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PEOPLE VERSUS PLACES: ELITE PERSISTENCE AFTER THE FALL OF THE MING

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ABSTRACT

We study how elite power persisted through the Ming–Qing transition in Central China. Using genealogical microdata on married couples and their descendants, linked to measures of local elite influence, we estimate the effects of the Ming collapse (1368–1644) on families (people) and on regions (places). A family line-level treatment and control approach shows that elites experienced an immediate loss of influence, but their descendants recovered and consolidated elite status under the Qing (1644–1911). In contrast, a region-level design indicates that areas more heavily exposed to Ming-collapse destruction suffered persistent adverse outcomes. Evidence on career choice is consistent with a trauma-induced shift toward civil service examination careers, with stronger intergenerational transmission of exam-oriented norms in families more exposed to destruction. The results document adaptive persistence of elite families despite regime change, alongside lasting regional scarring, and highlight the role of cultural transmission in the persistence of elite status.

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1 Introduction

The intergenerational transmission of status lies at the heart of research on inequality and policy debates. Yet comprehensive, multi-generational evidence on elites—and systematic comparisons with non-elite households within the same localities—remains scarce. This study investigates lineages in Central China across several generations surrounding the collapse of the Ming dynasty (1368–1644), an adverse political shock. By doing so, it identifies the mechanisms of elite status transmission and distinguishes the persistence of inequality at the family level (people) from that at the regional level (places).[1]

Our analysis focuses on families from Tongcheng County, an area that suffered destruction broadly representative of the Ming–Qing transition—a period during which an estimated 36 million people, or roughly 16 percent of the population, perished. We define a family line as a couple who lived through the fall of the Ming and all of their descendants. Tracking these family lines across several centuries, we observe individuals at roughly 33-year intervals, allowing us to trace family responses to the shock over time. The data derive from patrilineal genealogies that record each male member's social status and related characteristics.

Empirical evidence on how families respond to major shocks across generations remains limited. The collapse of the Ming dynasty provides a quasi-experimental setting to examine this question. In Tongcheng, wartime destruction varied across villages, creating heterogeneous exposure: some couples endured severe devastation, while others experienced relatively limited damage. We exploit this variation to implement a treated-versus-control design at the family line level. Treatment status is assigned based on a couple's exposure during the shock generation and carried forward to their descendants for four subsequent generations—regardless of where those descendants later lived—an approach we term the treatment of people. This design enables comparisons of outcomes through the great-great-grandsons of the shock generation and sheds light on how shocks propagate intergenerationally within family lines.

We first show that first-generation men from villages that suffered heavy destruction had about a 30% lower likelihood of joining the elite compared to those from less affected villages. This conforms with expectations: warfare, disease, and famine following the fall of the Ming hindered participation in the civil service examination (*keju*), the main pathway to elite status. We also find that the fall of the Ming somewhat reduced the likelihood that a couple's son would marry and establish the next generation, further deepening the short-term loss in elite attainment. Yet several generations later, the pattern reverses. Men are more likely—not less—to attain elite status if their great-great-grandfather lived in a village that was heavily destroyed during the fall of the Ming. Losses in the first generation transform into gains by the third, and cumulatively, over five generations, these family lines more than recover from the initial setback. In other words, early

[1] Chinese lineages, also referred to as clans or common descent groups in the literature, are extended families; we use these terms interchangeably.

loss did not deter later descendants from pursuing a *keju* degree, and the long-run impact of the shock diverges sharply from a simple, fading echo of its short-run effects when viewed through the people lens.

Examining the reasons behind this reversal provides new insight into how elite status was transmitted across generations. We first ask whether the Ming–Qing transition produced significant turnover—creating a clean slate among governing elites—or whether Qing elites in Tongcheng were largely descendants of Ming elites who shifted their allegiance to the new regime. By linking first-generation males to their fathers and grandfathers—extending the five-generation sample to seven generations—we assess whether those ancestors held elite status during the Ming era. We find that Ming elite families played a pivotal role in elite attainment during the Qing, indicating that the fall of the Ming was a case of elite persistence and re-capture rather than replacement.

Two mechanisms explain how family lines recovered from the losses incurred during the Ming collapse: fertility control and migration. Families with fewer sons were more likely to see one attain elite status in the next generation, as fewer brothers meant greater concentration of resources and higher chances of *keju* success. Similarly, descendants of families who migrated away from destroyed villages were more likely to achieve elite status than those who stayed. Consistent with migration and human capital theories, outmigrants were typically younger and wealthier than non-migrants. Both fertility and migration adjustments were short-lived, lasting no more than two generations.

We then compare the effects of the shock across two dimensions: the treatment of people—tracking descendants of initially exposed families—and the treatment of regions—comparing historically destroyed and less destroyed villages over time. The two measures coincide in the first generation but diverge as migration separates people from place. Over subsequent generations, the treatment-of-regions effect remains negative, while the treatment-of-people effect turns positive. Even in the fifth generation, the cumulative regional effect remains below zero, whereas the family-based effect indicates more than full recovery. The place impact thus represents a faded version of the short-run shock, whereas the people effect reveals intergenerational adaptation and resilience.

Finally, we explore why treated family lines placed greater emphasis on elite attainment than control families. Broader institutional reforms—such as changes in examination or tax systems—cannot explain the differential response. Instead, differential exposure to trauma offers a more compelling mechanism. First-generation couples in heavily destroyed villages suffered greater losses of life, land, and property. Unlike material assets, however, the skills required to succeed in the *keju* were portable. We hypothesize that severe trauma shifted family priorities toward education and *keju* career paths, transmitting this emphasis across generations through parental influence and inherited preferences.

Several empirical findings support this hypothesis. First, using canonical parent–child mobility regressions, we find that treated family lines exhibit greater intergenerational elite persistence than control family lines. According to standard models (e.g., Becker and Tomes 1986), a higher

intergenerational coefficient reflects stronger parental investment in children, consistent with the idea that traumatized treated families placed greater emphasis on *keju* success. Moreover, treated families were both more upwardly mobile (a higher likelihood of joining the elite) and less downwardly mobile (a lower likelihood of losing elite status) than control families. The difference in intergenerational elite mobility between treated and control groups also widened after the fall of the Ming, reinforcing the interpretation of heightened transmission intensity among treated family lines.

Variation within the treated group further illuminates the mechanisms of transmission. Elite persistence was especially strong when older and younger generations had greater opportunities for face-to-face interaction, measured by lifetime overlap between parent and child—both father–son and mother–son pairs. Persistence was also higher when family lines remained in the same location across generations. Staying in place likely strengthened intergenerational and extended-kin ties—to uncles, aunts, and cousins—facilitating the transmission of norms, values, and aspirations that reinforced elite persistence.

This paper contributes to the literature on how shared experiences and culture shape economic behavior (Alesina and Giuliano 2014, 2015; Fernández 2011; Guiso, Sapienza, and Zingales 2006). We emphasize the role of place-based shocks in shaping collective norms, much like how conditions on the American frontier fostered individualism (Bazzi, Fiszbein, and Gebresilasse 2020). In doing so, we provide new evidence that families are central to the intergenerational transmission of culture (Bau and Fernández 2021).

Our analysis builds on work documenting strong intergenerational links in behavior—such as correlations between migrants' behavior and that in their ancestral countries (Fogli and Fernández 2009) or persistent educational preferences despite displacement (Becker, Grosfeld, Voigtlaender, and Zhuravskaya 2020). We extend this literature in two key respects. First, we trace a longer horizon of post-shock generations, showing that the reversal in elite attainment emerges only about 130 years after the initial shock. Second, we exploit unique genealogical data that allow direct measurement of parent–child lifetime overlap, offering rare individual-level evidence on transmission mechanisms.

The study's focus on a single county reduces confounding factors common in more aggregated analyses, enabling a clearer view of how localized shocks shape long-run cultural adaptation. Finally, our results inform models of cultural transmission such as Bisin and Verdier (2025) by showing that clan norms in Tongcheng, while socially inherited, were also forward-looking. These norms evolved rapidly to promote collective survival—ensuring that future members would not face persecution for antisocial behavior—illustrating culture as an adaptive response to historical trauma rather than a static inheritance.

Research on a wide range of historical events—including environmental shocks, colonial interventions, epidemics, and wars—has shown that some shocks generate persistent effects while others do not (overviews in Nunn 2020; Voth 2021). This paper connects variation in persistence to dif-

ferent dimensions of the shock. Specifically, we distinguish between the regional (place-based) and familial (people-based) dimensions. The framework parallels the distinction between the predictive power of a country's territorial history and that of the histories of the people who currently inhabit it (Putterman and Weil 2010).

While studies examining how historical events in particular locations shape long-run economic outcomes are relatively common, analyses centered on how such events affected specific groups of people are much rarer. This asymmetry largely reflects the relative ease of linking historical events to modern territorial units rather than to individuals or families (Michalopoulos, Putterman, and Weil 2019). A key contribution of this study is to integrate both people and place dimensions within a single empirical framework. In doing so, we complement recent modern-economy analyses that compare people-versus-place effects—such as Dustmann, Otten, Schoenberg, and Stuhler (2023) and Autor, Dorn, Hanson, Jones, and Setzler (2025) —and extend this approach to a multi-generational historical context.

Our finding that regional shocks are more persistent than family shocks helps reconcile seemingly conflicting results in the literature. Studies emphasizing regional persistence—such as Dell (2010), Nunn and Wantchekon (2011), and Voigtlaender and Voth (2012)—contrast with family-level analyses showing more rapid dissipation of shock effects (Bleakley and Ferrie 2016; Ager, Boustan, and Eriksson 2021). By explicitly comparing the persistence of shocks across both dimensions, our analysis helps clarify why long-run effects often appear stronger in regional data than in intergenerational family data.[2]

Following Acemoglu, Johnson, and Robinson (2001) and earlier work, scholars have emphasized that the roots of comparative development often lie in events that occurred centuries ago. Yet empirical analyses linking such deep historical shocks to modern outcomes have long been constrained by the limited availability of comprehensive government data before the late nineteenth century. This study contributes to a growing literature that employs alternative data sources to investigate long-run development.

Non-governmental records—such as market, manorial, company, and church archives—have proven essential for studying long-run living standards, inequality, and innovation (Allen 2001; Broadberry et al. 2015; de la Croix, Scebba, and Zanardello 2025). The genealogical data used here provide observations roughly every 33 years, allowing analysis over more than 350 years while maintaining a close connection between narrative and observables. Although a relatively small sample raises concerns about representativeness, our sample closely matches national populations that included elites in historical China. Related studies using Chinese genealogies examine fertility, migration, and long-run social mobility (Shiue 2017, 2025; Hess 2023; Hu 2023, 2025).

The following section 2 provides background on the Ming-Qing dynastic transition in general and on developments in Tongcheng in particular. Section 3 introduces the data and describes our

[2]Less evidence for regional persistence is found in Miguel and Roland (2011) and Feigenbaum, Lee, and Mezzanotti (2022).

approach to estimation. Section 4 presents the main empirical finding of an elite reversal and contrasts it with findings of regional persistence. Section 5 uses intergenerational regressions to show that the shock led treated family lines to place a higher emphasis on the *keju*, an emphasis that was transmitted from generation to generation. Section 6 concludes. The Appendix provides more information on the dataset, discusses sample selection resulting from longer family lines, and presents important additional regression results.

2 The Fall of the Ming Dynasty

2.1 Macro Developments

Several factors contributed to the collapse of the Ming dynasty. In imperial China, dynasties were typically defined by hereditary rule, with each emperor tracing his paternal lineage to a common ancestor. During the late Ming period, fiscal deterioration, corruption, and growing imperial expenditures weakened state finances. In addition, a series of natural disasters in the late 1620s and 1630s drove up grain prices, leading to famine, epidemics, and widespread hardship; climatic conditions further exacerbated the crisis (Brook 2010; Lee and Zhang 2013). These economic and environmental shocks eroded the legitimacy of Ming rule, fueling waves of rebellion in the early seventeenth century. International factors also played a role. Whereas in the sixteenth century roughly half of the silver mined in Japan and the New World flowed into China, by the dynasty's final decades, costly military campaigns and a global economic downturn produced a severe silver shortage, increasing tax burdens and deepening domestic economic distress.

The Ming dynasty lasted for 276 years, from 1368 to 1644—roughly comparable to the 268-year reign of its successor, the Qing dynasty, which ruled from 1644 to 1911. The Ming were led by the Han people, whose origins lay in the central plains (modern Henan province), while the Qing rulers were Manchus, a semi-nomadic people from northeastern China (Manchuria). Because the vast majority of China's population was Han, the Qing conquest was widely viewed as foreign domination. Scholars disagree on precisely how long the Qing conquest took to complete, but all agree that hostilities continued well beyond 1644, when the Manchus captured Beijing. Some trace the beginning of the Ming collapse to Nurhaci's campaigns in 1618 or even earlier, in the late sixteenth century (Spence and Wills 1979). In any case, the transition from Ming to Qing spanned much of the seventeenth century.

The fall of the Ming brought immense destruction. Fighting between Ming and Qing forces, compounded by local uprisings and famine, devastated the country. Economic collapse and harvest failures produced widespread starvation and epidemics. Tongcheng County, discussed below, was one of many regions deeply affected by this turmoil. While dynastic transitions in China often involved violence and political upheaval, the Ming–Qing transition was exceptionally severe. Ge (1999) estimates that China's population fell from 221 million in 1630 to 185 million in 1680 (see

also Cao 2022). By any measure, the Ming collapse ranks among the largest negative shocks in world history, particularly among those not primarily caused by disease.

In structural terms, the fall of the Ming did not fundamentally alter China's economic or political foundations. The country remained a predominantly agrarian, pre-industrial economy, with large-scale industrialization emerging only in the twentieth century. Before Western intervention and the First Opium War (1840–42)—which shifted the economic center toward the coast and foreign trade—China's economic activity was concentrated inland, along major rivers, in Beijing, and in Inner Asia (Keller and Shiue 2022). Despite dynastic change, the basic mode of governance persisted. Like the Ming, Qing rulers relied heavily on local elites to implement policy across the empire. Limited fiscal capacity and small central bureaucratic and military forces constrained the Qing's ability to impose sweeping reforms in rural areas (Spence and Wills 1979). Thus, even after the conquest, real power in much of China remained with local elites—especially the scholar-official class. The following section summarizes the Ming–Qing transition and the role of these elites in the study's focal region.

2.2 Tongcheng County: Developments until the Fall of the Ming[3]

During the sample period, Tongcheng was part of Anhui province in central China. The county spanned roughly 110 kilometers east to west and 70 kilometers north to south. Many of its inhabitants had settled there during the transition from the Yuan (1271–1368) to the Ming dynasty. The topography of Tongcheng varied considerably: the northwest was hilly and mountainous, while the southeast consisted of low-lying, well-watered plains prone to flooding from the Yangzi River. Tongcheng city, the county seat, was located on a small plain nestled among the northern hills, safely above the flood-prone areas.

Agriculture was the dominant economic activity in Tongcheng. The fertile lands in the southern and eastern parts of the county supported small-scale farming, although a few families controlled large estates. Other residents worked as artisans, merchants, or local officials (*yamen* and runners), while some men pursued the prestigious scholar-official career by preparing for the civil service examination (*keju*). Those who achieved success in the *keju*—and their families—formed the local elite, enjoying the highest social standing. As Ho (1962) noted, participation in the *keju* was "the ultimate gateway to power." The high monetary and non-monetary returns to passing the examinations are well documented (Chang 1962, Chen, Kung, and Ma 2020, Bai, Jia, and Yang 2023). Although the *keju* system during the Qing was highly competitive, it was generally open to all social classes and not subject to hereditary or occupational restrictions. Examination quotas varied by region but were imposed at higher administrative levels rather than the county level (Bai and Jia 2016).

In the early Ming period, Tongcheng was an obscure county, similar to many others outside

[3]Sections 2.2 and 2.3 are based on Beattie (1979 a,b) and the sources given there, unless mentioned otherwise.

China's most developed regions. However, in 1404 the county produced its first national graduate (*jinshi*) in the civil service examination. By the sixteenth century, Tongcheng had become known for its scholarship, as evidenced by more than a threefold increase in the number of *jinshi* compared to the fifteenth century. Many top candidates during the late Ming came from a small number of families, suggesting strong intergenerational transmission of elite skills and status.

Tongcheng's strategic location—directly along the route of Qing armies advancing from the north—made it a major battleground during the Ming–Qing transition, as Ming forces from the south attempted to defend the dynasty. The county's population suffered devastating losses as a result of the conflict. Battles destroyed key resources, and by 1643 an estimated 75 percent of arable land lay in ruin. Ming armies, dependent on local food supplies, further depleted the region's resources, leading to widespread starvation. Reports suggest that as many as 160,000 people in Tongcheng were killed in a single year before peace was restored. Beyond these broader forces, local tensions between elites and commoners exacerbated the destruction during the Ming–Qing transition. The next section examines these local dynamics in greater detail.

