The Short- and Long-Run Effects of Affirmative Action: Evidence from Imperial China*

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Abstract

We examine the short- and long-run effects of affirmative action in the setting of China. The most academically talented individuals were chosen to take official jobs in imperial China through a centrally regulated, multi-stage examination process. Because of the stark differences in exam performance across the country, a reform to minimize the disparities in access to these positions was initiated in 1712. As acceptance rates were made equitable among the provinces, more candidates from underrepresented provinces were chosen. Using a novel dataset on the exam performance and career outcome of successful candidates, we demonstrate that, after the intervention, there was a steady convergence in the quality and performance of successful candidates chosen from underrepresented provinces and other provinces. A divergent trend between sub-provincial units suggests greater inequality within provinces, but this disparity was mitigated by the existence of non-governmental organizations that covered exam-related travel expenses. We demonstrate that after the reform dropped in 1905, the gap between the underrepresented and other provinces reopened. Nonetheless, some of the reform's effects persisted. The intervention had spillover effects that reached all the way down to secondary education.

Keywords: Affirmative Action, Education, Inequality, China

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I Introduction

Affirmative action policies are designed to improve the position of groups that have been underrepresented or disadvantaged. Affirmative action has been a subject of debate since its inception.[1] Researchers who have examined affirmative action's effects on equity and efficiency have come to drastically different conclusions.[2]

The imperial examination system in China was a program to recruit individuals for scarce, high-status government jobs through competitive exams. Ordinary individuals from all over China competed. They had to take several exams over nearly two decades to reach the final round. In the absence of mass schooling, the examination system was the main, if not sole, cause of educational attainment at the time.

The average performance of exam candidates varied considerably across the provinces.[3] Candidates from certain provinces found examination preparation more difficult due to linguistic barriers, fewer educational resources, and less convenient locations.[4] In 1712, the Qing state enacted a reform to improve the chance of candidates from underrepresented provinces and to diversify provincial origins of successful candidates. This policy stayed in effect until imperial exams were abolished in 1905.

A central piece of the reform was to make the number of successful candidates per province proportional to the *total* number of candidates from that province who sat in the exam. Before the reform, individuals competed with both those from the same province and those from other provinces. The new policy made the selection criteria based on provincial origins, restricting competition within the province. Conditional on passing lower-level exams, the same percentage of candidates from each province would pass the final round, irrespective of their actual score. This allowed candidates from less competitive provinces to pass the final round and obtain a government position with lower scores. This reform is a similar intervention to affirmative action policies elsewhere, as members of disadvantaged groups receive preferential treatment.

The 1712 reform provides an opportunity to estimate the long-term effects of large-scale affirmative action policies. We begin by analyzing the contemporaneous effects of the 1712 reform on the academic and career outcomes of intended beneficiaries, using a novel dataset on the 16,073 successful candidates who received their jinshi degree between 1650 and 1840. Using two sources of variation — the intensity of the reform and timing — we estimate the impact of the reform in

[1] Affirmative action began in the United States with Lyndon Johnson's 1965 executive order preceded by a commencement address he delivered at Howard University on the same subject matter.

[2] see Peter Arcidiacono and Lovenheim (2016) and H. Holzer and Neumark (2000) for a review.

[3] A broad pattern is that candidates from North China performed less well than South China candidates. This particular source of regional disparity had already been corrected through explicit quota systems imposed in 1454.

[4] The imperial exam curriculum was inherently biased against ethnic populations since it was in the Chinese language (Elman, 1991). In Schotter and Weigelt (1992), affirmative action programs are a solution to uneven tournaments, in which one group of agents have a higher cost of effort than another group

a continuous difference-in-differences framework. To understand the distributional consequences of the reform, we estimate the heterogeneous impact of the policy and investigate factors that shaped the distribution of the gains and losses from the reform within the provinces. Our last line of analysis probes into the long-run impact of the reform and its spillover effects on lower educational levels.

To quantify the magnitude of the reform, we first construct a measure of reform intensity. Specifically, we take the difference between a province's share of successful candidates without the reform and its share immediately after the reform. To ensure comparability over time, we create artificial provinces with boundaries well contained within exam regions.[5] The change in a province's share in its exam region ranged from -47% to 24%. As expected, there is an inverse relationship between a province's initial share and the change in its share. In other words, a province with a lower share of successful candidates without the reform was more likely to see a positive change under the reform. The observed relationship shows that the reform expanded opportunities for individuals from underrepresented provinces.

For robustness, we measure the intensity of the reform in several other ways: a.) instead of using a province's share in its exam region between 1454–1650 as its share in the absence of the reform, we use its share in the entire country between 1371 and 1425. This is to exploit the fact that competition at the imperial exam was nationwide before 1425, allowing us to measure the competitiveness of a province's candidates without any regulation. b.) instead of computing the raw difference in a province's share with and without the reform, we adjust for population growth between two periods. Intuitively, if a province's share of successful candidates increased — so did a province's population size — the role of the reform will be confounded if we do not adjust for population growth.

As the reform expanded opportunities for individuals from underrepresented provinces, return to education increased for these individuals. We ask: did an increase in return to education stimulate the demand for education following the reform? Using panel data on exam scores and bureaucratic ranks, we investigate how the reform affected successful candidates' academic achievement and professional outcomes. Because the final-round exam occurred at the end of a candidate's academic journey, exam scores would reflect cumulative investments in education made by him.[6] We estimate the interaction between reform intensity and the post-reform indicator and find the interaction term to be positive, indicating a larger improvement in the exam performance of successful candidates from provinces that benefited more from the reform. Taken together, there were more successful candidates from underrepresented provinces, and the achieve-

[5]Exam regions were instituted in 1454. From 1454 onwards, quotas were assigned to exam regions (North, South and Central) based on the following rule: 35% to North, 55% to South, and 10% to Central. The boundaries of these exam regions did not perfectly overlap with provincial boundaries. These exam regions became irrelevant after 1712.

[6]Imperial exams were open to all adult men, but not women.

ment gap between these candidates and other successful candidates shrank over time. Thus, we conclude that more educational investments were made in beneficiary provinces after the reform.

Having shown that the reform expanded opportunities for individuals in underrepresented provinces and incentivized education there, we explore the distribution of gains within the provinces. We estimate the heterogeneous impact of the reform varying by the amount of pre-existing human capital. Pre-existing human capital is measured by the density of jinshi degree holders before 1650.

Using a panel of 267 prefectures and 19 periods, we estimate the triple interaction term between pre-existing human capital, reform intensity, and post-reform dummy and find the coefficient estimate to be positive. After the reform, in beneficiary provinces, the density of successful candidates increased more in sub-provincial units where pre-existing human capital was higher. In other words, places with more pre-existing human capital captured most of the gains from the reform. The advantage of prefectures with greater pre-existing human capital also prevailed in reform-negative provinces. The reform raised the standard for individuals from reform-negative provinces, making it less likely for them to pass the exam, but the negative impact was not equally absorbed by all sub-provincial units. Compared to other prefectures in the province, prefectures with greater pre-existing human capital were also negatively impacted but to a much less extent.

Using a more flexible estimation strategy, we show that the differential impact of the reform lasted throughout the period under study, suggesting limited positive spillover across sub-provincial units. We also conduct an intraprovincial analysis at a county-decade level and find similar results.

Having witnessed a widening gap between sub-provincial units, we investigate what can reduce the gap. We begin by assessing the role of funding agencies. Since the final-round exam took place in the capital city, candidates from remote areas often had to travel a long way to attend the exam. Sometimes the trip would take several months and be extremely costly. Funding agencies provided resources to prospective examinees through a travel grant. Our results suggest that the gap that emerged after 1712 between prefectures with greater pre-existing human capital and other prefectures is almost entirely driven by prefectures without funding agencies. Prefectures with at least one funding agency by 1840 derived benefits (or endured losses) from the reform similarly, irrespective of their level of pre-existing human capital.

We have shown in 1650–1840 panel results that the reform had a positive impact on beneficiary provinces. Below we investigate whether the effects were permanent. We compare the periods right after the withdrawal of affirmative action policies and those just before. In 1905, affirmative action policies ended after the abolition of the imperial examination system. Using outcomes from competitive exams held by top universities, we show a relative decline in aggregate academic performance after 1905 in provinces that benefited from the reform. This indicates a weakened effect of the 1712 reform after its withdrawal.

While the reform targets the final round of the imperial exams and only directly affected individuals who competed at a very high level, we find evidence for significant spillovers of the reform onto lower educational levels. Using the first modern census with detailed information on educational attainment, we show that both tertiary and secondary education attainment in 1982 are correlated with the intensity of the 1712 reform. These results also suggest that despite the reversal after 1905, some of the gains from the reform remained.

Related Literature Our study contributes to the growing literature on the effects of affirmative action. Several studies provide theoretical support for the incentivizing effect of affirmative action on human capital accumulation. Lundberg and Startz (1983) demonstrate that equal opportunity laws encourage human capital investments, as human capital investment decisions are affected by the presence of labor market discrimination. Schotter and Weigelt (1992) find that affirmative action programs always benefit the intended beneficiaries by alleviating the dropout behavior of disadvantaged subjects. Chung (2000) and Fang and Moro (2011) provide theoretical mechanisms for affirmative action to improve group outcomes through role model effects. Other works, however, point to mismatch effects (Sander, 2004; P. Arcidiacono et al., 2011; Peter Arcidiacono and Lovenheim, 2016).

Our study is most related to the research estimating the effects of affirmative action on intended beneficiaries using natural experiments (Bertrand, Hanna, and Mullainathan, 2010; Kapor, 2015; Bagde, Epple, and Taylor, 2016; Bleemer, 2022). Bleemer (2022) shows that ending affirmative action caused underrepresented minority freshman applicants to cascade into lower-quality colleges. Kapor (2015) finds that under the "Top Ten Percent" policy in Texas, more students from high-poverty schools enrolled, and students who enrolled under the policy achieved higher GPAs. Bagde, Epple, and Taylor (2016) show that the affirmative action program in India increased college attendance for targeted students and there is no evidence for the "mismatch" effect. Bertrand, Hanna, and Mullainathan (2010) find a positive return to admission for intended beneficiaries, but lower-caste individuals from stronger socioeconomic backgrounds benefited the most.

Our results suggest that affirmative action policies could have a large positive impact on beneficiaries' academic achievement, with more ambiguous effects on their professional outcome. The long-term effects of these policies could be substantial, with positive spillovers onto members of the beneficiary group that were not directly affected by the policy. The finding that the reform led to a relative increase in academic achievement for the beneficiaries is related to the larger literature on how returns to education shape educational investments[7]. Because the Qing government did not invest in the supply side of education on the same scale as the modern states, we are relatively confident that the effect of the 1712 reform is driven by the change

[7]See Card (2001) for a review.

in demand for education and by private action.[8] We find that both the number of and the performance of successful candidates in beneficiary provinces increased, following an exogenous increase in returns to education. Assuming that the relationship between educational investments and academic achievement is generally positive, our findings would suggest that more educational investments were made in those provinces.

A central question in the affirmative action literature is how efficient these policies are and whether these policies are necessary in perpetuity.[9] Our findings suggest that the academic performance of successful candidates from beneficiary provinces increased over time, even though their performance might not be fully on par with other successful candidates yet. Upon the withdrawal of the affirmative action policy in 1905, we document a reversal in the effect of the reform, which suggests that the policies would still be needed to keep the beneficiaries on the same path as before.

Fewer studies within the affirmative action literature have examined the distributional consequences of the reform (Bertrand, Hanna, and Mullainathan, 2010). We find that prefectures with a high level of pre-existing human capital derived the most benefits from the reform. The gap that emerged after 1712 between prefectures with varying levels of pre-existing human capital remained large throughout the period under study. A silver lining is that this gap closed when small subsidies, such as travel grants, were provided to prospective examinees.

A separate literature examines the political determinants of affirmative action and redistribution, focusing on voter preferences (Austen-Smith and Wallerstein, 2006; Chan and Eyster, 2009). In our context, these policies were centrally determined and imposed by the central government and not a direct response to local preferences.

The recent development and urban economic literature increasingly consider place-based policy interventions (Busso, Gregory, and Kline, 2013; Austin, Glaeser, and Summers, 2018). The affirmative action policy studied in this paper was based on the geographic region and yielded benefits to individuals from beneficiary provinces. One difficulty of studying the effects of place-based policies is that the benefits will be arbitraged away (and specifically captured in land rents) in the presence of mobility and migration.[10] This concern does not apply to the historical setting considered in this paper. Migration between provinces was much lower than in the modern context, and it was illegal for families to try to move their place of legal residence in order to gain

[8]Individuals were taught at home or community schools. The Qing state provided few public goods besides disaster relief and granaries. There was no equivalent to the modern school system. Only when they passed lower-tier exams such as the prefectural exam did individuals receive any education at state-sponsored schools. However, even by that point, the education they received was nominal.

[9]See H. J. Holzer and Neumark (2006) and Peter Arcidiacono, Lovenheim, and M. Zhu (2015) for a review of the literature. At the heart of this literature is how affirmative action policies affect both equity and efficiency.

[10]Cullen, Long, and Reback (2013) documents strategic high school choice under Texas's top ten percent plan. They show that among the subset of students with both motive and opportunity for strategic high school choice, at least 5% enroll in a different high school to improve their chances of being in the top 10%.

favorable treatment in the examination system.[11]

Historians and economists have investigated the relationship between the imperial examination system, human capital, and social mobility in imperial and modern China (Ho, 1962; Campbell and Lee, 2008; Elman, 2013; Bai and Jia, 2016; Shiue, 2017; Yuchtman, 2017; Shiue, 2019; T. Chen, Kung, and Ma, 2020). Ho (1962) suggests there was a considerate amount of mobility in Ming China; Elman (1991) and Elman (2013), on the other hand, conclude that there was "a healthy circulation between upper and lower elites" but nowhere near social mobility. This study complements previous research. By showing that the 1712 reform incentivized educational investments in underrepresented provinces and had significant spillover effects on lower educational levels, we provide evidence that the influence of imperial exams was not limited to an unchanging elite.

To our knowledge, this study is the first to examine affirmative action policies in a historical context using a very long-run perspective.[12] The period at which the new policy was implemented allows us to estimate the effects of the policy over a long period and to track beneficiaries throughout their life. The policy under study spanned 193 years—from 1712 to 1905—before it abruptly ended. Rather than looking into a particular set of schools and students, our study analyzes the universe of successful candidates from the entire country who passed the metropolitan exam between 1650 and 1840. This provides an ideal setting for analyzing the long-run dynamics of human capital responses to affirmative action policies, both within and over the generations.

Our setting is characterized by a straightforward admission process and a single uniform labor market for successful candidates. Conditional on provincial origins, exam scores were the sole criteria for determining examinees' success (or failure). This feature ruled out potential adjustments along other dimensions in response to the affirmative action policy.[13]

The appointment process was centralized by the Ministry of Personnel, a branch of the central government, and the test score was the most crucial factor in determining the first assignment. Moreover, conditional on passing the final round, exam candidates were guaranteed to obtain important government jobs. This unusual feature mitigated the confounding role of further preferences and discrimination in the labor market faced by affirmative action beneficiaries, which are prevalent in other studies. The aforementioned features of the setting make it possible to pin down specific mechanisms underlying the short- and long-run effects of the 1712 reform.

[11]The prerequisite for taking the exam was being registered in a locality where the candidate held residency. At the time, an individual was only permitted to attend the exam in his locality if his extended family had resided there for at least three generations (*jiguan*). This made it difficult to take exams in locations different from an individual's place of origin. See Von Glahn (2012) for details on the household registration system in imperial China.

[12]One exception might be (Martin et al., 2001), which descriptively studies the Soviet Unión as the world's first Affirmative Action Empire.

[13]In the US, affirmative action and weights assigned to non-test-score items substitute for each other (Chan and Eyster, 2003).

The remainder of the paper is organized as follows. Section III discusses data sources and variable constructions. Section V links the 1712 reform to successful candidates' academic and career outcomes. Section VI examines the reform's distributional consequences and analyzes the reform's heterogeneous impact on prefectures varying by pre-existing human capital. Section VII documents the effects of the 1712 reform after the policy withdrawal. Section VIII gauge the long-term and spillover effects of the 1712 reform on the broader population. Section IX concludes.

II Historical Background

In 1712, a major reform was introduced to the long-standing imperial examination system, the backbone of China's economic and political institutions from 1000 AD onward. The reform equalized acceptance rates at the final round of imperial exams across the provinces. Under the new policy, candidates from less developed parts of the country would still have a chance to pass the exam even when they received lower scores than those of candidates from other provinces. Success at lower-tier exams, which had a quota and were capped at a certain number, was still required in order to take the final-round exam.

The imperial examination system originated in 587 AD and was further institutionalized during the Song Dynasty (960–1279 AD). The system was structured as a tournament and had three tiers: the Prefectural Examination (*yuankao*), the Provincial Examination (*xiangshi*) and the Metropolitan Examination (*huishi*). Academic degrees were conferred to candidates selected at each stage: *shengyuan*, *juren* and *jinshi*. The metropolitan exam was held every three years. After passing the metropolitan exam, candidates became eligible for important government positions. This system is described in Figure I.[14]

This system provided individuals with an incentive to learn to read and write. In the premodern world, such incentives were usually absent, as returns to education were typically low. Passing imperial exams required considerable cognitive skills. There was no formal schooling at that time. Candidates received education at home or attended community schools. Conditional on passing lower-level exams, they also received some training in government-sponsored academies. Successful candidates received high-status positions and social respect (Ho, 1962). Candidates who failed to advance to the next tier routinely pursued a teaching career in local communities, an important source of human capital externalities for the rest of the population. The imperial examination system produced a literate populace that was several times greater than the bureaucracy itself while being utilized as a tool to choose government officials.[15] According

[14]See Appendix Section C.3 and Appendix Section C.3.3 for a detailed discussion of job opportunities available to successful and failed candidates.

[15]The elimination tournament design had an additional effect on the level of effort (see Kracke (1957)).

to Evelyn Rawski's (likely too optimistic) estimates, 30-45% of adult males in the Yangtze Delta in late imperial China were literate (Rawski, 1979).

The imperial examination system was open to all adult males.[16] There were no additional requirements such as income and wealth. Popular participation in imperial exams was considerable.[17]While initially implemented to recruit officials, the institution became independently crucial over time. Elaborate superstitious beliefs and customs evolved around the imperial examination system. Exam candidates frequented fortune tellers for anxiety relief. Temples devoted to the God of Literature were erected all over the country.[18]

For operating on the basis of merit and being open to all, the system provided political legitimation to the state. Despite incidents of corruption and scandals. the system enjoyed a great deal of transparency. Each time, exam questions were drawn from the same list of classics, which ensured as many ordinary people as possible could access the exam materials. Exam answers were transcribed by a third party before they were graded. Punishment close to or at the same level of death penalty, was imposed on those who violated the rules at any stage, whether it was an organizer, a candidate, or a grader.[19]

Despite the traditional appeal of this meritocratic system, growing inequalities induced by the same system began to weaken the legitimacy of the state. Exam performance varied greatly across China. Many factors caused this unevenness, ranging from the examination curriculum to local educational infrastructure.[20] Some provinces were remote, poor, and previously unexposed to the examination system. Candidates coming from these provinces had a low chance to pass the final-round exam and to become jinshi.[21] After 1650, as the Qing state expanded its territory, the striking deficit of successful candidates in frontier provinces became more noticeable. Furthermore, a significant portion of government posts —close to 50%— was set aside for the Manchu elite, putting downward pressure on the number of positions available through the exam track (Xi, 2019). The total number of candidates allowed to pass the exam was then adjusted downward, significantly increasing the chance for certain provinces to produce no successful candidates for many years.

[16]An exception is the Tanka people (or Boat People). They were considered inferior and were not eligible for imperial exams for much of history. Even after they were permitted to attend imperial exams in the 1700s, the barrier remained substantial for them.

[17]In the late 19th century, it is estimated that about 3 million, i.e., 1 in 50 males (or 1 in 20 boys), took the first-tier exam every year (Elman, 2013).

[18]Appendix Section C.2.5 contains further details of superstitious beliefs and practices spawn by imperial exams.

[19]See Appendix Section C.2.2 for details on measures put in place to deter cheating.

[20]The curriculum was based on Confucian classics and written in the Chinese language. This alone disadvantaged examiners whose mother tongue was not Chinese. See Appendix SectionC.2.3 for more details of the imperial exam curriculum.

[21]See Appendix Section C.1.1 for a summary of spatial inequalities in exam performance. Recent literature has shown that place-based inequalities in education are widespread even in a modern context (Ludwig et al., 2013; Chetty and Hendren, 2018a; Chetty and Hendren, 2018b).

Finally, Emperor Kangxi and the officials introduced a reform to the imperial examination system in 1712. In his Imperial Edict of 1712 Kangxi remarked (*Veritable Records of the Kangxi Emperor* 1985):

> Nationwide, the number of applicants taking imperial exams has increased, even those who come from modest backgrounds and travel great distances. Few of these candidates ever passed the test, despite their best efforts. This situation is deeply unsettling. In the future, we ought to take a candidate's province of origin into account. To accomplish this, we must first wait for all applicants to come before calculating the number of candidates from each province who will pass based on the number of candidates who show up for the exam.

Emperor Kangxi made the above comments soon after the metropolitan exam in 1712. Key officials followed the emperor's decree and devised new rules governing the metropolitan exam. In 1713, another metropolitan exam was held in the capital city, following the new policy that essentially confined competition within the provinces.[22]

This was not the first reform implemented in the imperial examination system to address equity-related concerns.[23] The earliest debate about this issue occurred in 1066 between Sima Guang and Ouyang Xiu. Ouyang Xiu believed in unconditional meritocracy whereas Sima Guang advocated for preferential admissions for candidates from underrepresented regions. After 1400, a number of changes were made to the system: in 1425, regional quotas were imposed on South China (60%) and North China (40%).[24] In 1454, the quota system became more refined and three exam regions were established: South (55%), North (35%) and Central (10%) (Kracke, 1957). These interventions were not sufficient to shrink the gap in exam success and access to government jobs between provinces.

The 1712 reform took a step further toward the goal of equity. The reform made the number of successful candidates proportional to the number of examinees. Equalizing acceptance rates across the provinces confined academic competition to within the provinces. The criteria for passing the exam became linked to a candidate's province of origin and would be lower for individuals from provinces whose candidate pool was weaker.

[22]Usually every three years, metropolitan exams were held. Holding two metropolitan exams back-to-back was unusual for the government.

[23]See Appendix Section C.1.2 for the intellectual background on the equity doctrine in China.

[24]The absence of any successful candidates from North China in 1397 led to a shift in policy. Since the "Tang-Song transition" (750 – 1250 AD), the Yangzi River valley's rice industry had replaced the Central Plain's historic core as the driving force behind the Chinese economy. A series of significant changes in agricultural productivity, technology, industrial growth, transport, finance, and international trade was sparked by the population migration from the north to the south (Glahn, 2016, Chapter 6).

III Data

Below we introduce the main data sources used in this paper. Information on control variables can be found in Appendix A. Table A.1 presents the summary statistics of all variables used in this paper.

III.A Successful Candidates

In this study, we assemble a comprehensive and systematic dataset on the successful candidates of imperial exams over the period 1371–1840. The dataset includes the universe of successful candidates with information on their exam performance and professional outcome. This is the most complete dataset of its kind that we are aware of.

Throughout the Ming and Qing dynasty, about 51,000 candidates passed the final round of imperial exams and obtained the jinshi degree. The government released the names, ranks, and places of origin of the successful applicants after each exam. This information has been made available in B. Zhu and Xie (1980) in the *Official Records of Jinshi in the Ming-Qing Imperial Exams*.

