Property Rights, Fiscal Capacity, and Social Capacity: The Lasting Impact of the Taiping Rebellion

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Abstract. We examine the long-term regional development effects of the Taiping Rebellion (1850–1864), one of the deadliest civil wars in human history and a critical juncture in China's path toward modernity. Our analysis shows that some areas under the control of the Taiping regime experienced important institutional changes, including stronger land property rights, greater local fiscal capacity, and enhanced social capacity. We find that these areas exhibit enduring development outcomes, reflected in higher economic activity, larger fiscal revenues, stronger civic norms, and lower mortality during the Great Famine (1959–1961). The results suggest that violent conflicts have left lasting imprints on development by shaping local institutions in ways that influenced the evolution of property rights, fiscal capacity, and social cohesion, factors that could account for China's enduring regional disparities.

Keywords: Rebellion, war, property rights, fiscal capacity, social capacity, civic engagement
JEL Codes: H11, H41, N35, O14, O33, O43

* We are deeply grateful to the editor, Oded Galor, and three anonymous referees for their constructive comments, which have greatly improved this work. We thank Lee Alston, Laura Bailey, Hongbin Cai, Jimmy Chan, Shuo Chen, Zhiwu Chen, Francisco Ferreira, Sebastian Galiani, Yu Hao, Zhangkai Huang, Gary Libecap, Aaditya Mattoo, Chicheng Ma, Meng Miao, John Nye, Jean-Laurent Rosenthal, Jinchuan Shi, Mary Shirley, Zhigang Tao, Lingwei Wu, Melanie Xue, and Yuanyuan Yi for their valuable comments and suggestions. We are also grateful to Ying Bai, Shiyu Bo, James Kung, Cong Liu, and Melanie Xue for generously sharing the data with us. This research was supported by the RSB of the World Bank (P149926). The views expressed in this paper are our own and should not be interpreted as the views of the World Bank, its executive directors, or the countries they represent. All errors and omissions are our own. Correspondence can be addressed to Li Yang at li.yang@zew.de.

I. Introduction

How do civil wars affect a country's long-term development, and through which mechanisms? The economic consequences of war and conflict have been extensively explored in the literature (e.g., Blattman and Miguel 2010). Yet the enduring consequences of civil wars, especially their impact on institutions at these critical junctures, remain largely unexplored (Acemoglu and Robinson 2012; Desierto and Koyama 2025). The Taiping Rebellion (1850–1864) in Qing China, one of the deadliest civil wars in human history (Ho 1959), provides a natural setting to examine these issues. As a critical juncture in China's path to modernity, the rebellion led to the establishment of the Taiping Heavenly Kingdom, which controlled much of southern China for nearly a decade. The rebellion compelled the weakened Qing state to decentralize, granting local leaders unprecedented authority over militias and public finance. This transformation altered China's institutional trajectory: it strengthened regional power vis-à-vis the center (Fairbank 1992) and fostered the emergence of new local social organizations such as charities (Zheng 2009; Rankin 1986, 1990).

Understanding the Taiping Rebellion's long-term impacts on development and the underlying mechanisms is important for three reasons. First, the rebellion provides a lens through which to examine China's considerable regional disparities in economic performance (Fang et al. 2023). These gaps are as large as any inter-regional gaps in the world: globally, the ratio of GDP per capita between the richest and poorest regions in 2001 was 18 to 1 (Galor 2005, p. 276), whereas in China this ratio was 27 to 1 between Dongguan and Tianshui in 2010, and 15 to 1 between Erdos and Yushu in 2022. Given that all Chinese regions historically had similar Malthusian income levels, such persistent disparities can be termed the Intra-China Divergence.

Second, the rebellion generated significant regional variation in institutional and social arrangements relevant to long-term development. For two millennia, imperial China was characterized by a strong state and weak society (Zhao 2015; Acemoglu and Robinson 2019; Shirley and Xu 2025). Yet, as Wang (2022) argues, the Taiping Rebellion marked a turning point in state–society relations, shifting from the model of "state maintaining under partnership" since the Song Dynasty (960–1279 CE) to one of "state weakening under warlordism." Under the partnership model, local elites provided public goods, while central politicians—connected to local groups—blocked reforms that might strengthen the central state but weaken local elites. Even before the rebellion, there was already notable regional variation in institutions and social capacity. After the rebellion, however, the central state lost control, warlords dominated local governance, and private-order institutions arose to provide security and justice. Institutional and social variation deepened: protection of land property rights varied widely across rebel areas; the Qing government's fiscal decentralization generated wide differences in local fiscal capacity; and in

some regions, elite-led charities arose. These developments offer a unique opportunity to study how decentralization—induced by the Taiping Rebellion—shaped regional development.

Third, our sub-national analysis of China offers clear methodological advantages over cross-country studies. Cross-country research on war often suffers from data selectivity: countries most devastated by conflict tend to have poor records, leaving important impacts underdocumented. In contrast, sub-national data allow us to compare war-torn and unaffected areas within the same country. Moreover, our dataset, spanning one and a half centuries, enables us to trace the long-term consequences of one of history's largest civil wars.

Our investigation focuses on several key aspects of the rebellion and the Qing government's responses, summarized in Figure 1. First, land property rights were better protected in areas seized by the rebels during the late stage (around 1860 and later; "Late Taiping" areas) than in areas seized earlier ("Early Taiping" areas). Thus, Late Taiping areas may have experienced faster postwar population recovery and stronger long-term development (the *property rights hypothesis*). Second, to help local elites finance the war, the Qing government implemented drastic fiscal decentralization and introduced the *likin* tax. This may have strengthened local fiscal capacity—measured by *likin* revenue—which, in turn, could have improved public goods provision and long-run outcomes. This relates to the "war made the state" thesis (à la Tilly 1992 and Besley and Persson 2009), although our focus is on local fiscal capacity rather than central state capacity. We refer to this as the *likin-as-fiscal-capacity hypothesis*. Third, because local elites led both the fight and reconstruction, some regions developed stronger social cooperation and saw a rise in elite-led charities. This expansion of social capacity—the ability of society to act collectively, constrain the state, and empower its members—can promote balanced and sustainable long-term development (Acemoglu and Robinson 2019). We call this the *social change hypothesis*. Finally, in select Taiping areas, the shared cooperation experience during war and postwar reconstruction, particularly through the establishment of charities, spanned a wide range of social groups. Such experiences can be viewed as "bridging social capital" (Woolcock and Narayan 2000; Gittell and Vidal 1998), which promoted the diffusion of social trust. Thus, the rebellion may have fostered lasting social cohesion and civic engagement, which we refer to as *the social cohesion and civic engagement hypothesis*.

We examine these hypotheses by analyzing rich prefecture-level (and occasionally county-level) data. Some prefectures were under the control of the Taiping regime during the rebellion (Taiping prefectures), while others were not (control prefectures). We begin by establishing the effects of the rebellion on population growth, property rights, local fiscal capacity, and social capacity. When examining these outcomes, we use a difference-in-differences (DID) approach to

compare the evolution of the outcome (relative to the base period) between Taiping and control prefectures. To address concerns about confounding differential trends between the regions, we supplement the baseline DID approach with several additional strategies. First, we rely on propensity score matching to select a set of observationally similar prefectures in terms of pre-rebellion characteristics, following Xue (2021). Second, to further address potential omitted variables bias and measurement error, we use an instrumental variable (IV) approach, exploiting plausibly exogenous geographic variation in the Taiping Army's military strategy to predict rebellion experience. Third, we examine the robustness of our key results when allowing for spatial interactions, which might be relevant for research on long-term persistence (Kelly 2019). In addition, we demonstrate that the DID results are not driven by (i) a range of other historical events, (ii) the influence of the Taiping Army's conquest that did not lead to territorial control, (iii) the spillovers between neighboring units, and (iv) provincial heterogeneity.

We obtain several findings regarding the rebellion's impacts on the evolution of population, local fiscal capacity, and social capacity. *First*, the Taiping Rebellion had a significant impact on patterns of population growth in rebel-controlled areas: the Early Taiping areas suffered permanent population losses, but in the Late Taiping areas—with stronger land property rights—did not. Moreover, in the post-rebellion decades and relative to the control areas, Early Taiping areas—but not Late Taiping areas—had a larger share of idle arable land (i.e., land formerly cultivated but currently unused), suggesting a lower extent of land reclamation. These results are consistent with the property rights hypothesis that the Late Taiping areas had better protection of land property rights and should experience faster post-war population recovery, as well as more land reclamation. *Second*, the local governments in the Taiping areas had a higher level of tax (*likin*) revenue in the post-rebellion period, especially in the Late Taiping areas. This relates to what Tilly (1992) called "war made the state," which manifests as strengthened local fiscal capacity (as opposed to central state capacity) in our context. *Third*, some rebellion areas experienced significant social transformation, as captured by the number of charity organizations. While the average effect across Taiping areas was modest, the Late Taiping areas witnessed a significant increase in the establishment of charity organizations.

We examine the rebellion's impact on long-term development using cross-sectional regressions and a range of robustness checks. Several findings emerge. First, *Late Taiping* areas—but not *Early Taiping* areas—exhibit stronger long-term development than non-Taiping areas: in 1982, agricultural and industrial output per capita was 90% higher; in 2010, GDP per capita was 87% higher, and fiscal revenue per capita was 203% higher. These results are robust to alternative specifications and are not driven by other historical events. Moreover, the Late Taiping areas

showed more vibrant industrialization in the 1930s, mitigating concerns about confounding factors across a long history. These patterns are consistent with the *property rights hypothesis*, which posits that stronger property rights in Late Taiping areas fostered stronger long-run development. Second, higher post-rebellion *likin* intensity is associated with greater human capital accumulation today, in line with the *likin-as-fiscal-capacity hypothesis* that enhanced fiscal capacity improved public goods provision. Third, a notable channel is *social change*: the Late Taiping effect weakens once the number of post-rebellion charities is held constant. Charities themselves are strongly associated with long-term outcomes—including output, fiscal revenue, and industrialization—supporting the *social change hypothesis* that stronger social capacity promotes sustainable development.

We also find long-term impacts of the rebellion on social cohesion and civic engagement. Using a contemporary nationally representative survey, we show that individuals in *Late Taiping* areas—where local elites led the fight—exhibit stronger trust in personal networks (relatives, friends, coworkers), more attention to politics, and greater involvement in local affairs. This suggests that rebellion-induced cooperation fostered community-oriented values, paralleling the long-term effects of self-government in Italian cities (Guiso et al. 2016). Strong social cohesion and civic engagement can enhance social resilience, enabling communities to better withstand hardship. We examine the Great Chinese Famine (1959–1961), caused by central planning failures and radical grain procurement policies (Li and Yang 2005; Meng, Qian, and Yared 2015; Kasahara and Li 2020; Yang 1996). We find significantly fewer famine deaths in Taiping areas, with the strongest effect in Late Taiping areas, precisely where social cohesion and civic engagement were enhanced. Thus, the social capacity forged during one of history's greatest upheavals helped mitigate the toll of another human catastrophe a century later.

In summary, the body of evidence suggests that while the rebellion itself was undoubtedly a disaster, its positive effects on property rights, fiscal capacity, and social capacity in *certain* areas ultimately facilitated subsequent economic and social development.

Our paper contributes to the literature on the long-run impacts of wars (see Blattman and Miguel 2010) and recovery from major historical shocks. We show that wars can foster development by shaping institutions. Focusing on the Taiping Rebellion, one of the most consequential wars in history, we trace its effects on property rights, local fiscal capacity, and social capacity, and we examine the rebellion's long-term implications for economic activity, fiscal revenues, industrialization, human capital, civic attitudes, and resilience to famine. While prior work examines specific consequences of the rebellion—such as civil service quotas (Li 2014), demographic and industrialization effects (Li and Ma 2016), migration and public goods (Hao and Xue 2017), and late Qing power distribution (Bai, Jia, and Yang 2023)—none have addressed the

rebellion's enduring impacts on modern development, social trust, and collective responses to the Great Famine. Nor have previous studies explored the institutional mechanisms we highlight: property rights, fiscal capacity, and social capacity.

This paper also relates to the literature on the determinants of long-term development, which emphasizes geography (Diamond 1997; Gallup, Sachs, and Mellinger 1999; Nunn and Puga 2012), human capital (Galor and Moav 2002; Doepke 2004; Glaeser et al. 2004), culture and trust (Chen, Ma, and Sinclair 2022; Galor 2022; Mokyr 2016; Putnam 1994; Bisin et al. 2024), population shocks from technological change (Galor and Weil 2000; Voigtlander and Voth 2013a, 2013b), and institutions (North 1981). This literature in particular highlights historical divergences: Islamic vs. Christian worlds (Bisin et al. 2024), Europe vs. China (Pomeranz 2000), China vs. Japan since the nineteenth century (Sng and Moriguchi 2014; Koyama, Moriguchi, and Sng 2018), and North vs. South America (Acemoglu, Johnson, and Robinson 2002). We contribute to this body of literature by showing how the Taiping Rebellion shaped regional differences in property rights, fiscal capacity, and social capacity, thereby helping to explain the large *intra-China divergence*.

Finally, our paper relates to the literature on state capacity, social capacity, and development. This work emphasizes state capacity as an endogenous investment, highlights the role of executive constraints, and identifies wars as drivers of state capacity (Acemoglu 2005; Besley and Persson 2009, 2010; Johnson and Koyama 2017; Dincecco and Wang 2022). Acemoglu and Robinson (2019) highlight "Red Queen effects," in which the parallel growth of state and society underpins long-term prosperity. Studies on European state building find that wars enhanced state capacity and promoted development, typically through centralization and stronger executive constraints (Gennaioli and Rainer 2007; North 2009; Dincecco 2009; Karaman and Pamuk 2013; Arias 2013; Dincecco and Prado 2012; Michalopoulos and Papaioannou 2013; Dincecco and Katz 2014, 2016). Yet comparative work beyond Europe remains limited (Johnson and Koyama 2017; Koyama, Moriguchi, and Sng 2018). Our paper shows that the Taiping Rebellion strengthened local fiscal capacity through decentralization rather than centralization (Dincecco 2015; Hoffman 2015; Koyama, Moriguchi, and Sng 2018). This decentralization also expanded local social capacity, which constrained the central state. Moreover, we provide novel evidence that the rebellion spurred the growth of charities, which are positively associated with development outcomes today, complementing Xue (2021), who highlights the link between Qing charities, generalized trust, and political participation.

The rest of the paper is organized as follows. Section II outlines the institutional background and hypotheses, and Section III describes the data. Sections IV–VII present the findings: population effects, impacts on property rights and fiscal capacity, effects on social capacity, and long-term

development outcomes. Section VIII concludes.

II. Institutional Background and Hypotheses

In this section, we describe the historical background of the Taiping Rebellion and outline the hypotheses regarding the impacts on the rebellion regions. We focus on the rebellion's consequences for population, land property rights, local fiscal capacity, and local social capacity, and then discuss potential long-term consequences.

The Taiping Rebellion, lasting from 1850 to 1864, broke out amid severe population pressures and profound economic shocks in Qing China (Wu 1950; Miguel et al. 2004). The rebellion led to the establishment of the Taiping Heavenly Kingdom (TPHK), with Jiangning (Nanjing today) as its capital.[1] During its reign, the TPHK controlled the southern provinces of Jiangsu, Anhui, Hubei, Jiangxi, and Zhejiang (see Figure 2). The Taiping regime's territorial control was *incomplete*: some areas remained under the Qing government, and the control frequently changed hands between the two sides. The war resulted in massive casualties; including indirect deaths attributed to plague and famine, it is estimated that at least 20 million people perished (Platt 2013; Ho 1959, p. 246-247; Cao 2001, p. 553; Li and Lin 2015), making the rebellion one of the deadliest wars in human history.[2]

Aside from these impacts on population, the rebellion also resulted in institutional changes that might have affected development, including effects on land property rights, decentralization, local fiscal capacity, and social capacity. Given the massive scale of the rebellion, these institutional effects were unprecedented. The rebellion disrupted the Qing government's *status quo* landlord-centered land policy, and it granted *de facto* (and sometimes *de jure*) land property rights to tenant farmers in some areas. It also compelled the Qing government to decentralize and allow local governments to collect a new tax on trade and commerce. In addition, local elites led the fight

[1] In the paper, we use "TPHK" and "Taiping" interchangeably.

[2] Platt (2013) suggests that a widely accepted estimate of the death toll is "at somewhere between twenty million and thirty million people." This may be a conservative estimate. Ho (1959) and Cao (2001) estimate the death toll to be 70–100 million. More recently, using a prefecture-level panel dataset on population and a difference-in-differences approach, Li and Lin (2015) estimate that the rebellion killed 71 million people. Despite variation in these estimates, they confirm the Taiping Rebellion to be one of the deadliest wars in history. By way of comparison, there were approximately 698,000 deaths in the American Civil War (1861–1865) (Barceló et al. 2024).

against the rebels and post-war reconstruction, fostering greater social cooperation.[3]

In the following sections, we discuss the institutional impacts of the rebellion in greater detail and formulate hypotheses regarding their implications for development. Figure 1 offers a graphical summary to organize our hypotheses.

II.1. Land property rights

Traditionally, the Qing Empire's revenue came primarily from land taxes paid by landlords, who collected rents from tenant farmers. To ensure compliance of farmers, the empire thus protected landlords' rights and authority (Guo 1991, p. 238). The Taiping Rebellion, however, changed *de facto* (and sometimes *de jure*) land ownership. Although the TPHK regime proposed an egalitarian land redistribution, it was *not* implemented due to limited administrative capacity and the urgent need to raise taxes to finance the war (Bernhardt 1987).[4] Nevertheless, the rebellion disrupted the *status quo* land ownership structure.

The Taiping government's methods of collecting land taxes changed over time. Guo (1991) documents that tax collection methods differed between the areas occupied early (i.e., up to 1859, hereafter referred to as "Early Taiping" areas) and those occupied later (i.e., from 1860 until the end of the war, hereafter referred to as "Late Taiping" areas). In the early stage, when the Taiping Army expanded in Jiangxi, Hubei, and Anhui provinces, limited administrative capacity forced the Taiping regime to finance the war primarily through looting, confiscation, and contributions from residents in conquered areas rather than through formal land taxes (Wu 1950; Gu 2006). From 1854, the Taiping regime sought to restore the Qing land system and collect land taxes from landlords as before (Bernhardt 1987, p. 394). However, the old land system had largely collapsed because landlords were repressed, and most land title deeds were lost. The anti-rent movement further prevented landlords from collecting enough rents to cover their tax liabilities.[5] As a result, landlords

[3] We concentrate on the Taiping Rebellion's influences on property rights, fiscal capacity, and social change because of their prominence and the availability of appropriate measurements. Admittedly, there may exist other mechanisms through which the rebellion affected subsequent development. We are not able to exhaust all possibilities; however, we try our best to shed light on the measurable mechanisms and the ones that we deem the most important. We encourage future studies to explore other aspects of the rebellion's influence. Additionally, one challenge to our investigation is the existence of other historical events, e.g., other wars in China's modern history. Throughout our empirical investigation, we carefully tease out the influence of confounding factors.

[4] A more cynical view would argue that the TPHK regime merely used the land redistribution policy as a slogan to attract recruits rather than as a genuine commitment.

[5] To gain peasant support, the Taiping Army often executed landlords connected to the Qing government with large holdings in the occupied territories, and/or confiscated their properties. As a result, many landlords fled, and absentee landlords were commonplace (Guo 1991, p.188-201). Emboldened by the army's repression of the landlords, the anti-rent movement of tenant farmers spread in the Taiping-controlled areas (Luo 1955, p. 210). The destruction from the war led to the loss of most land title deeds and the public title deed records in these regions (Wang and Wang 1902, Vol. 27, Part II, p. 4), leading to ambiguity in land ownership even after the war.

avoided registering their land with the Taiping government, leaving land property rights ambiguous in the Early Taiping areas.

Ambiguous land ownership in Early Taiping areas would leave tenant farmers vulnerable to expropriation and discourage investment in maintaining land quality, improving land, and reclaiming idle land (i.e., land formerly cultivated but currently in a state of disuse). The under-investment effect was likely present in both the short and long run. In the short run, farmers might over-farm, resulting in more idle land. Weak property rights also restricted the use of land as collateral or a tradable asset (Besley and Ghatak 2010). In the long run, ambiguous land ownership and its adverse effects likely persisted even after the Qing government restored control. After the rebellion, many landlords and land deeds disappeared. Without secure land ownership, tenants would be reluctant to reclaim arable idle land.

The *Late Taiping land policy* began in 1860 (Guo 1991), when the Taiping Army occupied Jiangsu and Zhejiang provinces. The new policy only applied to the new territories, *not* to the Early Taiping areas. By then, the Taiping Army faced mounting war financing pressures from intensified Qing counterattacks and the soaring cost of modern weaponry, exacerbated by British support for Qing forces (Platt 2013). At the same time, the Taiping regime had consolidated control over the new territories near the capital Nanjing and sought to establish a long-term base of operations (Spence 1996). Thus, Taiping leaders introduced new land policies in the Late Taiping areas, behaving more like stationary bandits with long-term incentives to expand the tax base and promote production and investment (Olson 1993).[6] Initially adopting a "landlord registration and payment" system modeled on the Qing, the Taiping leaders promptly replaced it with a system of direct tenant payment (i.e., directly collecting taxes based on cultivation, or 作佃交粮), which proved far more effective and was soon widely adopted in the new territories (Bernhardt 1987; Guo 1991, p. 258-272). Under this new system, *cultivators* were urged to register their land, and they complied readily, as the effective tax rate was lower than under the Qing (Luo 1955, p. 208), which is consistent with the idea that Taiping officials acted more as stationary bandits in Late Taiping areas than in Early Taiping areas. The Taiping government also strengthened grassroots governance: village officials were designated, and land registration expanded, significantly improving tax enforcement (Bernhardt 1987). Importantly, tenants viewed their tax payments as *implying land ownership* (Luo 1961, Vol. 1, p. 279). From 1861 onward, Taiping leaders began issuing new land deeds in some prefectures in Jiangsu and Zhejiang, thus making many tenant farmers both *de facto* and *de jure*

[6] The Qing rulers can also be seen as stationary bandits, as they had established control over China. Here, we focus on regional variation in Taiping rebels' horizons between Early and Late Taiping areas, which shaped their incentive to implement the Late Taiping land policy.

owners (Luo 1955, p. 209). Overall, the Late Taiping land taxation system was more coherent, facilitating tax compliance and the emergence of tenant land ownership.

As *de facto* (and sometimes *de jure*) landowners, tenant farmers in the Late Taiping areas would treat their land as their own and invest in land improvements, including reclaiming idle land. Because labor effort is a critical input in agricultural production, tenant land ownership, as occurred in the Late Taiping areas, also likely increased efficiency by creating stronger incentives for cultivators (Besley and Ghatak 2010).

We expect these positive effects of the Late Taiping land policy to persist in the Late Taiping areas. Labor scarcity in the post-war era likely enhanced peasants' bargaining power, allowing them to maintain the land property rights acquired during the rebellion. The war experience may also have enhanced peasants' capacity for collective action, limiting government and elite expropriation. Indeed, historians have documented that the land rights granted to cultivators during the Taiping rule were largely respected after the fall of the Taiping regime (Zhang 1996; Zheng 2008). Thus, the benefits of clearly defined land property rights in the Late Taiping areas may have persisted, and we expect better long-term development in the Late Taiping areas than in the Early Taiping areas. Note that the protection of land rights represents an advantage of the Late Taiping areas relative to the Early Taiping areas; there is no strong reason to expect a relative advantage over the control areas that did not experience Taiping rule.

The property rights hypothesis. Compared with the Early Taiping areas, the Late Taiping areas had better-defined land property rights. As a result, they should have a lower share of idle land. They should also experience faster post-war population recovery and better long-term development.

II.2. War financing and fiscal capacity

The rebellion prompted the Qing government to reform its tax collection practices. To finance the war, taxation was decentralized to local elites and officials, especially in regions where combating the rebels was most urgent. Behind these fiscal reforms were the Qing government's weak and declining fiscal capacity (Rosenthal and Wong 2011) and the ineffectiveness of its central army. While adverse weather conditions and the indemnity paid to Great Britain added to fiscal pressures, the deeper structural problems lay in the empire's vast territory and pervasive corruption (Sng 2014; Koyama, Moriguchi, and Sng 2018). To prevent unrest, the Qing government maintained low tax rates on peasants. Yet because the empire's vast territory made it costly and difficult to monitor (remote) local officials—many of whom accepted bribes and granted tax waivers—actual collected taxes fell even below the already modest level. As a result, the Qing government's fiscal resources were severely constrained, leaving the central army unable to contain the Taiping rebels.