2.3 Tongcheng's Elite in the Ming-Qing Transition

In the final decades of the Ming dynasty, tensions between Tongcheng's elite and the general population intensified. This growing antagonism not only amplified the destruction that accompanied the dynasty's collapse but also shaped elite behavior during the Qing period. The Tongcheng gazetteer captures this shift vividly:

"Previously the scholar-officials and worthies of the county had all been noted for virtuous conduct in their localities, while the common people stood universally in awe of the authorities and respected the scholar-officials. But by the Tianqi [1621–28] and Chongzhen [1628–44] reigns, many of the long-established families and powerful lineages had become accustomed to license and extravagance; their young men and serfs made depredations everywhere, which the common people resented." (Tongcheng 1827)

Examples of elite misconduct included tax and labor-service evasion and obstruction of land surveys, which undermined the land-tax base. Under the Ming, officials and degree-holders enjoyed broad exemptions from taxes and labor obligations, but in Tongcheng—as elsewhere—elites sought to extend these privileges illegally to other family members. Tax avoidance became even more widespread after multiple land-tax surcharges were introduced in 1619. When the county magistrate attempted to re-survey farmland in 1581 to improve tax fairness, protests led by local elites forced the plan's abandonment.

The late Ming prosperity of Tongcheng's elite may have contributed to this behavior. Success in the *keju* elevated some families into the scholar-official class, fostering greater wealth and prestige. Many shifted from frugal rural lifestyles to more urban and lavish ones in Tongcheng city. Expanding commerce and a growing cash economy in the Yangzi valley encouraged this transfor-

mation, but to ordinary people it symbolized moral decline and detachment. The movement of landowning elites to the county seat and other urban centers—effectively absentee landlordism—fueled resentment. The construction of city walls in 1576, approved by the provincial governor, physically and symbolically reinforced the social divide between elites and commoners.

By the 1630s, tensions erupted into violence. In 1634, two local warlords attacked Tongcheng, plundering and burning hundreds of homes belonging to wealthy families. Many elites fled downstream to Nanjing or south across the Yangzi River. Yet popular anger was selective. The home of Tai Chuncai, a respected retired magistrate, was spared—suggesting that resentment was directed at abusive elites rather than at scholar-officials as a whole.

By 1645, Manchu forces had seized control of Tongcheng. Historical accounts suggest that they were welcomed with relief, and there is little evidence of organized loyalist resistance. Although Tongcheng produced numerous Ming officials, their response to the Qing conquest was largely one of accommodation rather than defiance. Reports of grief at Beijing's fall in 1644—people unable to sleep or eat—are often interpreted as ritualized expressions of loyalty rather than evidence of genuine resistance. This contrasts sharply with nearby Yangzhou, Jiading, and Jiangyin, where thousands died in acts of resistance or mass suicide.

Collaboration, rather than martyrdom, characterized the response of Tongcheng's elite families. The contrasting fates of two relatives illustrate this pattern: Chang Ping-wen died defending a Shandong city against the Manchus in 1639, while his cousin Chang Ping-chen defected to the Qing a year later and rose to become president of the Board of War. As Spence and Wills (1979) note, Tongcheng's elites largely "rode out the storm" by cooperating with the new regime.

Continuity in the composition of the local elite followed. During the early Qing, social prestige and opportunity became increasingly tied to success in the *keju*, which was held regularly every three years (Shiue 2017). At the same time, reforms abolished tax exemptions for officials and degree-holders in 1657, tying new levies to land rather than office income. These changes eliminated the advantages enjoyed by relatives of officeholders, forcing each generation to pursue *keju* success independently. Many clans responded by investing more heavily in education. Historical evidence suggests that Tongcheng's leading families redirected their resources and ambitions toward examination success more than ever before.

This renewed focus on the *keju* also reflected a broader transformation in how elites exercised influence. Under the Ming, local power often relied on horizontal alliances among factions, but under the Qing it depended more on vertical patronage ties with provincial and central officials (Wakeman 1970). Achieving such patronage required official appointment, which could only be attained through *keju* success. For Tongcheng's elites, cultivating examination achievement thus became both a strategy for maintaining influence and a means of moral self-restraint. The *keju* offered a socially legitimate path to prestige, avoiding the destructive excesses that had discredited many elite families in the late Ming.

Historical accounts suggest that these behavioral changes were motivated in part by the collec-

tive memory of Ming-era destruction. The trauma of the late Ming uprisings instilled humility and encouraged pro-social conduct among surviving elites. Families that had suffered heavy losses were particularly affected, passing down a heightened emphasis on moral conduct and public service. If such norms were transmitted across generations, descendants of those directly exposed to the late Ming devastation would have been more strongly influenced than others. The next section introduces the data used to examine these dynamics empirically.

3 Data

This study employs Chinese family genealogies—patrilineally organized records that document the history of extended families. Beyond their ritual importance in tracing shared ancestry, genealogies served key economic and social functions. They recorded information relevant to property rights, taxation, local public goods, education, and lineage governance. Typically, they contain details on a man's birth and death, marriage, children, and sometimes his social status, residence, and other characteristics. Genealogies are a well-established source of socioeconomic data for China and are increasingly used in Europe and North America to study periods lacking comprehensive official records (e.g., Minardi, Corti, and Barban 2023; Black, Duzett, Lleras-Muney, Pope, and Price 2022).

For Tongcheng, as for many parts of imperial China during the sample period, official population data are generally of lower quality than clan records (see Figure A.1). Because genealogies were privately compiled and financed, one potential concern is wealth bias: for example, average lifespan recorded in genealogies tends to exceed that of the general population (Stelter and Alburez-Gutiérrez 2022). To assess representativeness, we compare the share of high-status individuals in the sample to population benchmarks and find no major differences (see below). Another concern is accuracy—the possibility that families embellished achievements or altered records for prestige. While survey evidence confirms variation in the quality of genealogies, quantitative comparisons suggest they are broadly reliable. For instance, Telford (1986b) reports vital dates in 76 percent of Anhui genealogies but nearly 90 percent in Hubei genealogies. At the same time, comparisons with Japan's early twentieth-century household registration system—a benchmark for accuracy—yield favorable assessments of Chinese genealogies (Harrell 1987).

In the specific case of Tongcheng, there is no evidence that genealogical information was falsified or exaggerated. Competition for social prestige was so intense that any detected manipulation would have undermined a family's reputation (Beattie 1979a). Further details on the economic functions of genealogies are provided in Section A.1, while broader discussions of the compilation, reliability, and content of Chinese genealogies can be found in Liu (1978), Shiue (2016), and Dai (2025).

3.1 Representativeness

Our sample is drawn from genealogies in Tongcheng County for several reasons. First, during the late Ming dynasty, Tongcheng evolved from a typical agricultural region into one known for producing a remarkable number of high-ranking officials (see Section 2.2). The presence of a sizable local elite makes it an appropriate setting for studying how elite families responded to major historical shocks. A natural concern, however, is that Tongcheng's concentration of elites might make it too atypical for the findings to be informative about China more broadly. To assess this, we examine data on the regional distribution of *jinshi*—national graduates of the civil service examination. Given that fewer than 50,000 *jinshi* were produced across all of China during the five centuries of the Ming and Qing dynasties, our comparisons are necessarily granular.

At the provincial level, Tongcheng belonged to Anhui, which ranked 12th out of 19 provinces in total Qing *jinshi* counts (Ho 1962). When population size is taken into account, Anhui's rank drops to 18th (Ho 1962). Considering the Ming period—before the adaptive strategies discussed in this paper—Anhui also ranked in the lower half of provinces in terms of *jinshi* production (Ho 1962).

At a finer scale, Tongcheng was located within Anqing Prefecture. Using birthplace data for *jinshi* from Qu (1969), we find that while most prefectures in Ming China produced at least one *jinshi*, 63 percent of all *jinshi* came from prefectures with more graduates than Anqing. In other words, Anqing ranked at the 37th percentile of the prefectural *jinshi* distribution. At the county level, Tongcheng ranked somewhat higher, around the 65th percentile. Thus, although neither Anhui province nor Anqing prefecture produced an unusually high number of elite degree holders, Tongcheng itself had a modestly above-average representation. Even so, the difference relative to the typical county is small (65th versus 50th percentile). Furthermore, the specific Tongcheng clans analyzed in this study may bring the sample even closer to the national average (see below).

Another advantage of focusing on Tongcheng is the availability and quality of historical sources. Situated in central China but outside the most economically advanced Yangzi Delta, Tongcheng has multiple editions of its local gazetteer compiled between the fifteenth and nineteenth centuries. Genealogies for over 60 clans survive from the area, many of which have been used in prior research (Beattie 1979a,b; Telford 1986a, 1992; Shiue 2017). These materials enrich the historical context and, because they have been studied and cross-validated, help reduce measurement error in our data.

Our empirical analysis draws on all male members of seven Tongcheng clans, which together accounted for about two percent of the county's population in the late eighteenth century (Shiue 2025). Summary statistics for these men are shown in Table 1.

Table 1: Men of Seven Clans from Tongcheng

Panel A: All Clans

	N	Mean	Min	Max
Birth Year	9,787	1760.55	1298	1885
Status	9,786	1.65	0	22
Lowest Status	9,786	0.71	0	1

Panel B: By Clan

	N	Status	Elite
Chen	316	0.396	0.006
Ma	726	6.092	0.191
Wang	5,034	0.908	0.026
Ye	1,787	3.161	0.104
Yin	674	0.850	0.016
Zhao	896	0.674	0.002
Zhou	354	0.678	0.025

Notes: Panel A gives summary statistics on all married men from seven Tongcheng clans, Panel B gives number of observations and means by clan.

Table 1 summarizes the sample of N = 9,787 unique married men recorded in the seven Tongcheng genealogies (Panel A). The earliest recorded birth year is 1298 and the latest is 1885, with an average birth year of 1760, indicating that most observations fall within the Qing dynasty (1644–1911). For nearly all men, the genealogies provide information on their highest lifetime social status—an ordinal variable ranging from 0 (lowest status) to 22 (*jinshi* with a top official position)—based on standardized descriptors in the genealogical texts. The elite indicator variable used in the analysis is derived from these levels, see Table A.1. The mean social status of 1.65 suggests that high-status individuals are rare in the sample. About 71 percent of men fall into the lowest category ("0"), defined as those with no recorded achievements, degrees, or official positions—a distribution broadly consistent with the social structure of China during this period.

To assess representativeness of the sample, we compare the share of high-status men in the sample with national estimates. Data on elite shares vary across studies due to differences in definitions and time frames, but several benchmarks are informative. Chen, Kung, and Ma (2020) and Chang (1962) estimate that civil service examination graduates—combining local, provincial, and national levels—accounted for about 2 percent of China's total population during the Ming and Qing dynasties. Assuming equal numbers of men and women, this implies roughly 4 percent among males. In comparison, our Tongcheng genealogies record a civil examination scholar share of 1.9 percent among males, below the national average.

For the nineteenth century before the Taiping Rebellion, Chang (1955) estimates the total gentry population—including officials without degrees or with purchased titles—at 1.1 million, or 0.55 percent of all males, given a national male population of roughly 200 million. In our seven Tongcheng clans during this same period, the share of civil examination graduates at all levels, plus officials without or with purchased degrees, is 0.98 percent. Thus, at that time the sample contains somewhat more high-status men than the national average—a plausible outcome since genealogies typically exclude single men, and unmarried status was often correlated with low social

standing.

To sum up, while Anhui Province and Anqing Prefecture were not exceptional in their production of high-status men, Tongcheng County had a slightly higher concentration of *jinshi* than the average county. Within our sample, the genealogies may modestly underrepresent high-status men during the Ming and overrepresent them during the Qing, consistent with the persistence and adjustment strategies described in the paper. In any case, there is little evidence that the sample of the seven clans deviates substantially from the national distribution of elite status.

Panel B of Table 1 reports statistics by clan. Individual clans contribute between 3 and just over 50 percent of the total sample, with the Chen and Wang clans representing the smallest and largest shares, respectively. Average social status varies across clans—high-status individuals are relatively common in the Ma clan, though this clan accounts for less than 8 percent of all men and therefore does not dominate the overall sample. Indeed, the Ma clan was not among Tongcheng's most successful lineages in terms of *keju* success or official appointments; these distinctions belonged to the Fang, Yao, Ho, Wu, Ch'i, and Tai families (Beattie 1979a). The seven clan genealogies are listed at the end of the bibliography.

Panel B also reports summary statistics on elite attainment by clan. Our definition of elite status includes both civil examination graduates and officially recognized students, who were exempted from other duties to focus on study and already enjoyed elevated social standing. The 23-level social status scale and the elite indicator are positively correlated ($\rho = 0.68$). Table A.1 presents the mapping between social status categories and the elite variable.

The following describes the two key forms of treatment in our analysis.

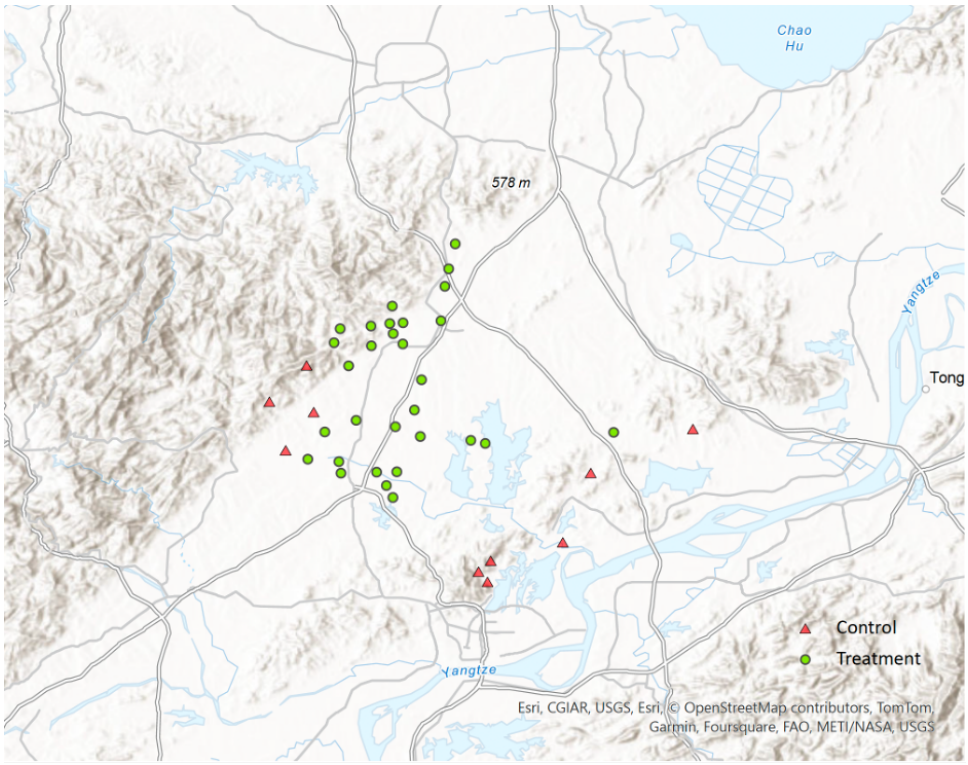
3.2 Treatment Definition

3.2.1 Regional Dimension

We compare outcomes for men who experienced a severe Fall of the Ming shock (treated) with those who were exposed only to a weaker version of the shock (control). The treatment measure is constructed from regional mortality figures for Tongcheng during the decade of most intense destruction, beginning in 1634 (Telford 1992). We convert Telford's mortality index into a binary indicator that equals one for regions with high or medium mortality and zero otherwise, and men living in high-mortality areas are classified as treated and those in lower-mortality areas as control.

As the men that are potentially affected by the fall of Ming we choose men born between from 1590 to 1644. These men would have been at most 44 years old at the onset of the severe destruction in Tongcheng starting in 1634; moreover, choosing 1644 as the final year is consistent with the fact that the transition from the Ming to the Qing took some time after 1644. Thus, men born between 1590 to 1644 were likely affected by the fall of the Ming shock (alternative time windows are considered below). These men born between 1590 and 1644 are a subset of all men from the seven clans in Table 1.

Figure 1: Tongcheng Villages and Destruction during the Fall of the Ming



Notes: Shown are villages of Tongcheng in which first-generation couples lived. Highly affected villages (treated) marked with circles, less affected villages (control) with triangles. Source: Telford (1992).

Figure 1 shows the location of villages and towns in which these men (and their wives) resided. Treated locations are marked as circles, control locations as triangles. Consistent with other evidence (Beattie 1979a), Figure 1 shows that the large majority of Tongcheng experienced high levels of mortality (treated). Villages not strongly impacted by the fall of the Ming tended to be located in the more peripheral and mountainous parts of Tongcheng. This is plausible because the costs of persecution in peripheral and mountainous regions are relatively high (Nunn and Puga 2012). This form of treatment by region (or place) has been widely employed in prior research.

3.2.2 People Dimension

We now turn to a second form of treatment—the treatment of people. The analysis is anchored on the men born between 1590 and 1644, referred to as the first generation or treatment generation. We then trace their male descendants over the next four generations. A man is defined as treated in the sense of treatment of people if he descends from a first-generation treated man—that is, from an ancestor who resided in a high-mortality (treated) location during the Fall of the Ming. This is illustrated in Figure A.6 in the Appendix.

This definition captures the idea that descendants may inherit the consequences of an adverse historical experience not only through economic or institutional channels, but also through the intergenerational transmission of memory, norms, and behavior. Families who endured the Fall

of the Ming may have internalized specific values or coping strategies that persisted across generations, regardless of where descendants later lived. Thus, the treatment of people reflects the persistence of familial exposure, even when family members subsequently migrate.

In the first generation, treatment of place and treatment of people are identical by construction. However, in subsequent generations, the two forms diverge as families move between regions. To illustrate, consider the Ye clan (Figure 2). In the first generation, 25 Ye members resided in the westernmost village and 30 lived in the county capital, Tongcheng City. The western village experienced relatively little destruction (control), while the county capital was heavily devastated (treated). As shown in the left panel of Figure 2, all treated individuals lived in treated places, and all control individuals lived in control places.

