Bonds of Love: Patriotism and the Rise of Modern Banks

Yuchen Sun Wanda Wang Yuchen Xu *

September 2025

Abstract

This study examines the role of patriotism in fostering public trust in modern banks when they emerged as a new form of financial institution. In China, the loss of Western financial support during WWI (1914) prompted the Republican government to issue patriotic domestic bonds to address fiscal shortfalls. Modern banks underwrote these bonds and expanded into regions with stronger patriotic sentiment to attract subscriptions. Public trust in these banks was formed as an extension of patriots' state-building efforts within the framework of social contracts. Historical evidence suggests that patriotism similarly fueled early banking development in other countries.

Keywords: Patriotism, social contract, trust, modern banks, government bonds
JEL Classification: G21, N25, N45, P16

*Yuchen Sun, China School of Banking and Finance, University of International Business and Economics. E-mail: sunyuchen@uibe.edu.cn. Wanda Wang, Business School, The University of Hong Kong. E-mail: wang422@connect.hku.hk. Yuchen Xu (corresponding author), Business School, University of New South Wales. E-mail: yuchen.xu@unsw.edu.au. We thank Ying Bai, Morten Bennedsen, Ting Chen, Francesco D'Acunto, Wentian Diao, Guan Gong, Pauline Grosjean, Bing Han, Wenkai He, Kewei Hou, Matthew Jaremski, Alexandre Jeanneret, Saumitra Jha, James Kai-Sing Kung, Ross Levine, Ronald W. Masulis, Elias Papaioannou, Gary Richardson, James Vickery, Hans-Joachim Voth, Vincent Yao, Wuyue You, Zilong Zhang, and audiences at AEA 2025, SIOE 2025, AsianFA 2024, and seminar participants at Central University of Finance and Economics, Renmin University of China, Shanghai University of Finance and Economics, Hong Kong Baptist University, the University of Hong Kong, the University of Melbourne, Monash University, and the University of New South Wales, for helpful comments and suggestions. Yuchen Sun acknowledges financial support from the National Natural Science Foundation of China [Grants 72573037, 72203037].

1 Introduction

Trust is the bedrock of banking.[1] It is therefore essential to understand the sources of trust. The idea that a capable banking system relies on public trust in the state is intuitive; for example, government endorsement has been a common tool to mitigate bank runs (Diamond and Dybvig, 1983). Yet, the state's own credibility is often most fragile during the very crises that necessitate its intervention. This tension is particularly acute during the formative stages of modern banking. Historical accounts suggest that early banks were established by governments to address fiscal shortages following wars and revolutions—contexts in which public trust in both the state and its fledgling financial institutions is inherently weak. This paper proposes that patriotism acts as a remedy for this dual trust deficit (Depetris-Chauvin, Durante, and Campante, 2020).[2] By investigating how patriotic sentiment can foster trust in the state, which in turn fuels the initial growth of a modern banking system, we shed light on the fundamental question of how initial trust in banks was formed.[3]

Our empirical analysis focuses on early twentieth-century China, a period that provides a unique setting to test our hypothesis. The genesis of modern banking in China emerged from a half-century of crisis. Following the Opium Wars of the 1840s, the Chinese government (both Qing and its Republican successor) struggled with persistent fiscal deficits and political instability, relying heavily on Western countries and foreign banks for financing (Xu, 1962). The outbreak of World War I in 1914 created an exogenous fiscal shock as foreign creditors withdrew their support. In response, the Chinese Republican government turned to domestic bond issuance, appealing to patriotism to encourage subscriptions. This shift directly spurred the rise of modern Chinese banks, many of which

[1] Deposits fundamentally rely on trust. The consequences of mistrust in banks are well documented, ranging from bank runs (Iyer and Puri, 2012) to shifts toward alternatives such as fintech (Yang, 2025).

[2] For instance, the Bank of England, the earliest modern bank in Great Britain, was founded in 1694 as a private bank but served as the government's banker to finance the Nine Years' War (1688–1697) and to manage the escalating national debt (North and Weingast, 1989). The public's initial interactions with the bank involved patriotic financial instruments, which included subscriptions to bank shares to support government lending and the purchase of government bonds underwritten by the bank. During the Nine Years' War, the public viewed supporting the government through monetary contributions as a "patriotic duty" (Murphy, 2006).

[3] Prior research has identified various factors that influence trust in financial institutions, such as culture or religion (Guiso, Sapienza, and Zingales, 2006; Algan and Cahuc, 2010), and historical contingencies (Nunn and Wantchekon, 2011; Stevenson and Wolfers, 2011; An, Hou, and Lin, 2022). To the best of our knowledge, patriotism has not been systematically examined in the banking literature.

first earned profits by underwriting and trading these patriotic bonds (Du, 2012; Yan, 2015).

This historical setting supports a Difference-in-Differences (DiD) strategy to gauge the causal effects of patriotism on modern banking development. The first difference is the fiscal shock of 1914 that spurred the domestic bond market, and the second difference is the cross-sectional variations in patriotic sentiment. We find that, following the 1914 fiscal shock, regions with stronger patriotic sentiment saw larger government bond subscriptions and, consequently, greater growth in modern banks.[4] Appendix Figure B1 illustrates this historical timeline.

Defining and measuring regional patriotism is challenging due to its intangible nature. To define it, we use a social contract theory framework, which posits that citizens enter into an "agreement" with the state, exchanging civic engagement for rights and protection (Locke, 1689; Rousseau, 1762). Civilians dedicate themselves to state-building through tax contributions, military service, and other forms of volunteer support for the state (Besley, 2020; Caprettini and Voth, 2023; Qian and Tabellini, 2025). Patriotism can thus be viewed as civilians' willingness to engage in a form of social contract. Note that patriotism drives both devotion and active civic participation in state affairs; the same strength of the social contract can manifest differently depending on the legitimacy of the regime. When the state underperforms, civilians exhibit constructive criticism, participating in public discussions or protests to constrain the government's conduct (Schatz, Staub, and Lavine, 1999).

In our empirical setting, the DiD fiscal shock occurs in 1914, shortly after China's regime change from the Qing to the Republic in 1911. To construct sensible ex-ante, cross-regional measures of patriotism (or social contract strength), we exploit this transition and focus on two dimensions: (1) oppositional anti-tax unrest against the delegitimized late Qing state (1902–1911), and (2) supportive civic engagements under the new Republican regime (post-1912). In the DiD design, we use anti-tax unrest as the main treatment

[4]Rich historical anecdotes support the idea that the rise of the domestic government bond market largely fueled the emergence of modern Chinese banks, as many were initially established to underwrite and trade government bonds as well as to issue banknotes backed by government bonds (Du, 2012; Yan, 2015). Naturally, these banks expanded in areas where public support for government bonds was strong. Amid the uncertainties of the time, people's patriotic sentiment acted as a catalyst for their trust in the nascent Republican government and for their support of government bonds (Zhu, 1993).

variable, and employ either the principal component or average standardized (z-score) index of all patriotism measures before 1914 as robustness checks.

While it may seem counterintuitive to proxy patriotism with anti-tax unrest, this choice is grounded in social contract theory.[5] We develop three supporting arguments, illustrated with anecdotal evidence, in Section 2.4.

In Section 4, we empirically demonstrate that prefectures with more incidences of late Qing anti-tax unrest exhibited increased patriotic civic engagement in the following Republican era. Civic engagement is measured by (1) military participation, i.e., the number of cadets at the *Baoding Military Academy*, (2) political participation, i.e., the number of associations promoting political ideologies, and (3) social participation, i.e., the number of associations supporting social welfare. Based on a DiD strategy, we also find that provinces with more anti-tax unrest were able to collect more money through issuing government bonds after the outbreak of WWI in 1914.

These findings affirm that incidents of anti-tax unrest during the late Qing, although seemingly negative actions, effectively captured the strength of the social contract and were manifested in patriotic state-building efforts in the subsequent regime.

In Section 5, we formally examine the extent to which the growth of modern banks was influenced by patriotic sentiment. The dependent variable, banking development, is proxied by the number of modern Chinese banks in each prefecture-year. This dataset was manually compiled from more than 2,000 local gazetteers. The analysis is based on the DiD strategy. Consistent with our hypothesis, prefectures with more anti-tax unrest between 1902 and 1911 saw a greater increase in modern banks after 1914. Each additional anti-tax unrest correlates with a 21% increase in the number of banks when evaluated at the mean. The results are robust when we use either the principal component or the average standardized z-scores of anti-tax unrest and civic engagement before 1914 as proxies for overall patriotism. A one–standard-deviation increase in patriotism is associated with a 0.5–standard–deviation increase in the number of banks. Dynamic DiD analysis shows no parallel trends and a sharp jump in the number of banks immediately after 1914.

[5] In social contract theory, tax compliance represents a fundamental form of citizens' consent to state legitimacy (Locke, 1689). Therefore, resistance to taxation in the late Qing China reflected an awareness—although perhaps not formally articulated—of the principles of the social contract.

Even with the DiD strategy, one might be concerned that endogeneity issues remain due to omitted variables. For instance, regions with stronger economic foundations may have had more exposure to modern ideologies, which could have fostered civic awareness and banking development after 1914. To address this concern, we employ an instrumental variable (IV) approach, using early Qing massacres (1644–1661) to instrument late Qing anti-tax unrest. These brutal massacres, carried out during the Qing conquest, significantly reduced populations and left a legacy of collective mistrust toward the government. We hypothesize that regions affected by these massacres were more likely to see unrest resisting tax payment when central control weakened. The exclusion restriction is plausibly satisfied, as the locations of the massacres were exogenously determined by Qing military campaigns, and the economic devastation caused by these events was unlikely to directly promote banking development. The instrumented results support our hypothesis, demonstrating a causal relationship between anti-tax unrest and banking growth.

To account for other confounding factors that may have influenced banking development around WWI, we introduce additional controls: (1) number of industrial firms, because industrialization drives financial demand; (2) treaty ports, because foreign exposure was a key driver of economic modernization; (3) import/export duties, to distinguish trade shocks from fiscal shocks, both induced by WWI; (4) prefectural civil examination quotas $\times$ post, proxying human capital supply; (5) Confusion clan $\times$ post, considering the influence of internal and informal financial markets; (6) telegraph and railway stations, to capture modern communication infrastructure; and (7) local civil wars and natural disasters (floods and droughts), which could create needs for government bond issuance. After incorporating these variables, the estimated effect of patriotism on banking remains robust, with a minimal coefficient change.

Next, we conduct falsification tests to rule out alternative explanations. First, it is possible that anti-tax unrest merely reflects high tax burdens. To address this, we compile data on (1) per capita land tax in each prefecture for the year 1820 (log) and (2) the number of commercial tax bureaus in each prefecture, and use them as alternative treatment variables in the DiD regressions. The interactions of these tax burden measures with the post-1914 indicator shows no significant impact on banking development.

Second, we differentiate anti-tax unrest from radical nationalism or xenophobia (Schatz et al., 1999). Unlike anti-tax protests, which aim to uphold social contract principles, xenophobia directed anger toward foreigners residing in China and overlooked the Qing government's responsibility for domestic issues. We use an indicator variable for the occurrence of either the Boxer Rebellion[6], or anti-foreigner unrest (e.g., attacks on foreigners, missionaries, or churches) between 1902 and 1911. Our DiD regression shows that these xenophobic measures did not significantly impact banking development post-1914.

Finally, to ensure that anti-tax unrest does not simply capture general discontent, we examine other types of unrest that were not explicitly directed at the Qing government: (1) anti-gentry protests, (2) peasant riots, (3) banditry activities, (4) secret societies, and (5) strikes. These forms of unrest showed weak or no significant impact on banking development, in particular after excluding economically developed Jiangsu and Zhejiang provinces. Overall, the falsification tests offer robust justification for using anti-tax unrest as a plausible measure of social-contract strength that influenced the development of modern banks.

Section 6 uses two tests to capture the transformation of patriotic sentiment to trust in banks *per se*. First, we examine the 1921 banking crisis, during which widespread bank runs occurred across branches of various banks nationwide. After controlling for bank fixed effects, and thus accounting for bank fundamentals, we find that bank branches were more likely to survive in prefectures with stronger patriotic sentiment. Second, we compare the development of official and private banks. Historical records indicate that government bonds were initially primarily underwritten by official banks. The rise of official banks was therefore a byproduct of public state-building efforts. Over time, the official banks matured, demonstrating reliability that fostered trust in similar financial institutions established by the private sector. Dynamic DiD analyses show that while anti-tax unrest spurred the growth of official banks immediately after 1914, the impact of that unrest on private banks became evident only after 1920, indicating a time-lagged spillover effect.

In Section 7, we present anecdotes suggesting that our findings may generalize to other

[6]The Boxer Movement was an anti-foreign and anti-Christian riot between 1899 and 1901. The Boxers were particularly hostile towards Christian missionaries and Chinese converts, whom they blamed for the state's crisis (Esherick, 1987)

countries. In nations such as Great Britain, the United States, and Japan, governments established early modern banks to address public finance shortages following revolutions and wars. These governments and banks often appealed to patriotism when raising funds from the populace. By contributing financially, citizens not only supported their nations, but also contributed to the growth and legitimacy of the emerging modern banks.

While our study examines the nascent period of banking systems, it offers broader implications for financial development. Capable financial systems depend heavily on trust in public institutions; for instance, government backing is a common approach to mitigate financial instability such as bank runs. Maintaining public trust is crucial for the resilience of financial systems. However, trust in governments is not inherent and often deteriorates during financial crises (Algan, Guriev, Papaioannou, and Passari, 2017; Doerr, Gissler, Peydró, and Voth, 2022). When that happens, patriotism can function as a last-resort safeguard, boosting public confidence and ensuring financial stability. While previous research has identified various trust determinants, including culture (Guiso et al., 2006; Algan and Cahuc, 2010) and historical contingencies (Stevenson and Wolfers, 2011; Nunn and Wantchekon, 2011; An et al., 2022), patriotism has received little attention. This paper proposes patriotism as an additional and crucial source of trust and examines its role in fostering banking development.

Our study contributes to three strands of literature. First, it complements the literature on the state-building dynamics within the framework of the social contract theory (Besley, 2020; Caprettini and Voth, 2023; Qian and Tabellini, 2025). We expand the literature by showing that social contracts can synergistically foster financial development, as patriotic sentiment promotes trust (Gangl, Torgler, and Kirchler, 2016; Depetris-Chauvin et al., 2020), which in turn promotes banking growth.

Second, this paper sheds light on the determinants of modern banking development. Existing research has emphasized the roles of laws and institutions (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998; Levine, Lin, Ma, and Xu, 2023), technological advances (Atack, Jaremski, and Rousseau, 2014; Lin, Ma, Sun, and Xu, 2021), human capital (Lin, Ma, Sun, and Xu, 2025), culture (Guiso et al., 2006), and historical endowments (Pascali, 2016; D'Acunto, Prokopczuk, and Weber, 2019; An et al., 2022). While prior studies have acknowledged the importance of financial trust (Guiso, Sapienza,

and Zingales, 2004), we introduce patriotism as an alternative source of trust, offering a novel perspective on how sociopolitical factors can shape financial development.

Third, our study speaks to the literature on the influence of government bonds on banking development (Hilt, Jaremski, and Rahn, 2022; Tang and Basco, 2023), particularly within China's historical context (He, 2013; Ho and Li, 2014). We propose that patriotic sentiment shapes the relationship between government bonds and banks, especially during periods when government creditworthiness is in question. Our analysis indicates that patriotism can mitigate the "credible commitment problem" (North and Weingast, 1989; Ma and Rubin, 2019), thereby enhancing financial stability and growth.

The paper is structured as follows: Section 2 gives an overview of the historical background. Section 3 elaborates on the data employed. Section 4 presents empirical evidence to affirm that the incidence of anti-tax unrest is a reliable proxy for social-contract strength that embodies patriotic sentiment. Section 5 presents the main findings on the effects of patriotism on modern banking development. Section 6 explores bank runs in 1921, as well as the heterogeneous effects of patriotism on official banks versus private banks, to shed light on the conversion of patriotism to trust in banks. Section 7 expands the geographic scope of our research and discusses the broader applicability of our findings. Section 8 concludes.

2 Historical background

2.1 Development of modern banks in China

After China's opening in the 1840s, a few foreign banks (e.g., HSBC) established their business in China (Cheng, 2003). In 1897, the Imperial Bank of China, which mimicked foreign banks, was founded as the first modern Chinese-owned bank. While foreign banks in China remained few throughout the twentieth century, modern Chinese banks experienced significant growth. By 1926, there were 866 Chinese banks (254 headquarters and 612 branches) operating in 165 or 57.5% of Chinese prefectures within our study sample.

Before the emergence of modern banks, China's financial system was dominated

by traditional banks, in particular *qianzhuang* ("money houses") and *piaohao* ("draft banks"). Their operations relied heavily on informal "soft" information, for example individuals' reputation within the local community (Huang, 2005). Modern banks differed from traditional banks in several dimensions. Modern banks had limited liability, allowing them to attract more capital and shareholders. They adopted modern governance structures, including shareholder meetings, independent boards, and modern accounting standards (Brett, 2003).

The birth of modern Chinese banks was tightly linked to the central government. While proposing the establishment of the first modern Chinese bank to the Qing court, Sheng Xuanhuai [7] advocated in his memorandum in 1896:

> *China should emulate Western countries by consolidating financial resources in modern banks, which are crucial for commercial and industrial development.... The establishment of Chinese banks would contribute to building trust within domestic businessmen and commoners,* ***facilitating government bond issuance. The objective is to shift from relying on foreign debt,*** *alleviating the burden of substantial interest rates and exchange rate losses. (Sheng 1974, vol. 2, 27, emphasis added)*

In the early twentieth century, a few other official banks, mainly the Bank of China and the Bank of Communications, were founded to address fiscal needs and reduce reliance on foreign financial support. However, as we will discuss in Section 2.2, modern banks saw little growth in their first decade, likely because the Qing government was unable to mobilize the domestic bond market. Modern banks had yet to establish direct ties with the general public.

Since the 1910s, official banks have gained the momentum to grow alongside the expansion of domestic bond markets. As official banks matured and the public became familiar with modern banks, private banks developed as well. These private banks actively engaged in bond trading, focusing on secondary markets. In 1912, private banks comprised 22% of all banks in China; by 1926, this share had risen to 43%.

[7] Sheng Xuanhuai (1844–1916) was a prominent politician active during the Qing dynasty. He played a pivotal role in modernizing China's banking, communication, transportation, and education systems.

2.2 Government bonds in twentieth-century China and the outbreak of WWI

Since the 1850s, the Qing government had relied heavily on high-interest foreign loans, underwritten by foreign banks and backed by customs revenues, to finance military expenses and war indemnities after successive defeats.

Before 1914, China's domestic government bond market was virtually non-existent. In 1894, the first national debt, *Xijie Shangkuan* ("commercial interest-bearing loans") functioned more as forced taxation and collapsed within a year due to corruption. Before the Qing dynasty fell in 1911, only two other bonds were issued: *Zhaoxin Gupiao* ("government-issued trust stocks" in 1898) and *Aiguo Gongzhai* ("patriotic bond" in 1911); both failed to meet issuance targets and resembled compulsory levies rather than market-driven sales (Qian, 1984).[8]

The new Republic of China, established in 1912, inherited the Qing's fiscal shortage; tax revenues were nearly depleted, and the government relied on foreign loans to cover indemnities and military expenses.[9] The outbreak of WWI in 1914 disrupted this reliance, as Western creditors, particularly the United Kingdom and France, redirected funds to the war effort. As shown in Figure 1, this exogenous fiscal shock forced China to shift to domestic bond issuance. Between 1914 and 1926, the total targeted (face) amount of government bonds, denoted *Gongzhai Piao* ("public debt tickets"), reached 756 million yuan (Ling, 1928; Qian, 1984).[10]

[Insert Figure 1 about here]

[8]For example, the "*Zhaoxin Gupiao*" were intended to raise 100 million taels, but the actual amount collected was estimated to be less than one-fifth of the intended amount (Qian, 1984).