Using this data source, we generate the following variables:

The Density of jinshi The variable is specified as the proportion of jinshi per 10,000 persons over a ten-year period. As 1776 is the only year for which population figures are available and because it falls in the midst of the period from 1650 to 1840, we choose population in 1776 as the denominator. Alternatively, we use population in 1820 and estimated population for other decades as the denominator. These other methods have no appreciable impact on our findings.

Exam Rank Exam rank in the metropolitan exam is our measure the academic achievement of successful candidates. The candidates took the metropolitan exam, which was held in the capital city. Although quotas had an impact on the number of successful candidates from different provinces, the rank of successful candidates was solely determined by their performance in the exam.

We employ standardized exam rank to assure comparability because the total number of successful applicants varies from exam to exam. Standardized rank is computed as one minus the ratio of the raw rank to the total number of successful candidates. The value of the standardized rank varies from 0 to 1. A lower value translate into a lower rank in the exam.

In alternative specifications, we aggregate individual-level standardized ranks into province-decade standardized ranks. For provinces with successful candidates in that decade, we average standardized ranks over all successful candidates from each province during that decade. A province's average standardized rank will be set to zero if there were not any successful candidates there in ten years. Using the same methodology, we produce standardized ranks for counties and prefectures.

Bureaucratic Rank We glean information on successful candidates' professional outcome from Gong (2019). The database includes jinshi degree holders' biographies taken from a variety of historical archives and local gazetteers. Information on the career outcome of 4,314 jinshi (or 27% of all jinshi) between 1650 and 1840 is available.

These applicants were hired for a range of government posts. The Qing Government divided administrative positions into nine ranks, with standard and secondary ranks within each level. Both the rank of the highest post ever held and the rank of the successful candidate's first position are known to us.

We convert this nine-rank system — which includes standard and secondary ranks — into a scale of 18 levels. The variable's value grows by 0.5 for each level from 0.5 to 9. A lower rank is indicated by a lower value (less important position). Higher values represent positions such as the Prime Minister (level 8.5-9), the Minister (level 7.5-8.5), and the Governor of a province (level 7.5-8). Lower numbers correspond to roles like the Deputy Governor of a county and the County Governor (level 3) and the Deputy Governor of a county (level 2-2.5). The average rank of the highest jobs for successful candidates in our sample is 5.5, which is the rank of a position comparable to the Governor of a prefecture.

We average individual rankings across all successful candidates who passed the exam within the same decade and were from the same province. The average standardized position is set to 0.5, which is the lowest possible number, if a province had no successful candidates for that decade. At both the prefecture and county levels, we use the same methodology to determine the average bureaucratic rank of successful candidates.

III.B Pre-Existing Human Capital

We use the density of jinshi before 1650 to proxy for pre-existing human capital. The variable is computed as the total number of jinshi between 1371 and 1650 per 10,000 people. In our baseline measure, we use the population of 1600 as the denominator. The outcomes remain the same when we use population in 1400 or 1500 as the denominator.

III.C Lower-Tier Exams and Quotas

Lower-level imperial exams were subject to predetermined quotas as opposed to the final round. These quotas, which set the number of applicants for higher-tier tests, are taken into account.

For prefectural examinations, the number of successful examinees was capped for each prefecture. Prefectural exam quota consisted of two parts: the first part is the number of slots allotted to the county, and the second part is a small number of slots set aside for competition among all counties within a prefecture. We gather quota data for the years 1724 to 1851 from the *Imperially Established Institutes and Laws of the Great Qing Dynasty* and normalize it by population.

For provincial examinations, the number of successful examinees was capped for each province. We consider the adjustments made to the provincial exam quota in 1645, 1660, 1696, 1711, and 1744.

In Appendix C.2, we discuss further details of lower-tier exams in the imperial examination system.

IV Measures of The 1712 Reform

The 1712 reform was to equalize the access to jinshi degrees and important government positions. A policy was put in place to make the number of jinshi proportional to the number of examinees from each province in order to achieve this.

In a motivating figure, we demonstrate trends in the density of jinshi following the reform, which vary depending on initial disparities in exam success rates (Figure II). The percentage of successful candidates who subsequently passed the highest-level exam was greater in the upper panel provinces. This group observed little change in the density of jinshi following the reform. In contrast, the density of jinshi increased in the provinces in the lower panel, the majority of which had a relatively low percentage of successful candidates who eventually passed the highest-level exam. This is broadly consistent with the objective of the reform.[25]

How do we measure the size of the reform for each province? Comparing a province's share of jinshi with its portion prior to the reform is one way to gauge its size. We would ideally examine a period that was close to the period of interest (1650–1840) and for which no intervention existed. These times did not exist. We consider the period of 1454–1650 as a compromise because no additional interventions happened within the exam region and competition for the jinshi degree only occurred at the level of exam region (South, North, and Central Region). Taking the difference between a province's share of jinshi within a region during this period and its share right after the reform yields a measure of the intensity of the reform.

To construct this measure, we first compute each province's share of jinshi within the region ($Share_{prov}^{1454-1650}$). We then compute each province's share of jinshi within the region for the period of 1713–1740, $Share_{prov}^{1713-1740}$, even though these regions were no longer relevant. A province's jinshi share within the region represents how it stands in comparison to other provinces within the same region.

The three test regions created during the Ming dynasty (South/North/Central) did not correspond with post-1712 provincial boundaries since provincial boundaries changed over time from

[25]We calculate the proportion of candidates who passed the final-round test (*jinshi*) to those who passed the lower-level exams (*juren*) for each province. The provinces are then split into two categories according to their jinshi-to-juren ratio prior to the reform (1644—1712). The provinces in the upper panel have jinshi-to-juren ratios above the median, whereas the provinces in the lower panel have jinshi-to-juren ratios below the median. The final-round exam was only open to people who had passed the lower-level exams.

the Ming period (1368–1644) to the post-1712 period (1713–1840). This issue is solved by reconstructing provinces so that each "province" is continually confined inside the same exam region.[26]

The share of jinshi prior to the reform ($Share_{prov}^{1454-1650}$) is deducted from the share after the reform ($Share_{prov}^{1713-1740}$) in equation 1.

When the change in the share of jinshi is positive, L_{prov}^{1712} is set to zero, G_{prov}^{1712} takes the value of the increase in jinshi to represent gains for provinces seeing an increase in jinshi. When the change in the share of jinshi is negative, G_{prov}^{1712} is set to be zero, and L_{prov}^{1712} is the absolute value of the change in the share of jinshi, signifying the losses for the provinces that witnessed a declining proportion of jinshi.

$$\begin{aligned} \Delta Share_{prov}^{1712} &= Share_{prov}^{1713-1740} - Share_{prov}^{1454-1650} \\ G_{prov}^{1712} &= |\Delta Share_{prov}^{1712}| \cdot 1(\Delta Share_{prov}^{1712} > 0) \\ L_{prov}^{1712} &= |\Delta Share_{prov}^{1712}| \cdot 1(\Delta Share_{prov}^{1712} < 0) \end{aligned} \tag{1}$$

This yields a measure of effective reform intensity. Figure III depicts effective reform intensity in different provinces. The red, green, and blue color represent the provinces in the South, North, and Central exam region. A lighter shade represents a negative change in the share of jinshi. A province shaded in a lighter color suffered losses from the reform. A darker shade represents a positive change in the share of jinshi. A province shaded in a darker color benefited from the reform. Provinces that profited from the reform were further away from the capital city and had a lower level of roughness than provinces that experienced losses as a result of the change.[27].

In Figure IV, we plot the relationship between a province's share of jinshi without the reform and the change in its share under the reform ($\Delta Share_{prov}^{1712}$ and $Share_{prov}^{1454-1650}$). As expected, the direction of the change is inversely related to its share prior to the reform. Provinces having a lower proportion of jinshi prior to the reform experienced a greater increase in jinshi under the reform; provinces with a higher proportion of jinshi prior to the reform experienced a more modest increase or even a fall in jinshi.

One limitation to this measure is that it is only comparable between provinces within the same exam region. In Appendix B.2, we examine various formulations of measures of reform intensity, including a measure that is comparable between the exam regions.

[26]We reconstruct 16 provinces based on the 18 provinces in 1713–1840, including *Fujian*, *Guangdong*, *Guangxi*, *Guizhou*, *Henan*, *Huguang* (*Hubei* and *Hunan* province in 1713–1840), *Jiangbei* (northern *Anhui* province and northern *Jiangsu* province in 1713–1840), *Jiangnan* (southern *Anhui* province and southern *Jiangsu* province in 1713–1840), *Jiangxi*, *Shanxi*, *Shaanxi* (*Gansu* and *Shaanxi* province in 1713–1840), *Shandong*, *Sichuan*, *Yunnan*, *Zhejiang*, *Zhili* (*Hebei* province).

[27]The average distance from prefectures in provinces with gains to Beijing is 1260 km, whereas the average distance from prefectures in provinces with losses to Beijing is 1098 km.

V The Impact of the Reform on Exam Performance and Professional Outcome

V.A The Reform and Exam Performance

In underrepresented provinces, the 1712 reform led to more jinshi (Figure IV). But how did the reform affect their exam performance? Below we look at how successful candidates' exam results changed as a result of the reform.

We estimate the impact of the 1712 reform on the exam performances of successful candidates in the following equation:

$$Exam\ Rank_{i(p),t} = \beta_0 + \beta_1 G_p^{1712} \cdot Post_t + \beta_2 L_p^{1712} \cdot Post_t + \gamma X_p \cdot \eta_t + \delta_p + \eta_t + \varepsilon_{i(p),t} \quad (2)$$

Our dependent variable $Exam\ Rank_{i(p),t}$ denotes the standardized exam rank of successful candidate (jinshi) i from province p in period t. As we introduced in Section IV, G_p^{1712} is the size of the gain for province p, and L_p^{1712} is the size of the loss for province p. In our alternative specification, we combine G_p^{1712} and L_p^{1712} into a single measure, $\Delta Share_p^{1712}$. $\Delta Share_p^{1712}$ denotes the change in the share of jinshi of province p after the 1712 reform. $Post_t$ is equal to 0 in the periods before the 1712 reform, and equal to 1 in the periods after the 1712 reform. X_p is a set of province-level control variables. δ_p is the time-invariant effect unique to province p, and η_t is a decade fixed effect. $\varepsilon_{i(p),t}$ is the error term.

Table I summarizes the results. In columns 1 and 2, we use our baseline measure of the reform intensity, G_{prov}^{1712} and L_{prov}^{1712}. In columns 3, 4, and 5, gains and losses are combined into a single measure, $\Delta Share_{prov}^{1712}$. Column 3 includes only successful candidates from provinces that benefited from the reform. Column 4 includes only successful candidates from provinces hurt by the reform. In column 5, we again include all the provinces with $\Delta Share_{prov}^{1712}$ as the treatment.

To account for trends related to broad economic differences between provinces, we control for the interactions of various time-invariant characteristics and decade fixed effects. These characteristics include population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers. In all columns, we include the fixed effects for decades and provinces. Decade fixed effects will take into account overall patterns in exam participation as well as common shocks that influenced exams in some years but not others. We also include the interaction terms between exam region fixed effects and decade fixed effects. This is due to the fact that, even before the reform, the amount of competition encountered by exam candidates varied depending on where they were from. Additionally, after 1712, this specific source of variation in competition vanished. We take into account the changing role of the exam region both before and after the reform by allowing the effects of exam regions to change over time.

Column 2 is our preferred specification. With all the controls included, the interaction be-

tween the post dummy and the gain from the reform is positive and significant. After the reform, the exam rank of successful candidates from provinces that benefited more from the reform improved, relative to successful candidates from elsewhere. If a province saw a change in its share of jinshi that was 0.1 larger, its successful candidates would a 3% larger increase in (standardized) exam rank. In column 5, the coefficient of the interaction of the post dummy and the change in the share is significant and positive as well. The results similarly suggest that provinces with greater gains (or smaller losses) from the reform saw improvements (relative to other provinces) in the exam performance of their successful candidates.

This suggests that post-reform successful candidates from beneficiary provinces gradually converged with other successful candidates in their exam performance. This converging trend is likely explained by increasing educational investments made by younger generations still preparing for imperial exams. At an aggregated level, this increase in educational investments may take two forms: 1) more children and young people were educated than before, and 2) they spent more time and effort learning the content than their predecessors.

Modern-day affirmative action sometimes comes with other state support for the targeted group. In our setting, the imperial Chinese state seldom public goods in education. Nonetheless, we investigate whether public investments in education played a role in post-reform change. Appendix Section B.3.4 examines whether there was a simultaneous change in the construction of government-sponsored academies after the reform. Based on the results in Table A.7, reform intensity is not correlated with an increase in newly constructed academies after the reform.

To demonstrate how the 1712 change affected exam performance over time, we estimate the equation 8 by including the interactions between decade dummies and change in the share of jinshi. Figure VI plots the point estimates of the coefficients $\beta_{1,t}$ and demonstrates that for many decades following 1712, a higher gain (or more minor loss) from the reform improved exam performance among successful candidates.

V.B The Reform and Professional Outcome

Next, we investigate the impact of the 1712 reform on the professional outcome of successful candidates. It should be noted that the reform did not contain any additional measures aimed at the candidates' professional performance. The effects we find should be considered as the effects of the same reform as examined in Section V.A.

Successful candidates were hired into different positions in the bureaucracy based on their exam rank, personality, and demeanor (see Figure A.10 for more details on official recruiting). This is confirmed by Figure V and results in Table A.8. Both the figure and the table point to be a correlation between exam rank and professional outcome that was in favor of higher bureaucratic ranks for successful candidates who scored higher on the final-round exam. This positive relationship holds both for the first placement and for the highest-ranked position obtained.

Given the strong connection between exam and bureaucratic rank, and the positive relationship found between reform intensity and exam performance, there should be a positive correlation between reform intensity and an improvement in the professional outcome. This does not have to be the case, however, if there are unobserved traits shared by the top candidates that are related to both the intensity of the reform and the factors that determine professional success.

To shed light on this inquiry, we estimate the impact of the 1712 reform on professional outcomes of successful candidates using the following equation:

$$Bureaucratic\ Rank_{i(p),t} = \beta_0 + \beta_1 G_p^{1712} \cdot Post_t + \beta_2 L_p^{1712} \cdot Post_t + \gamma X_p \cdot \eta_t + \delta_p + \eta_t + \varepsilon_{i(p),t} \tag{3}$$

In equation 3, we estimate the relationship between bureaucratic rank and the 1712 reform at an individual level. Our unit of analysis is a successful candidate i from province p who passed the metropolitan exam in decade t. The dependent variable $Bureaucratic\ Rank_{i(p),t}$ denotes the standardized rank of the highest position a successful candidate ever held. G_p^{1712} is the size of the gain from the 1712 reform for province p, and L_p^{1712} is the size of the loss from the 1712 reform for province p. $\Delta Share_p^{1712}$ is the change in the share of jinshi of province p from the 1712 reform. $Post_t$ is equal to 0 in the periods preceding the 1712 reform, and equal to 1 in the periods following the reform. X_p is a set of province-specific characteristics. δ_p is the time-invariant effect unique to province p, and η_t denotes decade fixed effects. $\varepsilon_{i(p),t}$ is the error term.

Table II summarizes the results. In columns 1 and 2, we use our baseline measure of the reform intensity. In columns 3, 4, and 5, we combine gains and losses into a single measure. In column 3, we only include successful candidates in provinces that benefited from the reform. In column 4, we only include successful candidates in provinces hurt by the reform. In column 5, we include all the provinces.

Column 2 is our preferred specification. With all the controls included, the coefficient estimate of the interaction of the post dummy and the gain from the reform is insignificant. After the 1712 reform, successful candidates from beneficiary provinces did not obtain higher rank relative to other successful candidates. The 1712 reform was not directly related to the success of candidates from beneficiary provinces in terms of their professional outcomes.

Based on the findings from Section V.A and Section V.B, we conclude that the 1712 reform not only increased the number of candidates but also improved the exam performance of successful candidates from beneficiary provinces. However, conditioning on entry into the bureaucracy, the reform did not translate into a further improvement in professional outcomes for successful candidates. [28]

[28]Due to a lack of other information on these successful candidates, we do not attempt to provide a definitive answer on why successful candidates from underrepresented provinces did not as successfully convert their academic achievement into professional success. In Appendix Section B.3.5, we discuss a few more results related to the impact of the 1712 reform on the professional outcome, but a more thorough investigation would require the use of

The reform could have changed the quality of the bureaucracy through the process of bureaucratic selection by introducing a different mix of people into it.[29] We acknowledge that there could be a meaningful change in the bureaucracy even though it is not the study's primary focus. As we focus on how the reform affects successful candidates' hometowns, whereas officials were specifically prohibited from working in their hometowns, the influence on the bureaucracy is unlikely to undermine our findings.[30]

For both exam and bureaucratic rank, our results are robust to using a binary variable as our treatment (Table A.5). When comparing reform-positive and reform-negative provinces, we find that reform-positive provinces saw a relative increase in the exam rank of their successful candidates after the reform. There was no equivalent change in the bureaucratic rank. Province-level regressions show qualitatively similar results (Table A.6).

VI The Distributional Consequences of The 1712 Reform

The beneficiaries of the affirmative policy's distributional effects are one of the main issues raised in the literature on affirmative action. Inequalities grew among intended recipients, according to a few studies (Bertrand, Hanna, and Mullainathan, 2010). However, even though it should be quite obvious that disparities will grow at the moment the policy is implemented, the long-term dynamics are far less obvious.

Below we estimate the heterogeneous impact of the reform on the density of jinshi within provinces, varying by a prefecture's pre-existing human capital. As shown in Figure VII, there was a lot of variation in pre-existing human capital across the prefectures. The total number of jinshi per 10,000 people prior to 1650 is used to calculate pre-existing human capital. We proceed to estimate the reform's heterogeneous impact with the following equation:

$$\begin{aligned} Jinshi_{pref,p,t} =& \beta_0 + \beta_1 G_p^{1712} \cdot PHC_{pref} \cdot Post_t + \beta_2 L_p^{1712} \cdot PHC_{pref} \cdot Post_t + \\ & \gamma X_{pref} \cdot \eta_t + \delta_p \cdot \eta_t + \theta_{pref} + \eta_t + \varepsilon_{pref,p,t} \end{aligned} \tag{4}$$

In equation 4, the dependent variable $Jinshi_{pref,p,t}$ is defined as the number of successful candidates (jinshi) from prefecture $pref$ in province $prov$ who passed the imperial exam in decade t, divided by the population. G_p^{1712} is a province's gain from the 1712 reform, and L_p^{1712} is a province's loss from the 1712 reform. PHC_{pref} is a proxy for pre-existing human capital, which is measured by the jinshi density in prefecture $pref$ before 1650. $Post_t$ is equal to 0 in the periods

better data. The China Government Employee Database, an eventual output of an ongoing data collection effort by James Lee, Cameron Campbell, and their team (B. Chen et al., 2020), will be a promising source.

[29] Xu (2021), for instance, shows that bureaucratic representation enhanced state responsiveness. Towns headed by Indian officers saw lower mortality during the 1918 pandemic in India.

[30] For 3,655 of all successful candidates, we know the location of the position they had. Only 14 of them had jobs in the same province as where they were born. These situations were frequently brought on by unique challenges an official faced, such as caring for sick parents.

preceding the 1712 reform and equal to 1 in the periods following the reform. X_{pref} is a set of prefecture-level control variables. δ_p is the time-invariant effect specific to each province. θ_{pref} is the time-invariant effect unique to prefecture $pref$, and η_t denotes decade fixed effects. $\varepsilon_{pref,p,t}$ is the error term.

Table III shows the regression results from estimating equation 4. In all columns, we use our baseline measure of the reform intensity. Decade fixed effects and prefecture fixed effect are included in every specification. We further control for the interaction of decade fixed effect and province fixed effect for provincial heterogeneous time trends.[31] We also control for the interaction of pre-existing human capital and post dummy. In columns 2, 3, and 4, we control for the interactions of different historical variables and decade fixed effects. We allow the trends to be related to the prefecture's initial conditions, including population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a prefecture had access to any major navigable rivers. Column 3 includes only the prefectures in the provinces that gained from the reform. Column 4 includes only the prefectures in the provinces with losses from the reform.

The coefficients of triple interactions $G^{1712} \times PHC \times Post$ and $L^{1712} \times PHC \times Post$ are positive and significant in column 2, with all the controls present. Prefectures with stronger pre-existing human capital had more successful candidates following the reform within a province that benefited from it. In other words, the prefectures with higher levels of pre-existing human capital reaped the majority of the benefits from the reform. Prefectures with more pre-existing human capital, on the other hand, inside a province harmed by the reform, also had more successful candidates following the change. The prefectures with the least prior human capital suffered the most from the reform, whereas those with more prior human capital continued to produce candidates who were more likely to succeed.

In column 3, only the prefectures in the provinces that gained from the reform are included. In column 4, only the prefectures in the provinces adversely affected by the reform are included. The coefficient of the triple interaction $G^{1712} \times PHC \times Post$ in column 3 and that of $L^{1712} \times PHC \times Post$ in column 4 are positive and significant. This further suggests that there was more intra-provincial inequality in both the reform-positive and reform-negative provinces.

The distributional consequences are large. We focus on column 2 when interpreting the magnitude of the distributional consequences. The average jinshi density before 1650, our measure of pre-existing human capital, is 1.33. In a province that benefited from the reform, if the increase in the jinshi share is 0.1, prefectures with greater pre-existing human capital (1.33 higher in jinshi density before 1650) had 0.006 more successful candidates per 10,000 in every period after the reform. Since a prefecture had an average of 0.024 successful candidates per 10,000 in a period,

[31] By controlling for the interaction of decade fixed effect and province fixed effect, we only focus on the difference between prefectures within the same province. We control for the confounding changes due to the different province-level conditions. For example, the changes in the quotas of the province-level exam.

the distributional impact of the reform is equal to an increase of 24% of successful candidates in prefectures with greater pre-existing human capital. [32]

To understand the dynamics, we estimate the equation 9. $Period_t$ is a group of dummies for 20-year periods[33] It is conceivable for intraprovincial disparities to increase over time under the following scenario: after watching the poor performance of the first few post-reform cohorts of examinees, those growing up in prefectures with lower pre-existing human capital invested less in education than those growing up in prefectures with higher pre-existing human capital.[34] Without any intervention, the widening gap between prefectures in exam performance could lead to differential investments, which could further widen the gap between them.

In Figure A.4, we plot the point estimates of the coefficients $\beta_{1,t}$ and $\beta_{2,t}$. According to these coefficients, the divergent trend that followed the reform expanded progressively over time, particularly in the provinces that were negatively impacted by it. There is no indication of convergence during this time period.

Having demonstrated the different impacts of the reform on achievement gaps between and within the provinces, we briefly analyze overall and between-province inequality in terms of the density of jinshi in Appendix Section B.5. Our main finding is that overall inequality declined after the reform, but not as much as between-province inequality.

VI.A Replicating the Analysis at the County Level

In this section, we replicate the above analysis at the county level. Table IV summarizes the results. In all columns, we use our baseline measure of reform intensity and include decade and county fixed effects. We further control for the interaction of decade fixed effects and province fixed effects to account for provincial heterogeneous time trends. We also control for the interaction of pre-existing human capital and post dummy. In columns 2, 3 and 4, we control for the interactions of different historical variables and decade fixed effects. We let the trends to be related to a county's initial conditions, including population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a county had access to any major navigable rivers. In column 3, we only include the counties in the provinces with gains from the reform. In column 4, we only include the counties in the provinces with losses from the reform. With all the controls included, the coefficients of triple interactions are positive and significant (column 2). The results parallel those in column 2 of Table III. The distributional pattern present at the county level is in line with results found using prefecture-level data, confirming our conclusion that the reform created greater within-province inequality.

