Competence-Loyalty Tradeoff under Dominant Minority Rule: The Case of Centuries of Manchu Rule[1]

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Abstract

Effective governance is challenging when the rulers come from a dominant minority. This paper examines a bureaucratic arrangement with which a million Manchus ruled over 100 million Han Chinese for two and half centuries in the Qing dynasty: the Manchu-Han duos, that is, Han elites were appointed to handle daily administrative issues, on top of whom Manchu superiors were assigned for oversight. Using extreme weather as instruments, we find that more frequent local insurgency – a proxy of governance complexity – led to higher likelihood of such cross-ethnic duos. This link between governance complexity and cross-ethnic duo arrangement is stronger where the region was farther away from the capital, especially where the initial resistance against Manchu rule was stronger, and when the governors began to have control over local armies. Finally, the Manchu-Han duos were associated with better local economic development, more efficient policy execution, and enhanced recognition of imperial authority.

[1] The views of this paper are the authors own, and do not implicate the World Bank and its member countries. The project has benefited from World Bank RSB support.

1. Introduction

Throughout history, countries were ruled by dominant minorities who are racially, religiously, or ethnically different from the ruled majority. Examples include the Greeks rule over the Indo-Greek Kingdom (Banerjee, 1961; Avari, 2007), the Mongols and the Manchus rule over Han China (Yu, 2003; Sun, 2011; Duan, 2012), the British rule over India (Stein, 2010; Lowe, 2015), and the colonists over the colonies from Sierra Leone to the Caribbean (Gibson, 1972; Johnson and Watson, 1998). Dominant minority remains relevant in the current world, with the Alawite ruling Syria, and the North Arabs ruling the whole of Yemen. Due to their limited population, effective control and governance become crucial challenges for the ruling minority. It is no surprise that the dominant minority – constrained by population – have to balance between two motives: on one hand, they need to motivate the majority elites to provide order, public goods, or at least tax revenues; on the other hand, they need to suppress the majority elites from challenging their hold on power. The second motive becomes critical when the dominant minority lack local information and thus have to delegate substantial power to the majority elites. The tension and the dynamics attract continuous scholarly attention with detailed cases studies and narrative descriptions (e.g., Oded, 2007; Fearon et al., 2007; Paine, 2019; Kohli, 2019).[2] However, the literature is short of a comprehensive and empirical analysis on systematic ruling strategies adopted by the dominant minority and their efficacy. In this paper, we use almost three centuries of experience in the Qing dynasty China to examine the ethnic assignment strategy for local leadership.

The history of the Qing dynasty represents a classic example of how a ruling minority effectively governed a majority population of different ethnicity. The Manchus, an ethnic minority in Northeastern China, overthrew the Ming dynasty in 1644, established the Qing dynasty, and ruled China until 1911. The ruling tasks were beyond challenging: the less than one million Manchus had to govern a population of more than 100 million – mostly Han Chinese. Constrained by the limited Manchu elite pool, delegation of power to the Han officials was inevitable for Manchu rulers. The efficacy of such delegation was demonstrated by the longevity of the rule,[3]

[2] Oded (2007) devises a conceptual framework for the analysis of continuous ethnic minority rule over hostile majorities, and uses the case of Syria to analyze how the minority utilized military forces to decrease the saliency of distinct identities. Paine (2019) shows how the minority European elites managed to rule over African colonies through repression, which in turn led to more frequent conflicts. Fearon et al. (2007), meanwhile, underscores increasing tendency towards civil wars under ruling minorities.

[3] The Qing dynasty lasted for 267 years. Over the history of Imperial China, only two dynasties had lasted longer than the Qing dynasty: the Ming dynasty survived 276 years; the Tang dynasty, 289 years.

the growth of population, and the regime's shares in the world economy.[4] Yet the delegation to Han Chinese officials entailed significant loyalty concerns: Competent native officials could have too much discretionary power, thus undermining the authority of the dominant minority (Jiang, 1980).

To ease the concerns, Manchu rulers adopted an ethnicity-based delegation strategies in response to localized governing needs. In a province with complex ruling challenges such as frequent insurgencies (Xie, 2006), Manchu rulers often delegated to Han governors (*xunfu*), and utilized their superior local knowledge to handle daily administrative issues (Xi, 2019). On top of the delegation, the rulers sometimes appointed a Manchu official as a viceroy (*zongdu*), the leading regional official overseeing several provinces, to ensure the loyalty of the Han governors (Ye, *et al.*, 1996; Du, 2009). We refer to such cross-ethnic assignments as *Manchu-Han duos*.[5] A such example is that Zhang Boxing, a Han elite, served as the governor of Jiangsu province in 1711, while his superior officer was Gali, a Manchu viceroy of Liangjiang that oversaw three provinces: Jiangsu, Anhui, and Jiangxi (Fan and Kong, 1996; Luo, 1996). Despite historical records of such Manchu-Han duos, it remains unclear whether the Manchu rulers use this ethnic leadership strategy systematically, and whether this strategy indeed ensures loyalty from Han officials to the Manchu rulers. Since the utilization of local knowledge is more important where the regional governance tasks were more complex, we hypothesize that such regions featuring more complex governance tasks would be more likely to be led by Manchu-Han duos to ensure both efficiency in governance and loyalty to the Manchu rulers.

To test the hypothesis, from a number of historical sources we construct an original panel dataset of top Qing local officials of 425 viceroys and 1020 governors during 1650-1911. In addition, we collect information for a total of 36,217 reported revolts during the same period: we use the number of peasant revolts to proxy local governance complexity. Our baseline regression results suggest that the Manchu central government was more likely to adopt a cross-ethnic Manchu-Han viceroy-governor arrangement when governance was more complex. The result remains robust after controlling for local population, human capital, and the adoption of new

[4] The population growth in the Qing dynasty more than doubled that in the Ming dynasty (0.70% vs. 0.32%, see Gong, 2002; Li et al., 2018). The Qing-dynasty economy claimed 32.9% of the world GDP (Maddison, 2001), and the economy was resilient during several recessions (Li, 2017).

[5] The cases of exercising power checks from Manchu viceroys to Han governors were not rare in the history of the Qing dynasty, with the most notable incident of the conflict between Gali, Manchu viceroy of Liangjiang, and Zhang Boxing, Han governor of Jiangsu, in 1711 (Fan and Kong, 1996; Luo, 1996).

technologies. Our hypothesis is further strengthened in provincial official turnovers: a province was more likely to switch from same-ethnic duos to Manchu-Han duos when it saw more frequent insurgency.

To address the endogeneity of revolts (in explaining the adoption of the Manchu-Han duo arrangement), we rely on incidences of extreme weathers as instruments, as peasant revolts were more likely after poor harvests following extreme weathers (Blattman and Miguel, 2010). Our baseline results remain robust. Furthermore, we explore the temporal and regional heterogeneity in the assignment, and find that Manchu-Han duos were more likely in provinces geographically more distant from the central authority – thus featuring more substantial loyalty concerns, and in the declining years of the dynasty when the central authority's control was weaker. All the evidences are consistent with the cross-ethnic viceroy-governor assignment as a calibrated strategic response to high governance complexity.

Lastly, we investigate the efficacy of such ethnicity-based governing strategies, and find them to be effective. First, we invalidate an alternative strategy of using trusted officials from neighboring provinces for supervision to alleviate the loyalty-competence tradeoff. Therefore, the power checks mainly apply vertically instead of horizontally within the bureaucratic hierarchy. Second, we consider the implementation of a centrally-initiated tax reform (*Huohao*) in 1723-1735 that aimed at reducing arbitrary local levies, which necessitated provincial coordination. We show that the Manchu-Han duos indeed implemented central policies more effectively than their colleagues. Third, we also utilize two historical shocks in which many provinces took stances against the central Qing government's wishes – the signing of the Yangtze Compact, and the provincial declaration of independence in the late Qing dynasty – to show that provinces under Manchu-Han duo leadership exhibited higher recognition of the imperial authority.

Our paper makes four contributions. First and foremost, we contribute to the discussion of the tradeoff between direct and indirect governance. A direct governance refers to the direct control of legislature and executive branches by the colonists (Iyer, 2010), while an indirect governance refers to the delegation of certain political responsibilities from the colonists to local intermediaries (Padró-i-Miquel and Yared, 2012). Similar with the Manchu rulers, colonists often relied on delegations to rule (Scott, 2009; Padró-i-Miquel and Yared, 2012), whose governance structures varied with geographic features (Acemoglu et al., 2001; Fearon and Laitin, 2003; Nunn and Puga, 2012), agricultural output (Callen et al., 2018), and the costs of suppressing resurgences (Berman

et al., 2011). We join the discussion by offering a first set of evidence that cross-ethnic office appointments were adopted as a systematic strategy towards the challenge—by appointing majority-ethnic-group elites for efficiency and minority elites for monitoring. We further differ in the context: traditionally indirect governance was used when the conquerors had more advanced technology and state capacity. In in our context, the elites from the conquered possessed more advanced technology and state capacity, thus highlighting concerns of interest alignment (Leffler and Legro, 2008; Sierra et al., 2019). We show that in such contexts, the cross-ethnic arrangement appears to be a workable organizational design.

Second, and relatedly, our paper contributes to a recent literature emphasizes that hearts and minds initiatives by the conquerors, which are found to be usually more effective in eliciting local information (Kalyvas, 2006), and in reducing the probabilities of local insurgence (Dell and Querubin, 2018). The appointments of Han elites to local administrative offices is a classic move to utilize their local knowledge and access to existing capacity of the dominant ethnicity's network. Our paper also emphasizes the complementary part of the strategy – the importance of assigning trustworthy supervisors to ensure the competent administrative officials are loyal.

Thirdly, our paper adds to the literature on leadership selection processes in China. Existing studies on leadership selection in China are largely contemporary, to investigate the logic of performance-based incentives (Maskin et al., 2000; Li and Zhou, 2005), faction-based promotion (Shih et al., 2012), ability-based selection (Yao and Zhang, 2015), or the co-existence of performance and loyalty (Landry et al., 2014; Jia et al., 2015). Yet, as emphasized by Xu (2011) in his survey of China's institutions, China's modern institutions have inherited many key features of what happened in millenniums of Chinese history, of which the literature on official selection is thin. By extending the data coverage on leadership selection in China from decades to centuries, we increase the signal-to-noise ratio, and show that pre-modern leadership selection processes offer much insights, such as the joint importance of both competence and loyalty.

Lastly, we contribute to the literature on the competence-loyalty tradeoff. The literature tends to focus on individual performance (Egorov and Sonin, 2011; Shih et al., 2012; Zahkarov, 2016), while we offer a novel perspective of strategic ethnicity choice. In this regard, a close paper to ours is Xi (2019), who focuses on the competence side of the story, i.e., Han governors in the Qing dynasty tend to be better at maintaining internal order. In comparison, this paper highlights a systematic solution for both sides of the competence-loyalty tradeoff: a cross-ethnical checks and

balance along bureaucratic hierarchy. Furthermore, through long-span historical studies of official selection, we show how the competence-loyalty tradeoff pendulum swings over time. In particular, when political survival is threatened and the majority elites become empowered, the competence-loyalty pendulum would switch to loyalty.

The remainder of the paper is organized as follows. The next section presents background information about the Manchu and their rule of China. Section 3 introduces the data. Section 4 provides the OLS regression and 2SLS results. Section 5 discusses the efficacy of the Manchu-Han duo assignment strategy, and Section 6 concludes.