[9]One might notice a sharp jump in foreign debt around 1911–1913 (Figure 1). This surge is attributable to the 1913 *Shanhou dajiekuan* ("Reorganization Loan"), contracted by the new government through a Five-Power Consortium of foreign banks (HSBC, Deutsch-Asiatische Bank, Banque de l'Indo-Chine, Russo-Asiatic Bank, and Yokohama Specie Bank) representing Britain, France, Germany, Russia, and Japan, to meet outstanding indemnity obligations. The issue totaled £25 million and was secured primarily by revenues from the Salt Gabelle, China's highly lucrative salt-tax monopoly. The pledging of tax revenues as collateral provoked widespread contemporary protests, denounced as a "national humiliation" (Research Institute for Fiscal Science and The Second Historical Archives of China, 1990).

[10]To give an idea of the size of the bonds, we use a Purchasing Power Parity (PPP) approach to estimate their present-day value. The average price of pork in Peking was approximately 15.5 silver yuan per 50 kg during 1914–1924 (Meng and Gamble, 1926, pp. 38-39), and the contemporary retail price for pork is approximately 30 RMB per kg. Therefore, the 756 million yuan would be equivalent to 73.3 billion constant RMB, or approximately 10.25 billion USD.

Government bonds were issued via direct public offerings or indirect bank-led sales, with the latter being dominant. Banks underwrote entire issuances at deep discounts, and they immediately resold the bonds at higher market prices for substantial profits.[11] Banks were also permitted or required to use these bonds as reserves to support banknote issuance, thereby expanding the credit supply. Additionally, banks profited from trading in secondary markets. During the early twentieth century, China's other capital markets remained underdeveloped, making government bonds one of the few viable financial instruments and a significant revenue source for banks (Yan, 2015).[12]

2.3 The role of patriotism in government bond issuance

The first successful Chinese government bond was the 1914 national bond. Initially targeting 16 million yuan at a 7.25% annual interest rate, it exceeded this goal within two months, prompting an increase to 24 million yuan, with final subscriptions reaching 25 million yuan.[13] While factors such as government efforts to build credibility contributed,[14] patriotic sentiment played a crucial role. Zhu (1993, p. 57) provides anecdotes detailing the circumstances surrounding the issuance of bonds in 1914 (emphasis added):

> *All sectors of society are in desperate need of social stability. Consequently, they support the government's efforts to 'maintain law and order and consolidate the foundations of the state,' leading them to* ***actively favor the issuance of public debt****....*
>
> *Zhou Jinzhen, the president of the Shanghai Chamber of Commerce, delivered a public speech in Shanghai: '****As businessmen with a patriotic fervor****, and being part of the financial sector, I urge you to* ***lead the way by subscribing to this debt*** *above all other industries.' The businessmen present at the event enthusiastically pledged subscriptions amounting to over 100,000 yuan....*
>
> *At the debt mobilization meeting held by the Hankow Chamber of Commerce, Wang Qinfu remarked, 'Since the devastating fire in Hankow, we have yet to settle our existing debts. Acknowledging* ***new public debts is certainly challenging****. However,* ***your willingness to contribute today is a testament to your patriotic spirit****'....*

[11] In practice, the Chinese government used newly issued government bonds as collateral to obtain loans from banks. These bonds were discounted 50%-70% of their nominal value (Qian, 1984).

[12] It is estimated that, before the 1930s, trading government bonds in the secondary market could yield annual returns exceeding 20%, sometimes even reaching 30%-40%. This high yield was attributed to the credit risks associated with the prevailing social instability (Qian, 1984).

[13] The 1914 bonds were collected through three main channels: direct subscriptions, purchases by special government agencies, and underwriting by banks, mainly the Bank of China and the Bank of Communication. Half of the funding came from government subscriptions, and the other half from banks.

[14] To enhance bond creditworthiness, the government founded the National Loan Bureau (NLB) and provincial Bonds Promotion Associations to oversee issuance. The NLB's board included representatives from the Bank of China, Bank of Communications, and Maritime Customs officials (Qian, 1984).

The 1914 national bonds were subscribed by a wide range of social strata, including local officials, merchants, and grassroots such as "tea attendants" and "kitchen staff" who purchased bonds with their wages (Shenbao, 1914).

After 1914, local authorities, including provinces, prefectures, and counties, emulated the successful experience and actively issued government bonds. Between 1914 and 1926, more than 80% of targeted bonds were successfully issued (613 million of 756 yuan raised), though success rates varied significantly across regions (Qian, 1984).

2.4 Anti-tax unrest, social contracts, and patriotism

Repeated defeats by Western powers in the late nineteenth century led China to face heavy indemnities and economic decline, eroding Qing legitimacy. Public frustration and demands for reform fueled widespread support for regime change. As C. E. S. Wakefield, an official at the Changsha Customs, observed on the eve of the collapse of the Qing court in 1911: "*Undoubtedly, most Chinese civilians are calling for a regime change. They are not necessarily revolutionaries, but they sincerely support overthrowing the Qing government*" (Modern Chinese Economic History Materials, 1964, v.13, pp.88).

Wakefield's observation stems from the unprecedentedly high frequency of civilian unrest ("*minbian*") during the final decade of the Qing dynasty. Zhang and Ding (1982) document 1,293 events of unrest across eighteen provinces during the years 1902–1911, an average of one every three days. The unrest targeted a wide range of issues, such as resistance to taxation, to foreigners, and to the gentry class; it took various forms, including protests, strikes, and violent activities; and it involved participants from various social classes, including commoners (peasants and citizens), elites (scholars and wealthy individuals), and even local officials. These actions were believed to have eroded Qing authority, thus fueling popular support for the *Xinhai Revolution* in 1911 (Chen, 1992).

We posit that unrest for the purpose of tax resistance reflects an awareness of a social contract, and the frequency of unrest captures the strength of the social contract, or tie, between people and their government (Lin, Sun, and Wang, 2026). We propose three reasons for this.

First, within social contract theory, tax compliance represents a fundamental form of

citizens' consent to state legitimacy (Locke, 1689; Rousseau, 1762), and tax resistance reflects collective rejection of the ruling government's legitimacy. Therefore, resistance to taxation in the late Qing China reflected an awareness—although perhaps not formally articulated—of the principles of the social contract.[15] A notable example is the *Sichuan Baolu (Railway Protection) Movement*. As a major protest primarily involving tax refusal, it triggered the 1911 *Xinhai Revolution* which toppled the Qing court.[16]

Globally, resistance to taxation was a significant catalyst of several major revolutions. Notable examples include the Boston Tea Party (1773), a protest against taxation without representation that triggered the American Revolutionary War (Smith, 2013), and the French Revolution (1789–1799) where the nation's taxation burden was a significant cause of revolutionary sentiment (Lefebvre, Palmer, and Tackett, 1947).

Second, resistance to taxation is costly with a high personal risk. It signifies not only civic awareness but also citizens' determination and capacity to hold their government accountable. Only when individuals possess a profound sense of civic rights are they compelled to challenge a government they perceive as inadequate or corrupt (Schatz et al., 1999). In the *Sichuan Railway Protection Movement*, the Qing government responded with a violent crackdown, including the use of gunfire (Appendix Figure B1, Panel A, illustrates the scene), which resulted in several dozen deaths (Xinhai Revolution and Wuchang Uprising Memorial Museum, 1991).

Third, oppositional and supportive (patriotic) forms of civic engagement can transform from one into the other (Locke, 1689). In the language of social contract theory, regions exhibiting stronger resistance to the Qing regime indicated a heightened desire to "tear up" the old "contract". This shift also signified a readiness to engage in a new "contract" that embraced the promise of patriotic participation in state-building during the subsequent Republican era.

For example, honoring the victims of the *Sichuan Railway Protection Movement* as heroes has led to lasting commemoration. A monument was erected in 1913 and remains preserved today (Appendix Figure B1, Panel B). The role-model effects reinforced the

[15] Lin et al. (2026) also posits that anti-tax unrest was a key trigger for the Qing's collapse.

[16] The movement was sparked by the Qing government's plan to nationalize a locally crowdfunded railway as collateral for foreign loans (Xinhai Revolution and Wuchang Uprising Memorial Museum, 1991)

persistence of civic awareness, which transitioned into state-building efforts under the new Republican regime. On June 3, 1912, Sichuan military and civic leaders submitted a proposal titled "*Sichuan Military Discusses Central Finance*," in the Minli Daily to the Republican government.[17] The proposal states (emphasis added):

> *The Republic relies on its military for strength and on its finances for survival.…However, we recognize that the foundations of the Republic are still fragile.…There is no solution except for all four hundred million compatriots to shoulder this burden together.…*
>
> *Sichuan took the lead in resisting the Qing government's foreign railway loans, and* ***thanks to the efforts of patriots nationwide****, the imperial court was overthrown within months.…If the entire nation does not unite and contribute to financial self-sufficiency, we will inevitably become subjugated once again.*
>
> *As military officers, we feel this responsibility deeply. Thus, we have collectively decided to contribute a portion of our salaries to address the immediate crisis.…Together, we can eliminate the existing three-million-tael loan, and subsequently,* ***discuss further cost-saving measures, including salary reductions and promoting national bonds, a national bank, and voluntary citizen donations****. Only by stabilizing the central government's finances can we ensure national sovereignty and deter foreign interference.*

In sum, we posit that late Qing anti-tax unrest events embody collective resistance to unjust policies and a breakdown of the social contract with the Qing court (Lin et al., 2026). The frequency of this unrest reflects the strength of people's awareness of such a contract, which was manifested in patriotic state-building under the new regime. As one outcome, the domestic patriotic bond market flourished, driving the early development of modern banks.

3 Data

Our sample comprises 286 prefectures from eighteen provinces in China proper.[18] *Shuntian* prefecture (Beijing) is excluded from the regression sample because of its role as the national capital; its residents would have distinctively different incentives for both civil unrest and the establishment of banks. The sample period begins in 1912, when the Qing court collapsed and China entered the Republican Era, and ends in 1926, on the eve of the Northern Expedition. We obtain records of the prefectures in 1911 from the Harvard

[17] Appendix Figure B1, Panel C, presents images of the newspaper article and its full translation.

[18] China proper refers to the core eighteen provinces of the Qing dynasty, excluding the frontier territories inhabited by non-Han Chinese populations, which were administrated by an alternative system.

China Historical Geographic Information System (CHGIS, 2016).

3.1 Anti-tax unrest

We use the total number of anti-tax unrest events taking place in each prefecture during 1902–1911 as a proxy for the strength of the social contract across prefectures. The data is drawn from *The Chronology of Civil Unrest in the Late Qing Dynasty* (Zhang and Ding, 1982), which provides a comprehensive survey of all recorded instances of civilian unrest and details the reasons, timing, and locations of these events. Of the 1,293 recorded unrest events within China proper, we identify 311 as tax-related which contain keywords such as *Kangjuan* or *Kangshui* (tax resistance).[19] As shown in Table 1, an average of 1.14 anti-tax unrest events occurred in each prefecture. 121 (42.2%) prefectures experienced at least one anti-tax unrest; and 29 (10.1%) prefectures experienced four or more such events. To facilitate result interpretation, we also standardize anti-tax unrest (z-score) for robustness.

[Insert Table 1 about here]

3.2 Patriotic civic engagement in Republican China

We measure (non-monetary) civic engagement during the Republican era (1912–1926) using three proxies, each capturing a distinct aspect of civilian contributions to the state.

First, we examine military participation, a key dimension of civic contribution under social contract theory (Caprettini and Voth, 2023; Qian and Tabellini, 2025). Using data from Chen (2006), we digitize enrollment records from the *Baoding Military Academy*, China's leading military school, which operated from 1902 to 1923. With data for each cadet's birthplace and enrollment year, we construct the cross-prefectural distribution of cadets before and after 1912 as a proxy for military participation across regimes and

[19] We went through each of the unrest and classified them as follows: 121 anti-foreigner unrest, 133 anti-gentry unrest, 423 peasant riots, 66 banditry activities, 121 secret societies, and 333 strikes (of which 140 were unrelated to anti-tax unrest or anti-government unrest). For other forms of anti-government unrest, we identified 51 resist-tyranny unrest, 115 oppose-policies unrest, 37 uprisings, and 20 mutinies. The remaining 77 unrest were with unknown reasons or forms, or concerned only with personal animosity. Note that an event could be identified with multiple reasons or forms. The above unrest incidents were used as placebo treated variables in Section 5.4.

across regions.[20] Panel A of Figure B3 illustrates the spatial distribution of cadets.

Second, we track political associations because civilian engagement in political activities reflects state-building willingness (Rousseau, 1762). Under the Qing, civilian organizations were tightly restricted, but political participation increased after 1912 as citizens sought to exercise their rights and contribute to governance. Political associations were formed to express political opinions, support state-building efforts, and offer insights on local governance.

Third, we consider social associations, which provide public goods, social support, and aid to vulnerable groups such as women and teenagers. Using data from Zhang and Li (1999), we compile all (718) civilian organizations founded in the years 1912 through 1926 and identify 418 political associations and 195 social associations.[21] Panels B and C of Figure B3 illustrate the distributions of these associations across prefectures.

3.3 Principal components and standardization

As patriotism takes various forms, we employ principal component analysis (PCA) and standardization (z-score) to construct reduced-form proxies for the overall strength of patriotism across prefectures.

Civic engagement 1912–26. We construct two reduced-form variables to capture civic engagement between 1912–1926. (i) *PC civic engagement 1912–26* is the first principal component of the three previously defined civic engagement measures. This component alone explains 64.8% of the total variance. (ii) *z civic engagement 1912–26* is the z-score of the average z-scores of the three civic engagement measures. The double standardization ensures that the final measure has a mean of zero and a standard deviation of one, which facilitates result interpretation.

Patriotism 1902–14. Combining anti-tax unrest and three civic engagement measures, we construct two more variables to capture patriotism between 1902–1914, serving as alternative treatment variables in our DiD design which examines the role of patriotism in banking development. (i) *PC patriotism 1902–14*, is the first principal component of

[20] The *Baoding Military Academy* drew students from both elite and grassroots backgrounds. Using Anhui as a case, Feng (2008) finds that over half of cadets came from the province's poorest regions.

[21] After excluding *Shuntian* Fu (Beijing), the numbers are 436 associations, including 211 political associations and 162 social associations

anti-tax unrest (1902–1911) and the three civic engagement measures from 1912–1914. This component explains 56.6% of the total variance. (ii) *z patriotism 1902–14* is the z-score of the average z-scores of anti-tax unrest and the three civic engagement measures before 1914.

3.4 Government bond subscriptions

Patriots could also demonstrate support for the state through financial contributions, primarily by subscribing to government bonds. Since no systematic records exist at the prefecture or county levels, we compile bond issuance data only at the national and provincial levels. Our sources include *Historical Materials on Government Bonds in China (1894–1949)* (Qian, 1984), *Domestic Bonds in China* (Survey Department of Southern Manchuria Railway Company, 1930), and *Provincial Bonds* (Ling, 1928). We also meticulously complement missing information using the "Fiscal Chronicles" from each provincial gazetteer.

From 1912 to 1926, a total of 139 bonds were issued, 29 by the central government and 110 by provincial governments. Figure 1 illustrates the time trends of successfully issued bonds, highlighting a noticeable increase in domestic bond issuances after 1914. Altogether, during this period, national bonds raised 500.4 million yuan, and provincial bonds raised 151 million yuan.

We also digitize key bond characteristics, including targeted and collected amounts, interest rates, maturity, issuance purpose, and whether they were guaranteed/collateralized. Based on issue descriptions, we classify bond purposes as military funding (52%), economic development (44%), and disaster relief (4%). Historical accounts indicate that military-related bonds were typically raised through compulsory allocation, whereas development bonds relied more on voluntary subscriptions.[22]

As we lack data on the geographic distribution of national bond subscriptions, our re-

[22]Several historical records document that military bonds were raised coercively. For example, one account states: *"...during the Beiyang government period, the purposes for issuing Anhui provincial public bonds were basically to cover military and administrative expenses.... As for the methods of raising subscriptions...did not realize a genuinely public offering in the true sense....there were underwritten apportionments and compulsory distribution."* (Pan, 2014, p. 115). A similar pattern is documented for other provinces: *"During periods of turmoil brought about by political instability, provincial warlord governments resorted to every means to raise military funds; practices such as forced loans, extortion, and advance levies were commonplace across the provinces"* (Zhang and Li, 1989, p. 557).

gression analysis focuses on provincial bonds and assumes they were primarily purchased by local populations. To avoid potential biases from central government influence, we exclude the province of *Zhili*, the seat of the central government.

3.5 Modern banking development

Our main dependent variable, modern banking development, is measured by the annual number of modern Chinese banks (headquarters and branches) in each prefecture. This dataset was manually compiled from more than 2,000 gazetteers across county, prefectural, and provincial levels. To ensure completeness, we supplement missing entries using *Banking Yearbooks* (1934–1937) and relevant historical archives. Please refer to the supplementary materials of Lin et al. (2021) for the full list of data sources.

We focus on modern Chinese banks and exclude foreign banks that primarily operated in foreign exchange markets and were less influenced by Chinese domestic policies. Modern Chinese banks are classified into official and private banks based on their founding entities: Official banks were established by government bodies, while private banks were independently founded by the private sector. Joint ventures between government and private entities are categorized as official banks due to their direct political ties.

Table 1 presents the summary statistics. In the years 1912–1926, the 286 prefectures had an average of 1.92 modern Chinese banks. The standard deviation is large: 52.33% of prefecture-year observations had no banks, while *Songjiang* prefecture, where Shanghai is located, had 97 banks in 1926.

3.6 Instrumental variable: Massacres

To address endogeneity concerns, we use massacres during the Qing dynasty's founding era (1644–1661) to instrument late Qing anti-tax unrest events. During the transition from Ming to Qing, the Qing army carried out brutal massacres to consolidate control; a lasting collective memory that increased the propensity for unrest against the Qing court continued during the late Qing period. These massacres followed the army's conquest route and severely disrupted local economies, making it unlikely that the massacres directly promoted banking development through any overlooked economic factors. More

details will be discussed in Section 5.2.

Drawing upon *The History of the Southern Ming Dynasty* (Gu, 1997), we identify 55 of 1,503 counties in our sample where at least one massacre occurred. After summing up to the prefectural level, 45 of 286 prefectures witnessed from one to three massacres.

3.7 Baseline controls

We control for baseline factors that may influence both anti-tax unrest and banking development; additional controls will be discussed in Section 5.3.

Population size serves as a key proxy for economic foundation, as both unrest and banking activity were likely to be more prominent in populous areas. Using population records in 1910 from Cao (2001), we control for the log of population density, i.e. the 1910 population divided by land area, interacted with the post-1914 dummy.

We also account for geographic factors that may shape the distribution of unrest and banking expansion: (1) prefecture land area (log), which affects the reach of financial services; (2) the prefecture's distance to the coast (log), because coastal areas were historically more exposed to trade and external influences; (3) the river density (river length scaled by land area) within each prefecture (log), given the role of waterways in trade and economic activity; and (4) the altitude (log) and ruggedness of the terrain, which impact transportation and communication. Data are sourced from the 1911 basemap of CHGIS (2016). Lastly, we control for the (log) distance to the national capital, Beijing, as proximity to the political center may influence state relations and banking development. We report the summary statistics of all these variables in Table 1.