Unable to resist the Taiping rebels' threats on its own, the Qing government turned to local gentry and officials, encouraging them to raise or expand local militias, a practice that predated the rebellion (Kuhn 1970). This gave rise to a new militia system (Wu 1950) and a new financing mechanism. In 1853, a local official in the rebellion region introduced a local tax called *likin*, which soon spread across provinces (Beal 1958).[7] *Likin* took two main forms. The first was a transit tax on goods transported by travelling merchants, collected either multiple times along trade routes or only at departure and destination points. The second was a business tax on resident merchants, levied on sales in marketplaces or workshop stores.[8] Over time, business taxes became the dominant: in the final half-century of the Qing dynasty, the general commodity tax alone accounted for 92 percent of *likin* revenues (Peng 1992). The implementation of *likin* was decentralized, with each province organizing the tax according to its own needs. For example, Hubei levied 1.2 percent on commodities, while Shanghai imposed 3–4 percent. *Likin* became institutionalized as a regular tax in the late Qing period and persisted through the early Republican era, remaining in place until 1931—nearly a century in duration.

Likin strengthened local fiscal capacity. While military agencies initially managed collection, the task was later taken over by specialized *likin* bureaus. Once established, the tax apparatus could reduce future tax collection costs and give local officials a vested interest in maintaining *likin* collection. *Likin* collection also fostered tax compliance and mobilization: during the rebellion, to protect their physical and property safety, local gentry, merchants, and well-to-do farmers willingly paid *likin* to support resistance against rebels (Zheng 2009). Furthermore, the introduction of *likin* created "a new balance between the central and provincial governments that was to shift steadily in favor of the latter" (Fairbank 1992, p. 238). By the end of the Taiping Rebellion, local *likin* revenue was 3–4 times the central government's revenue (Peng 1992). This fiscal decentralization overturned the millennium-long tradition of centralization in China dating back to the Qin dynasty (since 221 BCE), with only brief interruptions between the Han and the Sui dynasties (see Huang 2023, p. 243-245), and gave rise to a new regionalism that reshaped China's political landscape. Since then, local governments' power and resources have become the main constraint on the central government.

The rise in local fiscal capacity could have facilitated long-term development. *First*, *likin* collection enabled the local gentry to resist the rebels, reducing damage and supporting long-term

[7] For a brief introduction of *likin*, see http://www.chinaknowledge.de/History/Terms/lijin.html, as well as Beal (1958), Luo (1936), and Peng (1992).

[8] Over time, many varieties of this business tax developed, including pier taxes, monthly levies at market gates, shop contributions, establishment levies, and one-time commodity taxes on goods such as tea, silk, and other fabrics.

development. *Second*, the *likin* system expanded the tax base to include modern sectors. By taxing manufactured goods and commerce and building the capacity to do so, the *likin* system gave local officials stronger incentives to support modern sectors, much as in contemporary China (Cull et al. 2017). Such government support has historically been crucial for business success in China, given the state's dominant power (Acemoglu and Robinson 2019, Chapter 7; Cull et al. 2015; Huang 2023; Miao et al. 2024). In this environment, capitalists likely gained a stronger voice in local politics, which could have fostered institutions such as public schools to complement new technologies (Galor et al. 2009) or charity organizations to support the urban poor, an important source of cheap labor for early industrialization. This, in turn, would have promoted industrialization, increased incomes, and supported technological change, which could raise the returns to human capital and schooling, thus reinforcing modernization (Galor and Weil 2000). *Finally*, the *likin* system increased local leaders' economic and political power, which could have constituted some executive constraints on the central government.[9] Note that these three potential beneficial effects of *likin* are conditional: they are more likely to occur in regions with a strong gentry class and favorable initial conditions for modern sectors.[10] In particular, the Late Taiping areas in Jiangsu and Zhejiang provinces—which largely overlapped with the Lower Yangtze region—were wealthier and experienced greater violence (Pomerantz 2000), hence, *likin* collection and mobilization were likely to be more extensive in these areas. In Appendix F.1, we provide an extended discussion on *likin* as fiscal capacity versus distortionary taxation, suggesting that *likin*'s role in enhancing fiscal capacity is likely more relevant for long-term development. We propose the following hypothesis.

The likin-as-fiscal-capacity hypothesis. *Likin* revenue should be persistently higher in the Taiping-controlled regions than elsewhere, especially in regions with stronger local gentry. In regions with strong gentry presence and more favorable initial conditions for modern sectors, the stronger local fiscal capacity generated by the *likin* system would have promoted better long-term regional development.

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[9] There is suggestive evidence that local power relative to the power of the central government did indeed substantially increase in the post-rebellion Qing era (Chen et al. 2023). During the Boxer Rebellion of 1900, the central government declared war against the Western powers. However, multiple mostly southern provinces such as Guangdong, Anhui, Shandong, Jiangsu, Fujian, and Zhejiang refused to carry out the central government's orders to participate in the war. This was the so-called "Mutual Defense of the Southeastern Provinces" incident (东南互保). Such independence from the central government was impossible without substantial local capacity.

[10] Our argument suggests a complementarity between the *likin* system and the power of local elites. In Appendix F.1, we discuss our argument in relation to the influential work by Duara (1988), who examines how a different tax, *tankuan* (摊款), affected local elites' power in northern rural China during the early 20th century.

II.3. Social change

Social culture often co-evolves with institutions and has enduring consequences for development (Bisin et al. 2024). Besides changing formal institutions such as property rights, the rebellion also spurred favorable social change in some areas, particularly through the growth of social organizations and social capital.

China has a long-standing tradition of local governance, and local elites played an active role in local affairs (see Appendix F.2 for historical background). The Taiping Rebellion further empowered local elites. It compelled the emperor to allow and encourage local elites to organize and train local militias, especially in commercial regions where local militias were already common (Kuhn 1970; Rankin 1990; Bai, Jia, and Yang 2023). When *likin* became the primary source of funding for local militias, "the lack of a prescribed administrative format in the early days of *likin* made it inevitable that local gentry managers played a major role" (Kuhn 1970, p. 161). For instance, in Yin county (of Zhejiang province, in the Late Taiping region), a local elite, Chen Zhengyue, raised funds for militias and even hired British and French mercenaries to fight alongside local militias against the Taiping Army. This collaboration between the state and local elites was a crucial force behind the Qing's eventual triumph over the rebels (Zheng 2009).

The rebellion also forged strong bonds between local elites and the poor, who fought side by side against the rebels and shared life-and-death risks. This shared experience may have fostered a new social contract marked by greater trust and solidarity. One manifestation of this new social contract was the rise of pro-poor charities, such as "benevolent halls" (*shantang*), mirroring patterns of social transformation elsewhere in world history.[11] While benevolent halls first appeared in the 1820s in commercial cities of the Yangtze valley, they were established "with much greater frequency in the turbulent years of post-Taiping reconstruction" (Rowe 2009, p. 120-121). Managed and financed by local merchants and urban property holders, benevolent halls provided disaster relief, medical aid, and sometimes sponsored local peacekeeping militias. Their growth was especially pronounced in Taiping areas with strong local elites, whose influence had grown through their roles as *likin* collectors. A notable example is Chen Zhengyue, who led the defense of Yin county and later undertook a wide range of post-war activities, including "building up sacrificial halls, repairing sea dams, dredging rivers, setting up examination halls, and establishing orphanages"; he also managed disaster relief in other provinces (Zheng 2009, p. 73). The rising power of local elites after the rebellion contributed to "an independent, locally based public sphere"

[11] For instance, after the World War II, in the northern United Kingdom, the shared wartime experience led to permanently stronger support for social insurance programs (Heldring, Robinson, and Whitfill 2022). This is also similar to how decentralization increased the power of civil society relative to the central government in the Long Divergence between the Muslim and the Christian worlds (Bisin et al. 2024).

(Zheng 2009, p. 74). In some places, such as Ningbo, the elite-led local public activism became institutionalized, with elites actively engaged in post-war reconstruction (Rowe 1992, p. 259, 268, 318-320; Rankin 1986; Zheng 2009). Overall, local elites played a central role in social mobilization, the provision of public goods, and the establishment of new local organizations and charities (Rankin 1986, 1990; Schoppa 1982).

By reaching a wider range of groups than traditional clan-based organizations, these new local charities could help forge connections across classes and socioeconomic strata, functioning as "bridging social capital" (Woolcock and Narayan 2000; Gittell and Vidal 1998). Bridging social capital facilitates the spread of generalized trust. Consistent with this view, Xue (2021) shows that Chinese prefectures with more charities during the Qing dynasty exhibit higher levels of generalized trust today. Generalized trust and other measures of social capital (e.g., association density) are strongly associated with economic growth (Knack and Keefer 1997), and they are important factors in accounting for long-term prosperity in Italy (Putnam 1994). Historians also suggest that these charities contributed to the development of modern sectors. Rowe (2009, p. 121) notes that "the benevolent halls' clear goal was to take care of all who needed their services so that the very profitable local commerce could function smoothly," aided by "the growing presence of an underemployed class of urban poor." Taken together, we propose the following hypothesis.

The social change hypothesis. The Taiping Rebellion spurred the development of charity organizations and social capital, especially in the Late Taiping areas where local elites were more influential. Regions with more charities and stronger social capital should have better long-term development.

II.4. Long-term social cohesion and civic engagement

Social capital and civil society are crucial for the effective functioning of government and society (Putnam 2000; Tabellini 2008; Nannicini et al. 2013; Acemoglu and Robinson 2019; Bisin et al. 2024). High levels of social capital provide "values and beliefs that help a group overcome the free-rider problem in the pursuit of socially valuable activities" (Guiso, Sapienza, and Zingales 2011). People in a high social capital environment are more likely to engage in collective action that holds the government accountable to "do the right things" (Nannicini et al. 2013; Tsai 2007; Cao, Xu, and Zhang 2022). Social capital and civic society are often shaped by institutional changes, and the induced values and beliefs can live on long after the original institutions have disappeared (Nunn and Wantchekon 2011; Guiso, Sapienza, and Zingales 2016; Xue 2021; Bisin et al. 2024).

Therefore, it stands to reason that the social changes triggered by the Taiping Rebellion could have long-term impacts on social cohesion and civic engagement. Recall that in the aftermath of

the rebellion, local gentry led charity organizations to support postwar recovery, and such mobilization benefited local communities (Liang 2001; Bai, Jia, and Yang 2023). Combined with the shared wartime experience, these gentry-led postwar reconstruction efforts likely fostered stronger values of cooperation and reciprocity within local communities. Such values may persist across generations (Bisin and Verdier 2001; Doepke and Zilibotti 2008), even after original motives have dissipated. By way of example, Italian cities with self-government experience during the Middle Ages exhibit stronger self-efficacy beliefs today—that is, confidence in one's ability to complete tasks and achieve goals (Guiso, Sapienza, and Zingales 2016). Thus, we expect the Taiping areas, particularly the Late Taiping areas, to exhibit stronger social cohesion and greater civic engagement today. Given that social networks in China typically rely on local communities (Shirley and Xu 2025), these effects should be more pronounced within people's personal networks.

The impact of social cohesion and civic engagement can be visible in communities' resilience to disasters. In this vein, the social capital and norms forged by the Taiping Rebellion may have helped mitigate the fatal effects of political radicalism during the Great Leap Forward (1958–1962). The radical top-down grain procurement policies during 1959–1961 led to the Great Chinese Famine, which caused tens of millions of deaths (Li and Yang 2005). In the Taiping areas with higher levels of social capital and thus greater social cohesion, we hypothesize that local officials were more sympathetic to local communities, and that citizens were more willing and able to engage in collective action of assistance, thus mitigating the adverse effects of radical central planning (Cao, Xu, and Zhang 2022; Hu, Yao, and You 2023; Chen 2010).[12] We expect that the Taiping areas, especially the Late Taiping areas, where social capital was more developed due to the rebellion experience, had fewer famine deaths. We summarize the hypothesis as follows.

The social cohesion and civic engagement hypothesis. The Taiping areas, especially the Late Taiping areas, should exhibit greater social cohesion, especially within people's personal networks, and higher levels of civic engagement today. The Taiping areas, especially the Late Taiping areas, also had fewer deaths during the Great Chinese Famine.

III. Data and Measurements

Our main dataset covers 266 prefectures in China proper, according to the 1820 delineation of the

[12] There is some evidence that social capital helped reduce Great Famine deaths. Cao, Xu, and Zhang (2022) find that social capital, measured by kinship-based clan density, reduces famine severity, and that provinces with higher clan densities had lower excessive grain procurement rates. Similarly, Hu, Yao, and You (2023) find that officials governing their home counties implemented procurement more flexibly before the famine and spent more on social affairs such as disaster relief during the Great Leap Forward. Chen's (2010) interviews with peasants in Anhui province report that collective resistance was more likely in areas with dense local kinship networks.

Qing territory. Of the 266 prefectures, 55 prefectures fell under the jurisdiction of the Taiping regime ("treatment"), while the remaining 211 prefectures did not ("control"). Within the Taiping jurisdiction group, 37 prefectures were in the Early Taiping areas, where land property rights were ambiguous; and 18 prefectures were in the Late Taiping areas and had stronger land property rights. Appendix Table A1 presents the distribution of treatment and control prefectures.

To examine the impacts of the Taiping Rebellion, we have collected rich data from multiple sources. Below, we briefly discuss the key measurements and variables. Further details on the variable definitions and sources are provided in Appendix Table A2. Summary statistics are presented in Appendix Table A3.

Measuring the experience of the Taiping Rebellion. Based on Guo (1989) and Hua (1991), we construct a Taiping dummy indicating all the prefectures under the Taiping jurisdiction (denoted by $Taiping$).[13] Early Taiping prefectures are located in Anhui, Jiangxi, and Hubei provinces, where land property rights were ambiguous, as discussed earlier. Late Taiping prefectures are in Jiangsu and Zhejiang provinces, where land property rights were more clearly defined.[14]

Population. Our first key outcome, especially for earlier years, is population density. In subsequent regressions, we use the log of prefecture-level population as the dependent variable and control for prefecture fixed effects; thus, we essentially examine within-prefecture variation in population density. We are interested in how the rebellion affected the evolution of population.[15] We rely on two data sources. The first is Cao (2001), which has been widely used in existing research (e.g., Jia 2014; Chen and Kung 2016). It provides population figures at approximately three-decade intervals between 1820 and 1953. The second source is the Chinese population censuses of 1953, 1982, and 2000. Using historical maps of China, we merge contemporary censuses with historical population data, accounting for changes in administrative boundaries. In the end, we construct prefecture-level population data for seven time points spanning two centuries: 1820, 1851, 1880, 1910, 1953, 1982, and 2000.

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[13] When defining Taiping prefectures, our main source of data is the county-level map of the TPHK (Hua 1991). We first code Taiping areas at the county level using the 1893 Qing delineation of administrative boundaries, then we map them onto the 1820 Qing delineation of administrative boundaries. We thus use the administrative boundaries of prefectures and provinces in 1820. A prefecture is defined as a Taiping prefecture if it had at least one county under the Taiping jurisdiction.

[14] We have conducted a robustness check using an alternative definition of Early and Late Taiping prefectures based on occupation duration after 1860, the year when most of Jiangsu and Zhejiang provinces fell to the Taiping Army. Prefectures occupied longer after (before) 1860 are classified as Late (Early) Taiping prefectures. For example, if a prefecture was occupied 11 months before 1860 and 20 months after 1860, it is defined as a Late Taiping prefecture. This alternative definition largely aligns with our original definition, except for Jiangning and Zhenjiang prefectures in Jiangsu province. The results remain qualitatively similar (available upon request).

[15] Reliable estimates of historical population data are sporadic. Skinner (1977) estimates the population in the core area of Chinese cities or towns in 1893; Stauffer (1922) and Perkins (1969) offer similar estimates around the 1920s. Ullman (1961) offers comprehensive population estimates for Chinese cities in 1938, 1953, and 1957.

Likin. We obtain data on annual provincial-level *likin* revenue from two sources: (i) Luo (1936), and (ii) Second Historical Archives of China (1996). Based on the first source, we calculate the average *likin* revenue for two periods, 1869–1879 and 1880–1908. From the second source, we obtain the average *likin* revenue during 1922–1925. To account for differences in provincial size, we normalize *likin* by the area of a province, yielding *likin* per 1,000 square km.[16]

Charity. The data on local charities come from Liang (2001), which provides the most comprehensive compilation of charities in the Ming, Qing, and Republican eras. The primary sources are local gazetteers from the 1400s to the 1940s, which record each charity's establishment time and location. Following Hao and Xue (2017) and Xue (2021), we measure local social capital using the stock of charities in a prefecture. Specifically, we track the stock of charities in 1820, 1851, 1880, 1910, and 1941. This stock represents the cumulative number of charities established up to each year, assuming that they remained in operation once founded, at least until the founding of the People's Republic of China.[17] While this assumption might be strong, anecdotal evidence suggests that charity organizations persisted for a long time and that local gentry had strong incentives to sustain these institutions (Zheng 2009). Furthermore, the civic values associated with charities are likely to live on, making the influence of charities long-lasting. Our earlier hypotheses also consider the impacts of the Taiping Rebellion on civic attitudes and engagement; we defer the discussion of those related measurements to Section VII.

Idle land. Our land property rights hypothesis posits that stronger land property rights in Late Taiping areas could encourage farmers to reclaim idle land (i.e., land formerly cultivated but currently unused). To test this, we collect county-level data on the share of idle land in total arable land in 1915 for counties within Taiping provinces, from a survey by the Republic of China's Ministry of Commerce and Agriculture (1915). Ideally, we would examine the trends in idle land shares using a difference-in-differences approach. However, because the national agricultural survey in China did not begin until the early 1910s, we are forced to rely on cross-sectional regressions.

Long-term development outcomes. To examine the lasting impacts of the Taiping Rebellion on development, we collect variables spanning several historical episodes. First, we examine China's early industrialization from the 1850s to the 1930s. One measure is county-level industrial firm entry between 1858 and 1937, compiled by Du (1991, 2019).[18] The other measure is the county-level industrial output in 1933, drawn from China's only pre-WWII industrial census (Liu 1937).

[16] Normalizing by population yields similar conclusions, but the population fluctuates more than the area does.
[17] Liang (2001)'s data do not report any applicable closure dates of charities. However, before the establishment of the communist regime in 1949, it is plausible that charity closures were rare.
[18] Note that 1937 was the year when the Sino-Japanese War broke out.

These data have recently been used by Bo et al. (2023) to study military investment and industrial development in China. Second, from the 1982 census, we obtain measures of economic activity and human capital at the prefecture level. Economic activity is measured by the gross agricultural and industrial output per capita. Human capital is measured using the share of middle school graduates in the population and the literacy rate; we also use the average years of schooling from the 2000 population census (China Data Center and Spatial Data Center 2017). Finally, we obtain GDP per capita and fiscal revenue per capita in 2010, drawn from the City Statistical Yearbook.

Control variables. In our regression analysis, we control for basic prefectural characteristics that might affect long-term development, including geography, foreign influence, economic conditions, and political importance. Geographic characteristics include the distance to the Yangtze River, the coastline, and the Grand Canal (the major north-south waterway), as well as the number of neighboring provinces. It is important to control for these geographic variables because: (i) we need to hold constant geographical conditions when comparing the Taiping areas to the non-Taiping areas, and (ii) we will later leverage a geographical characteristic (longitude) as the instrumental variable for Taiping experience, motivated by spatial variation in the Taiping Army's military strategy (see Section IV.4). We control for the number of neighboring provinces because prefectures bordering multiple provinces were less tightly controlled by the provincial governments due to free-riding problems and monitoring difficulties, and thus, they were more prone to experience rebellions. All geographical variables are constructed based on China Historical GIS Data (Bol and Ge 2007).

To control for foreign influence on development (Jia 2014), we use three variables: the duration (in years) a prefecture held treaty port status before 1949, the duration as a concession, and the duration as a leased territory (Fei 1991).

We further include prefectural economic and political characteristics. We measure land taxation by the average farmland tax per *mu* in 1820 (Liang 1980),[19] human capital by the number of palace graduates (*jinshi*) per million people from 1793 to 1820 (Jiang 2007),[20] and agricultural production patterns by dummy variables of silk- and tea-production before the Taiping Rebellion (Wu 1990; Zhu 1992). Political importance is measured by four dummy variables based on the Qing classification system in 1820, which assigned prefectures some combinations of four designations: *Chong* (important for transportation), *Fan* (important for business), *Pi* (difficult to collect taxes), and *Nan* (high in crime). Additionally, since other wars could also affect the

[19] *Mu* is a unit of area measurement used in China. 1 *mu* is equal to 1/15 of a hectare, or about 666.7 square meters.
[20] The palace graduates (*jinshi*) are successful candidates in the highest level of the imperial civil service examinations (*keju*). Huang (2023, p. 106-107) argues that *keju* was a key factor in building up local literacy throughout Chinese history.

outcomes, we control for the frequency of wars since 1776, constructed using the War Chronology of China (Chinese Military History Editorial Committee 2003) and the Atlas of Historical Wars in China (Li 2007).

Descriptive statistics. Table 1 compares population growth between the control group (i.e., the non-Taiping prefectures) and the treatment group (i.e., Taiping/Early Taiping/Late Taiping prefectures) since the pre-rebellion year of 1820. Before the rebellion, in 1851, population growth rates did not differ between the control and the treatment groups.[21] After the rebellion, however, the Taiping areas had a significant disadvantage in population growth relative to the non-Taiping areas, which appears to have widened over time, from 47 log points in 1880 to 57 log points in 2000 (see Figure 3). The *initial* decline in population was especially severe in the Late Taiping areas: in 1880, population growth in the Early Taiping areas lagged behind the control areas by 41 log points, while the Late Taiping areas lagged by 60 log points.

IV. The Impact of the Taiping Rebellion on Population

In this section, we use a difference-in-differences strategy to examine the impact of the Taiping Rebellion on population growth. The goal of this exercise is to provide evidence for the "first-order" effects of the rebellion on population.

We use panel data for 266 prefectures and seven snapshots of population (1820, 1851, 1880, 1910, 1953, 1982, and 2000). The pre-treatment years are 1820 and 1851,[22] with 1820 serving as the reference year. The baseline regression model is as follows:

$$\ln(pop_{it}) = X'_{i,t}\beta + \sum_{\tau \neq 1820} \beta_\tau D_\tau Z_i + \sum_{\tau \neq 1820} \alpha_\tau D_\tau Taiping_i + \rho_t + \eta_i + e_{i,t}. \qquad (1)$$

In the model, i indexes prefectures, and t indexes years. η_i and ρ_i are prefecture and year fixed effects, respectively. $X_{i,t}$ is a vector of time-varying controls, including the durations of treaty port, concession, and leased territory status, as well as the frequency of wars. Z_i is a vector of time-invariant controls, including several geographical and historical variables: the distances to Yangtze River, the coastline, and the Grand Canal; the number of neighboring provinces; the pre-rebellion level of land taxes per *mu* of land; the total number of palace graduates per million from 1793 to 1820; dummies for silk- and tea-producing prefectures; and the four designations assigned by the Qing government in 1820. The variables in Z_i are interacted with year indicators (D_t) to allow for flexible time-varying effects. $Taiping_i$ is a dummy variable that equals one if prefecture i fell

[21] Technically, in 1851 the rebellion had just started, but the initial impact and the damage on population should be minimal, and data availability forces us to view 1851 as the plausible pre-rebellion year here.

[22] We have explored including one more pre-treatment year, 1776, and we find that the conclusion that the rebellion caused a large population decline remains robust.

under the jurisdiction of the Taiping regime; we allow $Taiping_i$ to have year-specific effects on population growth, denoted by α_τ. We cluster standard errors at the prefecture level.

A main concern is that geographic variation in the Taiping regime ($Taiping_i$) may align closely with provincial boundaries and thus potentially pick up regional factors that also influence population growth; moreover, some control prefectures—though never governed by the Taiping regime—had been affected by the Taiping Army's temporary conquest, which the binary variable fails to capture and may lead to contamination of the control group. To alleviate this concern, we conduct an analysis that leverages variation in Taiping "dosage," measured by rebel occupation time and the number of battles, which is less tied to provincial boundaries and captures more granular aspects of the rebellion (see Section IV.1). We also perform several additional exercises to reduce the influences of regional confounders, including a matching estimator, a spatial model, an instrumental variable strategy, and controls for other historical events.