By the fifth generation, however, this overlap disappears due to migration. As seen in the right panel of Figure 2, 13 descendants of first-generation treated Ye members had moved to the westernmost village—a location classified as control in terms of treatment of place. These descendants are therefore treated in the sense of treatment of people but not in the sense of treatment of place. By contrasting these two treatment definitions, we can disentangle how long-run effects operate across different dimensions of exposure: geographically through places, and intergenerationally through family lines.

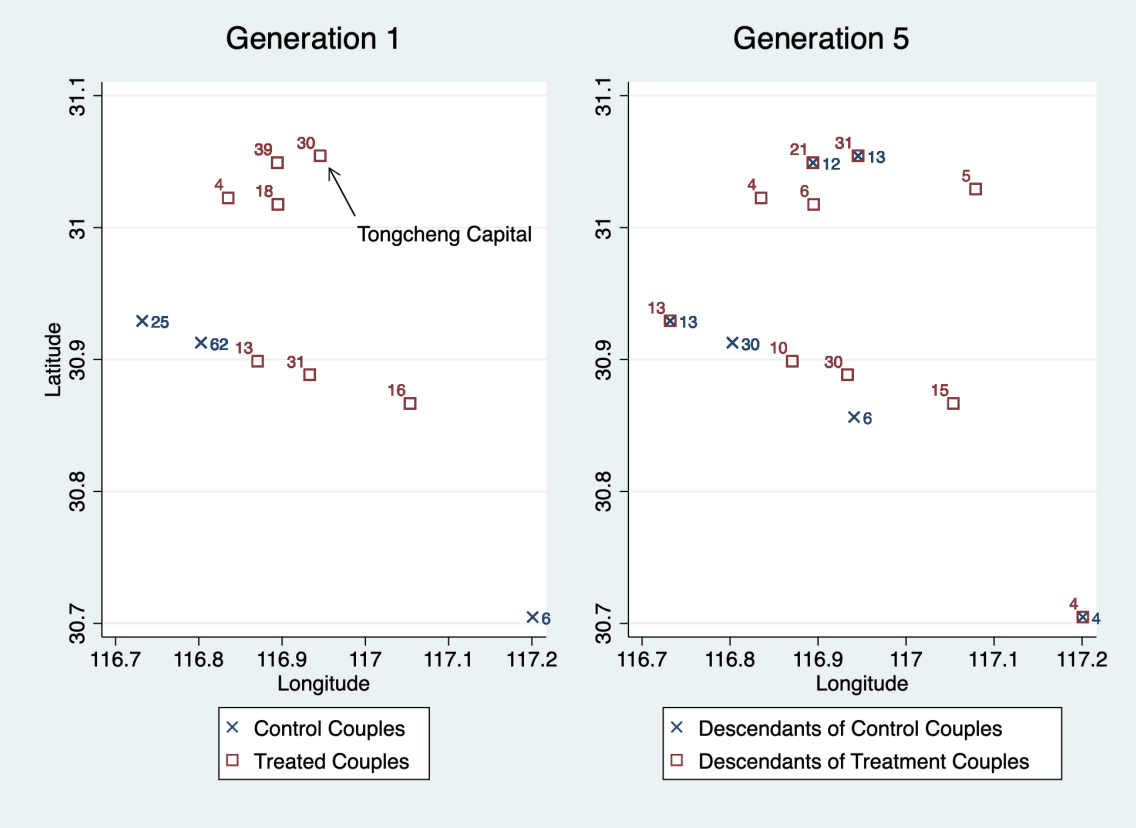
Our analysis of elite strategies to deal with the fall of the Ming covers all men from the seven Tongcheng clans that are intergenerationally linked for five generations to the first-generation men (those born between years 1590 and 1644). Table 2 shows summary statistics of this linked sample (N = 8,084). The unit of observation is family line by generation. By construction, fifth-generation men are unique and define distinct five-generation family lines. Because some fifth-generation men are brothers, the number of unique fourth-generation ancestors is smaller, and this pattern continues up to the first generation.[4]

Table 2 reports summary statistics for this five-generation linked sample. Family lines vary in the number of years required to span five generations. The median death year for second-generation members is 1718, while the typical midpoint of life for the fifth generation is around 1850 (see also Figure A.8 for additional information). The earliest birth in the first generation is 1590, and the latest death in the linked sample occurs in 1886—spanning nearly three centuries.

The mean value of the elite indicator across all generations is 16 percent (last row, column (5), Table 2). Several factors explain why this share is higher than the population-wide estimates discussed earlier. First, men from earlier generations appear multiple times when they have multiple sons, which increases the weight of elites in the sample because elite men generally had more

[4]With perfect genealogical information, all fifth-generation men would be traceable to their great-great-grandfather in the first generation. In our data, this linkage is achieved for 91 percent of cases (1,515 out of 1,667 men), with the remaining observations excluded because of incomplete or ambiguous identifying information. Only men who can be hard-matched across generations–they appear in the data both as child and as married man–are included in the analysis.

Figure 2: Ye Clan Residence Locations in the First and Fifth Generations



Notes: Left panel shows locations of the Ye couples in the first generation, with squares (crosses) indicating those living in treated (control) locations. Right panel shows locations of the 5th generation descendants of those in the right panel, with squares indicating those descendants whose ancestors resided in generation 1 in destroyed locations. Numbers indicate the number of heads-of-households of a particular type in that location.

Table 2: Summary Statistics: Five-Generation Linked Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Generation	N	Birth Year	Death Year		Elite	Residence Change	Sons
		Median	Median	Max		Mean	
1	1,667	1619	1678	1728	0.251	0.198	3.272
2	1,661	1653	1718	1759	0.224	0.276	3.667
3	1,632	1686	1743	1796	0.157	0.229	3.322
4	1,609	1716	1778	1850	0.106	0.147	3.391
5	1,515	1748	1803	1886	0.063	0.104	2.224
Total	8,084				0.163	0.189	3.193

Notes: Shown are statistics for five generation linked sample. The number of observations, N, is for male birth year; number of observation varies to some extent by variable. Elite is an indicator variable, see Table A.1 for the status groups that belong to the elite. Residence Change is equal to 1 if the head of household in a family line resides in generation x in a different town or village than in generation x-1. Sons is number of sons of a male head of households from all female partners he had during his lifetime.

children.[5] Second, inclusion in the genealogy—and hence in our sample—requires marriage, and elite men were more likely to marry than non-elites. Section C examines how exposure to the Fall of the Ming affected the probability of marriage. A third reason for the initially high and later declining share of elites is timing. The sample begins during a period when Tongcheng was first producing a notable number of scholars (Beattie 1979a), while later generations experienced population growth that outpaced the number of official positions available, so that the elite share declined (Chen, Kung, and Ma 2020; Shiue 2025). These factors do not bias the results because the research design is a treatment–control comparison with fixed effects for generation and birth year to account for secular trends.

The genealogies also provide information on residential location (village or town) for each family line and generation, allowing us to study migration patterns. Table 2 shows that, on average, a family line changes residence from one generation to the next in 18.9 percent of cases, with the rate especially high between the second and third generations (column (6)).[6] The data further indicate that each man had, on average, just over three sons with his recorded partners (column (7)). Section A.1 gives information on the definition and characteristics of variables in this study.

To assess baseline comparability, we examine pre-shock differences between treated and control samples. There are 490 men who could have been directly affected by the Fall of the Ming shock (born between 1590 and 1644). Of these, 436 lived in treated villages and 54 in control villages (Table 3). This share of 89 percent (= 436/490) aligns closely with other historical evidence documenting the widespread destruction in Tongcheng during the Fall of the Ming.

We first examine the parents of first-generation men, moving one generation up the family tree.

[5]Fertility as an elite adjustment strategy is discussed in section 4.3.3.

[6]Movements are also observed for the first generation because those men are backward-linked to their fathers and grandfathers.

Table 3: Differences between Treatment and Control Samples Before the Shock

	Control	Treatment	Difference	p-value
	N = 54	N = 436		
A. Test of Equality of Means				
I. Father of First Generation Male				
Elite	0.24	0.30	-0.06	0.35
Social Status	6.00	5.18	0.82	0.37
Birth Year	1589.16	1586.90	2.26	0.37
Lifespan	55.86	53.78	2.08	0.25
II. Mother of First Generation Male				
First Wife	0.11	0.12	-0.01	0.82
III. Grandfather of First Generation Male				
Elite	0.41	0.30	0.11	0.10
Social Status	5.22	5.62	-0.40	0.64
B. Tests of Equality of Distribution				
Social Status of Father of First Generation Male				0.31

Notes: Lifespan is year of death minus year of birth. First Wife is an indicator whether a man's mother was the female that the man's father married before other partnerships with females. Test for equality of distribution is Kolmogorov-Smirnov.

Fathers of first-generation treated men were slightly more likely to be elite than fathers of control men, although the difference is modest and statistically insignificant (p = 0.35), Table 3, Section A, Part I. Differences in average social status, birth year, and lifespan (measured as year of death minus year of birth) between treated and control fathers are similarly small. A comparison of the entire distribution of social status between treated and control fathers–23 classes–also reveals no substantial difference (p = 0.31; Table 3, Panel B).

We next examine mothers of first-generation men. The number of female partners a man had during his lifetime serves as a proxy for household resources, since only affluent men could afford multiple marriages. Table 3, Section II, shows that the proportion of mothers who were the first of several wives in the household was similar across treatment and control groups, suggesting that family wealth was broadly comparable.

Climbing another generation in the family tree, we compare the grandfathers of first-generation men in the treatment and control samples—yielding a total of seven linked generations. Some of these grandfathers were born in the early 1500s, well before the Ming collapse, making it unlikely that differences at this level would bias comparisons of later generations. As shown in Table 3, Section III, grandfathers of treated and control men had similar average social status. Interestingly, elite attainment among grandfathers of treated men is somewhat higher than that of grandfathers of control men (p = 0.10), a pattern opposite to that observed for the fathers of first-generation men. Overall, across the two generations preceding the Fall of the Ming, pre-shock differences

between the treatment and control groups appear limited.

The above analysis is based on all men born between 1590 and 1644. To ensure robustness, we also conduct a pre-shock balance test for the five-generation linked sample, as the process of forming linked family lines could, in principle, differ between treatment and control groups. The results, however, are similar. Among distinct first-generation men, the share with an elite father is 0.33 in the control group and 0.27 in the treatment group (p = 0.58; Table A.4). Thus, restricting the analysis to lineages with five linked generations does not introduce substantial pre-shock differences between treated and control families. Further analysis of the impact of the Ming shock on family line continuity can be found in Section C.

4 The Impact of the Fall of the Ming on Being Elite

4.1 The Impact on People

This section presents our first main result. We compare the impact of the fall of the Ming dynasty on individuals living in areas that experienced greater versus lesser exposure to the shock, and we trace how this difference evolved over the following four generations—what we refer to as the treatment of people.

To measure this effect, we relate each individual's elite attainment to an indicator of treatment, d_p, defined as relatively high mortality in the village where the family line resided in the first generation (see Figure 1). The following OLS specification is estimated:

$$e_{ic(p)g} = \alpha + \beta_g \left[I \left[t = g \right] \times d_p \right] + \beta_f hfstat_{c0} + \eta_g + X'\gamma + \varepsilon_{ic(p)g}, \tag{1}$$

where $e_{ic(p)g}$ is elite indicator of man i belonging to couple c in generation g who is a descendant of pair p in the treatment generation. The term $I[t = g]$ is an indicator function equal to one if observation t belongs to generation g, and zero otherwise, while η_g are fixed effects for each of the five generations. Equation (1) also includes the social status of the father of the family line's first generation male, denoted by $hfstat_{c0}$. While there is no large average difference of $hfstat_{c0}$ between treatment and control samples (Table 3, Section A. I), conditioning on the status of each first-generation father further reduces omitted variables concerns.

Equation (1) also includes a vector X of additional controls. First, we add fixed effects for each man's birth year. Because lifespans vary considerably within a given generation, including birth-year fixed effects helps account for temporal shocks that might influence elite attainment.[7]

Second, we include fixed effects for each of the seven male clans, denoted by m = 1,..., M. These capture time-invariant differences—such as disparities in wealth, influence, or collective resources—that could affect how individuals within a clan responded to the fall of the Ming. Similarly, we

[7]Information on typical lifetimes by generation is shown in Figure A.8.

include fixed effects for the wives' clans of origin (f = 1,..., F), since characteristics of a wife's natal clan may also shape her husband's chances of elite attainment.[8]

The error term $\varepsilon_{ic(p)g}$ is assumed to have mean zero but may be heteroskedastic. Standard errors are clustered at the level of the treatment-generation couple (p) to account for potential dependence among descendants of the same family line. Because the effects of the shock may persist across generations through intergenerational strategies, the behavior of descendants from the same ancestral couple could be correlated. Conditional on all included variables, β_g represents the average difference in $e_{ic(p)g}$ attributable to exposure to the fall of the Ming in generation g. The sample includes all men who are descendants of first-generation couples in generations two through five, as well as the first-generation men themselves. The results are summarized in Table 4.

We begin with a specification that includes only generation fixed effects (see column 1). In the first generation, the estimated treatment coefficient is -0.29, implying that for every ten control-group men who attained elite status, only a little over seven treated men did so. This finding is consistent with expectations: war, famine, and disease following the fall of the Ming likely made participation and success in the civil service examination more difficult.

In the second generation, the estimated coefficient β_g is close to zero, while the point estimates for the next three generations are positive (column 1, Table 4). This pattern suggests a reversal in elite attainment across generations, a result confirmed by the subsequent analysis. The variable $hfstat_{c0}$ —the social status of the first-generation father—enters with a positive coefficient, indicating that men from higher-status family lines were more likely to become elites. This is consistent with the historical context: preparation for the *keju* examination was costly, giving families with greater resources a clear advantage.

Including fixed effects for each man's birth year to account for temporal shocks does not materially change the results (see column 2). The next specification adds fixed effects for the seven male clans. This adjustment slightly reduces the coefficient on the first-generation father's status variable, but the overall pattern of treatment effects across generations remains consistent with the baseline (column 3). Finally, we introduce fixed effects for the wives' clans of origin. Although the magnitude of the estimated effects varies somewhat across generations, the overall trajectory—from a negative effect in the first generation to a positive one by the third—remains unchanged (column 4).

To summarize, although the shock initially hindered elite attainment in the first generation, by the second generation the descendants of treated and control couples performed similarly. From the third generation onward, however, descendants of treated couples entered the elite at higher rates than those from the control group. This pattern suggests that the initial setback did not discourage treated lineages from investing in preparation for the *keju* examination. A plausible explanation, consistent with historical evidence, is that the fall of the Ming dynasty increased

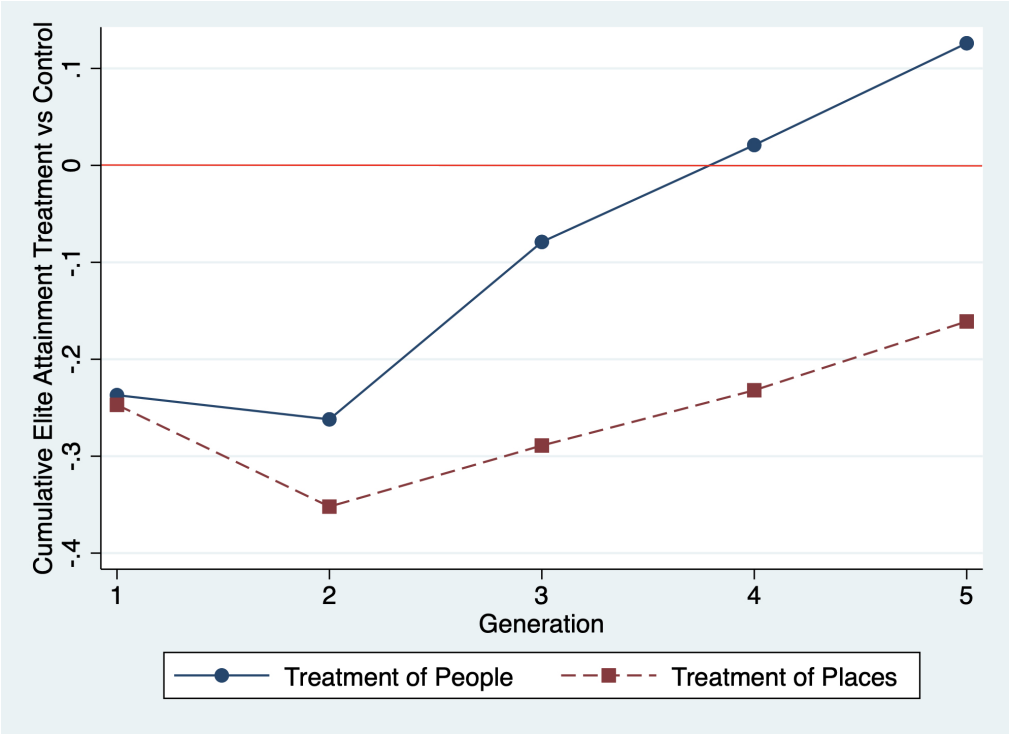
[8]For simplicity, clan subscripts m and f are omitted from Equation (1).