4 Social contract: From unrest to patriotic civic engagement

This section demonstrates that anti-tax unrest, a proxy for the strength of the social contract in the late Qing era, translated into patriotic civic engagement after the establishment of the Republican government in 1912; this is reflected in both non-monetary civic participation and financial contributions to the state.

4.1 Civic engagement

We measure civic engagement within the Republican era from three dimensions: military, political, and social participation. Each dimension reflects a distinct aspect of civilian contributions to the state. The analyses follow the cross-sectional regression model below:

$$Civic\_engagment_i = \alpha + \beta \times Anti\text{-}tax\_unrest_i + \gamma \times \mathbf{X}_i + \epsilon_i \tag{1}$$

where $Civic\_engagment_i$ refers to one of the three measures of civic engagement in prefecture i between 1912–1926. As a robustness check, we also use the first principal component of these three, or the z-score of the average z-scores of the three. $Anti\text{-}tax\_unrest_i$ denotes the number of unrest events related to anti-tax appeals in each prefecture during 1902–1911. If anti-tax unrest reflects the strength of social contract that embodies patriotism, β should be significantly positive. $\mathbf{X}_i$ represents a vector of baseline controls that include the 1910 prefectural population density (log), land area (log), distance to the coast (log), river density (log), altitude (log), terrain ruggedness, and distance to Beijing (log).

The baseline regressions use heteroskedasticity-robust standard errors. To account for potential spatial correlation among the residuals, we also cluster the standard errors within a circle that covers all adjacent prefectures, using the method of Colella, Lalive, Sakalli, and Thoenig (2019). Given that the average "radius" of each prefecture is 68.3 kilometers in our sample, we use a distance of three times this radius (205 kilometers) to approximate all adjacent prefectures. This method calculates the bilateral spatial correlation within this 205-kilometer radius.

[Insert Table 2 about here]

Panel A of Table 2 examines whether late Qing anti-tax unrest was linked to higher levels of military participation in the Republican era. Social contract theory views military service as a key demonstration of loyalty to the state (Caprettini and Voth, 2023; Qian and Tabellini, 2025). Using enrollment records from the *Baoding Military Academy* from 1902 throughout 1923 (Chen, 2006), we digitize cadet data and construct the cross-prefectural distribution of military participation before and after the Republic's establishment in 1912.

Column 1 in Panel A of Table 2 regresses the number of cadets on the number of anti-tax unrest events and reveals a positive association between the strength of social contract and military participation. Adding demographic and geographic controls (column 2) reduces the coefficient by 46%, but the effect remains significant. Quantitatively, each additional anti-tax unrest event corresponds to 3.51 more cadets, a 16% increase relative to the average (21.6 cadets). Columns 3 and 4 examine the unrest effects on the differences in cadet enrollment before and after 1912. The results indicate a significant rise of 22%, highlighting a stronger rise in patriotic engagement in regions with more unrest. All results remain robust to spatial correlation clustering. Appendix Table B1 reports the full set of coefficients for all control variables.

In the same vein, we examine whether regions with more instances of anti-tax unrest before 1912 saw greater formation of political and social associations after 1912. The results (Table 2, Panel B) show positive significance. We find that each additional anti-tax unrest event corresponds to a 123% increase in political associations (column 2) and a 106% increase in social associations (column 4). These findings provide evidence that a strong social contract in the late Qing era was manifested in active patriotic engagements in the Republican era, contributing to the building of political and social institutions.

Panel C of Table 2 presents the findings using two alternative proxies for civic engagement: the first principal component of the three individual measures (columns 1-2) and the z-score of the average z-scores (columns 3-4). As shown in column 4, a one standard deviation increase in anti-tax unrest is associated with a 0.42 standard deviation increase in civic engagement.

A potential alternative is that the late Qing protesters turned to anarchism, reducing their role in Republican state-building. Appendix A.1 details the development of anarchism in China and provides empirical analyses. The results indicate a positive but statistically weak correlation between anti-tax unrest and anarchist associations. Given that anarchism did not emerge on a large scale in China until 1919 (Zhang and Li, 1999), we argue that the awareness of a social contract was actively channeled into patriotic support for the new government, rather than resulting in disengagement during the critical period examined in our study.

4.2 Government bond subscriptions

We now examine the impact of anti-tax unrest on government bond subscriptions, a key form of "monetary contribution" to the state and a primary channel through which anti-tax unrest influenced banking development.

As discussed in Section 2.2, the outbreak of WWI disrupted Western financial support to China, creating an urgent need for domestic financing. This exogenous fiscal shock allows us to implement a Difference-in-Differences (DiD) strategy to gauge the causal effects of the social contract on government bonds subscription. The regression model is specified as follows:

$$\begin{aligned} CollectedValue_{p,t} = \alpha + \beta \times Anti\text{-}tax\_unrest_p \times Post_t + \gamma_1 \times TargetValue_{p,t} + \\ + \gamma_2 \times InterestRate_{p,t} + \gamma_3 \times Collateral_{p,t} + \gamma_4 \times Maturity_{p,t} \\ + \gamma_5 \times \mathbf{X}_p \times Post_t + \mu_p + \lambda_t + \varepsilon_{p,t}. \end{aligned} \tag{2}$$

where $CollectedValue_{p,t}$ refers to the actual amount raised (in million yuan) in province p in year t. $Anti\text{-}tax\_unrest_p$ denotes the incidences of unrest related to tax resistance in 1902–1911 in province p. $Post_t$ is a dummy that equals one for years after the outbreak of WWI (1915–1926) and zero otherwise. We include control variables, which generally affect bond pricing and issuance efficiency: $TargetValue_{p,t}$, $InterestRate_{p,t}$, $Collateral_{p,t}$ and $Maturity_{p,t}$; these denote the total target amount (in million yuan), bond interest rate, whether the bonds were collateralized, and years of maturity, respectively. $InterestRate_{p,t}$, $Collateral_{p,t}$ and $Maturity_{p,t}$ are averages of all bonds issued in province p in year t, weighted by target value. The vector $\mathbf{X}_p$ refers to a set of baseline controls interacting with $Post_t$; these include the 1910 provincial population density (log), land area (log), distance to the coast (log), river density (log), altitude (log), terrain ruggedness, and distance to Beijing (log). Province and year fixed effects are controlled for, and the standard errors are clustered at the province level.

[Insert Table 3 about here]

The results are presented in Table 3. Column 1 examines the overall impact of the anti-tax unrest on provincial bond subscriptions. Consistent with our hypothesis, regions with

more anti-tax unrest in the late Qing period raised significantly more funds after 1914. On average, 17.88 instances of anti-tax unrest occurred in each province before 1912, and each additional instance corresponds to an increase of 0.03 million yuan in bond subscriptions —a 5.1% rise relative to the mean. Interpreted alternatively, a one-standard-deviation increase in anti-tax unrest is associated with a 21.2%-standard-deviation increase in bond collected value.[23]

To probe mechanisms, columns 2-3 differentiate the effects across bond types. As outlined in Section 3.4, bonds issued for economic development are classified as voluntary, whereas bonds issued for military funding are classified as compulsory. The results show that a stronger social contract significantly increases the success of voluntary bonds, while compulsory bonds exhibit no comparable effect.[24] In Appendix Table B3, we use principal component and standardized measures of patriotism and of bond issuance for robustness. Overall, the results underscore that patriotic mobilization is effective when voluntary rather than coercive.

An alternative explanation is the demand-side effect: that government bonds were more attractive than other investment options, and regions with stronger social contracts had greater investment demand. In this case, once government bonds became available, their uptake would have increased more in regions with stronger social contracts. However, anecdotal evidence suggests otherwise. Government bonds offered no superior returns and carried high risk due to severe fiscal deficits.[25]

Provincial bonds in our sample had an interest rate ranging from 0% to 12% and

[23]The national bonds issued by the central government were subscribed by people across China. Including the local subscription of national bonds to measure people's contribution to government bonds would be ideal. Unfortunately, this data is not available. As a compromise, we use only provincial bonds, assuming that these bonds were primarily subscribed by local residents.

[24]One nuanced hypothesis is that a stronger social contract might also raise compulsory allocations if governments lean harder on high-patriotism regions. Two facts address this: (1) these are province-level issues—placement was organized within provinces, could not easily be floated across provinces, and reflects fiscal needs; (2) in Appendix Table B2, anti-tax unrest predicts lower targets for all, voluntary, and compulsory bonds; a one-unit rise of unrest led to 6.1%, 11.3% and 5.9% lower face value relative to the mean, respectively. Combining results in Appendix Table B2 and Table 3, stronger social contracts predict a higher *success rate* of voluntary bonds. We do not directly use success rates as the dependent variable in the regressions because many province-years have no issuance, leaving the denominator undefined.

[25]In 1921, Zhou Ziqi, the Minister of Finance of the central government, stated in a report: "*If we follow the current government debt regulations and pay the principal and interest on schedule, it would require as much as 39.7 million yuan. Given the current financial situation, it would be impossible to manage this*" (Qian, 1984, p. 14-15).

averaging 5.1%, significantly lower than private loan rates. Sourcing from the *China Historical Interest Rate Database* (Chen, Peng, and Yuan, 2016),[26] we analyze the 2,141 private loans issued from 1912 through 1926.[27] The average annual rate was 41.93%; after excluding usury above 100%, the adjusted average remained at 18.12% across 2,046 loans. This substantial gap in returns suggests that financial incentives alone do not explain the higher number of bond subscriptions in patriotic regions. Using 2,046 loan records, we computed the average loan rate at the province-year level. To account for missing data, we interpolated values when both a preceding and a succeeding province-year had data. Including it as a control variable in Equation 2, the results indicate minimal impact of local loan rates on government bond subscriptions (Panel A of Appendix Table B4). To test the robustness of our findings, we further excluded Zhejiang and Jiangsu provinces, given their populations' high awareness of investment. The results were robust to this exclusion (Panel B of Appendix Table B4).

Overall, findings in Section 4 suggest that pre-1912 anti-tax unrest reflects the strength of the social contract, which was manifested in patriotic efforts under the new government after 1912. This civic engagement in Republican China was manifested in increased military participation, in the establishment of political and social associations, and in heightened government bond subscriptions. Among these, bond subscriptions played a crucial role in fueling the growth of modern banks. We therefore hypothesize that, following the 1914 fiscal shock, regions with a stronger social contract (or greater patriotism) would experience larger expansions in modern banking.

While one might be concerned that anti-tax unrest reflected political opportunism, with participants signaling loyalty to a potential new government for future political gains, in Appendix A.2, we further discuss and empirically disentangle anti-tax unrest from political opportunism.

[26] Chen et al. (2016) constructs the *China Historical Interest Rate Database*, comprising 23,489 records of private lending and borrowing spanning from 1563 to 1950. These records were compiled from diverse sources such as private archives, newspapers, periodicals, and surveys. Chen, Ma, and Sinclair (2022) also provide an extensive description of this dataset.

[27] Before 1926, China's financial markets were underdeveloped, with few financial instruments. These markets included the Shanghai stock market, which emerged in the late 1860s but was primarily accessible to foreigners or Chinese within the Shanghai concession; a Beijing Stock Exchange that appeared after 1918; and a nascent corporate bond market that emerged after 1921 (Zhu, 2022). Thus, local borrowing and lending rates can reliably proxy the returns on investments in this period.

5 Patriotism and banking development

5.1 Baseline results

In the previous section, we show that the strength of social contract, measured by anti-tax unrest in the late Qing, persisted across regimes and translated into civic engagement efforts, including patriotic government bond subscriptions. As government bond underwriting drove early modern banks, regions with stronger social contracts should have experienced greater bank growth after the 1914 fiscal shock. In a reduced-form expression, modern banks were fueled by patriotism. To formally test this, we employ a DiD approach:

$$Banks_{i,t} = \alpha + \beta \times Anti\text{-}tax\_unrest_i \times Post_t + \gamma \times \mathbf{X}_i \times Post_t + \mu_i + \lambda_t + \varepsilon_{i,t}. \quad (3)$$

where $Banks_{i,t}$ refers to the number of modern banks (including headquarters and branches) in prefecture i in the year t (1912–1926). $Anti\text{-}tax\_unrest_i$, which denotes the total number of anti-tax unrest events in each prefecture i between 1902–1911, captures the social contract and embodies patriotic sentiment toward the Republican regime. *Post* is a dummy that equals one for years after the outbreak of WWI (1915–1926) and zero otherwise (1912–1914). The coefficient β captures the DiD effects of civic capital on bank establishment after 1914. The vector $\mathbf{X}$ denotes a set of baseline controls interacting with *Post*: these include the 1910 prefectural population density (log), land area (log), distance to the coast (log), river length density (log), altitude (log), terrain ruggedness, and distance to Beijing (log). We include prefectural fixed effects (μ_i) to control for time-invariant regional characteristics and year fixed effects (λ_t) to absorb common annual shocks. We report both standard errors clustered at the prefecture level and standard errors adjusted for spatial autocorrelation, following Colella et al. (2019). The spatial cutoff is set to 205 km, approximately three times the average prefectural radius, to account for correlations across adjacent prefectures.

As a robustness check, we replace the treatment variable with three alternatives: (i) *PC patriotism 1902–14*, the first principal component of anti-tax unrest (1902–1911) and the three civic-engagement measures (1902–1914), (ii) z-standardized anti-tax unrest; and

(iii) *z patriotism 1902–14*, defined as the z-score of the average of the z-scores of anti-tax unrest and the three civic-engagement measures before 1914. When the treatment is standardized, we also use the standardized number of banks as the dependent variable to facilitate result interpretation.

[Insert Table 4 about here]

The baseline results are presented in Table 4. Column 1 provides a benchmark by regressing the number of banks on *Anti-tax unrest* × *Post*, controlling only for prefecture and year fixed effects. The significantly positive coefficient on the interaction term suggests that social contracts fostered banking development. In column 2, we add demographic and geographic controls. While the coefficient decreases by about 33%, the effect remains significant. Economically, each additional anti-tax unrest event before 1912 is associated with a 0.40 increase in the number of banks after 1914, a 21% rise relative to the mean (1.92 banks). Column 3 excludes *Zhejiang* and *Jiangsu* (where Shanghai is located) to address concerns that results might be driven by these economically advanced regions with dense pre-existing traditional banking networks. The result indicates that our findings are robust to this exclusion. In columns 4-6, we use principal-component and standardized measures of patriotism. Column 6 shows that a one-standard-deviation increase in the standardized patriotism index is associated with a 0.5-standard-deviation increase in the number of banks. To visualize the results, the geographical distributions of anti-tax unrest, patriotism z-score, and bank growth are depicted in Figure 2.

[Insert Figure 2 about here]

We assess the parallel trend assumption with dynamic DiD, which regresses the number of banks on interactions between anti-tax unrest and year dummies for 1912 through 1920 (1914 omitted as the reference year), while including all controls interacted with year dummies, as well as prefectural and year fixed effects. The estimated yearly coefficients with 95% confidence intervals are plotted in Figure 3. It is observed that the coefficients are near-zero in 1912–1913 and turn significantly positive after 1914. This confirms the parallel trend assumption and indicates a sharp shock from WWI. To address concerns about the short pre-trend period (only two years in the baseline sample), we extend the

sample to 1908–1926 (Appendix Figure A1). Appendix A.3 further discusses the results' sensitivity to the potential violation of the parallel assumption based on the honest DiD method proposed by Rambachan and Roth (2023).

[Insert Figure 3 about here]

To examine whether the impact of anti-tax unrest on banking development operates through patriotic sentiment, we regress the number of banks on *Anti-tax unrest* × *Post* and *Civic engagement (1912–14)* × *Post* simultaneously. Here, civic engagement is measured by military participation, political associations, and social associations between 1912 and 1914, as well as the principal component or z-score of all three. The results (Appendix Table B5) show that adding patriotic civic engagement variables significantly reduces the coefficient for anti-tax unrest, even to the point of insignificance, indicating that patriotic sentiment is a key transmission channel.

5.2 Instrumental variable

Despite the DiD strategy, endogeneity remains. For one reason, economic conditions are difficult to fully control, raising the concern of omitted variables. It is possible that regions with stronger economic foundations had more exposure to modern ideologies, which fostered civic awareness and banking development after 1914. For another reason, modern banks emerged in China already in 1897. This raises the possibility of reverse causality, where early banking development introduced new ideas and influenced civic awareness.[28]

To tackle these concerns, we employ an IV approach, using the massacres taking place during the Qing regime's founding era (1644–1661) as an instrument for anti-tax unrest in the late Qing. The Ming-Qing transition was marked by violent massacres carried out by the Qing army against the mass Han Chinese resisting Qing rule. These massacres were a key strategy for consolidating Qing control and resulted in substantial casualties. Scholars estimate that China's population peaked at nearly 200 million in 1630 (Cao, 2001), but by 1680 had declined by 45-50 million because of these events.

[28] In Appendix Table B6, we present the regression results of banks predicted by anti-tax unrest, and anti-tax unrest predicted by banks between 1902 and 1911. There is no evidence of a positive correlation between anti-tax unrest and banks before 1911.

Notable massacres occurred in *Yangzhou*, *Taicang*, *Datong*, and *Ganzhou*. Based on Gu (1997), we identify one to three massacres as having occurred in each of 45 of the 286 prefectures. Figure 4 depicts the geographical distribution of massacres.

[Insert Figure 4 about here]

We argue that early Qing massacres satisfy the relevance condition for a valid instrument, as they could leave a profound and lasting imprint on collective memory (Fouka and Voth, 2023). Surviving records, such as the Record of *Ten Days in Yangzhou*, have preserved this historical trauma, which later fueled anti-Qing unrest as central authority weakened after the mid-nineteenth century (Li, 2023).[29] Thus, our first-stage hypothesis is that regions affected by the early Qing massacres were more likely to exhibit anti-tax unrest in the late Qing period.

This instrument likely satisfies the exclusion restriction. First, the massacres occurred over two centuries before the emergence of modern banks, eliminating the possibility of reverse causality. Second, the massacres were primarily driven by military, rather than economic, objectives and predominantly occurred along the Qing army's conquest path. Third, their destructive impact on local economies makes it unlikely that they directly benefited modern banks through unobserved economic factors.

[Insert Table 5 about here]

The IV results are presented in Table 5. Panel A reports the 2SLS estimates, where *Anti-tax unrest* × *Post* is instrumented by *Massacres* × *Post*. The instrumented anti-tax unrest significantly promoted modern banks. Comparing the 2SLS estimate 0.63 to the OLS estimate 0.40 in Table 4 (column 2), the IV effect is 1.59 times larger, with no sign of a high coefficient inflation issue (Jiang, 2017). Panel B presents the first-stage results. As shown, historical massacres significantly predict anti-tax unrest, indicating that regions with greater historical trauma were more likely to resist government taxation. This finding extends Qian and Tabellini (2025) by providing evidence that discriminated

[29] Even senior bureaucrats in the Qing government could sense the devastating effects of the massacres that occurred during the founding period. For example, Zhao Liewen (1832–1894), a disciple of Zeng Guofan, one of the most potent senior officials in the late nineteenth century, said, *"Our (Qing) state could be subverted within 50 years...the massacres during the founding period were too gruesome. Even if the emperor has very good virtue, he could not save our state from its fate"*(Zhao, 2013).

groups may not only be less willing to support the state but may also be more likely to engage in efforts to overthrow it. We also discuss the potential issue of Local Average Treatment Effect (LATE) (Jiang, 2017) and complier characteristics in Appendix A.4.