To address the concern that Taiping (treatment) prefectures may differ systematically from non-Taiping (control) prefectures, we implement a matching estimator to compare observationally similar treatment and control prefectures (Heckman, Ichimura, and Todd 1997), following Xue (2021), who also examines Qing-era panel data outcomes. Specifically, we construct a matched sample using the propensity score matching (PSM) method. The covariates used are: distances to the Grand Canal and to the coastline; taxes per unit of land in 1820; the four post designations assigned by the Qing government in 1820; the dummies for tea and silk production; the number of neighboring provinces; the number of wars during 1776 to 1820 per capita; and the number of palace scholars (*jinshi*) from 1793 to 1820 per capita. We first estimate a probit model of the reverse Taiping dummy (i.e., $1 - Taiping_i$) on the above covariates, which yields the predicted probability of a prefecture not receiving the Taiping treatment, i.e., the propensity score. Then, we match a control prefecture, with replacement, to a treatment prefecture with the closest propensity score. This procedure allows a treated prefecture to be compared to multiple similar control prefectures; observations are thus weighted by the number of times they are matched when we run regressions using the matched sample. Table 2 presents suggestive evidence supporting the validity of the matching approach: in the matched sample, the propensity score and covariates are balanced between treatment and control groups. It is useful to note that while the PSM method does not deal with selection on unobservables, it is transparent and avoids sensitivity issues with respect to

diverse estimates when using multiple equally plausible instrumental variables (Young 2017).[23]

IV.1. The OLS results

We now report the OLS estimation results for equation (1). Column (1) in Table 3 presents the baseline result using the full sample. Before the rebellion, there are no differential pre-trends in population growth between the Taiping and the non-Taiping areas. The estimated coefficient on the Taiping dummy before the rebellion, i.e., in 1851, is small and statistically insignificant, suggesting a lack of selection bias for the Taiping areas conditional on the controls.

After the rebellion, however, the coefficients on the Taiping dummy increase dramatically in magnitude, with no sign of post-rebellion convergence in population growth relative to the control group from 1880 to 2000. In 1880, the Taiping coefficient is -0.45, implying that the population growth rate in Taiping areas between 1820 and 1880 was 36 percentage points lower than in the control areas ($e^{-0.45} - 1 = -36\%$). This immediate drop in population underscores the devastating impact of the rebellion; it is comparable to Europe's population loss during the Black Death (1347–1351), which killed off 30-60 percent of the total population (see Jedwab, Johnson, and Koyama (2022) for a survey).

When it comes to the longer run, in 1953, the Taiping coefficient is -0.51, indicating that population growth in the Taiping areas from 1820 to 1953 remained 40 percentage points lower than in control areas, even one and a half centuries after the rebellion. The post-1953 disadvantage in population growth of the Taiping areas remains substantial, though part of the disadvantage during this period may reflect regional variation in family planning policies across China in the late 1970s. The enduring impact of the Taiping Rebellion on population is also demonstrated by the decline in the Taiping areas' share of the total population across all sample prefectures, which fell from 34.3 percent in 1776 to 22.7 percent in 2000. In sum, the Taiping Rebellion had a long-lasting impact on population growth.

We conduct several robustness checks for the baseline results. *First*, one concern is that the binary measure of the Taiping Rebellion experience may pick up broad regional dynamics, despite the inclusion of rich geographic, economic, and political controls. However, for such dynamics to

[23] Another potential issue, as in other history-based papers, is that we may have omitted (subsequent) historical events that are related to the treatment event of interest (here, the Taiping Rebellion) *and* may explain the final outcomes. A key question is whether some of subsequent historical events were caused by the treatment event. If so, our reduced-form empirical strategy remains valid and can identify the total treatment effect. A more serious problem arises when omitted events are not caused by the treatment but are correlated with both the treatment and the outcome. To alleviate this concern, In Section IV.5, we conduct robustness checks controlling for a wide range of other historical events. However, history comprises an almost infinite number of interrelated historical events, and it is difficult to exhaust all confounding events. This is a fundamental issue in every history-based paper and exceeds the scope of this paper. Nevertheless, the caveat should be kept in mind.

confound our findings, they would need to have the same timing as the Taiping Rebellion, which we deem not very likely. Nonetheless, to alleviate this concern, we allow the Taiping effects to vary by the Taiping "dosage" in columns (2) and (3). Specifically, we interact the Taiping dummy with the log of the number of battles during the rebellion (column (2)) and with the log of the duration of the Taiping occupation (in months) (column (3)). Therefore, the variation we exploit is less tied to provincial boundaries. The results remain qualitatively similar to the baseline: the rebellion led to a significant decline in relative population growth rates, and no recovery in population growth rates had taken place. *Second*, to ensure that our results are not driven by the prefectures that experienced the most intense fighting during the rebellion, we exclude six such prefectures (Wuchang, Songjiang, Anqing, Jiangning, Suzhou, and Hangzhou) from the sample (Platt 2013). The results in column (4) are similar to the baseline. *Third*, since the Taiping Rebellion affected subsequent imperial civil service exam quotas (Li 2014), which may have influenced local human capital development, we include in column (5) the number of newly selected palace scholars (*jinshi*) in a prefecture since the end of the preceding period (denoted by *Jinshi*).[24] The coefficient on *Jinshi* is insignificant, and the Taiping coefficients remain stable relative to the baseline.

Another concern is that the Taiping effects on population growth may reflect rebellion-induced migration. However, available historical evidence suggests that Taiping-induced migration only played a minor role in shaping population changes. As Ge (1997, p. 469-470) notes in his authoritative study of historical migration in China, "until 1889, the total number of migrants in all three provinces (Anhui, Jiangsu, and Zhejiang) was about 5.6 million, less than half of these, or about 2 million, were interprovincial migrants. Treating these three provinces as one region, there were even fewer migrants moving from outside of the region. Thus, after the Taiping Rebellion, migration did not play a significant role in accounting for the population trajectory of the Taiping region, while the population trajectory there was basically based on natural population growth."

IV.2. Addressing spatial autocorrelation

Economic historians recognize the importance of Tobler's law of geography—namely, that adjacent locations are more likely to share common characteristics or dynamics than distant ones (Tobler 1970)—which suggests that omitted spatial interactions could lead to spurious correlations between regional variables of a historical nature (Kelly 2019). To examine if our results are robust when accounting for spatial interactions, we estimate a spatial autoregressive model (SAR), which allows

[24] The dataset for palace scholars covers the period 1793–1911. For the base year 1820, *jinshi* measures the newly selected palace scholars in the 1793 to 1820 period. This variable is zero after 1911 after the fall of the Qing dynasty.

for cross-regional interactions between both dependent variables and the explanatory variables as well as the error term.[25] That is,

$$Y_t = \rho W Y_t + X_t \beta + W X_t \theta + \mu + v_t, \quad (2)$$

$$v_t = \lambda W v_t + \epsilon_t. \quad (3)$$

Here Y_t is an $n \times 1$ vector of the outcomes for all prefectures in year t. X_t is an $n \times k$ matrix of explanatory variables, including the Taiping dummies and control variables. W is the spatial weighting matrix, for which we use the inverse distance weights. We control for prefecture fixed effects (collected in the vector μ). In the model, as shown in equation (2), we allow a prefecture's outcome to be affected by the outcomes and explanatory variables of other prefectures. We also allow the error term to be spatially autocorrelated, as in equation (3).

To gain a preliminary sense of spatial interactions, for specifications of columns (1)–(5), we conduct Pesaran's test for cross-sectional independence of the error term. The results indicate significant cross-sectional dependence of the error term across regions. Column (6) then reports the SAR estimates based on the full sample. Even when allowing for spatial interactions, the pattern of the Taiping effects on population growth remains similar to what we find in column (1): a persistent and substantial negative gap in population growth in the Taiping areas relative to the control areas, with the gap peaking in 1953.

IV.3. The matching estimates

Column (7) of Table 3 reports the results based on the matched sample consisting of 135 prefectures. Reassuringly, the results remain qualitatively similar to those based upon the full sample in column (1). Since it is important to hold the treatment and control groups comparable, especially when we examine multiple outcomes and long-term effects, for the remainder of the paper, we will report results based on the matched sample when possible.

IV.4. Instrumental variable estimates

The estimated effect of the rebellion may be biased by omitted variables if Taiping areas, conditional on the controls, still differ systematically from other areas. To further address this concern, we employ an instrumental variable (IV) approach. Historical accounts detailed below show that the rebellion leaders adopted a military strategy that created a spatial pattern of occupation correlated with longitude. We therefore use the longitude of the prefectural seat as an IV for the Taiping dummy, while controlling for key geographical features that may also be related

[25] This is implemented in Stata following Belotti et al. (2017).

to longitude.

The longitude satisfies the IV relevance condition. At the onset of the rebellion, a capable river-bandit leader, Luo Dagang (罗大纲), brought over a thousand river bandits to join the Taiping rebels (Spence 1996). The Taiping Navy subsequently became central to the rebels' military strategy. In July 1852, the Taiping leaders adopted the following plan (Wang et al. 1952, Vol. 3, p. 291): the Taiping Army would first march *eastward* along the Yangtze River, capture Jiangning prefecture (Nanjing today), located on the eastward-flowing Yangtze River, and then use Jiangning as a base for expansion. Following this plan and relying on its (then) superior navy,[26] the Taiping Army conquered most major cities along the middle course and lower reaches of the Yangtze River, as well as many nearby cities (see Figure 2). This explains why areas in eastern China were more likely to fall under Taiping rule, while few prefectures in western China or in the upstream region of the Yangtze River were captured. This spatial pattern indicates that longitude likely satisfies the relevance condition as an IV for the Taiping dummy. Indeed, Table 1 shows that the Taiping prefectures, on average, have significantly larger longitudes.

The longitude also needs to satisfy the exclusion restriction. A potential concern is that the longitude may affect population through channels other than the Taiping rule. For example, population growth rates in the east may be higher due to more favorable geographical characteristics, such as arable land, irrigation potential, or lower transportation costs. This has been taken into account by our empirical strategy. We control for prefecture fixed effects, which absorb *all time-invariant characteristics*, including initial geographical advantages. Additionally, we control for the interactions between year dummies and key geographical conditions (e.g., distances to the coastline, the Grand Canal, and the Yangtze River), allowing for flexible time-varying effects of geography. Conditional on these controls, longitude should be excludable in explaining population growth. Reassuringly, Table 4 shows that, when controlling for geographical variables, the IV has little correlation with population growth (conditional on initial population in 1776) and other pre-rebellion variables, suggesting a lack of correlation with unobservable confounders (Altonji et al. 2005).

Since weak IVs can undermine the validity of IV estimates and existing testing frameworks focus on settings with a single endogenous variable, we implement two-stage least squares (2SLS) estimation using all pre-Taiping periods (1820 and 1851) and one post-Taiping period at a time. This yields five separate 2SLS estimations for post-rebellion years 1880, 1910, 1953, 1982, and 2000. The results are reported in Appendix Table A4. Panel B of Appendix Table A4 confirms the

[26] The Taiping Navy was dominant on the river until the rise of the navy of the Xiang Army led by Zeng Guofan in 1854 (Wang et al. 1952, Vol. 3, p. 276, p. 142).

strength of the IV: longitude has a strong positive association with the Taiping dummy; all F statistics are above 20 (Staiger and Stock 1997) and all Shea's partial R^2 values are above 0.1. IV estimates in Panel A show significant negative effects of the rebellion on population growth, which remain robust when performing inference using Anderson-Rubin confidence intervals developed for potentially weak IVs. When pooling the estimations, the results remain similar, as shown in column (8) of Table 3. The IV estimates are larger in magnitude than the OLS estimates, but the qualitative patterns of the Taiping effects on population growth are in line with our earlier results, confirming a persistent negative impact of the rebellion on population growth in the Taiping areas.[27]

IV.5. Robustness checks

We conduct a battery of robustness checks. The details are discussed in Appendices B, C, D, and E. Here, we briefly summarize these checks.

Controlling for other historical events. To ascertain that our results truly reflect the impacts of the Taiping Rebellion, we show that our results survive when controlling for other historical events. In particular, we consider a variety of events that may be related to population growth and socioeconomic development: (i) the Guangxu Drought (1876–1879); (ii) the Hui Revolt (1862–1877); (iii) the Nian Rebellion (1853–1868); (iv) the internal conflicts in the early period of the Republic of China; (v) the Sino-Japanese War (1937–1945); (vi) the Chinese Civil War (1945–1949); and (vii) missionary activities. Appendix B discusses the measurements used in detail. As Panel A of Appendix Table B1 shows, controlling for these events does not change the conclusion that the Taiping Rebellion had a persistent negative impact on population growth.

Taiping regime vs. Taiping conquest. Our baseline analysis compares prefectures under the Taiping regime with those that were not. A concern is that some control prefectures, though never governed by the Taiping regime, had been affected by the Taiping Army's temporary conquest. If the conquest had a large impact on population growth, it could bias our baseline results downward. To further validate our empirical strategy, in Appendix C, we examine the robustness of our results when explicitly controlling for the influence of the Taiping conquest. Columns (1) and (2) in Appendix Table C1 show that the effects of the Taiping conquest on population growth were moderate, and controlling for them does not markedly change the estimated effects of the Taiping rule. These patterns provide support for our empirical strategy, which focuses on comparing prefectures with and without the Taiping regime established.

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[27] While longitude is the best available IV we can come up with and has multiple attractive features as we mentioned, we cannot rule out that there are omitted determinants that are correlated with the IV. One should thus interpret the IV results with caution.

Own treatment vs. adjacent treatment. Another concern is that the Taiping Rebellion may have generated spatial spillover effects, possibly due to the widespread scope of battles. If so, this may contaminate the control group. Although the SAR estimates have already indicated that spatial spillovers do not drive our results, we provide an additional exercise to address the concern. Specifically, we code whether a control prefecture neighbored a treatment prefecture. Butts (2021) shows that in a difference-in-differences analysis, it is sufficient to control for this variable to address bias due to spillovers, provided that the potential spillovers occur mainly among neighbors. In Appendix D, Columns (1) and (2) of Table D1 show that accounting for adjacent spillovers does not change the conclusion regarding the effects of the Taiping Rebellion on population growth.

Excluding a province at a time. One may also be concerned about other unobserved shocks that may drive our results. We are not able to exhaust all possibilities and find plausible proxies. Nonetheless, in Appendix E, Figures E1(a) and (b) show that when we exclude control prefectures in a province at a time, the qualitative conclusion about the Taiping effects on population growth remains unchanged. This suggests that our results are not driven by province-specific unobserved shocks.

Summary. Throughout Section IV, the results provide robust evidence that the Taiping Rebellion resulted in a persistent decrease in population growth in the Taiping areas relative to the non-Taiping areas. Based on the empirical framework employed in this section, we go on to explore the broader impacts of the Taiping Rebellion on local state and society.

V. Property Rights, Fiscal Capacity, and Population

We now investigate two channels through which the rebellion may have affected population growth: property rights and local fiscal capacity.

V.1. Property rights and population growth

We examine the property rights hypothesis, that is, relative to the Early Taiping areas, the Late Taiping areas, which featured more clearly defined land ownership, would have less idle land and faster post-war population recovery (see Section II.1). We use data on idle land include the share of idle land of 332 counties in the Taiping provinces (Anhui, Jiangxi, Hubei, Jiangsu, and Zhejiang) in 1915. We have data on 151 Early Taiping counties, 95 Late Taiping counties, and 86 control counties (see Panel A of Table 5).

In Panel B of Table 5, we present the cross-sectional regression results of the determinants of the share of idle land in 1915. The control variables include the distance to the Yangtze River, the

distance to the coastline, and dummy variables indicating whether a county was a prefecture capital seat, was considered a key county by the Qing government in 1820, and was a trade center in 1915.[28] We also control for the provincial fixed effects to hold constant province-specific features.

The results show that the idle land ratio in the Early Taiping areas is 3.6 percentage points higher than in the non-Taiping counties, whereas the idle land ratio in the Late Taiping areas is slightly higher but not statistically different from that in the non-Taiping counties. The lack of a significant difference between the Late Taiping and non-Taiping counties suggests that the reallocation of property rights between former landowners and tenants in Late Taiping areas did not reduce long-term maintenance of or investment in land. This pattern supports the property rights hypothesis: relative to the Early Taiping areas, the Late Taiping areas had better protection of land property rights, and indeed, they had a lower share of idle land. Column (3) shows that these results remain robust when controlling for (i) the distance to Nanjing (as a proxy of distance to a major metropolitan area in the region) and (ii) the *likin* intensity immediately after the Taiping Army's fall. Neither of these additional variables explains the idle land ratio.[29]

Did the Late Taiping land policy affect the long-term population growth? To answer this question, we estimate the following equation, modified from equation (1):

$$\ln(pop_{i,t}) = \sum_{\tau \neq 1820} \alpha_{1\tau} D_\tau * Early\,TP_i + \sum_{\tau \neq 1820} \alpha_{2\tau} D_\tau * Late\,TP_i + X'_{i,t}\beta + \sum_t \beta_t D_t Z_i + \rho_t + \eta_i + e_{i,t}. \quad (4)$$

In essence, equation (4) distinguishes between the Early and Late Taiping areas,[30] while all other variables are defined as in equation (1). In column (1) of Table 6, we report the full sample OLS estimates for equation (4). In column (2), we report estimates of a SAR model using the full sample. In column (3), we report the OLS results using a matched sample. Since the results based on the matched sample are likely the most credible, our discussion focuses on column (3).

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[28] We do not control for the distance to the Grand Canal because it did not pass through our sample counties here.
[29] The results do not reflect any land reform efforts. Though the land reform was part of the ideology of the Xinhai Revolution of 1911, which overthrew the Qing dynasty and established the Republic of China, it was not implemented by the ruling Beiyang government (1912–1928) during the period of our idle land data. The subsequent Nationalist government (1928–1949) only enacted pilot land reforms in limited areas on the eve of the communist takeover.
[30] Here, we focus on the heterogeneity in the average population effect between the Early and Late Taiping regions. This is motivated by the fact that the Late Taiping region featured better land property rights, and it is a parsimonious characterization. There may exist further heterogeneity within the Early or Late Taiping group. For instance, Cao and Li (2000) study variation in population losses for prefectures within Zhejiang province, i.e., a province in the Late Taiping region. They document significant variation: Hangzhou and Huzhou prefectures had massive population losses after the rebellion, while Wenzhou prefecture even witnessed a slight increase in population. We do not pursue the further exploration of such within-Late-Taiping-region variation because we are more interested in the rebellion's impacts on institutions and subsequent development than in population effects *per se*.

Based on the estimates using a matched sample in column (3), compared to the control group, the Early Taiping areas experienced an *immediate* post-rebellion drop in the population growth rate by 30 percentage points (i.e., $1 - e^{-0.35}$) in 1880, followed by a *further decline* of 8 log points after the Communist takeover in 1949 (see the coefficient on *Early Taiping*Year 1953*). In contrast, the Late Taiping areas experienced a faster population recovery than the Early Taiping areas. While the Late Taiping areas experienced an initial drop in population growth by 32 percentage points ($1 - e^{-0.39}$) in 1880, in the long term, there is no significant difference in population growth between the Late Taiping and the control areas. This quick recovery in population growth could be explained by good land property rights in the Late Taiping areas, which led to faster re-utilization of idle land and potentially more migration. Together with the idle land results, these findings provide further support for the land property rights hypothesis.

Results from the full sample in columns (1) and (2) are overall consistent with the matched sample results. Patterns for the Early Taiping areas are similar. Column (1) suggests that the Late Taiping areas had a larger initial loss in population than the Early Taiping areas but experienced a faster recovery of population growth. The Late Taiping coefficients shrink over time, while the Early Taiping coefficients remain stable. The SAR estimates in column (2) are similar to the results based on the matched sample.

In the Appendices, we perform several robustness checks for the heterogeneous population effects. Panel B of Appendix Table B1 confirms that the adverse population effect is larger in Early Taiping areas. Columns (3) and (4) of Appendix Table C1 show that the distinction between Early and Late Taiping areas survives when accounting for the influence of the Taiping conquest. The results are not driven by spillovers between adjacent areas (columns (3) and (4) of Appendix Table D1). They also remain robust when excluding control prefectures of each province, one province at a time (see Appendix Figure E1(b) for details).

V.2. The effects of the Taiping Rebellion on *likin*

A key change induced by the rebellion was the adoption of *likin* for local taxation, a transformative change that made local finance a significant force. We now examine how the rebellion shaped *likin* collection. We gather data on average annual provincial *likin* revenue for the periods 1869–1879, 1880–1908, and 1922–1925. We set the *likin* revenue to be zero for periods before the Taiping Rebellion. Our final dataset consists of a panel of 266 prefectures across four periods: one pre-rebellion period and three post-rebellion periods (1869–1879, 1880–1908, and 1922–1925).

To examine whether the rebellion led to higher *likin* intensity (i.e., *likin* revenue per thousand square kilometers, denoted by $likin_{it}$) in the Taiping areas, we run the following difference-in-

differences regression:

$$\ln(1 + likin_{it}) = \sum_{t \neq \text{pre-rebellion}} \gamma_t (D_t \times Taiping_i) + d_t + \eta_i + e_{i,t} . \quad (5)$$

In the equation, D_t is the period dummy variable; $Taiping_i$ represents the Taiping dummy or the Early Taiping and the Late Taiping dummies. d_t and η_i denote year and prefecture fixed effects, respectively. Standard errors are clustered at the provincial level. We perform statistical inference following the wild bootstrap-*t* procedure due to the small number of clusters (Cameron et al. 2008). Table 7 reports the results.

Two findings emerge. First, as shown in column (1), *likin* intensity was substantially higher in the Taiping areas. In 1869–1879, the first post-rebellion period, the Taiping areas collected 12 times (i.e., $e^{2.5}$) as much *likin* as the control areas. Even in the period 1922–1925, seven decades after *likin* was introduced, *likin* intensity in the Taiping areas remained 3.7 times that of other areas. This suggests that the Taiping experience resulted in a lasting strengthening of local fiscal capacity. Second, column (2) shows that *likin* intensity is much higher in the Late Taiping areas than in the Early Taiping areas. Compared to the control areas, *likin* intensity in the Early Taiping areas was higher by a factor of 9.0 in 1869–1879 and by a factor of 2.7 in 1922–1925. By contrast, relative to control areas, Late Taiping areas had higher *likin* intensity by a factor of 22.2 and 6.1 in respective periods. Columns (3) and (4), based upon the matched sample, reveal similar patterns. Overall, these findings support the *likin*-as-fiscal-capacity hypothesis that the rebellion contributes positively to local fiscal capacity, especially in places with favorable initial conditions (here, Late Taiping areas).

In the Appendices, we provide several robustness checks for the effects of the Taiping Rebellion on the rise of *likin*. The results remain robust when (i) controlling for other historical events (Panel C of Appendix Table B1); (ii) accounting for the influence of the Taiping Army's conquest (columns (5) and (6) of Appendix Table C1); (iii) accounting for spillovers between adjacent areas (columns (5) and (6) of Appendix Table D1); and (iv) excluding the prefectures of a province that serve as the control, one province at a time (see Appendix Figure E1(c) for details).

VI. The Impact of the Taiping Rebellion on Social Capacity

As discussed in Section II.4, the number of charity organizations—an indicator of social capacity—should increase significantly after the rebellion, especially in the Late Taiping areas where local elites were more influential. Given the potential importance of social capacity for development, we now examine how the rebellion affected the development of charity organizations. Table 8 presents the impact of the rebellion on the total number of charities in a prefecture. All the control variables

are the same as in the baseline regression, equation (1), with 1820 as the omitted reference year. We report both full-sample and matched-sample results.

Column (1) shows that, on average, the rebellion was not significantly associated with charity organizations in the post-rebellion years. However, this masks important heterogeneity. In column (2), when we distinguish between the Early and the Late Taiping areas, we find divergent social development. In all the post-rebellion years, the Early Taiping areas did not exhibit a differential trajectory in the development of charity organizations compared to control areas. By contrast, the Late Taiping areas had experienced a significant increase in charity organizations after the rebellion. Even before the rebellion, the Late Taiping areas already exhibited moderately faster growth in charity organizations than the control areas. Nonetheless, immediately after the rebellion (i.e., 1880), the growth of charities in the Late Taiping areas was substantially higher than in control areas by 56 percentage points (i.e., 44 log points). This advantage in Late Taiping prefectures grew to around 78 percentage points (i.e., 58 log points) by the mid-20th century. Columns (3) and (4) report the matched sample results. Again, the effects of the rebellion on charities are significant and substantial only for the Late Taiping areas. In sum, the Taiping Rebellion facilitated growth in charity organizations in the Late Taiping areas, supporting the social change hypothesis.

We conduct similar robustness checks as before in the Appendices. We show that the results are robust to (i) controlling for other historical events (Panel D of Appendix Table B1);[31] (ii) accounting for the influence of the Taiping Army's conquest (columns (7) and (8) of Appendix Table C1); (iii) accounting for spillovers between adjacent areas (columns (7) and (8) of Appendix Table D1); and (iv) excluding the areas of a province that serve as the control, one province at a time (see Appendix Figure E1(c) for details).

VII. The Long-Term Consequences of the Taiping Rebellion

Thus far, we have established that despite the devastating impact on population, the Taiping Rebellion ushered in important institutional changes, especially in the Late Taiping areas, including (i) stronger land property rights, (ii) stronger local fiscal capacity, and (iii) enhanced social capacity. These institutional changes are important building blocks of long-term economic and social development. Therefore, in this section, we investigate the long-term consequences of the Taiping Rebellion.