[32] $1.33 \times 0.1 \times 0.0429/0.024 = 23.8\%$

[33] $Period_t$ is equal to 1 for the period from year t to $t+19$. For instance, $Period_{1650}$ is equal to 1 for the years of 1650–1669.

[34] Jensen (2010) shows that *perceived* returns affect schooling decisions. Youths often observe the earnings of workers who live in their neighborhoods to make schooling decisions.

VI.B The Role of Funding Agencies: The Great Equalizer

Next, we estimate the distributional consequences of the 1712 reform in prefectures with or without funding agencies. As the metropolitan exam was held in the capital city, *Beijing*, the cost of attending the exam was high for many.

In some prefectures, the wealthy set up funding agencies to subsidize travel, lowering the cost of attending the exam. For a marginal candidate, access to travel funding could be pivotal for their decision to attend the exam. While the effect of travel funding at an aggregated level is ambiguous, it is safe to say travel funding made continued participation in the exam more likely for prefectures that saw little exam success. We ask: did this change the long-run trajectory in human capital for these prefectures?

Table V shows the regression results from estimating equation 4. In all columns, we use our baseline measure of the reform intensity. We include time and prefecture fixed effects. We include the interaction of time and province fixed effects to allow for provincial heterogeneous time trends. Column 1 only includes the prefectures with a funding agency in 1840, while we focus on the prefectures without funding agencies in 1840 in column 2. We then divided the prefectures into two samples, the prefecture with and without funding agencies in 1840. In Appendix B.4.2, we discuss the full details of using the propensity score method to construct a more balanced sample. In columns 3 and 4, we use the matched sample.

In columns 2 and 4, the triple interactions' coefficients are positive and significant. The results suggest that the reform led to increased disparity in the sample of prefectures without any funding agency, but not in those with at least one funding agency. Our results suggest even small interventions such as travel subsidies can greatly reduce the gap that emerged within the provinces subsequently after the reform. The polarizing impact of the reform within the provinces was lessened by travel funding.

VII The Policy Reversal in 1905

In this section, we look at how the 1712 reform affected society in the first half of the 20th century. We wonder if the reform still had an impact when the imperial tests and the policy withdrawal in 1905.

After 1905, there was no clear replacement for the imperial examination system. We start our investigation with people who rose to any level of social prominence between 1912 and 1949. Politicians, military officers, scientists, professors, teachers, journalists, writers, and business owners are some of these people. Then, we concentrate our attention to those who passed competitive tests before enrolling in prestigious universities, including as Tsinghua University and Peking University graduates and those who got government support to pursue their studies abroad.

First, we look into how the 1712 reform affected the number of jinshi in the final few imperial

exams just before 1905 and the number of people in one of the aforementioned groups after 1905.

After 1905, we anticipate that the 1712 reform's impacts will be partly reversed. Particularly, once that examination system was abandoned, places that had generated a large number of successful candidates in part as a result of the reform during the imperial era may confront stiffer competition.

We create panel data around the time of 1905 to test this hypothesis. The density of jinshi in the most recent imperial exams during the eras of 1870 – 1880, 1880 – 1890, and 1890 – 1905 serves as the dependent variable in the first, second, and third periods. The density of highly educated people is shown in the fourth, fifth, sixth, and seventh periods, which cover the years 1910 through 1920, 1920 through 1930, 1930 through 1940, and 1940 through 1950. We normalized the outcome variable for each period to account for differences in units. We estimate the following equation:

$$Educational\ Elite_{pref,p,t} = \beta_0 + \beta_1 \Delta Share_p^{1712} \cdot Post_t + \gamma X_{pref} \cdot \eta_t + \theta_{pref} + \eta_t + \varepsilon_{pref,p,t} \quad (5)$$

The dependent variable $Educational\ Elite_{pref,p,t}$ is the density of highly educated individuals from prefecture $pref$ in province p in period t. In the first period, the variable is the standardized density of jinshi in 1890–1905. In the second, third, fourth, and fifth periods, the variable records the standardized density of highly qualified individuals in the years 1910–1920, 1920–1930, 1930–1940, and 1940–1950. $\Delta Share_p^{1712}$ is the change in the share of jinshi of province p from the 1712 reform. $Post_t$ is equal to 0 in the first period and equal to 1 after the second period. X_{pref} is a set of prefecture-level control variables. θ_{pref} is the time-invariant effect unique to prefecture $pref$, and η_t is a decade fixed effect. $\varepsilon_{pref,p,t}$ is the error term.

Table VI reports the results. We find that after 1905, prefectures in provinces that benefited more from the reform produced fewer notable figures and fewer students in selective universities than those in provinces that benefited less. The results confirm our prior that gains from the 1712 reform were partly reversed after 1905.

The dynamic effect of the 1712 reform on the concentration of the educational elite is examined below. We estimate the equation 10 by including the interactions between decade dummies and change in the share of jinshi. The point estimates of the coefficients $\beta_{1,t}$ are plotted in Figure A.8. Figure A.8 demonstrates that, over several decades after 1905, a greater gain (or smaller loss) from the 1712 reform is associated with a decline in the size of educational and social elite.

VIII Persistence and Spillovers

Recall that the 1712 reform was targeted at the final round of imperial exams. Does that imply that the reform had no bearing on the general populace and only had an impact on a small number of social and academic elites?

Contemporaneous data on education besides those who acquired degrees through imperial exams are unavailable. Moreover, the number of candidates who passed lower-level exams was tightly regulated by a predetermined quota.

We use census data from the 20th century to measure the reform's effects on the larger population in order to get around data restrictions. The 1982 census is the first modern one to include disaggregated data on educational attainment. To calculate the long-term effect of the 1712 reform on educational attainment, we utilize the census data from 1982. We calculate the long-term impact of the reform on various educational levels using the population's completion rate for elementary, secondary, and postsecondary education as well as college.

The results are shown in Table VII. In all columns, we control for the same historical characteristics as in the previous tables as well as age structure in 1982. We find suggestive evidence that the impact of the reform trickled down to lower educational levels. The 1712 reform is positively connected with educational attainment at the secondary and tertiary levels in 1982, after controlling for pre-existing human capital.

A probable explanation for this is that more people studied and prepared for imperial exams since they had a better chance of passing them. The vast majority would not make it to the final round, but they nonetheless learned the basics of literacy. If they at least passed the exam at the lowest level, they would receive compensation for their accomplishment. Those who were unsuccessful took on jobs like teaching or leadership roles in their native villages. Their level of education helped future generations to have higher educational aspirations and attainment.

Combining this result with those in Section VII, we arrive at the conclusion that, despite the policy's withdrawal, some of the 1712 reform's beneficial effects persisted. A significant portion of the population's educational attainment, up to the secondary education level, was significantly impacted by the reform in the long run.

IX Conclusion

Imperial China used a competitive examination system to choose its government officials. We look at the effects of a widespread affirmative action policy that was implemented in 1712 and devoured candidates from previously underperforming regions. In particular, this approach balanced the final round acceptance percentages among the provinces.

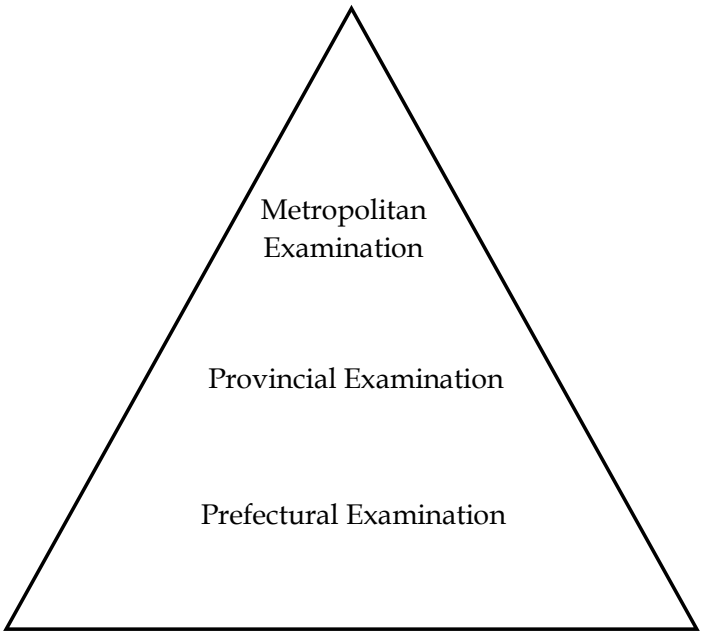
We demonstrate that the 1712 reform increased academic success for people from previously underrepresented regions using a unique dataset. Successful candidates from provinces with a greater intensity of change received higher exam ranks than before in provinces that were favorably impacted by the reform. We discover less conclusive evidence on whether the successful candidates also experienced greater professional success when we follow the development of their careers.

The reform lessened inequality among the provinces by implementing a policy that favored historically underrepresented provinces. The gains of the reform, however, appear to have been concentrated in sub-provincial units that had a wealth of human capital prior to the reform, according to our examination of the distributional consequences of the reform. After 1712, a distinction between prefectures or counties with higher pre-existing human capital levels and those with lower levels of human capital started to take shape. By providing exam applicants with travel subsidies, funding organizations were able to reduce this post-reform diverging trend between sub-provincial units with various pre-existing circumstances.

After 1905, the reform's impacts were significantly lessened compared to the time right before 1905. We show a change in academic excellence in the opposite direction of reform intensity, suggesting that the 1712 reform did not fully bridge the gap between the beneficiary and other provinces in academic achievement.

Nonetheless, some of the effects of the reform persisted. Reform intensity and top-tier educational attainment remained positively correlated in 1982. This positive association between educational attainment and reform intensity also holds at lower educational levels, demonstrating that the 1712 reform had a considerable ripple effect.

Figures and Tables



Venue: National Capital
Degree Holder: Jinshi
Competition: within exam regions -before 1712; within provinces – after 1712

Venue: Provincial Capitals
Degree Holder: Juren
Competition: Quota assigned to provinces

Venue: Prefectural Capitals
Degree Holder: Shengyuan
Competition: Quota assigned to counties and prefectures

Figure I: The Three-Tier Imperial Examination System

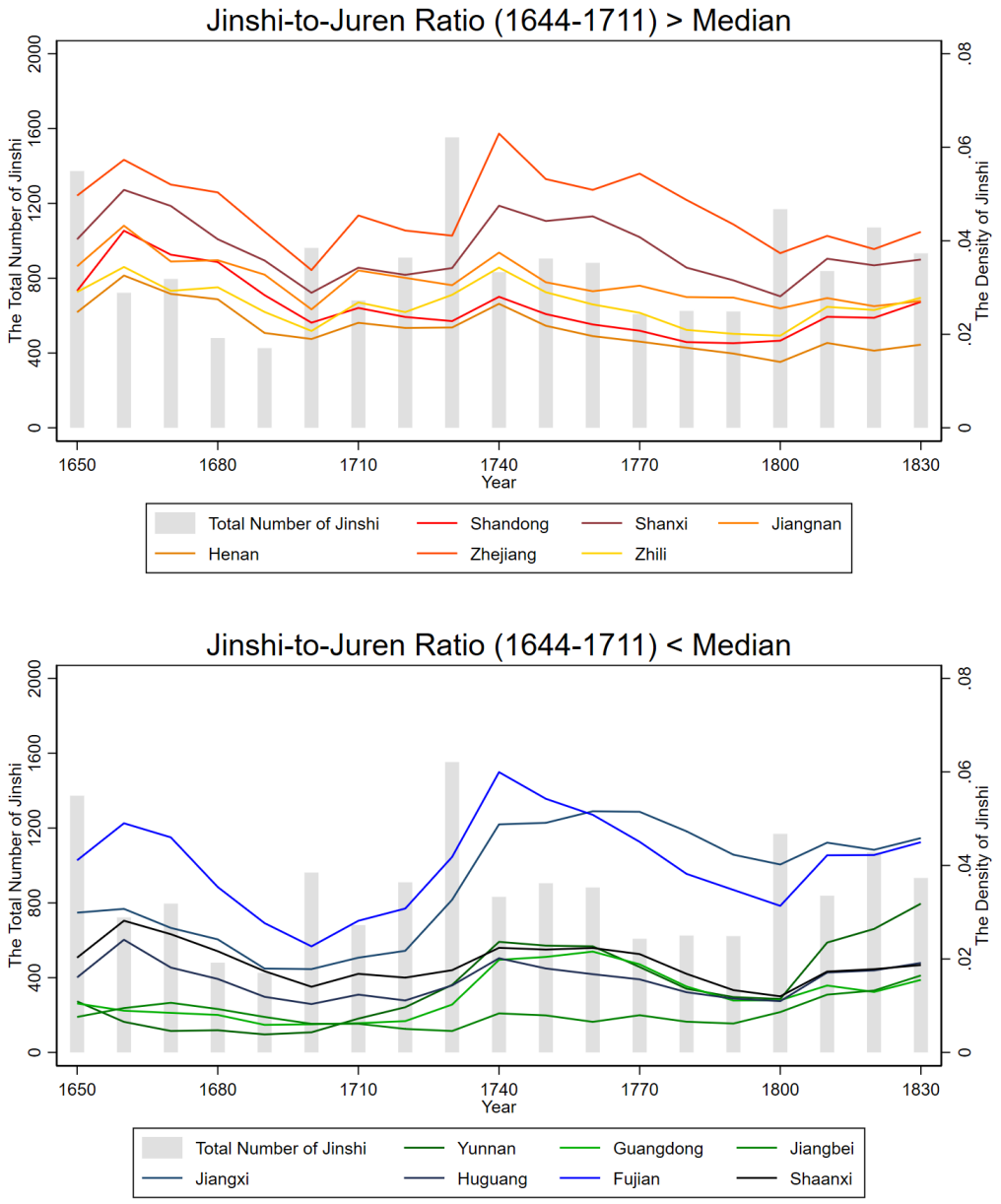


Figure II: Trends in the Density of Jinshi

Notes: This figure shows trends in the density of jinshi in the subsample of provinces with a below-median jinshi-to-juren ratio and the subsample of provinces with an above-median jinshi-to-juren ratio. Jinshi-to-juren ratio is a rough proxy for exam success, i.e. the share of examinees who passed the final round exam.

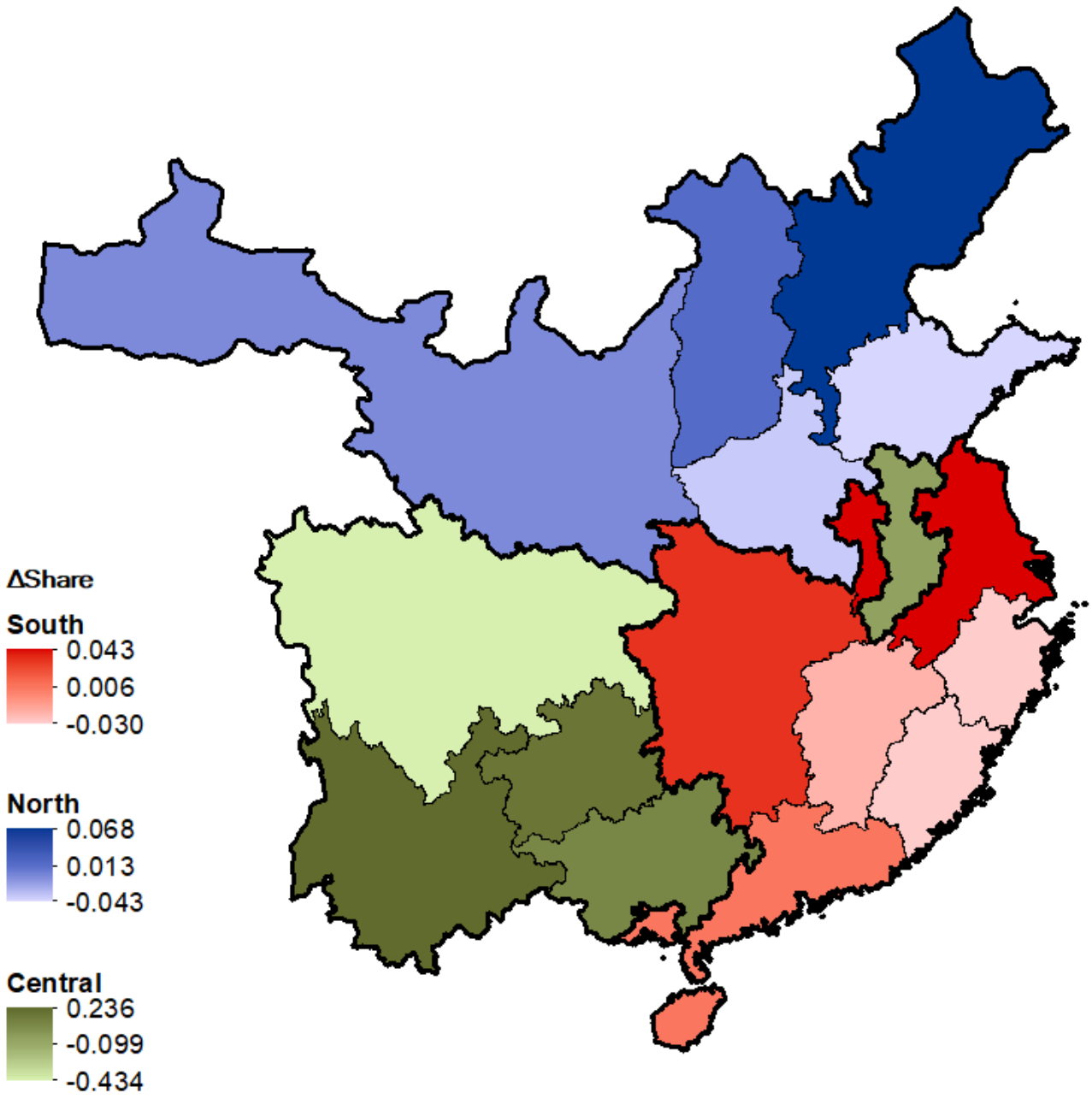


Figure III: Who Benefited From the Reform?

Notes: This map illustrates the difference between the share of jinshi within the region in 1713–1740 and the share of jinshi within the region in 1454–1650, or the change in a province's share of jinshi within its region before and after the reform. Darker shades correspond with a larger, positive change.

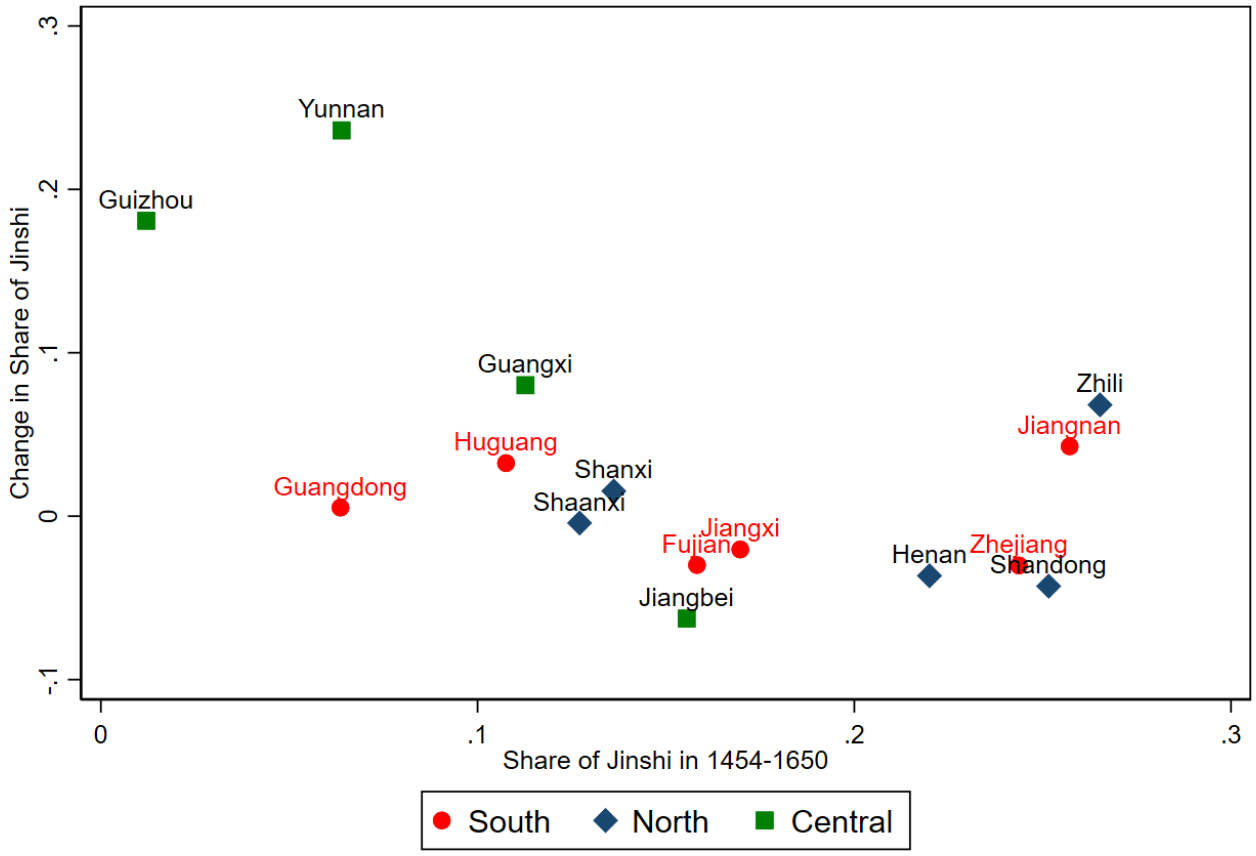


Figure IV: Who Benefited From the 1712 Reform?

Notes: The Y-axis is the difference between the share of jinshi within the region in 1713–1740 and the share of jinshi within the region in 1454–1650, or the change in a province's share of jinshi within its region before and after the reform. The X-axis is a province's share of jinshi in 1454–1650. There is an inverse relationship between the change in a province's share and its share before the reform.