Appendix Table B7 presents the reduced-form regressions. As expected, *Massacres* × *Post* positively predicts the number of banks (column 1). When both *Massacres* × *Post* and *Anti-tax unrest* × *Post* are included (column 2), the coefficient of massacres turns insignificant, leaving anti-tax unrest as the key driver of banking development. This suggests that historical massacres affected banking growth by mobilizing anti-tax unrest.

In Appendix Table B8, we use massacres conducted by non-Qing forces, primarily those led by historical peasant revolt leaders Li Zicheng (1606–1645) and Zhang Xianzhong (1606–1647) and their followers between 1644 and 1661 as a placebo instrument. Appendix Figure B4 maps the geographical distribution of these massacres and provides a brief historical background. The results indicate that massacres by non-Qing actors do not significantly predict anti-tax unrest in the late Qing period. This suggests that such unrest was not driven by a general breakdown of order, but specifically reflected a rupture in the social contract with the state responsible for prior harm.

5.3 Additional controls

This section outlines robustness checks incorporating additional covariates that could affect banking development. We begin by discussing the rationale and data, followed by presenting the results for each factor.

First, the weakening of Western powers in China after 1914 likely altered trade patterns and spurred local industrial growth. Specifically, World War I disrupted imports into China, boosted Chinese exports, and thereby stimulated domestic industries, generating increased demand for external financing (Rawski, 1989). Therefore, we additionally control for the prefecture-year number of industrial firms, using data from Du (2014).

Second, Treaty Ports were centers of foreign presence in China. They connected China to global trade, technology, and culture, likely fostering modern ideologies and civic awareness, which may have influenced banking development (Ma and Rubin, 2019). By 1926, fifty-four treaty ports spanned forty-two prefectures, hosting 50.4% (436 of 866) of modern Chinese banks. We thus control for the number of treaty ports per prefecture

using data from Yan (2012).

Third, to directly capture the impact of trade, we include customs duty income with records from *Historical Materials of Chinese Maritime Customs: 1859–1948* (Chinese Second Historical Archive, 2001).

Fourth, civic awareness likely evolved alongside the presence of educated elites. To distinguish whether anti-tax unrest influenced banking primarily through patriotism or simply reflected human capital concentration, we control for the interaction between (log) civil examination quotas and the post-1914 dummy. These quotas, set by the central government and largely unchanged since the nineteenth century, serve as a historical measure of regional human capital (Lin et al., 2025).

Fifth, Confucian clans, formed through kinship networks, have been shown to delay the emergence of modern banks in China. These clans established internal markets for resource pooling and risk sharing within families, thereby reducing the demand for external financial instruments during times of financial need (Chen et al., 2022). To measure the strength of these clans, we use the prefectural-level number of genealogy books as a proxy, drawing on data from Shanghai Library (2009).

Sixth, advancements in communication and transportation technology, including telegraph, railway networks, and postal routes, could also facilitate bank expansion. To capture such progress, we control for the lagged number of telegraph stations, railway stations, and postal offices in each prefecture (Lin et al., 2021).

Seventh, civil wars and natural disasters could hinder economic development and affect the government's likelihood of issuing bonds. Using data from Shizhengchu (1967) and Chinese Academy of Meteorological Sciences (1981), we count the number of civil wars and natural disasters (floods and droughts) per prefecture in the previous year.

[Insert Figure 5 about here]

Figure 5 shows the coefficients, along with 95% confidence intervals, of *Anti-tax unrest* $\times$ *Post* while controlling for each of the above-mentioned additional controls, or all of them simultaneously. It also plots the IV-DiD estimates. The figure shows that the estimated effects of anti-tax unrest on banks change little under all the circumstances. Appendix Figure B5 replicates the test using standardized patriotism as the treatment

variable and standardized bank as the dependent variable. The results remain robust.

In an additional robustness test, we replicate previous regressions at the county-level to account for variations in banks and anti-tax unrest within prefectures. Appendix A.5 discusses the models and results in detail. The results remain robust.

In Appendix A.6, we use bank-level balance sheet data from 1921–1926 and find that, by opening branches in patriotic regions, banks significantly increased both bond holdings and performance. These findings provide direct evidence that exposure to patriotism enhanced bank performance.

5.4 Falsification tests

In this section, we present falsification tests to validate that anti-tax unrest reflects the social contract rather than alternative explanations or other influencing factors.

First, anti-tax unrest could simply reflect high tax burdens. To address this concern, we construct two direct proxies for tax burden: (1) per capita land tax in 1820, derived from the latest available prefectural tax records (Liang, 2008), and (2) the number of commercial tax (*likin*) bureaus around 1909 (Luo, 1936). We replicate Equation 3 but replace anti-tax unrest with these two measures. As shown in Figure 6 (rows 1-2), tax levels had a marginal impact on banking development after 1914.[30]

[Insert Figure 6 about here]

Next, we distinguish between constructive patriotism and xenophobia (blind patriotism) (Schatz et al., 1999). We highlight that constructive patriotism reflects a nuanced understanding of the social contract and fosters civic engagement. We use two proxies for radical xenophobic activity.[31] First, based on the *Boxer Protocol*, we construct a dummy indicating whether a prefecture experienced episodes of violent attacks on missionaries

[30] Appendix Figure B9 (Panels A and B) illustrates the spatial distribution of land tax and commercial tax bureaus. Appendix Table B9, Panel A shows a strong positive correlation between tax burden and the frequency of anti-tax unrest events. However, in a horse-race regression (Panel B) where both anti-tax unrest events and tax burden are included as predictors of banking development, the tax burden coefficients become insignificant. These results suggest that anti-tax unrest reflects not only attitudes toward tax levels but also fundamental attitudes toward government.

[31] Patriotism did not necessarily lead to xenophobia. In contrast, during the Self-strengthening Movement (1860–1894), enlightened patriots highlighted assimilating Western technology with the slogan *"Shi yi changji yi zi qiang"* (learning the foreigners' advanced technology to strengthen our country) (Yan, 2012).

and expatriates between 1899 and 1901 during the Boxer Rebellion. Second, we count incidents of anti-foreigner unrest during the period 1902–1911 based on Zhang and Ding (1982); these include incidents such as "attacking foreigners", "attacking missionaries", or "destroying churches". We identify 121 such events. Panel C of Appendix Figure B9 shows the spatial distributions of both proxies. Since their distributions do not strongly overlap, we create a combined dummy variable to capture either event. Regression results (Figure 6, row 3) show no significant impact of xenophobic sentiment on bank growth after 1914, suggesting that radical nationalism did not drive modern financial development.

Finally, we distinguish between anti-tax unrest and general discontent or disorder. Using data from Zhang and Ding (1982), we count: (1) incidents of anti-gentry unrest targeting local elites or landowners (133 incidents), (2) riots by peasants triggered by land disputes or natural disasters (423), (3) banditry or criminal activities like robbery (66), (4) secret societies, or oath-bound, clandestine popular associations (121), and (5) strikes (333, of which 140 were unrelated to anti-tax unrest or anti-government unrest). Note that an event could be identified with multiple reasons or forms. Their influences on banks are shown in row 4-8 of Figure 6. Notably, strikes were concentrated in prosperous industrial cities, most notably Shanghai. Therefore, when we exclude *Zhejiang* and *Jiangsu* provinces, the strike effect on banks becomes statistically insignificant.[32]

The remaining unrest types in Zhang and Ding (1982) were mainly anti-government actions other than tax resistance: resistance to tyranny (collective protests against abusive local officials) (51), opposition to specific late-Qing policies (115), generic uprisings (37), and military mutinies (20).[33] These episodes were often triggered by particular corrupt officials or discrete policy shocks and are thus more idiosyncratic, less likely to proxy a broad "social contract" channel than anti-tax unrest. Figure B10 plots their placebo effects on the number of modern banks. "Resistance to tyranny" shows a positive association, but it becomes statistically insignificant once *Zhejiang* and *Jiangsu* are excluded.

[32]In contrast, the effect of anti-tax unrest on banks is largely unchanged when these provinces are excluded (column 3 of Table 4).

[33]The remaining 77 incidents of unrest were with unknown reasons or forms, or concerned only with personal animosity.

In short, the above falsification tests support that the anti-tax unrest is the most representative and valid proxy for patriotic sentiment rooted in social-contract awareness, which played a key role in banking development.

6 From patriotism to trust in banks

In this section, we investigate whether patriotic sentiment translated into trust in the banking sector *per se*. Because trust in banks is difficult to measure directly, we rely on two indirect tests to shed light on this channel.

6.1 Trust during bank runs

In the first test, we explore a mistrust crisis in Chinese banking and examine how patriotism influenced bank run behavior.

China experienced nationwide banking panics and widespread mistrust in the financial sector in 1921, triggered by two distinct crises. The first was a crises of confidence in the central government, driven by a growing fiscal deficit and diplomatic failure at the Washington Naval Conference (1921–1922) (Wu, 2019). This led to a large-scale bank run targeting the two *de facto* central banks, the Bank of China and the Bank of Communications. At the same time, a second financial crisis unfolded in Shanghai, fueled by the collapse of unregulated stock and commodity exchanges. Given that many bank headquarters were based in Shanghai, concerns about their solvency quickly spread, leading to runs on their branches in other provinces and cities (Zhu, 1998). Additional details about these crises, along with historical anecdotes highlighting the role of patriotism in mitigating panic, are provided in Appendix A.7.

Empirically, we construct a bank-prefecture-level panel dataset. On the banking side, our sample includes the Bank of China, the Bank of Communications, and all other banks that were either headquartered in Shanghai or operated at least one branch there at the end of 1920. We assign a unique bank ID to each bank headquarters and its branches. This sample includes 484 bank entities corresponding to 73 unique bank IDs.[34] These

[34]The 484 bank entities consist of 71 headquarters and 413 branches. Two banks had headquarters located outside the sample provinces (e.g., *Liaoning*) and are therefore only represented by their branches.

bank entities span 49 prefectures.

As we restrict the sample to bank-prefecture pairs where a bank operated at least one branch in the prefecture in 1920, the regression sample is an unbalanced panel of 73 bank groups across 49 prefectures. During the 1921 crisis, 36 banks (7 headquarters and 28 branches) closed across 27 prefectures. Our regression model is specified as follows:

$$\#\ bank\ closure_{i,b} = \alpha + \beta \times Anti\text{-}tax\_unrest_i + \gamma_1 \times \mathbf{X}_i + \gamma_2 \times HQ\text{-}B\ distance\ (log)_b + \mu_b + \lambda_t + \epsilon_i \tag{4}$$

where $\#\ bank\ closure_{i,b}$ denotes the number of branch closures in 1921 for bank b in prefecture i.[35] Prefecture level controls include baseline controls as specified in Equation 4, as well as conditional controls as specified in Section 5.3. The regression further controls for the log distance between the bank headquarters (HQ) and the branch (B). Prefecture *Shuntian* is excluded. Standard errors are clustered at the Bank ID level.

[Insert Table 6 about here]

The results reported in Table 6 indicate that anti-tax unrest is negatively associated with the likelihood of a bank entity closing during the 1921 banking crisis. Because our model includes bank fixed effects, this relationship rules out the effects from bank-level fundamentals. Thus, variation in branch-level resilience likely reflects differences in depositor trust toward the banking sector more broadly. Specifically, the finding that banks are more resilient in regions with stronger patriotic sentiment suggests that patriotism fosters institutional trust in banks. This trust helps sustain depositor confidence during times of financial distress, thereby mitigating the risk of bank runs when fundamental shocks occur.

6.2 Official versus private banks

The second test sheds light on whether there was a spillover of trust extending from government to modern banks *per se* by contrasting official versus private banks.

[35] A bank can have several branches in a prefecture as they might have multiple branches in different counties within a prefecture, or have more than one branch in large counties.

As discussed in Section 2.1, government bond underwriting was initially dominated by state-backed official banks; private banks entered later with limited involvement in the underwriter role. Thus, the public's first engagement with modern banking was through official banks. As these banks matured, their reliability fostered confidence in the broader banking system, which was extended to private banks. In other words, we posit that official bank growth primarily reflects public trust in the government, while private bank expansion indicates a broader trust in financial institutions.

To test this, we analyze the dynamic growth of official and private banks separately using the event-study dynamic DiD model, following the method described in Figure 3 but replacing the dependent variable with the number of official or private banks per prefecture-year. The findings, visualized in Figure 7, reveal that official and private banks responded in distinct ways to anti-tax unrest and the 1914 shock. Official banks saw a sharp jump in 1914, aligning with anecdotal evidence of their direct response to the fiscal shock. In contrast, private banks grew gradually, reflecting their slower bond market entry and the progressive buildup of public trust in modern banking. While official banks plateaued after 1914, private banks continued gaining momentum, eventually surpassing the official banks. This suggests that patriotic sentiment first bolstered trust in official banks before extending to private ones.

[Insert Figure 7 about here]

The ultimate, larger effects of anti-tax unrest on private banks are confirmed by Appendix Table B10, which estimates the average anti-tax effects for official and private banks separately. The results show that, on average from 1914 to 1926, each additional incident of unrest increased the number of official banks by 13.66% (Panel A, column 3) and private banks by 23.55% (Panel B, column 3) when evaluated at the mean. This aligns with the intuition that, for the banking sector and for others, once the private sector gains momentum, it expands rapidly and dominates the official sector.

To complement the identification of trust spillover, we conduct a less formal test to explore whether the effects of anti-tax unrest on private banks were channeled through official banks. Specifically, we assess the impact of anti-tax unrest on each bank type while controlling for the lagged presence of the other. Appendix Table B11 shows that

anti-tax unrest significantly influenced official banks, even when we account for lagged private banks (column 1). However, when controlling for lagged official banks, the effect of anti-tax unrest on private banks becomes insignificant (column 2). This suggests that patriotism directly drove official bank growth, while private bank expansion was indirectly influenced by official banks.

7 Generalization

Our study of China's banking history reveals a pattern in early banking development: modern banks were initially established by the government to raise patriotic funds, with financial trust rooted in civilians' patriotic sentiment. To demonstrate the wider applicability of our findings, we provide historical examples showing that this pattern extends beyond China.

Great Britain. The Bank of England (BOE), the first modern bank in Great Britain, was founded in 1694 amid ongoing military conflicts and shortly after the Glorious Revolution of 1688. It was founded as a private bank but served as the government's banker, with the primary mission of managing public debt and financing war efforts (North and Weingast, 1989). During the Nine Years' War (1688–1697), monetary contributions were promoted as a patriotic duty (Murphy, 2006). Motivated by this sentiment, a third of the first government war loan underwritten by the BOE was subscribed on the first day, another third within two days, and the entire loan was fully subscribed within ten days (North and Weingast, 1989). The BOE's success in raising capital laid the foundation for modern capital markets in England. Throughout the eighteenth and nineteenth centuries, modern private banks emerged, gradually replacing traditional institutions like local goldsmiths (North and Weingast, 1989).[36]

United States. The foundations of American modern banking were closely linked to patriotic efforts during the Revolutionary War (1775–1783). The nation's first congressionally chartered bank, the Bank of North America (1782), was established under

[36]Similar to China, various countries had traditional financial institutions before the establishment of modern banks, such as the goldsmiths in Great Britain. These traditional institutions were generally small in scale and relied on local, soft information to operate. Public trust in these banks was based on reputation and the owners' unlimited liability.

the leadership of Robert Morris to manage the financial logistics of the war. Morris, who even pledged his personal credit to secure loans and supplies, came to be regarded as the "patriotic financier" (Oberholtzer, 1903). His legacy is memorialized until today by a statue standing beside the First Bank of the United States in Philadelphia (see Figure B11).

Another example is the First Bank of the United States which was established by the Treasury of the United States in 1791 to stabilize the national economy after the Revolutionary War. To promote investment as a patriotic act, the Treasury deliberately scheduled the initial stock sale for July 4, 1791, coinciding with Philadelphia's fifteenth Independence Day celebration. The 20,000 publicly available shares sold out within hours, reflecting strong public support for the state (Cowen, 2000).

Japan. Japan's first modern bank, the First National Bank of Japan, was founded in 1873 after the Meiji Restoration (1868). In 1876, the government-issued Kinroku bonds to convert samurai stipends into interest-bearing securities, easing resistance to reform and funding modernization. To support this transition, the National Banking Act allowed government banks to use Kinroku bonds as capital and to issue convertible notes (Yamamura, 1967). This policy spurred rapid banking expansion, with the number of banks rising from six in 1876 to 153 within three years, creating a nationwide banking network (Tang and Basco, 2023).

Patriotism remains relevant in reinforcing public and financial trust in modern societies. While government backing has been proven to help mitigate financial instability, such as bank runs (Diamond and Dybvig, 1983), trust in governments is fragile and often declines during crises (Algan et al., 2017; Doerr et al., 2022). Acting as the ultimate safeguard, patriotism can sustain public support even when trust in government is low, helping to stabilize the state and to reinforce financial and economic stability.

8 Conclusion

This paper examines the role of patriotism in the emergence of modern banks, focusing on early twentieth-century China. The outbreak of World War I in 1914 created fiscal challenges, prompting the newly formed Republican government to issue domestic bonds

despite lacking creditworthiness. We argue that patriotism reinforced public trust in the government, enabling banks, key underwriters of these bonds, to expand.

Inspired by social contract theory, we use anti-tax unrest in the previous late Qing regime as a proxy for the strength of social contract, which embodied patriotic sentiment and was manifested in patriotic civic engagement efforts after institutional change. Regions with greater pre-1912 anti-tax unrest exhibited stronger state-building efforts during the Republican era. Using a DiD approach, we find that there were more subscriptions to government bonds in patriotic regions, fostering modern banking expansion after 1914. This result holds under the DiD-IV approach, additional socioeconomic controls, and falsification tests.

With bank fixed effects (therefore bank fundamentals) controlled for, the 1921 bank-run regressions show that bank branches in more patriotic prefectures are more resilient. This is consistent with patriotism bolstering institutional trust and depositor confidence, thereby mitigating run risk when shocks hit. We also document a trust spillover from official to private banks, shedding light on how trust in government extends to financial institutions. Finally, historical evidence suggests that patriotism's role in early banking development was not unique to China.

Overall, this study underscores patriotism as a crucial driver of trust in government and financial institutions, one that shapes the interactions among civilians, the state, and banking development.

References

Algan, Yann, and Pierre Cahuc, 2010, Inherited trust and growth, *American Economic Review* 100, 2060–2092.

Algan, Yann, Sergei Guriev, Elias Papaioannou, and Evgenia Passari, 2017, The European trust crisis and the rise of populism, *Brookings Papers on Economic Activity* 2017, 309–400.

An, Jiafu, Wenxuan Hou, and Chen Lin, 2022, Epidemic disease and financial development, *Journal of Financial Economics* 143, 332–358.

Atack, Jeremy, Matthew Jaremski, and Peter L Rousseau, 2014, American banking and the transportation revolution before the Civil War, *The Journal of Economic History* 74, 943–986.

Besley, Timothy, 2020, State capacity, reciprocity, and the social contract, *Econometrica* 88, 1307–1335.

Brett, Sheehan, 2003, *Trust in Troubled Times: Money, Banks, and State-Society Relations in Republican Tianjin* (Harvard University Press, Cambridge).

Cao, Shuji, 2001, *Zhongguo Renkoushi: Qing Shiqi [A Demographic History of China: Qing Period]* (Fudan University Press, Shanghai).

Caprettini, Bruno, and Hans-Joachim Voth, 2023, New deal, new patriots: How 1930s government spending boosted patriotism during World War II, *The Quarterly Journal of Economics* 138, 465–513.

Chen, Xulu, 1992, *Jindai Zhongguo Shehui de Xinchen Daixie [The New Superseding the Old in Modern Chinese Society]* (Renmin Chubanshe, Shanghai).