Table 4: The Impact of the Fall of the Ming

	(1)	(2)	(3)	(4)
Generation 1	−0.290*	−0.237*	−0.209*	−0.286**
	(0.120)	(0.100)	(0.103)	(0.104)
Generation 2	−0.026	−0.025	−0.009	0.052
	(0.130)	(0.115)	(0.118)	(0.106)
Generation 3	0.213**	0.183**	0.194**	0.211**
	(0.060)	(0.047)	(0.053)	(0.052)
Generation 4	0.149**	0.100*	0.111*	0.088*
	(0.052)	(0.040)	(0.043)	(0.041)
Generation 5	0.131*	0.105*	0.117*	0.127*
	(0.053)	(0.047)	(0.050)	(0.052)
First-Generation Father Status	0.026**	0.021**	0.018**	0.016**
	(0.003)	(0.002)	(0.003)	(0.003)
Fixed Effects				
Generation	Y	Y	Y	Y
Birth Year	N	Y	Y	Y
Male Clan	N	N	Y	Y
Female Clan	N	N	N	Y
Mean d.p.	0.163	0.163	0.163	0.163
N	8,076	8,074	8,074	8,041

Notes: Dependent variable is elite status indicator; sample consists of all men in generations 2, 3, 4, and 5 from couples formed by male descendants of the treatment (first) generation, as well as the treatment generation couples themselves. Estimation of equation (1) by OLS. d.p. stands for dependent variable. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

Figure 3: Treatment of People versus Treatment of Regions



Notes: Treatment of Regions shows cumulative point estimates from estimating equation (2)); Treatment of People shows cumulative point estimates of column (4), Table 4, based on equation (1). See Table A.5 for coefficients and standard errors.

the perceived incentives among treated families to pursue scholar-official status. We examine this mechanism in greater detail in Section 5.

4.2 The Impact on Regions

This section examines the impact of the fall of the Ming across regions. Using the same five-generation sample as in the previous analysis, we shift the focus from family lineage to geographic location. Rather than comparing descendants of treated and control couples regardless of where they live, we now compare men residing in historically treated areas with those living in historically control areas within the same generation, irrespective of their family's original residence in the first generation. The following equation is estimated using OLS:

$$e_{icg} = \alpha + \delta_g \left[I \left[t = g \right] \times I \left[r = 1 \right] \right] + \delta_f hfstat_{c0} + \eta_g + X'\gamma + \varepsilon_{icg}, \tag{2}$$

where $I \left[r_{ig} = 1 \right]$ is an indicator function equal to one if individual i in generation g resides in a historically destroyed location, and zero otherwise. The specification exploits cross-sectional variation across regions, with one treatment coefficient δ_g per generation. Figure 3 shows cumulative point estimates from equation (2), with generation-by-generation coefficients and standard errors given in Table A.5. Figure 3 illustrates the cumulative impact of the fall of the Ming on

regions (the lower series) and on people (the upper series, corresponding to Table 4, column 4).[9] The estimated impact on regions is consistently more negative than the impact on people. This pattern reflects both a larger negative point estimate in generation 2 and a slower recovery in elite attainment across generations 3, 4, and 5. Consequently, a cumulative reversal in elite attainment emerges only when examining the treatment of people, not the treatment of regions. Over the five generations, the treatment-of-people effect turns positive, while the treatment-of-regions effect remains negative (0.13 versus −0.16, respectively). This divergence aligns with broader findings in the literature: regional shocks often exhibit highly persistent effects, whereas shocks experienced at the individual or family level tend to dissipate more quickly (see the Introduction).

Notably, the positive cumulative treatment-of-people effect implies that the initial decline in elite attainment was more than offset over the following four generations. In this sense, the fall of the Ming ultimately strengthened the position of families initially disadvantaged by the shock. Historical evidence supports this interpretation: the great families of Tongcheng appear to have consolidated their status after the dynasty's collapse, at times acquiring property from deceased neighbors upon returning from temporary exile (Beattie 1979a).

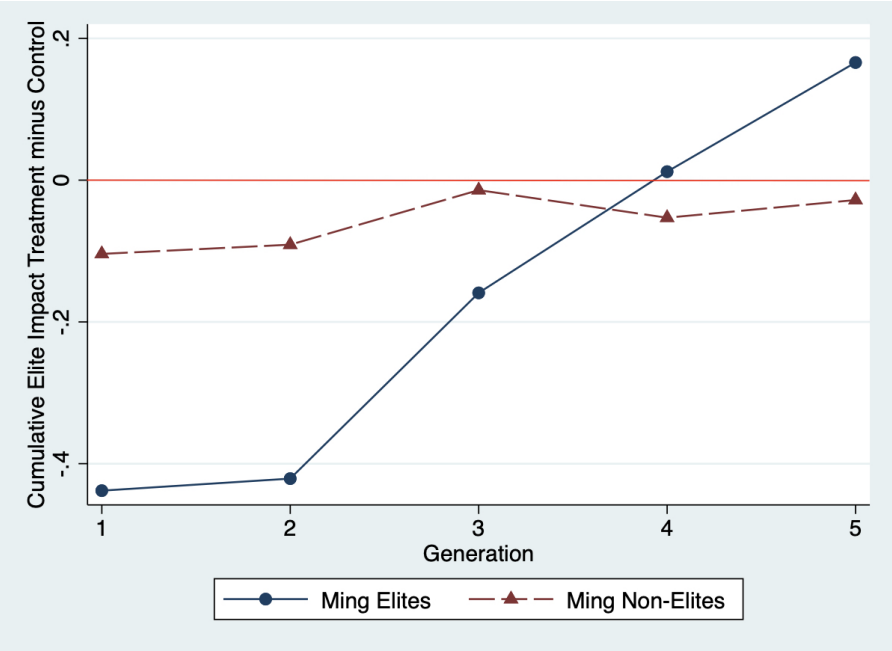
It is also important that it took a considerable amount of time until the first-generation losses of treated family lines were offset by the gains of future generations. Figure 3 indicates that the cumulative treatment-of-people effect moves into positive territory only with the fourth generation. Men of this generation typically lived 130 years after the fall of the Ming (Figure A.8), highlighting that long panels of family data may be needed to be able to track the full impact of historic shocks. The next section explores these dynamics further by examining the strategies that families adopted in response to the fall of the Ming dynasty.

Additional Results We assess several dimensions of the results in Table 4 to better understand the determinants of elite attainment. First, varying the treatment window for first-generation males—birth years 1590–1644 in the baseline—yields consistent evidence of elite reversal across specifications (Table A.8). Second, alternative definitions of elite status, such as distinguishing *jinshi* (national graduates) from *shengyuan* (local graduates), produce similar patterns and confirm that the large number of *shengyuan* played an important part in the reversal (Table A.9). Related outcomes correlated with *keju* success, such as social status and lifespan, do not exhibit comparable intergenerational reversals, suggesting that the shift was specific to examination attainment (Figure A.9). Third, the results remain robust to potential identification threats, including the privileged status of Tongcheng city—where elites were permitted to build a city wall—and differences in resources by birth order (Table A.10).

We also test for potential selection bias arising from unequal lineage survival after the fall of the

[9]The difference between the two series in generation 1 arises from imposing a set of parameter restrictions—held constant across all five generations—to conserve degrees of freedom. When these restrictions are removed, as shown in Table A.6, the results are identical.

Figure 4: Ming-Qing Persistence of Elites



Notes: Shown are cumulative treatment coefficients based on columns (1a) ("Ming Elites") and (1b) ("Ming Non-Elites") of Table A.7.

Ming. If weaker clan members were less likely to marry, surviving lineages might appear positively selected. In practice, the shock had little effect on marriage probabilities (Section C). Finally, the results are unaffected by data quality issues such as incomplete vital records or residence information (Section B.2).

4.3 Elite Strategies towards the Fall of the Ming

4.3.1 The Role of Ming Elites

A central question is whether the family lines driving the elite reversal in Figure 3 represent new entrants to the elite under Qing rule or reflect the persistence of families already elite during the Ming. To address this, we draw on information from the generation preceding the treatment generation—men who would have reached the peak of their careers in the early 1600s, near the end of the Ming dynasty. We estimate a modified version of Equation (1) that allows treatment effects to differ between such Ming elites and non-elites. The resulting cumulative effects for these two groups are presented in Figure 4, with regression coefficients and standard errors reported in Table A.7.

Figure 4 shows that Ming elites experienced a larger decline in the first generation than Ming non-elites, consistent with a temporary leveling of the playing field between the two groups. However, former Ming elite family lines quickly regained their elite status in subsequent generations under Qing rule ("Ming Elites" series, Figure 4). In contrast, family lines that were not elite dur-

ing the Ming show little change in elite attainment over time, and their cumulative effect remains negative after five generations ("Ming Non-Elites" series, Figure 4). These patterns indicate that the observed reversal in elite attainment primarily reflects elite persistence: families that held elite status under the Ming largely reestablished their position under the Qing. This interpretation is in line with historical evidence from Tongcheng county as a whole (Beattie 1979a).

4.3.2 Migration Strategies

Figure 3 compares the evolution of the shock's impact across regions historically exposed to the fall of the Ming with its impact on family lines that originally lived in those regions. If families had remained in place, the two series would coincide. We next examine migration patterns based on each family line's location in a given generation. Some families outmigrated from historically destroyed regions, others remained, and some moved into these areas. Because the regional treatment series lies below the treatment-of-people series in Figure 3, treated families who left historically exposed regions attained elite status at higher rates than control families who migrated into them.

Building on this finding, Figure 5 decomposes the earlier treatment-of-people estimates (Table 4, column 4) by distinguishing between treated family lines residing in historically exposed regions and those living in historically unexposed regions. In the first generation, all treated family lines reside in historically destroyed villages by definition. By the second generation, roughly 3 percent have relocated to villages that were not affected by the shock, indicating immediate outmigration after the fall of the Ming. Although estimates exhibit wide confidence intervals, outmigrating families achieve higher *keju* success than those who remain in historically exposed areas (point estimates of 0.30 versus 0.05; Figure 5). This suggests that attaining elite status after growing up in a recently devastated region was particularly difficult.[10]

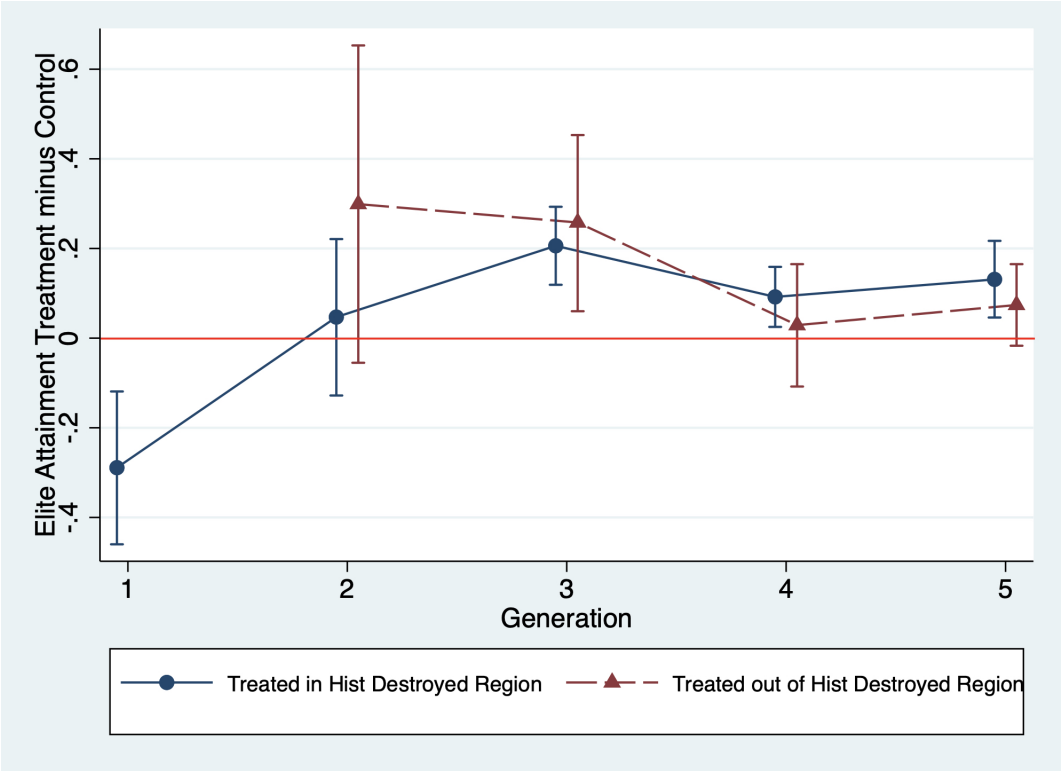
By the third generation, the advantage of movers over stayers declines, and it disappears entirely by the fourth and fifth generations (Figure 5). Thus, the short-run advantage of residing in a control region fades over time. In the long run, elite attainment is shaped more by a family line's direct experience during the fall of the Ming than by the historical exposure of its current location.[11]

Evidence on the determinants of migration comes from comparing treated family lines that outmigrated with those that remained in historically treated villages. Table 5 reports these comparisons for the first two generations.

[10]Similarly, control family lines that move into historically destroyed regions attain elite status at lower rates than those that remain in less affected areas (not shown).

[11]By the fifth generation, about 7 percent of treated family lines have migrated to control regions. Most move only once over the five generations, though a few relocate multiple times.

Figure 5: The Role of Outmigration



Notes: Figure shows effect on elite attainment for two sets of treated family lines, those who reside in a particular generation in a historically destroyed villages (circles), versus those who reside in a historically less destroyed villages (triangles). Estimation analogous to equation (1) by OLS. Shown are 90 percent confidence intervals based on standard errors clustered on first-generation couple.

Table 5: Correlates of Outmigration from Treated Regions

	Stayers	Movers	Difference	p-value
	N = 1,456	N = 46		
Second Generation				
Husband Birth Year	1651.2	1661.2	10.0	<.01
Wife Birth Year	1655.4	1663.2	7.9	<.01
First Generation				
Elite	0.21	0.37	0.16	<.01
Number of Females	1.30	2.15	0.85	<.01
Number of Sons	3.26	4.70	1.44	<.01
Husband Lifespan	59.16	62.07	2.91	0.18
Wife Lifespan	62.36	49.48	-12.89	<0.01

Notes: Table compares means for two sets of treated family lines, those who remain in a historically treated region in generation 2 and those who move to a historically not treated region in generation 2. Number of observations for Wife Lifespan is N = 1,443 Stayers, N = 46 Movers.

Table 5 shows that families migrating from historically destroyed areas tend to be younger than those who remain, as indicated by later birth years of both husbands and wives. Consistent with human capital theory, younger families have longer horizons to recoup the costs of migration. Migrant families also appear more resourceful: those leaving destroyed regions are more likely to have held elite status in the first generation. Although treated first-generation men overall were less likely to be elite (Table 4, Generation 1), those who left exposed regions were disproportionately among the few who attained elite status despite the shock. Other indicators of affluence, such as family size, also correlate with mobility—husbands with more sons were more likely to migrate in the second generation ("Number of Sons," Table 5), and migration in turn increased the likelihood of elite attainment (Figure 5).[12]

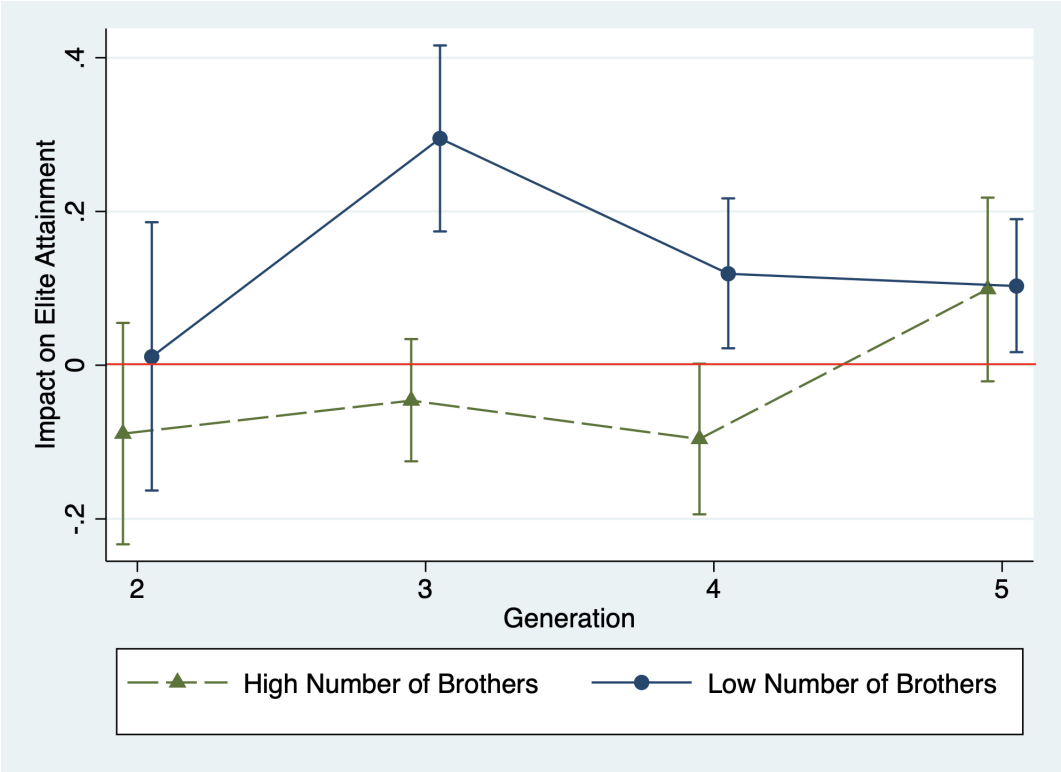
4.3.3 Fertility Strategies

In addition to migration, couples adjusted fertility behavior in response to the fall of the Ming. Although wealthier families in preindustrial economies typically had more children, certain conditions may create incentives to limit fertility. The aftermath of the Ming collapse appears to be one such case.

