NBER WORKING PAPER SERIES

WEB OF POWER: HOW ELITE NETWORKS SHAPED WAR AND POLITICS IN CHINA

Ying Bai
Ruixue Jia
Jiaojiao Yang

Working Paper 28667
http://www.nber.org/papers/w28667

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
April 2021, Revised August 2022

We thank Nathan Nunn, Andrei Shleifer, anonymous referees, Sam Bazzi, Eli Berman, Felipe Valencia Caicedo, Filipe Campante, Bruno Caprettini, Jeremiah Dittmar, Quoc-Anh Do, Harris Doshay, James Fenske, James Fearon, Camilo Garcia-Jimeno, Avner Greif, Leander Heldring, Matt Jackson, Micah Muscolino, Barry Naughton, Gerard Padró i Miquel, Maria Petrova, Giacomo Ponzetto, Nancy Qian, Pavithra Suryanarayan, Jesse Shapiro, Joachim Voth, Yiqing Xing, Noam Yuchtman and conference/seminar participants at AEA, APSA, Case Western Reserve, CKGSB, Fed Chicago, LSE, Michigan, NBER Summer Institute, NYU, Oxford, Stanford, UCSD, UQAM-Université Laval and Virtual Economic History Seminar for their comments. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2021 by Ying Bai, Ruixue Jia, and Jiaojiao Yang. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Web of Power: How Elite Networks Shaped War and Politics in China
Ying Bai, Ruixue Jia, and Jiaojiao Yang
NBER Working Paper No. 28667
April 2021, Revised August 2022
JEL No. D74,H11,L14,N45,O11

ABSTRACT

Scholars have argued that powerful individuals can exert influence on the path of a nation's development. Yet, the process through which individuals can have an effect on macro-level political economy outcomes remains unclear. This study uses the deadliest civil war in modern history, the Taiping Rebellion (1850–1864), to elucidate how one individual—Zeng Guofan—employed his personal elite networks to organize an army to suppress the rebellion, and how these networks would affect the nation's power distribution. Two findings stand out: (i) counties that already had more pre-war elites in Zeng's networks experienced an increase in soldier deaths after he took power; and (ii) post-war political power shifted significantly toward the home counties of these very elites, creating a less balanced national-level power distribution. Our findings highlight how micro-level elite networks can influence national politics and societal power distribution, shedding new light on the relationship between elites, war and the state.

Ying Bai
Department of Economics,
The Chinese University of Hong Kong
Shatin, Hong Kong
rickybai@gmail.com

Jiaojiao Yang
Chinese University of Hong Kong
1155133785@link.cuhk.edu.hk

Ruixue Jia
School of Global Policy and Strategy
University of California at San Diego
9500 Gilman Drive #0519
La Jolla, CA 92093
and CEPR
and also NBER
ruixue.jia@gmail.com

1 Introduction

History has repeatedly shown that certain individuals stand out in turbulent times and are able to exert enormous influence on their nation. Countless volumes have been written on how figures such as Napoleon, George Washington, Robespierre, and Lenin changed the course of history through war and revolution. Influential economics research has investigated whether leaders can affect a country's economic growth (e.g., Jones and Olken 2005, Easterly and Pennings 2020). Yet, it remains to be understood *how* individuals shape macro-level political economy outcomes. A burgeoning literature has focused on leaders' identity (e.g., Besley, Montalvo and Reynal-Querol 2011, Dube and Harish 2020) and pointed out that individuals can influence policy-making (Olken and Jones 2005), serve as role models, and change social norms (e.g., Acemoglu and Jackson 2015, Dippel and Heblich 2021, Cagé et al. 2021).

In this paper, we introduce a new argument—that individuals can influence important political economic outcomes via their personal networks, especially those connections among elites. This perspective applies to a variety of settings. For instance, in the French Revolution, the Robespierrist friendship network and the Girondin Brissot-centered network played central roles in determining the subsequent power distribution in revolutionary politics (e.g., Linton 2015). Likewise, in the 20th-century Chinese Civil War, Chiang Kai-shek relied on his personal networks formed at the Whampoa Military Academy to organize military forces (Taylor 2009). During South Korea's rapid industrialization, a small group of business elites influenced the state and, in turn, society via their extensive personal networks with both state officials and politicians (Kim 2007). However, because it is difficult to systematically measure personal networks and pinpoint their specific influences, few empirical studies have assessed the processes that link individual-level networks to macro-level political economy consequences.

We explore a context where we can characterize individual-level networks and study their influences on important outcomes: war and power. Our context is the Taiping Rebellion, a civil war waged in China from 1850 to 1864 between the peasant rebels of the Taiping Heavenly Kingdom and the Qing dynasty (1644–1911). It was one of the deadliest civil wars in modern history and one that profoundly altered the political development path of China. To put it into perspective, the Taiping Rebellion coincided partially with the U.S. Civil War (1861–1865), but its death toll—at

least 20 million deaths—was more than 30 times higher than that of the U.S. Civil War (Platt 2012).[1] One of the most striking aspects of this war is that the Taipings were defeated by a relatively small army,[2] known as the Hunan Army. This Hunan Army was commanded by one scholar-official from Hunan Province, Zeng Guofan, and was organized from existing militias that had fought against the Taipings from 1850 to 1852. After Zeng took power in 1853, he turned to his personal networks to recruit soldiers from commoners in Hunan province.

This setting has three specific strengths that enable us to elucidate how elite networks were able to shape both the war contribution and the post-war power distribution. First, this case features a well-defined elite network created by the Civil Service Exam system. This system, as the primary elite recruitment channel that produced the country's bureaucrats, gave elites the opportunity to forge political alliances based on exam links. We demonstrate the links in this network quantitatively for the first time. In addition, kinship ties, including by marriage, have always provided an important link among elites. We digitize a large number of historical archival sources and construct a database that covers Zeng and 2,460 other elites in his networks (including 164 from Hunan Province), providing variation in the make-up of Zeng's pre-war connections across 1,646 counties. The second strength of this setting is our ability to measure the mobilization outcome of the elites. Specifically, we focus on the deaths of individual soldiers, the costliest form of war contribution. We digitize the records related to 34,328 soldier deaths from the Hunan Gazetteers, including their names, origin counties, as well as the year and battle in which they died. In our analyses, we show that soldier deaths can proxy war mobilization. Finally, we measure elite power based on rich information on the Chinese bureaucracy. Since we are interested in the distribution of power that has the potential to influence a nation, we build a database of all those in national-level offices (including in the central government and the top offices in each province) during the period 1820–1910, which we utilize to study the distribution of power in both the short and long runs.

Our study constitutes three sets of analyses. First, we demonstrate that Zeng's personal networks shaped regional soldier deaths. Using a difference-in-differences strategy, we find that after Zeng took power, those Hunan counties with more elites connected to Zeng experienced more soldier deaths. We focus on the variation in elite connections across 75 Hunan counties and compare the

[1] In terms of population share, the Taiping Rebellion deaths accounted for at least 5% of the Chinese population and the U.S. Civil War deaths accounted for roughly 2% of the U.S. population at that time.

[2] At its prime time, the Hunan Army had approximately 130,000 soldiers. This size appears small relative to the number of civilian deaths because most of the civilian deaths were not caused by fighting between the Taipings and the government forces. Instead, many unarmed civilians were killed by both parties of the war. Famine- and plague-triggered deaths were among the major causes of civilian deaths.

counties with more elite connections to those with fewer or no connections. Our baseline networks include exam connections and blood relationships, neither of which are subject to individual choices. We measure a county's elite connections as the sum of direct and indirect connections inversely weighted by the distance to Zeng and also employ alternative measures including unweighted and per capita connections. We find that after he came to power in 1853, counties with one additional elite directly connected to Zeng experienced 21% more soldier deaths. To examine whether soldier deaths capture mobilization or alternate death rates, we conduct several heterogeneous checks and find evidence more consistent with the former interpretation.

The main concern in establishing a relationship between elite networks and soldier deaths is determining whether our estimate is driven by other omitted county characteristics. For instance, counties with more elite connections could also be more politically important and might contribute more to the war for reasons beyond those connections. The effect of elite connections only occurred in the time after Zeng took power, which implies there were no systematic differences across counties before the Hunan Army was mustered. Moreover, we construct placebo networks by assuming that Zeng succeeded in the previous or future exams. While both placebo and actual networks correlate with a county's general political importance, our findings are specific to actual networks. We present additional findings by examining each type of links, using soldier deaths outside Hunan as an additional placebo outcome, and checking the potential for measurement error in soldier deaths.

In our second set of analyses, we examine how pre-war elite networks that facilitated war contribution affected a post-war distribution of political power. To determine whether elite networks would have led to an increase in power even without war contribution, we use information gathered on all 1,646 counties across China during 1820–1910. Non-Hunan counties, while still operating under various degrees of connection in Zeng's networks, did not provide soldiers to the Hunan Army, leaving us with a control group to examine the impact of connections. Using a difference-in-differences specification, we find that Hunan counties with more connections to Zeng ended up with more national-level offices both during and after the war. One additional direct elite connection with Zeng is associated with 58% more national-level offices in a county after he took power, whereas no notable change occurred the thirty years before. By contrast, the advantages of non-Hunan, Zeng-connected counties remained stable in the time before and after the war, suggesting the Hunan Army was extremely relevant to post-war power distribution. The comparison between Hunan and non-Hunan counties constitutes a triple-difference design, from which we obtain the impact of elite connections in Hunan on the changes in elite power. The triple-difference estimate (52%) is close to the difference-in-differences estimate within Hunan.

Further evidence demonstrates county-level power gain can be explained by county-level war contribution as proxied by soldier deaths. First, after including soldier deaths of the Hunan Army in our triple-difference design, the impact of elite connections in Hunan is absorbed. Second, we leverage multiple sources with regard to elite connections and conduct over-identification analyses. These analyses show that, when using national-level exam links to predict soldier deaths, the other links are not correlated with national-level offices and vice versa. To be clear, the fact that the power effect can be explained by soldier deaths does not imply that those who benefited necessarily participated directly in the war. In fact, we find that this power effect persisted for several decades after the war, revealing spillover to later cohorts that were not present during the war.

In our final section, we provide evidence that the implications of our findings are reflected at the national level. Based on the Ellison-Glaeser index capturing the "localization" of power (Ellison and Glaeser 1997), we show that national-level power distribution became more unbalanced after the war. Specifically, we use the share of *Jinshi* (successful candidates from the national-level Civil Service Exam) across provinces to serve as a proxy for political power distribution held by the formal institutions. We measure power localization as the difference between the actual shares of national-level offices and these benchmark shares and document that power localization increased after the war. In a counterfactual analysis, we remove the channel of elite networks in Hunan and find that it accounts for 57% of the increase in power localization between 1850 and 1880. We further provide a case study to illustrate that power distribution can affect elite behavior in a critical historical moment.

To the best of our knowledge, our paper is the first to empirically elucidate how individuals have shaped national politics via their personal networks. This perspective contributes to the growing literature on leaders and leadership mentioned above by opening the black box that links individuals to macro-level outcomes. Our finding on how elite networks influence war mobilization is related to two recent studies on leadership in war settings (Dippel and Heblich 2021, Cagé et al. 2021),[3] both of which highlight the importance of role models and leader values in facilitating mobilization. In our context, historical narratives suggest that personal networks were used in the recruitment process to screen soldiers and build trust rather than direct role model influence. Built on war mobilization findings, we further demonstrate that individual-level networks that shape war processes also tend to

[3]Dippel and Heblich (2021) document that leaders of the failed German revolution of 1848–1849 were expelled to the United States and became antislavery campaigners who helped mobilize Union Army volunteers. Cagé et al. (2021) show that individuals who served under Philippe Pétain during the pivotal WWI battle of Verdun played a role in mobilizing Nazi collaborators during the Pétain-led Vichy regime.

have long-run consequences on the national-level distribution of power.

Our findings advance our understanding of "war made the state" (e.g., Tilly 1985, Besley and Persson 2010, Dincecco and Prado 2012). While theoretical literature differentiates between inter-state and intra-state wars, arguing that the latter weakens the state (Besley and Persson 2010), empirical studies that examine the most tangible form of state capacity—taxation capacity—have often found that civil war increases states' ability to collect taxes (e.g., Slater (2010) in Southeast Asia, Rodriguez-Franco (2016) in Colombia). Similarly in our setting, the state introduced a new trade tax known as *likin* to finance the Hunan Army, persisting after the war and increasing the country's tax revenues (Deng 2020). However, tax revenues do not tell the whole story of state capacity. Our findings suggest that knowing *how power distribution changes* can enrich our understanding of the relationship between war and the state.[4]

Our study also speaks to a literature that examines the role of social capital in political and economic changes, emphasizing that personal networks (and trust) complement weak institutions and can bring about positive political and economic outcomes (e.g., Ahlerup, Olsson and Yanagizawa 2009). Yet, as pointed out by Satyanath, Voigtlönder and Voth (2017), social capital can be used for good and ill. Our study illustrates a dynamic and macro impact of personal networks (and related social capital): During the war, these elite personal networks facilitated war mobilization and after the war, they enabled those same elites to beget more power and ultimately erode the formal institutions for political selection.

Finally, as one of the most important wars in Chinese history, the Taiping Rebellion and the state's response to it have attracted considerable attention from historians. Our study is related to several lines of historical narratives, which we discuss in Section 2. Our analyses seek to not only provide quantitative evidence to support these narratives, but also to bring them together to better understand the processes binding individual-level networks to macro-level political economy consequences.

[4]Of course we do not claim that every civil war has the same effect on power distribution. The Taiping Rebellion is one large-scale civil war that forced the state to rely on elites in the organization of its army, which is critical to our findings on a post-war shift of power distribution.

2 Context and Historical Narratives

In Section 2.1, we describe the historical context of the Taiping Rebellion and the Hunan Army. In Section 2.2, we summarize three lines of historical narrative that motivate our analyses.

2.1 The Taiping Rebellion and the Hunan Army

The Taiping Rebellion began in the southwestern province of Guangxi in 1850. Its motivations share similarities with those of several major rebellions in Eurasia in early modern times, as described in Goldstone (1991): Overpopulation, misgovernment, and ethnic competition all contributed to tensions in mid-19th century China.[5] Under the famine conditions of 1849–1850, tensions exploded into open warfare. The leader of the Taipings was Hong Xiuquan, a man who failed the Civil Service Exam four times before forming a regime that claimed dominion over the entire Qing empire.[6]

The Taipings launched a crusade northward toward the richer provinces. In the beginning, the rebels were much more effective than the poorly organized and corrupt Qing armies. The Taipings fought battles in Hunan (neighboring Guangxi) and Hubei and conquered several prefectures. In March 1853, they conquered Nanjing (the previous imperial capital during the early Ming) and declared the city its Heavenly Capital (Luo 1937).

Realizing that the official military could not contain the Taipings, the Qing government asked Zeng Guofan, a Hunanese scholar who had served in the central government, to organize an army. The choice of Zeng was partly accidental, driven by the circumstance of his return to Hunan (Luo 1937). His mother died in 1852, and, following the filial mourning rule in the Chinese bureaucracy, he was obliged to resign his official posts and return to Hunan, where his stay at his home province was supposed to last three years. There were also other factors underlying the choice of Zeng, notably local militarization in the mid-19th century (Kuhn 1970). Local militias emerged in several southern provinces and represented local elites who sought to protect their communities and property, given that the state was too weak to provide such public goods. Militias in Hunan were already employed to fight against the Taipings in Guangxi and Hunan from 1850 to 1852, and the Hunan Army was

[5] In addition to internal tensions, there was also a clash between China and the West. China lost the First Opium War in 1842, marking the start of an era of unequal treaties between China and foreign powers that reduced the legitimacy of the Qing state. Hobsbawm (1975) observes that international tensions contributed to three bloodiest wars in the era: the Taiping Rebellion (1850–1864), the America Civil War (1861–1865) and the Paraguayan War (1864–1870).

[6] Transformed by illness and inspired by Christian missionary tracts, Hong started the God Worship Society in 1844, which was renamed the Taiping Heavenly Kingdom.

organized upon the foundation of these existing militias.

Commanded by Zeng, a scholar without any military experience, the Hunan Army was often defeated by the Taipings in the beginning. From 1853 to 1864, the Hunan Army and the Taipings fought more than 600 battles across the country. In the summer of 1864, the Hunan Army finally conquered the Heavenly Capital, Nanjing, which ended the war.

We focus on the Hunan Army because it was the main force in helping the state suppress the rebellion. However, the Hunan Army was not the only force.[7] In particular, in 1861, Zeng Guofan ordered his protégé Li Hongzhang to bring some of the Hunan Army back to Anhui (Li's home province) and organize an independent force, later known as the Huai Army. In our analyses, we examine whether soldier deaths from the Huai region can also be explained by Zeng's personal networks.

2.2 Historical Narratives

The Importance of Elite Networks in Organizing the Hunan Army. Personal networks played a salient role in organizing the Hunan Army (Luo 1939). Because the state was weak, the Hunan Army's recruitment and command structure reflected the governing principles of the general social structure (Kuhn 1970). These social links were predominantly connections created by the Civil Service Exam and kinship among elites, but also included clan ties to also reach commoners.

Why did personal networks matter? Although elites in Zeng's networks actively recruited soldiers, few of these elites fought in battles. Historical discussion suggests that information and trust facilitated the recruitment process. On the demand side, the network provided information to screen the soldiers. As explained in Kuhn (1978): "[The fact that] [t]he Hunan Army ultimately swelled to a strength of some 132,000 men...not large by the standards of the day, exemplifies Zeng's emphasis of quality over numbers...Hunan Army units were distinguished for strict attention to details of recruitment, training, discipline and indoctrination in Confucian principles." In 1855, Zeng described the principle for screening soldiers as follows: "Young, strong, simple-minded men are the most preferred...Carefree wanderers should be avoided." On the supply side, social networks facilitated trust. Soldiers were promised a monthly salary of four taels, twice that of the official troops, and their families were promised 50 taels, about twice the yearly income of an unskilled

[7] Various village militias across the country fought against the Taipings. The Ever Victorious Army, an army of 5,000 soldiers, led by Charles Gordon and trained in European techniques, fought some of the final battles (Platt 2012).

worker, if they died in battle. Sometimes, the elite also emphasized that fighting the war provided a good career path for commoners (Luo 1939). Trust is vital for such promises to be believable.

The Rise of Hunan Elites. The Hunan Army's success launched the careers of its leaders and secured political power for Hunanese throughout the country. Some of these elites became the leaders of the post-war Self-Strengthening Movement (c. 1861–1895), establishing modern arsenals and shipyards in central and southern provinces and founding the first college to teach foreign subjects in Beijing. Their influence even went beyond central and southern China. Schluessel (2020) documents how the Hunanese elites dominated the Muslim-majority region of Xinjiang during the 1870s –1900s and undertook a program to "recreate Xinjiang not as a territory but as a province like its own Hunan."[8]

Historical discussions suggest that the rise of Hunan elites operated through two broad channels. First, although most national-level officials still needed to obtain a *Jinshi* degree (i.e., pass the national-level exam), it became possible for them to obtain these offices by claiming a contribution to the war (Platt 2007). In a second channel, given the same exam background, some Hunan elites "were constantly being promoted for their actual or alleged participation in military actions" (Schluessel 2020). These forces are not limited to the generation that participated in the war either. Schluessel notes that members of the subsequent second and third generations also benefited from "the blanket promotions given to their fellows," even though "they were often not present during the war."

The rise of the Hunanese should be considered as a bargaining outcome between the state and elites. Even during the war, the state was hesitant to share power. In 1859, Hu Linyi (in Zeng's network) submitted a Memorial to the Throne arguing that Zeng Guofan should be appointed to be the Governor of Sichuan to facilitate fighting against the Taipings. This suggestion was rejected by the throne.[9] However, the situation changed the following year after the Taipings destroyed the headquarters of the Qing military forces outside Nanjing. In the wake of this severe threat, the state promoted Zeng Guofan to be the governor-general of the Two Yangtze Provinces. This position gave him the opportunity to govern the richest regions in China and the highest military

[8]Some historians argue that the influence of the Hunan Army may have also inspired later Hunanese (e.g., Platt 2007). Although the channels of influence are not clear and likely to be indirect, it is striking to observe that the leaders in the reform and revolution era (1890s–1920s) originated disproportionately from Hunan, including Tan Sitong, Huang Xing, Song Jiaoren, and Cai E. Similarly, the top two leaders of the Chinese Communist Party–Mao Zedong and Liu Shaoqi–were both from Hunan.