2. Background and Hypothesis

The Manchus, a nomad population of less than one million, exercised effective governance over a vast empire of six million square kilometres with more than 100 million inhabitants of alien ethnicity for close to three centuries. How was this accomplished? What type of governance structure did the Manchus use to sustain its long reign? How did Manchu rulers use Han elites for their rule? This section provides a historical background. We first provide a sketch about the Manchus, followed by the governance structure under the Manchu rule in the Qing Empire. Within the bureaucratic hierarchy, we focus on the ethnicity choice at the provincial leadership level, based on which we draw testable hypothesis for empirical analysis.

2.1 The Manchus

The Manchus were ethnic minorities originated in north-eastern China that had resided there since the 13th century (during the late-Yuan and the Ming dynasties), when the ethnic group was organized as typical nomad tribes. By the end of the 14th century, the total Manchu population was less than 20,000, compared to 65 million of the Ming Empire (Cao, 2000).

The main economic activities of the Manchu community were livestock raising and forestry of special products such as ginseng and mink. In short of agricultural technologies and skills, the Manchus lacked a stable agricultural sector to support necessities. Their wars with the Hans over time allowed them to learn from Han captives, who passed technologies such as mining and weapon-making (i.e., bows and metal weapons). The Manchus got stronger militarily in a series of inter-tribal wars in late 16th century. In the first fifteen years of the 17th century, Nurhaci, the founder of the Qing dynasty, established the strengthened Eight Banners System, which organized

all households into hierarchical military and production units, with the largest units called a *Banner*. The Manchus were thus transformed into a strong fighting force. Categorized by specific banners, male members were farmers in peacetime and soldiers in war time. Distinctions were not made to separate civilian and military officials within a banner (Chen and Zhang, 2019; Liu, 2020). The frequent fighting experience, much like the frequently fighting in European countries at the similar periods – through means of improvement in weapons and learning by doing and organizational improvement – likely have greatly strengthened the state capacity of Manchus (North et al., 2009; Hoffman, 2015).

During the decades before conquering the Ming Empire, the Manchus established many precedents that dealt with the use of Han people for their purposes, and these precedents shaped their future conquering strategies (Wakeman, 1985: 18-19). In 1618, Nurhaci and his Manchu soldiers attacked the troops under a Ming general, and induced him and his troops to surrender. The Ming general was kept his Ming rank and continued to lead his army under the Manchu leadership. This precedent – with every endeavour made to induce surrender of Han armies and cities, and if without resistance, keeping the official rank of surrendered officials and generals—became standard practices. The Manchus also absorbed many Han scholar-advisors, who advertised on communication with the Hans, and often used the Confucius ideas of heaven's mandate to convince the Hans of the legitimacy of Manchus' conquering. Based on the Han retention strategy, the Manchus had a large Han army ("*Han Jun*") who fought alongside with the Manchu Banner-men. Indeed, it was the Han Army with the most advanced weapons, the Portugal cannons China obtained and obtained from international trade.

In the mid-17th century, the Manchus, already militarily powerful and organized and at the urging of the Han advisors of the Manchu chief, began their "great enterprise," by invading Beijing and beginning the conquering of China. Fully understood that their invasion could not succeed without the support of the Han Chinese, the Manchus tried to enforce strong discipline not to harm non-soldier Han Chinese.[6] They also continued the practice of trying to inducing surrenders with the promise of keeping Han generals' ranks and offering silvers and gold gifts. The Manchus conquered most of China in a few years starting from 1643.[7]

[6] When conquering the Southern China, that is, the most prosperous Jiangnan area, Manchus encountered strong resistance in several cities, and the Manchu army also committed some of the most atrocious slaughters in Chinese history. In the city of Yangzhou alone, 800,000 city residents were slaughtered (Wakeman, 1985: 563).

[7] The successful conquest was also partially due to the highly corrupt central regime in the late Ming dynasty. For a

2.2. The Manchu Governance over China

After the conquest, the Manchus implemented a **solid** governance system. The main challenge shifted to maintaining an effective rule of China, whose size and complexity were far greater than what the straightforward "Eight Banners System" could handle. The Ming Empire, by the time of Manchu conquest, had 18 provinces, 302 prefectures and 2064 counties (Zhang, 1996). The Manchus largely took over the governmental structure of the Ming. As illustrated in Figure 1, there were four administrative levels under the emperor (viceroys, governors, prefects, and magistrates) in the bureaucratic hierarchy. The central government consisted of thirteen departments; the provincial government, seven departments. Officials had a total of 18 grades and 638 formal positions (Lv, 2015).

As an ethnical minority in China, the Manchus simply did not have the manpower and capacity to fill all the positions in the bureaucracy, and the Manchu leaders had to rely on indirect governance by the elite Han Chinese. The Han elites possessed superior information on how to govern local Han people, such as by connecting with local gentries who helped with collecting local taxes, or by having better information on potential local rebels and how to control them. They thus made better local administrators. However, the delegation of authority to elite Han Chinese officials triggered severe loyalty concerns: too much discretionary power to Han officials could endanger the Manchu rule. Adding to the concern was that Han Chinese felt strong resentment of being ruled by a minority group, as evidenced by frequent organized revolts.[8] The possibility of relying on Hans to repress Han rebellions further intensified the dilemma: while Han officials knew better in how to defeat local insurgents, successful repression would increase the power of the Han officials, and thus weaken central control. The dilemma therefore called for systematic remedy in institutional designs, to ensure the loyalty of competent Han elites.

The Manchus thus needed to co-opt the Han elites, and the Han elites needed the Manchus as well. These two ethnic groups' intricate dance is well put by Tocqueville (p. 330, 1969):[9]

"When the conquered people are enlightened and the conquerors half savage, as when the nations

brief introduction of the Ming governance in its final days, please see Appendix B.

[8] The most famous one among the many organisations was the Heaven and Earth Society (*Tiandihui* or *Hongmen*). Founded in 1674, it lasted until the end of the Qing dynasty and was the longest anti-Qing organization in the Qing dynasty (Hao, 1996).

[9] As cited by Wakeman (1985) in his preface.

of the North invaded the Roman Empire or the Mongols invaded China, the power which the barbarians has won by his victory enables him to keep on a level with the civilized man and to go forward as his equal, until he becomes rival; one has force to support him and the other intelligence; the former admire the knowledge and arts of the conquered, and the latter envies the conqueror's power. In the end the barbarians invite the civilized people into their palaces, and the civilized open their schools to the barbarians."

At the local level, the Manchu rulers largely kept Han officials from the Ming era to continue serve the government, often at the same duties, and used other Han officials where possible based on recommendations from trusted Han officials/scholars. Indeed, at the level of prefects and magistrates,[10] most top officials were Han Chinese (Appendix C, Wakeman 1985). The Manchu rulers also kept the tradition of using the Imperial Exam to select governing officials, which tended to be a commitment device for power-sharing with the Hans due to Hans' advantage in such exams (Xi, 2019). By inheriting the Ming officials, and using the Ming exam system to select officials, the Qing essentially adopted the state capacity of previous dynasties in China—minus the loyalty of the Han officials. To ensure this loyalty, the Manchus adopted a clever ruling strategy of cross-ethnic assignments in the viceroy-governor positions.

2.3. The Viceroy-Governor Duo

Both viceroys and governors were leaders at provincial levels. A province was a large administrative unit: its average area was 730,000 square kilometers, and the average population was 24.2 million. Thus, any individual province, if sufficiently empowered without strong monitoring, could challenge the central government (Ge, 1997). Unlike the Ming dynasty that established only one type of top provincial office (i.e., Provincial Administration Commissioner, *buzheng shisi*), the Manchu rulers introduced two top offices at the top regional level: a viceroy (*zongdu*) was the highest regional official, usually governing several provinces, while a governor (*xunfu*) was in charge of the daily administrative affairs of a single province.

The design of viceroy-governor duo allowed the Manchu rulers to resolve the loyalty dilemma. Assigning Han elites to administration-oriented governor positions allowed utilizing their natural advantages of information, networking, and technology, while appointing loyal fellow Manchus

[10] A typical prefect has an average jurisdiction of 40,000 square kilometres and a population of 1.3 million, while counties were smaller, with the average jurisdiction of 6432 square kilometres and the population of 200,000.

to supervision-oriented viceroy positions allowed central control. Therefore, a cross-ethnic Manchu-Han assignment accommodates both efficiency and loyalty. Furthermore, higher governance complexity increases the need of delegation to knowledgeable Han officials, which in turn urges stricter monitoring from Manchu superiors. We thus expect:

The governance difficulty and cross-ethnicity assignment hypothesis. The probability of adopting cross-ethnic duo with a Manchu viceroy and a Han governor in a province rises when local governance tasks are more demanding, for instance, when there are more frequent local insurgencies.

Since the inception of the Qing dynasty, Manchu rulers had retained stronger connections with northern Han elites, and the rulers had displayed systematic preference for the northern Han elites over the southern ones (Chapter 6, Wakeman, 1985). One reason is that the Manchus had co-lived in the northeastern regions with migrants from the Shandong province (i.e., a northern province) and its nearby areas, and Manchus had incorporated the Hans in that region into its core army and leadership. Another reason was that the defeated Ming dynasty re-established the Southern Ming in Nanjing in the southern region, which co-existed with the Qing for a few decades. Not surprisingly, the Southern Ming regime incorporated disproportionately the southern elites. The Manchu rulers thus viewed northern Han elites as more loyal to the Qing Empire than the southern ones, and view the areas near the center of the Southern Ming—known as the Jiangnan areas--as being especially prone to rebellions and disloyalty. As a result, the initial Qing administration incorporated primarily northern elites into its administration apparatus, and the Imperial Exams thus drastically favored the northern examinees rather than the southern ones, which essentially implies a preference for northern bureaucrats. The trust of norther Han elites and the distrust of southern ones especially those from the Jiangnan region suggest that, in the presence of governance difficulties, the Manchu rulers would impose stronger monitoring in southern areas, especially the Jiangnan areas. We thus expect:

The North-South hypothesis. The link between internal conflicts and the adoption of Manchu-Han duo would be stronger in southern areas, especially the areas where the Southern Song dynastry held on the longest (i.e., the Jiangnan area near Nanjing).

As the Qing Empire evolved, the challenges and governing tasks changed over time, and this had implications for our hypothesis. In particular, in the middle of the 19th century, several blows to the Qing government—including the wars with Britain and other colonial powers, and most

importantly, the Taiping Rebellion that began in 1851—made decentralizing military power to local Han governors a necessity (Xu and Yang, 2018). Before 1850, governors were prohibited to be involved in military leadership, but starting with early 1850s, governors were allowed to lead militarily, due to the failure of the official Qing army to contain the Taiping rebels, and the successes of many Han gentries in doing so. Meanwhile, the costs of disloyalty from Han governors rose drastically since they could now control army. This implies that the adoption of the cross-ethnic duo in the presence of local conflicts would be even more compelling to keep the power in the Manchu hand. We thus expect:

The regime-change hypothesis. The link between internal conflicts and the adoption of Manchu-Han duo would be stronger after 1850s.

3. Data

We construct an original panel dataset from a number of historical sources spanning 1650-1911. Our dataset, covering the 18 provinces of all of the China Proper regions, allows us to empirically test the effect of governance complexity on strategic ethnic assignments of provincial leaders.

3.1 Viceroys and Governors

Our main dependent variable captures the ethnical combination of the vicery-governor duo in each province and year. This information is acquired from We (2002), which collects the official records and memorials about events of national significance based on *The Records of Qing Emperors* (*Qing Shilu*) during 1786-1911. From these records we build a database of viceroys and governors in the Qing dynasty, which include 425 viceroys, among whom 234 were Han Chinese and 162 were Manchus. The database also includes 1020 governors, with 731 Han Chinese and 255 Manchus.[11]

3.2 Peasant Revolts

Our main independent variable is governance complexity, proxied by the number of peasant revolts reported in each province and year, available from *The Records of Qing Emperors*. *The Records of Qing Emperors* provides information on social unrest during the Qing dynasty (Kung and Ma,

[11] Figures A1 and A2 in the Appendix illustrate the five-year moving average trends in the viceroy-governor duo selection.