We gather various data sources for our investigation. The details on measurements can be found in Section III and Appendix Table A2. For consistency, we harmonize the geographic units

[31] An important control variable we include is missionary activities in late Qing, which may relate to the development of charity organizations.

across different datasets to match those in 1820. Our main dataset includes 191 (Qing) prefectures. We compare the long-term performance between Taiping and control areas using cross-sectional regressions and perform a range of robustness checks.

VII.1. The Taiping Rebellion and long-term development outcomes

We begin by examining how the rebellion experience is associated with a range of development outcomes, including economic activity, human capital, and fiscal revenue. In Panel A of Table 9, we characterize the rebellion experience using a simple dummy variable, and we regress the development outcome on this rebellion dummy, controlling for the same covariates as before.[32] We report OLS estimates based on the full sample. Later, we will present several robustness checks for our results.

As shown in Panel A of Table 9, Taiping prefectures, on average, perform similarly to the control prefectures in terms of educational attainment and GDP per capita in 2010. However, compared to control prefectures, Taiping prefectures had a 27 percent (24 log points) higher per capita agricultural and industrial output in 1982, and a 51 percent (41 log points) higher per capita fiscal revenue in 2010. We have also performed 2SLS estimations (unreported), where the Taiping dummy is instrumented by longitude as before, and we find largely insignificant differences between Taiping and control prefectures.

In Panel B, we further distinguish between the Early Taiping and Late Taiping prefectures. Recall that the Late Taiping areas had better land property rights during and after the rebellion. Now, we see that in the longer run, Late Taiping prefectures exhibit much better performance than Early Taiping prefectures. Early Taiping prefectures' outcomes are not statistically distinguishable from those of control prefectures. In stark contrast, the better performance of Taiping prefectures found in Panel A is driven by Late Taiping prefectures: their agricultural and industrial output per capita in 1982 was 90 percent higher (64 log points) than that of control prefectures, and their fiscal revenue per capita in 2010 was 203 percent higher (111 log points). In addition, GDP per capita in 2010 was 87 percent (63 log points) higher in Late Taiping prefectures. In terms of human capital, Late Taiping prefectures also had more middle school graduates in 1982, though there were no significant differences in the literacy rate in 1982 and the average years of schooling in 2000. The strong advantage of the Late Taiping areas relative to the Early Taiping areas is consistent with the

[32] The cross-sectional nature of the data here does not allow for including prefecture fixed effects, so we control for the log population in 1820 instead. We also replace the interactions between the time dummies and the time-invariant variables with the time-invariant variables.

property rights hypothesis.[33]

VII.2. The roles of local fiscal capacity and social capacity

We now explore the roles of rebellion-induced changes in local fiscal capacity and social capacity in long-term development. To do so, in Panel C of Table 9, we include the *likin* intensity of 1880 and the average number of charities from 1880–1941 in the regressions.[34] Note that both *likin* and charities are the endogenous outcomes of the Taiping Rebellion, thus, one needs to interpret these results with caution (Angrist and Pischke 2009; Imai et al. 2011).[35] Due to the lack of additional sources of exogenous variation in *likin* and charities, we use this approach to describe in the data how *likin* and charities are *associated* with development outcomes and how they may mediate the impacts of the Taiping Rebellion, as in existing economics literature (e.g., Banerjee and Iyer 2005; Cutler and Lleras-Muney 2010; Bai and Kung 2015; Bo et al. 2023).

We find that higher post-rebellion *likin* intensity is associated with better long-term human capital development. Specifically, as shown in columns (2) to (6), a one standard deviation (i.e., 2.8) increase in post-rebellion *likin* intensity is associated with a 1.7 percentage points higher middle school completion rate, a 4.8 percentage points higher literacy rate, and a 5.3 percent higher level of schooling. In addition, a one standard deviation increase in the *likin* intensity is associated with a 12.2 percent (11.5 log points) higher level of GDP per capita in 2010. These patterns suggest that stronger local fiscal capacity developed a century ago is associated with better provision of public goods and contributes to modern economic activity.

We also find suggestive evidence, as shown in columns (1), (4), and (5), that charities are positively associated with modern economic activity and fiscal revenue. A one standard deviation

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[33] Stronger property rights could have lasting impacts on development through two channels: persistence of improved property rights themselves or sustained income increases (which could contribute to greater local state capacity, better local infrastructure, and better education). In unreported results, using the World Bank Enterprise Survey for 120 cities in 2005, we find no significant association between firms' perceived protection of property rights and the Early Taiping or Late Taiping regimes. This suggests that the Taiping-era property rights likely affected modern outcomes through the income effects rather than the persistence of property rights.

[34] We use the average to capture the full impact of the social changes associated with charity organizations for the post-rebellion years as of the communist takeover in China. We use the end year of 1941 for our calculation because it is the last year of our charity data and close to 1949 when the People's Republic of China was founded.

[35] Angrist and Pischke (2009) point out that variables that are affected by a treatment are typically "bad controls," as their inclusion may bias estimates unless strong exogeneity assumptions are imposed. Closely related to our exercise, Imai et al. (2011) discuss this issue from a perspective of causal mediation analysis, which aims to quantify the importance of a mechanism. They show that under exogeneity of the mechanism, controlling for a mechanism variable in the regression can identify (i) the direct treatment effect not mediated by the mechanism (captured by the treatment coefficient) and (ii) the indirect treatment effect mediated by the mechanism (captured by the *change* in the treatment coefficient after including the mechanism variable). In our case, the Taiping coefficient reflects the effect of the rebellion through channels other than *likin* and charities (e.g., property rights), while the change in the Taiping coefficient reflects the effect of the rebellion through channels of *likin* and charities.

increase in the charity variable (i.e., 1.4) is associated with a 15 percent (or 14 log points) higher agricultural and industrial output per capita in 1982, a 20 percent (or 18 log points) higher GDP per capita in 2010, and a 55 percent (or 44 log points) higher fiscal revenue per capita in 2010.

These results shed light on the *likin*-as-fiscal-capacity hypothesis and the social change hypothesis. They suggest that the Taiping Rebellion could facilitate long-term development by strengthening local fiscal capacity and social capacity (cf. Section V and Section VI). Moreover, if we compare estimates in Panel C to (unreported) estimates from regressions that leave out the charity variable but retain other variables, we find that once netting out the effects of social capacity, Late Taiping prefectures' advantages in gross agricultural-and-industrial output, GDP, and fiscal revenue are significantly attenuated—by about 17 percent, 14 percent, and 22 percent, respectively. These quantities should be interpreted with caution due to the endogeneity issues of *likin* and charities mentioned earlier. Nonetheless, qualitatively, this pattern highlights the importance of the rebellion-induced social change in explaining the Late Taiping prefectures' advantages in long-term development.[36]

VII.3. Robustness checks

In Sections VII.1 and VII.2, we have shown that the experience of the Taiping Rebellion, in particular, the experience of the Late Taiping rule, is associated with more favorable long-term development outcomes. Our preferred interpretation is that these associations reflect the lasting influences of rebellion-induced institutional changes in property rights, local fiscal capacity, and social capacity. A potential concern, however, is that these results may be driven by confounders over a long period of time that are not adequately controlled for. To alleviate this concern, we conduct several robustness checks designed to reduce the influence of such confounders. The results of these checks strengthen—though do not prove—the conclusion regarding the lasting impacts of the Taiping Rebellion.

First, we obtain similar patterns when using a SAR model that accounts for spatial interactions (see Table A5). Second, the results remain robust when using a matching estimator that compares observationally similar Taiping and control prefectures (see Table A6). Third, we show that our results are robust to controlling for a range of historical events that may correlate with the experience of the Taiping Rebellion and/or affect long-term development (see Table B2). Specifically, we consider historical events that we have additionally controlled for in Section IV.5 (e.g., the Guangxu Drought, the Nian Rebellion, missionary activities, and key wars in late Qing

[36] In Appendix F.2, we discuss our results in relation to Wang (2022)'s insights for the role of lineage organizations in development.

and Republican China). In addition, we control for the influence of the Cultural Revolution (1966–1976), given its importance in China's modern history (Walder 2014; Bai and Wu 2023).

Last but not least, we present evidence that the experience of the Taiping rule, particularly the Late Taiping rule, is associated with stronger economic development even in the *"intermediate" term*, when unobserved factors that might explain the long-term impacts on development should play a more minor role. We study China's early industrialization by the 1930s. We use county-level data for the Taiping provinces (Anhui, Jiangxi, Hubei, Jiangsu, and Zhejiang), which include 138 Early Taiping counties, 86 Late Taiping counties, and 132 control counties (see Section III for description of the data). The main outcome variable of interest is firm entry, measured by the number of industrial firms established between 1858–1937 (plus one and logged). We regress firm entry on the Taiping dummy, province fixed effects, and covariates. We include the covariates used in the idle land regressions (see Table 5) and a variable on local military investment during the Self-Strengthening Movement (1861–1895) in the late Qing, which may have affected local industrialization (Bo et al. 2023). Columns (1)–(3) of Table 10 report the results.

Column (1) shows that Taiping counties witnessed higher firm entry between 1858–1937 compared to control counties. Column (2) implies that Taiping counties' advantages are driven by Late Taiping counties, while Early Taiping counties in fact exhibit some disadvantages. Table A7 examines the temporal heterogeneity of this result. Specifically, we examine firm entry before and after 1895, the year when the Treaty of Shimonoseki between Qing China and Japan opened China to foreign firms and led the Qing government to lift restrictions on private industrial firms (Bo et al. 2023). Before 1895, there is no association between Early/Late Taiping rule and firm entry. However, after 1895, when the business environment became more favorable, Late Taiping counties witnessed higher firm entry than control counties, whereas Early Taiping counties actually had fewer entrants. These patterns rule out the possibility of "pre-trends," where Taiping counties were already on different trajectories of industrial development than control counties, and they underscore the important role of the Late Taiping rule in shaping early industrialization.

In column (3), we find that the average post-rebellion level of charities is strongly associated with firm entry, and controlling for charities accounts for part of the Late Taiping counties' advantage and accentuates the Early Taiping counties' disadvantage. We find similar patterns when studying local industrial production value in 1933 (see columns (4)–(6)). These results for early industrialization echo our findings for modern economic activity and fiscal revenue (Table 9), highlighting the rebellion's developmental impacts, particularly through the social capacity channel.

VII.4. The Taiping Rebellion and contemporary social cohesion and civic engagement

Thus far, we have offered evidence on the important roles played by social capacity, as captured by charity organizations, in shaping long-term development. We now investigate how the rebellion affects modern-day social cohesion and civic engagement, as discussed in Section II.4.

Attitudinal and behavioral outcomes. We first employ the China General Social Survey (CGSS hereafter) in 2010 for measures of social cohesion and civic engagement. CGSS is a nationally representative survey that collects rich information on people's attitudes and behaviors.[37] As before, we match modern prefectures in the CGSS with Qing prefectures of 1820 for the status of the Taiping Rebellion and other historical variables. We are able to link 69 modern prefectures to 67 Qing prefectures. All regressions include the same set of baseline prefecture-level controls in Table 9 as well as individual-level covariates, including gender, birth cohorts, educational attainment, urban residence status, marital status, employment status, and the Communist Party membership. We also control for the Cultural Revolution (1966–1976), given its impact on modern trust attitudes (Bai and Wu 2020; Wang 2021). Standard errors are clustered at the prefecture level, the same as the level of variation in the Taiping treatment.

Social cohesion is measured by interpersonal trust. The CGSS asks a respondent to rate their trust in different subjects on a 1–5 scale. Columns (1)–(3) of Table 11 present the associations between the Taiping Rebellion and trust attitudes. Panel A shows that people in the Taiping prefectures exhibit higher trust in their personal networks (relatives, friends, and coworkers) than those in the non-Taiping prefectures. Panel B further shows that higher trust in personal networks largely appears only in the Late Taiping prefectures. These results are consistent with the following notion: the Late Taiping areas featured strong social cohesion (led by local gentry) during the fight against the rebels and the post-rebellion reconstruction, which reinforced trust in local networks then and afterwards.[38]

We now examine how the rebellion affects civic engagement, which is critical to good governance as it facilitates checks and balances on the government (Campante and Chor 2012; Campante and Do 2014). This can be especially important in the Chinese context, where the Confucian tradition discourages civic engagement (Acemoglu and Robinson 2019; Huntington 1991; Shirley and Xu 2025). We use two measures for civic engagement: (i) *attention to politics*, a binary outcome that equals one if the respondent routinely follows political news; and (ii)

[37] The same dataset has also been used by Xue (2021) to study the long-run impact of state repression on trust.
[38] To understand how the Taiping Rebellion exerts effects, we run regressions that additionally include charities (results available upon request). However, we do not find significant effects of charities, suggesting that the rebellion affects current social trust and local cooperation independently of the tangible social capital (i.e., charity) channel.

engagement in local affairs, a binary variable that equals one if a respondent reports that she/he has engaged in local affairs (e.g., volunteering, petitions, and demonstrations). The first measure captures information acquisition, which is the prerequisite of effective civic engagement, while the second measure captures actual participation. In the sample, about 34 percent of respondents follow political news, and only 18 percent have ever participated in local affairs. Columns (4) and (5) of Table 11 report the effects of the Taiping Rebellion. In Panel A, the experience of the Taiping Rebellion has no discernible associations with people's attention to politics and engagement in local affairs. However, if we distinguish between Early and Late Taiping prefectures, as in Panel B, we see that Late Taiping areas exhibit significantly higher levels of political attention and participatory behavior.

The above results should be considered suggestive due to the potential influence of other uncontrolled shocks on social cohesion and civic engagement. As a robustness check, Table B3 shows that the findings survive controlling for the same set of historical events as before.

Severity of the Great Chinese Famine (1959–1961). China's long history as a unified country has been marked by various historical catastrophes. Surviving them tested the resilience of the country and its people. How did the rebellion experience potentially affect responses to the Great Chinese Famine (1959–1961)? The social changes induced by the Taiping Rebellion may have made some regions better equipped to respond to the catastrophe that occurred a century later.

The Great Famine was one of the deadliest famines in human history, with estimated deaths between 16 and 45 million (Coale 1981; Dikötter 2010; Li and Yang 2005). Previous studies suggest that this famine was a consequence of multiple institutional failures during the Great Leap Forward (GLF, 1958–1962), which resulted in a decline in agricultural production and the over-procurement of grain in rural areas (Li and Yang 2005; Meng, Qian, and Yared 2015; Kasahara and Li 2020). Political radicalism was a key factor behind the institutional failures, as demonstrated by the pronounced inverse relationship between party membership density (i.e., share of communist party members in population; hereafter PMD) and mortality rates during the famine. The common interpretation is that a *lower* PMD reflected a province's shorter revolutionary history and weaker alignment with the communist regime, so local officials were eager to advance their political careers by signaling their loyalty and enforcing the GLF policies *more* radically (Yang 1996). The experience of the Taiping Rebellion may have helped to mitigate the fatal effect of political radicalism in select Taiping areas. In Taiping areas with a higher level of social capital, local officials may have been more sympathetic to local communities and may have pursued less radical policies, despite career incentives; furthermore local populations may have been better able to act collectively to resist radical policies (Cao, Xu, and Zhang 2022; Hu, Yao, and You 2023; Chen

2010; Fang et al., 2023).[39] We thus compare famine severity between Taiping and non-Taiping areas and explore the potential role of social capital in containing the harm of political radicalism under central planning.

To measure famine severity at the local level, we follow Meng, Qian, and Yared (2015) by using the relative size of famine survivors in rural areas. The underlying idea is that "famine increases infant and early childhood mortality rates and lowers fertility rates such that a more severe famine results in smaller cohort sizes for those born shortly before or during the famine." Accordingly, following Fang et al. (2023), we construct a variable *"famine control"* to measure local famine severity. It is the ratio of the size of cohorts born during the famine period (1959–1961) to the size of cohorts born during the pre-famine period (1954–1957), as observed in the one percent sample of the 1990 population census:

$$\text{Famine Control}_i = \frac{\text{Size of cohorts born in 1959–1961, prefecture } i}{\text{Size of cohorts born in 1954–1957, prefecture } i}. \quad (6)$$

A *higher* value of Famine Control_i means that the famine was *less* severe in prefecture i. An x unit increase in Famine Control_i can be interpreted as a $100x$ percent increase in the size of famine survivors, relative to those born during the pre-famine period. Constructed using the population census, Famine Control_i is less vulnerable to misreporting because it is less influenced by the government's desire to understate famine severity.

Table 12 presents how the Taiping Rebellion affected famine severity. From column (1), the famine was significantly less severe in the Taiping areas. Specifically, the Taiping areas had a 6.9 percent larger size of survivors than the non-Taiping areas. In column (2), though the Taiping Rebellion's positive legacy is present in both early and Late Taiping areas, it is 28 percent stronger in the Late Taiping areas (i.e., 8.4 vs. 6.5 percent). To put the effect in perspective, consider the following back-of-the-envelope calculations. An average prefecture in our sample had 373,500 people born in 1954–1957 cohorts and 185,200 people born in 1959–1961 cohorts. Thus, based on our estimates, the Late Taiping experience would have saved $0.084 \times 373{,}500 = 31{,}374$ people, while the Early Taiping experience would have saved $0.065 \times 373{,}500 = 24{,}145$ people. These are sizeable effects: the Late (Early) Taiping effect amounts to 17 (13) percent of the size of 1959–1961 cohorts.

[39] There has been some evidence corroborating these possibilities. On policy enforcement, Cao, Xu, and Zhang (2022) find that social capital, measured by kinship-based clan density, reduces famine severity, and they show that provinces with higher clan densities had lower excessive grain procurement rates. Similarly, Hu, Yao, and You (2023) find that officials governing their home counties, which they had social ties with, implemented procurement more flexibly preceding the famine and expended more on social programs such as disaster relief during the GLF. When it comes to collective acts of resistance, Chen (2010)'s interviews with peasants in Anhui province report that resistance was more likely in the presence of dense local kinship networks.

In column (3), we further control for political radicalism, measured as the reverse party member density (-1*PMD) of a province. The coefficient on -1*PMD is not precisely estimated, however, the negative sign is consistent with Yang (1996), who argues that a lower PMD represents a shallower communist revolutionary history in a province, so that officials there implemented more radical grain procurement to show political loyalty, which resulted in more deaths in the famine. The inclusion of -1*PMD does not markedly change the association between the rebellion experience and famine severity, and the Late Taiping rule again strongly reduced famine severity. These results hold even if controlling for other historical events (see Table B4). Table A8 in the Appendix shows that our results are robust to alternative measures of famine severity (Kasahara and Li 2020; Chen and Yang 2015). The SAR model and matching approach give similar results (see Table A9), and if anything, the effect of the Late Taiping rule on famine severity is even more pronounced.

Taken together, these results suggest that the Taiping Rebellion, one of the bloodiest wars in history, helped mitigate the harm of another catastrophe a century later, and this mitigating effect was stronger in the Late Taiping areas that had developed stronger social capacity.

VIII. Conclusions

The sharp population decline during and after the Taiping Rebellion was comparable to Europe's experience following the Black Death (Voigtlander and Voth 2009, 2013a, 2013b; Jebwab, Johnson, and Koyama 2022). The rebellion marked a pivotal turning point in China's history (Wang 2023), yet its consequences remain poorly understood. We show that while the rebellion caused devastating—and in some regions permanent—population losses, it also spurred institutional, fiscal, and social changes that fostered long-term development in a subset of areas, namely, the *Late Taiping* areas. These areas experienced stronger property rights, greater local fiscal capacity, and the rise of local charities, with lasting impacts on modern income levels, early industrialization, fiscal revenue, and human capital. They also exhibit higher trust in personal networks, stronger civic engagement, and greater resilience during the Great Famine a century later. These patterns are consistent with hypotheses on the long-term impact of war in the literature: secure property rights foster development, wars can strengthen fiscal capacity, and social capacity underpins sustained progress.

The Taiping Rebellion was a crucial juncture in Chinese history, marking the onset of fiscal decentralization, a surge in political and social participation by local elites, and the beginning of China's modernization. Since then, China has grappled with the tension between centralization and decentralization. While decentralization helped the Qing survive the rebellion, it may also have

contributed to the dynasty's eventual collapse (Sng 2014; Koyama, Moriguchi, and Sng 2018).[40] After the Republic of China was founded in 1912, the weak central government gave way to a decade of full decentralization under warlord rule. Chiang Kai-shek's Nationalist regime sought to restore central control but ultimately failed on the mainland. Following the 1978 reforms, China pursued strong decentralization until the mid-1990s, when the trend reversed toward fiscal centralization, significantly strengthening state capacity. China's trajectory from the Qing to today can be seen as a shift from a weak state with a weak society to a strong state with a still weak society. Our evidence shows that greater social capacity can generate substantial long-term benefits. Given China's enormous state capacity today, cultivating civil society and strengthening social capacity could yield particularly large payoffs.

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[40] According to Sng (2014) and Koyama, Moriguchi, and Sng (2018), Japan's overtaking of China in the process of confronting the threat posed by the Western powers was likely due to its successful centralization drive, which was made possible by its smaller territorial size relative to that of China. The balance between centralization and decentralization is thus a key parameter of governance that has crucially shaped the development trajectories of these two key East Asian countries.

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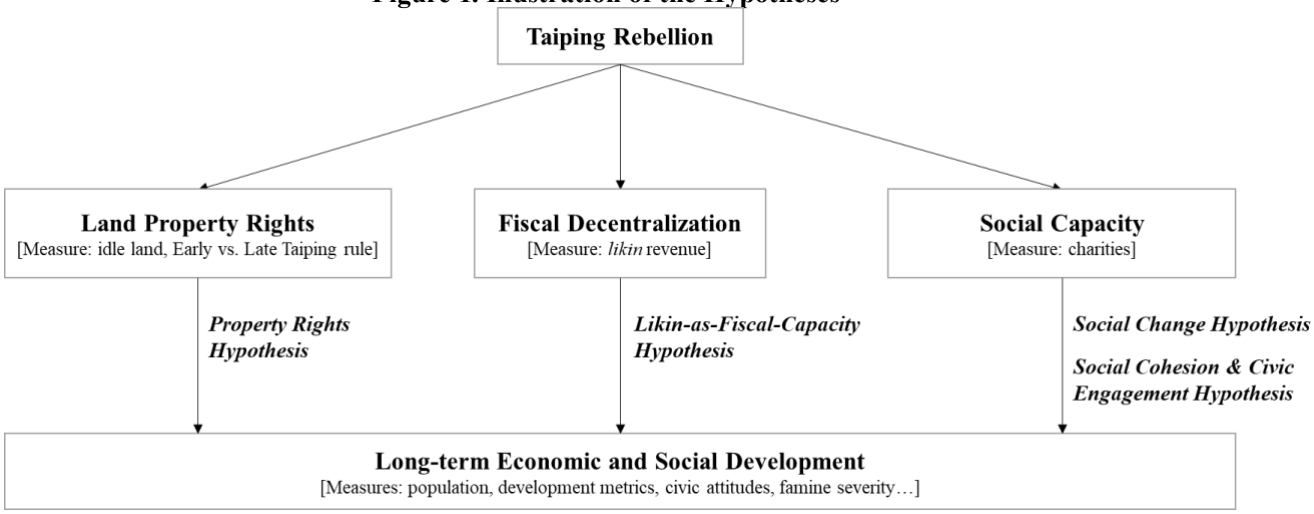
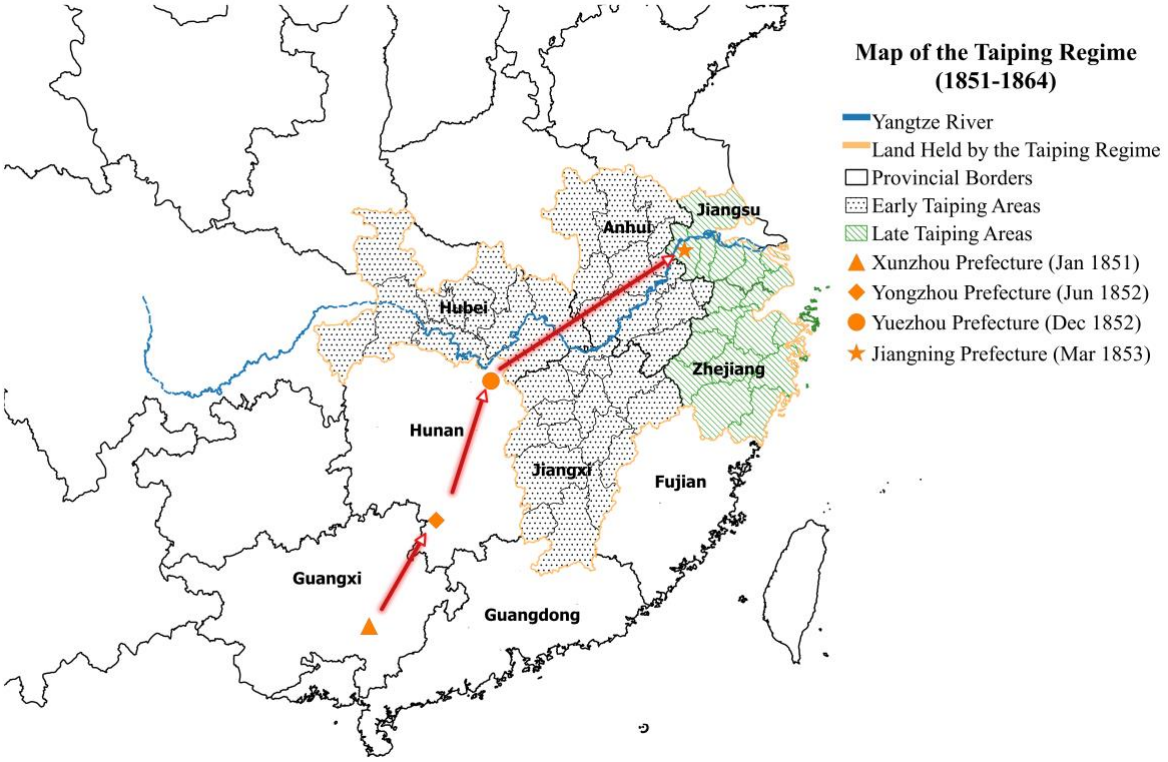
Figures