Equation (1) is estimated separately for two subsamples: family lines with above-average numbers of sons and those with below-average numbers in a given generation. These sons constitute the sibling set from the perspective of next-generation males. Figure 6 presents the estimated effects on elite attainment for both groups.

[12]One exception is that shorter maternal lifespan in the first generation is positively associated with outmigration, possibly because the early death of the mother released younger couples from caregiving obligations, facilitating their decision to move.

Figure 6: Fertility and Elite Attainment



Notes: Figure shows effect on elite attainment for two subsamples, those family lines with more than the median number of brothers in that generation, versus the family lines that has less than or equal to the median number of brothers in that generation. Dependent variable is elite indicator. Estimation of equation (1) by OLS. Shown are 90 percent confidence intervals based on standard errors clustered on first-generation couple.

Elite attainment is similar across the two groups in generations 2 and 5 but diverges in generations 3 and 4. In these middle generations, families with fewer sons exhibit substantially higher rates of elite attainment, with the largest gap observed in generation 3—the pivotal generation for the reversal in elite status (Table 4). This pattern suggests that families responded to the post-Ming shock by limiting fertility to concentrate resources and educational investment on fewer sons. The result aligns with other evidence of fertility control in Ming–Qing China (Shiue 2017; Hu 2025).

5 Increased Emphasis on the *keju*

This section examines why families adopted the strategies that produced the elite reversal. We hypothesize that the fall of the Ming generated a collective trauma that redirected Tongcheng families toward wealth and status derived from *keju* success—membership in the scholar-official elite—rather than from landlordism or other careers. The uprisings and devastation of the late Ming left a deep impression on local elites, tempering their behavior and encouraging greater cooperation in tax collection while discouraging overt displays of privilege. In this context, pursuing

socially respected careers through the *keju* system appeared the most secure and legitimate path forward. Contemporary accounts describe widespread commitment to learning: studying continued late into the night, even for girls, and surplus agricultural income was devoted to paper and brushes, even among poorer but ambitious households. Tongcheng's families increasingly channeled their competitive energies into examination success as a means of social stability and self-preservation. Historical evidence supports this interpretation (Beattie 1979a,b).

5.1 Differences in Elite Persistence

If experiences during the fall of the Ming led treated families to place greater emphasis on *keju* careers, their descendants should exhibit higher rates of elite attainment relative to controls, consistent with the results in Table 4. The following presents micro-level evidence supporting this mechanism. We begin by examining relative intergenerational persistence. In models of parental investment such as Becker and Tomes (1986), higher investments raise the transmission of norms and preferences, increasing the intergenerational correlation in outcomes. If parents in treated family lines invested more heavily in steering their children toward *keju* careers, elite status should display greater intergenerational persistence among treated families than among controls. We test this prediction by estimating the canonical intergenerational regression model using OLS:

$$e_{ic(p)g} = \alpha + \omega_1 e_{ic(p)g-1} + X\psi + \epsilon_{ic(p)g}. \tag{3}$$

Here, $e_{ic(p)g}$ is the elite indicator for son, $e_{ic(p)g-1}$ is the indicator for his father, and the vector X includes generation and birth year fixed effects. Coefficient ω_1 is a measure of elite persistence, because a higher ω_1 means that elite attainment transmits more strongly to the son (typically, $0 < \omega_1 < 1$). We estimate equation (3) separately for treated and control family lines. To ensure that the results are not directly influenced by the fall of Ming shock, only the post-shock observations of generations 3, 4, and 5 are employed. Alternatively, a pooled version of equation (3) allows the intergenerational parameter to vary for treated and control descendants:

$$e_{ic(p)g} = \alpha + \omega_1 e_{ic(p)g-1} + \omega_2 \left\{ [I[t=g] \times d_p] \times e_{ic(p)g-1} \right\} + \omega_3 [I[t=g] \times d_p] + X\psi + \epsilon_{ic(p)g}. \tag{4}$$

In equation (4), parameter ω_2 measures the difference in intergenerational elite persistence between treatment and control observations.

Results from estimating equations (3) and (4) are reported in Table 6. In the pooled specification, the intergenerational transmission coefficient for treated family lines is 0.334 (= 0.091 + 0.243), roughly three times that of control family lines (Table 6, column 1). Separate regressions yield a similar estimate for treated families (0.329), while the corresponding coefficient for controls remains less than half as large. The higher degree of elite persistence among treated families is consistent with greater parental investment in children's *keju* preparation. Moreover, this difference

Table 6: Intergenerational Transmission of Elite Status: Treated vs. Control Descendants

	(1) Pooled	(2) Treated	(3) Control
Father Elite	0.091	0.329**	0.152+
	(0.086)	(0.033)	(0.087)
Father Elite x Treated	0.243**		
	(0.091)		
Treated	0.011		
	(0.017)		
N	4,755	4,284	436

Notes: Dependent variable is son elite status indicator. Estimation of equation (4) in column (1) and equation (3) in columns (2) and (3). Also included are generation as well as birth year fixed effects. Robust standard errors clustered at the level of the treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

in intergenerational mobility emerges only after the fall of the Ming.[13]

Turning to absolute intergenerational mobility, Table 7 reports transition matrices of father–son elite status for treated and control family lines. Among control descendants (Panel A), 83.3 percent of sons of elite fathers fail to attain elite status themselves. In contrast, the corresponding share among treated descendants is 58.1 percent (Panel B), implying that downward mobility in elite status is more than 30 percent lower for sons in treated families.

Upward mobility also differs sharply between the two groups. Among control family lines, 2.1 percent of non-elite fathers have sons who attain elite status, compared with 5.8 percent among treated families (Table 7). Thus, upward mobility in treated family lines is nearly three times that of control family lines. These results on absolute mobility complement the relative persistence estimates, reinforcing the interpretation that the greater intergenerational transmission of trauma and adaptation among treated families contributed to the reversal in elite attainment.

5.2 Mechanisms of Elite Persistence

Which factors facilitate or hinder the intergenerational transmission of norms within families? Face-to-face interaction is likely central to passing on the tacit knowledge required for *keju* success. Such knowledge is rarely codified in writing and depends heavily on personal guidance (Polanyi 1966). To proxy for the intensity of direct interaction, we examine whether elite persistence

[13]Using data from the first and second pre-shock generations, we find no significant difference in elite persistence between treated and control samples prior to the shock.

Table 7: Absolute Mobility of Elites: Treatment versus Control Descendants

Panel A: Control Descendants

		Father: Not Elite	Father: Elite
Son	Not Elite	378 (97.9%)	60 (83.3%)
	Elite	8 (2.1%)	12 (16.7%)
	All	386 (100.0%)	72 (100.0%)

Panel B: Treated Descendants

		Father: Not Elite	Father: Elite
Son	Not Elite	3,309 (94.2%)	409 (58.1%)
	Elite	204 (5.8%)	295 (41.9%)
	All	3,513 (100.0%)	704 (100.0%)

Notes: Table shows transition matrix for intergenerational mobility in being elite. Results for post-shock period using generations 3, 4, and 5.

depends on the extent of lifetime overlap between parents and sons. Specifically, we estimate the following generalization of equation (3):

$$e_{ic(p)g} = \alpha + \omega_1 e_{ic(p)g-1} + \omega_2 \left[Z_{ic(p)g} \times e_{ic(p)g-1} \right] + \omega_3 Z_{ic(p)g} + X\psi + \epsilon_{ic(p)g}. \tag{5}$$

We consider three definitions of $Z_{ic(p)g}$: (1) an indicator equal to one if father–son lifetimes overlap by more than 15 years; (2) an indicator for mother–son overlaps exceeding 15 years; and (3) an indicator for average overlap between both parents and the son of at least 15 years. These measures capture the notion that sustained parental interaction during childhood is important for skill formation and that both parents contribute (e.g., Luis García, Heckman, Leaf, and José Prados 2020; Doepke, Sorrenti, and Zilibotti 2019). Results are reported in Table 8.

Table 8: Determinants of Within-Family Intergenerational Transmission of Norms

	(1)	(2)	(3)	(4)
	Lifetime Overlap			Changing
	Parent = Father	Parent = Mother	Parent = Father and Mother	Location
Father Elite	0.146*	0.198*	0.077	0.313**
	(0.072)	(0.008)	(0.078)	(0.042)
Father Elite x High Overlap	0.139+	0.088	0.203*	
	(0.088)	(0.077)	(0.089)	
Father Elite x Changing Loc.				−0.230**
				(0.084)
High Overlap	0.022	−0.035	0.018	
	(0.019)	(0.029)	(0.019)	
Changing Location				0.086*
				(0.041)
N	4,211	4,211	4,211	4,211

Notes: Dependent variable is son elite status indicator. Sample is all treated family lines in generations 3, 4, and 5. High Overlap is 15 or more years of overlap in lifetime between parents and son as described in text. Changing Location is younger generation living in different village or town than parent generation. Also included are male father's status in generation 1 as well as generation and birth year fixed effects. Robust standard errors clustered at the level of the treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

Table 8, column (1), shows that the correlation between father and son elite status is roughly twice as strong when their lifetimes overlap by more than 15 years. This supports the hypothesis that face-to-face interaction strengthens elite persistence by facilitating the transmission of tacit knowledge. Using lifetime overlap with the mother instead yields a positive but imprecisely estimated coefficient (column 2).

The preceding measures capture overlap with one parent only. A natural question is whether interaction with one parent can substitute for interaction with the other. In column (1), overlap is high if the father lives at least 15 years with the son even if the mother dies in infancy, and vice versa in column (2). To address substitutability, we construct a third measure based on the average overlap between both parents and the son, equal to one if the combined overlap exceeds 30 years.

In this specification, the interaction coefficient is 0.203 (column 3), larger than in either the

father-only or mother-only regressions. This suggests that both parents contribute to transmitting elite-related skills and that their roles are partially substitutable. Consistent with this interpretation, the father's elite status alone has little explanatory power once overlap with both parents is included (column 3).

We next consider whether physical separation limits intergenerational knowledge transfer. Using residence data, we define $Z_{ic(p)g} = 1$ if the son resides in a different village than his parents, and 0 otherwise. This measure also captures the influence of extended kin, such as uncles and aunts. Results in column (4) show that mobility is associated with lower intergenerational persistence (coefficient of -0.23), consistent with reduced transmission when generations are geographically separated.[14]

Overall, the evidence suggests that intergenerational transmission of norms within families played a central role in sustaining elite persistence across the Ming–Qing transition.

[14]This does not contradict earlier findings that outmigration from historically destroyed regions improved outcomes (Figure 5), since that result compared treated and control lineages in generation 2, whereas here the analysis covers generations 3–5 and defines moves between any two villages.

6 Conclusions

This paper uses multigenerational family data from central China to examine how families responded to a major historical shock—the fall of the Ming dynasty. The results reveal that such a disruption influences economic behavior for at least five generations, but its long-run consequences differ qualitatively from its short-run impact depending on whether we take the people or places dimension as our benchmark. At the heart of this persistence lies families' ability to adapt to dramatically altered circumstances.

We find that the long-run effects of the shock were far less negative for individuals than for the regions in which they lived. This contrast between the resilience of people and that of places provides new evidence on the differential transmission of shocks across space and family lines. Future research could further investigate what drives the recovery of regions beyond the resilience of their inhabitants. The genealogical data employed here—linking individuals to both family and locality—offers a valuable foundation for exploring these questions.

The strategies documented in this study may help explain Tongcheng's remarkable recovery during the Qing dynasty, when it rose in the national hierarchy of elite attainment relative to its standing under the Ming. Yet a complete understanding of long-run inequality requires examining not only successful cases of adaptation but also those that failed to recover. Comparing Tongcheng's trajectory with less resilient regions or families would provide a fuller picture of inequality and the rise and fall of elites.

This study has not addressed how kinship-based networks compare with geographically based ones in shaping economic behavior. While the evidence here underscores the strength of within-family transmission of norms, it remains an open question how these mechanisms differ from those that operate within local communities. Because both family and neighborhood ties foster close social interaction, Chinese clan genealogies offer a promising context for studying how kinship and geographic proximity jointly influence long-run economic outcomes.

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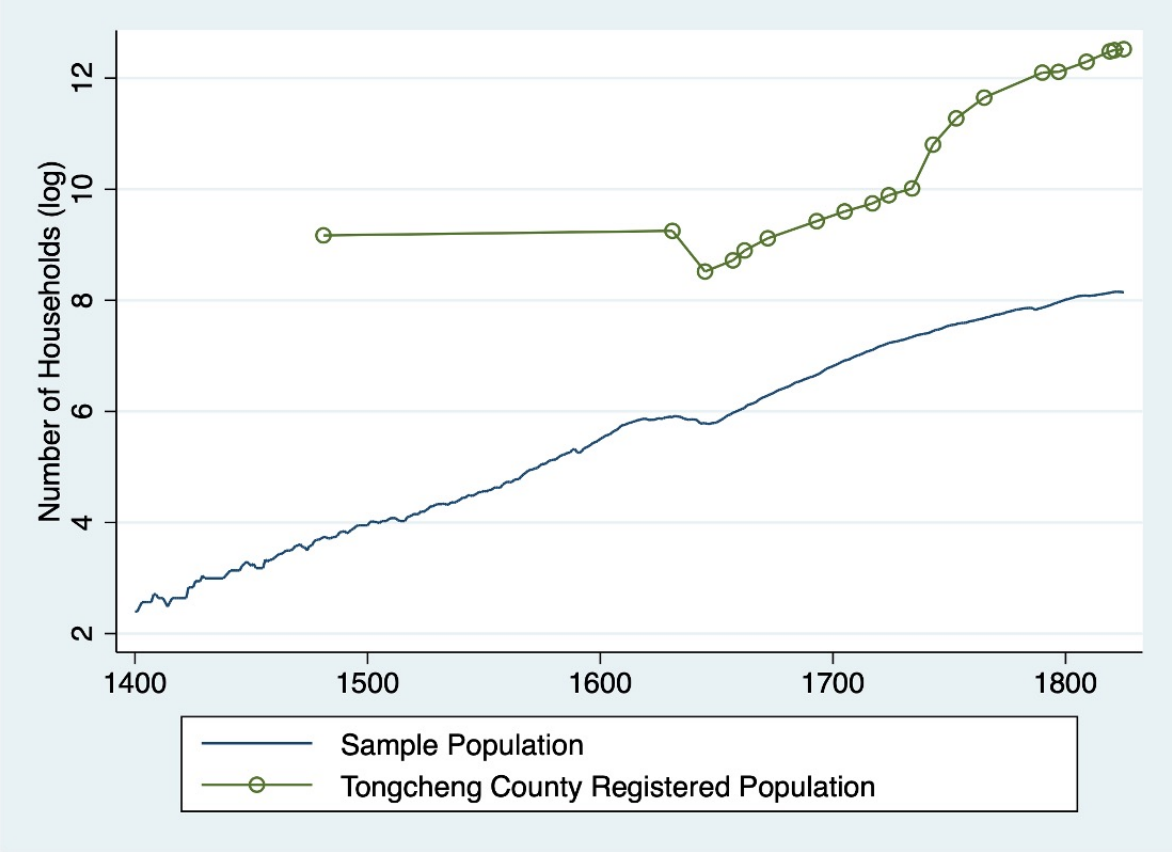
A Data

A.1 Sources and Characteristics

Data collection for this study originates with Ted Telford (1986a) and was subsequently expanded and refined by Telford and others. The present sample of seven Tongcheng genealogies builds on this foundation and is related to recent work by Shiue (2017, 2025). The genealogies record up to twenty generations, spanning births from 1298 during the Yuan dynasty (1271–1368) to deaths as late as 1929 in the post-imperial period. Owing to the family tree structure of genealogical data, observations become more numerous in later generations.

We rely on clan genealogies rather than official government records because the former provide higher-quality information. Figure A.1 compares Tongcheng population estimates derived from official tax registers with those from clan records.

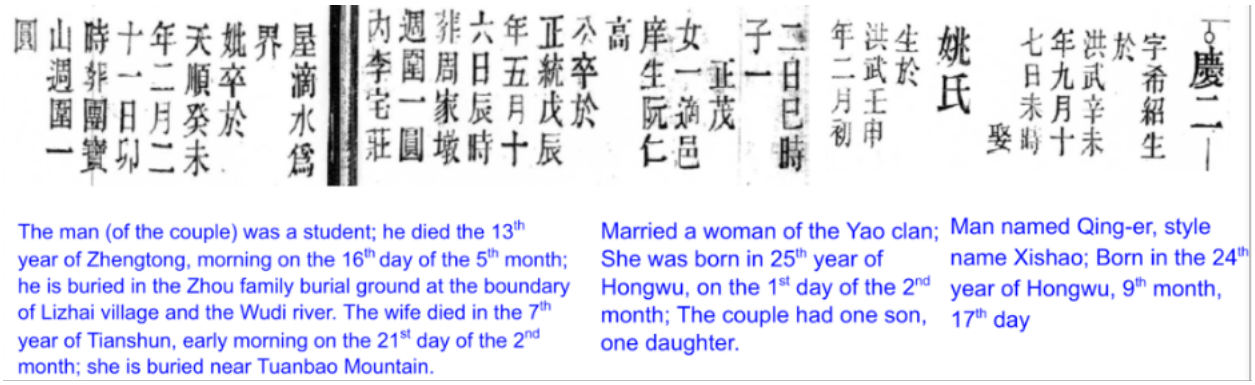
Figure A.1: Official versus Clan Data



Notes: Source of registered number of households is Beattie (1979a), Table 3. Sample population is number of head-of-households alive; authors computation.