2014). In our analysis, we focus on the onset of revolts.[12] The detailed coding methods along with the confounding complications are discussed in the long note for Figure A3 in the Appendix. During our sample period, there were a total of 36,217 reported revolts, or 135.1 annually. Figure 2 exhibits the temporal distribtuion of peasants revolts. A big spike in rebellion intensity was featured between 1850 and 1875, when some of the largest rebellions in history such as the Taiping Rebellion and the subsequent Nian Rebellion took place.[13] Figure 3 exhibits the spatial distribution. The revolts were all over the Qing Empire map.

To see how governance complexity influences viceroy-governor duos, Figure 4 depicts the spatial distribution of cross-ethnic duos, where Panel (A) shows the number of peasant revolts in each provinces, and Panel (B) shows the probabilities of cross-ethnic duos. The graphical evidence suggests that these two variables are positively linked.

3.3 Control Variables

Population Density. The literature suggests that governance strategies are deeply influenced by local demographics (Foucault et al., 2007; Hu, 2015; Liu, 2017). Therefore, we control local population density from Cao (2000),[14] which contains population at the prefecture level in 1680, 1776, 1820, 1851, 1880, and in 1910, respectively. The average population density was 93.8 (persons) per square kilometer, with significant regional variations. For instance, the density in Jiangsu Province was 296.8 people per square kilometer, whereas in Yunnan province, it was a mere 19.4.

Culture and human capital. The literature suggests that culture is another factor that underpins bureaucratic governance (Chaudhary and Rubin, 2016). In China, Confucianism deeply shaped governing strategies (Shi and Lu, 2010), and the Manchu rulers had deliberately

[12] Most existing literature focuses on the onset of revolts when it comes to civil wars (Hegre et al., 2001; Sambanis, 2001; Miguel et al., 2004; Blattman and Miguel, 2010), which measures the outbreak of the conflict, thus approximating local governance complexity. In our database, we elicit the onsets of revolts through counting the combination of "rebels" (*fei*) and "outbreak" (*hu you*), or "raise their flags" *(shu qi*), amongst other keywords in the *Records*. However, we cannot clearly identify the ends of revolts, thus the durations of the revolts are not available in our dataset.

[13] Both the Taiping Rebellion and Nian Rebellion consisted of a series of major or minor battles. In our database, each of these battles are counted as one revolt. This is appropriate since our key measure captures governance difficulty within a jurisdiction.

[14] Cao's work marks the first attempt to systematically construct population data at the prefecture level of the Qing dynasty based on more than 3,000 local gazetteers, whose validity has been verified by the 1953 census survey and has survived the scrutiny of such eminent China scholars as Ho (1959), Perkins (1969), and Skinner (1977).

incorporated Confucian philosophy into their ruling toolkits. Therefore, as a measure of cultural influence, we include the number of *Jinshi* — the highest attainable qualification under the Confucianism-focused civil exam — in the province during 1646-1905. Additionally, the number of Jinshi reflects local human capital accumulation, which may also affect the outcomes. Since both the mastering of the Confucian classics and the human capital embodied in these Jinshi scholars contributed to governning capacity, there is no need to distinguish the cultural and the human capital aspects associated with Jinshi intensity. In the sample, the average number of Jinshi is 5.3 per province-year.

Technology. Existing studies point to technological changes, especially in the agricultural sector, as determinants of governance structure (Scott, 2009; Callen, et al., 2018). We thus control for the planting share of maize, the most important New World crops in China, as a proxy of technology adoption. We recover the planting of maize during 1580 and 1900 in China from Chen and Kung (2016), who use the date of first mentions of maize in local gazetteers as the inception of maize planting.

Table 1 summarizes the sources and descriptive statistics of the variables used in our analysis. Of all the viceroy-governor combinations, about 28.4 percent were Manchu-Han duos.

4. Empirical Strategy and Results

We now estimate the impact of governance complexity on ethnic assignment at the top local bureaucracy. In Section 4.1 we present the baseline estimates. In Section 4.2 we address endogeneity concerns and conduct a 2SLS analysis. In Section 4.3 we provide additional robustness checks. In Section 4.4, we extend the analysis to examine the regional and temporal heterogeneity of the cross-ethnic Manchu-Han duos.

4.1 Baseline Results and Robustness Checks

The baseline specification is as follows:

$$Y_{it} = \alpha + \beta Revolt_{it} + X'_{it} + u_i + v_t + \varepsilon_{it} \qquad (1)$$

Here *i* and *t* index province and year. The outcome variable of interest, Y_{it} captures the ethnicity combination of the viceroy-governor duo. Our main explanatory variable is the number of peasant revolts (in log), $Revolt_{it}$, which approximates governance complexity. Note that when there was a large peasant revolt that lasted multiple years and locations, the revolt measure counts the battles

for each province-year so that this measure nicely captures governance complexity. The vector X contains a series of control variables, including population density, number of *Jinshi*, and the proportion of maize planting. We further control for province and the year fixed effects to isolate the time-invariant factors as well as common temporal shocks.

For the ethnicity combination of provincial officials, we choose two variants. First, we use the dummy variable of whether the governor being ethnic Han. Since Hans were supposed to have better local information and know-how to deal with rebellions, by adding the dummy variable we can examine whether governance complexity leads to the choice of competent regional leaders—a premise upon which we construct the argument that the Manchu-Han duo arrangement entails both competence and loyalty. Second, as our main dependent variable, we use the dummy variable indicating the combination of Manchu viceroy and Han governor (Manchu-Han duo for short), which is the leadership arrangement to ensure both efficiency and loyalty in our conjecture at the context of governance complexity. To account for spatial auto-correlation, we report the Conley standard errors.[15] The baseline results are in Table 2.

Column 1 explains the dummy of the governor being Han. Overall, provinces with more peasant revolts had a higher likelihood of appointing a Han governor. Doubling the number of peasant uprising is associated with a higher likelihood of Han-governor appointment by 17.9 percentage points, roughly a quarter of the mean.

Columns 2-5 explain the Manchu-Han duo. Across columns, we first control population density, then add the number of *Jinshi*, and then the technology adoption indicator. The link between peasant revolts and Manchu-Han duos is qualitatively and quantitatively robust. Doubling peasant revolts is associated with a higher likelihood of Manchu-Han cross-ethnic duos by 21 percentage points, or 74 percent of the mean.[16] The result is consistent with the governance difficulty and cross-ethnicity assignment hypothesis: increased governance complexity leads to higher propensity to assign competent Han officials to resolve local matters, while appointing a

[15] Conley (1999) standard errors adjust for potential spatial interdependence of observations. Typically, spatial independence is assumed to decrease in the distance between two observations. Since provinces are relatively big spatial units, there is complete independence for provinces that are 2 degrees apart. We also tried other cut-off values (1, 3, 4 and 5 degrees), and the results stayed the same.

[16] A measurement error that could arise from our data collection of peasant revolts is the double counting of a single event when it is reported multiple times (without notable linkages). To avoid this possibility, we construct both binary (presence) and the quantitative (number) measures of the revolts. In Table 2, we employ the quantitative measures of the revolts, i.e., the number of peasant revolts. In the appendix (Table A3), we employ a binary measure of whether a revolt or multiple revolts took place in a province-year cell to re-run the regression. Our results remain largely the same.

Manchu superior for monitoring and to ensure loyalty.

In Column 6, we estimate a more demanding specification where we replace the dependent variable with an indicator for political turnover: whether the political assignments changed from same-ethnic duos to Manchu-Han duos. We related this change in leadership ethinicty makeup to the number of peasant revolts (in log) while controlling for province fixed effects. Our results imply that when a province experienced more peasant revolts, provincial leadership configurations were more likely to change into cross-ethnic Manchu-Han assignments.

Next, we check the robustness of the baseline results. First, to address reverse causality concerns, we replicate the regression with once-lagged terms in Appendix Table A1. Our results remain qualitatively robust. To further consider potential spatial auto-correlation, we also experimenting with adopting the generalized spatial two-stage least squares (GS2SLS) method developed by Kelejian and Prucha (1998; 1999; 2004).[17] The results, presented in Table A2 in the Appendix, show that the estimated coefficients are close to our baseline in magnitudes. Our results are thus not driven by spatial interactions between provinces.

4.2 IV Estimation

A relevant concern when implementing the OLS analysis is the endogeneity of governance complexity. One might worry that unobserved time-varying variables across regions are correlated with both governance complexity and the leadership ethnicity identity. Meanwhile, records of revolts may feature measurement errors, due either to data quality or data manipulations – for instance, local officials could have incentives to suppress the number of revolts to signal superior performance in maintaining order.

To address these concerns, we utilize an instrumental variable (IV) approach, using the province-level index of extreme weather to instrument for governance complexity. Prior studies suggest that extreme weathers have important direct influences on occurrence of peasant revolts (Blattman and Miguel 2010; Bai and Kung, 2011; Chen, 2015). In our context, we expect more peasant revolts in regions where extreme weathers are more frequent. Climate information is

[17] As a special form of Generalized Method of Moments (GMM) for models with spatially interdependent variables, this approach uses exogenous factors and their spatial lags as instruments for the endogenous regressor of peasant revolts. The estimators of GS2SLS are considered to be consistent and asymptotically normal (Kelejian and Prucha, 2004), and are not subject to the influence of the "omitted common factors" in the spatial interdependence (Das et al., 2003; Kelejian et al., 2013).

obtained from the *Atlas of Drought and Flood Distribution in China in the Past 500 Years*. In partiuclar, a representative province in our sample experienced an extreme drought every 10.2 years and an extreme flood every 13.4 years. Our IV specification is as follows.

For the first stage:

$$Revolt_{it} = \lambda\, Exweather_{it} + X'_{it} + u_i + v_t + \varepsilon_{it} \qquad (2)$$

For the second stage:

$$Y_{it} = \alpha + \beta\left(\widehat{Revolt}_{it}\right) + X'_{it} + u_i + v_t + \varepsilon_{it} \qquad (3)$$

In the specification, $Exweather_{it}$ is our instrumental variable, which corresponds to a dummy variable taking the value of one if extreme weather took place in province i at time t. The rest of the variables follow those in Equation (1).

The IV results are presented in Table 3. Column 1 reports the first-stage regression results. The coefficient is 0.205, significant at the conventional level, with F-statistics of 19.88 – which suggests that we do not have a weak instrument. The first-stage results indicate that a higher value on the extreme weather index strongly predicts more peasant revolts. Columns 2 shows the 2SLS results for Manchu-Han duos, which are consistent with our earlier conclusion from the baseline regressions. The results of Column 2 suggest that a one-standard-deviation increase in peasant revolts increases the probability of cross-ethnic duo by 47.8 percentage points. Columns 4 further shows the 2SLS results for political turnover: our baseline results remain robust that provincial leadership were more likely to switch to cross-ethnic duos when insurgence risks were higher.

4.3 Additional Robustness Checks

Same-ethnic duos. According to our governance difficulty and cross-ethnicity assignment hypothesis, Manchu-Han cross-ethnic duos solved the competence problem by appointing a Han elite as governor, and solved the loyalty concerns by assigning a Manchu viceroy for supervision. This, on the other hand, implies that neither a Han-Han duo – the one that maximizes efficiency, nor a Manchu-Manchu duo – the one that ensures utter loyalty, is desirable under challenging local environments. To check this implication, Table 4 presents the 2SLS regression results of the effect of governance complexity on the probability of same-ethnic duos. Column 2 shows that higher governance complexity indicates lower likelihood for same-ethnic duos. To further break down the analysis, Column 3 and 4 show that governance complexity has a negative impact on Han-Han duos, but is not significantly associated with the probability of Manchu-Manchu duos. Taken

together, the results demonstrate that same-ethnic duos were not the go-to solutions for Manchu rulers when faced strong governance challenges. Instead, Manchu-Han duos were.