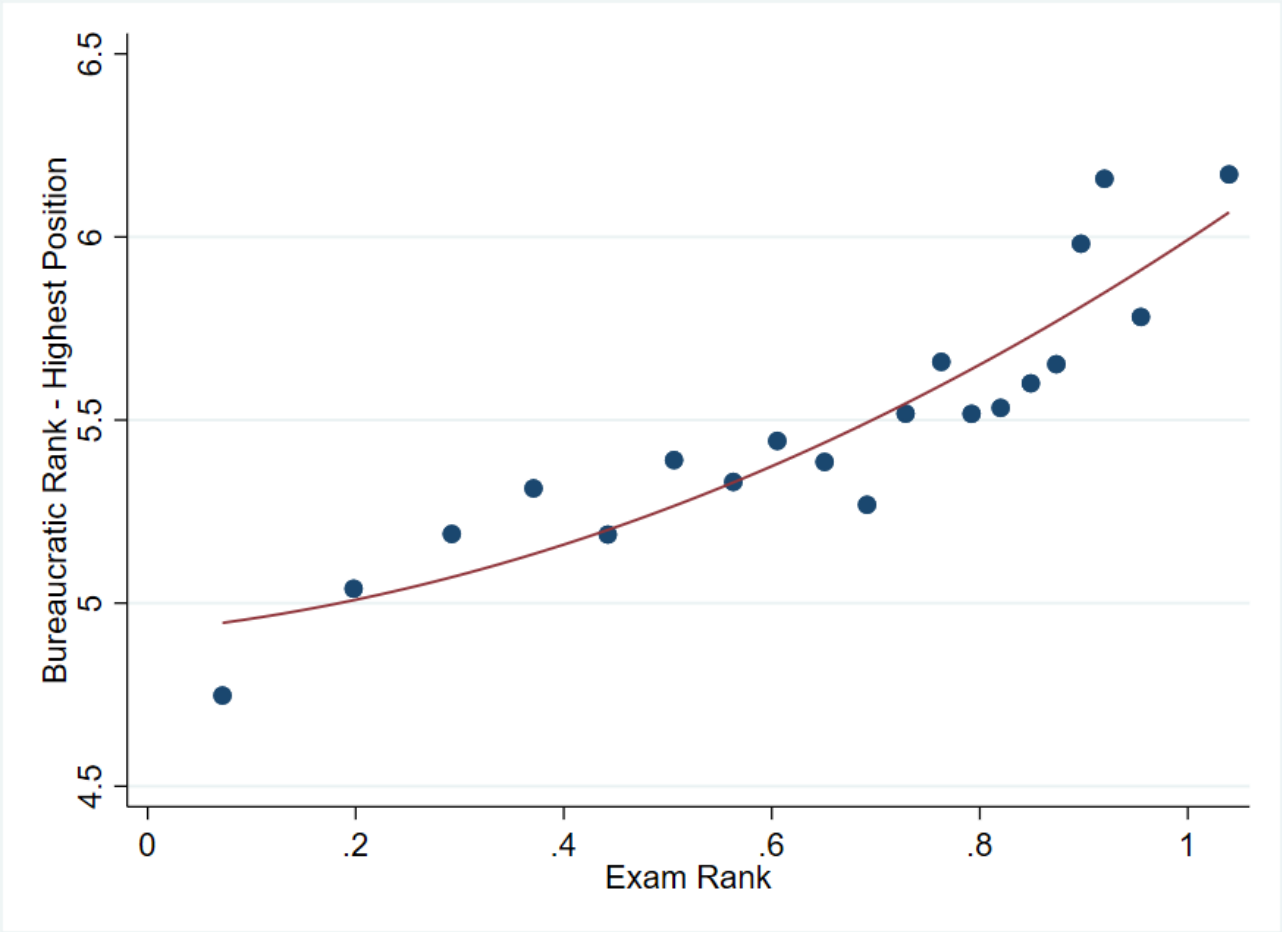


Figure V: The Relationship Between Exam Performance and Professional Outcome

Notes: This figure is a binned scatterplot of the relationship between exam and bureaucratic rank with a quadratic fit. Each observation is an individual. Controls are the same as in column 4 of Table A.8.

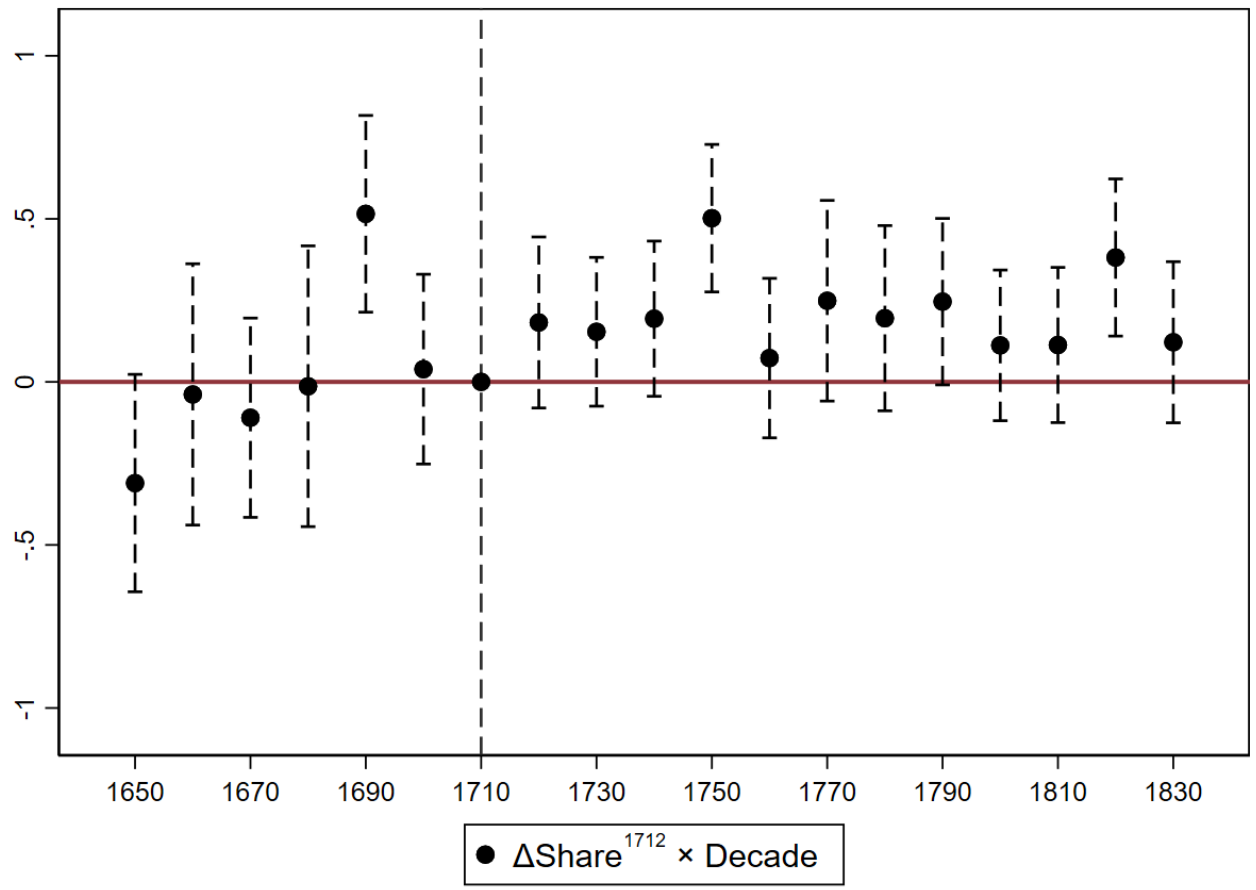


Figure VI: The Dynamic Impact of The 1712 Reform

Notes: This figure plots the estimation results of equation 8. The points represent the coefficients, and the dash lines are confidence intervals (90%).

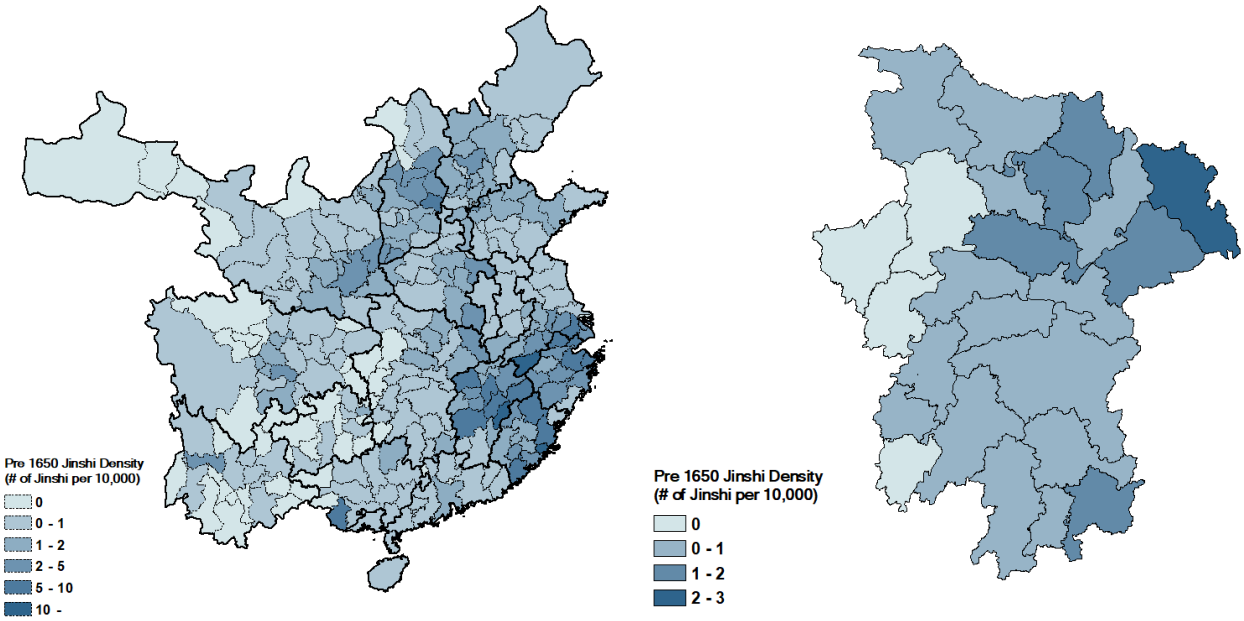


Figure VII: Heterogeneity in Pre-Existing Human Capital

Notes: The left map depicts the spatial variation in pre-existing human capital across the country. The right map depicts spatial variation in pre-existing human capital within Huguang.

Table I: The 1712 Reform and Exam Performance

	Exam Rank				
	(1)	(2)	(3)	(4)	(5)
	All	All	Reform Positive	Reform Negative	All
G^{1712} × Post	0.312*	0.323*			
	(0.182)	(0.191)			
L^{1712} × Post	-0.0244	-0.0806			
	(0.127)	(0.127)			
$\Delta Share^{1712}$ × Post			0.714**	0.152	0.171**
			(0.356)	(0.145)	(0.073)
Controls × Decade FE	No	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes
Observations	16073	16073	7950	8122	16073
Adjusted R^2	0.123	0.133	0.151	0.122	0.133

Each observation is a successful candidate from province p in period t. Exam Rank is the ordinal rank of a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). In columns 1 and 2, we use our baseline measure of reform intensity, G^{1712} and L^{1712}, interacted with the post dummy. In columns 3, 4, and 5, gains and losses are combined into a single measure, $\Delta Share^{1712}$. In columns 2, 3, 4, and 5, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table II: The 1712 Reform and Professional Outcome

	Bureaucratic Rank				
	(1)	(2)	(3)	(4)	(5)
	All	All	Reform Positive	Reform Negative	All
G^{1712} × Post	2.715	2.335			
	(1.929)	(2.124)			
L^{1712} × Post	1.465	1.863			
	(1.582)	(1.706)			
$\Delta Share^{1712}$ × Post			-2.111	-2.147	-0.118
			(4.109)	(1.988)	(0.841)
Controls × Decade FE	No	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes
Observations	4314	4314	2206	2107	4314
Adjusted R^2	0.013	0.006	0.008	0.003	0.006

Each observation is a successful candidate from province p in period t. Bureaucratic Rank is the rank of the highest position ever held by a successful candidate in the bureaucracy, standardized to 0.5 (lowest) to 9 (highest). In columns 1 and 2, we use our baseline measure of reform intensity, G^{1712} and L^{1712}, interacted with the post dummy. In columns 3, 4, and 5, gains and losses are combined into a single measure, $\Delta Share_{1712}$. In columns 2, 3, 4, and 5, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table III: Between Prefectures: The Distributional Consequences of the 1712 Reform

	The Density of Jinshi			
	(1)	(2)	(3)	(4)
	All	All	Reform Positive	Reform Negative
$G^{1712} \times$ PHC $\times$ Post	0.0631***	0.0429*	0.0761**	
	(0.023)	(0.022)	(0.032)	
$L^{1712} \times$ PHC $\times$ Post	0.0167***	0.0304***		0.0296***
	(0.005)	(0.005)		(0.005)
Controls $\times$ Decade FE	No	Yes	Yes	Yes
Province FE $\times$ Decade FE	Yes	Yes	Yes	Yes
Prefecture FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	5073	5073	2831	2242
Adjusted R^2	0.574	0.609	0.526	0.690

Each observation is a prefecture in period t. PHC is the density of jinshi in a prefecture before 1650. In all columns, we use our baseline measure of reform intensity, G^{1712} and L^{1712}. In all columns, we control for the interaction of pre-existing human capital and post dummy. In columns 2, 3, and 4, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Column 3 only includes prefectures in provinces benefiting from the reform. Column 4 only includes prefectures in provinces hurt by the reform. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and province fixed effects are included in all columns. Coefficients are reported, with standard errors clustered at the province-period-level in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table IV: Between Counties: The Distributional Consequences of the 1712 Reform

	The Density of Jinshi			
	(1)	(2)	(3)	(4)
	All	All	Reform Positive	Reform Negative
$G^{1712} \times$ PHC $\times$ Post	0.0638***	0.0538***	0.0870***	
	(0.019)	(0.018)	(0.021)	
$L^{1712} \times$ PHC $\times$ Post	0.0206***	0.0229***		0.0161***
	(0.005)	(0.006)		(0.006)
Controls $\times$ Decade FE	No	Yes	Yes	Yes
Province FE $\times$ Decade FE	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	31293	31293	16682	14611
Adjusted R^2	0.437	0.463	0.419	0.535

Each observation is a county in period t. PHC is the density of jinshi in a county before 1650. In all columns, we use our baseline measure of reform intensity, G^{1712} and L^{1712}. In all columns, we control for the interaction of pre-existing human capital and post dummy. In columns 2, 3, and 4, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a county had access to any major navigable rivers, interacted with decade fixed effects. Column 3 only includes counties in provinces benefiting from the reform. Column 4 only includes counties in provinces harmed by the reform. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and province fixed effects are included in all columns. Coefficients are reported with standard errors clustered at the province-period-level in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table V: The Distributional Consequences of the 1712 Reform: The Role of Funding Agencies

	The Density of Jinshi			
	(1)	(2)	(3)	(4)
	With Agencies	Without Agencies	With Agencies	Without Agencies
$G^{1712} \times$ PHC $\times$ Post	-0.00106	0.117***	-0.169	0.122***
	(0.027)	(0.031)	(0.104)	(0.031)
$L^{1712} \times$ PHC $\times$ Post	0.0161*	0.0418***	0.0145	0.0431***
	(0.010)	(0.008)	(0.014)	(0.008)
Matched Sample	No	No	Yes	Yes
Controls $\times$ Decade FE	Yes	Yes	Yes	Yes
Province FE $\times$ Decade FE	Yes	Yes	Yes	Yes
Prefecture FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	2489	2527	2204	2451
Adjusted R^2	0.634	0.585	0.591	0.499

Each observation is a prefecture in period t. PHC_p is the density of jinshi in prefecture p before 1650. We use our main measure of reform intensity, G^{1712}_{prov} and L^{1712}_{prov}. Column 1 includes prefectures with funding agencies in 1840. Column 2 includes prefectures without funding agencies in 1840. In columns 3 and 4, we use matched pairs of prefectures. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects, province fixed effects, as well as population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects, are included in all columns. Coefficients are reported, with standard errors clustered at the province-period-level in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table VI: The Impact of the 1712 Reform Upon a Policy Reversal in 1905

	The Density of Highly Educated Individuals			
	(1) Notable Figures	(2) Tsinghua Graduates	(3) Peking Graduates	(4) Oversea Students
$\Delta Share^{1712}$ × Post	-0.675***	-0.612***	-0.674***	-0.651***
	(0.127)	(0.162)	(0.167)	(0.125)
$Jinshi^{1650-1712}$ × Post	Yes	Yes	Yes	Yes
Controls × Decade FE	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	1869	1869	1869	1869
Adjusted R^2	0.396	0.538	0.591	0.505

Each observation is a prefecture in period t. We regress the density of highly educated individuals on the interaction between reform intensity and the post-1905 dummy. The educational elite refers to jinshi before 1905. After 1905, highly educated individuals refer to notable figures, elite university students or students going abroad. In all columns, we control for the density of jinshi prior to the reform, population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a prefecture had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and exam region fixed effects interacted with decade fixed effects. Coefficients are reported with standard errors clustered at the province-period-level in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table VII: The Long-Term Impact of the 1712 Reform: Persistence and Spillovers

	(1) Primary	(2) Secondary	(3) Tertiary
$\Delta Share^{1712}$	-0.123***	0.0208+	0.00362***
	(0.039)	(0.013)	(0.001)
$Jinshi^{1650-1712}$	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
Observations	266	266	266
Adjusted R^2	0.416	0.432	0.532

Each observation is a prefecture. The dependent variable is the share of the population with tertiary education, with secondary education or above, or with primary education or above. In all columns, we control for the density of jinshi prior to the reform, population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a prefecture had access to any major navigable rivers. Coefficients are reported with robust standard errors in round brackets. ***, **, * and + indicate significance at 1%, 5%, 10% and 15% levels.

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For Online Appendix

A Data Appendix

A.1 Additional Variables

We include historical variables such as population, land area, agricultural suitability, ruggedness, access to navigable river, and funding agencies as our controls.

a.) We use prefecture-level population statistics from the Population History of China (Cao, 2005). Economic historians frequently use this source since it is recognized as the most accurate population estimates for the period 200 BC–1953 AD. For the time period under consideration, Cao's estimates are available for 1776, 1820, and 1910. We include population estimates from the Historical Database of the Global Environment (HYDE) (Klein Goldewijk et al., 2017) to supplement Cao (2005). Klein Goldewijk et al. (2017) model population and land use over time. The data have a resolution of 5 arc minutes.

b.) Caloric Suitability Index (CSI), developed by Galor and Özak (2016), are used to assess agricultural suitability. The greatest potential caloric yield attainable in each cell, which measures 5 longitude arc minutes by 5 latitude arc minutes, is provided by the CSI data. For each province, prefecture, and county, we calculate the average value of the highest possible caloric yield that might have been achieved in the post-1500 period.

c.) To account for the ruggedness, we calculate the terrain ruggedness index for each province, prefecture, and county. The Global Multi-resolution Terrain Elevation Data 2010 (GMTED 2010), a raster map with elevation data for each cell measuring 7.5 longitude arc seconds by 7.5 latitude arc seconds (Danielson and Gesch, 2011). We compute the difference in elevation from a central cell and the eight cells around it. In order to make all eight elevation difference values positive, they are then each squared. Then we add them together and calculate the square root. In a province, prefecture, and county, we calculate the average value of the terrain roughness index across all grid cells.

d.) We create a dummy variable for whether a province, a prefecture, and a county had access to any major navigable rivers. The GIS map of rivers is obtained from the China Historical Geographic Information System (CHGIS, 2016b). We then use Matsuura (2009) to identify major navigable rivers. The dummy is equal to 1 if a province, a prefecture, and a county had a major navigable river.

e.) We compile information on the financing organizations that subsidized travel expenses for imperial exams. The metropolitan exam was held in the capital city of Beijing. Wealthy individuals fundraising organizations called *binxing ju* to support and reduce the trip expenses for candidates in their hometown. The funding agencies from 1644 to 1905, together with their founding dates and locations, are listed in Mao (2014). In order to determine if a prefecture had a funding agency before to 1840, we aggregate our data to the level of the prefecture.

f.) We compile information on the social elite in the early 20th century. More than 17,000 noteworthy individuals are listed in Xu (2007) who were active between 1912 and 1949. These individuals include politicians, military officers, scientists, professors, educators, journalists, writers, and business people. Besides, over 16,000 people who graduated from Peking University and Tsinghua University between 1910 and 1950 can be identified from the official alumni books of the top two universities in China (Peking University and Tsinghua University). We compile

information on students studying abroad from each prefecture, and geocode these people based on where they are from. The data is then combined by prefecture and by the year the person was born, enrolled in college, or traveled abroad.

g.) We use the 1% population census data from 1982 (King et al., 2017) to determine the proportion of the population in each prefecture who had completed primary school, secondary school, and college. We match the location of each individual in the 1982 census with the prefecture-level administration in 1911.

Table A.1: Summary Statistics

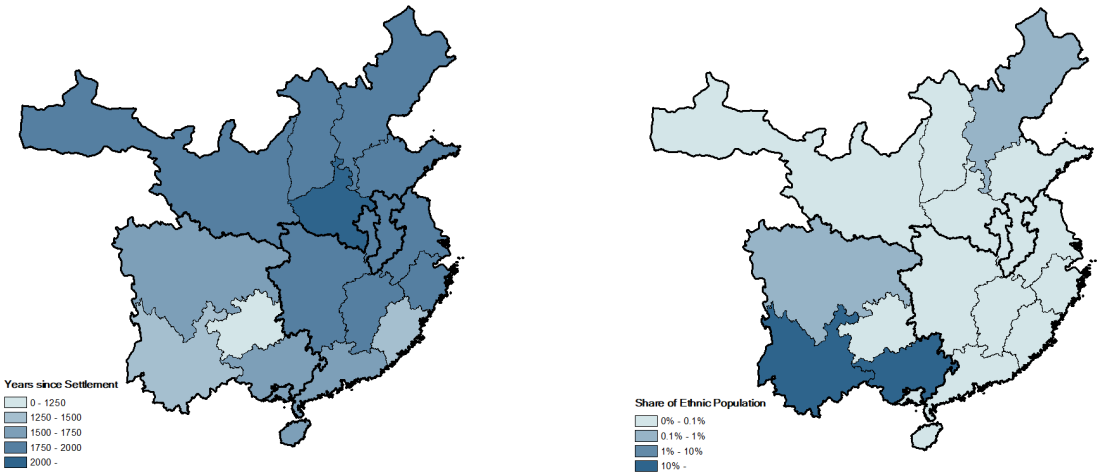
	Obs.	Mean	S.D.
Individual-level Data			
Exam Rank	16073	0.499	0.288
Bureaucratic Rank	4314	5.493	1.598
Prefecture-level Data			
The Density of Jinshi	5073	0.024	0.041
The Density of Juren	4256	0.125	0.180
Pre-Existing Human Capital	267	1.330	2.097
Population Density in 1776	267	132.014	146.462
Population Density in 1820	267	130.220	136.512
Quota for Shengyuan	267	1.052	0.983
Caloric Suitability Index	267	3631.617	949.024
Ruggedness	267	408.323	306.756
Access to any major navigable rivers	267	0.345	0.476

1: **Exam Rank** is the ordinal rank received by a successful candidate based on his raw score, normalized to 0 (lowest) to 1 (highest). 2: **Bureaucratic Rank** is the rank of the highest position held by successful candidates in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). 3: **The Density of Jinshi** is the number of successful candidates at the metropolitan examination per 10,000 people in a period. 4: **The Density of Juren** is defined as the number of successful candidates at the provincial examination per 10,000 people in a period. 5: **Pre-Existing Human Capital** is the total number of jinshi per 10,000 in 1371–1650. 6: **Population Density in 1776** is population per squared kilometer in 1776. 7: **Population Density in 1820** is population per squared kilometer in 1820. 8: **Quota for Shengyuan** is predetermined quota at the first-tier exam per 10,000 people. 9: **Caloric Suitability Index** is the maximum potential caloric yield attainable. 10: **Ruggedness** is terrain ruggedness index. 11: **Access to any major navigable rivers** is a dummy for whether a prefecture had access to any major navigable rivers.

B Empirical Appendix

B.1 Reform and the Disadvantaged

The 1712 reform favored provinces with a lower success rate in the metropolitan exam by construction. We find that reform-positive provinces, as shown in Figure III, tended to be in the hinterland with a high share of ethnic populations (Figure A.1b). Aside from the ethnic populations, these provinces were also home to a large number of Han Chinese who had only recently settled the frontier (Figure **??**). After the reform, these provinces saw an increase in the density of jinshi provinces with less exam success before (Figure II).