Figure 1. Illustration of the Hypotheses



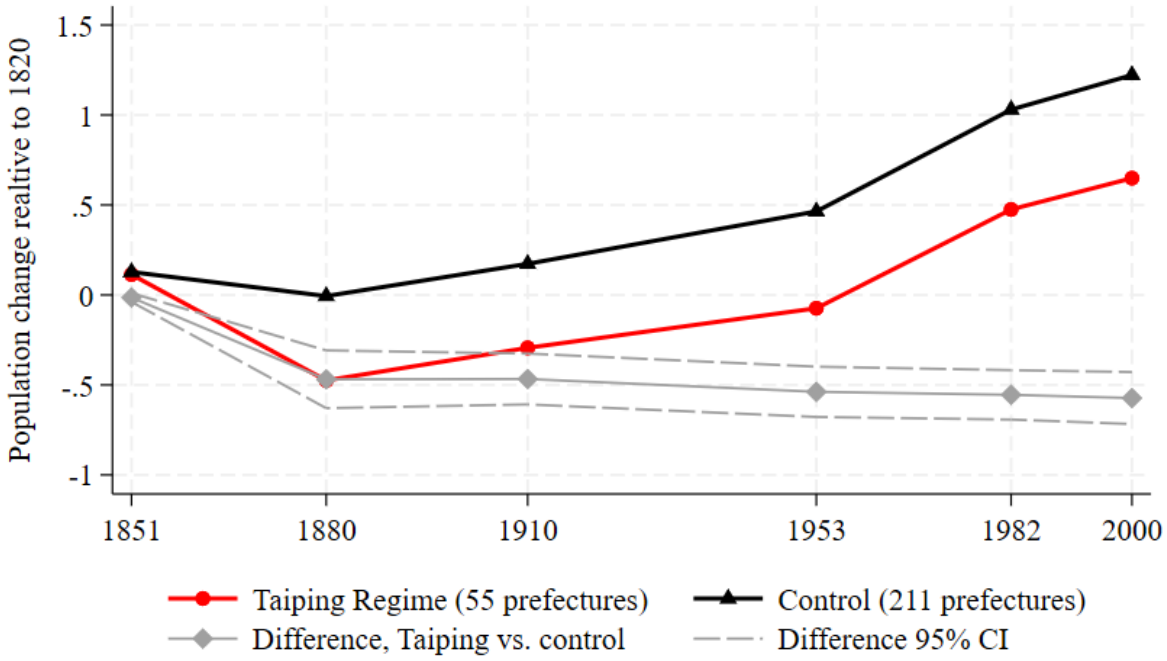
Note: This figure illustrates the hypotheses examined in this paper. See Section II for exposition in detail.

Figure 2. Map of the Taiping Areas (1851–1864)



Note: This figure maps the areas controlled by the Taiping Regime. The Taiping Rebellion broke out in Xunzhou prefecture, Guangxi in January 1851. Then, the Taiping Army marched along the arrow to the northeast, and ultimately captured Jiangning prefecture, Jiangsu in March 1853. In the figure, the shaded areas refer to land occupied by the Taiping regime. We distinguish between Early and Late Taiping areas. The former are the areas that the Taiping regime occupied at the early stage in Jiangxi, Hubei, and Anhui provinces, while the latter are the areas that the Taiping regime occupied at the late stage in Jiangsu and Zhejiang provinces.

Figure 3. Population Changes Over Time for Taiping and Non-Taiping Prefectures



Note: This figure compares population growth between Taiping and control prefectures. Population changes in year t = ln (Population in year t / Population in 1820). The Taiping Regime group covers 55 prefectures that were under Taiping jurisdiction, while the control group covers 211 prefectures that were never under Taiping jurisdiction.

Tables

Table 1. Population Changes for Taiping and Non-Taiping Prefectures

	Control	Treatment					
		Taiping		Early Taiping		Late Taiping	
	Mean	Mean	Difference (2)-(1)	Mean	Difference (4)-(1)	Mean	Difference (6)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Population Growth in 1820-1851	0.128	0.114	-0.014	0.123	-0.004	0.094	-0.034
	(0.092)	(0.079)	(0.014)	(0.042)	(0.015)	(0.125)	(0.023)
Population Growth in 1820-1880	-0.006	-0.475	-0.469***	-0.412	-0.406***	-0.605	-0.598***
	(0.526)	(0.547)	(0.080)	(0.572)	(0.095)	(0.480)	(0.128)
Population Growth in 1820-1910	0.173	-0.294	-0.467***	-0.226	-0.399***	-0.433	-0.606***
	(0.524)	(0.465)	(0.078)	(0.489)	(0.093)	(0.388)	(0.126)
Population Growth in 1820-1953	0.464	-0.074	-0.538***	-0.059	-0.523***	-0.104	-0.569***
	(0.456)	(0.476)	(0.070)	(0.506)	(0.083)	(0.422)	(0.111)
Population Growth in 1820-1982	1.030	0.475	-0.555***	0.532	-0.498***	0.358	-0.672***
	(0.452)	(0.467)	(0.069)	(0.477)	(0.081)	(0.436)	(0.111)
Population Growth in 1820-2000	1.222	0.649	-0.573***	0.704	-0.518***	0.537	-0.685***
	(0.452)	(0.498)	(0.070)	(0.508)	(0.082)	(0.469)	(0.111)
Population in 1820 (Baseline)	4.311	5.231	0.920***	5.051	0.740***	5.602	1.291***
	(1.057)	(0.690)	(0.150)	(0.692)	(0.180)	(0.532)	(0.252)
Longitude	110.154	117.125	6.971***	115.635	5.481***	120.188	10.034***
	(5.415)	(2.954)	(0.759)	(2.408)	(0.907)	(0.814)	(1.280)
Observations	211	55		37		18	

Note: This table compares population growth between the control group (i.e., the non-Taiping prefectures) and the treatment group (i.e., Taiping/Early Taiping/Late Taiping prefectures) since the pre-rebellion year of 1820. Population Growth in year t = ln (Population in year t / Population in 1820). The control group includes 211 prefectures not in the Taiping jurisdiction. The Taiping group includes 55 prefectures under the Taiping rule. The Early Taiping group includes 37 prefectures that the Taiping regime occupied in Anhui, Jiangxi, and Hubei provinces. The Late Taiping group includes 18 prefectures that the Taiping regime occupied in Jiangsu and Zhejiang provinces. Columns (1), (2), (4), and (6) report group means, with standard deviations in parentheses. Columns (3), (5), and (7) report mean differences between the treatment and control groups, with standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 2. Balance Tests for Covariates

	Mean			*t*-test	
Variable	Control	Taiping	% Bias	|*t*|	*p*-value
Distance to Grand Canal (log)	12.965	12.638	7.700	2.090	0.038
Distance to East Coast (log)	12.507	12.360	3.500	0.730	0.466
Chong Dummy	0.582	0.545	13.200	0.540	0.589
Fan Dummy	0.882	0.845	11.500	0.780	0.434
Pi Dummy	0.373	0.264	49.600	1.740	0.083
Nan Dummy	0.764	0.673	30.300	1.500	0.135
Tea prefecture Dummy	0.591	0.536	20.100	0.810	0.417
Silk prefecture Dummy	0.045	0.036	6.400	0.340	0.735
Num. of neighboring provinces	1.127	1.054	8.800	0.590	0.555
Tax per mu in 1820	0.080	0.067	34.100	1.440	0.151
War frequency 1776-1820 per capita	0.081	0.126	-47.300	3.430	0.001
Num. of *jinshi* 1893-1820 per capita	0.003	0.006	-5.600	1.290	0.197

Notes: This table presents balance tests for covariates after implementing the propensity score matching method. The control group includes 110 prefectures, and the Taiping group includes 25 prefectures.

Table 3. Baseline and 2SLS Estimation: Taiping Rebellion and Population

	Dependent variable: log population size							
	(1) FS	(2) FS	(3) FS	(4) FS-HWC	(5) FS w/ *Jinshi*	(6) FS-SAR	(7) PSM	(8) FS-2SLS
	Taiping	Taiping* log(No. of Battles)	Taiping* log(Duration)	Taiping	Taiping	Taiping	Taiping	Taiping
Taiping*Year 1851	-0.004	-0.010	-0.001	-0.004	-0.003	0.015	-0.007	-0.149
	[0.020]	[0.017]	[0.004]	[0.020]	[0.020]	[0.071]	[0.023]	[0.248]
Taiping*Year 1880	-0.454***	-0.394***	-0.113***	-0.434***	-0.450***	-0.205***	-0.355***	-0.818***
	[0.093]	[0.066]	[0.016]	[0.095]	[0.094]	[0.072]	[0.111]	[0.231]
Taiping*Year 1910	-0.438***	-0.369***	-0.103***	-0.416***	-0.435***	-0.187***	-0.341***	-0.849***
	[0.091]	[0.064]	[0.016]	[0.093]	[0.092]	[0.072]	[0.118]	[0.219]
Taiping*Year 1953	-0.513***	-0.430***	-0.113***	-0.497***	-0.513***	-0.225***	-0.375***	-1.189***
	[0.095]	[0.066]	[0.017]	[0.096]	[0.094]	[0.072]	[0.127]	[0.224]
Taiping*Year 1982	-0.443***	-0.384***	-0.100***	-0.425***	-0.444***	-0.181**	-0.316***	-1.080***
	[0.086]	[0.060]	[0.015]	[0.086]	[0.085]	[0.072]	[0.120]	[0.230]
Taiping*Year 2000	-0.428***	-0.388***	-0.099***	-0.415***	-0.428***	-0.161**	-0.303**	-1.200***
	[0.091]	[0.062]	[0.016]	[0.091]	[0.090]	[0.072]	[0.122]	[0.245]
War frequency	0.002	0.005	0.006	0.003	0.004	0.015	-0.017	0.014**
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.071]	[0.013]	[0.006]
Jinshi					0.002			
					[0.001]			
Observations	1862	1862	1862	1820	1862	1862	945	1862
R-squared	0.794	0.799	0.804	0.796	0.795	0.152	0.960	0.772
Number of prefectures	266	266	266	260	266	266	135	266
CD test: population (in logs)	396.468	396.468	396.468	396.468	396.468			
CD test: residuals	11.710	11.706	11.435	11.610	11.690			
rho						2.025***		
						[0.112]		
lambda						2.276***		
						[0.020]		
log likelihood						207.102		
Kleibergen-Paap rk Wald F-stat.								21.226
Control	Y	Y	Y	Y	Y	Y	Y	Y
Cluster at prefecture level	Y	Y	Y	Y	Y	Y	Y	N
Jinshi	N	N	N	N	Y	N	N	N
Prefecture FE, year FE	Y	Y	Y	Y	Y	Y	Y	Y

Note: This table presents the effects of the Taiping Rebellion on population. FS (full sample) is a prefecture-year panel dataset for 266 prefectures in seven years (1820 and six years presented in the table). FS-HWC is a prefecture-year panel for 260 prefectures (excluding 6 prefectures—Wuchang, Anqing, Songjiang, Jiangning, Suzhou, and Hangzhou—which were heavily affected by the fighting in the Taiping Rebellion). PSM is a prefecture-year panel for 135 prefectures, obtained through the propensity score matching method. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). The time-varying variables are the log distances to the Yangtze River, the coastline, and the Grand Canal; the duration as a treaty port; the duration as a concession; the duration as a leased territory; and the frequency of wars since 1776. Time-invariant variables are the number of neighboring provinces, the level of land taxes per unit of land; the total number of palace scholars (*jinshi*) from 1793–1820, indicators for silk- and tea-producing prefectures, and indicators of four post designations classified by the Qing government in 1820. Column (5) additionally controls for the time-varying number of palace scholars (*jinshi*) in a prefecture over the preceding period. All columns are linear regression models estimated using OLS, except column (6), which is a SAR model, and column (8), which uses 2SLS. Only estimation results for the key variables are reported. Standard errors are robust and clustered at the prefecture level; for the 2SLS estimation, the standard errors are robust.

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Testing IV Validity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Pop1820 (log)	Pop1820 (log)	War Frequency	Land tax per mu 1820	No. of *Jinshi* 1793-1820 per million	Chong	Fan	Pi	Nan
Longitude	0.065***	-0.003	0.003	-0.003	-0.021	0.010	-0.005	-0.032***	-0.009
	[0.015]	[0.003]	[0.007]	[0.002]	[0.222]	[0.009]	[0.006]	[0.010]	[0.009]
Observations	266	266	266	266	266	266	266	266	266
R-squared	0.288	0.967	0.077	0.035	0.031	0.039	0.013	0.052	0.006
Number of prefectures	266	266	266	266	266	266	266	266	266
Control	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cluster at prefecture level	Y	Y	Y	Y	Y	Y	Y	Y	Y
Control Pop 1776 (log)	N	Y	N	N	N	N	N	N	N

Note: This table reports the correlations between the instrument, longitude, and pre-rebellion variables. The sample contains 266 prefectures. Only the estimation results of the key variables are presented. The control variables include: the distance to Yangtze River, the distance to the coastline, and the distance to the Grand Canal. Standard errors are robust.
*** p<0.01, ** p<0.05, * p<0.1.

Table 5. Taiping Rebellion and the Share of Idle Land in 1915

Panel A. The distribution of counties in the control, Early, and Late Taiping areas				
	Taiping		Control	Total
	Early Taiping	Late Taiping		
Anhui	49		8	57
Jiangxi	64		14	78
Hubei	38		26	64
Jiangsu		27	31	58
Zhejiang		68	7	75
Total number of counties	151	95	86	332
Panel B. Determinants of the share of idle land in 1915				
	(1)	(2)		(3)
Taiping	2.710**			
	[1.034]			
Early Taiping		3.555***		3.855***
		[1.278]		[1.327]
Late Taiping		1.26		1.692
		[1.437]		[1.493]
Standardized ln(distance to Nanning)				-1.519
				[1.252]
Initial Likin				-1.025
				[0.701]
Observations	332	332		332
R-squared	0.108	0.11		0.079
Control	Y	Y		Y
Province fixed effect	Y	Y		N

Note: This table presents the relationship between the Taiping rule and the share of idle land in 1915. Panel A shows the composition of the county-level dataset. Panel B investigates the determinants of the share of idle land. The sample consists of cross-sectional county-level data from 1915, covering 151 Early Taiping counties, 95 Late Taiping counties, and 86 control counties. The control variables include the distances to the Yangtze River and the coastline, the dummy for being a prefectural capital in 1820, the dummy for being designated as the most important county in 1820, and the dummy for being a trade center in 1915. Only the estimation results of the key variables are presented. Standard errors are robust and clustered at the prefecture level.
*** p<0.01, ** p<0.05, * p<0.1

Table 6. Property Rights: Early Taiping vs. Late Taiping

	Dependent variable: log population size		
	(1)	(2)	(3)
	OLS, FS	SAR, FS	OLS, PSM
Early Taiping*Year 1851	-0.005	0.017	-0.017
	[0.020]	[0.075]	[0.024]
Early Taiping*Year 1880	-0.446***	-0.199***	-0.345***
	[0.100]	[0.075]	[0.122]
Early Taiping*Year 1910	-0.425***	-0.160**	-0.308**
	[0.094]	[0.075]	[0.126]
Early Taiping*Year 1953	-0.556***	-0.256***	-0.428***
	[0.100]	[0.076]	[0.125]
Early Taiping*Year 1982	-0.472***	-0.195***	-0.340***
	[0.091]	[0.076]	[0.120]
Early Taiping*Year 2000	-0.449***	-0.168**	-0.322***
	[0.096]	[0.076]	[0.121]
Late Taiping*Year 1851	0.005	0.008	0.044*
	[0.035]	[0.117]	[0.027]
Late Taiping*Year 1880	-0.500**	-0.230*	-0.385**
	[0.194]	[0.118]	[0.168]
Late Taiping*Year 1910	-0.510***	-0.297**	-0.494***
	[0.163]	[0.118]	[0.170]
Late Taiping*Year 1953	-0.312**	-0.109	-0.021
	[0.142]	[0.118]	[0.216]
Late Taiping*Year 1982	-0.314**	-0.132	-0.120
	[0.142]	[0.118]	[0.194]
Late Taiping*Year 2000	-0.338**	-0.138	-0.141
	[0.151]	[0.118]	[0.208]
Observations	1862	1862	945
R-squared	0.796	0.152	0.843
Number of prefectures	266	266	135
CD test: population (in logs)	396.468		
CD test: residuals	11.279		
rho		2.020***	
		[0.113]	
lambda		2.275***	
		[0.020]	
Log likelihood		210.400	
Control	Y	Y	Y
Cluster at prefecture level	Y	Y	Y
Year fixed effect	Y	Y	Y
Prefecture fixed effect	Y	Y	Y

Note: This table reports the effects of the Early/Taiping rule on population, shedding light on the property rights hypothesis. The full sample (FS) is a prefecture-year panel for 266 prefectures in seven years (1820 and six years presented in the table). The matched sample (PSM) contains 135 prefectures, obtained through propensity score matching. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). The time-varying variables are the log distances to the Yangtze River, the coastline, and the Grand Canal; the duration as a treaty port; the duration as a concession; the duration as a leased territory; and the frequency of wars since 1776. Time-invariant variables are the number of neighboring provinces, the level of land taxes per unit of land; the total number of palace scholars (*jinshi*) from 1793–1820, indicators for silk- and tea-producing prefectures, and indicators of four post designations classified by the Qing government in 1820. Columns (1) and (3) are linear regression models estimated by OLS. Column (2) uses a SAR model. Only the estimation results for the key variables are reported. Standard errors are robust and clustered at the prefecture level.

*** p<0.01, ** p<0.05, * p<0.1

Table 7. Taiping Rebellion and *Likin* Revenue

	Dependent variable: log (1 + avg *likin* per 1000 km^2)			
	(1) FS	(2) FS	(3) PSM	(4) PSM
Taiping*Period 1869-1879	2.500***		2.188***	
	[0.566]		[0.633]	
Taiping*Period 1880-1908	1.752***		1.416***	
	[0.406]		[0.389]	
Taiping*Period 1922-1925	1.297***		1.092***	
	[0.325]		[0.323]	
Early Taiping*Period 1869-1879		2.230*		2.030**
		[0.631]		[0.664]
Early Taiping*Period 1880-1908		1.371**		1.233**
		[0.399]		[0.415]
Early Taiping*Period 1922-1925		1.025*		0.956**
		[0.298]		[0.335]
Late Taiping*Period 1869-1879		3.120**		3.070*
		[0.457]		[0.588]
Late Taiping*Period 1880-1908		2.626**		2.438**
		[0.315]		[0.378]
Late Taiping*Period 1922-1925		1.922**		1.855**
		[0.273]		[0.291]
Observations	1064	1064	540	540
R-squared	0.904	0.904	0.956	0.957
Number of prefectures	266	266	135	135
Cluster at prefecture level	Y	Y	Y	Y
Period fixed effect	Y	Y	Y	Y
Prefecture fixed effect	Y	Y	Y	Y
Log population 1820*Period FE	Y	Y	Y	Y

Note: This table reports the effects of the Taiping Rebellion on *likin* revenue, shedding light on the *likin*-as-fiscal-capacity hypothesis. The full sample (FS) is a prefecture-period panel for 266 prefectures in four time periods (one base pre-period when *likin* is zero and three periods presented in the table). The matched sample (PSM) is a prefecture-period panel for 135 prefectures over the same span. *Likin* revenue is converted into 1887 silver teal. Only the estimation results of the key variables are presented. Standard errors are robust and clustered at the provincial level. P-values are computed by a wild bootstrap-t procedure, following Cameron et al. (2008).
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Taiping Rebellion and Charities

	Dependent variable: log (1 + number of charities)			
	(1)	(2)	(3)	(4)
	FS	FS	PSM	PSM
Taiping*Year 1851	-0.007		0.038	
	[0.068]		[0.095]	
Taiping*Year 1880	0.118		0.170	
	[0.103]		[0.152]	
Taiping*Year 1910	0.135		0.249*	
	[0.110]		[0.132]	
Taiping*Year 1941	0.114		0.238*	
	[0.110]		[0.134]	
Early Taiping*Year 1851		-0.042		0.040
		[0.072]		[0.100]
Early Taiping*Year 1880		0.056		0.134
		[0.108]		[0.152]
Early Taiping*Year 1910		0.051		0.201
		[0.114]		[0.131]
Early Taiping*Year 1941		0.022		0.193
		[0.113]		[0.130]
Late Taiping*Year 1851		0.166*		0.020
		[0.092]		[0.141]
Late Taiping*Year 1880		0.427***		0.425*
		[0.158]		[0.253]
Late Taiping*Year 1910		0.557***		0.581**
		[0.175]		[0.239]
Late Taiping*Year 1941		0.577***		0.594**
		[0.181]		[0.261]
War frequency	0.012	0.011	0.007	0.002
	[0.008]	[0.009]	[0.013]	[0.014]
Observations	1330	1330	675	675
R-squared	0.587	0.598	0.754	0.760
Number of prefectures	266	266	135	135
Control	Y	Y	Y	Y
Cluster at prefecture level	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y
Prefecture fixed effect	Y	Y	Y	Y

Note: This table reports the effects of the Taiping Rebellion on charities, shedding light on the social change hypothesis. The full sample (FS) is a prefecture-year panel for 266 prefectures in four years (1820, 1851, 1880, 1910, and 1941). The matched sample (PSM) is a prefecture-year panel for 135 prefectures over the same span. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). The time-varying variables are the log distances to the Yangtze River, the coastline, and the Grand Canal; the duration as a treaty port; the duration as a concession; the duration as a leased territory; and the frequency of wars since 1776. Time-invariant variables are the number of neighboring provinces, the level of land taxes per unit of land; the total number of palace scholars (*jinshi*) from 1793–1820, indicators for silk- and tea-producing prefectures, and indicators of four post designations classified by the Qing government in 1820. Only the estimation results for the key variables are reported. Standard errors are robust and clustered at the prefecture level.
*** p<0.01, ** p<0.05, * p<0.1

Table 9. Taiping Rebellion and Modern Outcomes

Dependent variable:	Log ag & ind. output per capita (1982) (1)	% Middle school graduates (1982) (2)	% Literate population (1982) (3)	Log avg. years of schooling (2000) (6)	Log GDP per capita (2010) (4)	Log fiscal revenue per capita (2010) (5)
Panel A.						
Taiping	0.243***	0.003	-0.016	0.020	0.035	0.413***
	[0.088]	[0.007]	[0.019]	[0.016]	[0.101]	[0.150]
Ln (Jinshi$_{1793\text{-}1820}$)	0.160***	0.011***	0.031***	0.027***	0.099**	0.176***
	[0.035]	[0.003]	[0.008]	[0.008]	[0.048]	[0.053]
Ln (pre-TP wars)	0.061	-0.000	-0.009	-0.014	-0.118	-0.228*
	[0.107]	[0.008]	[0.020]	[0.023]	[0.103]	[0.131]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.407	0.303	0.277	0.336	0.391	0.433
Panel B.						
Early Taiping	0.130	-0.007	-0.022	0.019	-0.154	0.190
	[0.091]	[0.007]	[0.020]	[0.017]	[0.105]	[0.165]
Late Taiping	0.642***	0.038***	0.006	0.025	0.625***	1.109***
	[0.162]	[0.013]	[0.029]	[0.031]	[0.166]	[0.222]
Ln (Jinshi$_{1793\text{-}1820}$)	0.174***	0.013***	0.031***	0.027***	0.120**	0.201***
	[0.035]	[0.003]	[0.008]	[0.009]	[0.049]	[0.053]
Ln (pre-TP wars)	0.045	-0.002	-0.010	-0.014	-0.148	-0.263*
	[0.113]	[0.008]	[0.020]	[0.023]	[0.098]	[0.137]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.437	0.339	0.279	0.336	0.447	0.479
Panel C.						
Early Taiping	0.062	-0.019**	-0.056***	-0.020	-0.250**	0.171
	[0.087]	[0.008]	[0.020]	[0.016]	[0.103]	[0.162]
Late Taiping	0.486***	0.030**	-0.027	-0.013	0.433***	0.966***
	[0.152]	[0.013]	[0.029]	[0.030]	[0.165]	[0.234]
Ln (Jinshi$_{1793\text{-}1820}$)	0.170***	0.016***	0.039***	0.035***	0.114**	0.174***
	[0.036]	[0.003]	[0.008]	[0.008]	[0.048]	[0.055]
Ln (pre-TP wars)	0.056	-0.004	-0.014	-0.019	-0.137	-0.237*
	[0.109]	[0.007]	[0.018]	[0.019]	[0.095]	[0.129]
Ln (Likin$_{1880}$)	0.029	0.006***	0.017***	0.019***	0.041**	-0.002
	[0.018]	[0.001]	[0.003]	[0.004]	[0.018]	[0.019]
Ln (Charity$_{1880\text{-}1953}$)	0.101**	-0.004	0.000	0.002	0.130***	0.156***
	[0.047]	[0.003]	[0.009]	[0.009]	[0.046]	[0.058]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.468	0.420	0.373	0.447	0.490	0.502

Note: This table reports the effects of the Taiping Rebellion on modern development outcomes. Control variables include the (log) distances to the Yangtze River and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of palace scholars (*jinshi*) from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk producing prefectures, and the number of wars before Taiping rebellion. Only the estimation results for key variables are reported. Standard errors are robust. The standard deviation of ln(likin 1880) is 2.8, and the standard deviation of ln(charity 1880-1953) is 1.4.
*** p<0.01, ** p<0.05, * p<0.1.