[9]See Zhu (2017) for many bargaining cases between the state and Zeng's group during and after the war.

authority. Following Zeng's ascension, the Hunan Army dominated eastern China and several key Zeng-connected figures were promoted to the most important civil offices. After the war, the state wanted to re-centralize power, attempting to rotate Hunanese away from their power bases established during the war (see our analysis in Section 5.3). But once key positions were under the control of elites connected with each other, the state's capability to re-centralize power became limited. In addition, the state still needed support from these elites to suppress other rebellions around the country.[10]

The Political Legacy of Network-Based Military Organization. The organization of the Hunan Army deviated from the long-standing tradition of military organization in imperial China. In response to previous threats by regional elites, the Song Dynasty (960–1279) and its successors relied on a centralized military system to limit personal influence. The crisis of the Taiping Rebellion forced the state to rely on personal networks for large-scale military organization for the first time. Some historians interpret this change as a turning point in China's power structure. For instance, Luo (1937) argues that the regional elites emerging from the war built sufficient power to resist central orders, thus weakening the state. Michael (1949) similarly conjectures that the rise of regional elites "marked the beginning of the disintegration of dynastic power that finally led to the collapse of the dynasty and to the system of warlordism that replaced," referring to the fact that the dynasty collapsed in 1911 and China entered the Warlord Era until 1928.

This view, however, is not unchallenged. As discussed in McCord (1993), critics argue that it exaggerates the role of regional elites in weakening the state, maintaining that after the war, the state still relied on the Civil Service Exam and related bureaucratic institutions to appoint and rotate important offices, ultimately limiting regional elites' influence. Moreover, many other additional factors might have contributed to the weakness of the state in the decades after the war, especially the conflicts with foreign nations. Therefore, it remains an empirical question to determine how the power structure changed after the war.

[10]The rebellions in this era include the Nian (1851–1868) and the Muslim (1855–1873) Rebellions. The Hunanese played central roles in repressing both.

3 Data

3.1 Elite Networks

The Qing government, following precedent, relied on the Civil Service Exam system (c. 600–1905) to recruit bureaucrats, serving as the primary avenue for social mobility and elite network formation. Kinship was also an important source of link among elites. Below, we define elite networks, describe our elite network data, and explain how we aggregate individual-level data to the county level.

Sources of Links. Our network data comprise three types of links: (1) those from the Civil Service Exams, (2) kinship, including blood and marriage relationships, and (3) other friends. Appendix A.1 describes our data sources and construction process.

Exams. There are two important relationships specific to the exam system, particularly via the triennial provincial-level and metropolitan (i.e., national-level) exams that produced bureaucrats for the state.[11] The first is the link between the court-commissioned examiners (who were already high-level central government officials) and their success examinees, known as the "master-disciple" relationship. The second is the link between successful examinees who would then go on to become future colleagues in the bureaucracy, known as the "quasi-classmate" relationship. As Miyazaki (1981) explains:

> The new graduates paid their respects to the examiners, whom they considered their lifelong teachers, and entered a firm master-disciple pledge. The chief and associate examined were called "master teacher", and the assistant examiners "teacher", while the graduates called themselves "disciples" and referred to each other as " classmates"...The result was a pledge between them to assist each other to weather the storms of political life.

Given the importance of these exam links in politics, it is not surprising that Zeng relied heavily on them when tasked with organizing the army. It is well recognized that the internal connections of Zeng's group depended significantly upon the bureaucratic-academic system (Kuhn 1978).

Because the exams were all carefully recorded, we are able to digitize the exam record archives

[11] The exam has three levels: prefecture, provincial, and national. Because passing only the prefecture-level exam did not guarantee a political career, we focus only on the provincial- and national-level exams and do not include prefecture-level links.

to capture these relationships. For instance, Zeng became a disciple of Muzhang'a in 1838, who would later help further Zeng's career in the 1840s. Zeng Guofan and Li Wen-an (Li Hongzhang's father) were quasi-classmates, which enabled Li Hongzhang to become Zeng's protégé. The data also allows us to observe more indirect links with Zeng. For example, his examiner, Muzhang'a, had disciples from other national-level exams who were then indirectly linked with Zeng. We use information on all of the exams that were administered during the three decades before the war (1820–1849) to construct our exam links.

Kinship. Blood relationships, such as brothers and sons, are certainly important, but marriage also provides an opportunity to connect with important families. For instance, Zeng and Guo Songtao were in-laws. Guo was an important local elite before the war and became a national-level statesman afterwards. Guo Songtao and Zuo Zongtang (who also would become an important national-level politician) were also in-laws. We obtain this information from *Zeng Guofan's Family Tree* (Cheng 1997).

Other friends. Our third source refers to the individuals covered in *The Chronicle of Figures in the Hunan Army* (Mei 1997), who helped Zeng in his war mobilization efforts. We call these individuals "friends of Zeng." The records on marriages and friends may suffer from selection concerns, which we consider by using different definitions of networks.

Defining Elite Networks and County-level Connections. By defining elite networks in two ways, which we term *baseline networks* and *expanded networks*, we account for the fact that some of the links were not subject to personal choices (e.g., exam links) while others (e.g., marriages) were.

Baseline networks include only exam links and blood relationships (Figure 1A). An individual could not choose these relationships, which were thus exogenous to the circumstances of this war. In the figure, each large circle indicates successful individuals from one exam (which was held once every three years) and the black dots indicate those individuals from Hunan.[12] All of these individuals were eligible for official positions, thus belonging to the elite class. Our baseline network covers 2,419 elites, with 131 from Hunan.

Expanded networks add marriage-based and friend-oriented relationships to the established baseline networks (Figure1B). This definition covers a total of 2,460 elites, 164 from Hunan. This alternative measure includes all of the available information, but with the caveat that marriages and friends were subject to personal choice. Thus, we focus on the baseline networks and use the

[12]On average, only around 200 individuals succeeded in a national-level exam cohort, 3–8 of whom were from Hunan.

expanded networks as robustness checks. In Appendix A.1, we plot each type of links separately.

To measure a county's connections in the elite networks, we transform these networks into a county-level variable. Our baseline measure for a county's connections is $\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$, where N refers to the number of elites from a county, and d indicates degrees of separation from Zeng. Here, motivated with the historical narratives, we assume that with more elites in a county there would also be greater war contribution and that a direct link matters more than an indirect link.[13] Because there is no theoretical reasoning that this would be the only measure of a county's connectedness, we also employ alternative measures including an unweighted measure that counts the general number of connected elites from a county and per capita measures that divide a county's weighted and unweighted connections by its population size.

The elite networks vary widely across counties. Figure 2 plots the county-level spatial distribution of connected elites across the country and within Hunan. 36 (38) of 75 Hunan counties had at least one connection in Zeng's baseline (expanded) networks, and seven counties had five or more. As reported in Table 1, our baseline measure of connections has a mean of 1.23 and a standard deviation of 2.53. Next, we examine what contributes to this variation.

County-level Connections vs. Other Characteristics. We are concerned about whether our connection measure reflects a county's economic development, political importance, or its relationship with the Taipings. We collect 12 variables that can be grouped into three broad categories to gauge the importance of such concerns summarized below (see Appendix A.2 for our data sources and construction process).

(i) Geographic-economic factors: log area, whether the county has a main river, log suitability for major crops (rice and wheat), log distance to the Grand Canal, log population in 1820, and log urban population in 1850. These variables capture a county's productivity and economic advantages.

(ii) Political importance: whether the county is a prefecture capital, log pre-war entry-level exam quotas, and log number of pre-war *Jinshi*.

(iii) Taiping-related factors: whether the county was on the Taipings' route to Nanjing and log distance to Nanjing.

We examine the correlations between our baseline measure of connections and these character-

[13] Using inverse distance to measure the relative importance of links is related to the concept of closeness in social network analysis (Jackson 2008). However, our aim is not to measure an individual's closeness in the whole network but to measure to what extent a county was connected to Zeng.

istics for Hunan counties and also for all counties (Appendix A.3). While the correlations between county-level elite connections and geographic-economic factors are not systematically strong, those elite connections are positively associated with the number of *Jinshi*. In general, counties with more *Jinshi* tend to have more elites, which correlates with our connections measure even though we focus on specific networks. This pattern begs the question of whether our results capture a county's general eliteness rather than Zeng's personal networks, which we address in our analyses.

3.2 Soldier Deaths

We digitize the death records of 34,328 soldiers with their names and origin counties from Provincial Gazetteers of Hunan (Zeng 1885). Appendix A.4 describes the data source, giving an example that illustrates the information in the original archives. For 29,490 of these records, we also know the year and location (battle) of the soldier's death.

Using individual-level information, we construct a county-year panel of soldier deaths from 1850–1864 for all 75 counties in Hunan province. This individual-level data provides additional information on clan relationships (reflected by surnames) and social status (i.e., exam degree or not) used to address possible measurement errors in our analyses.

3.3 Elite Power

To measure the distribution of political power before and after the war, we construct a database of national-level offices and officials from 1820–1910 based on *The Chronicle of Officials in the Qing Dynasty* (Qian 2005). Like previous dynasties, the Qing used an official rank system. The system had nine numbered ranks, each subdivided into upper and lower levels. We focus on those with a rank of three and above (i.e., vice minister level and above), which include central government officials (such as ministers) and top officials in each province (e.g., governors and vice governors). We refer to these positions as national-level offices for simplicity, as the top officials in each province were involved in national-level decision-making.

Our data covers 28,899 national-level offices held by 2,971 officials annually. On average, 221 officials held 318 offices in a given year. Of the officials, 67% were of Han ethnicity and held 66% of all positions (whereas the Manchu accounted for less than 1% of the population but 1/3 of the positions). We focus on the offices held by Han officials because Manchu officials had a different

career track. Appendix A.5 presents an example of the records and plots the yearly distribution of national-level offices. It illustrates a fairly stable number of positions and officials over time. Using this position-level information, we construct a county-year panel of national-level offices during the period 1820–1910 for all 1,646 counties.

4 Elite Networks and Soldier Deaths

4.1 Motivational Evidence and Research Design

Did elite networks shape the regional variation in soldier deaths? As motivational evidence, we plot the number of soldier deaths by year for Hunan counties with and without elite connections (defined by our baseline networks). Figure 3 illustrates that before Zeng took power in 1853, the numbers of soldier deaths in unconnected and connected counties appear to be in parallel. After Zeng came to power, the number rose to a higher level for connected counties, persisting until the end of the war in 1864. On average, the annual soldier deaths pre- and post-1853 went from 6.6 to 13 for unconnected counties, but from 4.7 to 53.1 for connected counties, suggesting the importance of Zeng's personal networks in the number of soldier deaths.

Based on this pattern, we use a standard difference-in-differences strategy by exploiting county-level variation across Hunan in elite connections and time variation in Zeng's appointment in 1853. The data cover 75 counties during the period 1850–1864 and our baseline specification is as follows:

$$\text{lnSoldierDeath}_{c,t} = \beta \text{EliteConnections}_c \times \text{Post1853}_t + \alpha_c + \lambda_t + \theta \mathbf{X}_c \times \text{Post1853}_t + \epsilon_{c,t}, \quad (1)$$

where $\text{SoldierDeath}_{c,t}$ refers to the log number of soldier deaths in county c and year t. Our baseline measure of $\text{EliteConnections}_c$ is $\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$ where we discount the importance of links by distance. We also present results for per capita and unweighted measures.

We control for county-level characteristics that vary little over time and factors that affect all counties over time by including county-level fixed effects (α_c) and year fixed effects (λ_t). We gradually control for the 12 county-level characteristics introduced above and their interaction with post dummy ($\mathbf{X}_c \times \text{Post1853}_t$) to allow the impacts of these characteristics to vary before and after Zeng came to power.

To facilitate interpretation of the coefficients, we use ln (Soldier deaths+1) as the dependent

variable in our main estimations and also present additional results using the inverse hyperbolic sine as the dependent variable. In addition, we show that our findings are robust to controlling for $\mathbf{X}_c \times \lambda_t$ instead of $\mathbf{X}_c \times \text{Post1853}_t$ and further controlling for prefecture-by-year fixed effects. Finally, we cluster standard errors at the county level in our main analyses and report the spatial standard errors in the appendix.[14]

Our assumption for estimating equation (1) is that counties with more or fewer elite connections were on a similar trend before Zeng was put in charge. To check whether this assumption is reasonable, we use an event study strategy to estimate the impacts of elite connections year by year.

4.2 The Impact of Elite Networks on Soldier Deaths

Main Results. We find that soldier deaths in counties with more connections to Zeng increased significantly after he took power. In Column (1) of Table 2, we control only for year and county fixed effects. In Columns (2)–(4), we gradually add controls—geographic-economic variables, political variables, war variables, and their interactions with the post dummy. These estimates imply that one more elite directly connected to Zeng increases the number of soldier deaths by around 21% (an additional 5,772 deaths during the period 1854–64 for the combined 75 counties).

In Columns (5)–(6), we present the estimates for the per capita connection measure. Based on the estimate in Column (6), a one-standard-deviation increase in connections per capita (7.53 per million) increases soldier deaths by 42%. Columns (7)–(10) show the estimates for the unweighted sum and per capita measures. The fact that the impact of a direct link (0.213) is larger than that of an unweighted link (0.147) confirms that it is reasonable to consider each link's distance to Zeng.

We relegate several checks to Appendix B.1. As shown, our finding is robust to dropping a group of counties with relatively more connections (prefecture capital and Zeng's home county), using the inverse hyperbolic sine as the dependent variable, controlling for $\mathbf{X}_c \times \lambda_t$ instead of $\mathbf{X}_c \times \text{Post1853}_t$, and further controlling for prefecture-by-year fixed effects. We also report spatial standard errors following the method proposed by Conley (1999), which are close to those clustered at the county level.

To check the assumption on parallel trends for estimating equation (1), we estimate the impacts

[14] Our results are robust to clustering at the upper (prefecture) level that considers correlations across counties. However, the number of clusters (15) would be small when using Hunan counties. We present the standard errors clustered at the prefecture level when using the national sample.

of elite connections year by year in Appendix B.2 and visualize these estimates in Figure 4. Elite connections to Zeng were not correlated with soldier deaths before 1853, implying that the counties did not exhibit different trends before he came to power. Afterwards, elite connections exerted a positive effect that persisted until the end of the war. As shown in Figure 4, these results are robust to four alternative ways of measuring a county's elite connections (weighted/unweighted connections and weighted/unweighted connections per capita).

Types of Links. Our finding holds if we expand our definition of elite network to include marriages and friends, as reported in Column (1) of Table 3. The estimate based on expanded networks is slightly smaller than our baseline estimate. Columns (2)–(4) report the results for each type of links. The results reveal that the impact of national-level exam connections is larger than all other link types, which is consistent with the understanding that these elites were particularly powerful and held more important offices.

The historical narratives suggest that clan relationships provided information and served to build trust in recruiting soldiers. We use the surnames of elites and soldiers to proxy for clan relationships, assuming they belonged to the same clan if they came from the same county and shared the same surname. Consistent with these historical narratives, we find that elite connections had a significantly larger impact for soldiers from the same clan as the elites. Columns (5)–(7) of Table 3 present the results for 75 counties $\times$ 15 years $\times$ number of surnames (for each county). These results illustrate that the impact of elite connections on the deaths of soldiers from the same clan is four times that of a different clan.

Placebo Tests. Two sets of placebo tests are useful to validate the impact of elite networks on the number of soldier deaths. First, to validate the relevance of elite networks, we leverage the timing of exams to construct placebo networks. We assume that Zeng would have passed the 1836 or 1840 national-level exam, rather than the actual one in 1838, changing his national-level exam network (as shown by the maps in Appendix B.3) even though the placebo networks would still be correlated with the actual network and a county's general eliteness.[15] We find that the placebo national-level exam connections did not exhibit similar findings once the actual ones are considered (Columns (1)–(3) of Table 4). Moreover, we employ an instrumental variable approach similar to that in Enikolopov, Makarin and Petrova (2020): We use the actual national-level exam network to

[15]Since Zeng's home county may be a founder for both actual and placebo exam networks, we exclude Zeng's home county in these analyses.

predict our baseline networks while controlling for the placebo national-level exam networks. Again, our findings are driven by our specific elite networks, rather than by a county's general political eliteness proxied by placebo networks (Columns (4)–(6)).[16]

For the second placebo test, because Zeng used his personal networks to mobilize soldiers from Hunan but not outside Hunan, soldier deaths outside Hunan can potentially serve as a placebo outcome. We further collect data on soldier deaths from the aforementioned Huai Army for counties in the Huai region (Anhui and Jiangsu) and find that Zeng's personal networks could not predict soldier deaths in the Huai region (Columns (7)–(11) of Table 4), likely because Li relied on his own networks when organizing his army.[17]

Measurement Error. Measurement error in elite networks is likely and such measurement error may not be classical (Chandrasekhar and Lewis 2011). Thanks to multiple sources of links, we can use an instrumental variable approach to examine this concern. As shown in Table 4, our estimate becomes a bit higher (0.33) when using when using the national-level exam connections to instrument our baseline connections.

Measurement error in soldier deaths is also likely, which we examine in two ways. First, 14% of the death records did not report the death year. Thus, it may be possible that elite connections are only correlated with more precise information on deaths. When examining the relationship between elite connections and the probability of missing years across counties, we find no correlation between elite connections and missing information, which alleviates this concern (Appendix B.5). Second, 93 of the individuals in the soldier death records held exam degrees. We find a strong correlation between these deaths and commoner deaths (R-squared = 0.44). When examining how connections affect the deaths in both groups, we also find comparable standardized coefficients (Appendix B.5). Because it is difficult to misinterpret the data on degree holders, this result suggests that our finding is unlikely to be explained by a misreporting of soldier deaths.

[16] In addition, the impacts of elite networks are close to our baseline estimates if we further control for other connectedness measures such as a county's dialect distance or physical distance from Zeng's home county (Appendix Table B.4), which again confirms the relevance of our network measure.

[17] We do not study all other provinces in this analysis, as there are no systematic data on soldier deaths beyond Hunan and the Huai region.

4.3 Interpretations of Soldier Deaths

Because deaths are the costliest type of contribution to war, it is meaningful to study soldier deaths as the outcome. Nevertheless, one may wonder whether soldier deaths more-so reflect mobilization or other variant death rates given the same level of mobilization. Three analyses reveal that soldier deaths are likely to reflect mobilization. We present the estimates of these analyses in Appendix B.6 and summarize the results here.

First, we hypothesize that elite networks had a smaller effect on mobilization for counties with a higher opportunity cost of joining the army. To proxy for the opportunity cost, we use variation in the primary mobility channel—the Civil Service Exam, access to which was governed by a quota system. We find that elite networks had a smaller effect on soldier deaths in counties with a higher entry-level exam quota per capita. This pattern can be interpreted as evidence that a higher opportunity cost deterred people from joining the Hunan Army.

Second, we leverage battle-level information. If soldiers were strategically deployed across battles that led to different death rates, we expect the relationship between elite connections and soldier deaths to differ when we conduct within-battle analysis vs. when we pool all battles together. On the contrary though, we find similar results without or with battle fixed effects.

Third, we examine the famous Battle of Three Rivers in 1858, in which all of the Hunan Army troops involved were annihilated. In this case, the death rates were the same across the soldiers' home counties. We find that in this battle, elite connections have a comparable impact on soldier deaths to that of other battles in 1858, which provides further support to the mobilization interpretation.

5 Elite Networks and Post-War Elite Power

5.1 Motivational Evidence and Research Design

Did elite networks that facilitated war contribution go on to shape the regional distribution of post-war elite power? Here, we face a challenge of knowing whether elite networks would have led to more power even without their war contribution. To address this challenge, we bring non-Hunan counties into our analyses as a comparison. Non-Hunan counties, while enjoying different degrees of connections in Zeng's networks, did not experience soldier deaths in the Hunan Army, revealing the impact of connections on power (without contribution to the Hunan Army) over time.

As motivational evidence, we plot the annual number of national-level offices held by four groups of counties—connected and unconnected counties in Hunan and connected and unconnected counties in other provinces (Figure 5). Two patterns are apparent. First, the number of national-level offices held by individuals from Hunan connected counties clearly increased in the later stage of the war and after the war. Second, there was no similar increase for those connected counties in non-Hunan provinces, even though connected counties generally accounted for more national-level offices. These patterns suggest that elite networks led to the rise of elite power through their involvement in the war.

Based on this evidence, we implement difference-in-differences and triple-difference designs to estimate the impact of elite connections in Hunan on national-level office distribution before and after Zeng took power. Our difference-in-differences specification replaces the dependent variable in equation (1) with the number of national-level offices, and our triple-difference specification is as follows:

$$\begin{aligned}\text{NatlOffice}_{c,t} =& \rho_1 \text{Hunan}_c \times \text{EliteConnect}_c \times \text{Post1853}_t + \rho_2 \text{Hunan}_c \times \text{Post1853}_t \\ &+ \rho_3 \text{EliteConnect}_c \times \text{Post1853}_t + \alpha_c + \lambda_t + \theta \mathbf{X}_c \times \text{Post1853}_t + \epsilon_{c,t}, \end{aligned} \tag{2}$$

where $\text{NatlOffice}_{c,t}$ indicates the number of national-level offices in a county c and year t. The rest of the definitions are the same as in equation (1). ρ_1 indicates the power effect of interest. ρ_2 measures the possible advantage of originating from Hunan after the war, and ρ_3 denotes the advantage of general elite connections after the war.[18]

Similar to our analyses above, we complement the triple-difference design with an event study strategy in which we estimate the impacts of $\text{Hunan} \times \text{EliteConnect}_c$ year by year.