(a) Years since settlement (b) Share of ethnic populations

Figure A.1

B.2 Measures of the Reform: Robustness

For robustness, we develop alternative reform intensity measures. Secondly, using the fact that competition for the imperial tests was open throughout this time and no quotas were given to certain provinces or regions ("laissez faire"), we gauge a province's performance in those exams in a new way. Specifically, we calculate a province's share of jinshi in the entire nation between 1371 and 1425 in order to assess its performance in imperial exams prior to the reform, and compute a province's proportion of jinshi in the entire nation between 1713 and 1740 to assess a province's success under the reform. Then, using equation 6, we calculate the difference between the share of jinshi with and without the reform.

We construct alternative measures for reform intensity for robustness. First, we measure a province's aggregate performance in imperial exams differently, exploiting the fact that competition at the imperial exam was unrestricted during this period and no quota were assigned to individual provinces or regions ("laissez faire"). To measure a province's aggregate performance in imperial exams without the reform, we compute a province's share of jinshi in the entire country during 1371 and 1425. To measure measure a province's performance under the reform, we compute a province's share of jinshi in the entire country between 1713 and 1740. We then compute the difference in the share of jinshi with and without the reform to obtain reform intensity

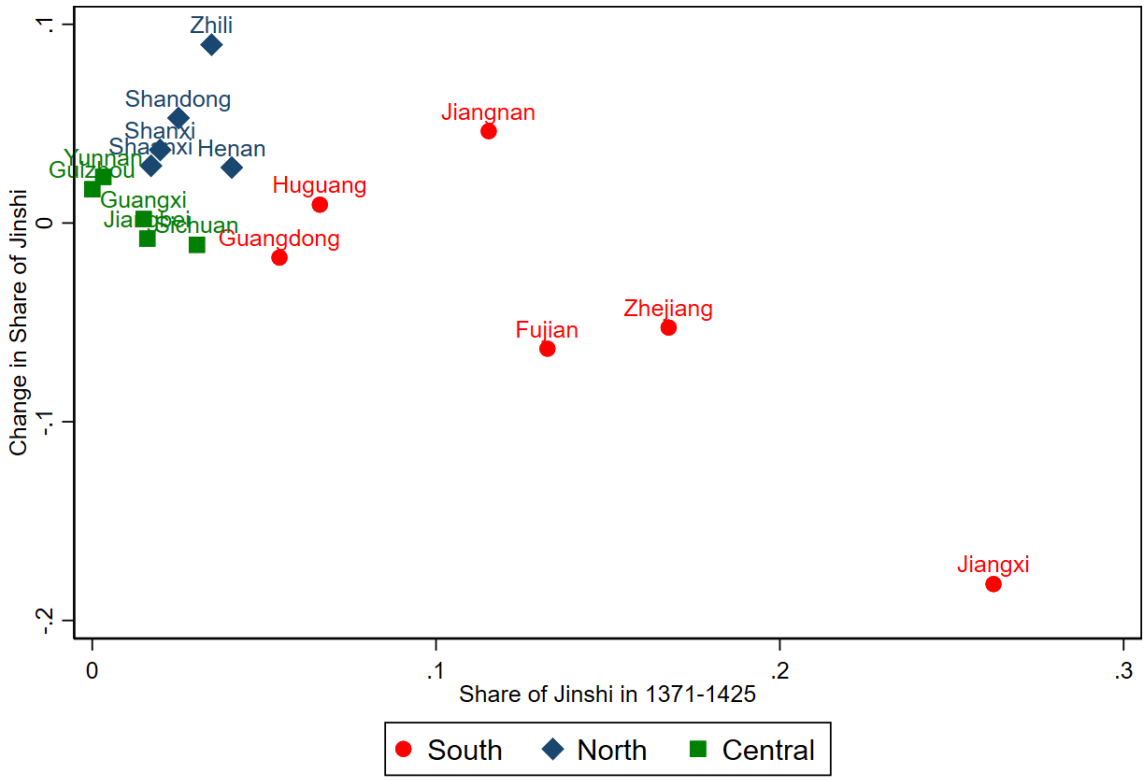


Figure A.2: Who Benefited from the 1712 Reform? Measure II

The variable on the y-axis represents the difference between the share of jinshi in the entire nation in 1713—1740 and the share in 1371—1425. The difference between the share of jinshi with and without the reform is negatively connected with the share of jinshi without the reform, as shown in Figure IV.

(equation 6). This procedure yields a second measure of reform intensity.

$$\begin{aligned} \Delta Share^{1712}_{prov,2} &= Share^{1713-1740}_{prov} - Share^{1371-1425}_{prov} \\ G^{1712}_{prov,2} &= |\Delta Share^{1712}_{prov,2}| \cdot 1(\Delta Share^{1712}_{prov,2} > 0) \\ L^{1712}_{prov,2} &= |\Delta Share^{1712}_{prov,2}| \cdot 1(\Delta Share^{1712}_{prov,2} < 0) \end{aligned} \tag{6}$$

Next, we add population growth to our reform intensity metric to develop a third measure of the treatment. Provinces might have experienced differing rates of population growth over time, and we construct a population growth-adjusted measure of reform intensity. For 1600 and 1740, we calculate a province's population proportion in the exam region, accordingly ($PopShare^{1600}_{prov}$ and $PopShare^{1740}_{prov}$). The change in the population share is then calculated by taking the difference between these two shares. The change in the population share is deducted from the change in the share of jinshi, as stated in equation 7.

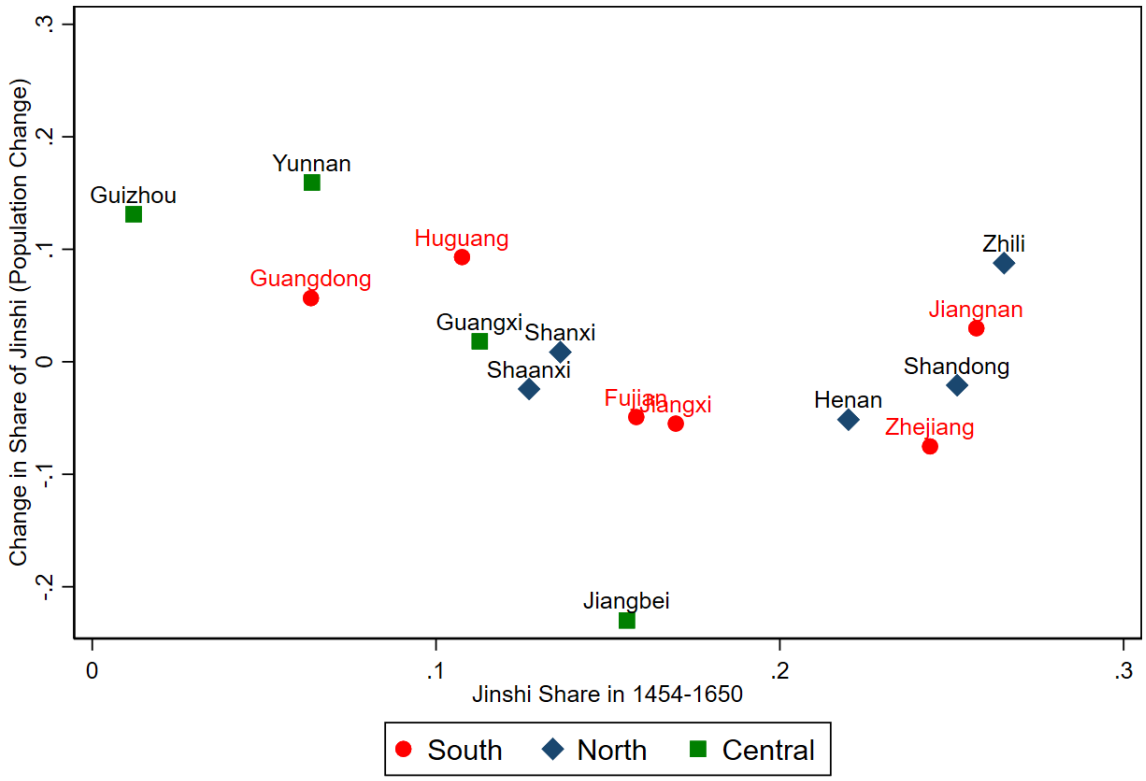


Figure A.3: Who Benefited from the 1712 Reform? Measure III

The variable on the y-axis represents the difference between the share of jinshi within the region in 1713–1740 and the share in 1454–1650, minus the change in the share of the population. The difference between the share of jinshi with and without the reform is negatively connected with the share of jinshi without the reform, as shown in Figure A.3.

$$\begin{aligned} \Delta Share^{1712}_{prov,3} &= \left[Share^{1713-1740}_{prov} - Share^{1454-1650}_{prov}\right] - \\ &\quad \left[PopShare^{1740}_{prov} - PopShare^{1600}_{prov}\right] \\ G^{1712}_{prov,3} &= |\Delta Share^{1712}_{prov,3}| \cdot 1(\Delta Share^{1712}_{prov,3} > 0) \\ L^{1712}_{prov,3} &= |\Delta Share^{1712}_{prov,3}| \cdot 1(\Delta Share^{1712}_{prov,3} < 0) \end{aligned} \tag{7}$$

Both in Figure A.2 and Figure A.3, we plot the relationship between a province's initial share of jinshi and the change in its share of jinshi after the reform and find a strong inverse relationship between the two.

We first use alternative measures of the treatment to investigate the impact of the reform on the exam performance and professional outcomes of successful candidates. In Table A.2 and Table A.3, we employ the second and third measures of the treatment. Columns 1 and 2 conduct an individual-level analysis in the same fashion as in Table I. Columns 3 and 4 use the province-level measure of exam performance. Column 5 and 6 conduct an individual-level analysis in the same fashion as in Table II , and columns 7 and 8 use the province-level measure of professional outcomes. The results are robust to using these alternative measures.

We then use these alternative measures to evaluate the distributional impact of the reform.

Table A.2: The 1712 Reform: Measure II

	Exam Rank				Bureaucratic Rank			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
G^{1712} × Post	0.678**		1.136***		-1.033		14.84	
	(0.267)		(0.363)		(3.090)		(10.362)	
L^{1712} × Post	0.0906		0.0334		-1.102		-4.280	
	(0.138)		(0.183)		(2.069)		(5.196)	
$\Delta Share^{1712}$ × Post		0.130		0.200		0.404		6.389
		(0.101)		(0.200)		(1.308)		(3.879)
Controls × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16073	16073	304	304	4314	4314	304	304
Adjusted R^2	0.130	0.130	0.680	0.678	0.013	0.013	0.367	0.366

In columns 1 and 2, each observation is a successful candidate from province p in period t, and Exam Rank is the ordinal rank received by a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). In columns 3 and 4, each observation is a province in period t, and Exam Rank is the average exam rank of successful candidates. In columns 5 and 6, each observation is a successful candidate from province p in period t, and Bureaucratic Rank is the standardized rank of the highest position held by a successful candidate in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). In columns 7 and 8, each observation is a province in period t, and Bureaucratic Rank is the average bureaucratic rank of the highest positions ever held by successful candidates in a province in period t. In columns 1, 3, 5, and 7, we employ the second measure for reform intensity when gains and losses are recorded separately for reform-positive and reform-negative provinces, $G^{1712}_{prov,2}$ and $L^{1712}_{prov,2}$, and in columns 2, 4, 6, and 8, the second measure of reform intensity when gains and losses are combined into a single measure, $\Delta Share^{1712}_{prov,2}$. In all columns, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction between decade fixed effects and exam region fixed effects are included in all columns. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported, with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

In Table A.4, we use the second and third measures of the treatment. The findings hold up well when these additional measures are used.

Table A.3: The 1712 Reform: Measure III

	Exam Rank				Bureaucratic Rank			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
G^{1712} × Post	0.408**		0.649***		-3.547*		-3.305	
	(0.175)		(0.207)		(1.981)		(3.558)	
L^{1712} × Post	0.126		-0.0862		-3.769*		-15.07***	
	(0.177)		(0.145)		(1.967)		(2.733)	
$\Delta Share^{1712}$ × Post		0.144*		0.346**		0.231		6.580***
		(0.077)		(0.124)		(0.854)		(1.544)
Controls × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16073	16073	304	304	4314	4314	304	304
Adjusted R^2	0.130	0.130	0.688	0.688	0.013	0.013	0.424	0.398

In columns 1 and 2, each observation is a successful candidate from province p in period t, and Exam Rank is the ordinal rank received by a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). In columns 3 and 4, each observation is a province in period t, and Exam Rank is the average exam rank of successful candidates. In columns 5 and 6, each observation is a successful candidate from province p in period t, and Bureaucratic Rank is the standardized rank of the highest position held by successful candidates in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). In columns 1, 3, 5, and 7, we employ the third measure for reform intensity when gains and losses are recorded separately for reform-positive and reform-negative provinces, $G^{1712}_{prov,3}$ and $L^{1712}_{prov,3}$, and in columns 2, 4, 6, and 8, the second measure of reform intensity when gains and losses are combined into a single measure, $\Delta Share^{1712}_{prov,3}$. In all columns, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction between decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported, with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table A.4: The Distributional Consequences of The 1712 Reform, Measure II and Measure III

	The Density of Jinshi							
	(1) All	(2) All	(3) Reform Positive	(4) Reform Negative	(5) All	(6) All	(7) Reform Positive	(8) Reform Negative
G^{1712} × PHC × Post	0.0428	0.0132	-0.0166		0.103**	0.0811**	0.0832*	
	(0.046)	(0.044)	(0.051)		(0.044)	(0.041)	(0.044)	
L^{1712} × PHC × Post	0.0172*	0.0138		0.0264*	0.0331	0.0407*		0.0742*
	(0.009)	(0.009)		(0.014)	(0.026)	(0.024)		(0.039)
Controls × Decade FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Province FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Prefecture FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5073	5073	3496	1577	5073	5073	2831	2242
Adjusted R^2	0.573	0.608	0.606	0.623	0.574	0.609	0.526	0.690

Each observation is a prefecture in period t. PHC_p is the density of jinshi in prefecture p before 1650. In columns 1-4, we use the second measure of reform intensity, $G^{1712}_{prov,2}$ and $L^{1712}_{prov,2}$. In columns 5-8, we use the third measure of reform intensity, $G^{1712}_{prov,3}$ and $L^{1712}_{prov,3}$. In columns 2, 3, 4, 6, 7, and 8, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Columns 3 and 7 only include prefectures in provinces benefiting from the reform. Columns 4 and 8 only include prefectures in provinces harmed by the reform. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and province fixed effects are included in all columns. Coefficients are reported, with standard errors clustered at the province-period-level in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

B.3 The Impact of the 1712 Reform on Exam Performance and Professional Outcome: Additional Results

B.3.1 The 1712 Reform: Dynamic Impact

We estimate the dynamic impact of the 1712 reform on the exam or bureaucratic rank of successful candidates using the following equation:

$$Rank_{i(p),t} = \beta_0 + \sum_{t=1650}^{1830} \beta_{1,t} \Delta Share_p^{1712} \cdot Period_t + \gamma X_p \cdot \eta_t + \delta_p + \eta_t + \varepsilon_{i(p),t} \quad (8)$$

B.3.2 The 1712 Reform: Binary Variable

We first experiment with a treatment that uses a binary variable. A province takes on the value of 1 if it benefited from the reform; a value of 0 if the province endured losses. Despite the fact that using this measure leads to the loss of important variation, we continue to find a significant association between the reform and the exam performance of successful candidates.

Table A.5: The 1712 Reform: Binary Variable

	Exam Rank				Bureaucratic Rank			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
G/L^{1712} Dummy × Post	0.0184*	0.0172*	0.0423*	0.0505*	-0.00945	-0.0509	0.890*	1.226***
	(0.010)	(0.010)	(0.024)	(0.027)	(0.115)	(0.118)	(0.421)	(0.367)
Controls × Decade FE	No	Yes	No	Yes	No	Yes	No	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16073	16073	304	304	4314	4314	304	304
Adjusted R^2	0.123	0.130	0.689	0.684	0.013	0.013	0.381	0.398

In columns 1 and 2, each observation is a successful candidate from province p in period t, and Exam Rank is the ordinal rank received by a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). In columns 3 and 4, each observation is a province in period t, and Exam Rank is the average exam rank of successful candidates. In columns 5 and 6, each observation is a successful candidate from province p in period t, and Bureaucratic Rank is the standardized rank of the highest position held by successful candidates in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). In columns 7 and 8, each observation is a province in period t, and Bureaucratic Rank is the average bureaucratic rank of the highest positions ever held by successful candidates in a province in period t. In all columns, we use G/L^{1712} as the treatment, which is a binary variable for the main measure of our treatment. In columns 2, 4, 6, and 8, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction between decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported, with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

B.3.3 Province-Level Regressions

Columns 1-3 of Table A.6 shows the regression results from estimating equation 2 with province-level data.[35] The results are similar to Table I. In column 2, the interaction of the post dummy and the gain from the reform is significant and positive. In column 3, the interaction of the post dummy and the change in the share is also significant and positive. Compared

[35]The dependent variable is defined as the average standardized exam rank of successful candidates (jinshi) from province p in period t.

with other provinces, the provinces with larger gains saw a greater improvement in the exam performance of its successful candidates. Columns 4-6 of Table A.6 shows the regression results from estimating equation 3 with provincial aggregates.[36] The results are similar to Table II. In column 2, the interaction of the post dummy and the gain from the reform is insignificant.

Table A.6: The 1712 Reform: Province-Level Estimation

	Exam Rank			Bureaucratic Rank		
	(1)	(2)	(3)	(4)	(5)	(6)
G^{1712} × Post	0.473**	0.572**		8.466	7.496	
	(0.215)	(0.211)		(6.787)	(5.488)	
L^{1712} × Post	-0.0528	-0.179**		-0.477	-1.855	
	(0.052)	(0.067)		(3.324)	(3.324)	
$\Delta Share^{1712}$ × Post			0.305***			3.660**
			(0.068)			(1.420)
Controls × Decade FE	No	Yes	Yes	No	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	304	304	304	304	304	304
Adjusted R^2	0.696	0.692	0.692	0.392	0.378	0.377

Each observation is a province in period t. Exam Rank is the average exam rank of successful candidates (jinshi) in a province in period t, ranging from 0 (lowest) to 1 (highest). Bureaucratic Rank is the average bureaucratic rank of the highest positions taken by successful candidates (jinshi) in a province in period t, ranging from 0.5 (lowest) to 9 (highest). In columns 1, 2, 4 and 5, we use the baseline measure of reform intensity, G^{1712}_{prov} and L^{1712}_{prov}, interacted with the post dummy. In columns 3 and 6, gains and losses are combined into a single measure, $\Delta Share^{1712}_{prov}$. In columns 2, 3, 5 and 6, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported, with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

B.3.4 Public & Private Educational Investment

The reform changed the incentive to learn and study for the exam. But was there also an increase in the supply of educational, such as educational investments made by the state? To shed light on this question, we examine the impact of the reform on the number of newly constructed academies.

The Qing state did not develop a large-scale schooling system, unlike modern states. However, it did provide funding to academies. Academies were mainly founded by private individuals before the Qing period. From the Qing onwards, the government became more involved in founding and running academies. In Table A.7, we show little change in the number of academies constructed by the government after the reform. Therefore, supply-side factors were unlikely to be the main explanations for the results in Section V.

[36]The dependent variable is defined as the average standardized rank of government position of successful candidates from province p who passed the imperial exam in period t.

Table A.7: The 1712 Reform: Academy Construction

	The Density of Newly Constructed Academies					
	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	Gentry	Gentry	Official	Official
G^{1712} × Post	-0.00767		0.00297		-0.00530	
	(0.007)		(0.003)		(0.008)	
L^{1712} × Post	0.000152		0.000844		-0.00266	
	(0.003)		(0.001)		(0.003)	
$\Delta Share^{1712}$ × Post		-0.00256		0.000375		0.000114
		(0.003)		(0.001)		(0.002)
Controls × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	304	304	304	304	304	304
Adjusted R^2	0.213	0.216	0.274	0.273	0.373	0.374

Each observation is a province in period t. The density of newly constructed academies is the average number of newly constructed academies in a province in period t. In columns 1, 3, and 5, we use the baseline measure of reform intensity, G^{1712}_{prov} and L^{1712}_{prov}, interacted with the post dummy. In columns 2, 4, and 6, gains and losses are combined into a single measure, $\Delta Share^{1712}_{prov}$. In all columns, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported, with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

B.3.5 The 1712 Reform and Professional Outcome: Further Investigation

The 1712 reform had a different impact on the exam performance and professional outcome of successful candidates. To shed some light on these differences, in this section, we further unpack the impact of the reform on the professional outcome of successful candidates from underrepresented provinces.

We begin by showing that there is a linear relationship between exam performance and professional outcome. In Table A.8, a successful candidate's exam rank is consistently correlated with the various positions held by him. Notably, the rank received at the final round exam predicts both his initial placement and the highest position he ever reached.

We then break down the sample into before and after the reform, between provinces that benefited from and lost to the reform. In Table A.9, we find a positive relationship between exam rank and the rank of the highest position for all provinces regardless of their status during the reform. However, the relationship between the initial placement and highest position is only significant for individuals outside of underrepresented provinces, suggesting that individuals from underrepresented provinces encountered special challenges in the promotion process.

Additionally, to separate the effects of the reform on exam performance and professional outcome, we explicitly control for exam rank and initial placement in our regression of the reform on the professional outcome of successful candidates. In Table A.10, the coefficient estimate of the 1712 reform remains insignificant. Unlike exam performance, there was no convergence in professional outcomes between successful candidates from unrepresented provinces and the other provinces after 1712.

Table A.8: Exam Performance and Professional Outcome

	Bureaucratic Rank			
	(1)	(2)	(3)	(4)
	Initial Position		Highest Position	
Exam Rank	0.113***	0.118***	1.233***	1.277***
	(0.032)	(0.033)	(0.092)	(0.095)
Controls × Decade FE	No	Yes	No	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	4704	4704	4314	4314
Adjusted R^2	0.040	0.038	0.053	0.051

Each observation is a successful candidate (jinshi) from province p in period t. Exam Rank is the ordinal rank of a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). Bureaucratic Rank is the standardized rank of the highest position held by successful candidates in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). In columns 2 and 4, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table A.9: Exam Performance and Professional Outcome: Subsamples

	Bureaucratic Rank							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Before 1712		After 1712		Before 1712		After 1712	
	Reform Positive	Reform Negative	Reform Positive	Reform Negative	Reform Positive	Reform Negative	Reform Positive	Reform Negative
Exam Rank	0.862***	0.630**	1.527***	1.470***				
	(0.273)	(0.272)	(0.154)	(0.162)				
Initial Placement					0.00275	0.223**	0.0610	0.163**
					(0.093)	(0.088)	(0.069)	(0.083)
Controls × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	570	577	1636	1530	454	468	1358	1252
Adjusted R^2	0.032	-0.016	0.065	0.068	0.016	-0.005	0.006	0.012

Each observation is a successful candidate (jinshi) from province p in period t. Exam Rank is the ordinal rank of a successful candidate based on his raw score, standardized to 0 (lowest) to 1 (highest). Bureaucratic Rank is the standardized rank of the highest position held by successful candidates in the bureaucracy, ranging from 0.5 (lowest) to 9 (highest). In all columns, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

Table A.10: The 1712 Reform and Professional Outcome, Controlling for Exam Rank and Initial Placement

	Bureaucratic Rank			
	(1)	(2)	(3)	(4)
G^{1712} × Post	2.329		2.638	
	(2.131)		(2.174)	
L^{1712} × Post	1.735		2.885*	
	(1.679)		(1.597)	
$\Delta Share^{1712}$ × Post		-0.0462		-0.655
		(0.833)		(0.828)
Exam Rank	1.281***	1.281***		
	(0.094)	(0.094)		
Initial Bureaucratic Rank			0.134***	0.132***
			(0.039)	(0.039)
Controls × Decade FE	Yes	Yes	Yes	Yes
Region FE × Decade FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Decade FE	Yes	Yes	Yes	Yes
Observations	4314	4314	3532	3532
Adjusted R^2	0.048	0.048	0.011	0.010

Each observation is a successful candidate from province p in period t. Bureaucratic Rank is the rank of the highest position ever held by a successful candidate in the bureaucracy, standardized to 0.5 (lowest) to 9 (highest). In all columns, we use our baseline measure of reform intensity, G^{1712}_{prov} and L^{1712}_{prov}, interacted with the post dummy. In all columns, we control for population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a province had access to any major navigable rivers, interacted with decade fixed effects. Decade fixed effects, province fixed effects, and the interaction of decade fixed effects and exam region fixed effects are included in all columns. Coefficients are reported with robust standard errors in round brackets. ***, **, and * indicate significance at 1%, 5% and 10% levels.