Chen, Yuhuan, 2006, *Baoding Junxiao Jiangshuailu [General Record of Baoding Military College]* (Guangzhou Press, Guangzhou).

Chen, Zhiwu, Chicheng Ma, and Andrew J Sinclair, 2022, Banking on the Confucian clan: why China developed financial markets so late, *The Economic Journal* 132, 1378–1413.

Chen, Zhiwu, Kaixiang Peng, and Weipeng Yuan, 2016, A preliminary study of Chinese interest rates from the early Qing to the twentieth century based on an examination of the historical database of Chinese interest rates (1660–2000), *Qingshi Yanjiu [Studies in Qing History]* 36–52.

Cheng, Linsun, 2003, *Banking in Modern China: Entrepreneurs, Professional Managers, and the Development of Chinese Banks, 1897–1937* (Cambridge University Press, New York).

CHGIS, 2016, China Historical Geographic Information System.

Chinese Academy of Meteorological Sciences, 1981, *Yearly Charts of Dryness/Wetness in China for the Last 500-Year Period* (SinoMaps Press, Beijing).

Chinese Second Historical Archive, 2001, *Zhongguo Jiuhaiguan Shiliao, 1859–1948 [Historical Materials on the Old Chinese Maritime Customs, 1859–1948]* (Jinghua Press, Beijing).

Colella, Fabrizio, Rafael Lalive, Seyhun Orcan Sakalli, and Mathias Thoenig, 2019, Inference with arbitrary clustering .

Cowen, David Jack, 2000, *The Origins and Economic Impact of the First Bank of the United States, 1791–1797*, Financial sector of the American economy (Garland Publishing, New York).

D'Acunto, Francesco, Marcel Prokopczuk, and Michael Weber, 2019, Historical antisemitism, ethnic specialization, and financial development, *The Review of Economic Studies* 86, 1170–1206.

Depetris-Chauvin, Emilio, Ruben Durante, and Filipe Campante, 2020, Building nations through shared experiences: Evidence from African football, *American Economic Review* 110, 1572–1602.

Diamond, Douglas W., and Philip H. Dybvig, 1983, Bank runs, deposit insurance, and liquidity, *Journal of Political Economy* 91, 401–419.

Doerr, Sebastian, Stefan Gissler, José-Luis Peydró, and Hans-Joachim Voth, 2022, Financial crises and political radicalization: How failing banks paved Hitler's path to power, *The Journal of Finance* 77, 3339–3372.

Du, Xuncheng, 2012, Jindai Zhongguo Zhengfu Gongzhai yu Jinrong Shichang [Government Bonds and Financial Market in Modern China], *Caijing Yanjiu [Journal of Finance and Economics]* 38, 37–47.

Du, Xuncheng, 2014, *Minzu Ziben Zhuyi yu Jiuzhongguo Zhengfu, 1840–1937 [National Capitalism and the Former Chinese Government, 1840–1937]* (Shanghai Renmin Chubanshe, Shanghai).

Esherick, Joseph W., 1987, *The Origins of the Boxer Uprising* (University of California Press, Berkeley CA).

Feng, Chao, 2008, Minguo chuqi de junren xuesheng yu shehui yanbian (1912–1922): yi Baoding junxiao Wanji xuesheng wei kaocha duixiang [Military cadets and social change in the early Republic (1912–1922): A case study of Anhui cadets at the Baoding Military Academy], *Ershiyi Shiji (The Twenty-First Century)* .

Fouka, Vasiliki, and Hans-Joachim Voth, 2023, Collective remembrance and private choice: German-Greek conflict and behavior in times of crisis, *American Political Science Review* 117, 851–870.

Gangl, Katharina, Benno Torgler, and Erich Kirchler, 2016, Patriotism's impact on cooperation with the state: An experimental study on tax compliance, *Political Psychology* 37, 867–881.

Gu, Cheng, 1997, *Nan Ming Shi [History of the Southern Ming Dynasty]* (Zhongguo Qingnian Chubanshe, Beijing).

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2004, The role of social capital in financial development, *American Economic Review* 94, 526–556.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2006, Does culture affect economic outcomes?, *Journal of Economic Perspectives* 20, 23–48.

He, Wenkai, 2013, *Paths toward the Modern Fiscal State: England, Japan, and China* (Harvard University Press, Cambridge).

Hilt, Eric, Matthew Jaremski, and Wendy Rahn, 2022, When Uncle Sam introduced Main Street to Wall Street: Liberty Bonds and the transformation of American finance, *Journal of Financial Economics* 145, 194–216.

Ho, Chun-Yu, and Dan Li, 2014, A mirror of history: China's bond market, 1921–42, *The Economic History Review* 67, 409–434.

Huang, Jianhui, 2005, *Zhongguo Qianzhuang Shi [A History of Money Houses in China]* (Shanxi Jingji Chubanshe, Taiyuan).

Iyer, Rajkamal, and Manju Puri, 2012, Understanding bank runs: The importance of depositor-bank relationships and networks, *American Economic Review* 102, 1414–1445.

Jiang, Wei, 2017, Have instrumental variables brought us closer to the truth, *The Review of Corporate Finance Studies* 6, 127–140.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1997, Legal determinants of external finance, *The Journal of Finance* 52, 1131–1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1998, Law and finance, *Journal of Political Economy* 106, 1113–1155.

Lefebvre, Georges, R. R. Palmer, and Timothy Tackett, 1947, *The Coming of the French Revolution* (Princeton University Press, Princeton).

Levine, Ross, Chen Lin, Chicheng Ma, and Yuchen Xu, 2023, The legal origins of financial development: Evidence from the Shanghai Concessions, *The Journal of Finance* 78, 3423–3464.

Li, Peiyuan, 2023, Political Repression, Media Propaganda, and Nation-building, Technical Report No.22–04, CU Boulder Working Paper in Economics.

Liang, Fangzhong, 2008, *Zhongguo Lidai Hukou, Tiandi, Tianfu Tongji [Statistics on Population, Land, and Land Tax Throughout Chinese History]* (Zhonghua Shuju, Beijing).

Lin, Chen, Chicheng Ma, Yuchen Sun, and Yuchen Xu, 2021, The telegraph and modern banking development, 1881–1936, *Journal of Financial Economics* 141, 730–749.

Lin, Chen, Chicheng Ma, Yuchen Sun, and Yuchen Xu, 2025, The allocation of talent and financial development, 1897 to 1936, *Management Science* 71, 4688–4706.

Lin, Chu, Wei Sun, and Chengli Wang, 2026, Saving an old regime with new elites? The unintended effects of co-opting foreign-educated councilors in China, *Journal of Development Economics* 178, 103580.

Ling, Wenyuan, 1928, *Sheng Zhai [Provincial Debts]* (Yinhang Yuekan, Beiping).

Locke, John, 1689, *Second Treatise of Government* (Awnsham Churchill, London).

Luo, Yudong, 1936, *Zhongguo Lijin Shi [The History of likin in China]* (Commercial Press, Shanghai).

Ma, Debin, and Jared Rubin, 2019, The paradox of power: Principal-agent problems and administrative capacity in Imperial China (and other absolutist regimes), *Journal of Comparative Economics* 47, 277–294.

Meng, T'ien-p'ei, and Sidney David Gamble, 1926, *Prices, Wages, and the Standard of Living in Peking, 1900-1924*, volume 10 of *Social Research Series* (Peking Express Press, Peking).

Modern Chinese Economic History Materials, 1964, *Diguo Zhuyi yu Zhongguo Haiguan [Imperialism and Chinese Customs]* (Zhonghua Book Company, Shanghai).

Murphy, Anne L., 2006, Dealing with uncertainty: Managing personal investment in the early English National Debt, *History* 91, 200–217.

North, Douglass C., and Barry R. Weingast, 1989, Constitutions and commitment: The evolution of institutions governing public choice in seventeenth-century England, *The Journal of Economic History* 49, 803–832.

Nunn, Nathan, and Leonard Wantchekon, 2011, The slave trade and the origins of mistrust in Africa, *American Economic Review* 101, 3221–3252.

Oberholtzer, Ellis Paxson, 1903, *Robert Morris, Patriot and Financier* (Macmillan, New York).

Pan, Guoqi, 2014, *Jindai Zhongguo Difang Gongzhai Yanjiu: yi Wan Chuan Min Yue wei Zhongxin de Kaocha [A Study on Local Government Bonds in Modern China: A Focus on Anhui, Sichuan, Fujian, and Guangdong]* (Jingji Kexue Chubanshe (Economic Science Press), Beijing).

Pascali, Luigi, 2016, Banks and development: Jewish communities in the Italian Renaissance and current economic performance, *The Review of Economics and Statistics* 98, 140–158.

Qian, Jiaju, 1984, *Jiuzhongguo Gongzhai Shiliao, 1894–1949 [Historical Source Materials on the History of Chinese Government Bonds, 1894–1949]* (Zhonghua Shuju, Beijing).

Qian, Nancy, and Marco Tabellini, 2025, Racial discrimination and the social contract: Evidence from US Army enlistment during WWII, *The Review of Economic Studies* rdaf038.

Rambachan, Ashesh, and Jonathan Roth, 2023, A more credible approach to parallel trends, *The Review of Economic Studies* 90, 2555–2591.

Rawski, Thomas G., 1989, *Economic Growth in Prewar China* (University of California Press, Berkeley).

Research Institute for Fiscal Science, and The Second Historical Archives of China, 1990, *Minguo Waizhai Dangan Shiliao [Archival Materials on Foreign Loans in the Republic of China]*, volume 4 (Dang'an Chubanshe (Archives Press), Beijing).

Rousseau, Jean-Jacque, 1762, *The Social Contract* (Paris, France).

Schatz, Robert T., Ervin Staub, and Howard Lavine, 1999, On the varieties of national attachment: Blind versus constructive patriotism, *Political Psychology* 20, 151–174.

Shanghai Library, 2009, *Comprehensive Catalogue on Chinese Genealogy (Zhongguo Jiapu Zongmu)* (Shanghai Library, Shanghai).

Shenbao, 1914, Neiguo gongzhai jinxing zhi zhuangkuang [Progress of domestic government bond issuance], *Shenbao* .

Shizhengchu, 1967, *Zhongguo Xiandai Junshishi Zhuyao Zhanyi Biao [Chronicles of Major Battles in China's Modern Military History]* (Shizhengchu, Taibei).

Smith, Daniel A., 2013, *Tax Crusaders and the Politics of Direct Democracy* (Routledge, London).

Stevenson, Betsey, and Justin Wolfers, 2011, Trust in public institutions over the business cycle, *American Economic Review* 101, 281–87.

Survey Department of Southern Manchuria Railway Company, 1930, *Zhongguo Neiguo Gongzhai Shiqing [Domestic Bonds in China]*.

Tang, John P., and Sergi Basco, 2023, Banks, credit supply, and the life cycle of firms: Evidence from late nineteenth century Japan, *Journal of Banking and Finance* 154, 106937.

Wu, Jingping, 2019, *Jindai Zhongguo de Jinrong Fengchao [Financial Agitations in Modern China]* (Dongfang Chuban Zhongxin, Shanghai).

Xinhai Revolution and Wuchang Uprising Memorial Museum, 1991, *Xinhai geming shi dituji [Atlas of the History of the Xinhai Revolution]* (SinoMaps Press, Beijing).

Xu, Yisheng, 1962, *Zhongguo Jindai Waizhai Shi Tongji Ziliao, 1853–1927* (Zhonghua Shuju, Beijing).

Yamamura, Kozo, 1967, The role of the Samurai in the development of modern banking in Japan, *The Journal of Economic History* 27, 198–220.

Yan, Hongzhong, 2015, Governmental debts and financial development in modern China, *Journal of Finance and Economics (Caijing Yanjiu)* 41, 108–120.

Yan, Zhongping, 2012, *Zhongguo Jindai Jingjishi Ziliao Xuanji [Selected Statistics of Early Modern China]* (Zhongguo Shehui Kexue Chubanshe, Beijing).

Yang, Keer, 2025, Trust as an entry barrier: Evidence from fintech adoption, *Journal of Financial Economics* 169, 104062.

Zhang, Bofeng, and Zongyi Li, eds., 1989, *Beiyang Junfa (1912-1918) [The Beiyang Warlords (1912–1928)]*, volume 1 (Wuhan Press, Wuhan).

Zhang, Yufa, and Rongtai Li, 1999, *Zhonghua Minguo Renmin Tuanti Diaochalu [Directory of People's Organizations in the Republic of China]* (Guoshiguan, Taipei).

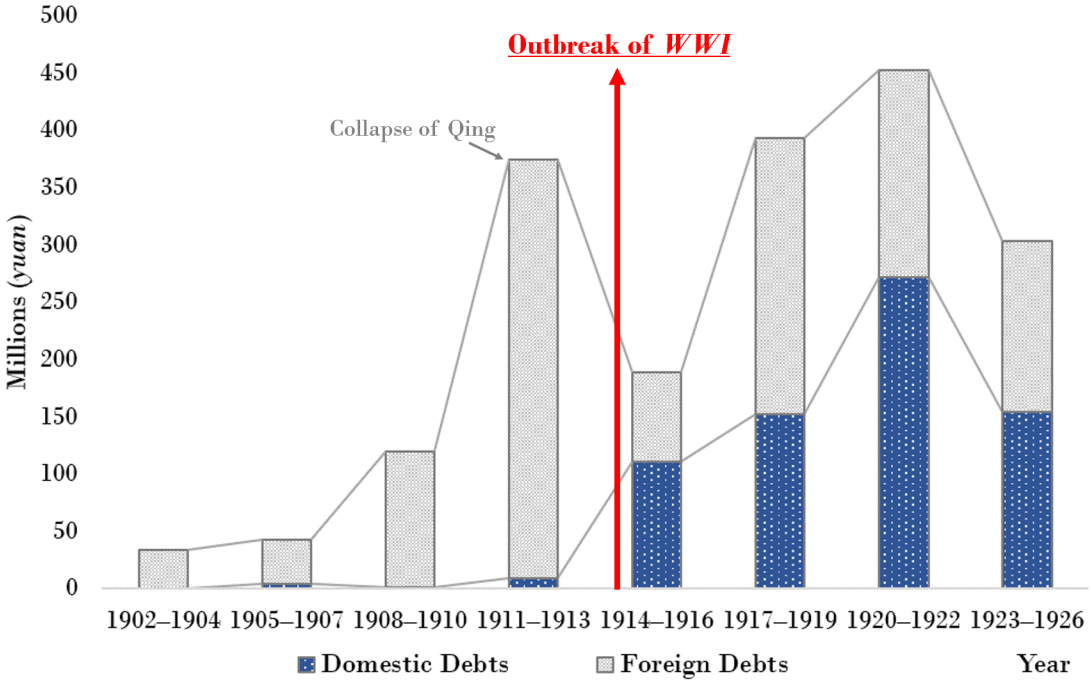
Zhang, Zhenhe, and Yuanying Ding, 1982, Qingmo Minbian Nianbiao [Chronology of Civil Protests in the Late Qing Dynasty], in *Modern History Materials, General Serial No. 49* (China Social Sciences Press, Beijing).

Zhao, Liewen, 2013, *Nengjingju Riji [The Diary of Zhao Liewen, 1832–1894]* (Yuelu Shushe, Changsha).

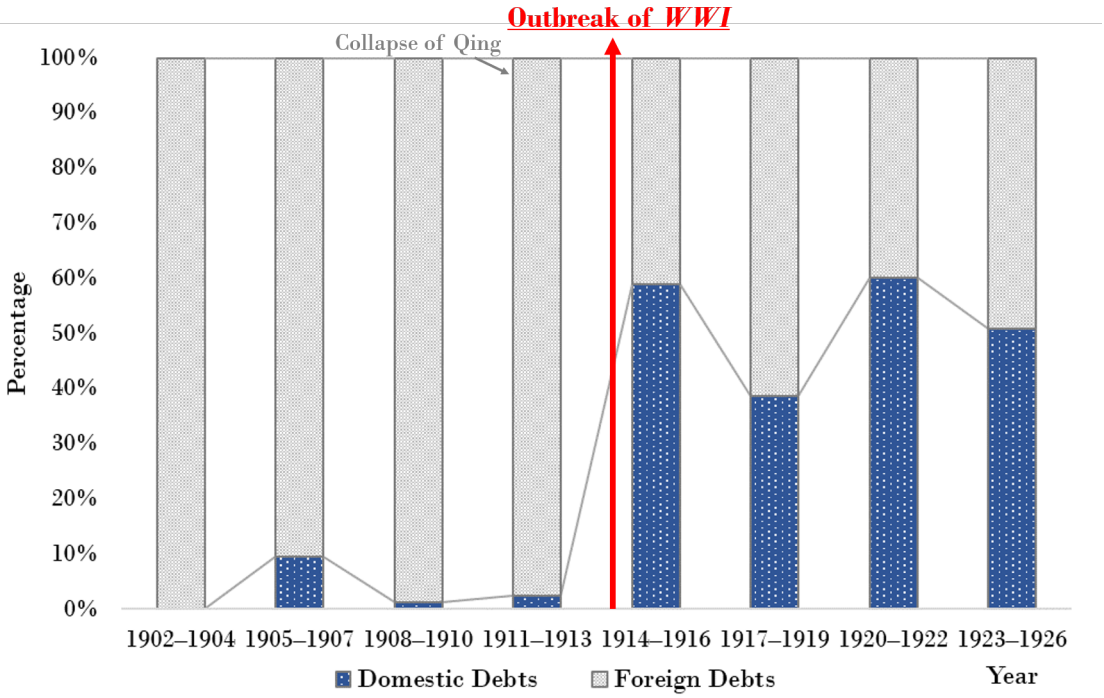
Zhu, Haicheng, 2022, *Jindai Huashang Gupiao Shichang Zhidu yu Shijian: 1872–1937 [The Stock Market System and Practices of Modern Chinese Merchants: 1872–1937]* (Zhongguo Shehui Kexue Chubanshe, Beijing).

Zhu, Yingui, 1998, Jindai shanghai zhengquan shichang shang gupiao maimai de sanci gaochao [Three peaks in stock trading on the modern shanghai stock market], *Zhongguo Jingjishi Yanjiu [Chinese Social-Economic History Research]* 58–70.

Zhu, Zongzhen, 1993, Minsan Neiguo Gongzhai de Faxing [the Issuance of Chinese Government Bonds in the Third Year of the Republic of China (1914)], in *Minguo Zhanggu [Historical Anecdotes of Republican China]*, 56–58 (Zhongguo Qingnian Chubanshe, Beijing).