5.2 The Impact of Elite Networks on Post-War Elite Power

The Power Effect. We first focus on the difference-in-differences estimates in Columns (1)–(2) of Table 5: Having one direct elite connection in a Hunan county is associated with 0.054 more national-level offices after 1853, or around 58% of the county-year mean (0.093). In contrast, no such association exists for counties in other provinces (Columns (3)–(4)). These results confirm the motivational patterns in Figure 5. Given these results, the triple-difference estimates in Columns

[18] We cluster the standard errors at the upper (prefecture) level in this part, as there exist enough (255) clusters to implement this strategy. In addition, as explained in Appendix A.2, our county-level population data for non-Hunan counties is imputed from prefecture-level data. Our findings hold if we aggregate data at the prefecture-year level.

(5)–(6) are close to the difference-in-differences estimates in Columns (1)–(2): One direct elite connection in a Hunan county is associated with 52% more national-level offices after Zeng took power in 1853 as compared with non-Hunan counties.

We study the dynamic pattern and present year-by-year estimates during 1821–1910, using 1820 as the reference year (Figure 6A-C). This dynamic pattern confirms that the power effect of elite networks in Hunan was not present before the war but rather occurred during the later stage of the war and during the post-war period, persisting for several decades after the war. Appendix C.1 further examines the dynamic power effect and finds that it is driven by individuals from different cohorts (rather than by the same group of individuals), implying that the power impact affects multiple cohorts, and explaining its long-term relevance.

In addition, we classify individuals who held national-level offices as either inside or outside the networks. As reported in Appendix C.2, those in Zeng's personal networks benefited: One direct link increased the number of national-level offices held by those inside the networks by 85%. Some not in the elite networks also benefited: One direct link increased the number of national-level offices held by those outside the networks (but from the home counties of the insiders) by 45%.

We further investigate to what extent national-level offices were obtained via the Civil Service Exam system. To this end, we use the value of exam quotas and the number of *Jinshi* as the outcomes. We find that elite networks in Hunan increased both of these exam-related outcomes after Zeng took power (Appendix C.3), implying that these elite networks also influenced formal institutions. However, including these two variables as controls in estimating equation (2) only marginally decreases our estimate for national-level offices. These findings suggest that the power effect of elite networks goes beyond a simple institutional channel, consistent with historical narratives discussed in Section 2.2.

Can Soldier Deaths Explain the Power Effect? We find that elite networks led to more soldier deaths and also more elite power. Is there a link between soldier deaths and elite power? Our answer is yes. First, in Column (1)–(3) of Table 6, we find that the impact of elite networks on elite power disappears once we control for soldier deaths of the Hunan Army during 1854–1864, suggesting the importance of war contribution in explaining the power effect.

To check this relationship more directly, we employ an instrumental variable approach with an over-identification strategy. We leverage the multiple link sources in the elite networks and divide them into two components: national-level exam connections and the rest. We can use each

component to instrument for soldier deaths of the Hunan Army during 1854–1864. If one component has an additional impact on power beyond the channel of soldier deaths, we would expect to see a significant coefficient of this component when using the other as an instrument. Column (4) of Table 6 reports the estimates when using both components to predict soldier deaths and the over-id test has a p-value of 0.82. Columns (5)–(6) report the results using one link component to predict soldier deaths and demonstrate that the other component is not predictive of national-level offices. Because the power effect can be explained by soldier deaths, our findings can then be interpreted as evidence that war contribution provides the opportunity for elite networks to beget elite power.

Additional Results. Because we examine very important offices, there are many zeros present in the county-year data of national-level offices. We conduct two sets of analyses to evaluate whether this is a critical concern (Appendix C.4). First, we examine the extensive and intensive margins separately and find that both margins are increased. Second, we employ a zero-inflated negative binomial model and demonstrate a similar pattern again.

Our findings are robust to varying comparison provinces (Appendix C.5), including restricting them to the five provinces along the Taiping route, using only Hunan's neighboring provinces or the Huai region (Anhui and Jiangsu) as the comparison provinces. Note that it is possible that elites from the Huai region benefited similarly to those from Hunan, but such provincial-level influence should not affect our county-level research design.

Corresponding to the analyses on placebo networks above, we find that the placebo networks cannot explain the power effect (Appendix C.6).

5.3 National-level Implications

Power Distribution. The rise of regional elites has important implications for power distribution at the national level. We use the Ellison-Glaeser (EG) index to measure national-level power distribution. We consider the shares of *Jinshi* across provinces as the benchmark shares, proxying for political power distribution controlled by state institutions. The deviation of actual national-level office shares from these benchmark shares thus serves as a proxy for power localization. We examine how this index changed from 1820 to 1910 and the extent to which elite networks in Hunan in our earlier analyses contributed to this change.

Figure 7A illustrates that power localization increased after the war: The EG index rose from

0.015 in the 1850s to 0.036 in the 1880s. This pattern shows that, although the state still relied on the Civil Service Exam and related bureaucratic institutions to appoint and promote officers after the war, the realized power distribution became more likely to deviate from these institutionalized rules. As a counterfactual analysis, we can shut down the channel of elite networks in Hunan by assuming Hunan×Elite connections to be zero in equation (2). In this scenario, the EG index would rise from 0.015 in the 1850s to 0.024 in the 1880s. Therefore, elite networks in Hunan could account for 57% of the increase in power localization between 1850 and 1880. Figure 7B presents the contribution of elite networks in Hunan by year. Appendix C.7 summarizes the results by decade and reveals that the power effect of these elite networks persisted until the 1900s.

As more specific evidence, we take a closer look at the origins of the top four officials (one governor and three vice-governors) and examine the ratio of them having come from the 38 connected counties in Hunan before, during and after the war.[19] A useful benchmark is simple randomization, which assumes that the probability of individuals from these connected counties holding such offices is proportional to these counties' population share in the country. This randomization implies a probability of 2.6%.[20] Figure 8A shows that before the war, around 2.7% of provincial governors came from these connected counties in Hunan, close to the randomization benchmark. In contrast, these shares increased dramatically during the war, especially in the central and southern provinces more affected by the war (Appendix C.8 depicts the spatial distributions over time). For instance, in Guangxi, Zhejiang and Hubei, the shares were over 20%, ten times the randomization benchmark. This change is consistent with the pattern captured by the EG index.

We find suggestive evidence that the Qing court attempted to limit the power of these elites. As shown in Figure 8B, after the war, the state relocated some elites from these connected counties to more peripheral provinces (e.g., Guizhou and Gansu). Nevertheless, the share of governors from these connected counties remained high (10–20%) in the provinces where they had initially become powerful during the war, suggesting that it was difficult to remove regional elites from their newly established power bases.

[19]The governor is an official charged with the general control of all affairs. The other three are the Superintendent of Provincial Finances, the Provincial Criminal Judge and the Provincial Educational Examiner. The fact that the Educational Examiner is one of the top officials confirms the importance of the Civil Service Exam in this bureaucracy.

[20]Due to the rule of home-province avoidance in the bureaucracy, officials who were born in a province could not govern the province. In 1851, the total population of our sample was 427.7 million and the average provincial population was 23.8 million, while the population in the connected Hunan counties was 10.5 million. Thus, the benchmark probability should be 10.5/(427.7-23.8)=0.026.

Elite Behavior. Power distribution affects elite behavior. As mentioned in Section 2.2, historians have argued that after the war, regional elites became more autonomous and able to resist orders from the state. The most frequently used example to illustrate this point is a major historical event known as "Southeast Mutual Protection" or the "Southeast Autonomous Plan" (Fairbank and Liu 1980). In June 1900, during the Boxer Rebellion, the Qing state declared war against 11 foreign nations. To the state's surprise, a majority of the provinces refused to follow the order and decided to remain neutral to preserve peace in their own provinces. Historians have noted that key regional leaders in this event, such as Liu Kunyi and Li Hongzhang, rose to prominence due to the Taiping Rebellion. However, they have not systematically examined the relationship between the composition of provincial leaders and this decision to defy the state.

We use our data on the origins of the top four officials in each province to illuminate this relationship. Figure 8C illustrates that the share of the top four provincial offices from Hunan connected counties during the war era—a proxy for regional elite power associated with the war process—is positively associated with the probability of joining this autonomous plan. An increase in the share of officials from Hunan connected counties from 5% to 15% raises the probability of disobeying the state by 40 percentage points.[21] This important event thus provides a case to illustrate the historical narratives on the autonomy of regional elites.

6 Conclusion

As one of the most important wars in Chinese history, there are bound to be many historical narratives related to the Taiping Rebellion. By constructing a database that combines over a dozen historical sources and employing multiple empirical strategies, we bring these perspectives together to study central political economy issues. We demonstrate a striking pattern: The personal networks of one individual influenced important macro-level outcomes including regional soldier deaths during the war and regional power after the war, creating an overall less balanced power distribution for the nation as a whole.

Our findings provide a novel perspective on the process through which individuals influence macro-level outcomes: Individual influences are propagated by personal networks across regions that can have major implications for the entire nation. While this insight is relevant in varied contexts, our setting provides a rare opportunity to delineate this process.

[21] Admittedly, with only 17 provincial-level observations, this estimate should be viewed cautiously.

Our study also reveals that war can shift a country's distribution of power, which has received little attention in the literature on war and the state. How to credibly motivate elites to help the ruler win and maintain power is, and may always be, a crucial issue in politics (Myerson 2008). Facing the crisis of a rebellion, rewarding elites with power can work as a social contract to incentivize them to become involved in war mobilization. However, once power is shared, the state might face difficulty in re-centralizing power. Our context highlights this tradeoff: The elites saved the Qing state from the Taiping Rebellion in the short run, but the shift in power distribution might have also contributed to the collapse of the state only a few decades later. These findings suggest that examining power distribution changes before and after war in varied settings can enrich our understanding of how war shapes the state. We thus hope our research opens new avenues to study the relationship between war, elites and the state.

References

[1] Acemoglu, Daron, and Matthew O. Jackson (2015), "History, Expectations, and Leadership in the Evolution of Social Norms," *Review of Economic Studies*, 82(2): 423–456.

[2] Ahlerup, Pelle, Ola Olsson, and David Yanagizawa (2009), "Social Capital vs Institutions in the Growth Process," *European Journal of Political Economy*, 25(1): 1–14.

[3] Besley, Timothy, Jose G. Montalvo, and Marta Reynal-Querol (2011), "Do Educated Leaders Matter?," *Economic Journal*, 121(554): 205–227.

[4] Besley, Timothy, and Torsten Persson (2010), "State Capacity, Conflict, and Development," *Econometrica*, 78(1): 1–34.

[5] Cagé, Julia, Anna Dagorret, Pauline A. Grosjean, and Saumitra Jha (2021), "Heroes and Villains: The Effects of Combat Heroism on Autocratic Values and Nazi Collaboration in France," Working Paper.

[6] Chandrasekhar, Arun, and Randall Lewis (2011), "Econometrics of Sampled Networks," Working Paper.

[7] Cheng, Kuang-Yu, and Sheng-Mo Hsu (1980), *Zhongguo Lishi Ditu [Historical Atlas of China]*, Taiwan: Chinese Culture University Press.

[8] Cheng, Xiaojun (1997), *Zeng Guofan Jiazu [Zeng Guofan's Family Tree]*. Liaoning Guji Press.

[9] Conley, Timothy G (1999), "GMM Estimation with Cross Sectional Dependence," *Journal of Econometrics*, 92(1): 1–45.

[10] Deng, Hanzhi (2020), "The Merit of Misfortune: Taiping Rebellion and the Rise of Indirect Taxation in Modern China, 1850s–1900s," Working Paper, LSE.

[11] Dincecco, Mark, and Mauricio Prado (2012) "Warfare, Fiscal Capacity, and Performance," *Journal of Economic Growth*, 17(3): 171–203.

[12] Dippel, Christian, and Stephan Heblich (2021), "Leadership in Social Networks: Evidence from the Forty-Eighters in the Civil War," *American Economic Review*, 111(2): 472–505

[13] Dube, Oeindrila, and S. P. Harish (2020), "Queens," *Journal of Political Economy*, 128(7): 2579–2652.

[14] Easterly, William, and Steven Pennings (2020), "Leader Value Added: Assessing the Growth Contribution of Individual National Leaders," NBER Working Paper 27153.

[15] Enikolopov, Ruben, Alexey Makarin, and Maria Petrova (2020), "Social Media and Protest Participation: Evidence from Russia," *Econometrica*, 88(4): 1479–1514.

[16] Fairbank, John King, and Kwang-Ching Liu, eds. (1980), *The Cambridge History of China*. Vol. 11, Late Ch'ing, 1800–1911. Part 2. Cambridge University Press.

[17] Ge, Jianxiong (Ed.) (2000), *Zhongguo renkoushi [China Population History]*, Shanghai: Fudan University Press.

[18] Ellison, Glenn, and Edward L. Glaeser (1997), "Geographic Concentration in US Manufacturing Industries: a Dartboard Approach," *Journal of Political Economy*, 105(5): 889–927.

[19] Goldstone, Jack A. (1991), *Revolution and Rebellion in the Early Modern World: Population Change and State Breakdown in England, France, Turkey, and China, 1600–1850.* University of California Press.

[20] Harvard Yenching Insitute (2007), CHGIS, Version 4, Cambridge.

[21] Hobsbawm, Eric (1975), *The Age of Capital: 1848–1875.* New York: Charles Scribner's Sons.

[22] Jackson, Matthew (2008). *Social and Economic Networks, Princeton.* NJ: Princeton University Press.

[23] Jiang, Yasha, Li Jing, Shenqi Chen (2010), *Zhongguo Kejulu Xubian [China's Imperial Civil Service Exam Records]*. China National Microfilming Center for Library Resources.

[24] Jones, Benjamin F., and Benjamin A. Olken (2005), "Do Leaders Matter? National Leadership and Growth since World War II," *Quarterly Journal of Economics*, 120(3): 835–864.

[25] Kim, Yun Tae (2007), "Korean Elites: Social Networks and Power," *Journal of Contemporary Asia*, 37(1): 19–37.

[26] Kuhn, Philip A. (1970), *Rebellion and its Enemies in Late Imperial China: Militarization and Social Structure, 1796–1864*. Cambridge: Harvard University Press.

[27] Kuhn, Philip A. (1978), "The Taiping Rebellion," *The Cambridge History of China*, Vol. 10, Edited by John Fairbank, Cambridge: Cambridge University Press.

[28] Kun, Gang et al. (Ed.), (1899), *Qinding da Qing huidian shili [Imperially Established Institutes and Laws of the Great Qing Dynasty]*, Beijing: Zhonghua shu ju (reprinted in 1991).

[29] Linton, Marisa (2015), *Choosing Terror: Virtue, Friendship, and Authenticity in the French Revolution.* Oxford University Press.

[30] Luo, Ergang (1937), "Qingji bingwei jiangyou de qiyuan [The Origin of the Personal Armies of the Qing Period]," *Zhongguo shehui jingji shi jikan [Collected Papers on Chinese Social and Economic History]*, 5(2): 235–50.

[31] Luo, Ergang (1939), *Xiangjun Xinzhi [A New History of the Hunan Army]*. Shanghai: Shanghai shudian, reprinted in 1996.

[32] McCord, Edward Allen (1993), *The Power of the Gun: The Emergence of Modern Chinese Warlordism*. Berkeley: University of California Press.

[33] Mei, Yingjie (1997), *Xiangjun Renwu Nianpu [The Chronicle of Figures in the Hunan Army]*. Yuelu Press: Changsha.

[34] Michael, Franz (1949), "Military Organization and Power Structure of China during the Taiping Rebellion," *Pacific Historical Review*, 18: 469–83.

[35] Myerson, Roger (2008), "The Autocrat's Credibility Problem and Foundations of the Constitutional State," *American Political Science Review*: 125–139.

[36] Miyazaki, Ichisada (1981), *China's Examination Hell: The Civil Service Examinations of Imperial China*. Yale

University Press.

[37] Platt, Stephen R. (2007), *Provincial Patriots: The Hunanese and Modern China*. Harvard University Press.

[38] Platt, Stephen R (2012), *Autumn in the Heavenly Kingdom: China, the West, and the Epic Story of the Taiping Civil War*. Knopf.

[39] Qian, Shifu (2005), *Qingdai Zhiguan Nianbiao [The Chronicle of Officials in the Qing Dynasty]*. Beijing: Zhonghua shuju.

[40] Rodriguez-Franco, Diana (2016), "Internal Wars, Taxation, and State Building," *American Sociological Review*, 81(1): 190–213.

[41] Schluessel, Eric (2020), *Land of Strangers: The Civilizing Project in Qing Central Asia.* Columbia University Press.

[42] Satyanath, Shanker, Nico Voigtlönder, and Hans-Joachim Voth (2017), "Bowling for Fascism: Social Capital and the Rise of the Nazi Party," *Journal of Political Economy*, 125(2): 478–526.

[43] Skinner, G. W., Zumou Yue, and Mark Henderson (2008), ChinaW-Cities, County Seats and Yamen Units (1820–1893), https://doi.org/10.7910/DVN/JCT5NE, Harvard Dataverse, V2.

[44] Slater, Dan (2010), *Ordering Power: Contentious Politics and Authoritarian Leviathans in Southeast Asia*. Cambridge University Press.

[45] Taylor, Jay (2009), *The Generalissimo: Chiang Kai-shek and the Struggle for Modern China*. Harvard University Press.

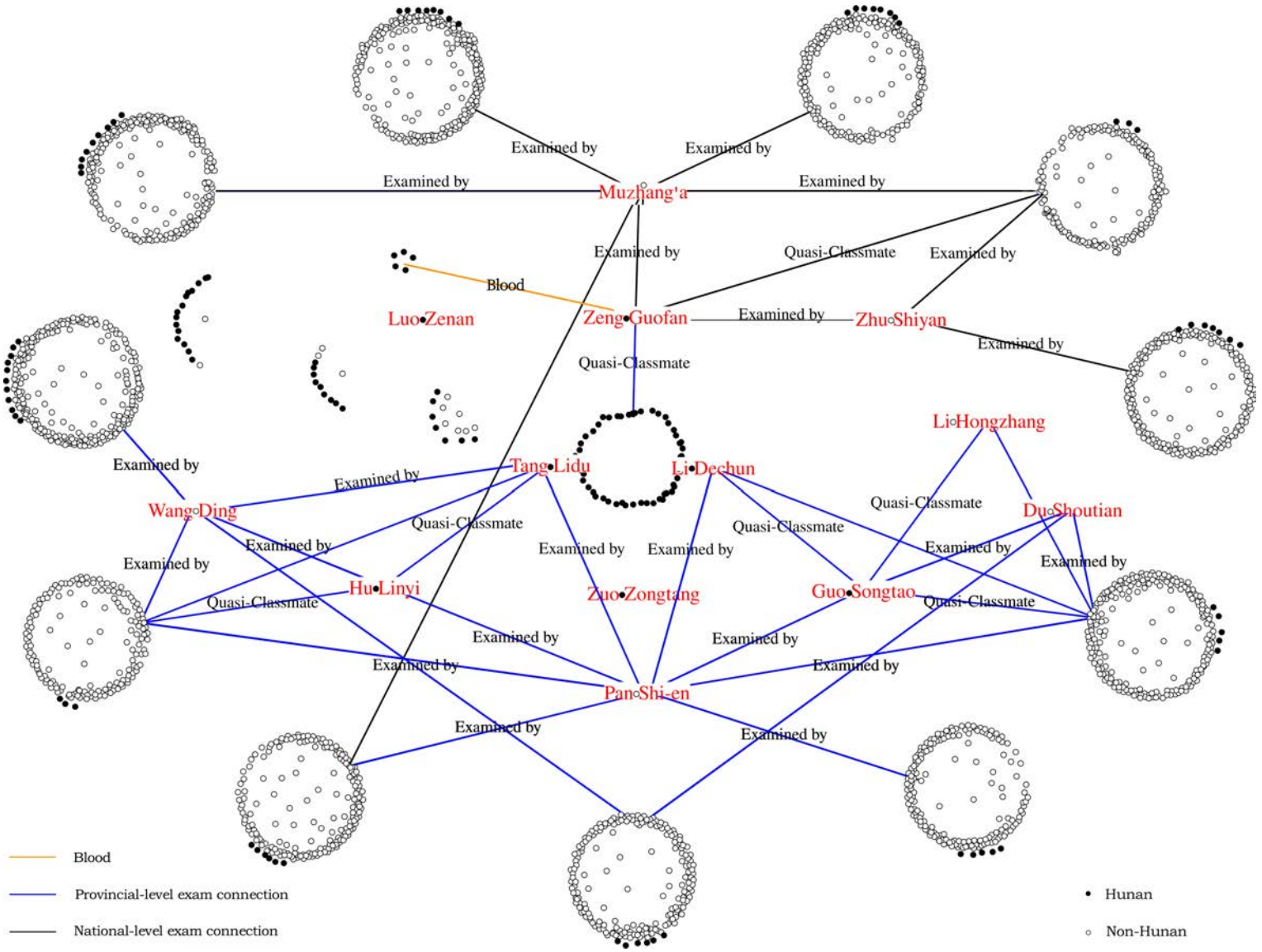
[46] Tilly, Charles (1985), "War-Making and State-Making as Organized Crime," in *Bringing the State Back In*, edited by Evans, Rueschemeyer and Skocpol: 169–191.