Han Banner-Men. Amongst the Han elites, Manchu rulers strived to create a trusted group, known as Han Banner-men – the Manchu-acknowledged noble Han elites. These trusted Han elites were officially included into the traditional Manchu Banner system, and their talents and loyalty had greatly facilitated the Manchu conquering and rule. Historically the Han Banner-men were reagarded as close substitutes of Manchu officials when it came to loyalty (Chen, 2013).[18] We thus replicate the 2SLS regression to see whether the imperial rulers also preferred to assign Han-Banner-Men viercoys with Han governors when the ruling tasks were complex. As shown in Table 5, when a province had more peasant revolts, Manchu rulers had no higher tendency in assigning Han Banner-men in the supervisionary viceroy positions – a stark comparison with our baseline results. The findings have two implications. First, in the loyalty-competence tradeoff, loyalty was crucial for the Manchu rulers so that they did not risk to assign presumably trusted Han elites for supervison. Second, to the Manchu rulers, the Han Banner-men were still not "one of us" when it came to matters of regime survival.

Peer Supervision. The Manchu rulers could use an alterantive way of official assignment to balance the goals of both efficiency and loyalty. Besides direct monitoring from viceroys, governors from neighboring provinces could also be used to monitor local governors to prevent insurgent colleagues. For instance, it is possible to surround an elite Han governor with a Manchu colleague in neighboring provinces, who would be better informed than the faraway emperor on the loyalty of his Han colleague, and who could report observed misbehaviors to Beijing. To investigate this possiblity of peer monitoring across provicnes, we replace the dependent variable with a dummy variable indicating whether a Han governor had a neighoring Manchu colleague –

[18] Across the world, the strategy for capturing dominant-ethnic elites were widely adopted historically. For instance, France in the 19th centuries had been recruiting local non-French elites to form Foreign Legions in their colonies. Some of the members were later granted French citizenship (Lispector, 1992). Similarly, the British government widely implemented the honour system in colonies from India, Malaysia to Hong Kong, rewarding the local loyalists and contributors of colonel rule (Galloway, 2014). In the case of the founding of the Qing dynasty, the policy of ensuring loyal support of Han people were a prioritized policy of the founding Manchu leaders. Indeed, the Manchus had strong divisions of Han soldiers loyally serving the Manchu cause, and the Manchu leaders had numerous cooperative and loyal Han military leaders serving under them as well. These early Manchu-cooperative Hans were designated as Han Banner members, and were treated more similarly as Manchu's own than other Hans (p. 45, 60-61, Chapter 3, Wakeman 1985). The Han Banner members group played crucial roles in the Manchu conquest. For instance, in 1648, Han Banner members consisted of 75% in the Qing army, amongst Manchu and Mongol soldiers (Fairbank, 1992).

either as a governor or as a viceroy -- and replicate the regressions. We present the 2SLS results in Table 6, using the same instrument as in the previous sections.

As shown in the table, increased governance complexity did not lead to increased likelihood of assigning a Manchu governor in the neighborhood. Thus, peer supervions was not an effective susbstitute of the Manchu-Han duos. We conclude that checks and balances on local governors mainly came from vertical – instead of horizontal – supervisions. A possible reason may be that the neighboring governors had limited authority to supervise, and lacked access to communication technology to permit prompt information sharing (Li, 2005). After all, the world more than a century away was characterized by high communication costs, and hundreds of miles were quite far to observe what was going on closely. To summarize, the results underscore the necessity of using cross-ethnic Manchu-Han duos to alleviate competence-loyalty tradeoffs.

4.4 Regional and Temporal Heterogeneity

As the North-South hypothesis implies, the historical legacy of the Qing suggests that we need to consider the spatial distribution of the impacts of insurgency on leadership ethnicity identity. To this end, we separate the provincial samples into four sub-samples by their distances to the capital (i.e., Beijing) – that is, within 1,000 km, 1,000-1,500 km, 1,500-2,000 km, and 2,000+ km radius. We note that the 1,000-1,500 km segment contains the Jiangnan areas where the initial resistance to Qing was the strongest. We then replicate our 2SLS estimation by running four separate estimations. Figure 5 presents the point estimates and the corresponding 95% confidence intervals.[19] When a province is further away from Beijing, it was more likely to have Manchu-Han cross-ethnic duo in general, but especially when it is within 1,000 to 1,500 km (to Beijing), that is, for the areas containing the Jiangnan area. This supports the North-South hypothesis, and the existing literature that the lack of local information encourages delegation to experts more familiar with local situations, but also calls for stricter supervision (Hayek, 1945; Aghion and Tirole, 1997; Huang et al., 2017).

Next, we examine how the adoption of Manchu-Han duo change over time and test the regime-change hypothesis—that is, cross-ethnic duo arrangements were more likely when the

[19] The regression results are included in Appendix Table A4.

disloyalty concerns were more severe. To this end, we classify the whole Qing dynasty from 1644-1911 into three periods: the founding era (1644-1681), which ended with having successfully handled Han warlords in the peripheral areas of China; the era of stability (1682-1850), which was characterized by relative stability and lack of large conflicts; and the era of decline (1851-1911), which began with the Taping Rebellion and the permission from the central authority to allow governors taking charge of local military forces. In this part of our analysis, we exclude the founding era from the analysis because it was characterized by sporadic fights between Ming-loyalists and the Manchu government, and a stabilized Manchu-Han relationship was yet to be formed. For the remaining two eras, we expect higher adoption of cross-ethnic duo arrangements when the disloyalty concerns were more severe in the era of decline than in the era of stability.

We present the 2SLS results in Table 7. In particular, we report two specifications, with and without other covariates. The results consistently show that, during the era of stability, the link between peasant revolts and Manchu-Han duos was consistently positive but not statistically significant. In sharp contrast, during the era of decline when governors were allowed to control the military, the link between peasant revolts and the Manchu-Han duo arrangements became more pronounced and statistically significant. The results support the regime-change hypothesis.

5. Efficacy of Power Checks

We have presumed that the cross-ethnic duo arrangements facilitated both efficiency and loyalty. Is there evidence that this arrangement indeed facilitated local governance while resolving the loyalty concerns? To this end, we first examine the impact of Manchu-Han duos on local economic development. To capture development in the Qing dynasty, we do not have modern indicators such as GDP per capita. Instead, the literature of economic history has relied on population density and urbanization indicators.[20] We follow this literature by relating provincial population density in year *t* to its once-lagged Manchu-Han duo dummy, along with province and year fixed effects. The results, in Column 1 of Table 8, show that the cross-ethnic duo dummy is significantly associated with higher subsequent population density. This is consistent with the premise that the mixed ethnicity leadership was good for local development.

[20] See, for instance, De Vries (1976), Bairoch (1988), Acemoglu et al., (2002; 2005), Clark (2007), Campbell and Lee (2008), Chen et al. (2010), Jia (2014), and Nunn and Qian (2011).

Next, we investigate the impact of Manchu-Han duos on loyalty. We first examine the local responsiveness to central policies. To this end, we track the implementation time of the *Huohao* tax reform during 1723-1725, which concerned all informal levies that were collected by local governments in addition to formal taxes. Such informal levies were used to maintain local offices and perform their duties (Ch'ü, 1962). The goal of the centralization reform was to formalize informal levies: such levies would be handed to the central government, which would then make transfer payments (*yanglianyin*, or "anti-corruption salaries") to the local governments to maintain their offices and provide public goods. This reform would tie the hands of local officials, and its earlier implementation would signal responsiveness to the agenda of the Qing authority. We expect earlier implementation of the central-directed reform in regions under Manchu-Han duo leadership than those under Han-Han leadership. Column 2 in Table 8 presents the results. Consistent with our conjecture, provinces under Manchu-Han duos had pushed for the central reform policy more proactively, by 9.4 percentage points, or 17 percent of the sample mean.

Furthermore, we investigate the link between the cross-ethnic duos and loyalty by examining the recognition of the central authority, as proxied by two measures. The first is whether a province participated in the Yangtze Compact in 1900. During the anti-colonists Boxing Rebellion in the late Qing dynasty, the imperial court tried to direct peasants to attack foreigners. But ten southeastern provinces declined the order of endorsing Boxing Rebellion (Feuerwerker, 1958; Xie, 1986; Bai and Kung, 2015).[21] Such decisions were consequently regarded as defiance of the central authority by the supreme leader in imperial court, Empress Cixi (Guo, 2010).

The second measure is the time of independence declaration in the last days of the Qing dynasty. After the Wuchang Uprising on October 10, 1911, provinces across China declared their independence from the Manchu government one by one. We measure the degree of loyalty by the time these provinces declared independence – the later, the more loyal. We expect provinces with Manchu-Han duos were less likely to defy central orders (i.e., participated in the Yangtze Compact) and would declare independence later than others.[22] Columns 3 and 4 in Table 8 present the results. Indeed, provinces under cross-ethnic duo leadership were more reluctant to defy central authority:

[21] The 10 provinces include: Shandong, Jiangsu, Anhui, Henan, Shaanxi, Zhejiang, Fujian, Jiangxi, Guangxi, and Guangdong.

[22] Larger entries correspond to later time of declaration. For instance, we assign the first province to declare dependence, i.e., Hubei province, with value 1; and the second province with value 2.

on average, they were less likely to participate in the Yangtze Compact later in 1899, and they declared independence later in 1911 (by one place in terms of rank order).

6. Conclusion

As in the case of colonization, indirect governance is often a must when the rulers are affiliated with an ethnic group with far fewer people than the dominant ethnic group. Under indirect governance, it is a critical challenge to ensure the loyalty of local elites of the dominant ethnic group while eliciting their best governing efforts, which would surely multiply the governance benefits by virtue of their superior local information, talents, and access to pre-existing state capacity. In this paper we offer evidence of a strategy systematically adopted by Manchu rulers in the Qing China to achieve a balanced approach aiming at both efficiency and loyalty: the cross-ethnic duo arrangement of assigning local Han elites as provincial governors to solve daily administrative problems, and appointing Manchu superiors (viceroys) to monitor and ensure loyalty. We proceed to show empirically that the likelihood of such Manchu-Han duos increases with governance complexity, as proxied by the frequency of peasant revolts. An increased governance complexity also shifts political turnovers towards Manchu-Han duos. We further find that provinces further away from the Qing capital, especially those that offered stiffer opposition to Manchu rule initially such as the Jiangnan area, tended to face stronger competence-loyalty tradeoff, that is, a stronger positive link between the adoption of cross-ethnic duo leadership and governance complexity. Furthermore, when the Manchu rulers, facing western invasions and domestic rebellions, had to concede the discretion of military leadership to Han governors to just survive politically, Manchu monitoring in the role of viceroys further increased, and we see a stronger link between the cross-ethnic duo arrangement and governance complexity.

Among the sensitivity checks, we allow for the endogeneity of peasant revolts, our proxy of governance complexity, and instrument it with extreme weather, and our results remain robust. We offer evidence that monitoring of local leaders was largely via the vertical framework (i.e., viceroy on governors) rather than from neighboring provinces. We further show that the cross-ethnic duo leadership was associated with higher subsequent population density, was more responsive in implementation of central policies, as well as less likely to break away from the Empire, indicating the efficacy of the arrangement.