Table 10. Taiping Rebellion and Early Industrialization

	Firm Entry, 1858–1937			Production Value, 1933		
	(1)	(2)	(3)	(4)	(5)	(6)
Taiping	0.082			1.175		
	[0.141]			[0.770]		
Early Taiping		-0.181**	-0.200**		-0.505	-0.587
		[0.088]	[0.091]		[0.413]	[0.400]
Late Taiping		0.468*	0.346		3.638**	3.132**
		[0.278]	[0.292]		[1.490]	[1.534]
Ln ($Charity_{1880\text{-}1910}$)			0.236***			0.980***
			[0.058]			[0.280]
Observations	356	356	356	356	356	356
R-squared	0.515	0.533	0.573	0.358	0.387	0.428
SSM investment	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Province fixed effect	Y	Y	Y	Y	Y	Y

Note: This table reports the effects of the Taiping Rebellion on early industrialization. The dependent variable for columns (1) and (2) is the number of new industrial firms between 1858–1937 (plus one and logged). The dependent variable for columns (3) and (4) is the production value in 1933 (plus one and logged). The control variables include the log distances to the Yangtze River and the coastline, the dummy for being a prefectural capital in 1820, the dummy for being designated as the most important county in 1820, the dummy for being a trade center in 1915, and the military investment during the Self-Strengthening Movement (1861–1895; SSM). Only the estimation results of the key variables are presented. Standard errors are robust and clustered at the prefecture level.
*** p<0.01, ** p<0.05, * p<0.1.

Table 11. Taiping Rebellion, Interpersonal Trust, and Civic Engagement

Dependent variable:	(1) Trust in Relatives	(2) Trust in Friends	(3) Trust in Coworkers	(4) Attention to Politics	(5) Engagement in Local Affairs
Panel A: Taiping dummy					
Taiping	0.139***	0.089	0.103*	-0.014	0.002
	[0.047]	[0.054]	[0.053]	[0.027]	[0.028]
Observations	6416	6404	6123	6406	6415
R-squared	0.022	0.025	0.026	0.295	0.045
Panel B: Early vs. Late Taiping					
Early Taiping	0.138***	0.072	0.077	-0.043*	-0.021
	[0.050]	[0.056]	[0.058]	[0.025]	[0.031]
Late Taiping	0.142**	0.142*	0.188***	0.080*	0.079*
	[0.069]	[0.078]	[0.066]	[0.045]	[0.042]
Observations	6416	6404	6123	6406	6415
R-squared	0.022	0.025	0.026	0.297	0.047
Baseline controls	Y	Y	Y	Y	Y
Individual controls	Y	Y	Y	Y	Y
Cultural Revolution	Y	Y	Y	Y	Y

Note: This table reports the effects of the Taiping Rebellion on trust attitudes and civic engagement. All regressions control for log distances to the Yangtze River and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793 through 1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. We also control for the population share of deaths due to violence during the Cultural Revolution. Individual-level covariates include indicators for gender, educational attainment, age, urban residence, employment status, marital status, and membership of the Chinese Communist Party. Robust standard errors clustered at the prefecture level are reported in brackets.

*** p<0.01, ** p<0.05, * p<0.1.

Table 12. Taiping Rebellion and Great Chinese Famine (1959–1961)

	Dependent variable: Famine Control		
	(1)	(2)	(3)
Taiping	0.069***		
	[0.021]		
Early Taiping		0.065**	0.061**
		[0.025]	[0.024]
Late Taiping		0.084**	0.079**
		[0.035]	[0.036]
Political Radicalism (i.e., -PMD)			-0.026
			[0.019]
Ln ($Jinshi_{1793–1820}$)	-0.003	-0.002	-0.005
	[0.011]	[0.011]	[0.010]
Ln (Pre-TP wars)	0.016	0.015	0.022
	[0.031]	[0.032]	[0.033]
Controls	Y	Y	Y
Observations	164	164	164
R-squared	0.258	0.259	0.270

Note: This table reports the effects of the Taiping Rebellion on the severity of the Great Chinese Famine (1959–1961). The dependent variable is "famine control," following Fang et al (2023). It is the ratio of the size of cohorts born during the famine period (1959–1961) to the size of cohorts born during the pre-famine period (1954–1957): a higher value of which means a lower famine severity. All regressions control for the log distances to the Yangtze and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793–1820, dummies for prefecture importance classification by Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. Robust standard errors are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

Appendices (For Online Publication)

A. Additional Results

This section includes additional results that are discussed in the paper.

Table A1. Distribution of Prefectures Across Different Groups

	Taiping Treatment		Controls	Total
	Early Taiping	Late Taiping		
Provinces within Taping jurisdiction	37	18	6	61
Anhui	*13*		*0*	*13*
Jiangxi	*14*		*0*	*14*
Hubei	*10*		*1*	*11*
Jiangsu		*7*	*5*	*12*
Zhejiang		*11*	*0*	*11*
Provinces outside Taiping jurisdiction	0	0	142	*205*
Full Sample	37	18	147	*266*

Note: This table presents the distribution of prefectures across different groups. The control group consists of non-Taiping-jurisdiction prefectures. The treatment group consists of prefectures that were officially within the Taiping regime's jurisdiction. The Early Taiping group consists of prefectures that the Taiping regime captured in Anhui, Jiangxi, and Hubei provinces. The Late Taiping group consists of prefectures that the Taiping regime conquered in Jiangsu and Zhejiang provinces.

Table A2. Variable Definitions and Sources

Variable	Definition and Source
Log (Population)	Log population size of a prefecture (unit: 10,000) in specific years. We use the administrative boundaries of Qing prefectures in 1820. For each Qing prefecture, we estimate its population in different periods from 1953 to 2000 by calculating the sum of the populations of contemporary counties located within the historical prefecture boundaries. If a county is only partially contained within a Qing prefecture, we apportion its population based on the proportion of its area that falls within the prefecture, assuming that population is evenly distributed within the county. Source: China Population Census Data, Cao (2001).
Taiping	Equal to 1 if there was any county in the prefecture under the control of the Taiping regime. Source: Hua (1991).
Early Taiping	Equal to 1 if a prefecture was under the Taiping regime's control and was in Anhui, Jiangxi, or Hubei Provinces, which experienced the early phase of the land policy of the Taiping regime. Source: Bol and Ge (2007), Hua (1991).
Late Taiping	Equal to 1 if a prefecture was under the Taiping regime's control and was in Zhejiang or Jiangsu Provinces, which experienced the late phase of the land policy of the Taiping regime. Source: Bol and Ge (2007), Hua (1991).
Log (No. of Battles)	Number of Battles in a prefecture during Taiping Rebellion (in logs). Source: Hua (1991).
Log (Duration)	Duration (days) of Taiping occupation (in logs). Source: as above.
Log Distance to XXX	Log distance (in meters) from the seat of the prefecture to XXX. XXX could be the Yangtze River, or the coastline, or the Grand Canal. Source: Bol and Ge (2007).
Log Distance to Nanjing	Standardized log distance to Nanjing. Source: Bol and Ge (2007).
Land tax per mu in 1820	The farmland tax in taels of silver per mu for a prefecture in 1820. Source: Liang (1980)
Number of palace graduates, 1793–1820	The number of people received the palace graduate (*jinshi*) title from 1790–1820 per million population in 1776 for each prefecture. Source: Jiang (2007).
Number of palace graduates, time-varying	The number of people received palace graduate (*jinshi*) title in each prefecture between the end of the last period and the start of the current period. For the base year 1820, the measure refers to that between 1793 and 1820. Source: Jiang (2007).
Number of neighboring provinces	Number of neighboring provinces for a prefecture. Source: Bol and Ge (2007).
Tea (silk) prefecture	Equal to 1 if any county in the prefecture is a tea (silk) production area. Source: Wu (1990), Zhu (1992)
Post designations being XXX	Dummy variable equal to 1 if a prefecture's importance label in 1820 included XXX, which could be: "important in transportation (*chong*)", "important in businesses (*fan*)", "difficult to gather taxes (*pi*)", and "high in crimes (*nan*)." Source: Bol and Ge (2007).
Duration of the treaty port status	Duration of being a treaty port before 1949 (in years). Source: Yan (1955).
Duration of the concession status	Duration of being a concession before 1949 (in years). Source: Fei (1991).
Duration of the leased territory status	Duration of being a leased territory before 1949 (in years). Source: Fei (1991).
Frequency of wars since 1776	The number of wars/battles from 1776 to the current year in each prefecture. Source: Li (2007), Chinese Military History Editorial Committee (2003).
Longitude	Longitude of the prefecture seat. Source: Bol and Ge (2007).
Percentage of idle land	Idle lands / (Idle lands + Cultivated Land) in 1915. Source: The Agriculture and Commerce Statistic Table of Republic of China (1915).
Prefecture capital seat	Equal to 1 if the town hall of a prefecture is located in the county. Source: Bol and Ge (2007)
Greatest-importance county	Equal to 1 if the county was classified as the most important in 1820. Source: Bol and Ge (2007).
Trade center	Equal to 1 if the county is a trade center designed by Shina Shobetsu Zenshi (1915). Source: as above.
Likin intensity	The average annual provincial revenue of *likin* in taels of silver per 1000 km^2 during period X (X = 1869–1879, 1880–1908, or 1922–1925). The variable is zero for other periods. Source: Luo (1936); The Second Historical Archives of China (1996).
No. of Charities	Number of charities. Source: Koyama and Xue (2015) and Liang (2001).

Table A2. Variable Definitions and Sources (Cont'd)

Log agricultural-and-industrial output per capita, 1982	Prefectural-level log agricultural-and-industrial output per capita in 1982. Source: 1982 Population Census.
Share of middle school graduates, 1982	Prefectural-level share of middle school graduates in the population in 1982. Source: 1982 Population Census.
Share of literate population, 1982	Prefectural-level literacy rate in 1982. Source: 1982 Population Census.
Log (Schooling 2000)	Prefectural-level log average years of schooling in 2000. Source: 2000 Population Census.
Log (GDP PC 2010)	Log GDP per capita. Source: City Statistical Yearbook, 2011
Log (Fis Rev PC 2010)	Log revenue of local government per capita in 2010. Source: City Statistical Yearbook, 2011
Party Member Density (PMD)	Provincial-level percentage of population who were Chinese Communist Party members as of mid-1956. Source: Yang (1996, Table 8, p. 57).
Political Radicalism	-1*PMD. Source: as above.
Famine Control (Fang et al 2023)	Main measure for famine severity. Defined as $\text{Famine Control}_i = \frac{\text{Size of cohorts born in 1959–61, prefecture } i}{\text{Size of cohorts born in 1954–57, prefecture } i}$. Source: 1990 population census (from IPUMS).
Famine Control (Kasahara and Li 2020)	Alternative measure for famine severity. Used for robustness. Defined as $\text{Famine Control}_i = \frac{\text{Size of cohorts born in 1959–61, prefecture } i}{\text{Size of cohorts born in 1953–65, prefecture } i}$. Source: as above.
Famine Control (Chen and Yang 2015)	Alternative measure for famine severity. Used for robustness. Defined as $\text{Famine Control}_i = \frac{\text{Size of cohorts born in 1959–61, prefecture } i}{\text{Projected size of cohorts born in 1959–61, prefecture } i}$. Source: as above.
Attention to politics	Equal to 1 if an individual reports that they at least occasionally "read books, newspapers, and journals about politics." Source: China General Social Survey in 2010.
Engagement in local affairs	Equal to 1 if an individual reports that they have ever served in local community committees, made suggestions to the committees, participated in petitions, signed joint letters, contacted journalists for community issues, contacted the government for community issues, or participated in protests or demonstrations. Source: as above.
Trust in X	An individual's reported trust level for subject X (= friends, relatives, or coworkers). It is in a 1–5 scale. A higher value means a higher level of trust. Source: as above.
New industrial firms 1858–1937	Number of industrial firms established from 1858–1937 at the county level. Source: Du (1991, 2019); Bo et al. (2023).
Production value 1933	Industrial output in 1933 at the county level. Source: Liu (1937); Bo et al. (2023).
Military investment during the SSM	Qing government's military investment during the self-strengthening movement at the county level. Source: Bo et al. (2023)

Table A3. Summary Statistics

Variable	Level	Observations	Mean	Std. Dev.	Min	Max
Dependent Variables						
Ln population size	Prefecture-year	1862	4.854	1.120	1.194	8.173
Ln agricultural-and-industrial output p.c., 1982	Prefecture	191	6.332	0.556	5.174	8.597
Share of middle school graduates, 1982	Prefecture	191	0.163	0.044	0.055	0.283
Share of literate population, 1982	Prefecture	191	0.652	0.109	0.352	0.843
ln (Sch. 2000)	Prefecture	191	1.988	0.112	1.625	2.234
ln (GDP PC 2010)	Prefecture	185	9.846	0.620	8.421	11.927
ln (Fis Rev 2010)	Prefecture	185	-2.414	0.801	-4.166	0.212
Key Independent Variables						
Taiping	Prefecture	266	0.207	0.406	0.000	1.000
Taiping*log(No. of Battles)	Prefecture	266	0.190	0.349	0.000	1.322
Taiping*log(Duration)	Prefecture	266	0.521	1.274	0.000	5.800
Early Taiping	Prefecture	266	0.139	0.347	0.000	1.000
Late Taiping	Prefecture	266	0.068	0.252	0.000	1.000
Control Variables						
Distance to Yangtze (log)	Prefecture	266	12.484	1.255	5.066	14.038
Distance to Coast (log)	Prefecture	266	12.710	1.152	7.572	14.448
Distance to Grand Canal (log)	Prefecture	266	13.027	1.297	5.582	14.552
Land Tax per Mu in 1820	Prefecture	266	0.080	0.076	0.002	0.664
Number of Jinshi from 1793–1820	Prefecture	266	10.508	17.319	0.000	148.000
Number of Jinshi from 1793–1820 per million population (1776)	Prefecture	266	8.219	9.851	0.000	74.484
Number of Neighboring Provinces	Prefecture	266	1.083	0.825	0.000	3.000
Tea Prefecture Dummy	Prefecture	266	0.500	0.501	0.000	1.000
Silk Prefecture Dummy	Prefecture	266	0.083	0.276	0.000	1.000
Post Designation Chong in 1820	Prefecture	266	0.658	0.475	0.000	1.000
Post Designation Fan in 1820	Prefecture	266	0.917	0.276	0.000	1.000
Post Designation Pi in 1820	Prefecture	266	0.380	0.486	0.000	1.000
Post Designation Nan in 1820	Prefecture	266	0.805	0.397	0.000	1.000
Duration of the Treaty port	Prefecture-year	1862	5.214	17.729	0.000	106.000
Duration of the Concession	Prefecture-year	1862	1.425	9.767	0.000	99.000
Duration of the Leased Territory	Prefecture-year	1862	0.367	3.887	0.000	58.000
Frequency of Wars since 1776	Prefecture-year	1862	2.352	2.940	0.000	17.000
Number of Jinshi in each prefecture by period	Prefecture-year	1862	9.515	23.135	0.000	302.000
Instruments and Others						
Longitude	Prefecture	266	111.596	5.746	95.789	121.543
Other Key Variables in Modern Data						
ln (1 + charities in 1776)	Prefecture	191	0.961	0.951	0.000	3.584
ln (1 + charities in 1820)	Prefecture	191	1.150	1.063	0.000	4.317
ln (1 + charities in 1851)	Prefecture	191	1.337	1.168	0.000	4.997
ln (1 + charities in 1880)	Prefecture	191	1.578	1.348	0.000	5.242
ln (1 + charities in 1910)	Prefecture	191	1.734	1.416	0.000	5.434
ln (1 + charities in 1941)	Prefecture	191	1.760	1.417	0.000	5.707
ln (1 + avg. charities in 1880-1953)	Prefecture	191	1.701	1.391	0.000	5.403
ln (1 + avg *likin* per 1k km^2 from 1869–1879)	Prefecture	191	6.800	2.808	0.000	10.075
ln (1 + avg *likin* per 1k km^2 from 1880–1908)	Prefecture	191	7.714	1.299	6.424	10.193
ln (1 + avg *likin* 1k km^2 from 1922–1925)	Prefecture	191	8.587	1.097	6.084	10.426
Agriculture Data in 1915						
Percentage of idle land	County	332	4.460	9.838	0.000	75.105
Taiping Regime	County	332	0.741	0.439	0.000	1.000
Early Taiping	County	332	0.455	0.499	0.000	1.000
Late Taiping	County	332	0.286	0.453	0.000	1.000
Initial Likin (1880)	County	332	9.155	0.977	0.000	10.075
standardized log distance to Nanjing	County	332	-0.000	0.997	-13.190	1.176
Prefecture Capital Seat	County	332	0.057	0.233	0.000	1.000
Greatest Important County in 1820	County	332	0.386	0.487	0.000	1.000
Trade Center in 1915	County	332	4.460	9.838	0.000	75.105
Party Member Density and Great Famine						
Famine Control (Fang et al. 2023)	Prefecture	164	0.503	0.125	0.234	1.171
Famine Control (Kasahara and Li 2020)	Prefecture	164	0.150	0.031	0.071	0.226
Famine Control (Chen and Yang 2015)	Prefecture	164	0.570	0.145	0.234	0.921
Political Radicalism (-1*PMD)	Province	18	-1.288	0.722	-3.140	-0.710

Table A3. Summary Statistics (Cont'd)

Trust Attitudes and Civic Engagement						
Trust in Relatives	Individual	6424	4.163	0.738	1.000	5.000
Trust in Friends	Individual	6412	3.789	0.793	1.000	5.000
Trust in Coworkers	Individual	6131	3.494	0.790	1.000	5.000
Attention to politics	Individual	6413	0.337	0.473	0.000	1.000
Engagement in local affairs	Individual	6423	0.183	0.387	0.000	1.000
Early Industrialization Data						
Ln (1 + new industrial firms 1858–1937)	County	356	0.685	1.076	0.000	7.491
Ln (1 + production value 1933)	County	356	2.323	5.432	0.000	20.442
Ln (1 + military investment during the SSM)	County	356	0.244	1.902	0.000	18.116

Table A4. 2SLS Estimation with One Endogenous Variable: Taiping Rebellion and Population

Panel A. Second Stage					
	Pop1880 (log)	Pop1910 (log)	Pop1953 (log)	Pop1982 (log)	Pop2000 (log)
Taiping*Post-rebellion	-0.739***	-0.786***	-1.126***	-1.016***	-1.124***
	[0.233]	[0.225]	[0.277]	[0.282]	[0.299]
Anderson-Rubin 95% CI	[-1.227, -0.287]	[-1.259, -0.349]	[-1.818, -0.654]	[-1.719, -0.536]	[-1.894, -0.614]
Observations	798	798	798	798	798
R-squared	0.320	0.226	0.389	0.794	0.836
Panel B. First Stage					
Longitude*Post-rebellion	0.039***	0.039***	0.036***	0.036***	0.036***
	[0.006]	[0.007]	[0.007]	[0.007]	[0.007]
Kleibergen-Paap rk Wald F stat.	37.248	34.246	27.372	27.372	27.372
Shea's partial R-squared	0.153	0.152	0.119	0.119	0.119
Observations	798	798	798	798	798
R-squared	0.667	0.662	0.649	0.649	0.649
Number of prefectures	266	266	266	266	266
Control	Y	Y	Y	Y	Y
Cluster at prefecture level	Y	Y	Y	Y	Y
Year Fixed Effect	Y	Y	Y	Y	Y
Prefecture Fixed Effect	Y	Y	Y	Y	Y

Note: This table presents the effects of the Taiping Rebellion on population using an instrumental variable strategy. Taiping dummy*Post rebellion is instrumented by Longitude*Post-rebellion. The sample for each column is a prefecture-year panel for 266 prefectures and three time periods, i.e., 1820, 1851, and one post-rebellion year (1880, 1910, 1953, 1982, or 2000). Only the estimation results of the key variables are presented. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). The time-varying variables are the log distances to the Yangtze River, the coastline, and the Grand Canal; the duration as a treaty port; the duration as a concession; the duration as a leased territory; and the frequency of wars since 1776. Time-invariant variables are the number of neighboring provinces, the level of land taxes per unit of land; the total number of palace scholars (*jinshi*) from 1793–1820, indicators for silk- and tea-producing prefectures, and indicators of four post designations classified by the Qing government in 1820. Panel A presents the second stage results estimated by 2SLS. Panel B presents the first stage results estimated by OLS. Standard errors are robust and clustered at the prefecture level.

*** p<0.01, ** p<0.05, * p<0.1.

Table A5. Taiping Rebellion, Likin, Charities and Modern Outcomes: SAR Model

Dependent variable:	Log ag & ind. output per capita (1982) (1)	% Middle school graduates (1982) (2)	% Literate population (1982) (3)	Log avg. years of schooling (2000) (4)	Log GDP per capita (2010) (5)	Log fiscal revenue per capita (2010) (6)
Panel A.						
Taiping	0.246**	-0.001	-0.005	-0.005	-0.162	0.279
	[0.108]	[0.010]	[0.020]	[0.024]	[0.151]	[0.177]
Ln (Jinshi$_{1793\text{-}1820}$)	0.159***	0.011***	0.029***	0.023***	0.078**	0.105**
	[0.036]	[0.003]	[0.006]	[0.007]	[0.037]	[0.047]
Ln (pre-TP wars)	0.067	0.004	0.018	-0.023	-0.064	-0.144
	[0.106]	[0.008]	[0.017]	[0.022]	[0.113]	[0.138]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
Log likelihood	-107.990	398.079	234.708	194.808	-112.051	-149.768
Panel B.						
Early Taiping	0.126	-0.005	-0.023	-0.010	-0.244	0.229
	[0.112]	[0.010]	[0.023]	[0.026]	[0.149]	[0.163]
Late Taiping	0.643***	0.047***	0.036	0.015	0.394*	1.010***
	[0.164]	[0.016]	[0.034]	[0.038]	[0.233]	[0.240]
Ln (Jinshi$_{1793\text{-}1820}$)	0.172***	0.012***	0.029***	0.023***	0.090**	0.183***
	[0.035]	[0.003]	[0.006]	[0.007]	[0.037]	[0.049]
Ln (pre-TP wars)	0.049	-0.000	0.010	-0.024	-0.094	-0.224
	[0.104]	[0.008]	[0.017]	[0.022]	[0.111]	[0.143]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
Log likelihood	-103.227	398.507	232.124	195.036	-107.534	-157.012
Panel C.						
Early Taiping	0.077	-0.009	-0.033	-0.033	-0.229	0.202
	[0.112]	[0.010]	[0.023]	[0.023]	[0.145]	[0.166]
Late Taiping	0.499***	0.038**	-0.049	-0.020	0.286	0.819***
	[0.167]	[0.017]	[0.033]	[0.034]	[0.235]	[0.245]
Ln (Jinshi$_{1793\text{-}1820}$)	0.167***	0.013***	0.027***	0.032***	0.065*	0.144***
	[0.036]	[0.003]	[0.006]	[0.007]	[0.037]	[0.048]
Ln (pre-TP wars)	0.064	0.002	0.017	-0.021	-0.100	-0.194
	[0.101]	[0.007]	[0.016]	[0.021]	[0.106]	[0.138]
Ln (Likin$_{1880}$)	0.030*	0.005***	0.009*	0.018***	0.028	-0.000
	[0.016]	[0.002]	[0.004]	[0.003]	[0.022]	[0.023]
Ln (Charity$_{1880\text{-}1941}$)	0.106***	0.004	0.019***	0.002	0.150***	0.159***
	[0.038]	[0.003]	[0.007]	[0.008]	[0.042]	[0.053]
Controls	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
Log likelihood	-97.596	409.737	242.168	205.903	-99.250	-152.146

Note: This table reports the effects of the Taiping Rebellion on modern development outcomes, using the spatial autoregressive (SAR) model that allows for spatial interactions. Control variables include the (log) distances to the Yangtze River and to the coastline, log population in 1820, log land tax rate per mu in 1820, log number of palace scholars (*jinshi*) from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk producing prefectures, and the number of wars before Taiping rebellion. Only the estimation results for key variables are reported. Standard errors are robust. The standard deviation of ln(likin 1880) is 2.8, and the standard deviation of ln(charity 1880-1953) is 1.4.