[47] Zeng, Guoquan (1885), Hunan Gazetteer. In *the Continuation to the Siku Quanshu*, edited by Editorial Committee of the Continuation to the Siku Quanshu, 2002, Shanghai: Shanghai Classics Publishing House.

[48] Zhu, Baojiong, and Peilin Xie (Ed.) (1980), *Ming Qing Jinshi Timing Beilu Suoyin [Official Directory of Ming-Qing Imperial Exam Graduates]*, Shanghai: Shanghai guji.

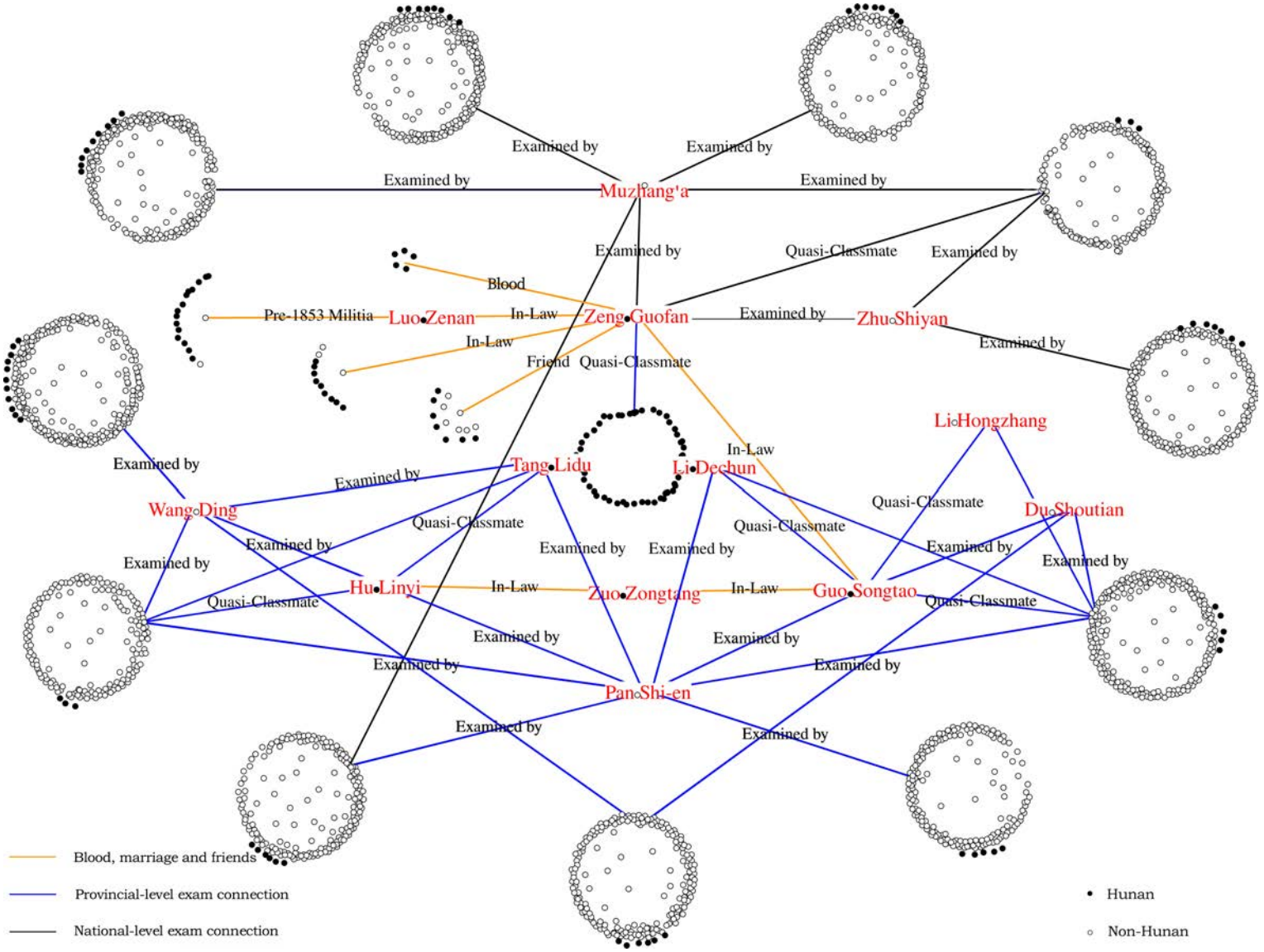
[49] Zhu Dongan (2017), *Zeng Guofan jituan yu wanqing zhengju [The Group of Zeng Guofan and Political Situation in Late Qing Dynasty]*, Liaoning renmin press.

Figure 1A. Elite Network Definition: Baseline Networks



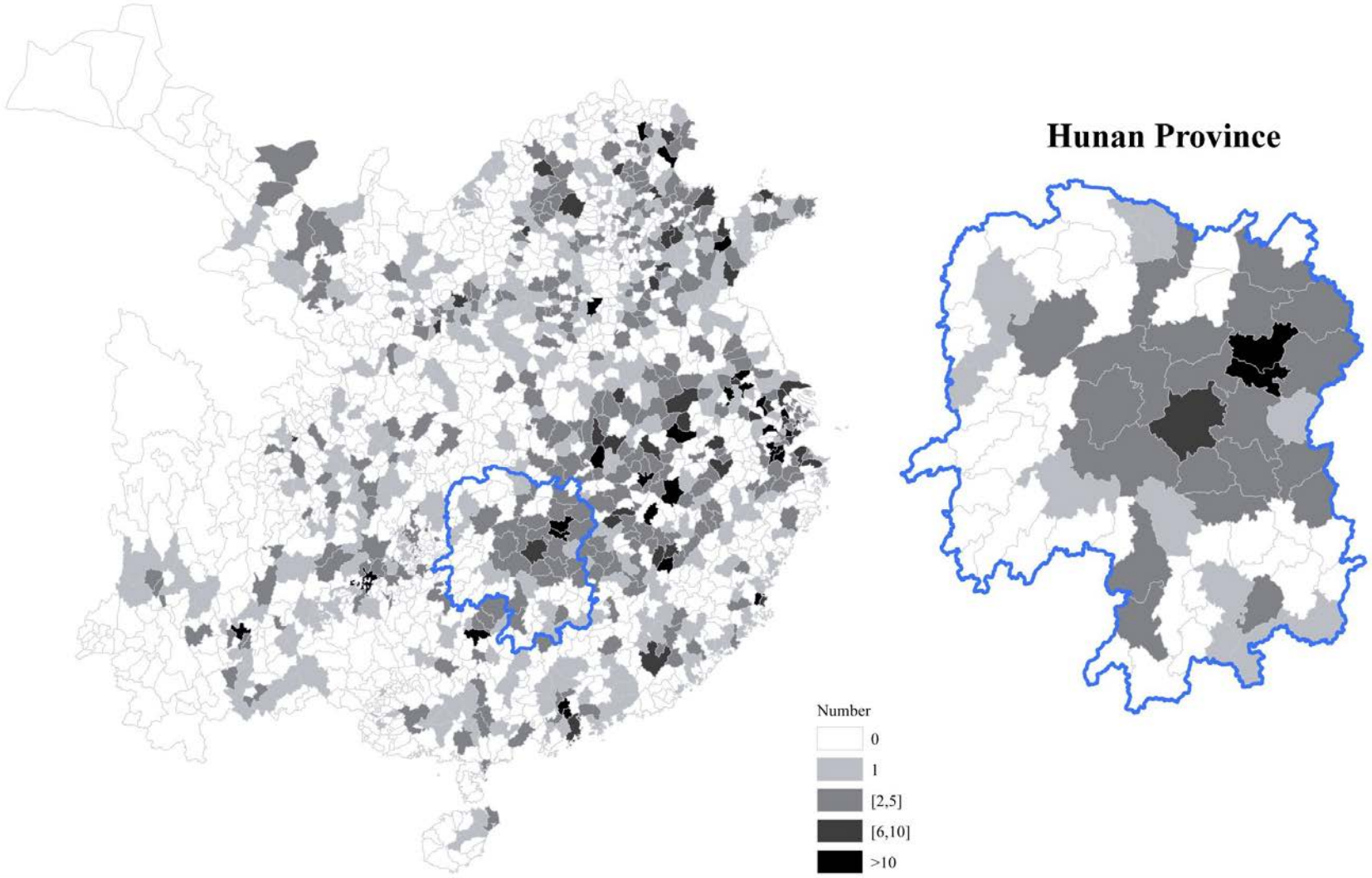
Note. This figure plots the elites in our baseline networks, defined by exam relationships and blood relationships. Each larger circle consists of the graduates from one exam. The individuals not linked in these networks appear in the expanded networks (see next page). We highlight a group of notable figures in red.

Figure 1B. Elite Network Definition: Expanded Networks



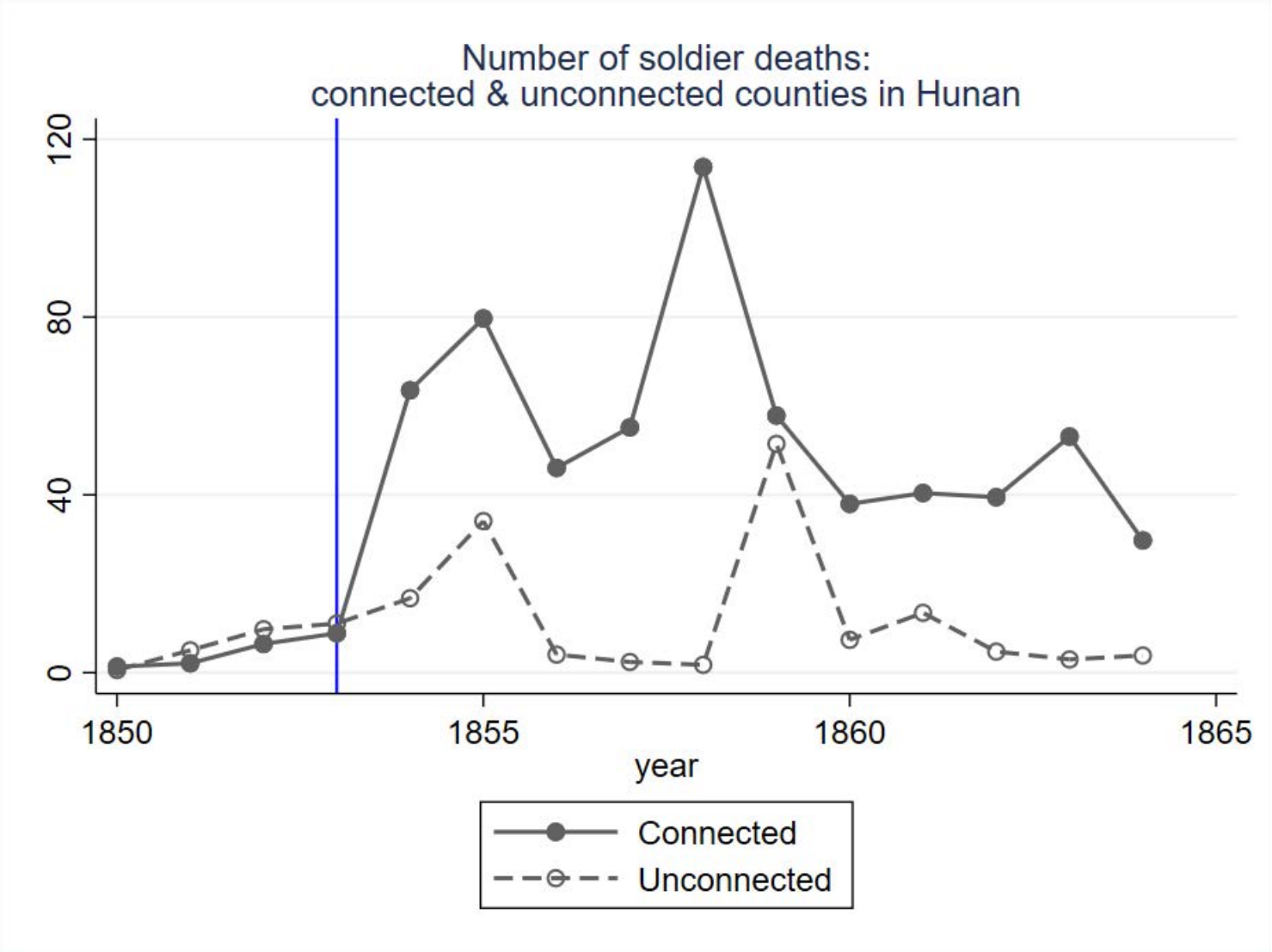
Note. This figure plots the elites in our expanded networks, i.e., adding marriages and friends to the baseline networks. We highlight a group of notable figures in red.

Figure 2. Spatial Distribution of County-level Elite Connections



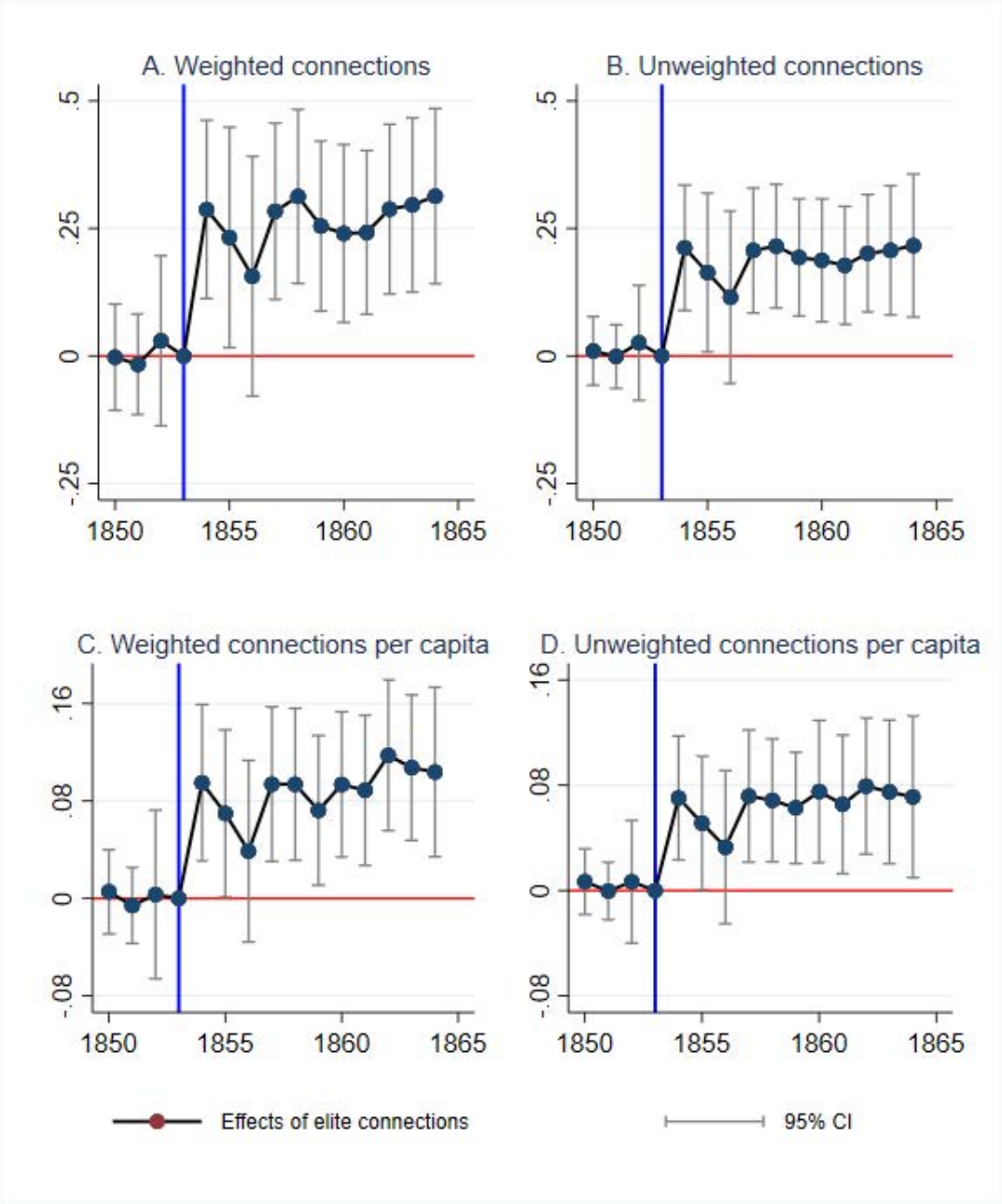
Note. The two maps illustrate a wide variation in the number of elites connected with Zeng Guofan across counties in Hunan and the whole country. For simplicity, the number of connections is unweighted.

Figure 3. Motivational Evidence on Elite Networks and Soldier Deaths: Raw Data



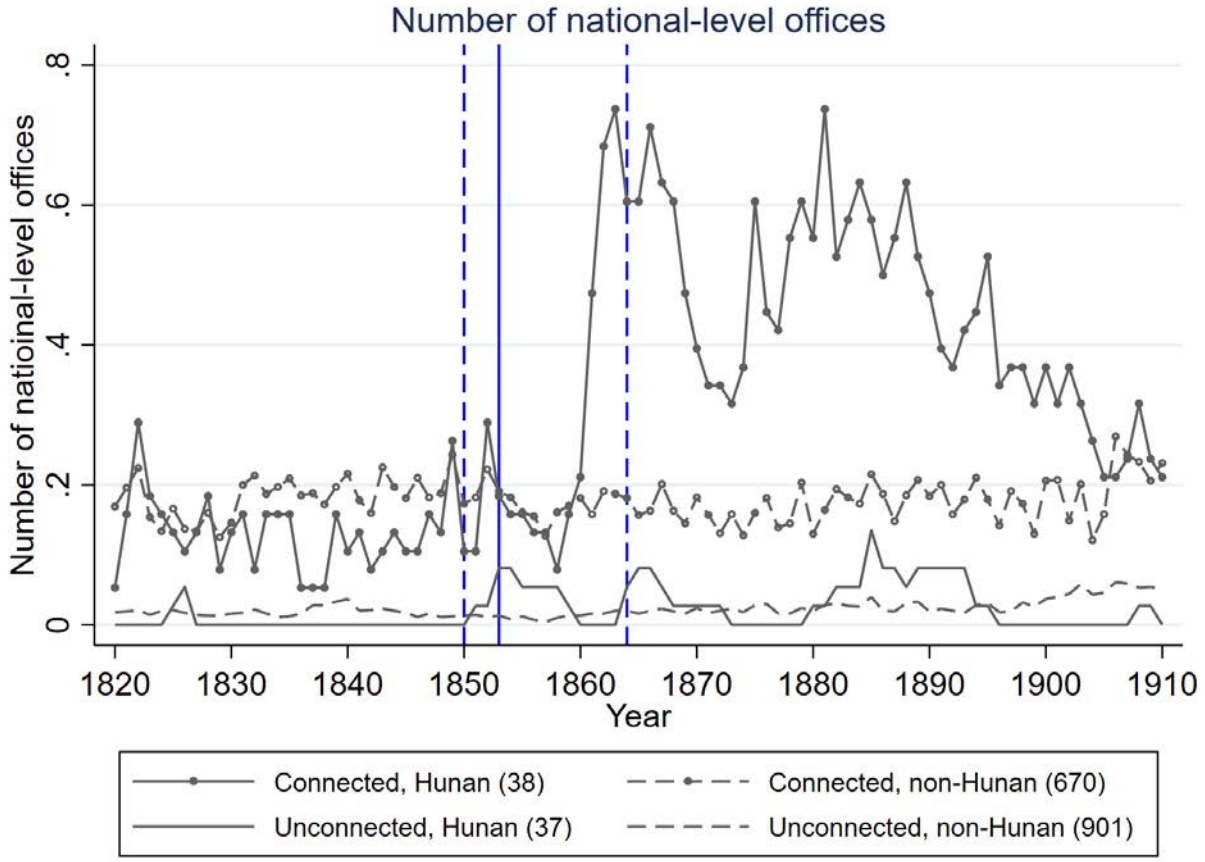
Note. This figure plots the number of soldier deaths by year in unconnected and connected counties (those with at least one elite in our baseline elite networks). The blue line indicates the year Zeng was assigned to organize an army from existing militias.