The cross-ethnic duo arrangement had been successful in general, as testified by the long ruling duration of the dynasty, the large increase in population during the reign, and the large territory expansion. But the arrangement was insufficient to save the Manchu rulers. The multiple shocks of severe weather changes in the middle of 19th century, western invasions, one of the largest rebellion in China's history (i.e., Taiping Rebellion) joined forces in the middle of the 19th century. The weak state capacity of the Manchu rulers made the official Qing Army completely inadequate to put down the Rebellion. The Manchu rulers then had to allow the Han elites to raise local armies/militias under their own charge to fight the rebels. Out of this arrangement, as we documented, the ethnic duo arrangement were even more heavily used in the presence of internal conflicts, but that was not enough to contain the growing power of Han governors and viceroys, and eventually the Han scholar-generals such as Zeng Guofang, Li Hongzhang, and Yuan Shikai became dominant in the late Qing politics, and China soon reverted back to Han people, and the Qing Empire collapsed in 1911.

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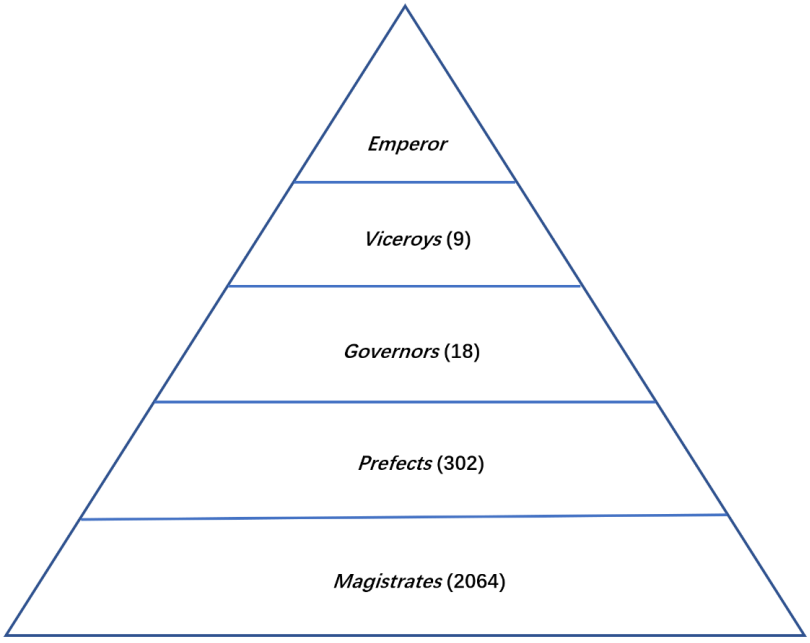
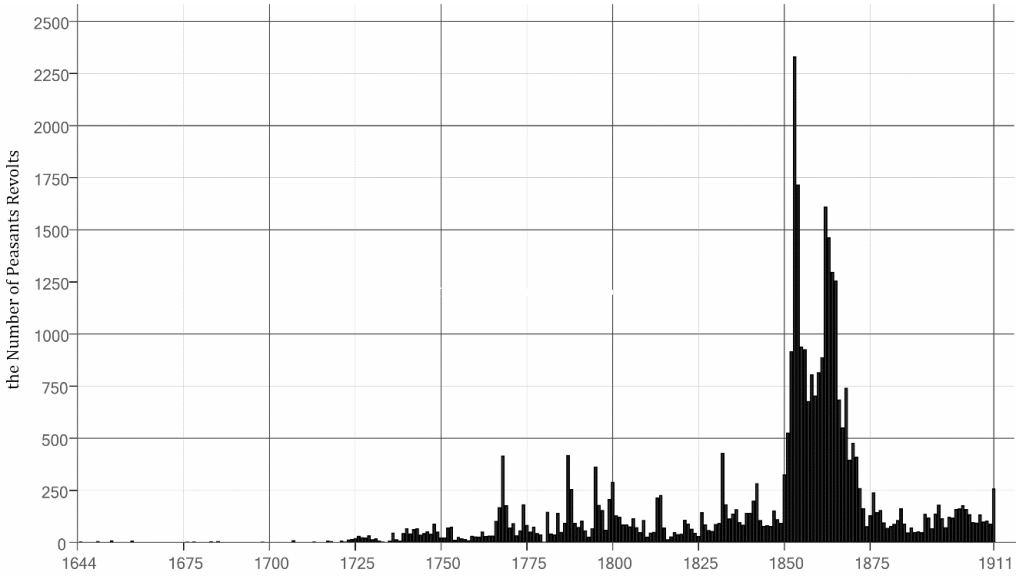
Figures and Tables

Figure 1. Bureaucratic Hierarchy in the Qing dynasty



Source: The bureaucratic structure is retrieved from Lv (2015), the numbers of personnel are retrieved from the *Records of the Qing Emperors* (*Qing Shilu*)

Figure 2. Temporal Distribution of Peasants Revolts



Note: The data are retrieved from the *Records of Qing Emperors*, which counts 39,648 peasant revolts in total.

Figure 3. Spatial Distribution of Peasants Revolts

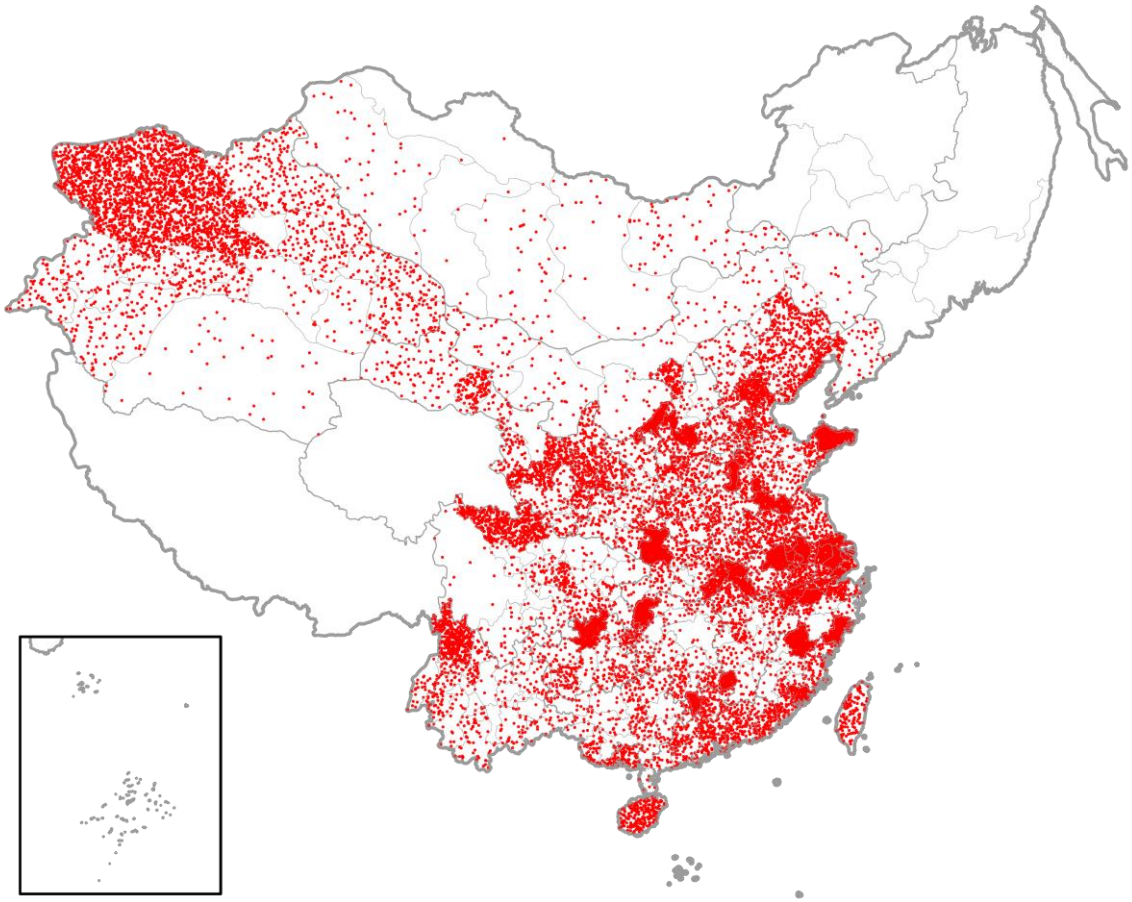
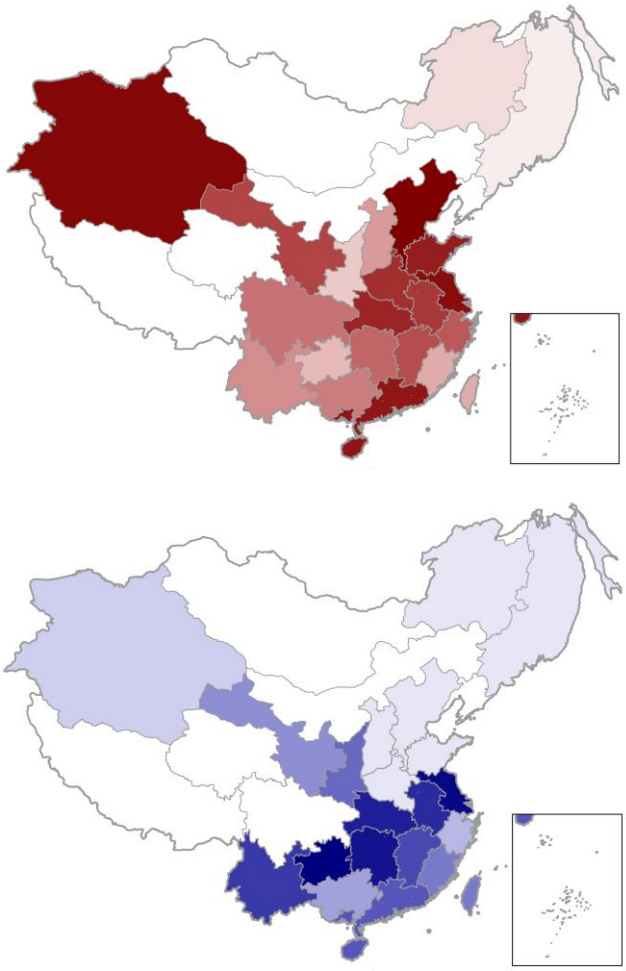


Figure 4. Peasants Revolts and the Spatial Distribution of Manchu-Han Duos



(A) Peasant Revolts (B) Manchu-Han duos

Note: (A) Darker colors indicate more frequent peasant rebellions; (B) Darker colors indicate longer usages of cross-ethnical duos. The white areas in both panels represents those with missing information.