B.4 The Distributional Consequences of The 1712 Reform: Additional Results

B.4.1 Dynamic Impact

We estimate the dynamics of the distributional impact of the 1712 reform using the following equation:

$$Jinshi_{pref,p,t} = \beta_0 + \sum_{t=1650}^{1830} \beta_{1,t} G_p^{1712} \cdot PHC_{pref} \cdot Period_t + \sum_{t=1650}^{1830} \beta_{2,t} L_p^{1712} \cdot PHC_{pref} \cdot Period_t + \gamma X_{pref} \cdot \eta_t + \delta_p \cdot \eta_t + \theta_{pref} + \eta_t + \varepsilon_{pref,p,t} \quad (9)$$

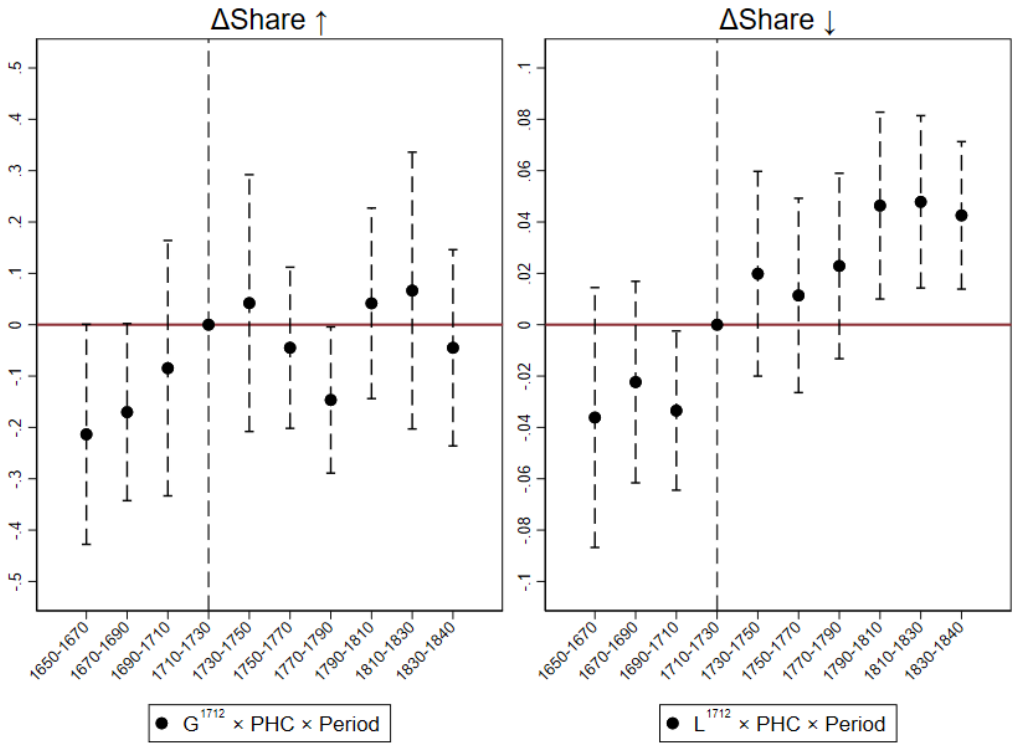


Figure A.4: The Distributional Consequences of the 1712 Reform, Dynamic Impact

Notes: This figure plots the estimation results of equation 9. The points represent the coefficients, and the dash lines are confidence intervals (90%).

B.4.2 The Role of Funding Agencies

Funding agencies in a prefecture in 1840 were not randomly assigned. As shown in Figure A.5, there were more funding agencies in eastern and southern provinces. We employ propensity score matching to improve the comparability of our treatment and control group. In calculating the probability for a prefecture to have a funding agency in 1840, we consider four variables: the prefecture's jinshi density before to 1650, its population density, its suitability for agriculture, and its predetermined quota at lower-tier exams. We apply a caliper of 0.1 using a nearest neighbor matching estimator, and choose up to 5 nearest neighbors.

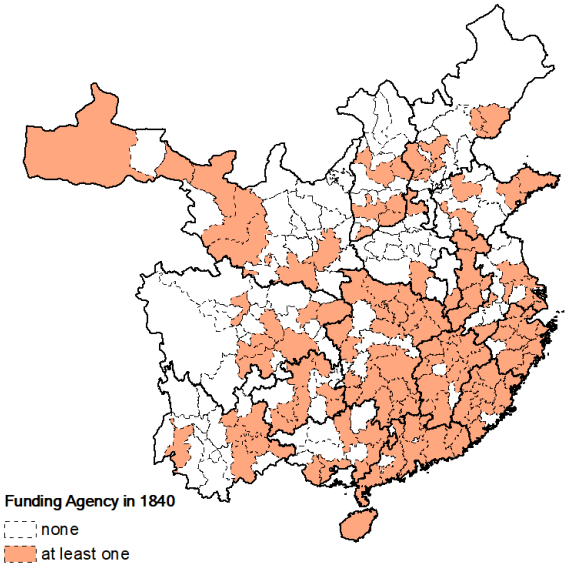


Figure A.5: The Geography of Funding Agencies

Table A.11: Balancedness Test for Prefectures With and Without Funding Agencies

	Before Matching			
	With Agencies	Without Agencies	Bias (%)	T-Test
The Density of jinshi Before 1650	1.851	0.828	49.8	4.10***
Population Density in 1776	158.78	106.24	36.3	2.97***
Population Density in 1820	147.67	113.41	25.2	2.06**
Quota for Shengyuan	0.948	1.152	-20.9	1.70*
Caloric Suitability Index	3620.3	3642.5	-2.3	-0.19
	After Matching			
	With Agencies	Without Agencies	%Bias	T-Test
The Density of jinshi Before 1650	0.841	0.866	1.2	0.19
Population Density in 1776	111.40	109.22	1.5	0.16
Population Density in 1820	111.67	114.66	-2.2	-0.22
Quota for Shengyuan	1.074	0.994	8.3	0.90
Caloric Suitability Index	3575.4	3615.5	-4.2	-0.34

***, **, and * indicate significance at 1%, 5% and 10% levels.

Table A.11 shows the results of a balancedness test for prefectures with and without funding agencies. Before matching, the prefectures with at least one funding agency had a slightly higher density of jinshi prior to 1650 and also a higher population density. After matching, the two samples are balanced on all characteristics. Figure A.6 also shows the distribution of propensity scores for prefectures with and without funding agencies both before and after the matching.

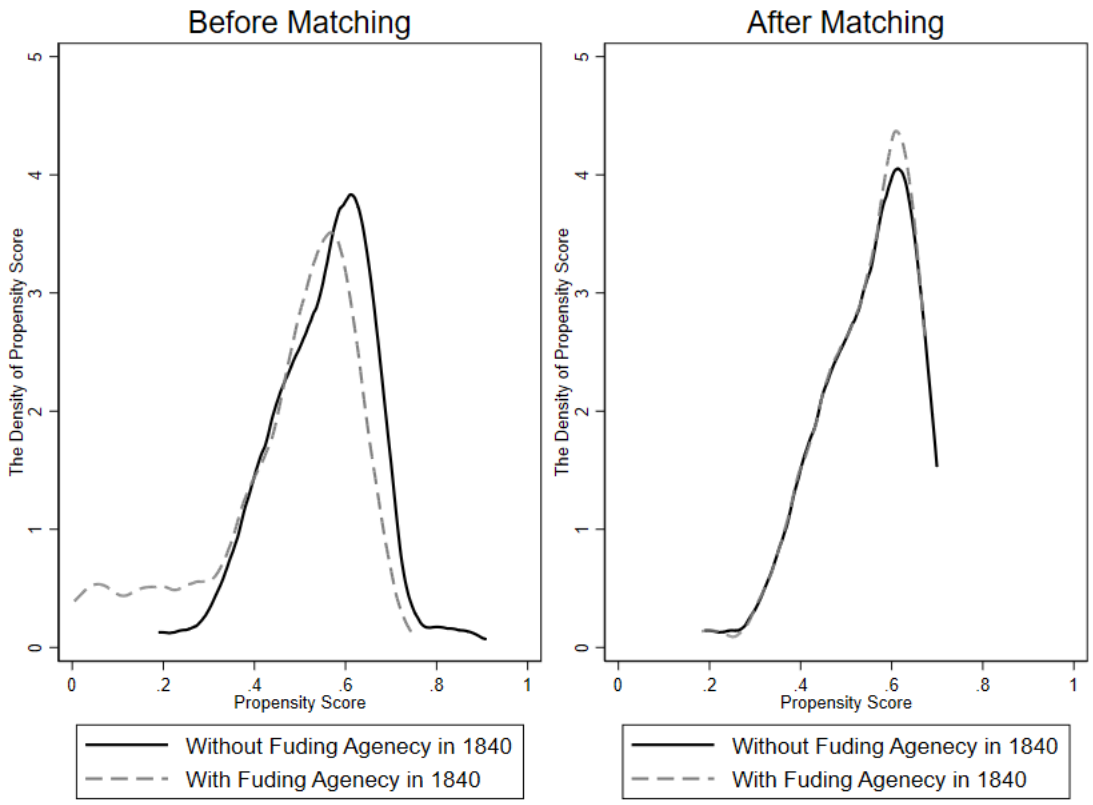


Figure A.6: The Distribution of the Propensity Scores of Funding Agencies

B.5 Changes in Inequality

We construct measures of inequality in the density of jinshi for the entire period of 1650–1840. Both overall inequality and between-province inequality declined after the reform, but there was a more substantial decline in between-province inequality. This implies that within-province inequality did not decline to the same extent. According to our analysis in Section VI , indeed, the impact of the reform on individual prefectures depends greatly on the pre-existing human capital in a prefecture.

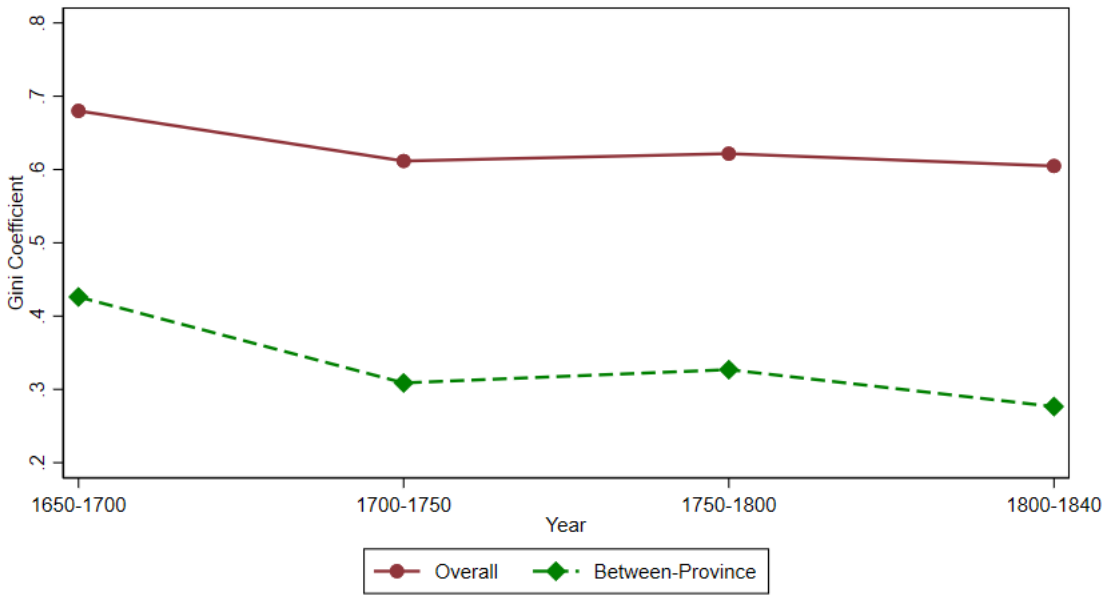


Figure A.7: Overall vs. Between-Province Inequality, Gini Coefficient

Notes: The figures shows the gini coefficient for the density of jinshi across the country and between provinces. Our unit of analysis is a prefecture.

B.6 The Policy Reversal in 1905: Additional Results

B.6.1 Dynamic Impact

We estimate the dynamic impact of the 1712 reform on the highly educated individuals using the following equation:

$$Educational\ Elite_{pref,p,t} = \beta_0 + \sum_{t=1650}^{1830} \beta_{1,t} \Delta Share_p^{1712} \cdot Period_t + \gamma X_{pref} \cdot \eta_t + \theta_{pref} + \eta_t + \varepsilon_{pref,p,t} \tag{10}$$

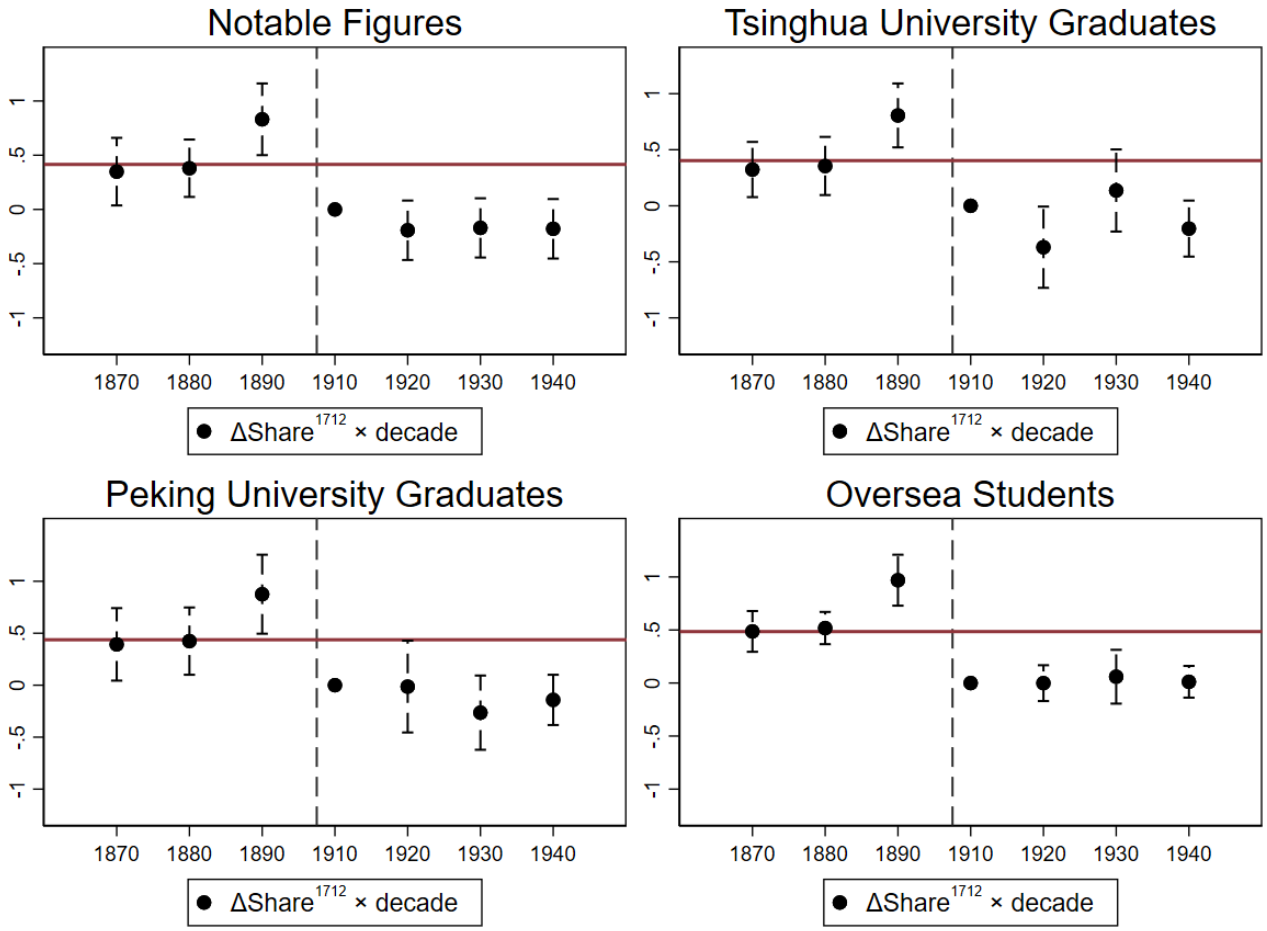


Figure A.8: The Impact of The 1712 Reform following a Poilcy Reversal in 1905

Notes: This figure plots the estimation results of equation 10. The points represent the coefficients, and the dash lines are confidence intervals (90%).

B.7 Persistence and Spillovers: Additional Results

We perform a subsample analysis of the long-run effects of the 1712 reform on educational attainment. We find a strong correlation between the 1712 reform and the share of education with tertiary education in 1982 across all subsamples . While women did not participate in imperial exams, there were positive gains for women from the reform in the long run when educational opportunities became available to them (columns 4-6). The positive impact of the reform on women could be due to positive spillovers from male members of society or an increased supply of teachers.

For secondary education or above, the positive association with the 1712 reform is the strongest for women (column 5), and there is a generally positive association across all subsamples. However, statistical significance is lacking in a few instances.

In column 3 of Table VII, we find a negative association between the reform and the share of the population with primary education. A subsample analysis suggests that the negative association is mainly driven by the rural sample (column 7), and the negative association is muted in the urban sample (column 10). Factors such as urban-rural migration and brain drain might explain the differential impact, but also the institutional differences between rural and urban schooling in 20th-century China. Further investigation is required to understand the cause of this negative association between the reform and primary education.

Table A.12: Exam Performance and Professional Outcome: Subsamples

	Primary (1)	Secondary (2)	Tertiary (3)	Primary (4)	Secondary (5)	Tertiary (6)
		Male			Female	
$\Delta Share^{1712}$	-0.108**	0.0212	0.00454***	-0.136***	0.0204*	0.00265***
	(0.044)	(0.016)	(0.001)	(0.039)	(0.011)	(0.001)
$Jinshi^{1650-1712}$	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	266	266	266	266	266	266
Adjusted R^2	0.422	0.434	0.405	0.391	0.414	0.718
	(7)	(8)	(9)	(10)	(11)	(12)
		Rural			Urban	
$\Delta Share^{1712}$	-0.145***	0.00861	0.000247**	0.0265	0.0390	0.0134***
	(0.037)	(0.009)	(0.000)	(0.020)	(0.029)	(0.004)
$Jinshi^{1650-1712}$	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	266	266	266	266	266	266
Adjusted R^2	0.373	0.420	0.285	0.250	0.208	0.769

Each observation is a prefecture. The dependent variable is the share of the population with tertiary education, with secondary education or above, or with primary education or above. In all columns, we control for the density of jinshi prior to the 1712 reform, population density, agricultural suitability, predetermined quota at lower-tier exams, ruggedness, and whether a prefecture had access to any major navigable rivers. Coefficients are reported with robust standard errors in round brackets. ***, **, * and + indicate significance at 1%, 5%, 10% and 15% levels.

C Historical Appendix

C.1 The 1712 Reform

C.1.1 Spatial Inequalities in Exam Performance

At the Imperial Exams, the Qing provinces displayed a range of performances. Southeastern China clearly outperformed the rest of China in the tests. As a contemporary noted:

> Since the Southern Song Dynasty made Hangzhou its capital, the lower Yangtze valley has become the focus of politics, culture, and business. Scholars in the Qing Empire outperformed those in earlier dynasties in terms of intellectual achievement, yet the majority of the top scholars are from Jiangsu and Zhejiang, two provinces in the lower Yangtze.[37]

The key factor influencing Southern China's superior exam results is the region's large economic advantage, which translated into an educational edge over the core area. A contemporary wrote:

> Now Northern China had two problems: the first is deserted land, and the second is the shortage of talent.[38]

Another factor is that the bordering provinces performed poorly in the Imperial Exams due to language barriers, which was a problem that was particularly acute in the southwest provinces. The ethnic makeup of the southwest provinces was more complex than that of the inner land because they had just recently been inhabited in compared to other interior provinces.Figure A.9 shows the 18 inner provinces of Imperial China's language distribution in 1820. A mix of ethnic groups, mostly Miao people, made up the population of the southwestern provinces. According to a local gazetteer,

> (Miao people) could not read Chinese at first. Recently, they began to understood the value of attending school. The intelligent students took the Imperial Exams as registered Miao people since they have become well versed.[39]

After the 1712 reform, there began to disparities in admission criteria across the country. Opportunistic migration to a province with lower criteria was unlikely to succeed. In addition to the government's rigorous guidelines against faking registered origins in exams, locals monitored examinees' legal residency. For instance, from 1719 to 1804, the locals in Tongdao county, Jingzhou prefecture, had many legal disputes with 18 families who moved in there before 1644, charging the latter of being illegally registered as local examinees.[40] Another instance is that there were more than 2,000 immigration families on the coast of Xinning county, Guangdong Province, who were prohibited from attending the imperial exams as registered residents in Xinning county by the locals. They had legal disputes for years.[41]

[37]Shengmu Liu (1998). *Five Books of Essays in Changchuzhai (Changchuzhai Suibi, Xubi, Erbi, Sanbi, Sibi, Wubi).* Vol. 5. Zhonghua Book Company, 104

[38]Yanwu Gu (1994). *Compiled Annotations of Rizhilu (Ri Zhi Lu Ji Shi).* Vol. 17. Yuelu Press, 615

[39]*Gazetteers of Longshan County (Longshan Xianzhi)* (1818). Chap. Culture (Fengsu)

[40]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 243-246

[41]Xun Zhu (2000). "Shaanxi Governor Zhuxun's Memorial to the Throne on Regulations of Immigrants and