Figure 4. The Impact of Elite Connections on Soldier Deaths: Year-by-Year Estimates



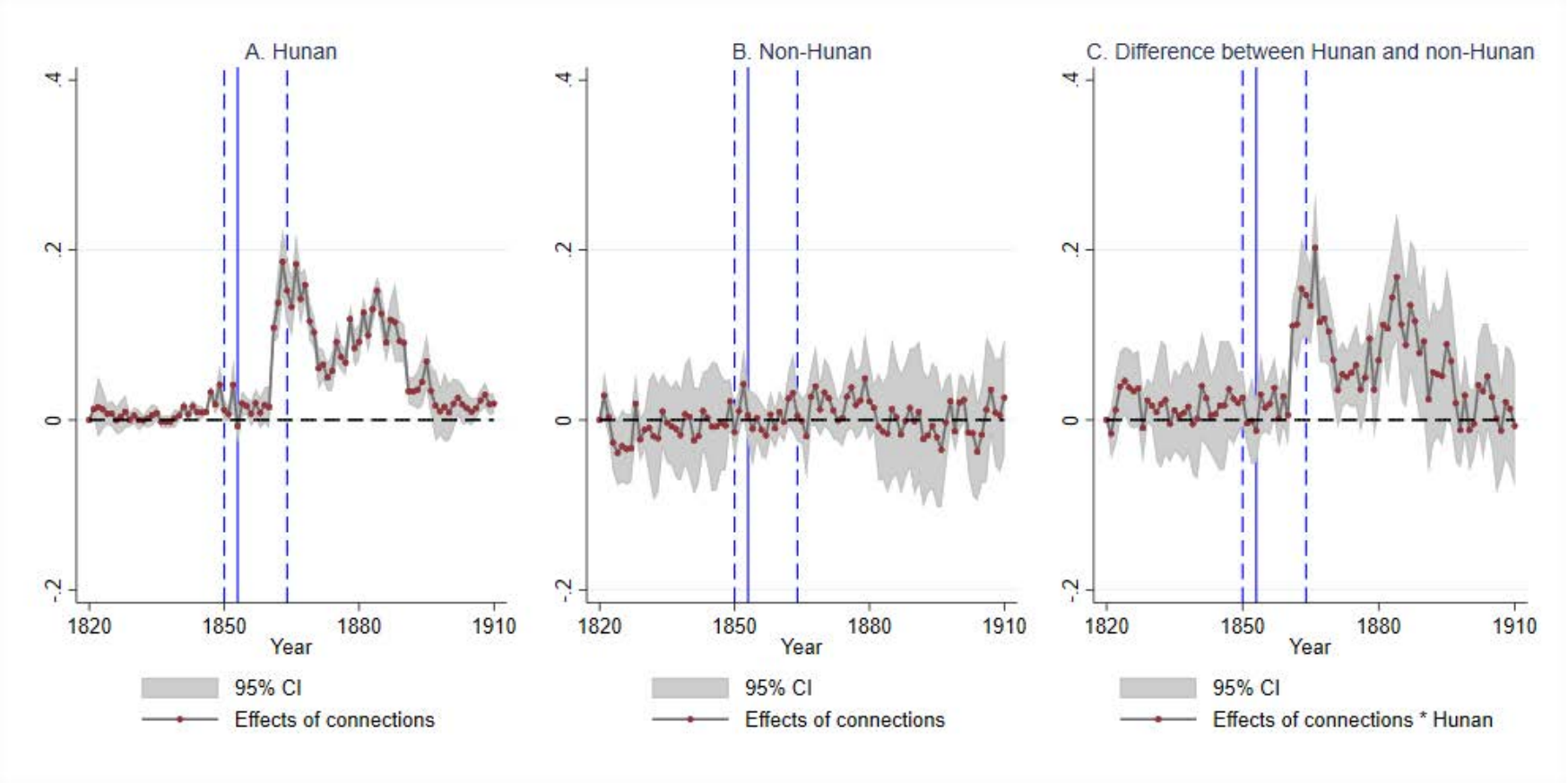
Note. This figure plots year-by-year estimates of the impact of county-level elite connections on county-level soldier deaths, using 1853 as the reference year. The blue line indicates 1853, the year Zeng was assigned to organize an army from existing militias. It shows that elite connections increased soldier deaths after Zeng took power in 1853 and persisted until the end of the war.

Figure 5. Motivational Evidence for the Power Effect: National-level Offices by Connection-Province



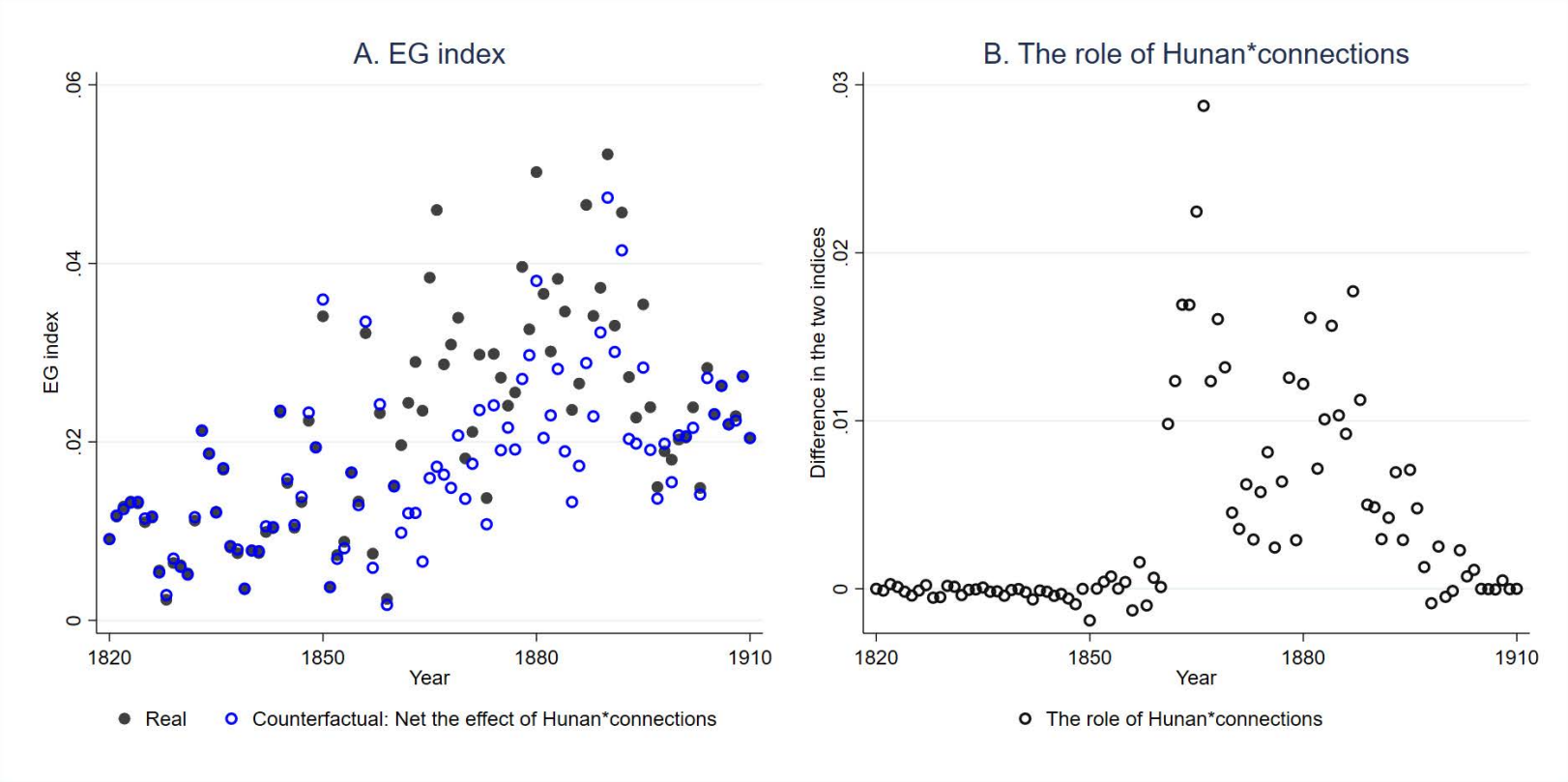
Note. This figure plots the number of national-level offices in four groups of counties. The two dashed lines indicate 1850 (the war started) and 1864 (the war ended). The blue solid line indicates 1853, the year Zeng was assigned to organize an army from existing militias. It shows that (1) connected counties in Hunan obtained more power in the later stage of the war and after the war, and (2) the role of connections in non-Hunan provinces was relatively stable over time.

Figure 6. The Dynamics Impacts of Elite Network on National-level Offices



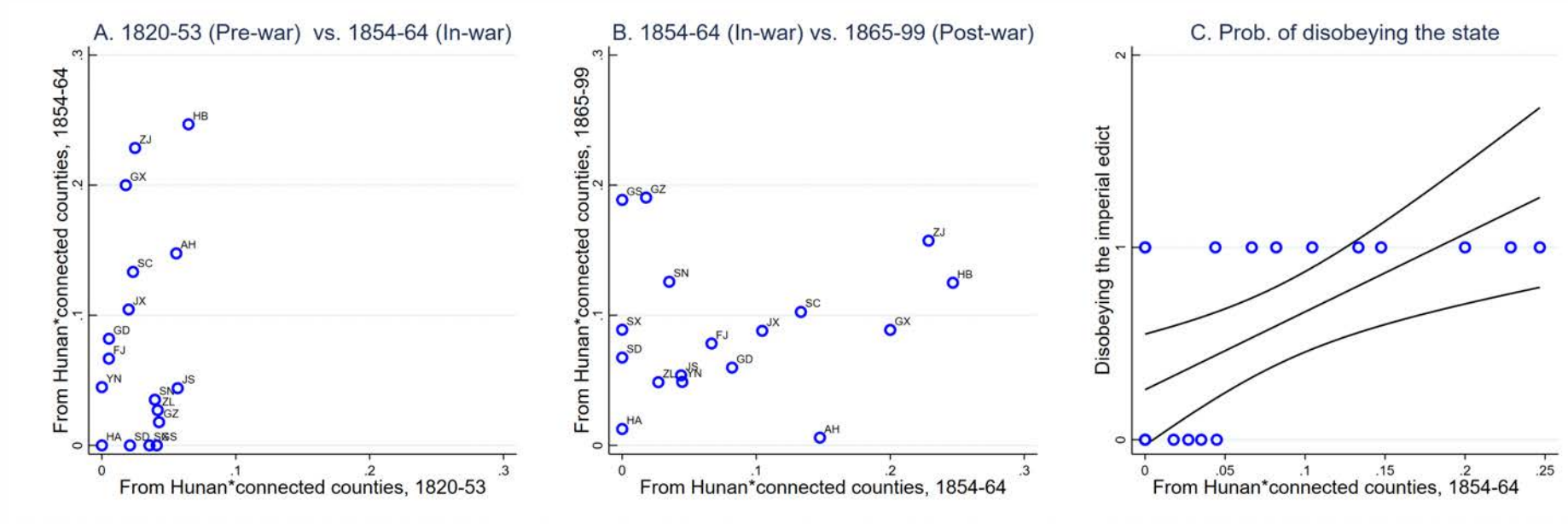
Note. The two dashed lines indicate 1850 (the war started) and 1864 (the war ended). The blue solid line indicates 1853, the year Zeng was assigned to organize an army from existing militias. Panel A reports the difference-in-differences estimates by year for Hunan counties during 1820–1910, using the year 1820 as the reference year. Panel B reports the results for non-Hunan counties. Panel C reports the triple-difference estimates. These results show that counties with more connections in Hunan province obtained more national-level positions during the last few years of the war and after the war.

Figure 7. National-level Power Distribution and the Contribution of Elite Networks



Note. The EG index measures the deviation of actual national-level offices from the benchmark shares determined by the Civil Service Exam. Panel A plots the EG index over time with and without elite connections in Hunan. Panel B plots the contribution of elite connections in Hunan in increasing the EG index.

Figure 8. The Share of Provincial Officials from Connected Counties in Hunan



Note. Panels A and B plot the share of the top-4 offices in each province from connected counties in Hunan over time. Panel C plots the relationship between this share during the war and the probability of disobeying the state in 1900, when the state declared war against foreign nations.

Table 1. Summary Statistics

Sample	A. Hunan counties, 1850–1864				B: All counties, 1820–1910			
	Source	Obs.	Mean	S.D.	Source	Obs.	Mean	S.D.
Number of soldier deaths, by year	A	1,125	26.21	145.75				
Number of soldier deaths during 1854-64 (1K)	A	1,125	0.37	1.20	A	149,786	0.02	0.27
Elite connections, Baseline networks (weighted)	B, C, D, E	1,125	1.23	2.53	B, C, D, E	149,786	0.68	2.02
Elite connections Per capita, Baseline networks (weighted)	A, B, C, D, E, L	1125	4.48	7.53	B, C, D, E, L	149,786	2.92	9.28
Number of national-level offices					K	149,786	0.09	0.54
ln Area	F	1,125	7.84	0.48	F	149,786	7.40	0.89
ln Population	A, L	1,125	12.14	0.62	L	149,786	12.08	1.02
ln Rice suitability	G	1,125	1.63	0.10	G	149,786	1.34	0.32
ln Wheat suitability	G	1,125	1.61	0.06	G	149,786	1.56	0.30
Main river dummy	F	1,125	0.40	0.49	F	149,786	0.42	0.49
Distance to the Grand Canal	F	1,125	8.74	1.22	F	149,786	7.06	5.56
ln Urban population	H	1,125	8.53	1.48	H	149,786	7.70	2.76
Prefecture capital	H	1,125	0.28	0.51	H	149,786	0.14	0.35
ln Number of Jinshi	B, F	1,125	1.11	1.07	B, F	149,786	1.46	1.23
ln Quotas for the entry-level exam	I	1,125	2.63	0.36	I	149,786	2.50	0.84
Distance to Nanjing	F	1,125	8.64	1.26	F	149,786	9.12	4.74
Along the route of Taipings during 1850-53	J	1,125	0.12	0.33	J	149,786	0.04	0.19

Note. A. Zeng (1885); B. Zhu and Xie (1980); C. Jiang, Jing and Chen (2010); D.Cheng (1997); E. Mei (1997); F. CHGIS (2007); G. FAO (2012); H. Skinner, Yue and Henderson (2008); I. Kun (1899); J. Cheng and Hsu (1980); K. Qian (2005); L. Ge (2000). See more on the data construction process in Appendix A.1.

Table 2. The Impact of Elite Connections on Soldier Deaths: DD Estimates
Sample: Hunan counties, 1850–1864

Dependent variable	ln (Soldier deaths+1)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Connections measured by	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$						N_c			
Baseline connections × Post	0.214***	0.201***	0.212***	0.213***			0.146***	0.147***		
	(0.058)	(0.060)	(0.058)	(0.059)			(0.042)	(0.042)		
Baseline connections per capita × Post					0.061***	0.056**			0.047***	0.044**
					(0.022)	(0.023)			(0.017)	(0.017)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Geographic-economic var.×Post		Y	Y	Y		Y		Y		Y
Political var.×Post			Y	Y		Y		Y		Y
Taiping var.×Post				Y		Y		Y		Y
Observations	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125
R-squared	0.452	0.467	0.477	0.478	0.447	0.475	0.452	0.477	0.449	0.476

Note. The table shows that elite connections increased the soldier deaths of a county after Zeng took power in 1853. The sample includes all 75 Hunan counties during 1850–1864.
Controls include (i) Geographic-economic factors: ln area, ln population, ln rice suitability, ln wheat suitability, distance to the great canal, and whether the county has a main river; (ii) Political importance: whether the county is a prefecture capital, ln quotas for the entry-level Civil Service Exam pre-Taiping, and ln number of pre-Taiping Jinshi (who succeeded in the national-level exam); (iii) Taiping-related factors: whether the county was on the route of the Taipings to Nanjing, and distance to Nanjing. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table 3. The Impact of Elite Connections on Soldier Deaths: Types of Links
Sample: Hunan counties, 1850–1864

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Expanded network × Post	0.183***						
	(0.038)						
Blood, marriage and friends × Post		0.178***					
		(0.043)					
Provincial-level exam connections × Post			0.200**				
			(0.095)				
National-level exam connections × Post				0.680**			
				(0.282)			
Same-Surname baseline connections × Post					0.223***	0.249***	0.214***
					(0.067)	(0.073)	(0.061)
Diff.-Surname baseline connections × Post						0.057***	
						(0.016)	
County FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y	Y	Y	
Pref FE × Year FE	Y	Y	Y	Y	Y	Y	
Year FE × Surname FE					Y	Y	Y
County FE × Surname FE					Y	Y	Y
Year FE × County FE							Y
Observations	1,125	1125	1125	1125	48,495	48,495	48,480
R-squared	0.671	0.667	0.664	0.665	0.473	0.478	0.616

Note. This table reports the results when examining expanded networks, specific types of links, and clan relations.
Controls include all the geography-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table 4. The Impact of Elite Connections on Soldier Deaths: Placebo Networks
Sample: Hunan and Huai counties, 1850–1864

Dependent variable	ln (Soldier deaths+1)										
Sample	Hunan						Huai Region				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				IV-Estimates							
Baseline connections × Post				0.329**	0.323**	0.330**	0.029				
				(0.137)	(0.140)	(0.143)	(0.036)				
National-level exam connections × Post	0.725**	0.756**	0.727**					0.047	0.030	0.048	0.028
	(0.316)	(0.335)	(0.316)					(0.052)	(0.056)	(0.053)	(0.054)
Placebo connections I × Post	-0.028		0.146	-0.303		-0.079			0.021		0.106
(Assuming Zeng passed the previous exam)	(0.254)		(0.537)	(0.329)		(0.535)			(0.047)		(0.097)
Placebo connections I × Post		-0.085	-0.179		-0.278	-0.231				-0.001	-0.115
(Assuming Zeng passed the next exam)		(0.192)	(0.422)		(0.253)	(0.408)				(0.050)	(0.106)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pref. FE × Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,110	1,110	1,110	1,110	1,110	1,110	1,995	1,995	1,995	1,995	1,995
R-squared	0.638	0.638	0.638	0.102	0.102	0.102	0.561	0.561	0.561	0.561	0.561

Note. Columns (1)–(3) report the OLS results. Columns (4)–(6) report the results using actual national-level exam connections to predict our baseline connections, while controlling for placebo connections. Zeng's home county is excluded in these comparisons. Columns (7)–(11) present the results when using soldier deaths in the Huai region as the outcome.
Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table 5. The Impact of Elite Connections on Elite Power: DD and DDD Estimates
Sample: All counties, 1820–1910

Dependent variable	National-level offices (mean: 0.093)					
	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Hunan		Non-Hunan		All	
Baseline connections × 1854-1910	0.053***	0.054***	0.009	0.011	0.009	0.011
	(0.005)	(0.005)	(0.012)	(0.011)	(0.012)	(0.011)
Baseline connections × Hunan × 1854-1910					0.044***	0.049***
					(0.012)	(0.013)
Hunan × 1854-1910					0.094	0.082
					(0.058)	(0.063)
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls × 1854-1910		Y		Y		Y
Observations	6,825	6,825	142,961	142,961	149,786	149,786
R-squared	0.338	0.357	0.388	0.388	0.383	0.384

Note. This table reports the impact of elite networks on the number of national-level offices in a county-year. Columns (1)–(4) are obtained from a difference-in-differences design and Columns (5)–(6) from a triple-difference design.
Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table 6. The Power Effect: the Role of Soldier Deaths
Sample: All counties, 1820–1910

Dependent variable	National-level offices (mean: 0.093)					
	(1)	(2)	(3)	(4)	(5)	(6)
Methods	OLS			IV Estimates		
Baseline connections × Hunan × 1854-1910	0.049***		-0.011			
	(0.013)		(0.015)			
Soldier deaths$_{1854-64}$ × 1854-1910		0.421***	0.427***	0.383***	0.387***	0.368***
		(0.091)	(0.097)	(0.077)	(0.093)	(0.044)
Natl-level exam connections × Hunan × 1854-1910					0.018	
					(0.076)	
Other connections × Hunan × 1854-1910						0.008
						(0.035)
Baseline Connections × 1854-1910	0.011	0.010	0.011			
	(0.011)	(0.011)	(0.011)			
Natl-level exam connections × 1854-1910				0.006	0.007	0.007
				(0.020)	(0.022)	(0.022)
Other connections × 1854-1910				0.022	0.019	0.019
				(0.030)	(0.040)	(0.040)
Hunan × 1854-1910	0.082	-0.018	-0.008	-0.020	-0.024	-0.022
	(0.063)	(0.029)	(0.032)	(0.040)	(0.038)	(0.037)
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls × 1854-1910	Y	Y	Y	Y	Y	Y
Observations	149,786	149,786	149,786	149,786	149,786	149,786
R-squared	0.384	0.392	0.392	0.019	0.019	0.019
First-state F test				5.6×10^4	1.0×10^5	6.3×10^4
Over-identification test (p-value)				0.82		

Note. Columns (1)–(3) show that the impacts of elite connections can be explained by including soldier deaths. In Columns (4)–(6), we separate all connections into two components—those built via the national-level exams and the rest—and obtain two instruments: (i) national-level exam connections×Hunan×1854-1910 and other connections×Hunan×1854–1910. Column (4) presents the results using two instruments to predict soldier deaths. Column (5) presents the result using instrument (ii) as the instrument to check whether instrument (i) has any direct effect, and column (6) does the opposite. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Online Appendix

Table of Contents

A Data Construction

A.1 Elite Networks

The Civil Service Exam Links. Using information on all exams during 1820–1849, we define the exam links in four steps described below.