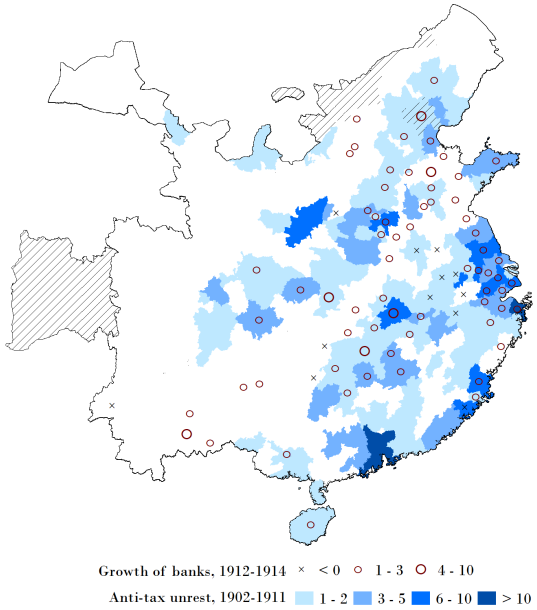
Panel A: The collected amount of domestic and foreign debts



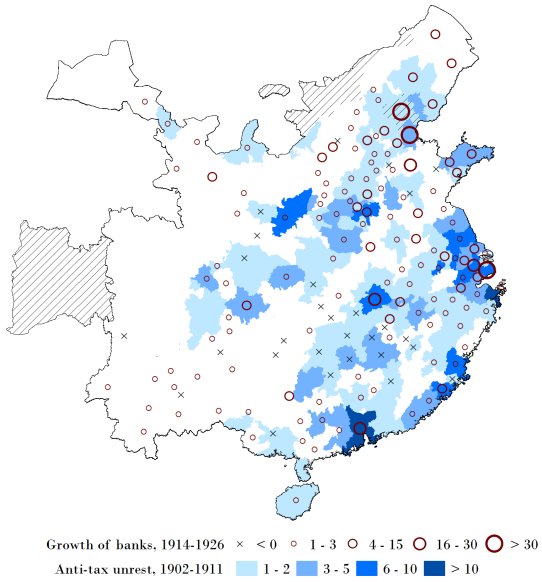
Panel B: The percentage share of domestic and foreign debts

Figure 1. **Domestic and foreign debts (1902–1926)**

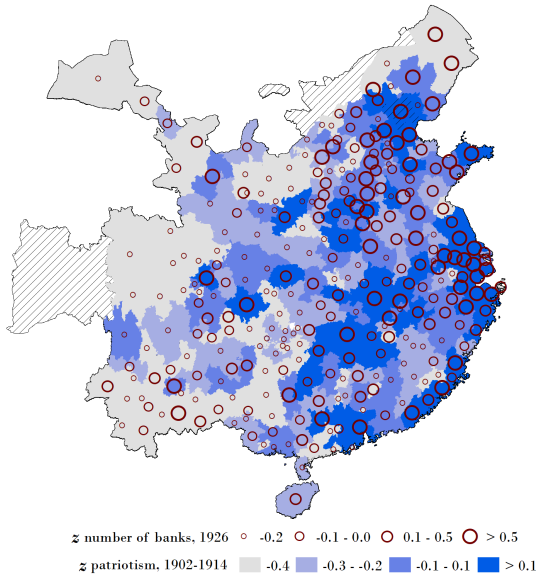
Note: The figures depict the collected amount (in million *Yuan*) and percentage share of domestic and foreign debts in China from 1902 to 1926. Domestic debts refer to Chinese government bonds issued by the central government and 18 provincial governments. Foreign debts refer to debts borrowed by the Chinese government from foreign banks and foreign governments. Data for foreign debts are from Xu (1962), and the data for domestic debts are from Qian (1984), Survey Department of Southern Manchuria Railway Company (1930), Ling (1928), and Fiscal Chronicles from provincial gazetteers.



(a) Panel A: Anti-tax unrest and the growth of banks before 1914



(b) Panel B: Anti-tax unrest and the growth of banks after 1914



(c) Panel C: Patriotism (z-score) and the standardized banks in 1926

Figure 2. **Distributions of anti-tax unrest and growth of modern banks**

Note: These maps illustrate the distribution of anti-tax unrest and the growth of modern banks. Anti-tax unrest refers to the total number of unrest events involving tax resistance occurring in 1902–1911 in each prefecture. Growth of Chinese banks refers to the difference in the number of banks between 1912 and 1914 (Panel A), and between 1914 and 1926 (Panel B). Panel C maps the standardized measures of patriotism (the z-score of the average z-scores of anti-tax unrest as well as the three civic engagement measures before 1914) and of banks in 1926. The data are at the prefectural level. The map covers 298 prefectures from 18 provinces in China proper; prefectures outside the regression sample are shaded.

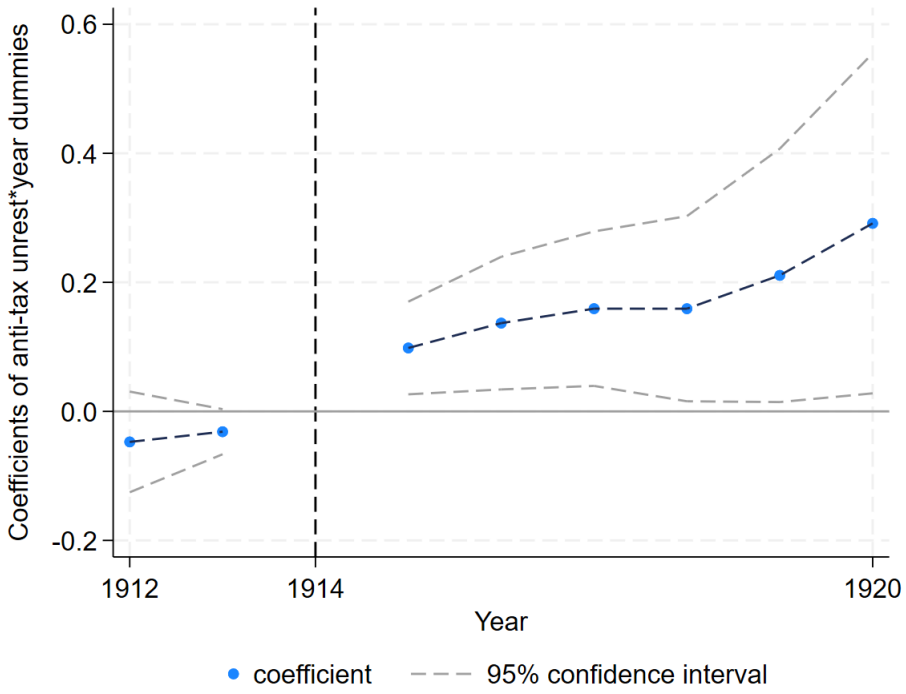


Figure 3. **Parallel trends: The effect of patriotism on modern banks**

Notes: This figure shows the pre- and post-1914 trend in the effect of anti-tax unrest on the number of modern Chinese banks. The coefficients (with 95% confidence intervals) are obtained from regressing the number of banks on the interaction terms between the anti-tax unrest and the year dummies for the years 1912–1920, conditional on the prefectural and year fixed effects and the interactive effects between the year dummies and the baseline prefectural factors (logarithm of prefectural population density in 1910, the logarithm of prefectural land area, the logarithm of the prefecture's distance to the coast, the logarithm of the river density within each prefecture, the logarithm of the prefectural altitude, the ruggedness of the terrain, and the logarithm of the prefecture's distance to capital (Beijing)). The year 1914 is set to be the reference year.

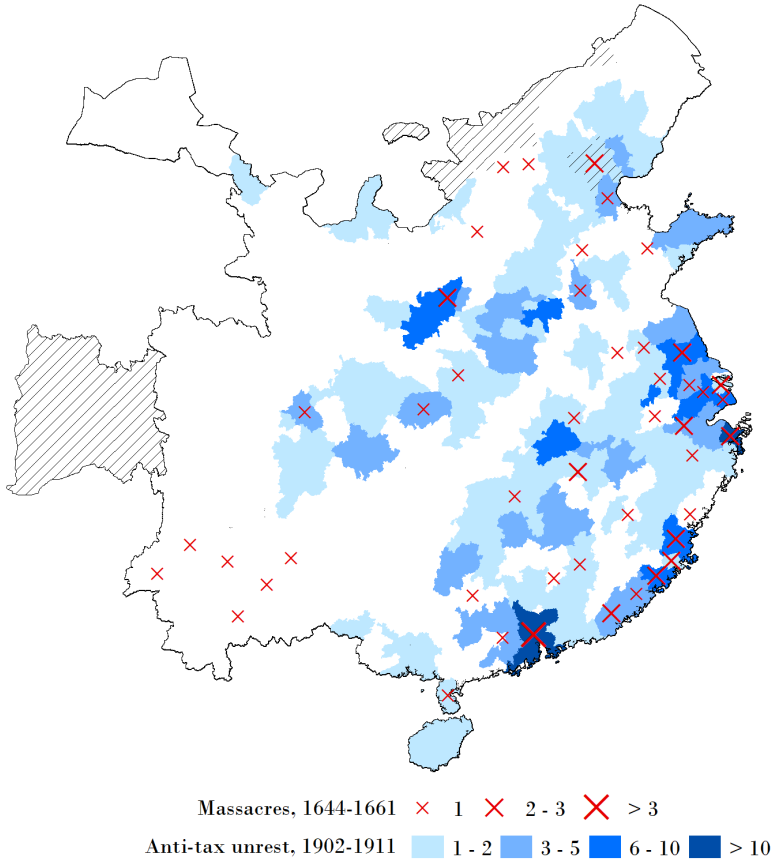


Figure 4. **Distributions of anti-tax unrest and historical massacres**

Notes: This figure depicts the spatial distribution of anti-tax unrest and historical massacres taking place from 1644 through 1661. The data are at the prefectural level. The map covers 298 prefectures from 18 provinces in China proper; prefectures outside the regression sample are shaded.

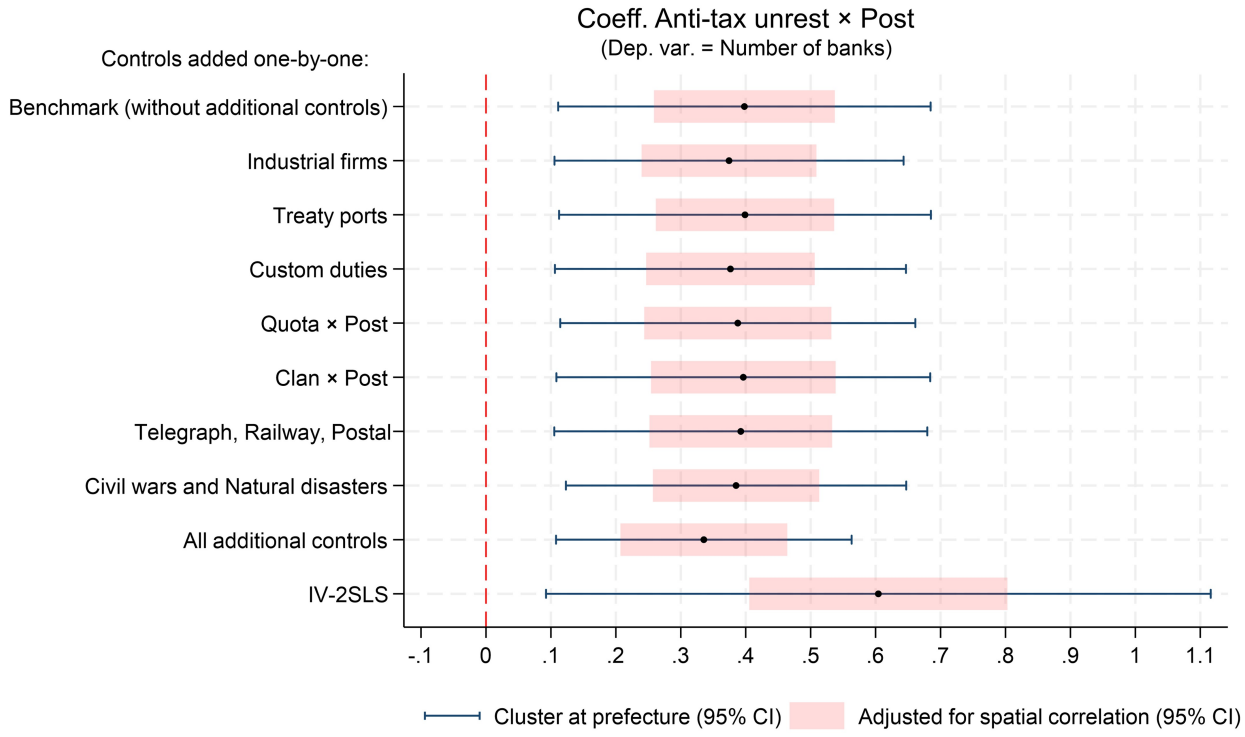


Figure 5. **Additional controls**

Note: This figure examines the effects of anti-tax unrest on modern banks with additional controls. In all models, the dependent variable is the number of banks in each prefecture-year, and the figure plots the coefficient of the main explanatory variable, Anti-tax unrest × Post. Model 1 replicates column 2 of Table 4, serving as a benchmark. Additional controls are added one-by-one, including: the logarithm of the number of newly established industrial firms (model 2), the number of treaty ports (model 3), the logarithm of the custom duty income in these treaty ports (model 4), the interaction term between log civil examination quota and post-1914 dummy (model 5), the interaction term between log clan and post-1914 dummy (model 6), the number of telegraph stations, railway stations and postal offices (model 7), the occurrence of local civil wars and the occurrence of natural disasters (flood and drought) (model 8). All time-variant additional controls are lagged for one year. In model 9, all the above-mentioned controls are included simultaneously. Column 10 employs a DiD-IV approach where Anti-tax unrest × Post is instrumented by Massacres × Post. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures, covering the period 1912–1926. Standard errors are either clustered at the prefecture level or calculated using the method of Colella et al. (2019) with a distance parameter of 205 kilometers (3 times prefectural radius). Appendix Figure B5 plots the coefficients using models with the standardized number of banks and the standardized measure of patriotism.

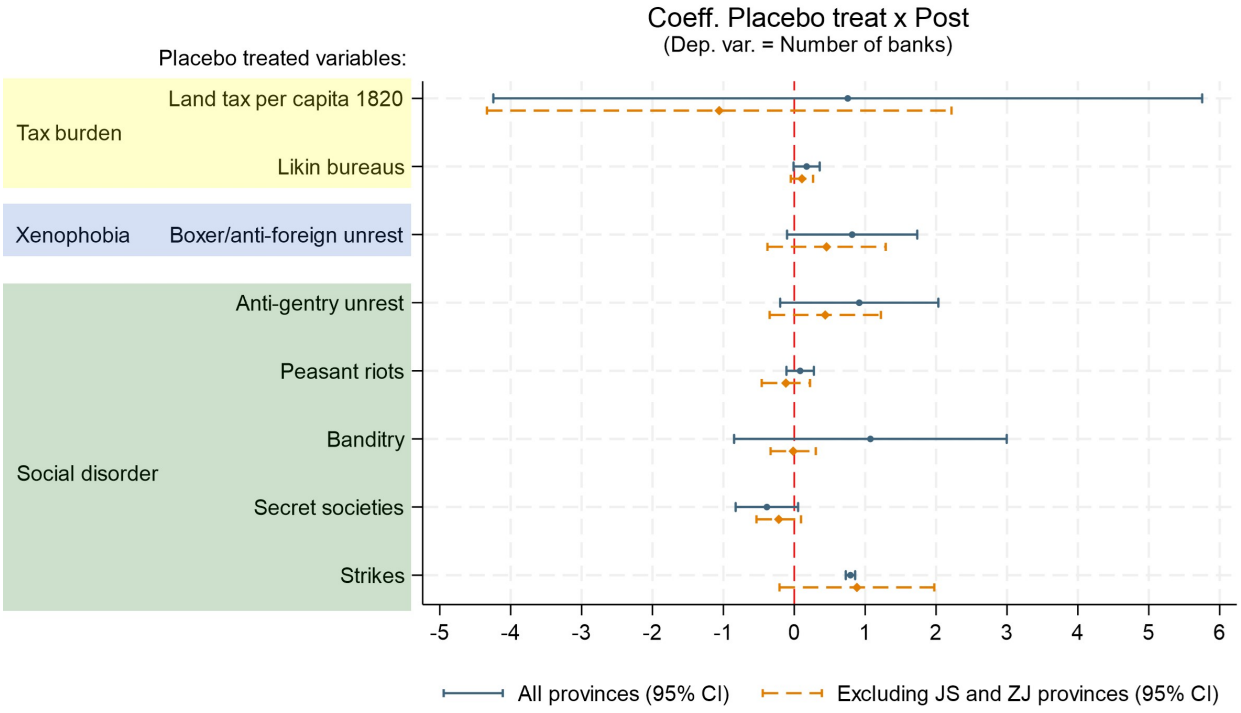
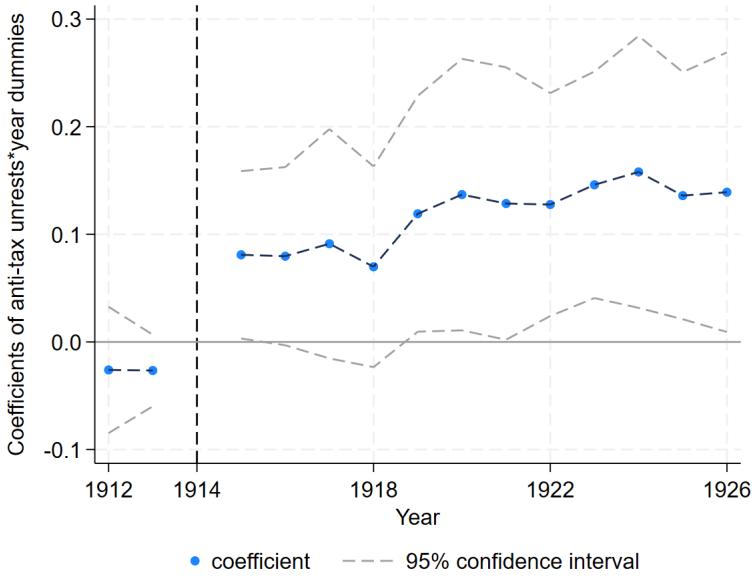
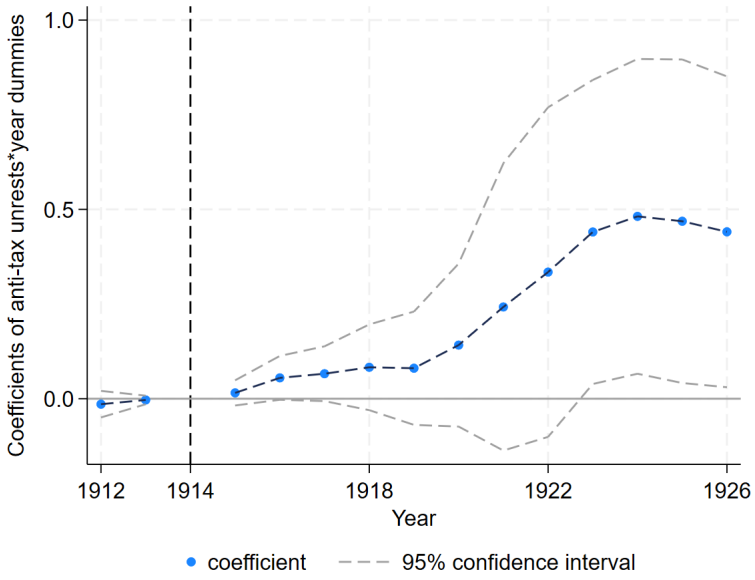


Figure 6. **Falsification tests**

Note: This figure displays the coefficients of placebo explanatory variables from falsification tests. In all models, the dependent variable is the number of modern Chinese banks in each prefecture for each year, and the placebo explanatory variable is structured as treat × post. The placebo "treat" variables fall into three categories. In models 1-2, tax burden is measured by the logarithm of per capita land tax in 1820 (model 1) and the number of commercial tax bureaus (model 2). Model 3 examines xenophobia, which is proxied by a dummy that indicates the occurrence of either the Boxer movement or anti-foreigner unrest. Models 4-8 examine general social disorder which is proxied by five measures: the number of anti-gentry unrest events in 1902–1911 (model 4), the number of peasant unrest events in 1902–1911 (model 5), the number of banditry activities in 1902–1911 (model 6), the number of secret societies (model 7), and the number of strikes (model 8). Detailed variable definitions are provided in Section 5.4. All controls and model specifications are identical to those in column 2 of Table 4. Coefficients for the placebo treatment variables are reported for the full sample and for a subsample that excludes *Zhejiang* and *Jiangsu* provinces.