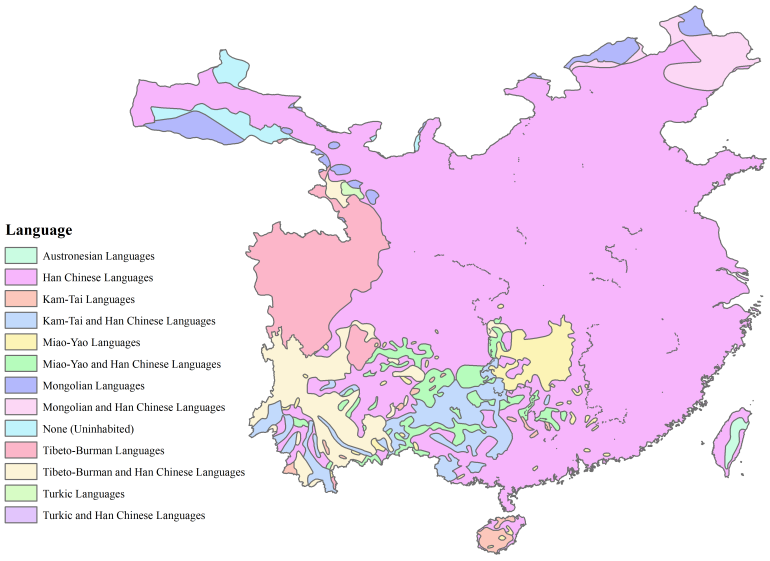


Figure A.9: The Language Distribution of Imperial China's 18 Inner Provinces

Data Source: Lawrence W. Crissman (2012). *Digital Language Atlas of China*. Version V6. URL: https://doi.org/10.7910/DVN/OHYYXH; CHGIS (2016a). *1820 Layers GBK Encoding*. Version V1. URL: https://doi.org/10.7910/DVN/2K4FHX

C.1.2 The Equity Doctrine in the Imperial Examination System

The equity doctrine has a long history in China, and has frequently appeared in traditional Chinese political thought. Equity was seen as crucial as wealth. In the Analects, Confucius (551 B.C. – 479 B.C.) stated that whether it be lords of states or feudal lords, they should not be concerned about having few people, but only about an unequal distribution of wealth; they need not be concerned about having little wealth, but only about insecurity within their borders.[42] His emphasis on equality was followed by his disciples throughout the whole history of Imperial China, and they believed that even though a country may have a large population and a large territory, it cannot be truly prosperous if social wealth is not distributed fairly..[43]

The equality doctrine was also reflected in the imperial examination system. Degree holders were hailed with pride as the representatives of the local society. Therefore, there were voices calling for affirmative action ever since the system became more institutionalized in the Song period. In 1066, Sima Guang, a senior official in Northern Song, proposed that the imperial examination system should set aside admission quotas for provinces in Northwest China:

> A total of roughly 2000 people have obtained jinshi degrees in recent years, with

Aborigines to Take Exams in Shangzhou (Shaanxi Xunfu Zhuxun Wei Zhuoding Shangzhou Jiji Tuzhu Yingshi Zhangcheng Shi Zouzhe)". In: *Historical Materials on Fake Registered Residence in the Imperial Examinations at Qianlong Emperor and Jiaqing Emperor (Qianjia Shiqi Keju Maoji Shiliao)*. Ed. by Che Wang. The First Historical Archives of China

[42] Confucius (2016). "Jishi". In: *The Analecta of Confucius (Lunyu)*. Zhonghua Book Company

[43] Juyi Bai (1994). "On Division of Cultivated (Yi Jingtian Qianmo)". In: *The Compilation of Bai Juyi (Baishi Changqing Ji)*. Shanghai Classics Publishing House

> 200 coming from Southern China and about half from the Capital. The average number of new jinshi degree holders per province is less than 100. Especially, only one or two people have received the degrees in recent years in the provinces of Shaanxi, Hedong, Hebei, Jinghubei, and Guangnandongxi...In certain provinces today, not even one person holds a degree. The implementation of a province-degree quota system is necessary. One jinshi degree should be given to every ten examinees from a province.[44]

The importance of the imperial examination system in the political equilibrium of imperial China should not be understated; some historians even claim that the Ming and Qing Empires' territorial integrity may be linked to the success of implementing a provincial-quota system, whereas the Northern Song Empire's military defeat against nomads can be related to the failure to do so.[45]

In a few instances, attempts to equalize the access to jinshi degrees were supported by emperors. The emperor believed there was bias among officials in charge of the Imperial Exam because they were also from Southern China in 1397 when all of the jinshi degrees were awarded to examinees from that region. As a result, the emperor executed criminal suspects and only conferred jinshi degrees on Northern Chinese examinees that year.[46] These feelings are also expressed in Qianlong Emperor's comments on affirmative action policies. In 1788, an official named *Qian Feng* suggested Qianlong Emperor abandon the 1712 reform. Qianlong's reply was:

> Some recurring issues might be resolved by Qian's suggestion. But, the government should choose its officials from a diverse pool that includes not just brilliant academics but also candidates from a vast geographic area. As the academic performance of the provinces varies, if Qian's proposal were to be implemented, the provinces of Jiangsu and Zhejiang would obtain more than half of the degrees, while the remote provinces at the border might not even obtain one. Qian should be blameless because he is from the province of Yunnan. He must have selfish intentions if he was from the provinces of Jiangsu or Zhejiang.[47]

C.2 An Overview of the Imperial Examination System

To earn a range of degrees, candidates in the Qing Empire had to pass a number of exams. The exams and accompanying degrees of the imperial examination system are briefly described in this section.

C.2.1 Three-Tier System

Shengyuan Degrees A basic degree in the imperial examination system is shengyuan. An examinee had to pass three exams in order to earn a shengyuan degree. The first exam was administrated at the county level (*Xian Shi*), followed by the second (*Fu Shi*) and third (*Yuan*

[44] Guang Sima (2009). "Proposal for a Province-Degree-Quota System in the Imperial Examinations (Qi Gongyuan Zhulu Quren Zhuang)". In: *Comments on the Compilation of Essays by Sima Guang in Chronological Order (Sima Wengong Ji Biannian Jianzhu)*. Ba Shu Press.

[45] Zheng Jin (1990). *The Imperial Examination System Institution and Chinese Culture (Keju Zhidu Yu Zhongguo Wenhua)*. Shanghai People's Publishing House, 178

[46] Tingyu Zhang (1974). *The History of Ming Dynasty (Ming Shi)*. Zhonghua Book Company, 1697

[47] "Qianlong Wushisan Nian Sanyue Yiyou" (n.d.). In: *Historical Records of Qianlong Emperor in Qing Dynasty (Qing Gaozong Shilu)*. Vol. 1301

Shi) exams at the prefecture level. Only those who passed all three exams typically were permitted admission to the Confucian Schools established by prefectures or counties, where they received shengyuan degrees. Regardless of their actual ages, the examinees were referred to as tongsheng (or government students) before receiving shengyuan degrees. regardless of their real ages. The three exams as a whole were called the Child Examination (*Tong Shi*). These exams were held twice every three years.[48]

Juren Degrees The next exam for shengyuan degree holders was at the province level (*xiangshi*, or Provincial Examination). The Provincial Examination was held once every three years, and those who made it through would be awarded juren degrees. The Provincial Examination took place at the provincial capital.[49]

Juren Degree holders, in principle, were qualified for posts in government.[50] One of the most well-known officials in the late Qing Empire, Zuo Zongtang (1812–1885), only held a juren degree. A juren degree holder, however, had little prospect of being given an official post in the actual world. Nonetheless, those who earned a juren degree rose to gentry status in their community and frequently assumed control of village affairs. In fact, local gentry had a significant role in grass-roots government throughout the Qing Empire, and they frequently received special treatment under the tax and judicial systems.s[51]

Jinshi Degrees Holders of a juren degree were eligible to sit for the national exam, known as the "Metropolitan Examination," which was held the year following the Provincial Examination at the nation's capital. Every three years, the Metropolitan Examination was also held. The top degrees in the imperial examination system, known as jinshi degrees, were awarded to successful candidates at the Metropolitan Examination.[52]

C.2.2 Verification of Residency

To take the imperial exams in a particular area, one had to be a local resident. The residency of exam candidates had to be verified before they could sit for the exams. The techniques for verification include the following:

Proof Materials for Registered Residence In order to avoid fraudulent registered residency in the Imperial Examination System, sophisticated evidence materials were required. There were two residence registration systems operating concurrently in the Qing Empire: the residence registration system for public security and the residence registration system for taxation. An examinee's residence was determined by his tax system registration, but he must also supply his public security system registration records. The examinees also had to present proof documents

[48] Yanliu Shang (2003). *The Memoirs of Qing's Imperial Examination and Other Relevant Books (Qingdai Keju Kaoshi Shulu Ji Youguan Zhuzuo)*, 1-33

[49] Yanliu Shang (2003). *The Memoirs of Qing's Imperial Examination and Other Relevant Books (Qingdai Keju Kaoshi Shulu Ji Youguan Zhuzuo)*, 48-56

[50] Yanliu Shang (2003). *The Memoirs of Qing's Imperial Examination and Other Relevant Books (Qingdai Keju Kaoshi Shulu Ji Youguan Zhuzuo)*, 94-96

[51] Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press

[52] Yanliu Shang (2003). *The Memoirs of Qing's Imperial Examination and Other Relevant Books (Qingdai Keju Kaoshi Shulu Ji Youguan Zhuzuo)*, 102-107

that may attest to the whereabouts of his home and his ancestors' graves.[53] As stated in the following imperial edict from 1733, the information on buildings and tombs was no less significant for confirming an examinee's registered residence:

> Before it has been confirmed that they have lived in Waisha with the proof of buildings and tombs there, the examinees from Chongming and Zhaowen in Jiangnan Province are not permitted to take imperial exams at Tongzhou. They are unable to sit for the exam without confirmation that they have arrived there. The degrees of the examinees and guarantors will be revoked if they take the exam in Tongzhou but do not have homes or graves in Waisha.[54]

Guarantors of Registered Residence Examinees had to locate guarantors of their domicile to prevent fraudulent registered addresses. A group of five examinees, each of whom must guarantee the other four members' right to live in the localit legally, must be formed.[55] The examinee also needed a second guarantor who held a shengyuan degree and had access to government funding. Following is a 1652 imperial decree:

> A group must consist of five examinees, and a shengyuan degree holder with a strong track record must sign as a guarantor. ... The linsheng guarantor, along with the other five members of the group, are required to check each other out at the roll call and denounce any cheaters right away. If the five members cover up the cheat, they will be punished, and their degree will be revoked.[56]

Following 1792, Qing's county officials added a second shengyuan degree holder to serve as a backup guarantee for the examinees' residence in the event that the first shengyuan degree holder was compromised by the examinee. An observer observed:

> For the prefecture-level examination, a second guarantor would also be necessary in addition to the first one. The examinees would invite them to serve as the second guarantors in the prefecture-level examination, and the county education officials would display the name list of designated guarantors in front of their offices.[57]

The county and prefecture officials were also in charge of verifying the real addresses of the examinees and would be held accountable if examinees lied about their actual residence.[58] The exam rules were as follows:

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[53]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 257-260

[54]Gang Kun et al. (1995). *Changes in Qing's Political System (Qinding Daqing Huidian Shili).* Shanghai Classics Publishing House, 239

[55]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 262-263

[56]Youming Huo and Haiwen Guo (2009). *Collation and Annotation on the Imperial School Regulations (Qinding Xuezheng Quanshu Jiaozhu).* Wuhan University Press, 77

[57]Yanliu Shang (2003). *The Memoirs of Qing's Imperial Examination and Other Relevant Books (Qingdai Keju Kaoshi Shulu Ji Youguan Zhuzuo)*, 10

[58]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 271-277

> The test must be administered to the candidates at their registered address. The examinee's degree as well as the degree of his guarantor will be revoked if there is a phoney registered residence in the test...Trials will be held against the local officials in charge of the exam, instruction, and administration.[59]

Accent Verification Prior to an exam, it may be required to assess the examinee's accent. Exams for shengyuan degrees in Wanping County and Daxing County were the first places where the accent verification was used; thereafter, it was extended to more places.[60] In 1844, the regulation read as below:

> As is customary in Wanping County and Daxing County, every county under the control of the Shuntian Prefecture and Tianjin Prefecture must rigorously check the examinees' accents and maintain records with the Province Education Commissioners.[61]

The role of the special censor on examinees' accents was established in 1745.[62] In addition, if the censor did not catch the cheaters, he would be punished:

> Examinees who falsely claim to live in Daxing County and Wanping County will first have their guarantor's degree revoked, be subject to a bribery investigation and trial, and will no longer be eligible to sit for the Imperial Examination. Also, the accent censor will be put on trial.[63]

C.2.3 Curriculum and Syllabi

The Imperial Exams curriculum can be classified into three primary categories: basic information for beginners, core Confucianism classics, and direct preparation materials for the imperial examinations.

By age 8, children in the Qing Dynasty began their education. Education at this stage, known as "Meng Xue," placed a strong emphasis on the pupils' proficiency with Chinese characters. Basic moral principles were also taught to the kids. There were many different textbooks available, and professors typically selected their own. The "Three-Characher Scripture," "the Book of Family Names," "Thousand Characters," and other popular textbooks were among the most well-known. This stage lasted one or two years, according to the rules of a private school run by a Qing teacher.[64]

The imperial examination system made test questions from these classics, including The Four Books ("The Great Learning", "The Doctrine of the Mean", "The Confucian Analects",

[59]Dingbao Wang, Dong Qichang, et al. (2006). *Compilation of Each Dynasty's Literature on the Imperial Examination System (Lidai Keju Wenxian Jicheng)*, 2672

[60]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 278-279

[61]Tedeng'e (1844). *Regulations on the Ministry of Rites (Libu Zeli)*

[62]Xiwei Liu (2012). *On Imperial Examination Migrants in the Qing Dynasty (Qingdai Keju Maoji Yanjiu).* Central China Normal University Press, 278-279

[63]Gang Kun et al. (1995). *Changes in Qing's Political System (Qinding Daqing Huidian Shili).* Shanghai Classics Publishing House, 257

[64]Chang Wang (n.d.). *Regulations of the Free Private School (Yi Shu Gui Tiao)*

and "The Works of Mencius"), and The Five Classics, so the second stage required the students to read and memorize these works ("The Book of Songs", "The Book of History", "The Book of Changes", "The Book of Rites" and "The Spring and Autumn Annals").[65] The additional reading requirements varied amongst schools, teachers, and students, but they can include reading other works of art, philosophy, or history.

The final stage required pupils to get familiar with the Imperial Exams' writing requirements. The "eight-part essays" must be written by the pupils using a specific format, which can only be learned thoroughly. At this point, there was no standardized textbook on the market because private publishers had assembled the "eight-part essay" examples in enormous volumes for sale. Some examinees solely read these texts and neglected the fundamental Confucianism classics because they were so helpful in preparing for the Imperial Exams.[66]

C.2.4 Appointment Procedures

Despite the fact that jinshi was the highest degree awarded by the Imperial Examination System, successful candidates must pass additional checks in order to be considered for open official jobs. Those who performed well in supplementary exams could move quickly through the appointment and promotion processes, while the rest had to wait in line for a small number of appointment openings. In order for someone with a jinshi degree to get an appointment, the supplementary exams were therefore equally vital.

Jinshi degree holders must complete the Court Examination, and only the successful ones were admitted to Hanlin Academy.[67] The rest must wait in the Ministry of Personnel's lengthy line, and it may take years for the Ministry of Personnel to appoint them as an official.This was the first time that the paths of the jinshi degree holders diverged.

"Hanlin Bachelors," as the enrollees at the Hanlin Academy were known, worked primarily in administration. Hanlin Bachelors had to pass the Hanlin Academy Graduation Examination three years later in order to keep their positions as Hanlin Academy officials. Those who failed the exam would also join the ministry of personnel's official reserve and wait for a position. This is the second split among jinshi degree holders.

However, in accordance with the appointment regulations of the Ministry of Personnel, individuals who failed the graduation examination of the Hanlin Academy were placed ahead of those who failed the imperial court examination, so they did not have to wait too long for jobs. As a contemporary noted,

> No matter how well they do, if recommended for posts, the official candidates from Hanlin Academy and the Household Administration of the Heir Apparent will be given preference over those who are currently in line. They are known as the Tiger Class because, if suggested for County Magistrate, they would be appointed first, without going through the formalities.[68]

[65]Chang Wang (2011). "Regulations of Youjiao School (You Jiao Shu Yuan Gui Tiao)". In: ed. by Hongbo Deng. Zhongxi Book Company, 624

[66]Zongxi Huang (1972). "The Imperial Examinations (Keju)". In: *The Compilation of Modern China's Historical Materials (Jindai Zhongguo Shiliao Congkan)*. Ed. by Yunlong Shen. Taibei Wenhai Press, 2108-2109

[67]Only the top three candidates in the National Examination qualified to forego the Court Examination and receive direct admission to Hanlin Academy.

[68]Kejing Zhu (1983). "Notes in Hanlin Academy (Hanlin Yipin Ji)". In: *Two Volumes in Ming'an House (Ming An Er Zhi)*. Yuelu Press

The emperor himself should theoretically appoint all of the Imperial officers. The emperor must thus interview the person recommended by the Ministry of Personnel before the appointment is made.[69] The emperor could also directly appoint someone as an official, although in this case, he could only select someone he knew very well. For that reason, Hanlin scholars had a substantial edge in advancement as the emperor frequently visited Hanlin Academy and sought advice from officials there regarding policymaking. As a contemporary noted,

> Hanlin Academy Bachelors have a low rank, but they receive the same respect as elite officials, as they directly assist the emperor in administration[70].

Hanlin Academy was obviously a fast-track to promotion, hence holders of jinshi degrees considered Hanlin Bachelor to be a higher honour:

> After three years, Hanlin Bachelors will take the Hanlin Academy Graduation Examination. The winners will remain appointed in Hanlin Academy to do administrative work, while those who fail will be appointed as Supervising Secretaries (*Jishi Zhong*), Censors (*Yu Shi*), Secretaries in a Bureau of a Ministry (*Zhu Shi*), Secretaries in the Grand Secretariat (*Zhong Shu*), Judges (*Tui Guan*), County Magistrates (*Zhi Xian*), and Educational Posts (*Jiao Zhi*)... They can waive the tests to serve the central and provincial governments, do paperwork and organize exams... The Hanlin Bachelors who have remained in the Hanlin Academy are promoted faster than other officials. They were the primary source of potential Prime Minister candidates during the Qing Dynasty, and many of them were selected as high-ranking members of the central government and province governors. Hanlin Bachelors are considered an honour by all jinshi degree holders.[71]

The appointment procedure of Jinshi degree holders is demonstrated in Figure A.10.

Under the Qing Empire, hiring practices were generally merit-based. The primary source for middle- and high-level officials was jinshi. Table A.13 shows the degree distribution across official ranks based on the Qing emperors' interview records. In comparison to jinshi, who held approximately one-third of middle- and high-level official jobs but only one-fifth of low-level ones, juren held around one-third of low-level positions but only one-sixth of middle- and high-level positions. Low-level positions refer to positions below the fourth rank.

Table A.14 provides a summary of the percentage of jinshi degree holders in key positions during the Qing Empire. Around half of the critical positions in the central government (Minister and Senior Censor-in-Chief) and roughly one-third of the critical positions in provincial governments were held by people with jinshi degrees (Governors-General and Governors).

The percentage of people with jinshi degrees who held important positions during the Qing Empire is summarised in Table A.14. Those with jinshi degrees occupied about one-third of the

[69] Zhenguo Zhang (2010). "Researches on Qing's Civil Official Selection (Qingdai Wenguan Xuanren Zhidu Yanjiu)". PhD thesis. Nankai University, 58

[70] Kejing Zhu (1983). "Notes in Hanlin Academy (Hanlin Yipin Ji)". In: *Two Volumes in Ming'an House (Ming An Er Zhi)*. Yuelu Press

[71] Erxun Zhao et al. (2020). "Regulations on Official Selection (Xuan Ju Zhi)". In: *Draft of Qing History (Qing Shi Gao)*. Zhonghua Book Company

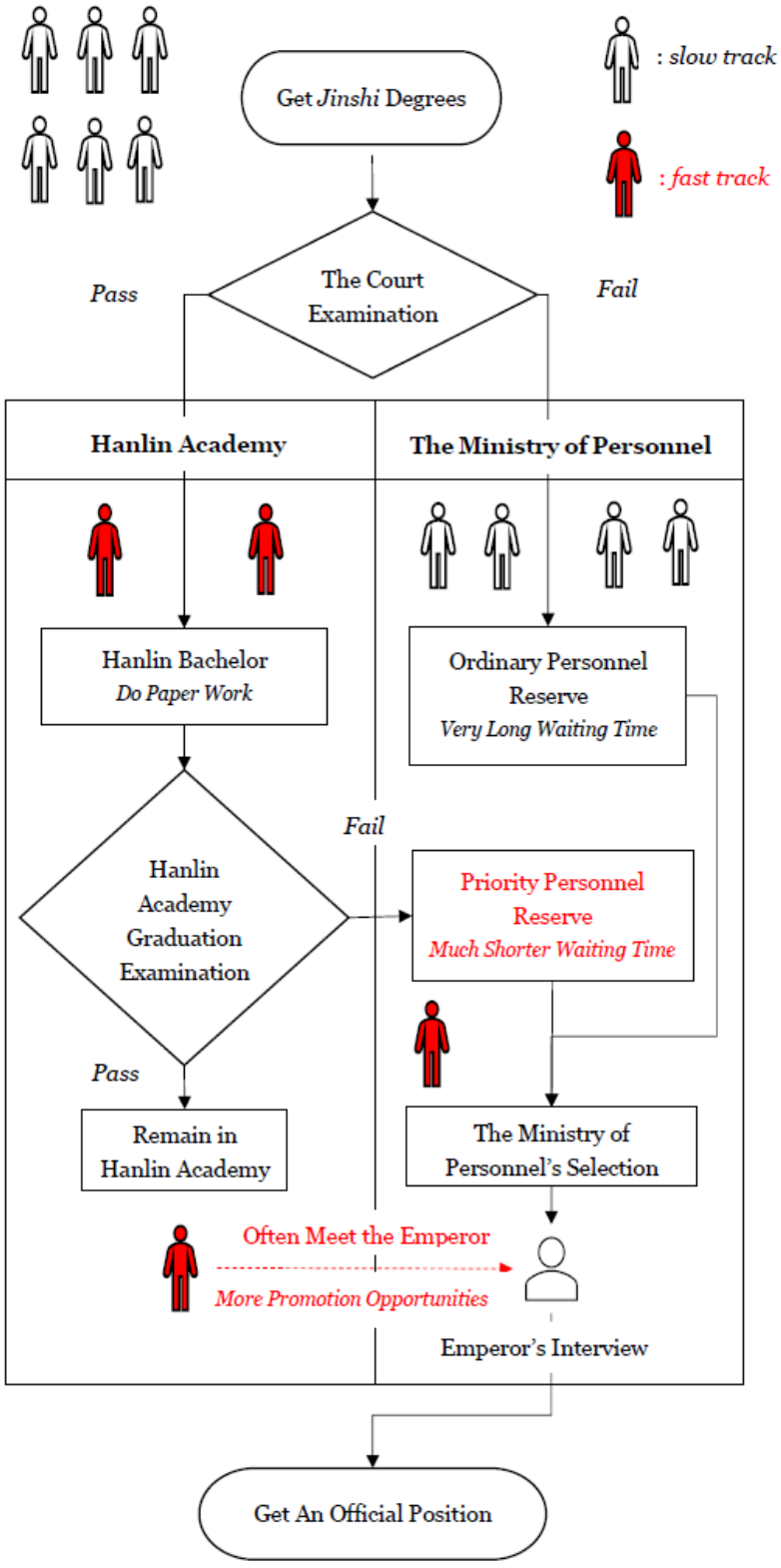


Figure A.10: Procedure for jinshi's Appointment as Officials

Table A.13: Degree Distribution Across Official Ranks

The Emperor	Middle- & High-Level Officials (%)			Low-Level Officials (%)		
	Jinshi	*Juren*	*Others*	Jinshi	*Juren*	*Others*
Yongzheng	33.9	9.6	56.5	16.2	31.2	52.6
Qianlong	30.9	14.9	54.2	25.1	44.5	30.4
Jiaqing	30.2	15.4	54.4	24.3	35.5	40.2
Guangxu	41.3	12.2	46.5	19	20.2	60.8
Total	34.5	13.4	52.1	21.1	34.8	44.1

Source: Zhiming Wang (2016). *Research on Qing Officials' Career Path: Analysis based on Emperor's Interviewees' Resumes (Qingdai Zhiguan Renshi Yanjiu: Jiyu Yinjian Guanyuan Lvli Dangan De Kaozheng Fenxi)*. Shanghai Bookstore Publishing House, 168

Table A.14: The Proportion of Jinshi in Qing's Crucial Positions

Position	Total Number	Jinshi	Percentage
Minister (Shang Shu)	744	339	46%
Senior Censors-in-Chief (Zuo Du Yu Shi)	430	221	51%
Governors-General (Zong Du)	585	181	31%
Governors (Xun Fu)	989	390	39%

Data Source: Dezhao Wang (1984). *Research on the Imperial Examination Institutions in Qing Dynasty (Qingdai Keju Zhidu Yanjiu)*. Zhonghua Book Company, 58

critical posts in provincial governments (Governors-General and Governors) and about half of the critical positions in the central government (Minister and Senior Censor-in-Chief).