- Zeng Guofan passed the provincial-level exam in 1834 and the metropolitan (national-level) exam in 1838, based on which we identify the quasi-classmate relationships between other successful examinees and Zeng. We collect the list of *Juren*, successful examinees at the provincial exam, from Jiang, Jing and Chen (2010), and *Jinshi*, the successful examinee at the national-level exam, from Zhu and Xie (1980). Specifically, 53 *Juren* in 1834 and 182 *Jinshi* in 1838 were directly connected with Zeng via quasi-classmate links.
- We identify the examiners of Zeng in the national-level exam: Muzhang'a, Zhu Shiyuan, Wu Wenrong and Liao Hongquan, who were Zeng's masters.
- We track all the other exams Zeng's examiners had supervised, and define the examiner-examinee relationship between these examiners and the *Jinshi* from all the other exams. Out of the four examiners of the 1838 national-level exam, two of them had served as the examiners of the other five exams. Specifically, Muzhang'a supervised the national-level exams in 1823, 1832, 1835 and 1845, Zhu Shiyuan in 1829 and 1832. In total, 1,138 *Jinshi* connected with the two examiners via examiner-examinee links and were, hence, indirectly connected with Zeng.
- We track the political path of the quasi-classmates of Zeng at the 1834 provincial exam. Out of the 53 quasi-classmates, Tang Lidu and Li Dechun passed the national-level exams and became *Jinshi*. We repeat the three steps above to construct the exam links for these two individuals. Tang Lidu passed the national-level exam in 1836, which made him connected with 163 quasi-classmates and four examiners (masters), Pan Shi-en, Wang Ding, Wu Jie, and Wang Zhi. Out of these four examiners, Pan Shi-en also supervised the national-level exams in 1832, 1840, and 1847, and Wang Ding in 1826 and 1841. Li Dechun passed the national-level exam in 1847, which made him connected with 225 quasi-classmates and four examiners (masters), Pan Shi-en, Du Shoutian, Fu Ji and Zhu Fengbiao. Out of the four examiners, Pan Shi-en also supervised the national-level exams in 1832, 1840, and 1847, and Du Shoutian

in 1841. Altogether, 1,235 individuals (198 individuals have been counted in step 3) got indirectly connected with Zeng via Tang Lidu and Li Dechun.

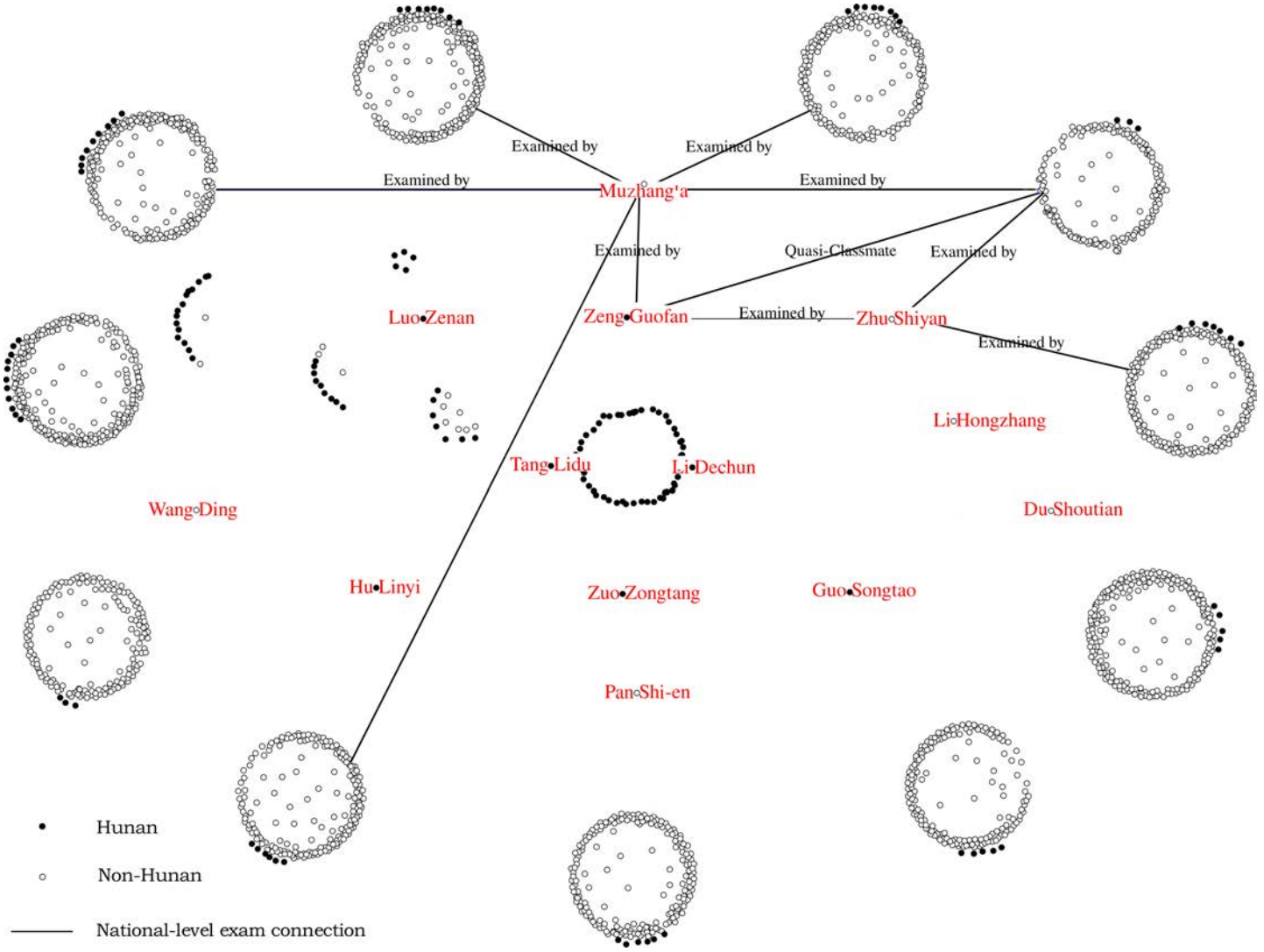
Some individuals appeared multiple times in the exam links. In total, 2,414 unique individuals were directly or indirectly connected with Zeng Guofan via these exam links.

Kinship. We collect information on the blood and marriage relationships from Zeng Guofan's Family Tree (Cheng 1997). Overall, 5 individuals were connected with Zeng via blood ties and 12 via marriages.

Friends. The friend network of Zeng is obtained from the Chronicle of Figures in the Hunan Army (Mei 1997). In total, 29 individuals were mentioned as friends who helped Zeng in organizing the Hunan Army.

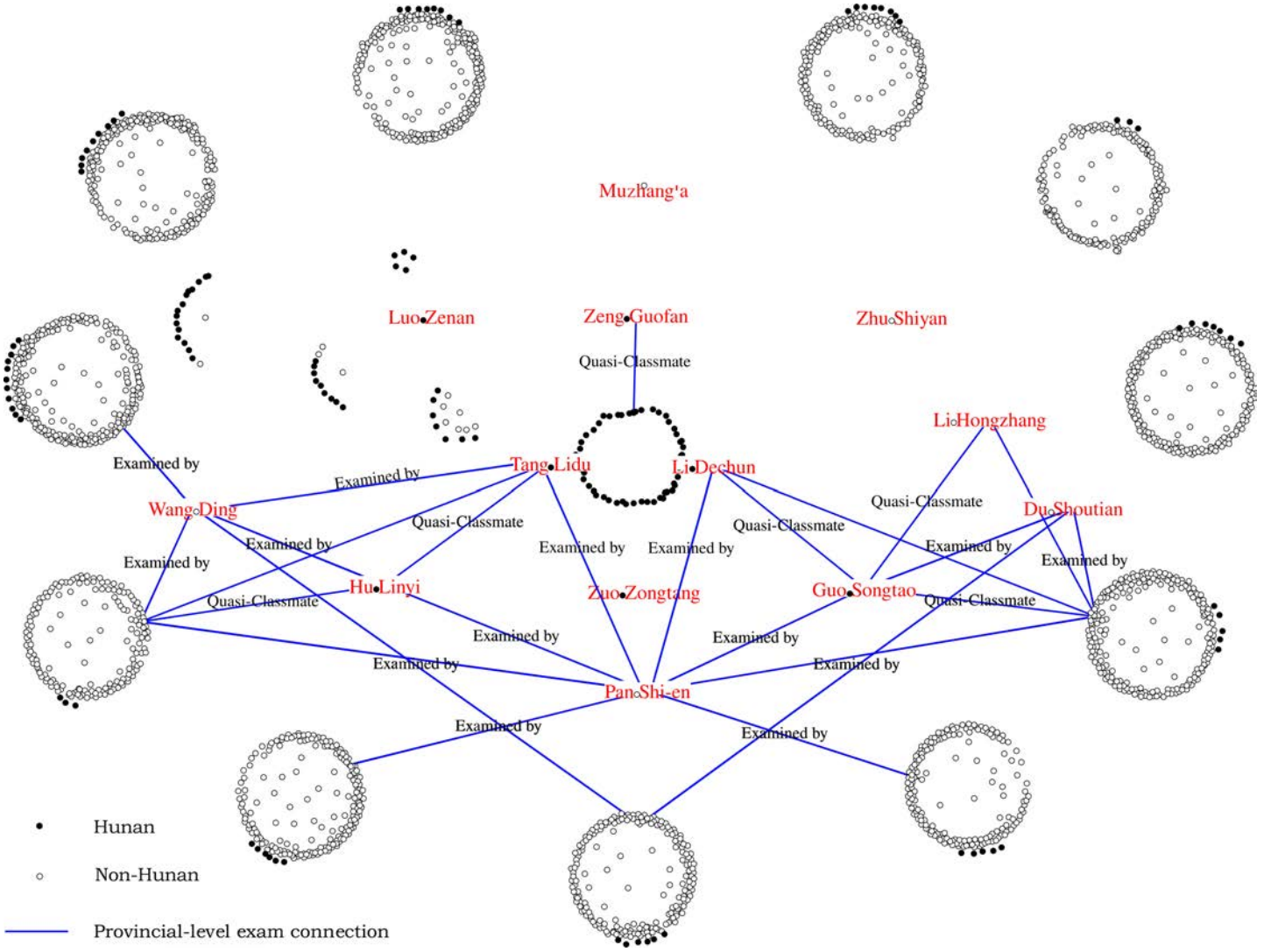
We plot these links by type in Figures A.1(a)-(c). As shown, the exam networks enabled Zeng to connect with a wide group of elites throughout the country.

Figure A.1. (a) National-level Exam Links



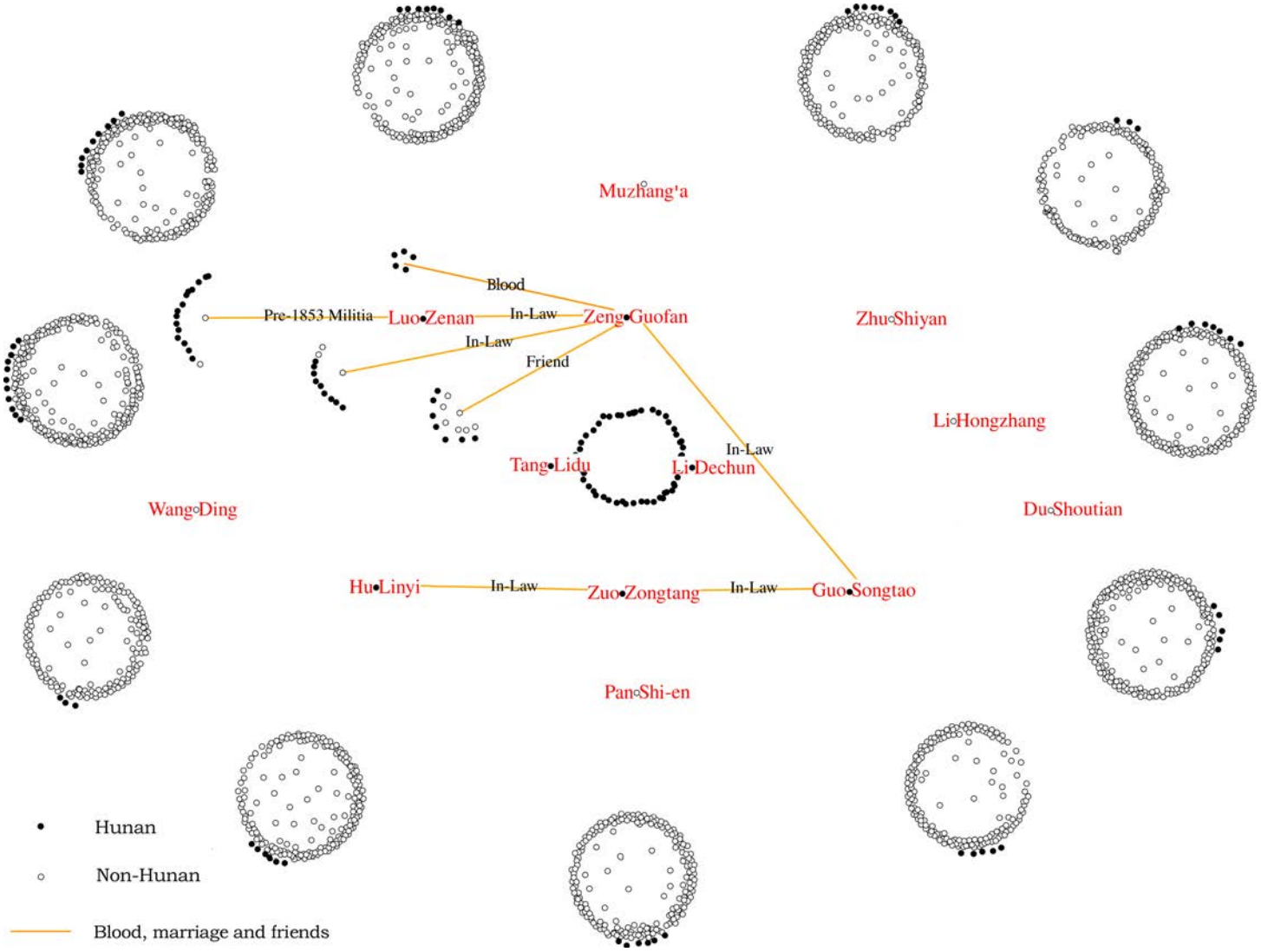
Note. This figure plots those connected with Zeng via the national-level exam. These links include both direct links and indirect ones.

Figure A.1. (b) Provincial-level Exam Links



Note. This figure plots those connected with Zeng via the provincial-level exam. These links enabled Zeng to indirectly connect with many via other national-level exam links.

Figure A.1. (c) Blood, Marriage, and Friendship Links



Note. This figure plots those connected with Zeng via kinship and friendship.

A.2 County-level Characteristics

Geographic-economic Variables. By matching CHGIS V4 (2007) with county boundaries in the Qing Dynasty, we calculate the area of each county and construct a dummy indicating whether a county contains a major river using the ArcGIS software. Based on the suitability index from the Food and Agriculture Organization's 2012 Global Agro-Ecological Zones database (FAO (2012)), which ranges from 1 ("not suitable") to 8 ("very high") in each 0.5-degree $\times$ 0.5-degree grid cell, we measure county-level crop suitability as the average for all cells located in each county with a primary focus on the suitability of rice and wheat.

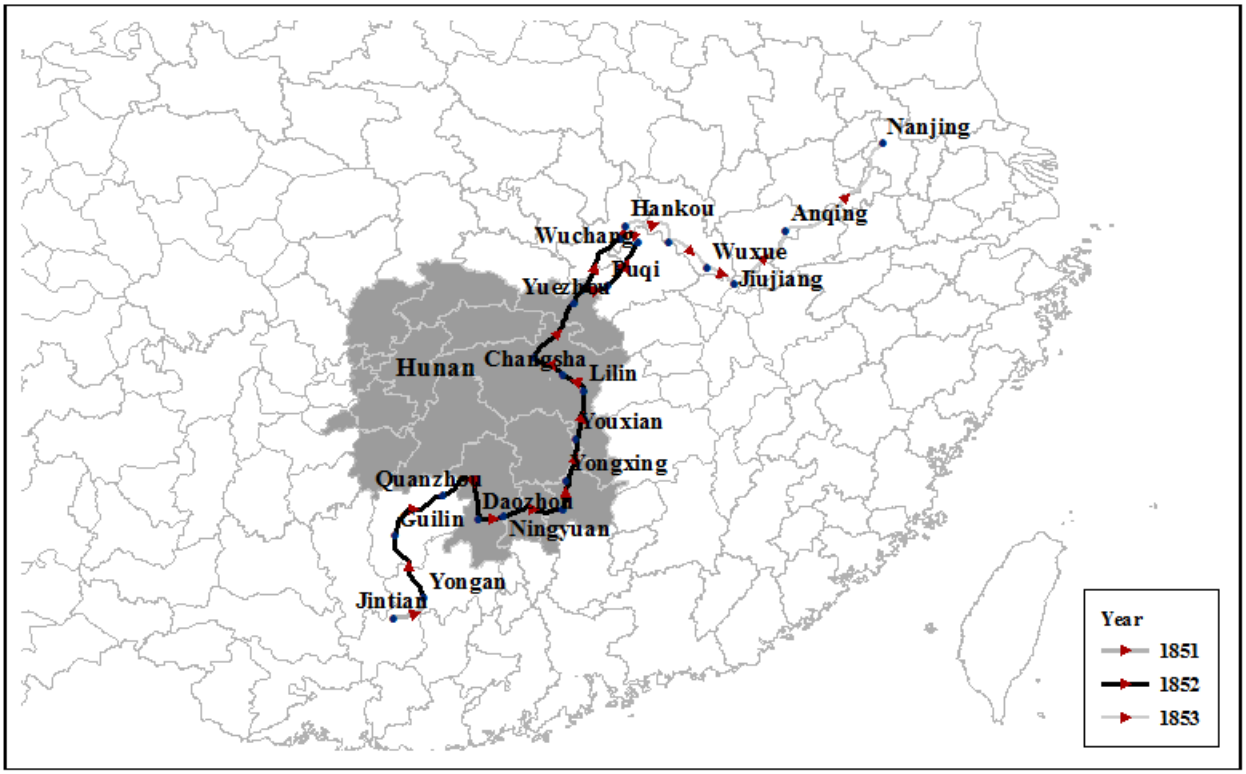
For Hunan province, we collect the information on county-level population in 1820 from Zeng (1885) and validate the data with Ge (2000). However, we should note that no systematic information on county-level population exists for the whole country. Thus, for non-Hunan counties in our national sample, we use prefecture-level population data provided by Ge (2000) to impute county-level population data based on each county's area. To take this assumption into consideration, we cluster our standard errors at the prefecture level when using the national sample.

We obtain county-level urban population estimates in the mid-19th century for the whole country from Skinner, Yue and Henderson (2008).

Political Variables. We collect information on the geolocation of prefecture capitals. If a county contains a prefecture capital, we term it a prefectural capital county. We use the value of quotas for the entry-level exam and the number of *Jinshi* to measure the influence of the civil service exam. The information on quotas is obtained from Kun (1899), and the number of *Jinshi* from Cheng and Hsu (1980). We calculate the value of county-level quotas as the sum of two parts: the county's own quota and the prefecture-level quota divided across counties within a prefecture based on their area.

Taiping-related Variables. The Taipings started in Guangxi province in 1850 and launched a crusade northward towards the rich provinces. Figure A.2 maps the route before 1854, which comes from Cheng and Hsu (1980). We consider whether a county is on this route and calculate a county's great circle distance to Nanjing—the Heavenly Capital.