Panel A: Official banks



Panel B: Private banks

Figure 7. **The effect of patriotism on official and private banks**

Notes: The figures show the dynamic effects of anti-tax unrest on the number of official banks (Panel A) and private banks (Panel B). The coefficients (with 95% confidence intervals) are obtained from regressing the number of official (private) banks on the interaction terms between the anti-tax unrest and the year dummies for the years 1912–1926, conditional on the prefectural and year fixed effects and the interactive effects between the year dummies and the baseline prefectural factors (logarithm of prefectural population in 1910, the logarithm of prefectural land area, the logarithm of the prefecture's distance to the coast, the logarithm of the river density within each prefecture, the logarithm of the prefectural altitude, the ruggedness of the terrain, and the logarithm of the prefecture's distance to capital (Beijing)). The year 1914 is set to be the reference year.

Table 1. **Summary Statistics**

	Obs.	Mean	S.D.	Min	Max
A. Prefecture-level variables					
Anti-tax unrest	286	1.143	2.179	0	21
Cadets in Baoding Academy after 1912	286	21.612	45.610	0	387
Cadets in Baoding Academy diff. (after-before 1912)	286	13.608	28.394	-15	239
Political associations (1912–1926)	286	0.738	5.156	0	77
Social associations (1912–1926)	286	0.566	3.180	0	35
PC civic engagement (1912–1926)	286	0	1.394	-0.371	17.050
z civic engagement (1912–1926)	286	0	1	-0.336	10.844
PC patriotism (1902–1914)	286	0	1.505	-0.562	18.099
z patritism (1902–1914)	286	0	1	-0.440	10.565
Chinese banks	4,290	1.915	5.538	0	101
Official banks	4,290	1.171	2.160	0	19
Private banks	4,290	0.692	3.585	0	78
Baseline controls					
Population in 1910 (in 100,000 people)	286	13.995	13.397	0.330	75.770
Land area (in 1,000 sq.km.)	286	14.663	14.205	0.262	131.190
Population density (1,000 people/sq.km.)	286	0.134	0.159	0.000	1.878
Distance to the coast (km)	286	500.337	382.237	0.381	2181.953
River length (km)	286	3.378	5.790	0.024	38.037
River density (m/sq.km.)	286	0.824	4.322	0.001	58.341
Altitude (in 100 m)	286	7.484	8.102	0.040	42.778
Ruggedness	286	1.004	0.006	1.000	1.040
Distance to Beijing (km)	286	1.230	0.589	0.099	2.499
Instrumental variable					
Massacres	286	0.213	0.580	0	5
Additional controls (lagged)					
Modern industrial firms	4,290	0.379	2.141	0	51
Treaty ports	4,290	0.157	0.449	0	4
Custom duties (in million yuan)	4,290	0.116	0.942	0	24.360
Civil examination quota	286	103.164	76.009	0	354
Clan (before 1911)	286	20.811	79.174	0	718
Telegraph stations	4,290	1.999	1.754	0	11
Railway stations	4,290	0.624	1.442	0	8
Postal offices	4,290	4.701	2.847	0	16
Civil wars	4,290	0.035	0.250	0	5
Natural disasters	4,290	0.167	0.373	0	1
Placebo treats					
Land tax per capita in 1820	286	1.082	0.102	1	1.959
Commercial tax bureaus	286	2.654	3.482	0	20
Boxer or anti-foreigner unrest	286	0.336	0.473	0	1
Anti-gentry unrest	286	0.476	1.358	0	10
Peasant riots	286	1.608	3.548	0	29
Banditry	286	0.269	0.907	0	7
Secret societies	286	0.458	0.938	0	7
Strikes	286	0.490	3.279	0	53
Resist tyranny	286	0.178	0.670	0	6
Oppose policies	286	0.413	1.088	0	8
Uprisings	286	0.126	0.548	0	7
Mutiny	286	0.063	0.271	0	2
All resist government unrest	286	0.780	1.738	0	10
B. Province level variables					
Anti-tax unrest events	17	17.882	13.242	0.000	44.000
Collected value (in million yuan)	255	0.544	1.751	0.000	17.750
Collected value for voluntary bonds (in million yuan)	255	0.226	1.095	0.000	14.968
Collected value for compulsory bonds (in million yuan)	255	0.276	1.334	0.000	17.750
Target value (in million yuan)	255	0.879	2.334	0.000	18.250
Target value for voluntary bonds (in million yuan)	255	0.382	1.545	0.000	15.000
Target value for compulsory bonds (in million yuan)	255	0.425	1.704	0.000	18.250

Table 2. **Anti-tax unrest and civic engagement**

This table examines the effects of anti-tax unrest on civic engagement activities. Panel A focuses on military participation. The dependent variable in column 1-2 is the number of cadets at the Baoding Military Academy from 1912 through 1923. The prefectural distribution of cadets is identified based on the students' birthplace. In column 3-4, the dependent variable is the difference in the number of cadets post- and pre-1912. Panel B focuses on political and social participation. The dependent variable in column 1 and 2 is the number of associations promoting political ideologies and the dependent variable in column 3 and 4 is the number of associations aimed at social welfare, such as charities and support groups for vulnerable demographics like women and youth. In Panel C, the dependent variables are the principal component of the number of cadets, the number of political associations, and the number of social associations between 1912–1926 (column 1-2), and the z-score of the average z-scores of the three (column 3-4). The main explanatory variable for all panels is the number of anti-tax unrest events (or its z-score in panel C) in each prefecture from 1902 through 1911. Control variables include the log of prefectural population density in 1910, the log of prefectural land area, the log of the prefecture's distance to the coast, the log of the river density within each prefecture, the log of the prefectural altitude, the ruggedness of the terrain, and the log of the prefecture's distance to capital (Beijing). Appendix Table B1 reports the full set of coefficients for all controls. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures from 18 provinces within China proper. Robust standard errors are reported in parentheses. Standard errors that account for spatial correlation using Colella et al. (2019) with a distance parameter of 205 kilometers (3 times prefectural radius) are reported in square brackets. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Military participation	# cadets at the Baoding Military Academy			
	After 1912		Diff.(After 1912-Before 1912)	
	1	2	3	4
Anti-tax unrest	6.509	3.513	4.598	3.053
	(1.415)***	(1.433)**	(1.064)***	(1.006)***
	[1.795]***	[1.536]**	[1.382]***	[1.176]***
R-squared	0.094	0.256	0.121	0.210
Mean of dependent variable	21.612		13.608	
Panel B. Political and social participation	# political associations		# social associations	
	1	2	3	4
Anti-tax unrest	0.939	0.906	0.621	0.599
	(0.356)***	(0.349)***	(0.222)***	(0.237)**
	[0.292]***	[0.320]***	[0.215]***	[0.236]**
R-squared	0.155	0.149	0.178	0.176
Mean of dependent variable	0.738		0.566	
Panel C. Principal component (PC) and standardization (z-score)	PC civic engagement 1912–26		z civic engagement 1912–26	
	1	2	3	4
Anti-tax unrest	0.299	0.268		
	(0.092)***	(0.098)***		
	[0.083]***	[0.094]***		
z anti-tax unrest			0.480	0.417
			(0.130)***	(0.144)***
			[0.120]***	[0.140]***
R-squared	0.216	0.230	0.227	0.265
Controls		Y		Y
Observations	286	286	286	286

Table 3. **Anti-tax unrest and government bond subscription**

This table examines the effects of anti-tax unrest on government bond issuance. The dependent variable, collected value (in million yuan), refers to the amount of funds raised by provincial government through bond issuance in each year. The main explanatory variable, *Anti-tax unrest × Post*, is the number of anti-tax unrest events in each province during 1902–1911 interacting with the post-1914 dummy. Other control variables, target value, interest rate, collateral, and maturity, denote the total target amount (in million yuan), bond interest rate, whether the bonds are collateralized, and years of maturity, respectively. The latter three variables are the average of all bonds issued in a province in a given year, weighted by target value. Column 1 includes all bonds issued by provincial governments. Column 2 focuses on voluntary bonds. Column 3 focuses on compulsory bonds. The regressions include the interaction between post-1914 dummy and each of the baseline controls (identical to column 2 of Table 2, except at the provincial level). Province and year fixed effects are included. The analysis encompasses 17 provinces, covering the period 1912–1926. Standard errors are clustered at the province level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
Anti-tax unrest × Post	0.028**	0.020**	0.008
	(0.010)	(0.008)	(0.008)
Target value (in million yuan)	0.678***	0.646***	0.718***
	(0.131)	(0.192)	(0.191)
Interest rate (weighted avg)	5.043	2.032	8.372*
	(4.472)	(7.383)	(4.567)
Collateral (weighted avg)	-0.553*	-0.861*	-0.484*
	(0.288)	(0.480)	(0.231)
Maturity (weighted avg)	-0.048	-0.017	-0.084
	(0.042)	(0.076)	(0.063)
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.766	0.729	0.782
Observations	255	255	255
Mean of dependent variable	0.544	0.226	0.276

Table 4. **Patriotism and modern banking development**

This table explores the relationship between patriotism and the development of modern banking in China. In Columns 1-4, the dependent variable is the number of modern banks, including both headquarters and branches, in each prefecture for each year. Columns 5-6 use the standardized (z-score) number of banks as the dependent variable. The key explanatory variable is structured as treat × post, where "treat" is (i) the number of anti-tax unrest events occurring in each prefecture in 1902–1911 (column 1-3), (ii) patriotism, or the principal component of anti-tax unrest in 1902-1911 and the three civic engagement measures (see Table 2 for definitions) in 1912-1914 (column 4), (iii) the standardized anti-tax unrest (column 5), and (iv) the standardized patriotism (column 6). *Post* is a dummy variable that equals one for years after 1914 and zero for years up to and including 1914. Control variables include the interaction of post dummy and the log of prefectural population density in 1910, the log of prefectural land area, the log of the prefecture's distance to the coast, the log of the river density within each prefecture, the log of the prefectural altitude, the ruggedness of the terrain, and the log of the prefecture's distance to capital (Beijing). Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures from 18 provinces within China proper, covering the period from 1912, the establishment year of Republican China, through 1926, just before the Northern Expedition. Standard errors clustered at prefecture level are reported in parentheses. Standard errors that account for spatial correlation using the method of Colella et al. (2019) with a distance parameter of 205 kilometers (3 times prefectural radius) are reported in square brackets. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of banks				z number of banks	
	1	2	3	4	5	6
Anti-tax unrest × Post	0.596	0.398	0.300			
	(0.186)***	(0.146)***	(0.110)***			
	[0.063]***	[0.051]***	[0.045]***			
PC patriotism 1902–14 × Post				1.789		
				(0.398)***		
				[0.333]***		
z anti-tax unrest × Post					0.171	
					(0.063)***	
					[0.031]***	
z patriotism 1902–14 × Post						0.502
						(0.155)***
						[0.103]***
Pop. density in 1910 × Post		-0.010	0.141	-0.230	-0.002	-0.065
		(0.254)	(0.239)	(0.218)	(0.050)	(0.052)
Land area × Post		0.548**	0.606***	0.143	0.108**	0.013
		(0.238)	(0.217)	(0.248)	(0.047)	(0.055)
Distance to coast × Post		-0.184	-0.281**	-0.190	-0.036	-0.034
		(0.130)	(0.112)	(0.123)	(0.026)	(0.027)
River density × Post		0.533	0.361	0.369	0.105	0.084
		(0.363)	(0.231)	(0.243)	(0.072)	(0.054)
Altitude × Post		-0.742	-0.319	-0.346	-0.146	-0.079*
		(0.455)	(0.402)	(0.227)	(0.090)	(0.047)
Ruggedness × Post		74.153**	52.558	47.054*	14.621**	9.683*
		(36.373)	(36.598)	(26.164)	(7.172)	(5.223)
Distance to Beijing × Post		-1.273**	-1.435***	-1.298***	-0.251**	-0.247***
		(0.493)	(0.465)	(0.437)	(0.097)	(0.086)
Prefecture and Year FE	Y	Y	Y	Y	Y	Y
R-squared	0.745	0.755	0.774	0.786	0.755	0.781
Observations	4290	4290	3930	4290	4290	4290
Mean of dep. var.	1.915	1.915	1.533	1.915	1.915	1.915
Sample	Full	Full	Excl. JS & ZJ prov.	Full	Full	Full

Table 5. **Instrumental variable (IV)**

This table examines the effects of anti-tax unrest on modern banks using the IV-2SLS approach. The dependent variable is the number of modern banks in each prefecture for each year. The explanatory variable, *Anti-tax unrest* × *Post*, is instrumented by *Massacres* × *Post*, where massacres refer to the number of massacres that each prefecture had experienced during 1644 and 1661. Panel A reports the 2SLS estimation results. Column 1 reports the result without any controls. Column 2 reports the result with baseline controls identical to column 2 of Table 4. Column 3 excludes Jiangsu and Zhejiang provinces. Column 4 uses standardized banks and patriotism measures (see section 3.3 for definition). Panel B reports the first-stage regression accordingly. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures, covering the period 1912–1926. Standard errors clustered at the prefecture level are reported in parentheses. Standard errors that account for spatial correlation using the method of Colella et al. (2019) with a distance parameter of 205 kilometers (3 times prefectural radius) are reported in square brackets. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A: 2SLS	Number of banks			z number of banks
	1	2	3	4
Anti-tax unrest × Post	0.749	0.631	0.476	
	(0.279)***	(0.270)**	(0.221)**	
	[0.130]***	[0.112]***	[0.099]***	
z patriotism 1902-14 × Post				0.322
				(0.110)***
				[0.055]***
Kleibergen Paap F-statistic	16.182	10.194	5.229	9.798
Kleibergen Paap F-statistic, spatial	79.219	51.945	24.337	49.626
Panel B: First Stage	Anti-tax unrest × Post			z patriotism 1902–14 × Post
	1	2	3	4
Massacres × Post	2.149	1.823	1.731	
	(0.534)***	(0.571)***	(0.757)**	
	[0.240]***	[0.251]***	[0.348]***	
z massacre × Post				0.409
				(0.131)***
				[0.058]***
R-squared	0.863	0.882	0.870	0.857
Controls × Post		Y	Y	Y
Prefecture and Year FE	Y	Y	Y	Y
Observations	4,290	4,290	3,930	4,290
Sample	Full	Full	Excl. JS & ZJ prov.	Full

Table 6. **Banking crisis in 1921**

This table examines the effect of patriotism on bank closures during the 1921 run. The dependent variable is the number of bank entities (head offices or branches) that closed in 1921 in each bank–prefecture cell. The explanatory variable is the number of anti-tax unrest events in 1902–1911 by prefecture. In column 5, anti-tax unrest is instrumented by the number of massacres a prefecture experienced in 1644–1661. Prefectural controls are identical to those in Table 2; additional controls are described in Section 5.3. For time-varying controls, we use their 1920 (lagged) values. Columns 4 and 5 also include the log Headquarter–branch distance. All specifications include bank ID fixed effects. The sample comprises 73 bank IDs and 484 entities across 49 prefectures. Standard errors are clustered at the bank-ID level, and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of bank closure				
	OLS				IV
	1	2	3	4	5
Anti-tax unrest	-0.000	-0.004	-0.005***	-0.005***	-0.021***
	(0.004)	(0.005)	(0.001)	(0.001)	(0.007)
R-squared	0.412	0.419	0.422	0.422	
Kleibergen–Paap F-statistic					70.430
Prefectural controls		Y	Y	Y	Y
Additional controls			Y	Y	Y
HQ-B distance				Y	Y
Bank FE	Y	Y	Y	Y	Y
Observations	307	307	307	302	302
Mean of dep. var.	0.097	0.097	0.097	0.097	0.097

Appendices for Bonds of Love: Patriotism and the Rise of Modern Banks

Appendix A Additional results

Appendix A.1 Anti-tax unrest and anarchism

Anarchism emerged in late Qing China amid civilian unrest and intellectual ferment. Seeking solutions to national decline and foreign subjugation, some Chinese thinkers turned to anarchism. The *Chunfeng Hui* (Spring Wind Society), formed in Tokyo around 1907, was among the earliest attempts by Chinese students to promote anarchist ideology. However, anarchism remained marginal in China until the May Fourth Movement in 1919. Given its limited presence in China, it is unlikely to confound our results.

To formally test to what extent anti-tax protesters during the late Qing (from 1902 to 1911) adopted anarchism instead of state-building in the Republican era (from 1912 onward), we compiled data on anarchist associations during the years 1912 through 1926 using the data from Zhang and Li (1999). The data confirm that anarchism remained marginal before 1919, with only 12 of 33 documented groups founded from 1912 through 1919. Post-1919, anarchist ideas spread but remained less influential than those of other political movements. Empirically, we regress anarchist association counts on anti-tax unrest events, using both OLS and Poisson models to account for geographic sparsity and potential zero inflation.

The results reported in Appendix Table A1 show a weak correlation between anti-tax unrest and anarchist associations. This, along with the fact that anarchism only emerged after 1919, suggests anti-tax unrest was unlikely driven by anarchism. Even if such a correlation existed, it would attenuate the association between anti-tax unrest and state formation.

Table A1. **Anti-tax unrest and anarchism**

This table examines whether anti-tax unrest events were associated with anarchism. The dependent variable is the number of anarchistic associations established in each prefecture from 1912 through 1926. The explanatory variable is the number of anti-tax unrest events in each prefecture from 1902 through 1911. Control variables are identical to Table 2. The analysis encompasses 286 prefectures from 18 provinces within China proper. Standard errors are robust and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of anarchistic associations	
	1 OLS	2 OLS
Anti-tax unrest	0.168* (0.089)	0.170* (0.100)
Controls		Y
R-squared	0.216	0.208
Observations	286	286
Mean of dependent variable	0.101	0.101

Appendix A.2 Anti-tax unrest and political opportunism

One concern is that anti-tax unrest reflected political opportunism, with participants signaling loyalty to a potential new government for future political gains. Distinguishing patriotism from opportunism is challenging. We resort to both historical narratives and empirical evidence to shed light on their differences.

First, most anti-tax unrest events were grassroots movements led by ordinary citizens without explicit political slogans or objectives. Second, our sample includes events of unrest from as early as a decade before the Qing collapse, a period when no clear alternative government had emerged. Late Qing China saw multiple failed revolutionary movements and lacked a unified opposition to the Qing court (Cameron, 1963). Given the low likelihood of success and the absence of a viable new authority, it is unlikely that early incidents of anti-tax unrest were primarily motivated by political opportunism.

We empirically test political opportunism using "merely symbolic" alignment with the Xinhai Revolution as a proxy. The Xinhai Revolution, triggered by the Wuhan Uprising on October 10, 1911, led to the collapse of the Qing court. Following the uprising, many regions—provinces, prefectures, and counties—formally declared their separation from the Qing. A significant share of these declarations came from Qing officials and local elites and contributed to a largely bloodless transition.

To illustrate the ease of alignment, on November 5, 1911, Jiangsu Governor Cheng Dequan, responding to requests from Suzhou gentry and merchants, declared Jiangsu's "independence". He converted the governor's office into a military governor's headquarters, replaced the flags at the main entrance, and had a few roof tiles removed from the main hall with bamboo poles to symbolically "destroy for the revolution". With these simple acts, the "revolution" was considered complete (Li, 2013).

This lack of widespread violence was partly driven by opportunistic officials who abandoned the Qing court and aligned with the revolution in response to shifting power dynamics.