*** p<0.01, ** p<0.05, * p<0.1.

Table A6. Taiping Rebellion, Likin, Charities and Modern Outcomes: PSM Results

Dependent variable:	Log ag & ind. output per capita (1982) (1)	% Middle school graduates (1982) (2)	% Literate population (1982) (3)	Log avg. years of schooling (2000) (4)	Log GDP per capita (2010) (5)	Log fiscal revenue per capita (2010) (6)
Panel A.						
Taiping	0.188**	-0.010*	-0.009	0.000	-0.047	0.370***
	[0.083]	[0.006]	[0.023]	[0.018]	[0.082]	[0.135]
Ln (Jinshi$_{1793\text{-}1820}$)	0.098**	0.004	0.019*	0.010	-0.013	0.083
	[0.048]	[0.003]	[0.010]	[0.010]	[0.055]	[0.071]
Ln (pre-TP wars)	0.126	-0.013*	-0.009	-0.002	-0.223***	-0.117
	[0.103]	[0.008]	[0.021]	[0.021]	[0.084]	[0.130]
Controls	Y	Y	Y	Y	Y	Y
Observations	111	111	111	111	108	108
R-squared	0.562	0.438	0.340	0.387	0.492	0.387
Panel B.						
Early Taiping	0.131	-0.017***	-0.020	-0.004	-0.088	0.331**
	[0.084]	[0.006]	[0.023]	[0.018]	[0.086]	[0.139]
Late Taiping	0.868*	0.065**	0.119	0.045	0.420***	0.808***
	[0.451]	[0.027]	[0.077]	[0.083]	[0.141]	[0.269]
Ln (Jinshi$_{1793\text{-}1820}$)	0.125***	0.007**	0.024**	0.012	0.002	0.097
	[0.047]	[0.003]	[0.010]	[0.010]	[0.058]	[0.074]
Ln (pre-TP wars)	0.152	-0.010	-0.004	-0.000	-0.200**	-0.095
	[0.112]	[0.007]	[0.022]	[0.023]	[0.082]	[0.135]
Controls	Y	Y	Y	Y	Y	Y
Observations	111	111	111	111	108	108
R-squared	0.590	0.512	0.367	0.391	0.505	0.394
Panel C.						
Early Taiping	0.099	-0.022***	-0.058**	-0.031	-0.123	0.373**
	[0.099]	[0.008]	[0.023]	[0.021]	[0.093]	[0.148]
Late Taiping	0.619	0.065**	0.079	0.036	0.198	0.622**
	[0.426]	[0.027]	[0.069]	[0.077]	[0.187]	[0.304]
Ln (Jinshi$_{1793\text{-}1820}$)	0.094*	0.008**	0.027***	0.018*	-0.031	0.056
	[0.048]	[0.004]	[0.010]	[0.010]	[0.057]	[0.077]
Ln (pre-TP wars)	0.178	-0.012	-0.007	-0.005	-0.168*	-0.060
	[0.109]	[0.008]	[0.022]	[0.023]	[0.087]	[0.136]
Ln (Likin$_{1880}$)	-0.010	0.003*	0.016***	0.014**	-0.012	-0.047
	[0.026]	[0.002]	[0.005]	[0.007]	[0.024]	[0.032]
Ln (Charity$_{1880\text{-}1941}$)	0.111**	-0.002	0.007	-0.005	0.120**	0.110
	[0.047]	[0.003]	[0.011]	[0.009]	[0.049]	[0.073]
Controls	Y	Y	Y	Y	Y	Y
Observations	111	111	111	111	108	108
R-squared	0.614	0.529	0.426	0.438	0.542	0.420

Note: This table reports the effects of the Taiping Rebellion on modern development outcomes. The sample is obtained by propensity score matching (PSM). Control variables include the (log) distances to the Yangtze River and to the coastline, log population in 1820, log land tax rate per mu in 1820, log number of palace scholars (*jinshi*) from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk producing prefectures, and the number of wars before Taiping rebellion. Only the estimation results for key variables are reported. Standard errors are robust. In the full sample, the standard deviation of ln(*likin* 1880) is 2.8, and the standard deviation of ln(charity 1880-1953) is 1.4.

*** p<0.01, ** p<0.05, * p<0.1.

Table A7. Taiping Rebellion and Firm Entry by Period

	(1)	(2)
	Firm entry, 1858–1895	Firm entry, 1896-1937
Early Taiping	-0.005	-0.178*
	[0.018]	[0.089]
Late Taiping	-0.042	0.495*
	[0.048]	[0.278]
SSM investment	Y	Y
Controls	Y	Y
Province fixed effect	Y	Y
Observations	356	356
R-squared	0.410	0.535

Note: This table examines the effects of the Taiping Rebellion on firm entry by period. The dependent variable is the number of new industrial firms before or after 1895 (plus one and logged). The control variables include the distances to the Yangtze River and the coastline, the dummy for being a prefectural capital in 1820, the dummy for being designated as the most important county in 1820, the dummy for being a trade center in 1915, and the military investment during the Self-Strengthening Movement (1861–1895; SSM). Only the estimation results of the key variables are presented. Standard errors are robust and clustered at the prefecture level.
*** p<0.01, ** p<0.05, * p<0.1.

Table A8. Taiping Rebellion and Great Chinese Famine (1959–1961): Alternative Measures

	DV: Famine Control (Chen and Yang 2015)			DV: Famine Control (Kasahara and Li 2020)		
	(1)	(2)	(3)	(5)	(6)	(7)
Taiping	0.085***			0.019***		
	[0.027]			[0.006]		
Early Taiping		0.074**	0.065**		0.017**	0.015**
		[0.032]	[0.029]		[0.007]	[0.007]
Late Taiping		0.121***	0.109***		0.027***	0.024***
		[0.041]	[0.041]		[0.009]	[0.009]
Radicalism (-PMD)			-0.067***			-0.013***
			[0.019]			[0.004]
Ln ($Jinshi_{1820}$)	0.009	0.010	0.002	0.001	0.001	-0.000
	[0.010]	[0.010]	[0.010]	[0.002]	[0.002]	[0.002]
Ln (Pre-TP wars)	0.035	0.033	0.051	0.008	0.008	0.011
	[0.033]	[0.033]	[0.033]	[0.007]	[0.007]	[0.007]
Controls	Y	Y	Y	Y	Y	Y
Observations	164	164	164	164	164	164
R-squared	0.315	0.319	0.376	0.307	0.311	0.356

Note: This table examines the effects of the Taiping Rebellion on the severity of the Great Chinese Famine, using alternative measures. The dependent variable is "famine control," following Chen and Yang (2015) and Kasahara and Li (2020)—a higher value of which means a lower famine severity. All regressions control for log distances to the Yangtze and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. Only the estimation results for key variables are reported. Robust standard errors are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

Table A9. Taiping Rebellion and Great Chinese Famine (1959–1961): SAR and PSM Results

	DV: Famine Control SAR			DV: Famine Control PSM		
	(1)	(2)	(3)	(5)	(6)	(7)
Taiping	0.069**			0.068**		
	[0.034]			[0.031]		
Early Taiping		0.057	0.053		0.062*	0.065**
		[0.035]	[0.035]		[0.034]	[0.029]
Late Taiping		0.139**	0.137**		0.122***	0.125***
		[0.054]	[0.056]		[0.037]	[0.040]
Radicalism (-PMD)			-0.038*			-0.055**
			[0.020]			[0.024]
Ln (Jinshi$_{1820}$)	-0.009	-0.008	-0.013	-0.002	-0.001	-0.003
	[0.009]	[0.009]	[0.009]	[0.012]	[0.012]	[0.011]
Ln (Pre-TP wars)	-0.009	-0.014	-0.013	-0.006	-0.008	0.015
	[0.028]	[0.028]	[0.027]	[0.029]	[0.030]	[0.031]
Controls	Y	Y	Y	Y	Y	Y
Observations	164	164	164	100	100	100
Log likelihood	143.004	144.398	145.780			
R-squared				0.409	0.412	0.461

Note: This table examines the effects of the Taiping Rebellion on the severity of the Great Chinese Famine. Columns (1)–(3) present results using the spatial autoregressive (SAR) model. Columns (5)–(7) present results using propensity score matching. The dependent variable is "famine control," following Fang et al (2023), a higher value of which means a lower famine severity. All regressions control for log distances to the Yangtze and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. Only the estimation results for key variables are reported. Robust standard errors are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

B. Robustness: Controlling for Other Historical Events

This section shows that our results are robust to controlling for other historical events. Below, we briefly introduce the events considered and the measurements employed.

(1) Guangxu Drought.[41] From 1876–1879, during Guangxu Emperor's reign, a severe drought hit northern China. It induced crop failures and subsequent widespread starvation, killing 9.5–13 million people. Based on Cao (2001), we create a dummy variable that indicates a prefecture's exposure to the drought.

(2) Hui Revolt.[42] This refers to the uprising by various Chinese Muslims, mostly Hui people, in western China, between 1862 and 1877. The uprising was eventually suppressed by Qing forces led by Zuo Zongtang. Based on Cao (2001), we create a dummy variable that indicates each prefecture's exposure to the revolt.

(3) Nian Rebellion.[43] The Nian Rebellion was an insurrection against the Qing dynasty in northern China from 1851 to 1868. We code the number of battles against the Nian rebels at the 1820 Qing prefecture level, based upon Chinese Military History Editorial Committee (2003) and Li (2007).

(4) Wars in the ROC. The Republic of China (ROC) witnessed continuous internal conflicts between different forces. Drawing upon data from the Chinese Military History Editorial Committee (2003), we compile the number of battles experienced by each prefecture between 1912 and 1937, prior to the Japanese invasion. The variable captures the wars between warlords and the first phase of wars between the KMT (the ruling party of China from 1927–1949) and the CCP.

(5) Sino-Japanese War. Using data from the Chinese Military History Editorial Committee (2003), we compile the number of battles experienced by each prefecture during the Sino-Japanese War (1937–1945).

(6) Chinese Civil War. Shortly after the Sino-Japanese War, a civil war erupted between the KMT and the CCP. Using data from the Chinese Military History Editorial Committee (2003), we compile the number of battles experienced by each prefecture during the Chinese Civil War (1937–1945).

(7) Missionary activities. Missionary activities may have influenced the establishment of charity organizations, possibly through competition for authority in public space that spurred local elites to react. Missionary activities may have facilitated knowledge transmission that would support development (Bai and Kung 2015). We obtain a variable on the size of missionary activities at the prefecture level as of 1865 from Mattingly and Chen (2022).

(8) Cultural Revolution. The Cultural Revolution from 1966–1976 featured a turbulent decade in China's modern history. The mass was mobilized to purge "class enemies," leading to severe

[41] See https://en.wikipedia.org/wiki/Northern_Chinese_Famine_of_1876%E2%80%931879.
[42] See https://en.wikipedia.org/wiki/Dungan_Revolt_(1862%E2%80%931877).
[43] See https://en.wikipedia.org/wiki/Nian_Rebellion.

political violence and disruptions of social and economic life. To measure the local influence of the Cultural Revolution, we use data from Walder (2014) to calculate each prefecture's deaths attributed to political violence relative to its population, following the existing literature (Bai and Wu 2023; Wang 2021).

In panel regressions, we add the interaction terms of the above variables with year/period dummies. In cross-sectional regressions, we control for the above variables. The results are summarized as follows.

- Table B1 examines the robustness of results for population, *likin*, and charities. We control for variables (1)–(7), since the Cultural Revolution is not relevant.
- Table B2 examines the robustness of results for long-term development. We consider variables (1)–(8).
- Table B3 examines the robustness of results for modern social cohesion and civic engagement. We consider variables (1)–(8).
- Table B4 examines the robustness of the results for famine severity. We consider variables (1)–(7). Again, the Cultural Revolution is not relevant to the outcome examined.

Table B1. Taiping Rebellion and Population, Likin, and Charities: Controlling for Other Historical Events

Control (×year dummies) =	(1) Baseline	(2) Guangxu Drought	(3) Hui Revolts	(4) Nian Rebellion Battles	(5) ROC Battles	(6) Sino-Japanese War Battles	(7) Chinese Civil War Battles	(8) Missionaries	(9) All Variables
Panel A: log population size									
Taiping*Year 1851	-0.004	-0.005	-0.003	-0.004	-0.006	-0.004	-0.004	-0.003	-0.006
	[0.020]	[0.020]	[0.020]	[0.020]	[0.021]	[0.020]	[0.020]	[0.020]	[0.020]
Taiping*Year 1880	-0.454***	-0.463***	-0.465***	-0.453***	-0.435***	-0.453***	-0.435***	-0.453***	-0.428***
	[0.093]	[0.088]	[0.085]	[0.093]	[0.099]	[0.095]	[0.094]	[0.094]	[0.088]
Taiping*Year 1910	-0.438***	-0.445***	-0.449***	-0.437***	-0.415***	-0.436***	-0.420***	-0.437***	-0.406***
	[0.091]	[0.088]	[0.085]	[0.091]	[0.097]	[0.092]	[0.092]	[0.092]	[0.089]
Taiping*Year 1953	-0.513***	-0.517***	-0.528***	-0.511***	-0.496***	-0.510***	-0.476***	-0.512***	-0.473***
	[0.095]	[0.093]	[0.093]	[0.094]	[0.097]	[0.095]	[0.095]	[0.095]	[0.093]
Taiping*Year 1982	-0.443***	-0.446***	-0.458***	-0.442***	-0.427***	-0.440***	-0.407***	-0.442***	-0.403***
	[0.086]	[0.085]	[0.085]	[0.086]	[0.088]	[0.086]	[0.087]	[0.087]	[0.084]
Taiping*Year 2000	-0.428***	-0.431***	-0.443***	-0.427***	-0.415***	-0.426***	-0.390***	-0.427***	-0.388***
	[0.091]	[0.089]	[0.089]	[0.090]	[0.093]	[0.091]	[0.091]	[0.091]	[0.088]
Observations	1862	1862	1862	1862	1862	1862	1862	1862	1862
R squared	0.794	0.803	0.822	0.794	0.795	0.794	0.797	0.795	0.831
Panel B: log population size, Early vs. Late Taiping									
Early Taiping*Year 1851	-0.005	-0.006	-0.005	-0.005	-0.009	-0.006	-0.007	-0.005	-0.011
	[0.020]	[0.020]	[0.020]	[0.020]	[0.021]	[0.020]	[0.020]	[0.020]	[0.021]
Early Taiping*Year 1880	-0.446***	-0.459***	-0.488***	-0.446***	-0.420***	-0.446***	-0.431***	-0.446***	-0.454***
	[0.100]	[0.095]	[0.091]	[0.099]	[0.108]	[0.101]	[0.100]	[0.100]	[0.097]
Early Taiping*Year 1910	-0.425***	-0.435***	-0.464***	-0.424***	-0.394***	-0.422***	-0.410***	-0.424***	-0.420***
	[0.094]	[0.091]	[0.088]	[0.094]	[0.103]	[0.095]	[0.095]	[0.094]	[0.094]
Early Taiping*Year 1953	-0.556***	-0.562***	-0.592***	-0.555***	-0.538***	-0.554***	-0.520***	-0.556***	-0.541***
	[0.100]	[0.099]	[0.098]	[0.100]	[0.104]	[0.101]	[0.101]	[0.100]	[0.099]
Early Taiping*Year 1982	-0.472***	-0.477***	-0.506***	-0.472***	-0.453***	-0.470***	-0.436***	-0.471***	-0.452***
	[0.091]	[0.090]	[0.090]	[0.091]	[0.094]	[0.091]	[0.092]	[0.091]	[0.089]
Early Taiping*Year 2000	-0.449***	-0.453***	-0.481***	-0.449***	-0.432***	-0.448***	-0.412***	-0.448***	-0.429***
	[0.096]	[0.095]	[0.094]	[0.096]	[0.100]	[0.096]	[0.097]	[0.096]	[0.094]
Late Taiping*Year 1851	0.005	0.005	0.010	0.004	0.004	0.005	0.007	0.005	0.011
	[0.035]	[0.035]	[0.036]	[0.035]	[0.036]	[0.035]	[0.035]	[0.035]	[0.036]
Late Taiping*Year 1880	-0.500**	-0.490***	-0.359**	-0.495**	-0.502**	-0.490**	-0.464**	-0.500**	-0.296*
	[0.194]	[0.187]	[0.178]	[0.194]	[0.195]	[0.196]	[0.192]	[0.196]	[0.171]
Late Taiping*Year 1910	-0.510***	-0.502***	-0.379**	-0.508***	-0.511***	-0.504***	-0.478***	-0.509***	-0.326**
	[0.163]	[0.156]	[0.152]	[0.163]	[0.164]	[0.164]	[0.161]	[0.166]	[0.144]
Late Taiping*Year 1953	-0.312**	-0.306**	-0.223	-0.307**	-0.313**	-0.303**	-0.275**	-0.309**	-0.164
	[0.142]	[0.140]	[0.142]	[0.141]	[0.143]	[0.144]	[0.137]	[0.147]	[0.136]
Late Taiping*Year 1982	-0.314**	-0.309**	-0.233	-0.308**	-0.315**	-0.306**	-0.277**	-0.310**	-0.173
	[0.142]	[0.140]	[0.143]	[0.141]	[0.143]	[0.144]	[0.138]	[0.148]	[0.139]
Late Taiping*Year 2000	-0.338**	-0.333**	-0.262*	-0.330**	-0.339**	-0.328**	-0.298**	-0.334**	-0.197
	[0.151]	[0.151]	[0.152]	[0.150]	[0.152]	[0.153]	[0.147]	[0.157]	[0.151]
Observations	1862	1862	1862	1862	1862	1862	1862	1862	1862
R squared	0.796	0.804	0.823	0.796	0.796	0.796	0.798	0.797	0.833
Panel C: log (1 + *likin* per 1000 km^2)									
Early Taiping*Period 1869-1879	2.230*	2.386*	2.143*	2.234*	2.069*	2.247*	2.403*	2.215*	2.236*
	[0.631]	[0.815]	[0.651]	[0.638]	[0.567]	[0.636]	[0.781]	[0.620]	[0.841]
Early Taiping*Period 1880-1908	1.371**	1.267**	1.326**	1.369**	1.287**	1.366**	1.313**	1.364**	1.131*
	[0.399]	[0.443]	[0.432]	[0.403]	[0.368]	[0.407]	[0.422]	[0.393]	[0.432]
Early Taiping*Period 1922-1925	1.025*	1.158*	0.974*	1.030*	1.044*	1.042*	1.088*	1.020*	1.127*
	[0.298]	[0.352]	[0.340]	[0.300]	[0.322]	[0.291]	[0.330]	[0.296]	[0.410]
Late Taiping*Period 1869-1879	3.120**	3.276**	3.031**	3.141**	3.331**	3.189**	3.186**	3.105**	3.392**
	[0.457]	[0.637]	[0.501]	[0.496]	[0.541]	[0.531]	[0.515]	[0.470]	[0.747]
Late Taiping*Period 1880-1908	2.626**	2.521**	2.580**	2.616**	2.737**	2.605**	2.604**	2.619**	2.604**
	[0.315]	[0.366]	[0.357]	[0.326]	[0.325]	[0.330]	[0.320]	[0.315]	[0.385]
Late Taiping*Period 1922-1925	1.922**	2.055**	1.869**	1.946**	1.897**	1.992**	1.946**	1.917**	2.014**
	[0.273]	[0.331]	[0.314]	[0.298]	[0.257]	[0.304]	[0.285]	[0.273]	[0.359]
Observations	1064	1064	1064	1064	1064	1064	1064	1064	1064
R squared	0.904	0.907	0.905	0.904	0.905	0.905	0.906	0.905	0.910
Panel D: log (1 + cumulative charities)									
Early Taiping*Year 1851	-0.042	-0.045	-0.043	-0.044	-0.078	-0.038	-0.045	-0.043	-0.094
	[0.072]	[0.071]	[0.072]	[0.071]	[0.070]	[0.071]	[0.071]	[0.072]	[0.068]
Early Taiping*Year 1880	0.056	0.051	0.056	0.054	0.008	0.048	0.057	0.055	-0.007
	[0.108]	[0.108]	[0.108]	[0.109]	[0.111]	[0.107]	[0.109]	[0.108]	[0.108]
Early Taiping*Year 1910	0.051	0.045	0.051	0.050	-0.007	0.049	0.053	0.050	-0.017
	[0.114]	[0.112]	[0.114]	[0.114]	[0.119]	[0.113]	[0.114]	[0.113]	[0.116]
Early Taiping*Year 1941	0.022	0.016	0.022	0.024	-0.012	0.019	0.025	0.022	-0.022
	[0.113]	[0.112]	[0.114]	[0.113]	[0.119]	[0.113]	[0.113]	[0.112]	[0.115]
Late Taiping*Year 1851	0.166*	0.167*	0.168*	0.170*	0.160*	0.161*	0.160*	0.164*	0.159
	[0.092]	[0.092]	[0.094]	[0.093]	[0.092]	[0.092]	[0.093]	[0.093]	[0.097]
Late Taiping*Year 1880	0.427***	0.428***	0.427***	0.441***	0.422***	0.416***	0.430***	0.425***	0.444***
	[0.158]	[0.157]	[0.160]	[0.158]	[0.157]	[0.160]	[0.157]	[0.156]	[0.156]
Late Taiping*Year 1910	0.557***	0.559***	0.557***	0.567***	0.550***	0.539***	0.561***	0.554***	0.559***
	[0.175]	[0.174]	[0.178]	[0.176]	[0.173]	[0.176]	[0.175]	[0.172]	[0.170]
Late Taiping*Year 1941	0.577***	0.579***	0.579***	0.585***	0.573***	0.555***	0.579***	0.573***	0.578***
	[0.181]	[0.180]	[0.184]	[0.181]	[0.180]	[0.180]	[0.181]	[0.178]	[0.174]
Observations	1330	1330	1330	1330	1330	1330	1330	1330	1330
R squared	0.598	0.602	0.598	0.599	0.602	0.600	0.599	0.600	0.614

Notes: This table examines the robustness of the main results for population, *likin*, and charities when controlling for variables on other historical events. Column (1) presents the baseline results that we report in the main text. In Columns (2)–(8), we sequentially add one control variable at a time, each interacted with year indicators: an indicator for Guangxu drought, an indicator for Hui revolts, the number of battles during several episodes (the Nian Rebellion, the ROC 1912–1937, the Sino-Japanese War, and the Chinese Civil War), and the number missionary activities in the 1860s. In the last column, we control for all variables. Only the estimation results for the key variables are reported. Standard errors are clustered at the prefecture level for Panels A, C, and D and at the provincial level for Panel B. For Panel B, statistical inference is performed following the wild bootstrap-*t* procedure recommend by Cameron et al. (2008).