Figure A.2. The Routes of the Taipings 1850-53



A.3 Elite Connections and Other County Characteristics

We examine the correlations between county-level elite connections and other county characteristics in Table A.3. While the correlations between county-level elite connections and geographical-economic factors are not systematically strong, we note that elite connections are positively associated with the number of pre-war national-level exam graduates (*Jinshi*). This pattern begs a question of whether our results capture a general eliteness of a county, which we address in different ways.

Table A.3. Elite Connections and Other Characteristics cross Counties
Dependent variable: $\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$

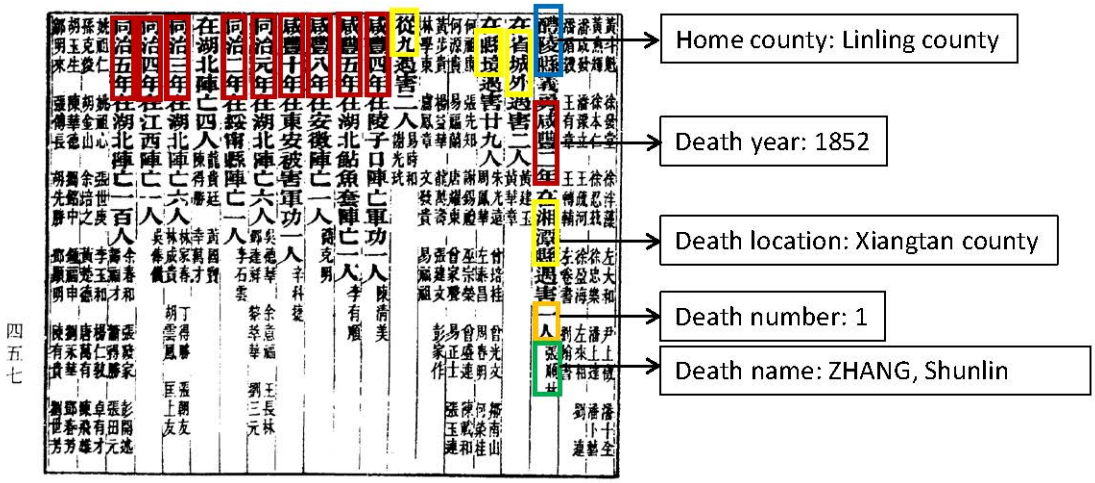
	(1)	(2)
Sample	Hunan	All
ln Area	2.530*	-0.033
	(1.367)	(0.081)
ln Population	0.556	0.344***
	(0.778)	(0.087)
ln Rice suitability	-1.713	0.313
	(1.937)	(0.194)
ln Wheat Suitability	0.059	-0.327
	(2.982)	(0.223)
Main river dummy	0.255	0.121
	(0.637)	(0.118)
Distance to the Great Canal	0.572	-0.004
	(0.870)	(0.041)
ln Urban population	-0.169	-0.083**
	(0.368)	(0.040)
Prefecture capital	0.379	0.448**
	(0.777)	(0.180)
ln Number of Jinshi	1.275**	0.556***
	(0.490)	(0.110)
ln Quotas for the entry-level exam	-3.120**	-0.202**
	(1.477)	(0.097)
Distance to Nanjing	-0.362	0.022
	(0.927)	(0.054)
Along the route of Taiping, 1850-53	1.517*	0.860**
	(0.779)	(0.346)
Observations	75	1,646
R-squared	0.420	0.141

Note. All standard errors are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

A.4 Soldier Deaths

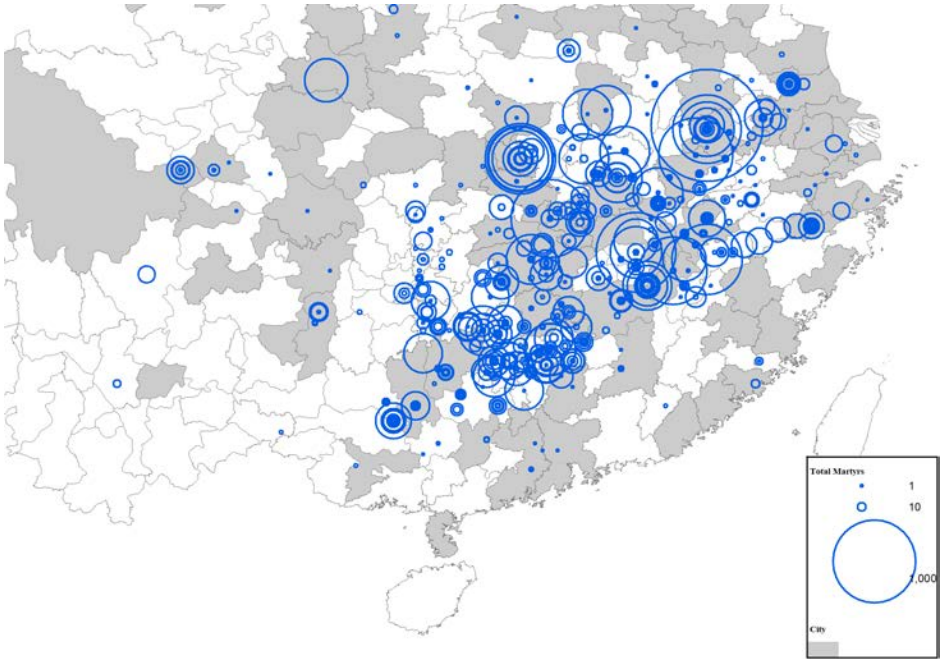
The Hunan Gazetteers (Zeng 1885) list all the soldiers who died during the Taiping rebellion by county and year. Figure A.4(I) below presents an example of the records.

Figure A.4. I. Records on Soldier Deaths



We use this information in several ways. First, we calculate the total number of soldier deaths at the county-year level. Second, based on the surname information, we calculate the total number of soldier deaths at the county-surname-year level. Third, using the information on battle location, we know the number of soldier deaths at the county-battle level. During 1850–64, the Hunan Army and the Taipings fought at least 694 battles across the country, as mapped in Figure A.4(II) below.

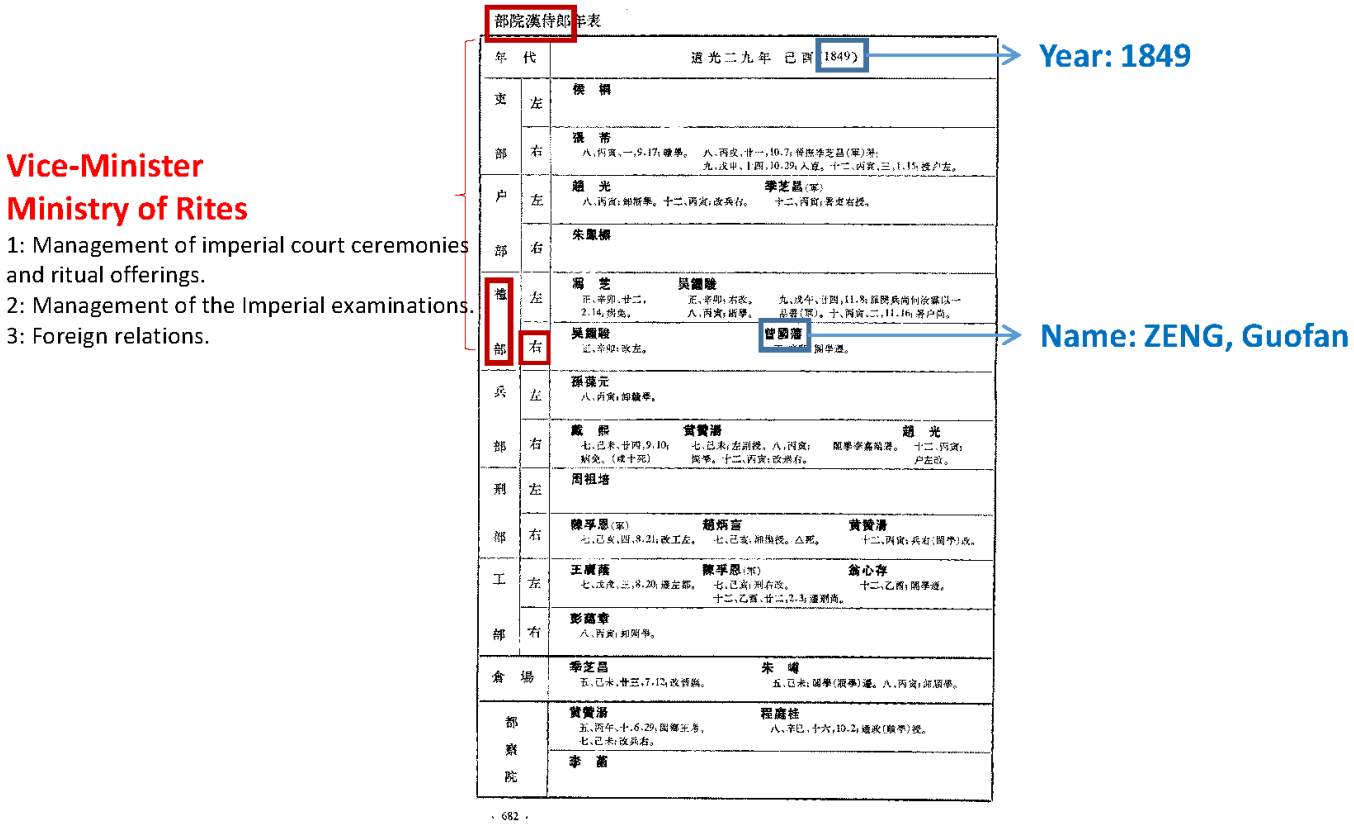
Figure A.4. II. Map of the Battles 1850-1864



A.5 National-level Offices

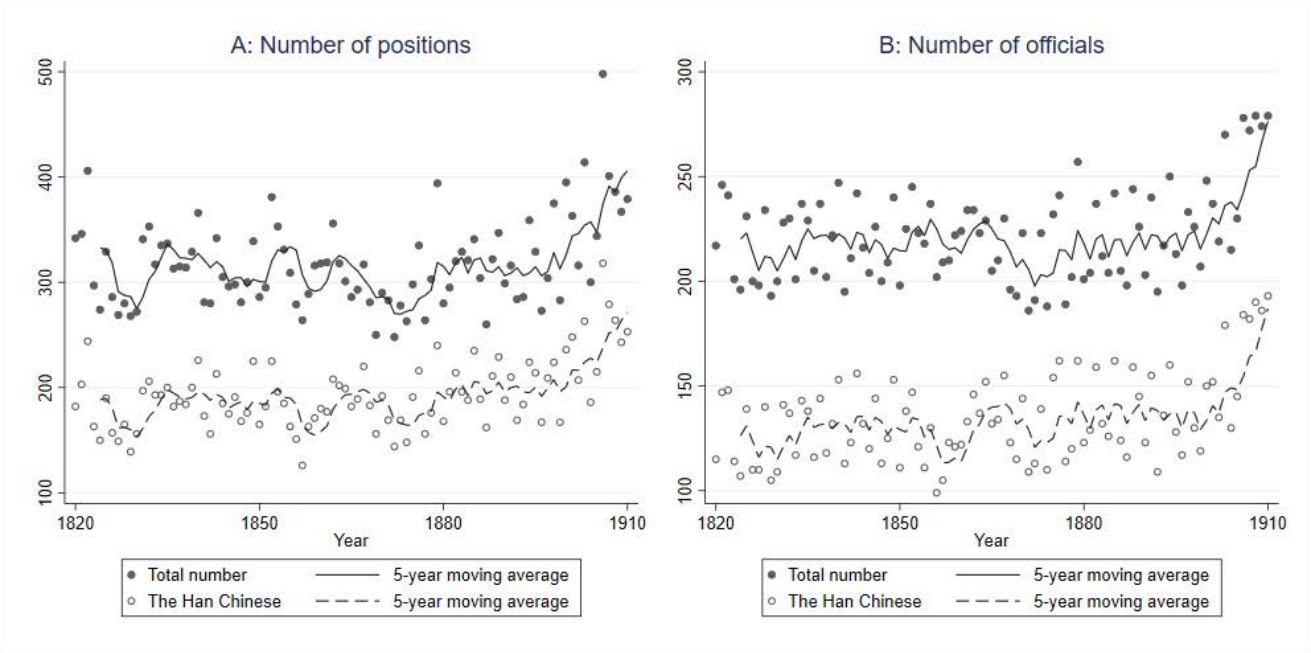
We collect data on national-level offices and officials from *The Chronicle of Officials in the Qing Dynasty* (Qian 2005). Figure A.5(I) presents an example of the records.

Figure A.5. I. Records on National-level Offices



We construct a database of national-level offices during 1820–1910. As shown in A.5(II), the number of national-level offices was relatively stable over time. Based on the hometown county information provided in Qian (2005), we obtain the total number of offices at the county-year level. Our analyses focus on the Han officials for both data and conceptual reasons. On the data side, the Manchu officials originated from the Manchu region, which is not included in our main analyses. On the conceptual level, the civil service exam was the channel to recruit Han officials, whereas the Manchu elites—a small share of the population—could gain power without taking the exam.

Figure A.5. II. Number of National-level Offices and Officials Over Time



B More Results on Elite Networks and Soldier Deaths

B.1 Outlier and Specification Checks

Dropping Certain Counties. Recall that in Figure 2, we observe that a few counties (e.g., prefecture capital and Zeng's home county) had relatively more connections in our baseline networks. Our finding holds after excluding such counties, as reported in Table B.1(I) below.

Inverse Hyperbolic Sine. We use ln (Soldier Deaths+1) as our dependent variable in our main analyses. As shown in Table B.1(II), our results are robust to using the inverse hyperbolic sine as the dependent variable.

Table B.1. I. The Impact of Elite Connections on Soldier Deaths: Checking Outliers
Sample: Hunan counties, 1850–1864; Dependent variable: ln (Deaths+1)

	(1)	(2)	(3)
	Baseline	Connections ≤10	Connections ≤3
Baseline connections × Post	0.213***	0.380***	0.529***
	(0.059)	(0.115)	(0.196)
Year FE	Y	Y	Y
County FE	Y	Y	Y
Controls × Post	Y	Y	Y
Observations	1,125	1,095	1,080
R-squared	0.479	0.463	0.399

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table B.1. II. The Impact of Elite Connections on Soldier Deaths
Sample: Hunan counties, 1850–1864

Dependent variable	$\ln(Deaths + (Deaths^2+1)^{0.5})$			
	(1)	(2)	(3)	(4)
Connections measured by	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$		N_c	
Baseline connections × Post	0.239***		0.166***	
	(0.064)		(0.046)	
Baseline connections per capita × Post		0.063**		0.050***
		(0.026)		(0.019)
County FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y
Observations	1,125	1,125	1,125	1,125
R-squared	0.475	0.470	0.475	0.472

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Spatial Standard Errors. Table B.1(III) reports Conley spatial standard errors, where we use the distance cutoff of 50KM, 100KM, and 200 KM, respectively. As shown, these standard errors are similar to those clustered at the county level.

Table B.1. III. The Impact of Elite Connections on Soldier Deaths: Spatial Clustering S.E.
Sample: Hunan counties, 1850–1864

Dependent variable	ln (Soldier deaths+1)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Connections measured by	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$						N_c			
Baseline connections × Post	0.214***	0.201***	0.212***	0.213***			0.146***	0.147***		
50 KM	(0.055)	(0.057)	(0.056)	(0.057)			(0.040)	(0.040)		
100 KM	(0.057)	(0.059)	(0.057)	(0.058)			(0.041)	(0.041)		
200 KM	(0.055)	(0.058)	(0.058)	(0.058)			(0.039)	(0.041)		
Baseline connections per capita × Post					0.061***	0.056***			0.047***	0.044***
50 KM					(0.020)	(0.022)			(0.016)	(0.016)
100 KM					(0.020)	(0.022)			(0.016)	(0.016)
200 KM					(0.020)	(0.022)			(0.015)	(0.016)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y		Y		Y		Y
Geography-economic var.×Post		Y	Y	Y		Y		Y		Y
Political var.×Post			Y	Y		Y		Y		Y
Taiping var.×Post				Y		Y		Y		Y
Observations	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125
R-squared	0.452	0.467	0.477	0.478	0.447	0.475	0.452	0.477	0.449	0.476

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are spatial standard errors. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Additional Fixed Effects. If we control for Controls × Year FE instead of Controls × Post and add prefecture-by-year fixed effects, we obtain similar estimates, as reported in Table B.1(IV).

Table B.1. IV. The Impact of Elite Connections on Soldier Deaths: Controls × Year FE
Sample: Hunan counties, 1850–1864; Dependent variable: ln(Deaths+1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Connections measured by	$\sum_{n=1}^{N_c} \frac{c}{d_{c,n}}$				N_c			
Baseline connections × Post	0.261***	0.269***			0.182***	0.182***		
	(0.065)	(0.064)			(0.047)	(0.050)		
Baseline connections per capita × Post			0.088***	0.089***			0.063***	0.063***
			(0.021)	(0.019)			(0.017)	(0.018)
Controls × Post	Y		Y		Y		Y	
Controls × Year FE		Y		Y		Y		Y
Pref FE × Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125
R-squared	0.669	0.737	0.670	0.738	0.668	0.743	0.669	0.744

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

B.2 Elite Networks and Soldier Deaths: Year-by-Year Estimates

We report the year-by-year estimates on how elite connections affect soldier deaths in Table B.2, using 1853 as the reference year. These estimates are visualized in Figure 4 in the main text.

Table B.2. Yearly Effects of Elite Connections
Sample: Hunan counties, 1850–1864; Dependent variable: ln (Deaths+1)

	(1)	(2)	(3)	(4)
Elite connections measured by:	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$	N_c	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$ per capita	N_c per capita
Elite connections × 1850	-0.002	0.010	0.005	0.007
	(0.052)	(0.034)	(0.017)	(0.013)
Elite connections × 1851	-0.016	-0.001	-0.006	-0.000
	(0.049)	(0.031)	(0.016)	(0.011)
Elite connections × 1852	0.030	0.026	0.003	0.007
	(0.084)	(0.057)	(0.035)	(0.023)
Elite connections × 1854	0.287***	0.212***	0.095***	0.070***
	(0.088)	(0.062)	(0.032)	(0.024)
Elite connections × 1855	0.232**	0.163**	0.070**	0.051**
	(0.108)	(0.078)	(0.034)	(0.025)
Elite connections × 1856	0.156	0.115	0.039	0.033
	(0.118)	(0.085)	(0.037)	(0.029)
Elite connections × 1857	0.283***	0.207***	0.094***	0.072***
	(0.087)	(0.061)	(0.032)	(0.025)
Elite connections × 1858	0.313***	0.215***	0.094***	0.069***
	(0.086)	(0.061)	(0.031)	(0.023)
Elite connections × 1859	0.255***	0.193***	0.072**	0.063***
	(0.084)	(0.058)	(0.031)	(0.021)
Elite connections × 1860	0.240***	0.188***	0.094***	0.075***
	(0.087)	(0.060)	(0.030)	(0.027)
Elite connections × 1861	0.242***	0.178***	0.089***	0.065**
	(0.080)	(0.058)	(0.031)	(0.026)
Elite connections × 1862	0.288***	0.201***	0.118***	0.079***
	(0.083)	(0.058)	(0.031)	(0.026)
Elite connections × 1863	0.296***	0.207***	0.107***	0.075***
	(0.086)	(0.064)	(0.030)	(0.027)
Elite connections × 1864	0.313***	0.216***	0.104***	0.071**
	(0.086)	(0.070)	(0.035)	(0.031)
County FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Pref. FE × Year FE	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y
Observations	1,125	1,125	1,125	1,125
R-squared	0.671	0.670	0.674	0.672

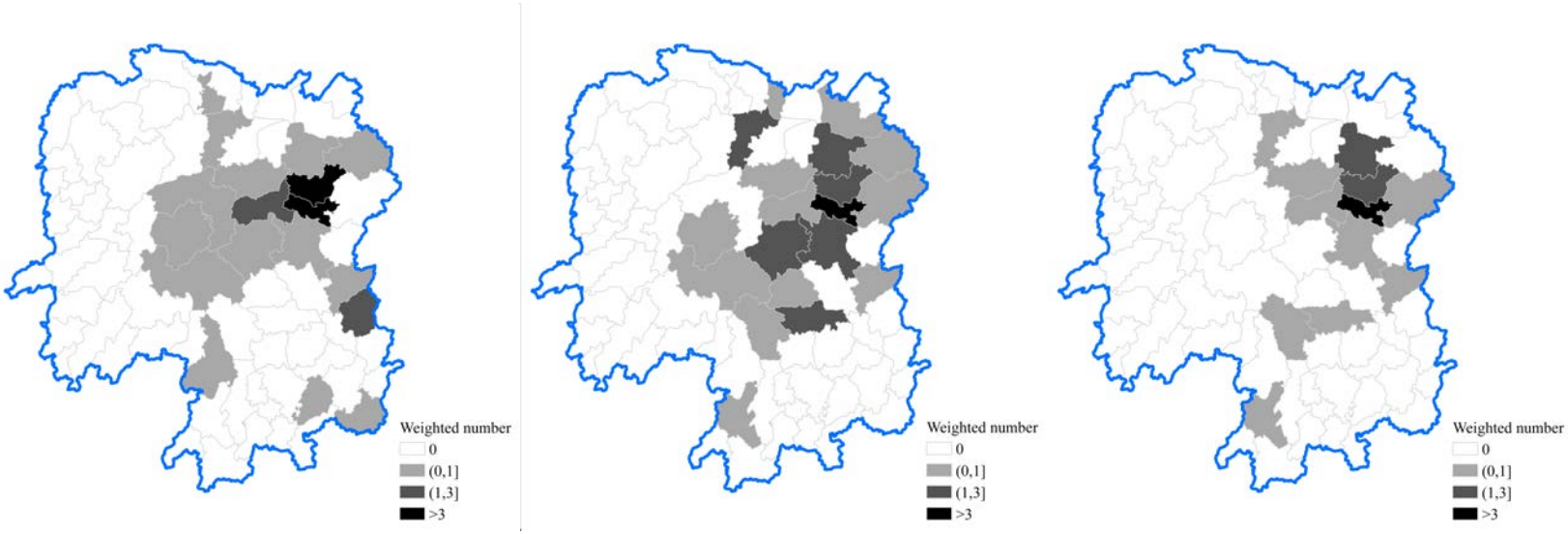
Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

B.3 Placebo Networks

The timing of the exam provides us with natural placebo tests. Zeng Guofan passed the national-level exam in 1838. This exam took place twice every three years. We construct two fake networks, assuming Zeng passed the previous national-level exam (1836) or the following one (1840). As shown in Figure B.3, the county-level national-level exam connections would be different.