Figure A.1 shows that relying on official population data for this period would produce misleading results. Official records display implausible short-term fluctuations inconsistent with known demographic patterns. For example, recorded population growth between 1734–43 was ten times

Figure A.2: Genealogy Example: Zhou clan from Tongcheng



Notes: Source is Zhou shi zhipu [Genealogy of the Zhou lineage].

higher than between 1724–34, while in other intervals official counts stagnate even as clan records show steady growth. As illustrated in Figure A.1, such inconsistencies make strong inferences based on official data unreliable, both in Tongcheng and in comparable settings of the period.

Family genealogies, by contrast, were compiled and maintained by clans and typically updated every two or three generations to prevent information loss. Their primary function was ritual: genealogical records were essential for ancestral worship and often included detailed burial locations. Figure A.2 provides an example from Tongcheng's Zhou clan. The entry records that the man was buried at the boundary of Lizhai village and the Wudi River—the family's burial site—and notes his lifespan (1392–1448) by imperial reign year. Chinese genealogies systematically recorded all males in the patrilineal line for ritual reasons.

Genealogies also served important economic and social functions. Beyond their ritual purpose, they provided a framework for managing resources and coordinating lineage affairs. As noted by Freedman (1971), genealogies were instruments for regulating access to communal assets and organizing defense against neighboring lineages, while Szonyi (2002) emphasized their role in negotiating tax obligations between households and the state. Viewed through these lenses, genealogies fulfilled key economic and administrative purposes.

These functions were closely linked to the governance structure of the Ming and Qing. The imperial state—explicitly or implicitly—delegated much of local administration to clans, including the management of irrigation, famine relief, and grain storage. A clan's capacity to perform these functions depended on its resources and membership size. For instance, lineage school fees, typically assessed in proportion to income, provide reliable evidence on intralineage income variation. Clans also acted as quasi-judicial bodies: internal regulations often served as the first level of adjudication in cases of misconduct (Spence and Wills 1979).

Clan membership thus clarified obligations and loyalties during periods of uncertainty or conflict. Genealogies served as communal archives containing practical information on family rules, property rights, claims to corporately owned land, and fee schedules for lineage schools. These internal laws were not static; they evolved with changing circumstances. In Tongcheng, for exam-

ple, many clan rules were revised after the Ming collapse to promote prosocial behavior and to encourage pursuit of keju careers (Beattie 1979a).

The detailed recording of family members—through biographical entries, obituaries, and documentation of degrees or appointments—reflects the role of lineages as units of collective organization. The shared belief in the importance of genealogical accuracy likely enhanced oversight in recordkeeping. Unlike official household registers, which linked population counts to taxation and thus created incentives for underreporting, clan genealogies encouraged accuracy and completeness. This difference in reporting incentives explains the discrepancy between official and clan population data shown in Figure A.1.

A.2 Elites, Social Status, and Income

Being part of the elite is measured by an indicator variable equal to one if a man was studying for or had successfully passed the civil service examination (women could not take part in the civil service examination). The coding is given in Table A.1, column (3). This elite indicator is related to a broader set of standardized descriptors which classify a man's social status into 23 ranked categories. The 23 categories are shown in column (1) of Table A.1. All measures in the genealogies are lifetime measures, and elite or broader social status would be the highest lifetime achievement.

Table A.1: Elite Status and Genealogy Descriptors

(1) Social Status	(2) Description	(3) Elite
0	No title, degree, and evidence of wealth	0
1	Honorary or posthumous title; village head; other honors	0
2	Multiple wives in consecutive marriage (two or more not living at the same time)	0
3	Evidence of moderate wealth of 1st degree family, incl. minor and expectant official, lower level degree (*shengyuan, jiansheng*), and official student	0
4	Wealthy family member 2nd degree, incl. official, *juren*, *gongsheng*, and *jinshi*	0
5	Wealthy family member 1st degree, incl. official, *juren*, *gongsheng*, and *jinshi*	0
6	Educated, scholar, no degrees or office; editor of genealogy; refused office, or prepared but did not pass exam	0
7	Two or more wives or concubines at the same time	0
8	Substantial evidence of wealth and property; set up lineage estates, large donations, philantrophy; wealthy farmer, landowner, or merchant	0
9	Official Student	1
10	Military *shengyuan*, minor military office	0
11	Purchased *jiansheng* and/or purchased office	0
12	Student of the Imperial Academy	1
13	Civil *shengyuan*; minor civil office	1
14	Expectant official; no degrees	0
15	Expectant official one of the lower degrees	1
16	Military *juren, jinshi*; major military office	1
17	Civil official with no degree, minor degree, or purchased degree	0
18	*juren, gongsheng*, with no office	1
19	*juren, gongsheng*; with expectant office	1
20	*jinshi*, no office	1
21	*jinshi* with official provincial post or expectant official	1
22	*jinshi* with top-level position in Imperial bureaucracy (Hanlin Academy, Grand Secretariat, Five Boards, Prime Minister)	1

Notes: Table gives information on a man's elite attainment (column 3) based on standardized descriptors in the genealogies (column 2) that map ordinally into social status (column 1). Analysis based on Telford (1986a, 1992), Chang (1955, 1962), Ho (1962), and Eberhard (1962).

There were multiple pathways to elevated social status in imperial China. Monetary wealth was one, but wealthy farmers, landowners, and merchants did not occupy the highest social ranks.[15] The keju conferred the highest status, and our elite indicator is designed to capture this dimension (Table A.1, column 3). The definition excludes purchased degrees but includes men officially recognized as *keju* students (alternative definitions are discussed in Section D.3). There is broad agreement that *keju* achievement represented the apex of social prestige in imperial China (Ho 1962; Chen, Kung, and Ma 2020). Local genealogies from Tongcheng reinforce this view: the Yao clan genealogy declared that success in the keju was "the only way for the lineage to become great," while the P'an clan asserted that a sustained scholarly tradition would ensure descendants "never

[15]Unless they also held civil service examination (*keju*) degrees, these individuals belonged to class 8 (Table A.1).

in a thousand years" would fall to commoner status (Beattie 1979a).

Within the *keju* hierarchy, shengyuan was the entry-level degree, awarded upon passing local examinations. Exceptional shengyuan could receive the gongsheng ("imperial student") title, while higher levels included juren (provincial graduates) and jinshi (national graduates). The structure was sequential: candidates had to earn lower degrees before attempting higher ones.[16] There were no formal age restrictions, but the examinations required extensive study, so successful jinshi were typically in their twenties or older, and many men remained shengyuan well into middle age. Those who failed to advance often pursued alternative elite roles, assisting officials, managing local affairs, settling disputes, organizing public works, or providing education (Chang 1962). Thus, *keju* preparation itself yielded nontrivial social and economic returns even for unsuccessful candidates.

Elite status translated directly into differences in income and wealth. Prior studies document substantial monetary returns to *keju* achievement (Ho 1962; Chen, Kung, and Ma 2020). Chang (1962) provides detailed evidence on the earnings of jinshi and officials, noting that degree level strongly correlated with rank in the nine-tier official hierarchy of the late nineteenth century. A district magistrate held seventh-rank status, while a provincial governor ranked second. Although the mapping between degree and position was not deterministic, higher degrees generally led to higher-ranking and better-remunerated posts. Reaching top administrative positions without a juren or jinshi degree was exceedingly rare, while most jinshi held posts above the district level.

Degree level is a valuable proxy for socioeconomic position because it is consistently recorded in the genealogies. While official salaries are known for certain periods (Chang 1962), they constituted only a fraction of total compensation. Informal income sources—such as local "contributions" and gifts—often exceeded formal pay, though systematic data on these are scarce. Beyond material rewards, *keju* success also generated social capital: examination participation facilitated extensive personal networks that shaped later careers and influence (Bai, Jia, and Yang 2023).

The seven genealogies on which this research draws are listed in section 6. Table A.2 describes the variables employed in this study.

[16] Although degrees and offices were occasionally sold, our baseline specification keeps these cases separately; see Section D.3 for further analysis.

Table A.2: Variable List

Variable Name	Description
Husband	
Birth Year	Year converted from emperor reign to AD
Birth Month	Lunar month mapped into solar calendar month
Year of Death	Year converted from emperor reign to AD
Month of Death	Lunar month mapped into solar calendar month
Social Status	Highest lifetime status based on standardized descriptors; ordinal ranking with 23 categories, see Table A.1
Elite Attainment	Participation and success in civil service examination (*keju*); indicator variable, see Table A.1
Residence	Village or town in Tongcheng county in which husband resided; does not account for temporary absences
Distance to Tongcheng city	Straight-line distance from a given village to the capital, Tongcheng city
Burial Information	Indicator whether the record includes burial information
Number of sons	Total number of sons from all female partners the husband had
Clan name	Name of one of seven male clans
Generation	Number of generation in five-generation analysis
Vital Data Indicator	Categorical variable for estimated or adjusted vita data
Wife	
Birth Year	Year converted from emperor reign to AD
Birth Month	Lunar month mapped into solar calendar month
Year of Death	Year converted from emperor reign to AD
Month of Death	Lunar month mapped into solar calendar month
First Wife	Variable is equal to 1 if wife was the first-married wife of a given husband, 0 if not or if husband had only one lifetime wife
Clan name	Name of one of 130 birth clans of the wives

Notes: Social status of father and grandfather are variables analogous to social status of husband. Mapping of lunar to solar calendar follows Shiue and Keller (2007).

Information on clan members is organized in the data set by couple: husband, wife, and their children. If a husband had more than one wife during his lifetime, typically because his first wife died early, this husband will appear in another couple with their children.

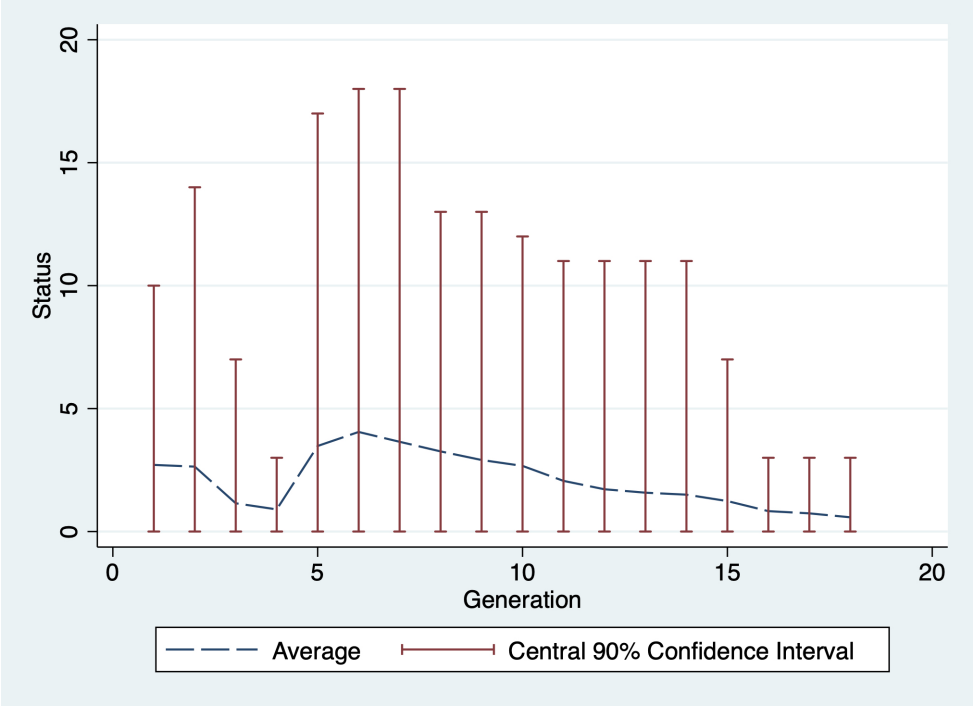
B Sample Bias

Genealogies generally tend to be available for richer clans not least because it takes resources and skills both to produce and to preserve a genealogy. Section 3.1 compares Tongcheng county in terms of the share of high-status men to a region that would be nationally representative. That section also examines the extent to which our sample from Tongcheng, consisting of seven particular clans, differs from a nationally representative sample. The following extends this analysis in several dimensions.

B.1 Progenitor, Selection, and Recall Bias

One form of bias concerns the timing of when a genealogy is first compiled. To what extent do systematic records on a particular clan exist because there was a particularly successful man, which also gave the clan the resources to have a genealogy?

Figure A.3: Average Clan Status by Generation



Notes: Shown are average and 90% confidence interval of a clan's average social status for the first to the eighteenth generation. Status varies from 0 to 22 (Table A.1).

Figure A.3 shows average social status by generation across clans. Note that clan status is not typically highest in the first generation, the progenitor, but rather, it is highest several generations later. That it does not take a *jinshi* for a clan to have a genealogy is true also in Tongcheng, where the compilation of family records of P'an clan started with a man who was a disppointed examinee who spent much of his life teaching (Beattie 1979a). The decline in average social status from the

6th generation on, evident also in Table 2, is due to China's limited economic development during the Qing combined with a lower chance to succeed in the *keju* due to a roughly constant number of official positions despite rapid population growth.

One may also ask whether a lineage will dissolve itself and cease to produce family records as soon as there are no (more) successful *keju* graduates from the lineage. For Tongcheng county, the answer to this is no, as there were several large and well-organized lineages, such as the T'ang, Kuei, and the Tung, whose members never achieved *keju* degrees (Beattie 1979a). Furthermore, recall bias–that infrequent ex-post recording might lead to overstated achievements–is unlikely in the present case because Tongcheng lineages updated their genealogies frequently (Beattie 1979a).

B.2 Missing Records

B.2.1 Vital Data

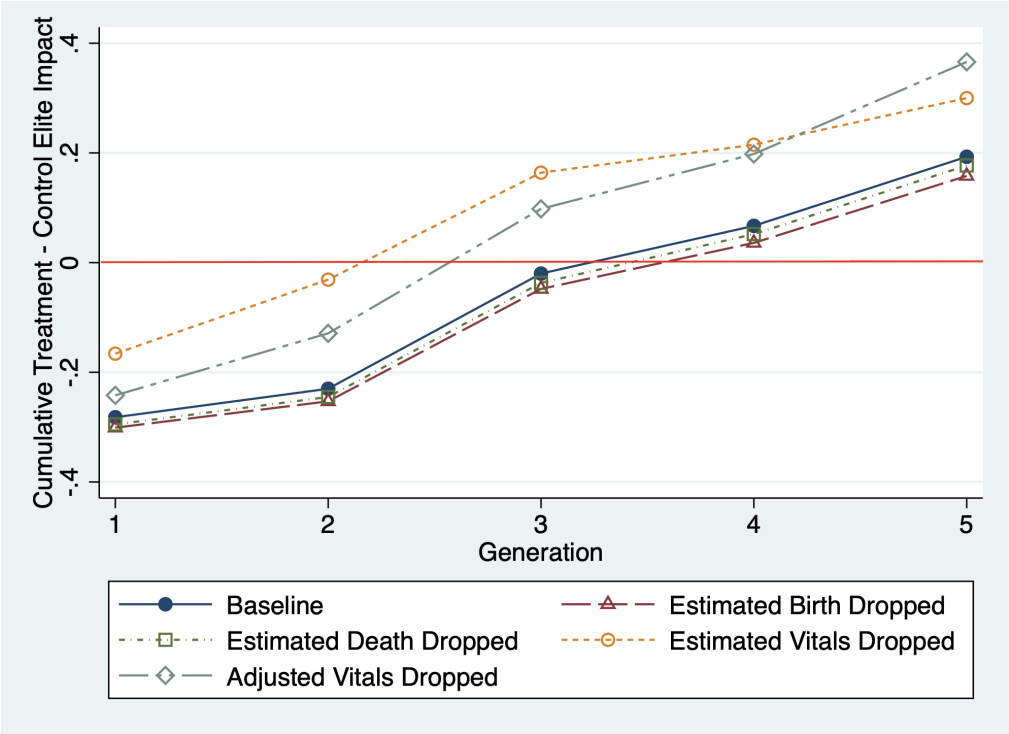
Information on vital statistics in the dataset is relatively complete compared to other Chinese family genealogies.[17] Specifically, of the men potentially treated by the fall of the Ming (born 1590 to 1644) we know their year of death in 485 of the cases (99%). Vital statistics are employed for verifying the intergenerational links in the data; we drop all family lines that cannot be hard-matched on vitals (year and month of birth, as well as year and month of death).

Importantly, some of the vital data has been adjusted or estimated. This is based in part on auxiliary information in the genealogies. For example, a genealogy may state that a particular person "died in the year the Taipings entered Tongcheng". This provides indirect information on the year of death of this person, but because the Taipings entered Tongcheng in two years (1853-1854), there remains measurement error in this variable. Other vitals are estimated using model life tables, a well-established demographic tool, as described in Telford (1990), or adjusted in the process of cleaning the data from orthographic errors.

One might be concerned that any resulting measurement error strongly influences the estimation results. We therefore compare results using different approaches for such data, see Figure A.4.

[17] Telford (1986b) provides a survey of almost 1,000 genealogies from all over China.