Figure 5. Spatial Distribution of the Influence of Peasant Revolts on Governance (2SLS)

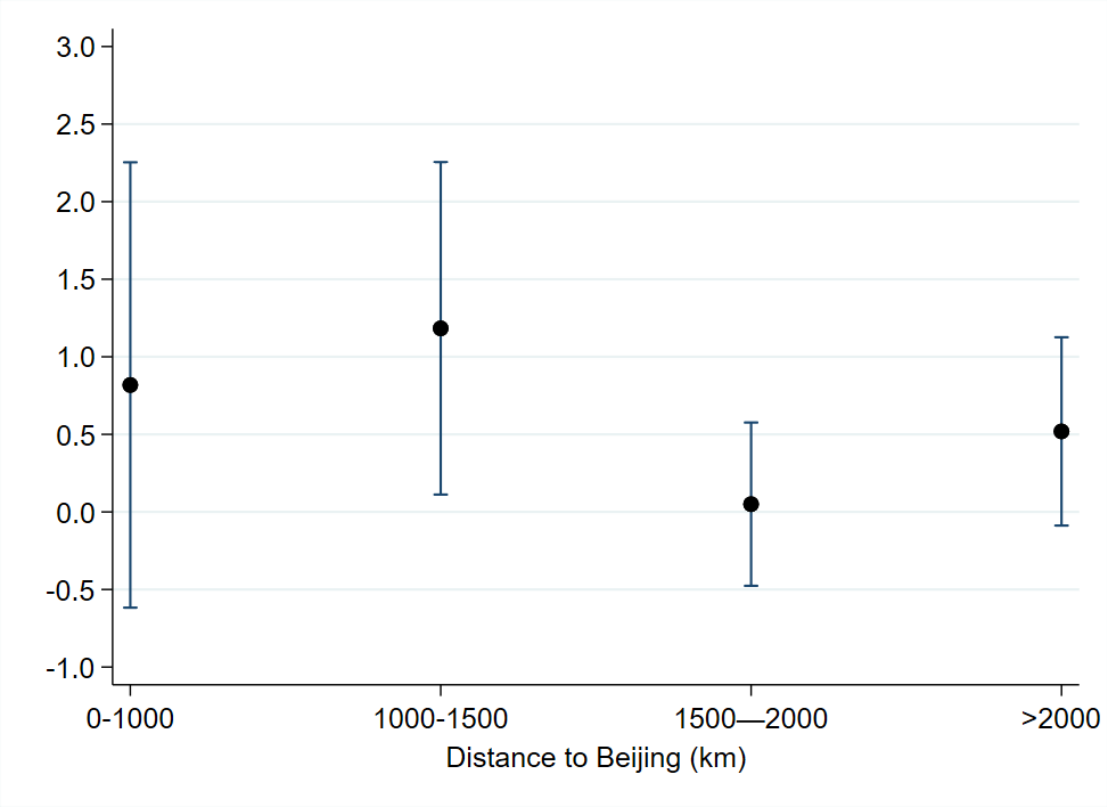


Table 1: Summary Statistics

Variables	Source	Obs	Mean	S.D
Han Governor	A	4014	0.759	0.428
Manchu-Han Duo	A	3117	0.288	0.453
Han-Han Duo	A	3117	0.492	0.500
Manchu-Manchu Duo	A	3174	0.110	0.313
Han Governor + Manchu Viceroy or colleague	A	4824	0.450	0.326
Han Banner-Men viceroy + Han governor	A	3117	0.982	0.298
Political turnover	A	3289	0.051	0.221
Peasant Revolt (ln)	B	4824	1.168	1.112
Population Density (ln)	C	4824	4.145	0.909
No. of *Jinshi* (ln)	D	4824	0.965	1.247
Proportion of Maize Planting	E	4824	0.540	0.343
Extreme Weather	F	4824	0.114	0.318
Huohao Reform	B	238	0.555	0.498
Manchu-Han Duo before 1900	A	17	0.350	0.153
Yangtze Compact	B	17	0.588	0.507
Independence	B	17	7.941	4.366

Sources：A:*Viceroys and governors*: We, Hsiu-me (ed.). 2002. Charts of Qing officials and offices (Qingji zhiguanbiao), Archive Publication Series, Institute of Modern History, Taipei: Academia Sinica. B: *Peasant revolts*: Veritable Records of the Qing Emperors (Qing Shilu). C:*Population density*: History of Population in China (*Zhongguo Renkou Shi*) and Statistics of Hukou and Farmlands in China (*Zhongguo Lidai Hukou Tiandi Tianfu Tongji*). D:*Jinshi*: Baojiong Zhu and Peilin Xie, editors. Ming-Qing Jinshi Timing Beilu Suoyin (Official Directory of Ming-Qing Imperial Exam Graduates). Shanghai: Shanghai Guji Chubanshe, 1980. E:*Maize planting*: local gazetteers (*difangzhi*) of each prefucture; Chen and Kung (2017). F: *Extreme weather*: Atlas of Drought and Flood Distribution in China in the Past 500 Years (Zhongguo Jinwubainianlai Hanlao Fenbu Tuji)

Table 1b: Definitions of Variables

Variables	Definition
Han Governor	A binary variable, taking value of one if the governor is Han Chinese.
Manchu-Han Duo	A binary variable, taking value of one if the viceroy is Manchu and the governor is Han Chinese.
Han-Han Duo	A binary variable, taking value of one if both the governor and the viceroy are Han Chinese.
Manchu-Manchu Duo	A binary variable, taking value of one if both the governor and the viceroy are Manchu.
Han Governor + Manchu Viceroy as colleague	A binary variable, taking value of one if a neighboring province has a Manchu viceroy.
Han-Banner Viceroy and Han Governor	A binary variable, taking value of one if the viceroy is a Han-Banner man, and the governor is Han Chinese.
Political turnover	A binary variable, taking value of one if the viceroy-governor duo switched from same-ethnic to cross-ethnic combinations.
Peasant Revolt (ln)	Number of peasant revolts during 1644-1911, in log.
Population Density (ln)	The average population per square kilometers during 1644-1911, in log.
No. of Jinshi (ln)	The number of Jinshi of the province during 1646-1905, in log.
Proportion of Maize Planting	A binary variable, taking value of one if maize was introduced to the province.
Extreme Weather	A binary variable, taking value one if extreme weather took place.
Huohao Reform	A binary variable, taking value one if the province was impacted by the Huohao Reform during 1722-1735.
Manchu-Han Duo before 1900	A proportion measure, calculated by the years that a province was governed by a Manchu-Han Duo before 1990, over the total years before 1990.
Yangtze Compact	A binary variable, taking value one if the province participated in the Yangtze Compact during 1900.
Independence	The rank order of declaration of dependence during 1911-1912.

Table 2: Governance Complexity and the ethnic identity: Baseline

	(1) Han Governor	(2) Manchu Viceroy + Han Governor	(3) Manchu Viceroy + Han Governor	(4) Manchu Viceroy + Han Governor	(5) Manchu Viceroy + Han Governor	(6) Same-Ethnic to Manchu-Han Duo
Peasant Revolt	0.180***	0.215***	0.210***	0.209***	0.207***	0.045***
(ln)	(0.029)	(0.032)	(0.032)	(0.031)	(0.029)	(0.008)
Pop. Density (ln)			0.382***	0.387**	0.421***	0.081***
			(0.129)	(0.133)	(0.110)	(0.016)
No. of Jinshi (ln)				-0.053*	-0.052*	-0.008
				(0.028)	(0.028)	(0.013)
Maize Planting					-0.315	-0.009
					(0.211)	(0.038)
Observations	4014	3117	3117	3,117	3117	3289
R-squared	0.292	0.262	0.286	0.288	0.294	0.140
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Conley standard errors reported in brackets.

Table 3: Governance Complexity and Leader Ethnic Identity: 2SLS Results

	First Stage	IV	First Stage	IV
	(1)	(2)	(3)	(4)
	Peasant Revolt	Manchu-Han Duo	Peasant Revolt	political turnover
Extreme Weather	0.205***		0.193***	
	(0.036)		（0.034）	
Peasant Revolt (ln)		0.478***		0.115*
		(0.132)		(0.0689)
Pop. Density (ln)	0.127**	0.387***	0.138**	0.0714***
	(0.056)	(0.046)	（0.054）	(0.0231)
No. of Jinshi (ln)	-0.042*	-0.043**	-0.037	-0.00531
	(0.025)	(0.019)	（0.024）	(0.00956)
Maize Planting	-0.126	-0.279***	-0.117	-0.00104
	(0.095)	(0.074)	（0.091）	(0.0366)
Observations	3117	3117	3289	3,289
R-squared	0.757	0.111	0.7708	0.1054
F-stat	19.88		20.06	
Year FE	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4: Governance Complexity and Same-ethnic Duos: 2SLS Results

	First Stage	IV		
	(1) Peasant Revolt	(2) Same-Ethnicity Duo	(3) Han-Han Duo	(4) Manchu-Manchu Duo
Extreme Weather	0.205***			
	(0.036)			
Peasant Revolt		-0.371***	-0.324**	-0.047
		(0.146)	(0.141)	(0.090)
Pop. Density (ln)	0.127**	-0.317***	-0.322***	0.005
	(0.056)	(0.050)	(0.049)	(0.031)
No. of Jinshi (ln)	-0.042*	0.039*	-0.001	0.040***
	(0.025)	(0.021)	(0.021)	(0.013)
Maize Planting	-0.126	0.248***	0.120	0.129**
	(0.095)	(0.082)	(0.079)	(0.050)
Observations	3117	3117	3117	3117
R-squared	0.757	0.068	0.116	0.187
F-stat	19.88			
Year FE	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5: Governance Complexity and Ethnic Identity of Leaders: Banner System

	First Stage	IV	
	(1)	(2)	(3)
	Peasant Revolt	Han-Banner Viceroy & Han Governor	Han-Banner Viceroy & Han Governor
Extreme Weather	0.205***		
	(0.036)		
Peasant Revolt		-0.0943	-0.0922
		(0.0908)	(0.0897)
Pop. Density (ln)	0.127**		-0.0307
	(0.056)		(0.0309)
No. of Jinshi (ln)	-0.042*		-0.0181
	(0.025)		(0.0131)
Maize Planting	-0.126		-0.0375
	(0.095)		(0.0501)
Observations	3117	3,117	3,117
R-squared	0.757	0.126	0.128
F-stat	19.88		
Year FE	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6: Peer Supervision

	First Stage	2SLS	
	(1)	(2)	(3)
	Peasant Revolt	Han Governor with neighboring Manchu colleagues	Han Governor with neighboring Manchu colleagues
Extreme Weather	0.155***		
	（0.027）		
Peasant Revolt (ln)		0.115	0.114
		(0.079)	(0.071)
Pop. Density (ln)	0.142		-0.004
	（0.039）		(0.019)
No. of Jinshi (ln)	-0.029		0.026***
	（0.186）		(0.008)
Maize Planting	-0.032		-0.022
	（0.066）		(0.027)
R-squared	0.7682	0.5301	0.499
Observations	4824	4824	4824
F-stat	31.85		
Year FE	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7: Temporal Heterogeneity of Cross-ethnic Duos

Panel A. Not controlling for other covariates	**The stability era:**		**The decline era:**	
	First Stage	IV	First Stage	IV
	(3)	(4)	(5)	(6)
	Peasant Revolt	Manchu-Han Duo	Peasant Revolt	Manchu-Han Duo
Extreme weather	0.206***		0.231***	
	(0.050)		(0.086)	
Peasant Revolt		0.158		0.386**
		(0.152)		(0.155)
Observations	1988	1,987	714	714
R-squared	0.5836	0.079	0.7308	-0.084
F-stat	17.07		11.03	
Year FE	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes
Panel B. Controlling for other covariates				
Extreme weather	0.209***		0.226***	
	(0.050)		(0.070)	
Peasant Revolt		0.237		0.473**
		(0.161)		(0.201)
Observations	1988	1,987	714	714
R-squared	0.5836	0.079	0.7308	-0.084
F-stat	20.45		7.04	
Other controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes

Note. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

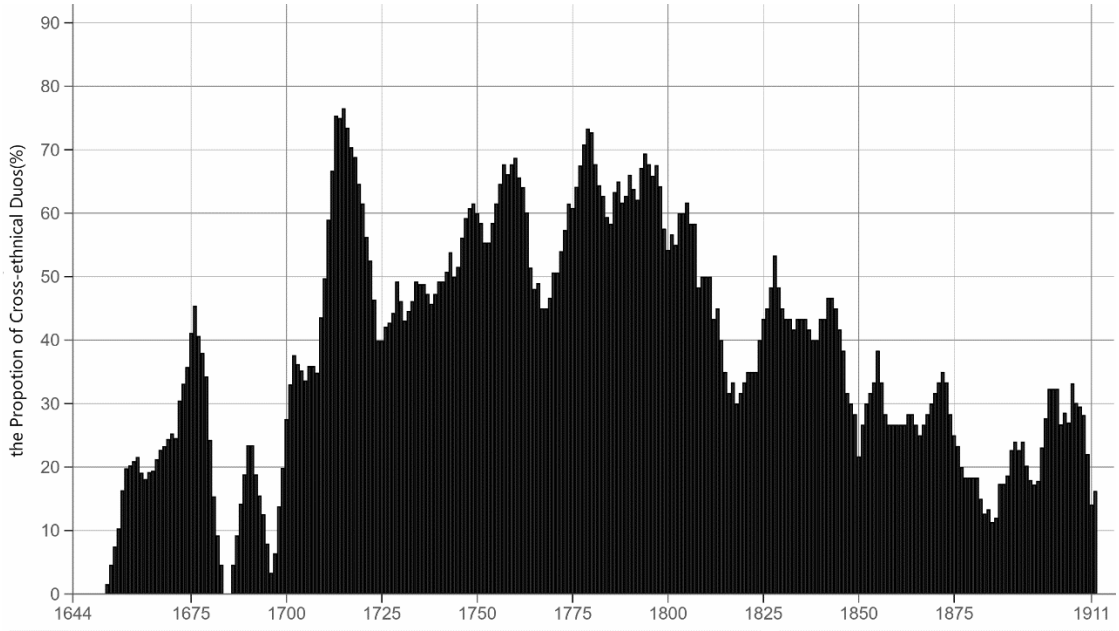
Table 8: Efficacy of Power Checks

	(1) Population Density	(2) *Huohao* Reform	(3) Yangtze Compact	(4) Independence
Manchu-Han Duo (lagged)	0.061***	0.094*		
	(0.018)	(0.055)		
Proportion of Manchu-Han Duo Before 1900			-0.091***	-1.022***
			(0.075)	(5.297)
R-squared	0.957	0.356	0.172	0.187
Observations	3108	168	17	17
Year FE	Yes	Yes	No	No
Provincial FE	Yes	Yes	No	No

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

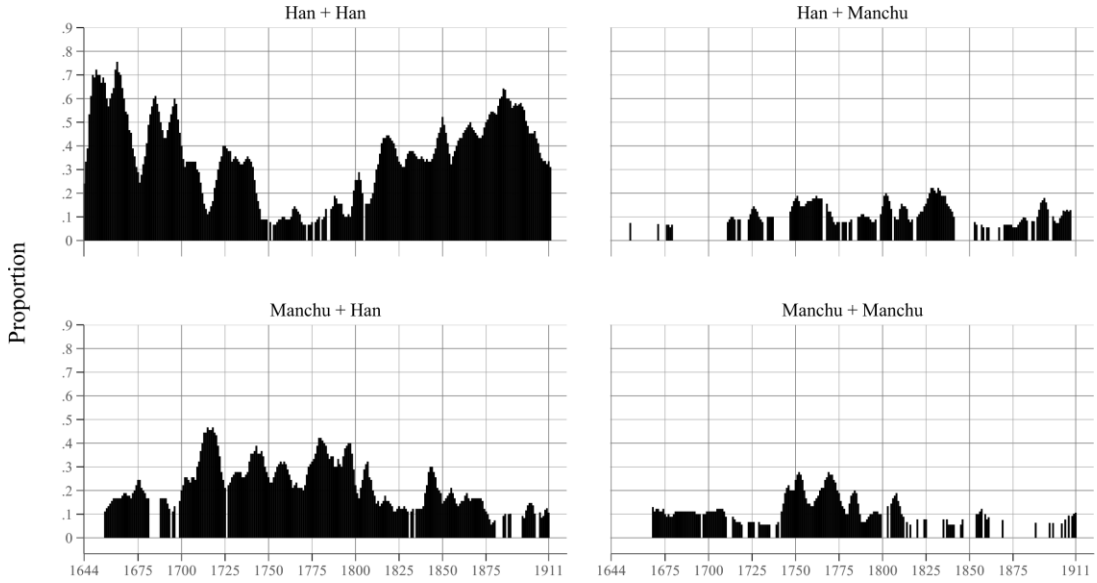
Appendix A: Appendix Figures and Tables

Figure A1. Temporal Distribution of Cross-ethnical Duos



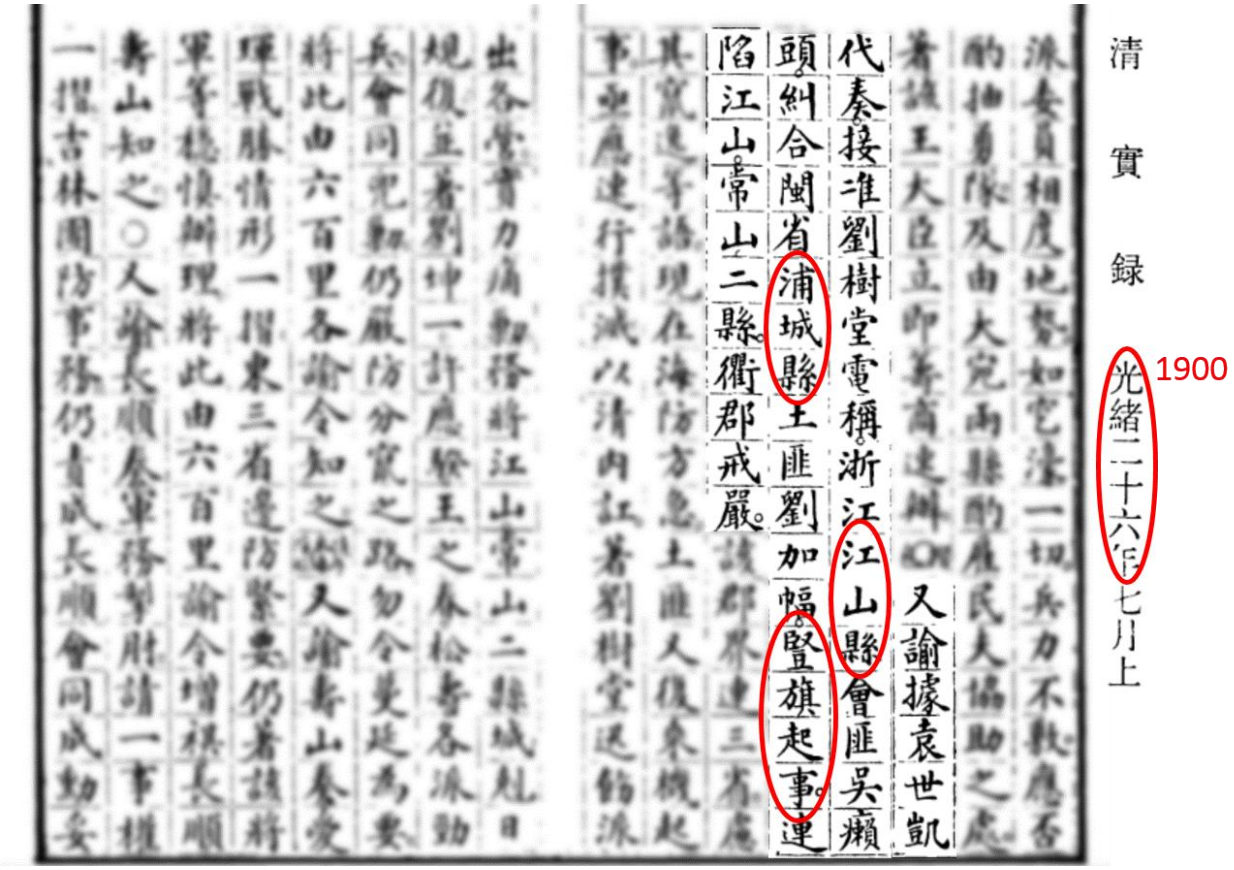
Note: The calculation is based on five-year moving-averages.

Figure A2. Breakdown of Cross-ethnical Duos



Note: Han bannermen are considered as Manchus for this plot. The overall trend remains unchanged when Han Banner Men are considered as Han Chinese.

Figure A3: Coding Method



Translated script

July, Guangxu 26 (1900):

A telegraph report from Shutang Liu suggests that a rebel group led by Laitou Wu and Jiafu Liu has formed in Jiangshan County and Pucheng County. They have captured Jiangshan County and Changshan County. Keep alert!

Guangxu Shilu (vol. 266)

Details of the Coding Method

This section summarizes the coding method of our dependent variable: the number of rebellions. We start by describing the structure and content of *Qing Shilu* (The Veritable Records of Qing Emperors). Then the detailed steps taken to locate and code the relevant records are described with illustrative examples.

Qing Shilu is a collection of 13 books, each corresponding to one of the 13 emperors in Qing China. The books consist of the words, orders and activities of the emperors documented daily. It is a unique data source that systematically tracks the universe of rebellions throughout the Qing dynasty.

The original books of *Qing Shilu* are hard to read due to their traditional format (right- to-left, vertical writing) and traditional usages of Chinese language. To facilitate the task, we obtained the digitized text of the books available at *Chinese Text Project* and collected the information in the following steps:[23]

[23] https://ctext.org. See Sturgeon (2019) for a description of the project.

Step 1. We identified the items in the books that are related to rebellions by looking for the keyword "*fei*" (bandits), the most common term used by the Qing government to refer to the rebels.[24]A typical record starts by describing the activities of the rebels followed by the emperors' instructions on how to deal with them. Specifically, it would mention where the rebels originated, where they headed to and where they were stationed.

Step 2 We extract the following information through a thorough reading of the texts: i) year of the event reported; ii) counties involved; iii) the activities that took place. For events that involve multiple counties, we identify the activities for each county (i.e., we have activities for each event-county pair).

Step 3 We pinpoint the counties' location by matching their names to the administrative boundaries of counties as of 1820.[25]

Step 4 For each event-county record, we categorized the activities into five groups according to the descriptions of the event: *onset*, *attacking*, *defending*, *stationing* and *retreating*. Specifically, *onset* refers to cases where the rebelling group did not exist previously and started to rebel locally. This is often identified by phases such as "hu you" (suddenly there is), "shu qi" (raise their flag), and "qi shi." *Attacking* refers to cases where the rebelling group already exists and is trying to attack **another** county. *Defending* refers to cases where the rebelling group already exists and is being repressed by the government. *Stationing* refers to cases where the rebelling group already exists and is staying in one county without other military action. Finally, *Retreating* refers to cases where the rebelling group already exists and is retreating to a different county (often after being defeated by the government).[26]

Step 5 Finally, for each county-year we count the number of events by action type and construct a balanced panel where a value of 0 is assigned to county-year pairs with no reports of a specific type of action. We also generate for each action type a dummy variable indicating the presence of the specific type of action in the county year.

Although the books of Qing Shilu are the most reliable source available for rebellions in the Qing dynasty, the fact that they are not statistical books in standard format posed some complications for our data collection process. Such complications, if not handled properly, could have affected the accuracy of the data collected. We made every effort to address these complications. First, while most of the events were reported in the year in which it happened, in some cases they were reported one or more years later especially if an event took place at the end of the year but was reported at the beginning of the next year. While we primarily rely on the year of reporting to document time, we identify phrases such as "last year" and "back in some specific year" to make corrections accordingly.

Second, the records for some years are known to be inaccurate. For example, the cases reported in 1768 are mostly miscarriages of justice in which the innocent people were accused and interrogated during the government's campaign against a sorcery rumor.[27] The reports in 1818 are mixed up with many previous events over the previous decades as a result of the backlog clearing campaign. Therefore, we discard all cases reported in 1768 and 1818 to make sure that our results are not biased by the distortion.[28]

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[24] The Qing government often referred to rebel groups according to their identity (usually the location or the leader's surname) followed by the keyword "fei". For example, "yue fei" refers to rebelling groups originating from Guangdong and Guangxi (also named "yue"); "cuan fei" refers to rebels moving around ("cuan").