Figure B.3. Maps of Real and Faked National-level Exam Networks

(a) Actual: passed in 1838 **(b)** Placebo I: passed in 1836 **(c)** Placebo II: passed in 1840



B.4 Other Types of Connectedness of a County

We compare elite networks with two alternative ways of measuring a county's connectedness to Zeng. The first is the dialect distance to Zeng's home county, and the second is a great circle distance to Zeng's home county. In in Table B.4, these alternative measures of connectedness cannot explain our finding.

Table B.4. The Impact of Elite Connections on Soldier Deaths: Controlling for Physical Distance to Zeng
Sample: Hunan counties, 1850–1864; Dependent variable: ln (Deaths+1)

	(1)	(2)	(3)	(4)	(5)	(6)
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post	0.260***	0.277***	0.295***			
	(0.066)	(0.079)	(0.068)			
$N_c \times$ Post				0.180***	0.189***	0.197***
				(0.053)	(0.057)	(0.055)
Dialect similarity with Zeng × Post	Y	Y	Y	Y	Y	Y
Dist. to Zeng's home county × Post	Y	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Pref. FE × Year FE	Y	Y	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y	Y	Y
Observations	1,125	1,125	1,125	1,125	1,125	1,125
R-squared	0.671	0.669	0.673	0.670	0.669	0.672

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

B.5 Measurement of Soldier Deaths

Prob. of Missing Years vs. Elite Connections. In the soldier death records, 14% had missing year information. We examine whether the missing probability correlates with elite connections and find it not to be the case. Table B.5(I) reports the results using the probability of soldier deaths with missing years to total soldier deaths as the dependent variable.

Soldier Deaths: Degree-Holders vs. Commoners. We find similar magnitudes on the deaths of individuals with and without exam degrees, as reported in B.5(II). Since those with degrees are unlikely to be missed, the finding suggests that measurement error in soldier deaths is not a critical concern for our findings.

Table B.5. I. Elite Networks and Data Missing
Sample: Hunan counties; Dependent variable: Share of missing years

Elite connections measured by:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$				N_c			
Connections	0.003	-0.002	0.014	0.010	0.002	-0.002	0.009	0.007
	(0.005)	(0.005)	(0.013)	(0.013)	(0.004)	(0.003)	(0.009)	(0.008)
ln (total soldier deaths during 1850-64)		0.029**		0.022		0.029**		0.023
		(0.014)		(0.018)		(0.014)		(0.018)
Controls			Y	Y			Y	Y
Prefecture FE			Y	Y			Y	Y
Observations	75	75	75	75	75	75	75	75
R-squared	0.191	0.246	0.262	0.289	0.190	0.246	0.261	0.288

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

Table B.5. II. The Impact of Elite Connections on Soldier Deaths: Degree-Holders vs. Commoners
Sample: Hunan counties, 1850–1864

Dependent var. (standardized)	ln (Commoner deaths +1)		ln (Gentry deaths +1)	
	(1)	(2)	(3)	(4)
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post	0.160***		0.149**	
	(0.045)		(0.065)	
$N_c \times$Post		0.112***		0.099*
		(0.033)		(0.051)
County FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Pref. FE × Year FE	Y	Y	Y	Y
Controls × Post	Y	Y	Y	Y
Observations	1,125	1,125	1,125	1,125
R-squared	0.669	0.669	0.410	0.409

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

B.6 Interpretations of Soldier Deaths

Heterogeneous Patterns. Columns (1)–(3) of Table B.6(I) show that the effect of elite connections is smaller for counties with higher exam quotas, suggesting that alternative opportunities mitigate the mobilization effect. Columns (4)–(5) show that the effects of elite connections are similar without and with battle fixed effects, implying that deployment across battles is not critical for our finding.

Table B.6. I. What Does the Number of Soldier Deaths Measure?
Sample: Hunan counties, 1850–1864; Dependent variable: ln (Deaths+1)

	(1)	(2)	(3)	(4)	(5)
	By opportunity cost			Across vs. Within battles	
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post	0.483***	0.492***	0.528***	0.034**	0.034**
	(0.133)	(0.158)	(0.144)	(0.014)	(0.014)
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post $\times$ ln Quotas	-0.884***		-0.728**		
	(0.249)		(0.343)		
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post $\times$ ln Jinshi		-0.173**	-0.068		
		(0.079)	(0.082)		
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}} \times$ Post $\times$ ln Population	0.108	0.194	0.174*		
	(0.076)	(0.127)	(0.097)		
County FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
Pref. FE $\times$ Year FE	Y	Y	Y	Y	Y
Controls $\times$ Post	Y	Y	Y	Y	Y
Battle FE					Y
Observations	1,125	1,125	1,125	52,050	52,050
R-squared	0.675	0.673	0.675	0.196	0.206

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2.Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

The Battle of Three Rivers. We examine soldier deaths in the famous 1588 Battle of Three Rivers where the entire Hunan troops were lost. We also compare the estimate with that for other battles in 1858. As shown in Table B.6(II), the similar estimates suggest that the difference in death rates is not a critical driver of our findings.

Table B.6. II. The Battle of Three Rivers vs. Other Battles in 1858
Sample: Hunan counties, 1858; Dependent variable: ln (Deaths+1)

	(1)	(2)	(3)
	ln total soldier deaths in 1858	ln soldier deaths in the Battle of Three Rivers	ln soldier deaths in other battles, 1858
$\sum_{n=1}^{N_c} \frac{1}{d_{c,n}}$	0.417**	0.401**	0.388**
	(0.162)	(0.155)	(0.150)
Controls	Y	Y	Y
Prefecture FE	Y	Y	Y
Observations	75	75	75
R-squared	0.598	0.568	0.587

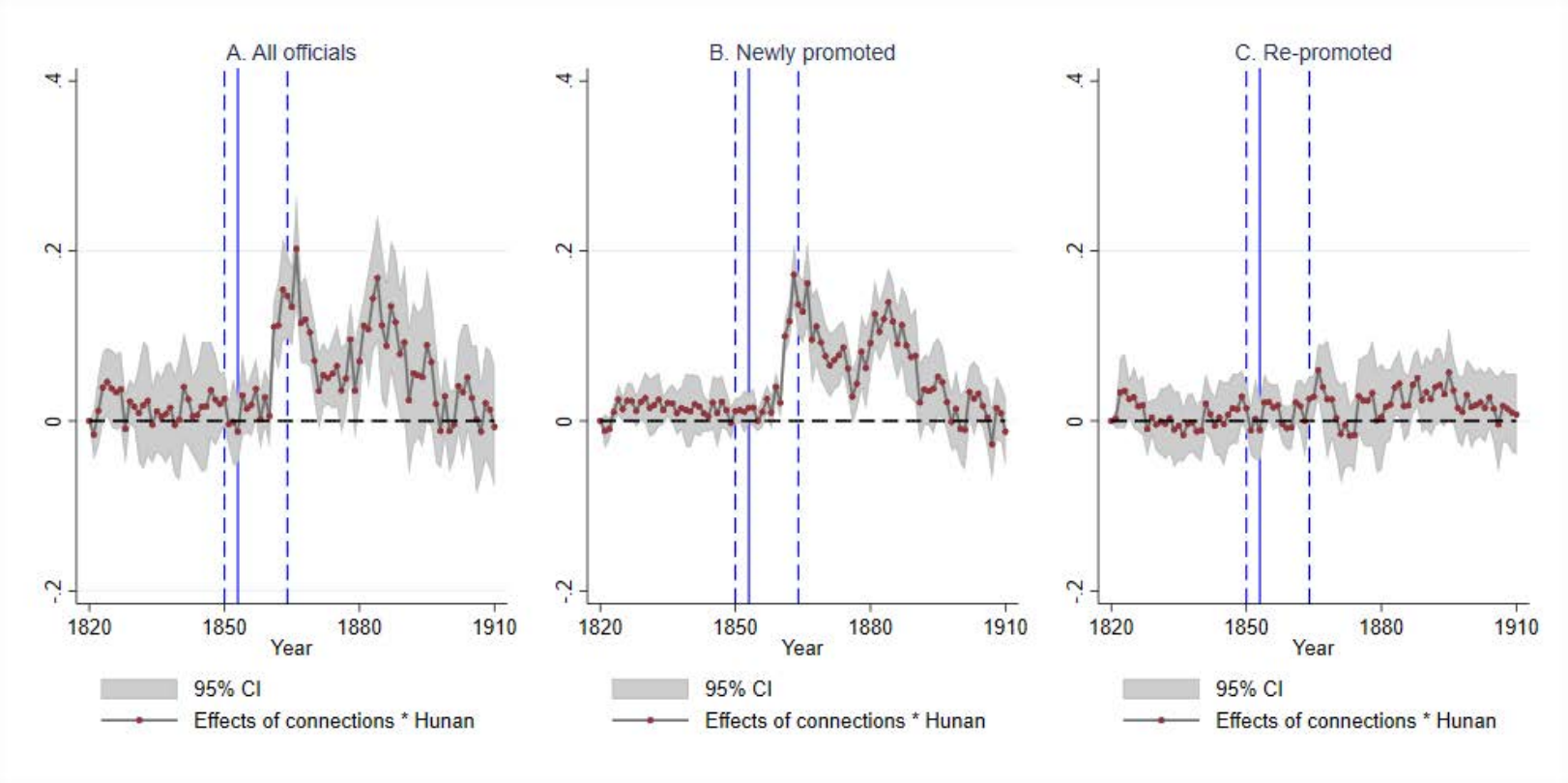
Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the county level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C More Results on Elite Networks and Post-War Elite Power

C.1 Understanding the Fluctuation of the Power Impact

To examine whether the dynamic fluctuation pattern is driven by a fixed group or different cohorts, we differentiate two groups of individuals: (1) those who obtained national-level office only once, and (2) those with multiple switches. As shown in Figure C.1, our finding is driven by (1), implying that the fluctuating patterns are driven by multiple cohorts.

Figure C.1. Understanding the Fluctuation of the Power Impact



Note. The two dashed lines indicate 1850 (the war started) and 1864 (the war ended). The blue solid line indicates 1853, the year Zeng was assigned to organize an army from existing militias. Panel A reports the triple-difference estimates by year for all officials, using the year 1820 as the reference year. Panels B and C differentiate the newly promoted from the re-promoted.

C.2 Inside and Outside the Network

Column (1) of Table C.2 presents the average impact relative to the mean. Then, we decompose the national-level offices for a county-year into two groups: those held by individuals in and outside the elite network. Columns (2) and (3) show that both groups benefited.

Table C.2. The Impact of Elite Networks on Elite Power: Inside and Outside the Network
Sample: All counties, 1820–1910

	(1)	(2)	(3)
Dependent var.	Total national-level offices / sample mean	Held by elites in the network / sample mean	Held by those outside the network /sample mean
Baseline connection × Hunan × 1854-1910	0.527***	0.847***	0.452***
	(0.136)	(0.280)	(0.135)
Baseline connections × 1854-1910	0.117	0.221	0.093
	(0.120)	(0.184)	(0.125)
Hunan × 1854-1910	0.880	0.079	1.067
	(0.679)	(0.746)	(0.705)
County FE	Y	Y	Y
Year FE	Y	Y	Y
Controls × 1854-1910	Y	Y	Y
Observations	149,786	149,786	149,786
R-squared	0.384	0.228	0.327

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C.3 Exam Quotas and Numbers of *Jinshi*

We examine how elite networks affected the value of exam quotas and the number of *Jinshi* before and after Zeng took power in 1853. Columns (1)–(2) of Table C.3 show that elite networks in Hunan increased both variables. However, including these two variables as controls only marginally decreases our baseline estimate on national-level offices (Columns (3)–(5)).

Table C.3. The Impact of Elite Networks on Exam Quotas and Numbers of *Jinshi*
Sample: All counties, 1820–1910

	(1)	(2)	(3)	(4)	(5)
Dependent variable	ln Quotas	ln *Jinshi*	Natl.-level offices		
Baseline connections × Hunan × 1854-1910	0.019***	0.054**	0.049***	0.047***	0.046***
	(0.005)	(0.023)	(0.013)	(0.013)	(0.013)
ln *Jinshi*				0.031*	
				(0.017)	
ln Quotas				0.036	
				(0.064)	
ln *Jinshi* (Post-war) × 1854-1910					0.028*
					(0.016)
ln Quotas (Post-war) × 1854-1910					0.035
					(0.064)
Baseline connections × 1854-1910	Y	Y	Y	Y	Y
Hunan × 1854-1910	Y	Y	Y	Y	Y
County FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
Controls × 1854-1910	Y	Y	Y	Y	Y
Observations	3,292	3,292	149,786	149,786	149,786
R-squared	0.996	0.932	0.384	0.384	0.384

Note. The data on exam quotas and *Jinshi* refer to those during 1644–1853 and 1854–1904 in Columns (1)–(4). Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C.4 Observation of Zeros in Our Data on National-level Offices

Many observations are zero in our dependent variable, national-level offices. We conduct two sets of analyses to evaluate whether this is a critical concern. First, we examine the extensive and intensive margins separately and find that both margins are increased (Columns (2)–(3) of Table C.4. Second, we employ a zero-inflated negative binomial model and demonstrate a similar pattern again (Column (5)).

Table C.4. The Impact of Elite Networks on Elite Power
Sample: All counties, 1820–1910

	(1)	(2)	(3)	(4)	(5)
Sample	All	All	Natl-level offices>0	All	All
Dependent var.	Natl-level offices	**1**(Natl-level offices>0)	Natl-level offices	Natl-level offices	Natl-level offices
Mean	0.093	0.049	1.905	0.093	0.093
Method	OLS	OLS	OLS	OLS	Zero-inflated neg. binomial
Baseline connections × Hunan × 1854-1910	0.049***	0.008**	0.790***	0.049***	0.286***
	(0.013)	(0.004)	(0.164)	(0.013)	(0.068)
					*0.026****
					(0.006)
Baseline connections × 1854-1910	0.011	-0.002	0.021	0.011	-0.00023
	(0.011)	(0.002)	(0.016)	(0.011)	(0.00972)
					-0.00003
					(0.00089)
Hunan × 1854-1910	Y	Y	Y	Y	Y
Controls × 1854-1910	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
County FE	Y	Y	Y		
Baseline connections × Hunan				Y	Y
Baseline conn., Hunan, Controls				Y	Y
Observations	149,786	149,786	7,263	149,786	149,786
R-squared	0.384	0.321	0.399	0.092	

Note. Those in italics are the marginal effects. Because the zero-inflated model requires a Probit model to characterize zeros and it is difficult to control for a large amount of county fixed effects, we use simplified controls instead. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C.5 Comparison Provinces: Alternative Groups

In our main analysis, we use all of the 18 provinces in the Qing dynasty. Our finding holds even if we focus on various subgroups of provinces as the comparison, as reported in Table C.5.

Table C.5. The Impact of Elite Networks and Elite Power: Varying Comparison Provinces
Sample: All counties, 1820–1910; Dependent variable: Number of national-level offices

	(1)	(2)	(3)	(4)	(5)	(6)
Hunan vs.	Along the Taiping Route		Neighbor provinces		Huai Region	
Mean numb. natl offices	0.142		0.085		0.245	
Connections × Hunan × 1854-1910	0.081***	0.022	0.072**	0.012	0.100**	0.042
	(0.024)	(0.025)	(0.031)	(0.029)	(0.038)	(0.041)
Soldier deaths$_{1854-64}$(1K)× 1854-1910		0.414***		0.433***		0.395***
		(0.102)		(0.097)		(0.107)
Connections × 1854-191	-0.019	-0.021	-0.014	-0.019	-0.028	-0.029
	(0.021)	(0.021)	(0.030)	(0.029)	(0.033)	(0.034)
Hunan × 1854-1910	0.011	-0.061	0.040	-0.024	0.093	-0.190
	(0.058)	(0.041)	(0.057)	(0.042)	(0.260)	(0.301)
County FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls × 1854-1910	Y	Y	Y	Y	Y	Y
Observations	43,225	43,225	31,122	31,122	18,928	18,928
R-squared	0.379	0.397	0.311	0.365	0.396	0.414

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C.6 Placebo Networks

Similar to the strategy in Enikolopov, Makarin and Petrova (2020), we use actual national-level exam networks to predict soldier deaths while controlling for placebo national-level exam networks. As shown, our findings are driven by the specific elite networks that we identified, rather than by the placebo networks.

Table C.6. The Impact of Elite Networks and Elite Power: Controlling for Placebo Networks
Sample: All counties, 1820–1910; Dependent variable: Number of national-level offices

	(1)	(2)
Soldier deaths$_{1854-64}$ × 1854-1910	0.622***	0.563***
(instrument: Natl-exam connections × Hunan × 1854-1910)	(0.162)	(0.155)
Placebo exam connect. I × Hunan × 1854-1910		0.004
(assuming Zeng passed the previous exam)		(0.202)
Placebo exam connect. I × 1854-1910		-0.046
		(0.039)
Placebo exam connect. II × Hunan × 1854-1910		-0.034
(assuming Zeng passed the next exam)		(0.061)
Placebo exam connect. II × 1854-1910		0.070
		(0.049)
Natl-level exam connect × 1854-1910	0.017	0.014
	(0.017)	(0.028)
Hunan × 1854-1910	-0.086	-0.060
	(0.061)	(0.039)
County FE	Y	Y
Year FE	Y	Y
Controls × 1854-1910	Y	Y
Observations	149,786	149,786
R-squared	0.015	0.017

Note. Controls include all the geographic-economic variables, political importance proxies, and Taiping-related factors used in Table 2. Standard errors presented in the parentheses are clustered at the prefecture level. ***: significant at 1%, **: significant at 5%, *: significant at 10%.

C.7 A Counterfactual Analysis

Table C.7 presents the change in the EG index and the contribution of elite networks in Hunan by decade. These results reveal that the importance of these elite networks persisted until the 1900s. When the contribution of Hunan*connections exceeds 100%, it means that the distribution of power became more equal for counties outside these connected counties in Hunan.

Table C.7. The Changes in Power Distribution by Decade

	Actual		Counterfactual: net the effect of Hunan*connections		
	(1)	(2)	(3)	(4)	(5)
	EG index	Change from t-1	EG index	Change from t-1	The role of Hunan*connections (%) 1-(4)/(2)
1820-29	0.0097		0.0098		
1830-39	0.0111		0.0112		
1840-49	0.0140		0.0143		
1850-59	0.0149	0.0009	0.0149	0.0006	31.9
1860-69	0.0289	0.0150	0.0141	-0.0003	101.7
1870-79	0.0262	0.0122	0.0206	0.0063	48.2
1880-89	0.0358	0.0218	0.0243	0.0100	54.1
1891-99	0.0292	0.0152	0.0255	0.0112	26.3
1900-09	0.0229	0.0090	0.0225	0.0082	8.2

C.8 Provincial Officials Originated from Connected Counties in Hunan

Figure C.8 plots the share of top-4 officials from connected counties in Hunan before and during the war era. These maps reveal that war is associated with a large increase of power of these connected counties, especially in central and southern provinces that were more affected by the war.

Figure C.8. Provincial Governors and Vice-Governors Originated from Connected Counties in Hunan

(a) Pre-war

(b) In-war