Figure A.4: Incomplete Vital Data



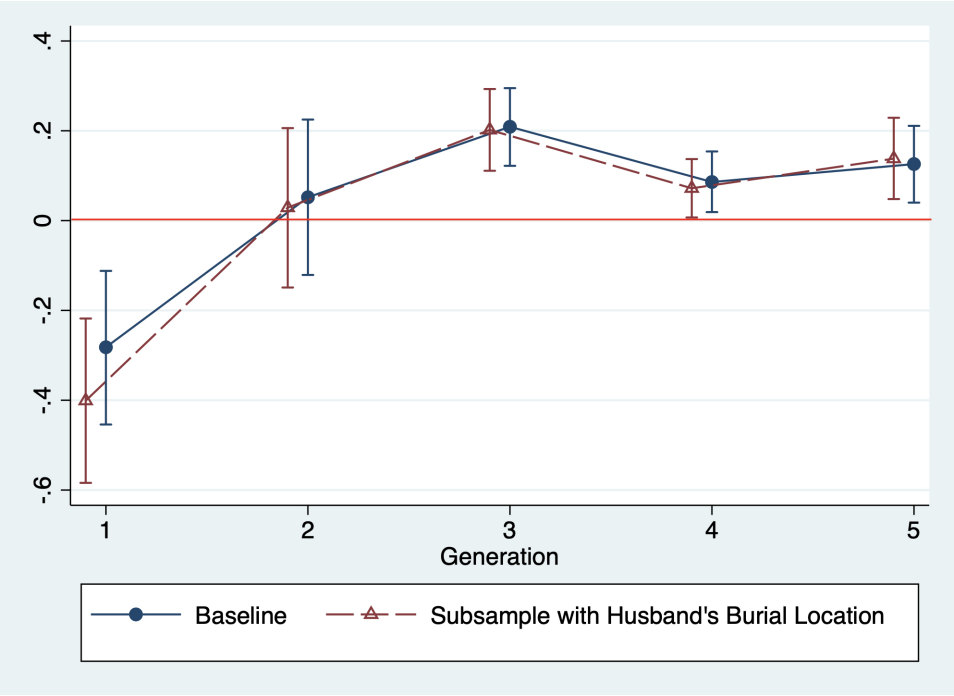
Notes: Cumulative estimates based on equation (1) shown for the five samples indicated.

Figure A.4 indicates that the qualitative pattern of elite reversal is obtained across a range of treatments for non-recorded data. Quantitatively, moreover, the reversal can be stronger *or* weaker than what is obtained in the baseline approach. Because limiting the analysis to men with complete vital statistics means incurring a positive selection bias–Telford (1990) shows that lower-status men in this setting are more likely to have incomplete vitals–, in the light of Figure A.4 this study employs the augmented vital data as the baseline.

B.2.2 Information on Residence Location

Information on in which village a family line lives in a particular generation is based on a range of information either in the body of the genealogy or in one of its prefaces. Residence information is available for 94% of couples in the seven Tongcheng clans (location of the head of household). Given that in some cases residence location is partially inferred, measurement error in this variable might play a role. We use information on burial location in the genealogy to gauge the influence of this. Because of the key role of the genealogy for ancestral worship, information on burial location–if known–will be extremely accurate (see Figure A.2 for an example of how genealogies report burial location). We hypothesize that when burial location of a man is unavailable, his residence information is also subject to more measurement error than otherwise. In the following, the baseline results are contrasted with results for the subsample for which there is information on burial location of the husband. Results are shown in Figure A.5.

Figure A.5: The Role of Estimated Residence Location



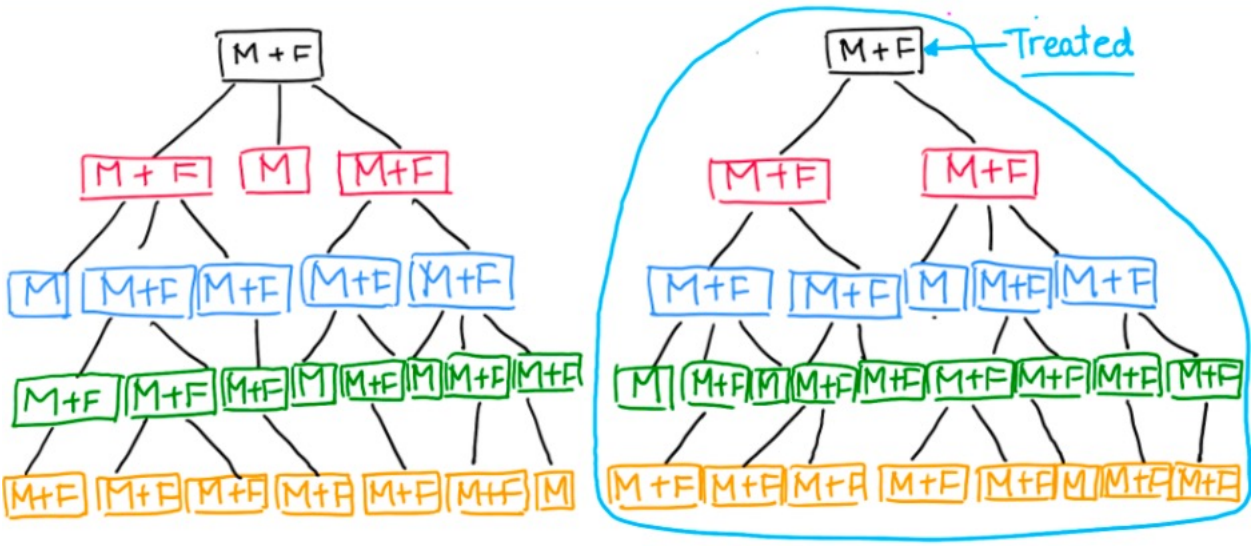
Notes: Estimates of equation (1) for two different samples, the baseline as in Table 4, column (4), and the subsample in which husband's burial location information is present (N = 7,430).

Figure A.5 shows that whether we include observations with missing burial information or not, there is evidence for an elite reversal. The first-generation negative impact on elite attainment is somewhat larger if one excludes observations for which burial location is unknown; this is consistent with classical measurment error. Overall, patterns are similar and based on the results in Figure A.5 it is unlikely that estimated residence location affects the findings in a major way.

C Sample Changes Due to Five Linked Generations

The notion of treatment of people is the idea that all family lines going back to a treated first-generation couple are treated in the sense of people, irrespective of where they currently live. This is illustrated in Figure A.6. Shown in the top row are two first-generation couples, each consisting of a male (M) and a female (F). The couple on the right resided in a location belonging to a region of Tongcheng that experienced high levels of mortality, and is therefore treated, while the first-generation couple on the left lived in a location belonging to a region that was affected less, and is therefore part of the control sample. Treatment of people means that the assignment from the first generation is carried forward to subsequent generations, irrespective of where each family line lives in a particular generation. Thus, all encircled family lines on the right side of Figure A.6 are treated in the sense of treatment of people. In contrast, all family lines on the left side that descend from a couple living in the first generation in a region with lower mortality are control family lines.

Figure A.6: Treatment of People



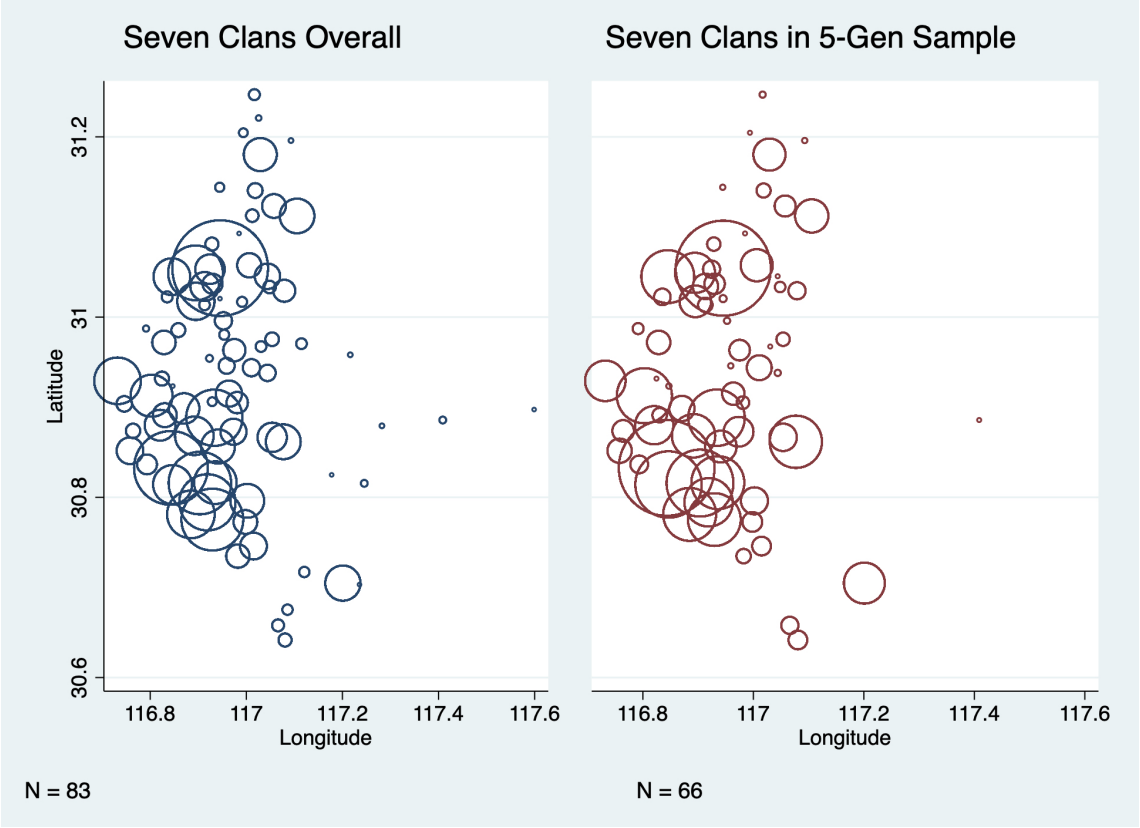
Notes: Shown are two first-generation couples (M and F) and their descendants in the following four generations. Family lines on the right are treated in the sense of treatment of people, because they descend from a couple that lived in a treated location in the first generation, and conversely family lines on the left a control because they descend from a first generation couple that resided in a control location. Family lines involving single men are dropped from the five generation sample.

Notice that in the second generation, there is a control male who did not marry (second row, left side of Figure A.6). During the sample period in China, generally between 10 and 20% of males did not marry (in contrast, marriage was virtually certain for women). The two main reasons for non-marriage in Ming-Qing Tongcheng were death as a child due to illness and lack of resources to start a new household (Telford 1986a). Migration outside of the county was another reason because

it could prevent the family in Tongcheng to update the genealogy with that man's information; however, outmigration over such longer distances was rare. Because the Ming collapse might raise child mortality or reduce a family's resources, the shock itself could affect the length of family lines and therefore the composition of our five-generation estimation sample. The following examines how these factors affect sample composition and the results. This is possible because males such as the single second-generation control man in Figure A.6 are included in the genealogies as children but they do not re-appear as married husbands.

We begin with a comparison of geographic coverage of the samples. Figure A.7 shows the extent to which the five-generationally linked sample is a subset of the overall sample in terms of villages that are included. There 83 locations in the sample overall, which shrinks to 66 when the sample is constrained to have at least five consecutive generations after the fall of the Ming.

Figure A.7: Long Family Lines and Selection in Terms of Geography



Notes: Shown are residence locations of members of the seven male clans (1) overall on the left, and for (2) couples in the five generation sample on the right. Size of circle is proportional to number of heads of household.

This indicates that the five-generation sample shares the same broad patterns of residence that are present in the seven genealogies overall. Furthermore, it is primarily locations with relatively few households that disappear with the sample constraint.

Next, we turn to the impact of the shock on the probability to marry. This is informative on the composition of the five generation sample because only men that marry can have children

that would be recorded in the genealogy. First-generation couples have a total of N = 806 male children. If one of these male's parents resided in an area of high mortality ('treated') of Tongcheng, the male child had a 71.3% chance of getting married, while if a male's parents were part of the control observations, his chance of marriage was 78.6%. Thus, sons of control couples had a higher chance of marriage, although with a p-value for the difference-in-means test of 13.4%, there is also considerable heterogeneity. The following expands on this by estimating the following equation using OLS:

$$married_{ip} = \alpha + \beta_1 d_p + \beta_f hfstat_{c0} + X'\gamma + u_{ip}, \tag{6}$$

where $married_{ic(p)}$ is an indicator whether son i of first-generation couple p married later in his lifetime, or not. The variable d_p is equal to one if his parents were treated in the fall of the Ming dynasty, zero otherwise. The variable $hfstat_{c0}$ is the social status of the son's grandfather. The vector includes birth year as well as male and female clan fixed effects. Table A.3 shows the results.

Table A.3: The Chance of Continuing the Family Line

	(1)	(2)	(3)	(4)
Variable Z =			Elite	Social Status
Ming Shock	-0.105^{+}	-0.018	-0.056	-0.033
	(0.059)	(0.072)	(0.095)	(0.099)
Ming Shock x Z			0.202	0.006
			(0.135)	(0.011)
Z			0.054	0.017
			(0.135)	(0.011)
Fixed Effects				
Birth Year	Y	Y	Y	Y
Male Clan	N	Y	Y	Y
Female Clan	N	Y	Y	Y
N	801	788	788	788

Notes: Dependent variable is marriage indicator, measured by whether a son is listed as an adult husband in the genealogy or not. Sample is all male children of first-generation couples. Estimation by OLS. Measure of Z is for first generation. Social status of the son's grandfather included in all specifications. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

According to the first specification, the Ming shock lowered the probability of marriage by about ten percentage points (Table A.3, column (1)). Much of this appears to be due to time-invariant differences across clans, however. Once fixed effects for the clans of father and mother are included, the Ming shock's effect on marriage probability is close to zero (column (2)). In contrast, the negative impact of the Ming shock on first-generation elite attainment does not depend on

Table A.4: The Length of Family Lines and Sample Composition

	(1)	(2)	(3)	(4)	(5)	(6)
	All			Five Generations		
	Control	Treatment	p-value	Control	Treatment	p-value
	N = 54	N = 436		N = 21	N = 142	
A. Test of Equality of Means						
Elite	0.24	0.30	0.35	0.33	0.27	0.58
B. Tests of Equality of Distribution						
Social Status			0.31			0.29

Notes: Statistics for first-generation males in two samples; in columns (1) to (3) on the left are all first-generation males–birth year between 1590 and 1644– in the seven clans, while on the right in columns (4) to (6) statistics are reported for the subset of them that can be linked at least over five generations. Sample size N = 490 on left, N = 163 on right side.Test for equality of distribution is Kolmogorov-Smirnov.

whether clan effects are controlled for or not (see Table 4).

We also augment equation (6) with interactions to capture possible non-linear effects. An interaction variable using father elite status enters with a positive point estimate, indicating that sons of treated fathers tend to have higher chance to marry if their father is elite; however, the coefficient is imprecisely estimated (see Table A.3, column (3)). Similar results are obtained for social status (Table A.3, column (4)). Overall, we do not estimate a strong impact of the fall of the Ming on the probability to marry. To the extent that this result from second-generation sons extends to later generations, we do not expect that the constraint of five linked generations greatly affects the sample.

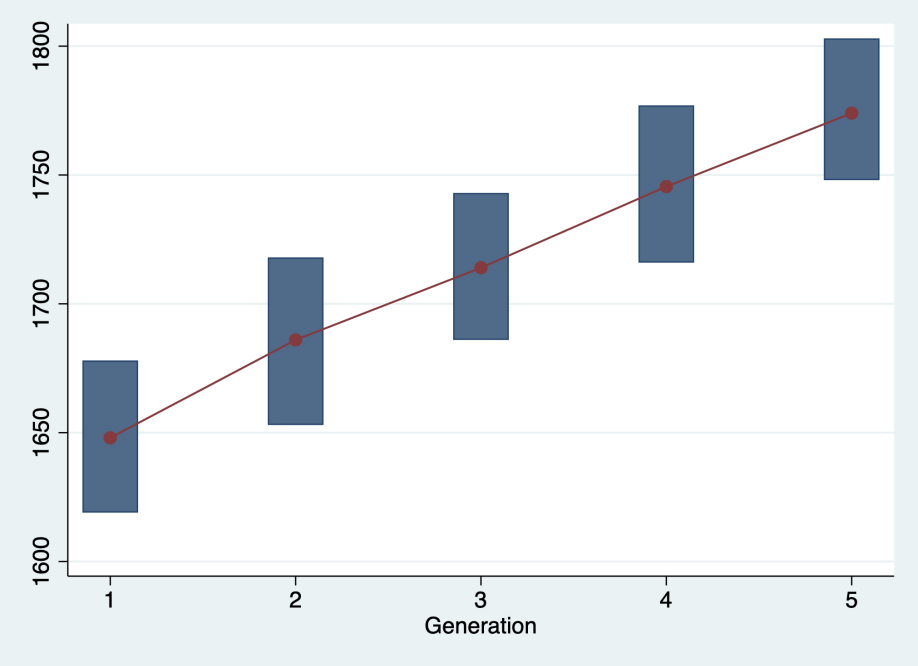
Another piece of evidence comes from comparing all first-generation males with the first-generation males that remain in the five generation linked sample. Table A.4 shows on the left statistics for the sample of all first-generation males (that is, born between 1590 and 1644). On the right, the same statistics are reported for the subset of first generation couples of family lines that go on for at least four more generations.