Second, the principal source of senior officials was Hanlin Bachelors. Since there were only 6,065 Hanlin Bachelors and 26,848 Jinshi degree holders in the Qing Empire, only about a quarter of Jinshi degree holders were admitted as Hanlin Bachelors.[72] This made the Court Examination, or the Hanlin Academy admission exam, extremely competitive. Hanlin Bachelors was anticipated to advance to the first and second rank official positions after four or five promotions[73].

Observers of the time saw Hanlin Bachelors as potentially strong contenders to become the *de facto* Prime Ministers of the Qing Empire, or Grand Ministers of State.[74] Under the Qing Empire, there were 138 Grand Ministers of State in all, 64 of whom were Hanlin Bachelors, making up 46% of the Grand Ministers of State.[75]

C.2.5 Superstitious Beliefs and Practices

Examinees frequently turned to supernatural power because the degrees offered through the Imperial Examination System were so alluring. The examinees were the most significant clients for the fortunetellers because they were so worried about their scores in the Imperial Exams.

[72]Runqiang Li (2007). *Qing's Jinshi Degree Holders and their Academic Culture (Qingdai Jinshi Qunti Yu Xueshu Wenhua)*. China Social Science Press, 79

[73]Runqiang Li (2007). *Qing's Jinshi Degree Holders and their Academic Culture (Qingdai Jinshi Qunti Yu Xueshu Wenhua)*. China Social Science Press, 107

[74]Dezhao Wang (1984). *Research on the Imperial Examination Institutions in Qing Dynasty (Qingdai Keju Zhidu Yanjiu)*. Zhonghua Book Company, 56-57

[75]Jianhua Wu (1994). "A Brief Analysis of Hanlin Bachelors in Qing Dynasty (Qingdai Shujishi Qunti Jianxi)". In: *Social Science Journal (Shehui Kexue Jikan)* 4, pp. 107–115

> Only when examinees consult them during an Imperial Examination can the capital's fortunetellers turn a profit. The fortunetellers use a number of strategies to increase their revenues. When an examinee asks, some fortunetellers would respond, "you will get in," because they are more concerned with short-term gains. Many test takers would go ask these fortunetellers because they are eager to hear their predictions.
>
> The fortunetellers in the imperial capital can only make profits when examinees consult them as an Imperial Examination is being held. The fortunetellers have a variety of tricks to make profits. Some of the fortunetellers care more about short-term profits, then they will answer "you must get enrolled" every time an examinee asks them. The examinees are happy to hear their predictions, so a lot of examinees will go to ask these fortunetellers. Some fortunetellers are more concerned with long-term gains, thus they always respond, "You will not get in," when an examinee asks. These fortunetellers are regarded as having higher talents and more honest. After all, they are more likely to be correct since the losers make up about 70% of all the examinees. These fortune tellers will then benefit greatly in the upcoming years. Several of them have achieved great fame in this field of fortunetelling and have lived prosperous lives.[76]

Apart from fortunetellers, examinees often sought for anxiety alleviation by praying for dream oracles in temples:

> At the western end of the inner city in the imperial capital stands the Temple of Two Gentlemen. The juren degree holders must travel to the imperial capital before the national level exams in order to pray for oracles, which will manifest in the dreams of followers. They all placed money in the two servant statues' left and right hands, respectively. The oracles there are reputed to be the most accurate.[77]

Last but not least, believers of China's religions were even promised degrees from imperial exams. Eight stories from a well-known Buddhist book from the Qing period featured major characters who, in return for their sexual restraint, had earned degrees in imperial exams.[78] Also, since the God of Books was said to have his birthday on February 3rd in Taoism, examinees performed elaborate ceremonies of homage on that day:

> The God of Literature is revered with great fervor by the exam candidates in Taizhou County. More than ten halls worship him in addition to the two public schools in the prefecture and county. Each venue generated money on the day before February 3rd in their own way by performing music and songs nonstop for three days.[79]

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[76]Kuo Shen (2016). "Deception Tricks (Miu Wu Jue Zha Fu)". In: *Brush Talks From Dream Book (Meng Xi Bi Tan)*. Zhonghua Book Company

[77]Mai Hong (1981). "The Temple of Two Gentlemen (Er Xiang Gong Miao)". In: *Records by Yijian (Yi Jian Zhi)*. Zhonghua Book Company

[78]Anshi Zhou (2013). "For the Degree Seekers (Quan Qiu Gong Ming Zhe)". In: *Compilation of Zhou Anshi's Essays (An Shi Quan Shu)*. Unity Press

[79]Yitian Lu (1984). "Notes in a Cold House (Leng Lu Za Zhi)". In: *Collection of Qing Notes as Historical Materials (Qingdai Shiliao Biji Congkan)*. Ed. by Zhonghua Book Company. Zhonghua Book Company, 120

C.3 The Life of a Qing Intellectual

C.3.1 Preparation for Imperial Exams

A Qing intellectual began to study for imperial exams from a young age. As only shengyuan degree holders were permitted to study in official Confucian schools on prefecture or county levels and take the Province Examination, the entry-level examinations (tongshi) were no less important for him than higher-tier examinations. Preparation for the entry-level examination would take him many years. According to Zhang's estimate, the expected age of acquiring the shengyuan degree was 24.[80] This indicates that a child should spend more than ten years preparing for the entry-level examination.

After earning a Shengyuan degree, he was allowed to attend formal schools to finish his studies and get ready for the Provincial Examination to earn a juren degree. The Province Examination is thought to be the imperial examination system's most challenging component.[81] Zhang estimated that 24 was the expected age for obtaining the shengyuan degree.[82] This suggests that a young person should devote more than ten years to studying for the entry-level exam.

Zhang predicted that people who obtained juren degrees would typically be 31 years old.[83] Juren degree holders may theoretically be appointed as officials directly, but the chance was too low. Therefore, he must prepare for the Metropolitan Examination to get the jinshi degree to pursue an official career path. Zhang predicted that a person would typically earn a jinshi degree between the ages of 33 and 36.[84] Zhang also demonstrates that a Shengyuan degree holder's predicted death age was around 60.[85] This means that an intellectual had spent more than half of his life preparing for the Imperial Exams, and that he had spent around two-thirds of that time on the Child Examination.

C.3.2 Becoming a Professional Bureaucrat

The intellectual may anticipate being appointed as an official after passing every exam. He might, however, have to wait a while for a post to open up. His formal career would be largely based on how well he performed in his role after being appointed. Three assessment procedures used in the Qing Empire were used to evaluate his performance:

1. The Ratings Fulfilled System. The evaluation timetable is individual-specific since under the Ratings Fulfilled System, an official's performance was assessed every three years over his nine-year term in office. In this system, the emperor was in charge of evaluating province governors and high-ranking Beijing officials, while low-ranking Beijing officials were eval-

[80]Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press, 95

[81]Dezhao Wang (1984). *Research on the Imperial Examination Institutions in Qing Dynasty (Qingdai Keju Zhidu Yanjiu).* Zhonghua Book Company, 35

[82]Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press, 95

[83]Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press, 126

[84]Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press, 122

[85]Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society.* Seattle: University of Washington Press, 96

uated by high-ranking Beijing officials, and lower-level local authorities were evaluated by provincial governors. In 1665, this rating system was abandoned.

2. The Capital Evaluation System. Every three years, the officials employed in Beijing were examined, but the evaluation cycle was not person-specific. In Beijing, high officials and the Ministry of Personnel were in charge of evaluating high-ranking officials, while the emperor was responsible for evaluating low-ranking officials.[86]

3. The Great Reckoning System (*Da Ji*). Every three years, local leaders were reviewed, and the timing wasn't person-specific either. Before to 1686, the emperor conducted his own personal interviews with local authorities; but, from 1686, the provincial governors were in charge of evaluating local officials.[87]

Retirement as Local Gentry The regulations state that officials who are more beyond a certain age shall be regarded as being past retirement age. The age cutoff was imposed in 1757 at 55, increased to 65 in 1768, and finally to 70 in 1798.[88] In general, Qing officials were expected to retire at age 70 or so. However there were some latitudes in how this regulation was applied.

The official continued to have political and financial advantages in his hometown after he retired. Under the Qing Empire, retired officials played a significant role in the local gentry and assumed a variety of duties related to local administration, such as providing the local population with public goods and services.[89]

C.3.3 Non-Official Careers

Although the imperial examination system attracted numerous intellectuals in the Qing Empire, some chose other professional paths. Most did so because they had to look for work elsewhere after failing higher-level tests.

Informal Government Staff In contrast to its huge population, the Qing Empire maintained a small bureaucracy. A contemporaneous estimate placed the entire number of administrators in the Qing Empire in 1850 at just 26,408.[90] Hence, the true rule of the Qing Empire was mainly dependent on informal personnel. Because it required a lot of administrative work, working as informal government employees provided an excellent opportunity to those who did not pursue an official career. As a contemporary noted below,

> We must pursue alternative vocations since we have failed the Imperial Exams. Working as informal government worker is the most comparable to just reading literature, thus many of us would choose it.[91]

[86] Gang Xue (2020). *The Study on the Assessment of the Civil Officials in Qing Dynasty (Qingdai Wenguan Kaohe Yanjiu)*. China Social Sciences Press. Chap. Three.

[87] Gang Xue (2020). *The Study on the Assessment of the Civil Officials in Qing Dynasty (Qingdai Wenguan Kaohe Yanjiu)*. China Social Sciences Press. Chap. Two.

[88] Erxun Zhao et al. (2020). "Regulations on Official Selection (Xuan Ju Zhi)". In: *Draft of Qing History (Qing Shi Gao)*. Zhonghua Book Company

[89] Zhongli Zhang (1955). *The Chinese Gentry: Studies on Their Role in Nineteenth-Century Chinese Society*. Seattle: University of Washington Press, 3-71

[90] Qi Zhong (1897). *Records of Trivial Matters in Qing Dynasty (Huang Chao Suo Xie Lu)*

[91] Huizu Wang (1786). *Advice on Governance (Zuo Zhi Yao Yan)*

Private School Teachers Working as a teacher in private schools was another common job choice for unsuccessful candidates. The Qing Empire mandated local governments aid in the establishment of more private schools and the employment of intellectuals as instructors in 1723:

> Counties must establish private schools in sizable local towns, staff them with qualified instructors with shengyuan degrees who have demonstrated academic and moral excellence, waive their corvee fees, and pay them a living wage.[92]

Attorneys Attorneys were a despicable professional choice for unsuccessful candidates. Intellectuals had a comparative advantage in attorney jobs since they required a lot of writing skills. But in the Qing Dynasty, lawyers were despised because it was thought that they were the source of conflict and trouble. As a result, it was considered shameful for intellectuals to practice law, as a contemporary stated below:

> Some academics were so destitute that they needed to file lawsuits to purchase food. I felt pity for them and gave them money so they could provide for their family. Along with sending them to schools to finish their education and paying their tuition, I also convinced them to change occupations.[93]

Other Occupations Candidates who were unsuccessful also had access to less common career options. As noted in the following family historical record, merchant families from the Huizhou prefecture occasionally had their descendants join the family business if they failed to pass imperial exams:

> (He) gave up his academic career to pursue entrepreneurship after failing the imperial exams as a child. The family business was then passed down to him.[94]

Some other failed examinees even became doctors:

> When he was younger, he studied for the Imperial Exams and was capable of writing good essays. He first had no idea how difficult imperial exams could be, and as a result, he repeatedly failed. He so received the family business and pursued a career in medicine.[95]

Records show that the poor intellectuals frequently sold their calligraphy since they had undergone rigorous handwriting training:

> He taught kids and sold calligraphy to support his family's meagre means.[96]

[92]Gang Kun et al. (1995). *Changes in Qing's Political System (Qinding Daqing Huidian Shili)*. Shanghai Classics Publishing House. Vol. 396

[93]Tingyao Gao (1859). *My Life as an Official (Huan You Ji Lue)*

[94]Runzhuang Shi (n.d.). "The Biography of Mr. Gongshu Cheng in the West of Xi County (Xi Xi Gong Shu Cheng Jun Zhuan)". In: *Bibliographies of Cheng Family Southern Branch's Historical Records in Xin'an County*. Ed. by Mihong Cheng

[95]Letao Wang (1999). *Doctors in Xin'an County (Xin An Yi Ji Kao)*. Anhui Science & Technology Press, 111

[96]Shao Liang (2002). "Essays in Liang Ban Qiu Yu An (Liangban Qiuyu An Suibi)". In: *The Continued Imperial Collection of Four Divisions (Xu Xiu Siku Quanshu)*. Ed. by Yun Ji et al. Vol. 1263. Shanghai Classics Publishing House, 142

Sometimes they might also sell paintings:

> He was a teacher and supported a low-income family. Nonetheless, his salaries were insufficient to support his daily expenses, so he turned to selling paintings for additional income.[97]

Some intellectuals even became fortunetellers:

> He studied divination in addition to educating students for a living. After closing his school, he moved to the Lizhou Prefecture with his books of divination. He lived in Liu Qingli's house. Liu had a shengyuan degree, and worked as a fortune teller.[98]

C.4 University Admissions in Republican China

This section surveys university admission policies in the Republican China. These policies can be divided into two time periods: (1) before 1938, the admission process was decentralized, and universities enjoyed considerable freedom in deciding how to conduct their own entrance exams; and (2) after 1938, as a result of the Second Sino-Japanese War, the admission process was largely under the control of the government.

C.4.1 University Admission Before 1938

Prior to 1938, universities had a great deal of autonomy over how they conducted admissions tests and decided who would be admitted. Each university could autonomously select exam questions, schedule exam times and venues, and decide whether to admit students. The government only sometimes stepped in. According to a contemporary:

> It is challenging to get a consensus because each university has a finite number of lecture halls, laboratories, and instructors. It is impossible to standardize the selection process. It will be easier if each university can decide how many students to accept on their own.[99]

The sole factor used to determine admission to institutions was student achievement on admissions examinations. Even if some highly talented students may forego the entrance examinations, they still needed to do well on the middle school graduation exam.[100] Universities only have

[97] Tingji Zhong (1992). "The Local Gazetteer of Sheng Lake (Shenghu Zhi)". In: *The Compilation of China's Local Gazetteers: Villages and Towns (Zhongguo Difangzhi Jicheng: Xiangzhen Zhi Zhuanji)*. Vol. 11. Shanghai Bookstore Publishing House, 528

[98] The Palace Museum (Gugong Bowuyuan) (2011). *The Records of Qing's Literacy Inquisition: Amplified Version (Qingdai Wenziyu Dang: Zengding Ben)*. Shanghai Bookstore Publishing House, 237

[99] "Proposition that University Admission in Each Department Should be Allocated According to Need (Daxue Geke Xuee Yiongfou Shi Xuyao Yufou Er Zhuojia Fenpei An)" (1936). In: *Compilation of Propositions and Resolutions in Each Education Conference (Lijie Jiaoyu Huiyi Yijuean Huibian)*. Ed. by Shuangqiu Tai et al. Institute for Educational Compilation and Translation (Jiaoyu Bianyi Guan), 18-19

[100] "The 1938 Regulations on Recommendation for University Admission of Distinct Students in the Graduation Examination in Each Province and Prefecture and Graduates from National Senior High Schools (Ershiqi Niandu Ge Shengshi Gaozhong Huikao Chengji Youxiu Xuesheng Ji Guoli Ge Zhongxue Gaozhong Biyesheng Baosong Mianshi Shengxue Banfa)" (1938). In: *Communique from the Ministry of Education (Jiaoyu Bu Gonggao)*. Vol. 10, 19-20

Table A.15: The Origins of Admitted University Students in ROC (1931–1934)

Province	1931		1932		1934	
	Amount	Share	Amount	Share	Amount	Share
Hebei	4268	9.60%	4142	9.70%	3701	9.69%
Shandong	2857	4.20%	1659	3.88%	1674	4.38%
Zhejiang	2469	5.60%	3582	8.35%	2972	7.78%
Guangdong	5844	13.30%	6072	14.21%	7168	19.56%
Anhui	1916	4.30%	1901	4.45%	1291	3.38%
Henan	1236	2.80%	1338	3.12%	1238	3.24%
Sichuan	2885	6.60%	2853	6.07%	2144	5.61%
Hubei	1302	3.00%	1350	3.16%	1190	3.12%
Jiangxi	1346	3.10%	1376	3.21%	1186	3.11%
Shanxi	2387	5.40%	2250	5.27%	1946	5.10%
Hu'nan	1592	3.60%	1811	4.24%	1721	4.51%
Liaoning	3003	6.80%	1756	4.12%	1407	3.68%
Guangxi	1073	2.40%	1274	2.98%	1192	3.12%
Fujian	2609	6.90%	1846	4.37%	1665	4.36%
Jiangsu	6647	15.10%	7122	16.67%	5902	15.46%
Gansu	164	0.40%	199	0.47%	119	0.31%
Jilin	865	2.00%	567	1.32%	297	0.78%
Heilongjiang	327	0.70%	338	0.79%	106	0.28%
Yunnan	329	0.70%	320	0.75%	219	0.57%
Shaanxi	361	0.80%	236	0.55%	229	0.60%
Guizhou	184	0.40%	204	0.48%	189	0.58%
Rehe	84	0.19%	69	0.16%	36	0.09%
Suiyuan	104	0.20%	78	0.18%	86	0.23%
Chahaer	133	0.30%	132	0.31%	92	0.24%
Menggu	2	0.01%	11	0.03%	12	0.03%
Ningxia	25	0.06%	20	0.05%	28	0.07%
Xinjiang	54	0.12%	55	0.13%	55	0.14%
Qinghai	7	0.02%	42	0.10%	19	0.05%
Xikang	6	0.01%	7	0.02%	2	0.01%
Tibet	51	0.11%	51	0.12%	-	-
Foreign	37	0.08%	54	0.13%	124	-

Data Source: The Education Ministry (Jiaoyu Bu) (1933). *The Statistics of National High Education in 1932 (Ershi Niandu Quanguo Gaodeng Jiaoyu Tongji)*. Commercial Publishing House, 25-26; The Education Ministry (Jiaoyu Bu) (1935). *The Statistics of National High Education in 1933 (Ershiyi Niandu Quanguo Gaodeng Jiaoyu Tongji)*. Commercial Publishing House, 89-90; The Education Ministry (Jiaoyu Bu) (1936). *The Statistics of National High Education in 1934 (Ershisan Niandu Quanguo Gaodeng Jiaoyu Tongji)*. Commercial Publishing House, 36

vague entrance criteria for students' moral standing and physical fitness. The only requirements for admission to Tsinghua University are that applicants "should conduct with honesty and have never been dismissed from school."[101] If the students did not have any serious health issues, they could be admitted.[102]

Such an entrance policy was obviously biassed against students from far inner provinces.

[101]Xuewei Yang, Xin Liu, et al., eds. (2003). *Compilation of Literature on China's Examination History: The Republic Era (Zhongguo Kaoshishi Wenxian Jicheng: Minguo)*. Vol. 7. Higher Education Press, 42-43

[102]Tao Li (2014). "A Study on Admission System of National Universities in Republic Era (Minguo Shiqi Guoli Daxue Zhaosheng Yanjiu)". PhD thesis. Southwest University, 51

The pupils from the inner provinces had little chance of being admitted because of (2) the stark discrepancy in middle school academic levels and (3) the expensive travel expenditures. The Education Ministry presented a plan to distribute admissions based on provinces at the Tenth Education Union Congress, but the proposal was rejected by the government. The suggestion was written as follows:

> Several provinces had very few, if any, newly admitted students at national universities. About all of the newly admitted students come from areas where transportation is readily available, and institutions purposefully schedule admissions exams in these areas. . . . . Universities exclusively use exam scores as a criterion for admission, but they are unaware that students from distant areas are not less intelligent as they simply received less education, which led to poorer exam performance. The absence of qualified teachers is the cause of the poorer education. If affirmative action is not implemented right away, student quality will never improve, and applicants to national universities will never have a chance to be accepted. Secondly, the Education Ministry needs to inform the national universities and colleges that they need to set aside some slots for admissions from particular provinces. Finally, the provinces ought to provide a stipend for the admitted students coming from there.[103]

Table A.15 provides a description of where the newly admitted students to the universities in 1931, 1932, and 1934 came from. It appears that students from economically developed eastern Chinese provinces including Hebei, Zhejiang, Guangdong, and Jiangsu had a strong advantage in admission. Students from Jiangsu and Guangdong made up more over 10% of the newly admitted students, respectively. The percentage of students from inner provinces like Yunnan, Gansu, Shaanxi, and Guizhou, in contrast, was typically less than 1%.

C.4.2 University Admission After 1938

The government tightened its control over admissions after the Second Sino-Japanese War broke out in 1937 in an effort to maintain national unity, and universities moved inland. The Education Ministry designated a committee in charge of selecting students for each university between the years of 1938 and 1940, and that committee was in charge of setting exam questions.[104] After 1940, institutions were given the authority to determine exam topics and admission standards, but the government retained oversight of the exam's content and admission criteria.[105]

The government split the nation into exam districts and made sure that each district had exam rooms in order to increase the likelihood that students from inner provinces would be allowed into institutions. Chongqing, Chengdu, Kunming, Guiyang, Northwestern China, Guangdong & Guangxi, Zhejiang & Jiangxi, Fujian, Hunan, and Hubei were the ten test districts in 1942. A committee tasked with developing exam questions and grading exam papers was assigned to each district. The district may also be designated as the admissions committee for universities outside

[103] Xuewei Yang, Xin Liu, et al., eds. (2003). *Compilation of Literature on China's Examination History: The Republic Era (Zhongguo Kaoshishi Wenxian Jicheng: Minguo)*. Vol. 7. Higher Education Press, 43

[104] "The 1938 Regulations on Unified Admission of National Universities (Ershiqi Niandu Guoli Ge Yuanxiao Tongyi Zhaosheng Banfa Dagang)" (1938). In: *Communique from the Ministry of Education (Jiaoyu Bu Gonggao)*. Vol. 10, 9-10

[105] Tao Li (2014). "A Study on Admission System of National Universities in Republic Era (Minguo Shiqi Guoli Daxue Zhaosheng Yanjiu)". PhD thesis. Southwest University, 40

the district.[106] Students from the interior provinces had considerably easier access to the exam rooms and may benefit from exam papers that were district-specific.

[106]The Education Annual Committee (Jiaoyu Bu Jiaoyu Nianjian Bianzuan Weiyuanhui) (1948). *The Second Annual of China's Education (Dierci Zhongguo Jiaoyu Nianjian).* Commercial Press, 530-543