*** p<0.01, ** p<0.05, * p<0.1.

Table B2. Taiping Rebellion and Modern Outcomes: Controlling for Other Historical Events

Dependent variable:	Log ag & ind. output per capita (1982) (1)	% Middle school graduates (1982) (2)	% Literate population (1982) (3)	Log avg. years of schooling (2000) (4)	Log GDP per capita (2010) (5)	Log fiscal revenue per capita (2010) (6)
Panel A.						
Taiping	0.269***	0.006	-0.013	0.018	0.050	0.412***
	[0.090]	[0.007]	[0.018]	[0.015]	[0.103]	[0.157]
Ln (Jinshi$_{1793\text{-}1820}$)	0.160***	0.008***	0.021***	0.015*	0.083	0.171***
	[0.037]	[0.003]	[0.008]	[0.008]	[0.052]	[0.057]
Ln (pre-TP wars)	0.042	-0.005	-0.007	-0.020	-0.156	-0.251
	[0.109]	[0.007]	[0.018]	[0.021]	[0.106]	[0.157]
Controls	Y	Y	Y	Y	Y	Y
Other historical events	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.471	0.488	0.442	0.502	0.440	0.455
Panel B.						
Early Taiping	0.147	-0.005	-0.023	0.013	-0.145	0.171
	[0.094]	[0.007]	[0.019]	[0.017]	[0.108]	[0.176]
Late Taiping	0.654***	0.039***	0.019	0.033	0.607***	1.100***
	[0.168]	[0.013]	[0.028]	[0.028]	[0.166]	[0.219]
Ln (Jinshi$_{1793\text{-}1820}$)	0.172***	0.009***	0.022***	0.016*	0.099*	0.191***
	[0.037]	[0.003]	[0.008]	[0.008]	[0.053]	[0.057]
Ln (pre-TP wars)	0.034	-0.006	-0.008	-0.020	-0.175*	-0.275*
	[0.114]	[0.007]	[0.018]	[0.021]	[0.103]	[0.160]
Controls	Y	Y	Y	Y	Y	Y
Other historical events	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.499	0.521	0.447	0.503	0.489	0.499
Panel C.						
Early Taiping	0.101	-0.014**	-0.050**	-0.017	-0.207*	0.205
	[0.096]	[0.007]	[0.019]	[0.016]	[0.106]	[0.173]
Late Taiping	0.495***	0.030**	-0.014	-0.004	0.407**	0.966***
	[0.156]	[0.013]	[0.028]	[0.028]	[0.170]	[0.236]
Ln (Jinshi$_{1793\text{-}1820}$)	0.160***	0.011***	0.027***	0.022***	0.078	0.139**
	[0.040]	[0.003]	[0.008]	[0.008]	[0.053]	[0.061]
Ln (pre-TP wars)	0.046	-0.006	-0.007	-0.019	-0.159*	-0.255*
	[0.112]	[0.007]	[0.017]	[0.019]	[0.096]	[0.153]
Ln (Likin$_{1880}$)	0.022	0.004***	0.013***	0.014***	0.027	-0.019
	[0.021]	[0.002]	[0.004]	[0.004]	[0.020]	[0.021]
Ln (Charity$_{1880\text{-}1941}$)	0.113**	-0.000	0.008	0.009	0.162***	0.185***
	[0.047]	[0.003]	[0.008]	[0.009]	[0.049]	[0.063]
Controls	Y	Y	Y	Y	Y	Y
Other historical events	Y	Y	Y	Y	Y	Y
Observations	191	191	191	191	185	185
R-squared	0.529	0.550	0.493	0.558	0.536	0.528

Note: This table examines the robustness of the results for modern development outcomes when controlling for variables on other historical events. Control variables include the (log) distances to the Yangtze River and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of palace scholars (*jinshi*) from 1793–1820, dummies for prefecture importance classification by the Qing government, dummies for tea and silk producing prefectures, and the number of wars before Taiping rebellion. The additional controls for other historical events include an indicator for Guangxu drought, an indicator for Hui revolts, the number of battles during several episodes (the Nian Rebellion, the ROC 1912–1937, the Sino-Japanese War, and the Chinese Civil War), the number missionary activities in the 1860s, and the population share of deaths due to violence during the Cultural Revolution. Only the estimation results for key variables are reported. Standard errors are robust.

*** p<0.01, ** p<0.05, * p<0.1.

Table B3. Taiping Rebellion, Interpersonal Trust, and Civic Engagement: Controlling for Other Historical Events

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Trust in Relatives	Trust in Friends	Trust in Coworkers	Attention to Politics	Engagement in Local Affairs
Early Taiping	0.269***	0.158***	0.112*	-0.073**	-0.008
	[0.060]	[0.059]	[0.065]	[0.029]	[0.035]
Late Taiping	0.145**	0.156**	0.201***	0.083*	0.069*
	[0.072]	[0.068]	[0.063]	[0.048]	[0.041]
Observations	6416	6404	6123	6406	6415
R-squared	0.033	0.033	0.032	0.299	0.049
Baseline controls	Y	Y	Y	Y	Y
Individual controls	Y	Y	Y	Y	Y
Cultural Revolution	Y	Y	Y	Y	Y
Other historical events	Y	Y	Y	Y	Y

Note: This table examines the robustness of the results for trust attitudes and civic engagement when controlling for variables on other historical events. All regressions control for log distances to the Yangtze and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793 through 1820, dummies for prefecture importance classification by Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. We also control for the population share of deaths due to violence during the Cultural Revolution. Individual-level covariates include indicators for gender, educational attainment, age, urban residence, employment status, marital status, and membership of the Chinese Communist Party. The additional controls for other historical events include an indicator for Guangxu drought, an indicator for Hui revolts, the number of battles during several episodes (the Nian Rebellion, the ROC 1912–1937, the Sino-Japanese War, and the Chinese Civil War), and the number missionary activities in the 1860s. Robust standard errors clustered at the prefecture level are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

Table B4. Taiping Rebellion and Great Chinese Famine (1959–1961): Controlling for Other Historical Events

	Dependent variable: Famine Control		
	(1)	(2)	(3)
Taiping	0.069***		
	[0.021]		
Early Taiping		0.066***	0.063**
		[0.025]	[0.024]
Late Taiping		0.079**	0.076**
		[0.033]	[0.033]
Political Radicalism (i.e., -PMD)			-0.019
			[0.017]
Ln ($Jinshi_{1793–1820}$)	-0.011	-0.011	-0.013
	[0.011]	[0.011]	[0.010]
Ln (Pre-TP wars)	0.006	0.006	0.010
	[0.030]	[0.030]	[0.032]
Controls	Y	Y	Y
Other historical events	Y	Y	Y
Observations	164	164	164
R-squared	0.392	0.392	0.398

Note: This table examines the robustness of the results for the severity of the Great Chinese Famine when controlling for variables on other historical events. The dependent variable is "famine control"—a higher value means a lower famine severity. All regressions control for log distances to the Yangtze and the coastline, log population in 1820, log land tax rate per mu in 1820, log number of *jinshi* from 1793–1820, dummies for prefecture importance classification by Qing government, dummies for tea and silk production, and the number of wars prior to the Taiping Rebellion. The additional controls for other historical events include an indicator for Guangxu drought, an indicator for Hui revolts, the number of battles during several episodes (the Nian Rebellion, the ROC 1912–1937, the Sino-Japanese War, and the Chinese Civil War), and the number missionary activities in the 1860s. Robust standard errors are reported in brackets.
*** p<0.01, ** p<0.05, * p<0.1.

C. Robustness: Taiping Regime vs. Taiping Conquest

In this section, we isolate prefectures that experienced the Taiping Army's conquest but were never under the Taiping rule from the control group. We estimate the following regression model, modified from equation (1):

$$Y_{it} = \sum_{\tau \neq 1820} \alpha_\tau (D_\tau \times Taiping_i) + \sum_{\tau \neq 1820} \theta_\tau (D_\tau \times Taiping\ Conquest_i) + Controls + \rho_t + \eta_i + e_{i,t}. \quad \text{(C1)}$$

The outcome variable Y_{it} can be log population, log *likin* intensity plus one, or log charities plus one. Depending on the outcome examined, $Controls$ includes the same set of covariates used in the preferred specification presented in the main text. $Taiping\ Conquest_i$ is a dummy variable that equals one if prefecture i had experienced the Taiping Army's conquest *but* was never under the Taiping rule.

Table C1 reports the results. To ease comparison, for each outcome, we first replicate the preferred specification and then estimate equation (C1). One can see that accounting for the Taiping conquest's influence does not alter our conclusions: the rebellion reduced population growth, with the adverse effect larger in Early Taiping areas; the rebellion increased *likin* revenue, but the effect is more pronounced in Late Taiping areas; and the rebellion increased local charities only in Late Taiping areas.

Table C1. Taiping Regime vs. Taiping Conquest

	Log population		Log population (Early vs. Late)		Log 1 + likin per 1000 km^2		Log 1 + charities	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Taiping*Year 1851	-0.004	-0.015						
	[0.020]	[0.019]						
Taiping*Year 1880	-0.454***	-0.463***						
	[0.093]	[0.100]						
Taiping*Year 1910	-0.438***	-0.464***						
	[0.091]	[0.094]						
Taiping*Year 1953	-0.513***	-0.556***						
	[0.095]	[0.096]						
Taiping*Year 1982	-0.443***	-0.494***						
	[0.086]	[0.090]						
Taiping*Year 2000	-0.428***	-0.478***						
	[0.091]	[0.094]						
Early Taiping*Year 1851			-0.005	-0.016			-0.042	-0.036
			[0.020]	[0.018]			[0.072]	[0.075]
Early Taiping*Year 1880			-0.446***	-0.455***	2.230*	2.707*	0.056	0.063
			[0.100]	[0.105]	[0.631]	[0.781]	[0.108]	[0.117]
Early Taiping*Year 1910			-0.425***	-0.451***	1.371**	1.557**	0.051	0.046
			[0.094]	[0.097]	[0.399]	[0.388]	[0.114]	[0.125]
Early Taiping*Year 1953			-0.556***	-0.596***	1.025*	1.118*	0.022	0.018
			[0.100]	[0.102]	[0.298]	[0.348]	[0.113]	[0.126]
Early Taiping*Year 1980			-0.472***	-0.520***				
			[0.091]	[0.095]				
Early Taiping*Year 2000			-0.449***	-0.496***				
			[0.096]	[0.099]				
Late Taiping*Year 1851			0.005	-0.008			0.166*	0.173*
			[0.035]	[0.035]			[0.092]	[0.094]
Late Taiping*Year 1880			-0.500**	-0.513***	3.120**	3.678**	0.427***	0.435***
			[0.194]	[0.198]	[0.457]	[0.631]	[0.158]	[0.165]
Late Taiping*Year 1910			-0.510***	-0.544***	2.626**	2.843***	0.557***	0.550***
			[0.163]	[0.164]	[0.315]	[0.302]	[0.175]	[0.185]
Late Taiping*Year 1953			-0.312**	-0.361**	1.922**	2.030**	0.577***	0.571***
			[0.142]	[0.142]	[0.273]	[0.334]	[0.181]	[0.191]
Late Taiping*Year 1980			-0.314**	-0.372**				
			[0.142]	[0.144]				
Late Taiping*Year 2000			-0.338**	-0.395***				
			[0.151]	[0.152]				
Taiping conquest*Year 1851		-0.024*		-0.024*				0.013
		[0.013]		[0.013]				[0.041]
Taiping conquest*Year 1880		-0.014		-0.016		1.213		0.016
		[0.075]		[0.075]		[0.802]		[0.062]
Taiping conquest*Year 1910		-0.051		-0.054		0.472		-0.011
		[0.073]		[0.073]		[0.270]		[0.069]
Taiping conquest*Year 1953		-0.083		-0.080		0.236		-0.008
		[0.067]		[0.067]		[0.220]		[0.069]
Taiping conquest*Year 1982		-0.098		-0.096				
		[0.064]		[0.064]				
Taiping conquest*Year 2000		-0.096		-0.095				
		[0.065]		[0.065]				
Observations	1862	1862	1862	1862	1064	1064	1330	1330
R squared	0.794	0.795	0.796	0.796	0.904	0.907	0.598	0.598

Notes: This table examines the robustness of the main results for population, *likin*, and charities when we extend the baseline specification by isolating from the control group the prefectures that the Taiping Army conquered but did not establish a regime. This group of prefectures are denoted by a "Taiping conquest" dummy. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). For each super column, we first replicate the baseline results (Columns (1), (3), (5), and (7)), and then we present the results from the extended specification that additionally includes the Taiping conquest dummy interacted with year indicators while keeping other control variables unchanged (Columns (2), (4), (6), and (8)). For *likin* results, year 1880, 1910, and 1953 mean periods 1869–1879, 1880–1908, and 1922–1925. Only the estimation results for the key variables are reported. For *likin* results, standard errors are robust and clustered at the provincial level; otherwise, standard errors are clustered at the prefecture level.

*** p<0.01, ** p<0.05, * p<0.1.

D. Robustness: Own Treatment vs. Adjacent Treatment

In this section, to explicitly account for spatial spillovers, we isolate control prefectures adjacent to Taiping prefectures from the control group. We estimate the following regression model, modified from equation (1):

$$Y_{it} = \alpha(Post_t \times Taiping_i) + \pi(Post_t \times NeighborTaiping_i) + Controls + \rho_t + \eta_i + e_{i,t}. \quad \text{(D1)}$$

The outcome variable Y_{it} can be log population, log *likin* intensity plus one, or log charities plus one. Depending on the outcome examined, $Controls$ includes the same set of covariates used in the preferred specification presented in the main text. $NeighborTaiping_i$ is a dummy variable that equals one if prefecture i neighbored a prefecture under the Taiping rule. When examining *likin* and charities, we distinguish between Early and Late Taiping rules. To improve the readability of results, we report the static difference-in-differences estimates rather than the dynamic estimates. $Post_t$ is a dummy variable that equals one for years/periods after 1851.

Table D1 reports the results. One can see that accounting for the spillovers from Taiping neighbors does not alter our conclusions about the treatment effects of the rebellion. If anything, it accentuates our findings.

Table D1. Own Taiping Treatment vs. Adjacent Taiping Treatment

	Log population				Log *likin* per 1000 km^2		Log charities	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Taiping*Post	-0.453***	-0.542***						
	[0.081]	[0.084]						
Early Taiping*Post			-0.465***	-0.525***	1.542**	1.891**	0.065	0.125
			[0.087]	[0.089]	[0.377]	[0.390]	[0.086]	[0.090]
Late Taiping*Post			-0.395***	-0.443***	2.556**	2.959***	0.438***	0.509***
			[0.140]	[0.140]	[0.303]	[0.305]	[0.140]	[0.144]
Neighbor Taiping*Post		-0.194***						
		[0.069]						
Neighbor Early Taiping*Post				-0.284***		1.150***		0.068
				[0.071]		[0.341]		[0.058]
Neighbor Late Taiping*Post				0.192**		0.072		0.180*
				[0.076]		[0.336]		[0.095]
Observations	1862	1862	1862	1862	1064	1064	1330	1330
R squared	0.957	0.957	0.957	0.958	0.912	0.914	0.972	0.972

Notes: This table examines the robustness of the main results for population, *likin*, and charities when we extend the baseline specification by isolating from the control group the prefectures that neighbored a Taiping/Early Taiping/Late Taiping prefecture. To ease comparison and presentation, we estimate static difference-in-differences specifications where a *Treatment*Post* term (*Post* = 1 for periods from 1880 onward) replaces *Treatment*Year* terms. The control variables include time-varying variables and time-invariant variables (interacted with period indicators). For each super column, we first replicate the baseline results (Columns (1), (3), and (5)), and then we present the results from the extended specification that additionally includes the Neighbor Taiping/Early Taiping/Late Taiping dummies interacted with year indicators while keeping other control variables unchanged (Columns (2), (4), and (6)). Only the estimation results for the key variables are reported. For *likin* results, standard errors are robust and clustered at the provincial level; otherwise, standard errors are clustered at the prefecture level.

*** p<0.01, ** p<0.05, * p<0.1.

E. Robustness: Dropping One Province at a Time

In this section, we examine if our results are driven by any regional heterogeneity. Specifically, we leave out control prefectures of a province at a time, and then estimate the following regression:

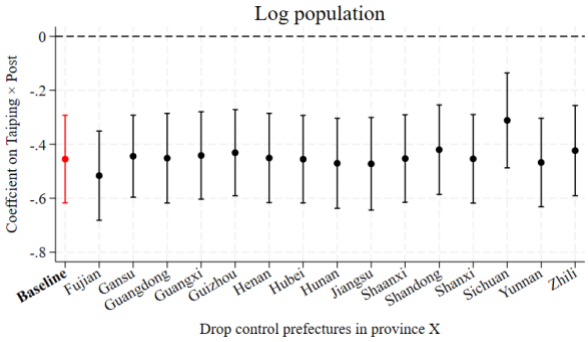
$$Y_{it} = \alpha(Post_t \times Taiping_i) + Controls + \rho_t + \eta_i + e_{i,t}. \qquad \text{(E1)}$$

The outcome variable Y_{it} can be log population, log *likin* intensity plus one, or log charities plus one. Depending on the outcome examined, $Controls$ includes the same set of covariates used in the preferred specification presented in the main text. When examining *likin* and charities, we distinguish between Early and Late Taiping rules. Because there are many provinces, to improve readability of results, we report the static difference-in-differences estimates rather than the dynamic estimates. $Post_t$ is a dummy variable that equals one for years/periods after 1851.

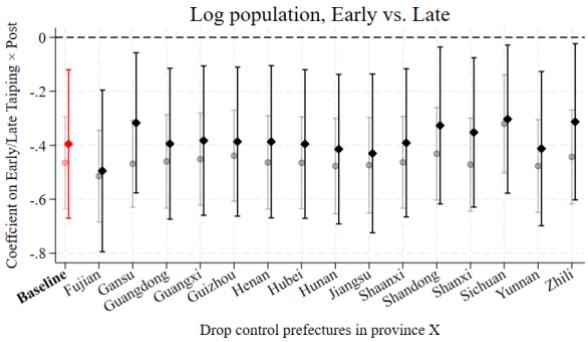
Figure E1 reports the results. Our key results survive: the rebellion reduced population growth; the rebellion increased *likin* revenue, but the effect is more pronounced in Late Taiping areas; and the rebellion increased local charities only in Late Taiping areas.

Figure E1. Leaving Out One Province at a Time

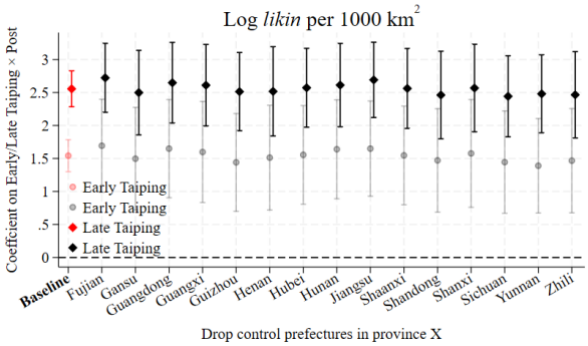
(a) Results for Population



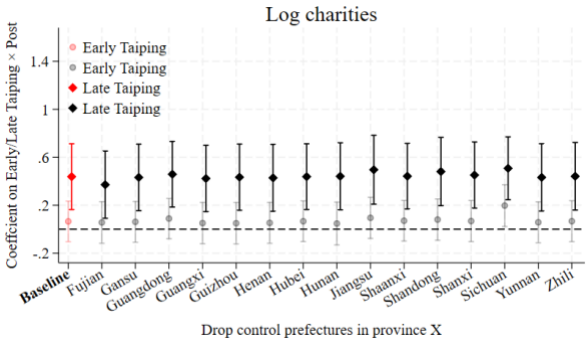
(b) Results for Population, Early vs. Late Taiping



(c) Results for *Likin*



(d) Results for Charities



Note: This figure examines the robustness of our main results for population, *likin*, and charities when excluding control prefectures of a particular province at a time. To ease comparison and presentation, we estimate static difference-in-differences specifications where a *Treatment*Post* term (*Post* = 1 for periods from 1880 onward) replaces *Treatment*Year* terms. The horizontal axis presents the province dropped. The solid points represent point estimates, and the caps are 95% confidence intervals.

F. Supplementary Material

F.1. Additional Discussion on the Impacts of *Likin*

Views on *Likin*. What were the long-term effects of the *likin* system? If viewed narrowly as distortionary taxation, it could have negative consequences. Heavy transit taxes—the first form of *likin*—might hinder inter-regional trade, encourage local autarky, and impose substantial burdens on producers and merchants. Moreover, the *likin* system could have induced power struggles and administrative abuses, further distorting resource allocation, as evidenced by the warlord conflicts over territorial control in early twentieth-century China (Huang et al. 2021). However, these distortions might be transitory as the *likin* system was ultimately abolished in 1931.

An alternative perspective, however, is that *likin* could have strengthened local fiscal capacity. This perspective implies positive long-term effects, especially in regions with favorable initial conditions, as discussed in Section II.2. Often strengthened during interstate wars, fiscal capacity is viewed in the literature as a prerequisite for development, the expansion of markets, and the establishment of modern infrastructure and market-supporting institutions. More broadly, fiscal capacity correlates with state capacity, namely, the government's ability to implement a range of objectives and policies. State capacity has been highlighted as a critical driver of long-term economic development (Besley and Persson 2010; Johnson and Koyama 2017).[44] Equally important, the rise in fiscal capacity associated with wars often coincided with stronger executive constraints, as effective tax collection often required the cooperation of local elites, thereby increasing their political power. These institutional changes could persist even after the abolition of *likin*.

Taken together, we argue that *likin*'s role in enhancing local fiscal capacity is more relevant to long-term development, and we empirically examine this argument.

Likin* versus *Tankuan. Duara (1988) examines a different kind of tax in northern rural China during the first half of the 20th century—*tankuan* (摊款), an informal levy that a village was required to pay to the upper (or central) government. He argues that *tankuan* tended to drive traditional local elites out of local leadership positions and attract village leaders who were more adept at collecting informal levies, thus damaging local governance. In spirit, he also emphasizes that a more cohesive local community would benefit local development, which we discuss in Section II.3.

We view our results as complementary rather than contradictory to Duara's argument. It is

[44] Indeed, state capacity is viewed as a key ingredient of the East Asian Miracle (Wade 1990), and the lack of it is viewed as a key factor behind the economic failure of African and Latin American countries (Herbst 2000; Centeno 2002). The importance of state capacity is further supported by both cross-country evidence (Gennaioli and Rainer 2007; Dincecco and Prado 2012; Dincecco and Katz 2016) and within-country evidence (Michalopoulos and Papaioannou 2013).

useful to note the distinction between *tankuan* and *likin*. *Tankuan*, an informal levy imposed by villages to meet the state's financial demands, was more arbitrary and volatile over time. For instance, it increased dramatically after the Nationalists came to power in the 1920s and sought to expand central tax revenues. By contrast, *likin* arose from the decentralized, local collection of taxes on commercial and industrial goods in urban areas (rather than in villages). *Likin* was more institutionalized in the wake of the Taiping Rebellion, remaining in effect until its abolition in 1931.

Notably, *likin* initially financed the war against the Taiping rebels, a conflict that inflicted severe economic damage. Higher *likin* revenue in some regions represented collective efforts by local elites and commoners to contain the damage: e.g., in Hunan, Zeng Guofan effectively organized the Hunan Army to defeat the Taiping rebels.

In sum, *tankuan* and *likin* differ in many aspects: rural versus urban, agricultural versus commercial-industrial bases, arbitrary versus institutionalized collection, and centralized versus decentralized administration. Hence, Duara's observations about *tankuan* at the village level cannot be directly extended to our analysis at the prefectural level. It is also likely that the positive impacts of stronger fiscal capacity would dominate. For instance, stronger local fiscal capacity may support the development of local schools in urban areas, while at the same time, volatile and arbitrary informal levies at the village level undermine village cohesion and prosperity.

F.2. Additional Discussion on Social Change

Local Governance in China. China has a long-standing tradition of local governance (Duara 1988). From the Song dynasty (960–1279 CE) onward and especially from the Late Ming dynasty (i.e., 16th century), local elites became increasingly involved in local affairs. Commercialization and merchant wealth led (and enabled) local commercial elites to engage in local provision of public goods, especially in the Lower Yangtze region (Wang 2022, p. 126; Rankin 1990). Local elites also elevated their social status through philanthropy.

Local elites' involvement in local governance continued throughout the Qing dynasty, in part because the small Qing bureaucracy failed to provide the public services demanded by rapid population growth and territorial expansion (Skinner 1977). This absence of the state created space for local elites to take responsibility for public goods such as education, water control, welfare, famine relief, roads, ferries, bridges, temples, and shrines (Duara 1988; Rankin 1990), most of which are now typically the government's responsibilities. The increasing social disorder prompted local elites to organize militias to protect property and maintain order (Kuhn 1970), further strengthening their power.

Social Change and Long-Term Development. Wang (2022) suggests that the social terrain,

i.e., how *central* elites connect local social groups, has important implications for state capacity at the national level, the development of local private-order institutions (e.g., lineage organizations), and the provision of local public goods. As such, social capacity and social structure affect the long-term development of a country.

We have tried to examine how Wang (2022)'s insight on the importance of the strength of lineage organizations, measured by genealogy books, relates to our conclusion on the role of social capacity (here, measured by charity organizations) in long-term development. We find that our conclusion on the importance of social capacity remains robust if we control for local genealogy books (using the database constructed by Wang (2020)). We interpret genealogy books as a proxy for a specific type of social capital, namely, in-group social capital, whereas charity organizations tend to capture bridging social capital pertinent to a broad group of individuals in a community. Our findings seem to suggest that while genealogy books (or lineage organizations) had some effect on development in the medium term, their effect is much weaker than that of charity organizations in the long term (results available upon request).