Overall, one third of all couples in these clans have at least one great-great-grandson in the fifth generation (163/490 = 0.33). In principle, this is consistent with considerable changes in the composition of the sample. However, actual changes of sample composition turn out to be limited. The share of control observations increases somewhat through imposing the constraint (from 11.0% to 12.8% (= 54/490 and 21/163, respectively; Table A.4). We also see that in contrast to the full sample, mean elite attainment of control men in the five generation sample exceeds that of treated men. This is the opposite of what one expects if the shock disproportionately eliminated relatively weak treated family lines. In general, any differences between treated and control family

line characteristics appear to be modest in size. Overall, the evidence in this section suggests that while the fall-of-Ming shock might have had a moderate impact on the probability to marry, it is unlikely that this is the main driver behind the elite reversal because it did not strongly affect the composition of the sample.

Information on lifetimes of these men in five generations is given in Figure A.8. The life of the typical man in the first generation begins around 1620 while the life of the typical man in the fifth generation ends in the early 19th century.

Figure A.8: Typical Lifetimes by Generation



Notes: Bars show median birth year and death year by generation, while the line giving the average life midpoint (1/2*(birth year + death year)) by generation.

D Additional Results

D.1 Regression Results for Figures in the Text

D.1.1 Treatment of People versus Treatment of Regions

In Figure 3 we compare cumulative point estimates for treatment of people and treatment of regions specifications. The corresponding regression results are in Table A.5.

Table A.5: Treatment of People versus Treatment of Regions

	Treatment of People		Treatment of Regions	
	By Generation	Cumulative Point Estimate	By Generation	Cumulative Point Estimate
Gen 1	-0.237^{**}	-0.237	-0.247^{**}	-0.247
	(0.100)		(0.104)	
Gen 2	-0.025	-0.262	-0.105	-0.352
	(0.115)		(0.107)	
Gen 3	0.183^{**}	-0.079	0.063	-0.289
	(0.047)		(0.058)	
Gen 4	0.100^{*}	0.021	0.057	-0.232
	(0.040)		(0.045)	
Gen 5	0.105^{*}	0.126	0.071^{*}	-0.161
	(0.047)		(0.029)	
Father Status	0.021^{**}		0.020^{**}	
	(0.002)		(0.002)	
Fixed Effects				
Generation	Y		Y	
Birth Year	Y		Y	
Mean d.p.	0.163		0.163	
N	8,074		8,074	

Notes: Dependent variable is elite indicator; sample consists of all men that constitute couples formed by male descendants of the first generation in generations 2, 3, 4, and 5, as well as the first generation males themselves. Estimation of equation (1) by OLS. Father Status is status of the husband's father in the first generation. Gen stands for generation, d.p. stands for dependent variable. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

Treatment of people and treatment of regions is equivalent in the first generation, because treatment at the level of people is based on the region in which these couples lived in the first generation. The reason why the slope coefficients for the first generation in Table A.5 are not

identical is cross-generation restrictions to conserve on the number of degrees of freedom. If only the first generation is considered, the two treatment definitions yield identical results. This is shown in Table A.6.

Table A.6: First Generation: Treatment of People and Treatment of Regions Are Equivalent

	Treatment of People	Treatment of Regions
Generation 1	-0.198^{*}	-0.198^{*}
	(0.089)	(0.089)
Father Status	0.043^{**}	0.043^{**}
	(0.008)	(0.008)
Fixed Effects Birth Year	Y	Y
N	1,670	1,670

Notes: Dependent variable is elite indicator; sample consists of all observations of the five generation sample in generation one. estimation by OLS. Father Status is status of the husband's father in the first generation. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

D.1.2 Ming Elites versus Ming Non-Elites

Figure 4 compares elite attainment over five generations for family lines that were Ming elites and for family lines that were not Ming elites. Table A.7 shows regression results that underlie Figure 4.

Table A.7: Elite Persistence: Reversal and the Role of Ming Elites

	Ming Elites	Ming Non Elites
Generation 1	−0.438**	−0.104
	(0.136)	(0.115)
Generation 2	0.017	0.013
	(0.204)	(0.078)
Generation 3	0.262**	0.077
	(0.076)	(0.055)
Generation 4	0.171*	−0.039
	(0.085)	(0.052)
Generation 5	0.154*	0.025
	(0.061)	(0.050)
Fixed Effects		
Generation	Y	
Birth Year	Y	
Male Clan	Y	
Female Clan	Y	
N	8,041	

Notes: Dependent variable is elite indicator; estimation by OLS of a generalized version of equation (1) that allows treatment coefficients, generation fixed effects, and first-generation Father status to vary by a Ming elite indicator. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

We see that Ming elites experienced the initial loss followed by a subsequent recovery more strongly than Ming non-elites.

D.2 Time Window for Treatment

Results depend on the definition of couples that are potentially affected by the fall of the Ming (first-generation couples). In the baseline, the definition of first-generation couples is all couples in which the male is born between 1590 and 1644. Results for four alternative definitions are shown in columns (2) to (5) of Table A.8.

Table A.8: Treatment Time Window – Alternative Definitions of First Generation Men

	(1)	(2)	(3)	(4)	(5)
First-Generation Males Birth Year	Baseline 1590-1644	1595-1644	1600-1644	1590-1639	1590-1634
Generation 1	−0.286**	−0.278**	−0.298**	−0.273*	−0.334**
	(0.104)	(0.105)	(0.112)	(0.105)	(0.105)
Generation 2	0.052	0.036	0.033	0.058	−0.003
	(0.106)	(0.106)	(0.112)	(0.105)	(0.104)
Generation 3	0.211**	0.172**	0.172**	0.220**	0.222**
	(0.052)	(0.051)	(0.055)	(0.052)	(0.050)
Generation 4	0.088*	0.077+	0.082*	0.092*	0.087*
	(0.041)	(0.041)	(0.038)	(0.041)	(0.039)
Generation 5	0.127*	0.111*	0.110*	0.129*	0.126*
	(0.052)	(0.050)	(0.052)	(0.052)	(0.049)
First-Generation Father Status	0.016**	0.016**	0.016**	0.016**	0.016**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
N	8,041	7,376	6,814	7,616	7,124

Notes: Dependent variable is elite status indicator; sample consists of all men and women in generations 2, 3, 4, and 5 that constitute couples formed by male descendants of the treatment (first) generation, as well as the first-generation couples themselves. Estimation of equation (1) by OLS with alternative samples. Samples differ in the definition of first generation males. Fixed effects for generation, birth year, male clan, and female clan included. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

Table A.8 shows that key findings are similar across alternative time window treatment definitions for first-generation couples. Specifically, in all alternative specifications the Ming shock leads to a first-generation decline followed by a long-run increase in elite attainment. We conclude that the finding of an elite attainment reversal does not strongly depend on the definition of the time window of treatment for first-generation couples.

D.3 Elite Definition

The baseline definition of elite is an indicator variable that is equal to one for graduates of the *keju* at all three levels (local, provincial, and national), and it is also equal to one for men who were official students preparing for the *keju*, see Table A.1 . The following compares elite attainment over five generations for four alternative definitions of elite, see Table A.9 for results.

Table A.9: Alternative Definitions of Elite

Elite Definition	(1) Baseline	(2) Purchased	(3) Other Educated	(4) Juren and Jinshi	(5) Non-binary
Generation 1	−0.286**	−0.274**	−0.354**	0.002	−0.284**
	(0.104)	(0.092)	(0.096)	(0.012)	(0.103)
Generation 2	0.052	0.001	0.006	0.025	0.077
	(0.106)	(0.094)	(0.105)	(0.016)	(0.105)
Generation 3	0.211**	0.127	0.202**	0.047*	0.257**
	(0.052)	(0.052)	(0.057)	(0.018)	(0.061)
Generation 4	0.088*	0.036	0.120**	0.019+	0.107*
	(0.041)	(0.055)	(0.042)	(0.011)	(0.047)
Generation 5	0.127*	0.085	0.132*	0.028*	0.155*
	(0.052)	(0.073)	(0.055)	(0.011)	(0.059)
First-Generation Father Status	0.016**	0.022**	0.018**	0.002**	0.018**
	(0.003)	(0.004)	(0.003)	(0.001)	(0.003)
N	8,041	8,041	8,041	8,041	8,041

Notes: Dependent variable is elite status indicator; sample consists of all men and women in generations 2, 3, 4, and 5 that constitute couples formed by male descendants of the treatment (first) generation, as well as the treatment generation couples themselves. Estimation of equation (1) by OLS. Specifications differ in their definition of elite, see text. Fixed effects for generation, birth year, male clan, and female clan included. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

The first alternative elite definition includes men who did not successfully pass but purchased their *keju* degrees. Degree purchase occurred occasionally, especially during times of government revenue shortfalls in the 19th century, although rarely for the higher degrees. There is evidence for a more muted elite reversal, see Table A.9, column (2). The status of men with purchased degrees would have been lower than of those that actually passed the *keju*, and the weaker results suggest that by including degree holders through purchase, elite attainment is measured with more error.

Next, we expand the definition of elite by including men that were highly educated but did not pass the *keju* or accept an official position. This includes includes not only editors of genealogies but also those who attempted to pass the *keju* but failed. For this definition, results are similar to the baseline results (compare columns (3) and (1), Table A.9). This suggests it was not the degree or position as such but rather a relatively 'virtuous' lifestyle, as reflected by studying and scholarly work that was emphasized by intergenerationally transmitted clan norms.

A more narrow definition of elite is adopted in the next specification, where elite is defined

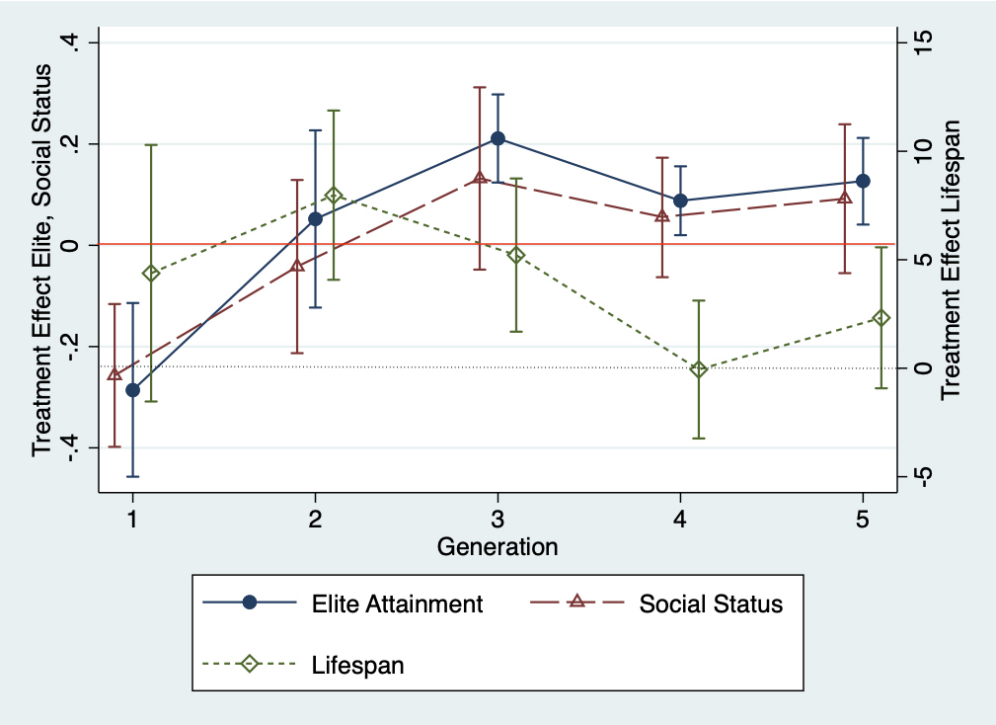
as provincial or national graduates only (*juren* and *jinshi*). In that case, we do not estimate a first-generation loss in elite attainment, and the reversal in later generations is more muted (Table A.9, column (4)). However, *juren* and *jinshi* are not only few in number but they also often spend a substantial part of their lives on assignments elsewhere, which limits their local influence. Consistent with that, *keju* participants below the *juren* level–in particular *shengyuan* (graduates at local level)– played a key role in formulating and implementing new norms in Tongcheng (Beattie 1979a). Therefore we prefer the broader, baseline definition of elite. In the final specification, we adopt a non-binary definition of elite with a higher value for graduates at a higher *keju* level. Specifically, it assigns a value of one to elites below the *juren* level, and a value of two for *juren* and *jinshi*. We see in column (5) of Table A.9 that this elite definition leads to similar patterns as the binary definition of elite.

Overall, employing alternative definitions of elite in Table A.9 provide support for a elite reversal due to the intergenerational transmission of changed norms.

D.4 Resource Differences: Lifespan and Broader Social Status

One might be concerned that our results reflect mostly broad differences in resources across family lines. If so, the pattern of reversal that we estimate should be very similar for other variables that are correlated with family resources, such as good health or high social status. Thus we estimate equation (1) with two alternative dependent variables. The first variable is lifespan (year of death minus year of birth), as a proxy for health. The second is social status more broadly, as captured by the 23 classes given in Table A.1. Figure A.9 compares results for these alternative measures with the baseline elite attanment results in Table 4. The underlying specifications include male and female clan fixed effects which means that time-invariant differences in clan resources are controlled for. Baseline elite attainment estimates are from Table 4, column (4).

Figure A.9: Elite, Social Status, and Lifespan Compared



Notes: Estimates of equation (1) for three dependent variables: (1) elite indicator, (2) social status, and (3) lifespan. Social status measure from Table A.1, divided by 10; lifespan measured in years. Fixed effects by generation, birth year, male, and female clan included. Also included is the status of the first-generation male's father; 90 percent confidence intervals of point estimates shown.

The pattern of social status coefficients is not unlike the pattern of those for elite attainment, see Figure A.9. This is not surprising because *keju* participation also affects the social status of the man more broadly (see Table A.1). At the same time, in general the coefficient pattern for social status is less clear. In particular, the reversal of social status in generations 3, 4, and 5 is more muted than the reversal of elite attainment in these generations.

Lifespan results indicate that the impact of the fall of Ming on a man's lifespan over five generations is different from its impact on elite attainment. Thus, while a long lifespan tends to help a man to pass the *keju* because it allows more attempts, the elite attainment across generations after the Ming collapse is different from living a long life.

Overall, the results summarized in Figure A.9 support the hypothesis that elite reversal is driven by something other than broad differences in resources across family lines.

D.5 Identification: Tongcheng Capital and Birth Order Differences

The historical record indicates that Tongcheng's capital city played a unique role. In addition to central-place functions typical for a capital, it was the location of choice for highly-ranked men in the late Ming who became absentee landlord, and Tongcheng city was the only location in the

county that was protected by a city wall at the time of the Ming collapse. For these reasons, The following examines the role of Tongcheng city for our results.

Table A.10: The Roles of the Capital City and Birth Order

	(1)	(2)	(3)	(4)	(5)
	Baseline	Capital City		Birth Order	
Generation 1	-0.282^{**}	-0.314^{**}	-0.304^{**}	-0.278^{**}	-0.260^{*}
	(0.103)	(0.102)	(0.101)	(0.104)	(0.103)
Generation 2	0.052	0.032	0.041	0.056	0.060
	(0.106)	(0.106)	(0.107)	(0.104)	(0.103)
Generation 3	0.210^{**}	0.186^{**}	0.193^{**}	0.209^{**}	0.213^{**}
	(0.052)	(0.049)	(0.051)	(0.053)	(0.052)
Generation 4	0.087^{*}	0.074^{+}	0.081^{+}	0.088^{*}	0.085^{*}
	(0.041)	(0.041)	(0.044)	(0.041)	(0.041)
Generation 5	0.127^{*}	0.117^{*}	0.122^{**}	0.127^{*}	0.124^{*}
	(0.052)	(0.044)	(0.046)	(0.052)	(0.052)
Tongcheng Capital		0.159^{**}	0.171^{**}		
		(0.034)	(0.039)		
Distance to Capital			0.003		
			(0.005)		
Birth Order = 1				0.033^{+}	
				(0.020)	
N	8,012	8,012	8,012	8,006	7,994

Notes: Dependent variable is elite status; sample consists of all men in generations 2, 3, 4, and 5 that constitute couples formed by male descendants of the first generation, as well as the treatment generation couples themselves. Estimation of equation (1) by OLS. Tongcheng Capital is an indicator variable that a man is currently residing in the county capital. Distance to Capital is the geographic distance to Tongcheng city in kilometers, divided by 10. A fixed effect for each level of male birth order included in column (5). All regressions include father status of first-generation male, as well as fixed effects for generation, birth year, male clan, and female clan. Robust standard errors clustered at the level of treatment generation couple; **/*/+ indicates significant at the 1%/5%/10% level.

We see that residing in Tongcheng city is positively correlated with elite attainment, see Table A.10, column (2). This is consistent with the capital city having central-place functions during the sample period. At the same time, accounting for capital city location does not drastically change the pattern of the coefficients across generations (column (2) compared with column (1)). Furthermore, conditional on capital city location, a village or town's distance to the capital does not play a major role for elite attainment, see column (3).

Parental investments play a major role for achievements of the next generation, and there is

evidence for imperial China that parental investments were higher for first- and early born sons. If the elite reversal would be related to the within-family allocation of resources depending on birth order, one would expect the pattern to substantially weaken once we control for the birth order of each male. Results indicate that a first-born male is more likely to become elite, see Table A.10, column (4). At the same time, the level and pattern of coefficients is similar to before. This also continues to hold when a separate fixed effect is included for every birth order, see column (5). We conclude that the elite reversal is not strongly related to the within-family resource allocation according to birth order.