[25] The county boundaries were relatively consistent throughout the Qing dynasty despite the frequent adjustments in prefectural and provincial boundaries (Ge, 1997). In the rare cases when the names did not match, we relied on online searches to link the county names mentioned in the records to 1820 counties.

[26] Unfortunately, our data do not allow us to further distinguish various types of rebellions such as food riots or political grievance.

[27] In spring 1768, a mass hysteria broke out over rumours that sorcerers were roaming the country, cutting off men's braids and stealing their souls. During the campaign against the rumour, people brought false charges against marginalized people of society, and officials extracted confessions of sorcery from the innocent under torture. (Philip, 2009)

[28] We also verified that our findings are barely affected by including these cases.

Third, it is not uncommon in *Qing Shilu* for one event to be reported and discussed multiple times, which could have caused double-counting. However, when the record refers to an event that was already reported, it typically starts with an indicator phrase such as "as reported before". We use such phrases to identify and discard duplicate reports in order to minimize the risk of double counting. We also discard cases with phrases that imply that they are explicitly connected to previous ones (e.g., one is a continuation of the other, or initiated by the same leader, or there is some sort of collusion between the rebels, etc.).[29]

Fourth, in cases where the rebels were reported to spread across multiple counties, we code their actions in each county separately.[30]

Finally, the cases reported in the books might also capture battles between the Qing government and its major enemies (e.g., the British army, the Taiping army and the Nian army). Unfortunately, our data source does not provide us with enough information to identify whether a case actually belongs to any of these events. However, since these events generally started from outside our sample period and lasted for several years, most of the associated actions could be categorized as attacking, defending, retreating, or stationing. Therefore, because we focus on the onset measure, it is unlikely that it would directly capture the campaigns of these historical events.[31]

[29] It is nevertheless possible that the two events are implicitly connected in an unobservable manner that is not recorded, causing potential double-counting. We address this by also using the binary indicator of the presence of rebellions in our analysis.

[30] To illustrate, consider a group of rebels that started in county A, attacked counties B and C, and retreated into county D after being repressed. In our data set, county A will receive 1 count of onset, counties B and C will each receive 1 count of attacking, and county D will receive 1 count of retreating.

[31] Unfortunately, our data does not allow us to distinguish the types of revolts such as food riots or political grievance.

Table A1: Governance Complexity and Power Checks (lagged terms)

	(1) Han Governor	(2) Manchu-Han Duo	(3) Manchu-Han Duo	(4) Manchu-Han Duo	(5) Manchu-Han Duo
Peasant Revolt $_{t-1}$ (ln)	0.095***	0.133***	0.127***	0.127***	0.125***
	(0.019)	(0.026)	(0.025)	(0.025)	(0.023)
Pop. Density $_{t-1}$ (ln)			0.300**	0.301**	0.334***
			(0.129)	(0.130)	(0.105)
No. of Jinshi $_{t-1}$ (ln)				-0.008	-0.008
				(0.031)	(0.031)
Maize Planting $_{t-1}$					-0.295
					(0.205)
Observations	4011	3117	3117	3,117	3117
R-squared	0.198	0.143	0.158	0.158	0.163
Year FE	Yes	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A2: Governance Complexity and Power Checks: GS2SLS estimation

	(1) Han-Governor	(2) Manchu-Han Duo	(5) Manchu-Han Duo
Peasant Revolt (ln)	0.112***	0.154***	0.177***
	(0.017)	(0.027)	(0.031)
Observations	3286	2716	2716
Spatial Autocorrelation coefficient (σ)	0.127	0.078	0.83
Adjusted R-squared	0.325	0.216	0.270
Additional Controls	No	No	Yes
Year FE	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1. Additional controls include population density, number of Jinshi, and proportions of maize planting.

Note on Generalized Spatial Two Stage Least Squares (GS2SLS)

The spatial correlations in governance are not captured in Equation (1). It is possible that the governance mode of a province might be a function of the interactive learning process among localities close to each other. To operationalize such an influence, we create a spatially weighted lag of the governance status, and the weights are based on whether the respective regions are neighboring provinces. The spatial lag of the adoption status alone however does not capture the totality of neighborhood externalities. Each province is also subject to the influence by some unobserved, random characteristics of the neighboring provinces. Formally, the relationship is shown as follows:

$$Y_{it} = \rho W Y_{it} + Revolt_{ij}\beta + X'_{it}\delta + \mu_{it}$$

$$\text{and: } \mu_i = \sigma W \mu_i + \varepsilon_i, \; i = 1,2,\dots N \quad (2)$$

In equation (2), *i* indexes province, and *t* indexes time. Y_{it} indicates the ethical choice for viceroy-governor duo. WY_{it} is the spatially weighted lag of the governance status for neighboring province, and ρ is the coefficient for the spatial lag. $Revolt_{\text{ij}}$ is the key explanatory variable, while X_i is a matrix of control variables including population density, number of Jinshi, and proportion of maize planting. β is a vector of coefficients for these covariates. μ_i represents the residual of the model, which is a function of the spatially weighted lag of the residuals of neighboring provinces $W\mu_i$, plus an error term ε_i.

Because Y_{it} is a function of μ_i, which means its spatial lag WY_{it} is also a function of μ_i, the use of standard maximum likelihood estimation for equation (2) faces endogeneity concerns. In the context of this study, the ethnic choice of viceroy-governor duo is influenced by the decisions of its neighboring provinces, but its own decision may in turn have an impact on the decisions of its neighbors. To deal with the endogeneity problem, we apply the Generalized Spatial Two Stage Least Squares (GS2SLS) procedure developed by Kelejian and Prucha (1998, 1999, and 2004). This approach is a special form of Generalized Method of Moments (GMM) for models with spatial interdependent variables. It uses exogenous factors and their spatial lags as instruments for endogenous regressors. The estimators of GS2SLS are considered to be consistent and asymptotically normal

(Kelejian and Prucha 2004), and are not subject to the influence by the "omitted common factors" in the spatial interdependence (Das et al. 2003; Kelejian et al., 2013).[32]

We estimate only the spatial lag of our dependent variable in the first model, and include control variables in the second model. We treat the spatial lag of the dependent variable as the endogenous regressor. The p-values of Hansen *J*-statistics of over-identification tests for the instruments are not significant across the three models, suggesting endogeneity is a less concerned source of biases.[33] We present the result in Table A2. We find the result suggests that the effect of neighborhood externalities is substantial and significant. The chance of a province adopting a Han governor, and a Manchu-Han duo increases by 11% and 17%, respectively, if the neighboring province has the same ethnical assignment. The results are consistent with the baseline without considering the spatial correlations.

[32] Although the form of our dependent variables suggests the use of a logistic estimator, the maximum likelihood estimator is invalid when variables and/or errors are spatially dependent (because of the violation on the identically and independent distribution assumption). For the use of linear model in the estimation of spatially dependent dummy outcome, see Wooldridge (2007).

[33] Hansen *J*-test was not developed in the context of spatial models with spatial lags in both the dependent variable and the error terms, but it is still an informative criterion for the over-identification test. For example, see Kelejian et al. (2013).

Table A3: Governance Complexity, with binary revolt measure

	（1） Han-Governor	(2) Manchu-Han Duo	(4) Manchu-Han Duo
Revolt (binary)	0.533***	0.399***	0.378***
	(0.088)	(0.067)	(0.0707)
Pop. Density (ln)			0.429***
			(0.103)
No. of Jinshi (ln)			-0.0439
			(0.0277)
Maize Planting			-0.282
			(0.214)
Observations	4014	3117	3,117
R-squared	0.333	0.241	0.272
Year FE	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A4: Spatial Distribution of the Influence of Peasant Revolts on Governance (2SLS)

	(1)	(2)	(3)	(4)
	0-1000 km	1000-1500 km	1500-2000 km	>2000 km
Peasant Revolt (ln)	0.818	1.183**	0.050	0.519*
	(0.732)	(0.547)	(0.269)	(0.310)
Pop. Density (ln)	1.592**	0.128	1.030***	1.791***
	(0.669)	(0.168)	(0.277)	(0.315)
No. of Jinshi (ln)	-0.036	-0.010	-0.130**	0.039
	(0.059)	(0.064)	(0.052)	(0.113)
Maize Planting	-0.771**	-0.097	-0.755**	1.054
	(0.359)	(0.208)	(0.336)	(1.392)
Observations	797	868	970	473
Year FE	Yes	Yes	Yes	Yes
Provincial FE	Yes	Yes	Yes	Yes
Number of provinces	6	4	4	2

Note: Robust standard errors clustered at the provincial level in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Appendix B: The Fall of the Ming dynasty: a brief background

On the surface, the Ming Empire was one of the great empires in Chinese history. It maintained a statecraft which had been inherited over millennia. For instance, its bureaucratic hierarchies traced back to the Qin Dynasty (221-207 BC), while the elite recruitment channel – the meritocratic imperial examination system - was initially adopted in the Sui Dynasty (581-619AD).[34] The Ming Empire was a developed agricultural civilization, with state-of-the-art agricultural tools, such as plows and sickles for farming, and waterwheels for irrigation (Xu, 1639). Planting technology was also advanced: sweet potatoes, corn and other Latin American crops had been introduced nationwide (Chen and Kung, 2016); the multiple cropping technology (double-cropping rice and three-cropping rice) was very mature in the southern region while cash crop (cotton) cultivation also started in the northern region (Perkins, 1969).

However, several factors conspired to bring down the Ming Empire (Wakeman, 1985; Li 2017). The 17th century experienced global cooling, causing worldwide famines and pandemics. Ming dynasty was, even by Chinese standard, on the side of tight government control, which tend to cause large rebellions as a dynasty ages (Chapter 7, Acemoglu and Robinson, 2019). At the end of Ming dynasty, land inequality was severe, with a large share of peasants on the verge of starvation. Between 1618 and 1655, Chinese population dropped by around 35%, similar to the scale happened in Germany and England (p. 15, Li, 2017). The governance of the Ming Empire also became increasingly dysfunctional, with the power increasing in the hand of the inner court of the Emperors rather than in the hands of professional ministers and scholars, with frequent purging of the latter by the former (Chapter 2, Wakeman, 1985). The whole government system was very corrupt, and the expenditures supposedly on the army were largely embezzled, which greatly weakened the ability of the Ming Empire to fight rebellions and/or invasions. The continued dominance of the Ming Empire for a long time, and the lack of continuous war experiences, likely reduced the motivation for Ming to improve its military technology and the army system (Hoffman, 2015). The burden of government size also became greater and greater. The emperor's descendants, supported of course by tax money, began at 42 at the end of 14th

[34] The system of prefectures and counties (*junxian* system) is a local administrative system in which the central government vertically manages the locality. Under this system, local officials were directly appointed and removed by the emperor, and the localities were under the direct jurisdiction of the central government. The imperial examination system selected outstanding talents through examinations and introduced them into the bureaucratic system, which was the fairest selection mechanism at the time (Jin, 1990).

century when Ming was founded, to 80,000 in the early 17th century. By the end of 16th century, the expenditure on male royal family members surpassed the *total* salaries for all government officials (p 332, Wakeman, 1985). The collapse of silver trade with Europe and the Spanish America led to strong inflation, further amplifying the human misery in China (Li, 2017). The economic hardship caused several largest-scale peasant rebellions in China led by capable leaders such as Li Zicheng and Zhang Xianzhong, who invaded the capital city Beijing, and made the Ming emperor committing suicide.