As an example of opportunistic alignment, we reference Liu Xianshi, who served as the magistrate of Xingyi county in Guizhou province during the Qing dynasty and had previously aided the Qing government in suppressing local peasant and secret society

uprisings. After the outbreak of the Xinhai Revolution, Liu initially intended to suppress the uprising. However, upon learning that Guizhou's provincial capital had fallen to revolutionary forces, he recognized that supporting the revolution would be more advantageous and chose to betray the Qing court, aligning strategically with the new order. As a political outcome, he later rose to the position of Guizhou provincial governor under the early Republican government (Worthing, 2007).

Using the *Historical Atlas of the Xinhai Revolution* (Xinhai Revolution and Wuchang Uprising Memorial Museum, 1991), we manually identified 401 local alignments within our sample region. Excluding military conquests and failed alignments, we classified 293 alignments as "symbolic". While acknowledging most participants in the Xinhai Revolution were genuinely patriotic, we suggest symbolic aligners were more opportunistically motivated than those who initiated violent conquests.

In Appendix Tables A2 and A3, we replicate equations 4 and 2, replacing the main independent variable with *Symbolic Xinhai alignment* in Appendix Table A2, and with *Symbolic Xinhai alignment* $\times$ *Post* in Appendix Table A3. Additionally, we include both *Symbolic Xinhai alignment* and *Anti-tax unrest* to conduct horse-race regressions, testing whether the social contract (anti-tax unrest) or political opportunism better predicts civic engagement and bond subscription. Results show political opportunism fails to predict either outcome, while anti-tax unrest coefficients remain significant with magnitudes comparable to those in Tables 2 and 3.

Table A2. **Political opportunism and civic engagement**

This table examines the effects of political opportunism on civic engagement activities. Political opportunism is measured by *Symbolic Xinhai alignment*—that is, within each prefecture, the ratio of counties that symbolically declared abandonment of the Qing court during the Xinhai Revolution. Panel A focuses on military participation. Panel B focuses on political and social participation. Panel C focuses on the princinpal component and standardized civic engagement measures. The definitions of dependent variables and model specifications follow Table 2. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures from 18 provinces within China proper. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Military participation	# cadets at the Baoding Military Academy			
	After 1912		Before 1912	
	1	2	3	4
Symbolic Xinhai alignment	-7.365	-12.398*	-3.207	-7.498
	(6.561)	(6.779)	(4.414)	(4.722)
Anti-tax unrest		3.744**		3.193***
		(1.489)		(1.056)
R-squared	0.235	0.257	0.167	0.211
Mean of dependent variable	21.612		13.608	
Panel B. Political and social participation	# political associations		# social associations	
	1	2	3	4
Symbolic Xinhai alignment	3.051	1.880	1.613	0.829
	(2.345)	(1.948)	(1.134)	(0.883)
Anti-tax unrest		0.871***		0.583**
		(0.330)		(0.233)
R-squared	0.050	0.153	0.054	0.176
Mean of dependent variable	0.738		0.566	
Panel C. Principal component (PC) and standardization (z-score)	PC civic engagement 12–26		z civic engagement 12–26	
	1	2	3	4
Symbolic Xinhai alignment	0.679	0.326		
	(0.545)	(0.434)		
Anti-tax unrest		0.262***		
		(0.095)		
z symbolic Xinhai alignment			0.097	0.036
			(0.086)	(0.068)
z anti-tax unrest				0.400***
				(0.141)
R-squared	0.100	0.230	0.140	0.264
Controls	Y	Y	Y	Y
Observations	286	286	286	286

Table A3. **Political opportunism and government bond subscription**

This table examines the effects of political opportunism on government bond issuance. Political opportunism is measured by *Symbolic Xinhai alignment*—that is, within each prefecture, the ratio of counties that symbolically declared abandonment of the Qing court during the Xinhai Revolution. Panel A focuses on military participation. Panel B focuses on political and social participation. Panel C focuses on the principal component and standardized civic engagement measures. The definitions of dependent variables and model specifications follow Table 3. Province and year fixed effects are included. The analysis encompasses 17 provinces, covering the period from 1912 through 1926. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
Panel A. Political opportunism			
Symbolic Xinhai alignment × Post	0.176	0.955	-0.238
	(0.955)	(0.665)	(0.478)
R-squared	0.766	0.729	0.782
Panel B. Horse race			
Symbolic Xinhai alignment × Post	-0.961	0.339	-0.605
	(1.177)	(0.601)	(0.798)
Anti-tax unrest × Post	0.034**	0.019**	0.011
	(0.014)	(0.008)	(0.011)
R-squared	0.765	0.728	0.782
Bond controls	Y	Y	Y
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
Observations	255	255	255
Mean of dependent variable	0.392	0.234	0.13

Appendix A.3 The Parallel Trends Assumption

We employ the honest DiD method proposed by Rambachan and Roth (2023) to examine the extent to which our baseline DiD estimation is robust against potential violations of the parallel trends assumption.

Specifically, Rambachan and Roth (2023) define δ_t as the difference in trends between the treated and control groups that would have occurred in the absence of the treatment effect in a given period t. Δ is the set of δ_t for all t. The authors formulate Δ as a function of a parameter M that bounds how different the post-treatment differential trend may be from the pre-treatment differential trend.[37] A larger value of M indicates a greater allowance for violations of the parallel trends assumption, pushing the estimated treatment effects toward statistical insignificance. For any given M, the honest DiD method estimates a coefficient and its confidence interval. The break-even M is of particular interest as it represents the minimum level of assumption violation required to render the estimated treatment effects statistically insignificant. Rambachan and Roth (2023) propose two types of parallel trend violations:

1. Relative Magnitudes Bounds (RM). In the RM approach, the violation of parallel trends in the post-treatment period is assumed to be $\bar{M}$ times the largest violation of parallel trends in the pre-treatment period. Δ is defined as:

$$\Delta^{\text{RM}}(\bar{M}) = \{\delta : \forall t \geq 0, |\delta_{t+1} - \delta_t| \leq \bar{M} \cdot \max_{s<0} |\delta_{s+1} - \delta_s|\} \tag{5}$$

2. Smoothness Restrictions (SD). The SD ("second differences" or "second differential") assumes that the differential trends evolve smoothly over time, and M bounds the extent to which the slope of the difference in trends can vary across consecutive periods. Δ is defined as:

$$\Delta^{\text{SD}}(M) = \{\delta : \forall t \geq 0, |(\delta_{t+1} - \delta_t) - (\delta_t - \delta_{t-1})| \leq M\} \tag{6}$$

[37] The conventional DiD parallel-trends assumption is the special case where post-treatment differential trend is identical to pre-treatment differential trend in the absence of the treatment effect.

Applications to our settings

In our baseline model, which estimates the effects of anti-tax unrest on modern banking (equation 3), there are only two periods of pre-treatment trends (1912–1913). To lengthen the pre-trend window, thereby improving the credibility of the honest DiD estimation, we extend the sample back to 1908 and use a sample period of 1908–1926. Appendix Figure A1 illustrates the event study estimations using this window.

Based on this 1908–1926 sample and focusing on the coefficient of *anti-tax unrest* $\times$ $year_{1915}$, or the first year post-shock, we implement the honest DiD method to assess the robustness of the results against varying levels of trend violations. Panel A and B of Appendix Figure A2 plot the results using RM and SD methods, respectively.

For the RM approach, our result is robust up to $\bar{M} \approx 0.35$. In other words, the effects of anti-tax unrest on banks in 1915 would become insignificant only if a violation in the post-treatment period (i.e., a change in the trend) were more than 35% as large as the maximum violation observed in the pre-treatment period.

For the SD approach, our results are robust to linear violations of the trend ($M = 0$), and remain statistically significant until M reaches approximately 0.02.

The above analysis signifies that our core finding—that social contract strength fostered bank development—would only be challenged by the presence of unobserved confounding factors or shocks capable of inducing a sharp and non-linear change in the differential trend of bank growth.

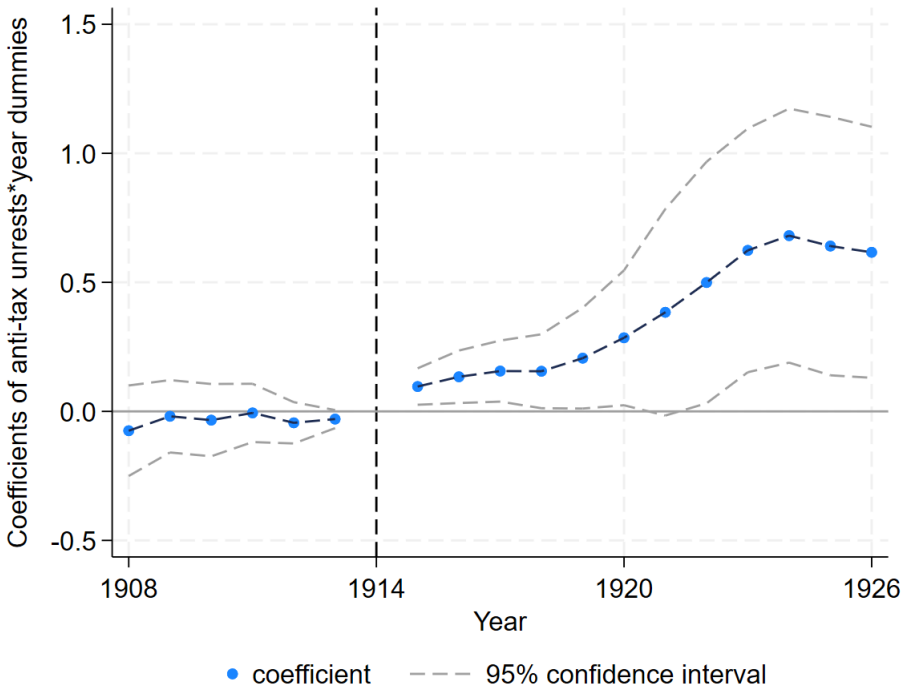
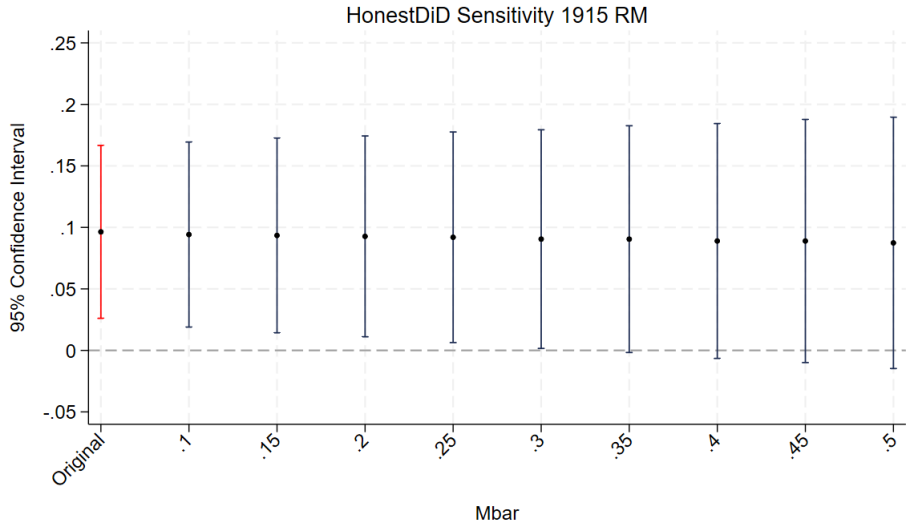
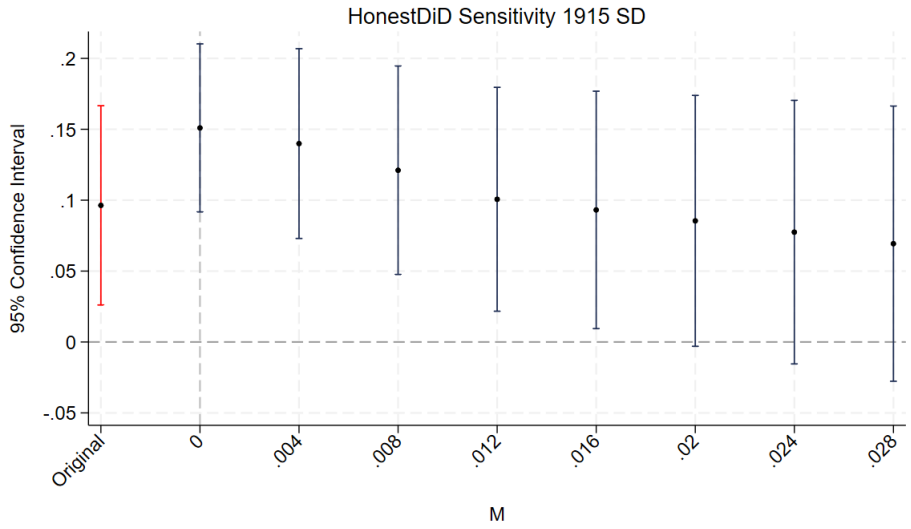


Figure A1. **Extended parallel trends**

Notes: This figure presents an extended version of the pre- and post-1914 trend in the effect of anti-tax unrest on the number of Chinese modern banks. The time span is prolonged to be 1908 through 1926. The coefficients (with 95% confidence intervals) are obtained from regressing the number of banks on the interaction terms between the anti-tax unrest and the year dummies, conditional on the prefectural and year fixed effects and the interactive effects between the year dummies and the baseline prefectural factors. The year 1914 is set to be the reference year.



Panel A. Honest DiD under Relative Magnitudes Bounds (RM)



Panel B. Honest DiD under Smoothness Restrictions (SD)

Figure A2. **The Parallel Trends Assumption**

This figure examines the sensitivity of our results to the potential violations of the parallel trend assumption. The analysis is based on the model in Appendix Figure A1 and focuses on the coefficient of year 1915. The x-axis corresponds to the sets of M, while the y-axis plots the corresponding coefficient as well as the 95% confidence interval given each value M. Panel A employs the RM method and Panel B employs the SD method. Detailed explanations of the methods are presented in Section Appendix A.3.

Appendix A.4 LATE and complier characteristics

Instrumental Variable (IV) approach estimates a Local Average Treatment Effect (LATE), rather than an Average Treatment Effect (ATE) (Jiang, 2017). It is therefore essential to characterize the subpopulation for which this effect is estimated—the compliers. Following the framework of Imbens and Rubin (1997) and assuming no defiers, we classify prefectures into three groups based on their response to the instrument (experiencing a massacre, Z) and their subsequent action (engaging in anti-tax unrest, D). These groups are defined as follows:

Compliers are prefectures whose behavior follows the instrument; they exhibit unrest if and only if a massacre occurs ($[Z = 1, D = 1]$ and $[Z = 0, D = 0]$). This group constitutes the majority of our sample (61.89%), and the LATE represents the causal effect for these prefectures. **Always-takers** are prefectures that experience unrest regardless of the instrument ($[Z = 0, D = 1]$). They represent a substantial portion of the sample (32.17%), suggesting that other significant factors also drive unrest. **Never-takers** are prefectures that do not experience unrest even if a massacre occurs ($[Z = 1, D = 0]$). This is the smallest group (5.94%).

As shown in Table A4, a comparative analysis of these groups' characteristics reveals a distinct profile. Most notably, always-takers are, on average, located in significantly more developed regions. Compared with compliers, they are closer to Beijing (by 269 km, $p<0.001$) and the coast (by 119 km, $p<0.01$), and situated at substantially lower altitudes (by 496 m, $p<0.001$) with less rugged terrain ($p<0.001$). This suggests that in more developed and centrally located areas, unrest may be driven by factors other than our instrument, such as a greater awareness of the "social contract", as we hypothesize. In contrast, the observable differences between compliers and never-takers are not statistically significant, which may be due to the small sample size of the never-taker group (N=17). Ultimately, this characterization clarifies the scope of our findings. The LATE estimated by our IV model represents the causal effect of anti-tax unrest on provoking banking development, but this effect is concentrated within a specific subpopulation: the compliers, which are predominantly the prefectures that are relatively less developed, more remote, and located in inland, mountainous areas.

Table A4. **Complier characteristics**

This table reports the charateristics of compliers, never-takers and always-takers in our IV design. Detailed discussions are presented in Appendix Section Appendix A.4

.

	Full sample	Compliers (C)	Never-takers (N)	N − C		Always-takers (A)	A − C	
	Mean	Mean	Mean	Diff.	s.e.	Mean	Diff.	s.e.
# prefectures	286	177	17			92		
% prefectures	100%	61.89%	5.94%			32.17%		
Pop. density (1,000 people/km^2)	0.134	0.125	0.101	-0.025	(0.046)	0.158	0.033	(0.021)
Land area (thousand km^2)	14.663	15.407	15.679	0.273	(4.140)	13.045	-2.362	(1.859)
Distance to the coast (km)	500.337	544.784	439.336	-105.448	(101.022)	426.097	-118.687**	(49.422)
River density (km/km^2)	0.824	1.162	0.410	-0.751	(1.328)	0.250	-0.912	(0.571)
Altitude (hundreds of m)	7.484	9.012	10.138	1.126	(2.287)	4.052	-4.960***	(0.999)
Ruggedness	1.004	1.005	1.005	0.000	(0.002)	1.003	-0.002***	(0.001)
Distance to Beijing (km)	1230.234	1314.314	1355.221	40.907	(150.422)	1045.376	-268.938***	(72.372)

Appendix A.5 Anti-tax unrest and modern banks: County-level evidence

We conduct a county-level robustness test to account for variations in banks and anti-tax unrest within prefectures. Our sample includes 1,503 counties across 286 prefectures, averaging five counties per prefecture. County-level data is not used as the baseline due to severe zero inflation, as banks and unrest were concentrated in prefectural capitals. From 1912 through 1926, 77.5% of county-level observations recorded zero banks, compared to 33.6% at the prefecture level.

At the county-year level, we apply the same DiD and IV-DiD strategies as in Section 5, except that the measures are at the county level. Appendix Table B8 presents the results. We start with a baseline model (column 1), add demographic and geographic controls (column 2), and further incorporate additional controls (column 3). The results remain robust; each additional anti-tax unrest event (1902–1911) leads to 0.423 more banks after 1914 (column 2), translating into a 0.182 (=0.423/2.330) standard deviation increase, similar to the prefecture-level estimate (0.183 = 0.398/2.179) reported in Table 4, column 2. Columns 4–6 show IV results, instrumenting anti-tax unrest events with early Qing county-level massacres. The effects remain consistent, though statistical significance weakens.

Table A5. **County-level evidence**

This table examines the effects of anti-tax unrest on modern banks at the county level. The dependent variable is the number of modern Chinese banks in each county for each year. The explanatory variable, *Anti-tax unrest* × *Post* is the number of anti-tax unrest events in each county from 1902 through 1911 interacting with the post-1914 dummy. Column 1–3 report the regression results with OLS. Column 4–6 report results using IV-2SLS approach, where the *Anti-tax unrest* × *Post* is instrumented by *Massacres* × *Post*. *Massacres* refer to the number of massacres that occurred in each county from 1644 through 1661. Columns 1 and 4 report the result without any controls. Columns 2 and 5 report the result with baseline controls identical to those in Table 4, column 2. Columns 3 and 6 further include additional controls identical to those presented in Section 5.3. County and year fixed effects are included. The analysis encompasses 1,503 counties, covering the period from 1912 through 1926. Standard errors are clustered at the county level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of banks					
	OLS			IV-2SLS		
	1	2	3	4	5	6
Anti-tax unrest × Post	0.485**	0.423**	0.374**	1.083*	1.094*	1.002
	(0.216)	(0.195)	(0.172)	(0.573)	(0.642)	(0.710)
Controls × Post		Y	Y		Y	Y
Additional controls			Y			Y
Year and County FE	Y	Y	Y	Y	Y	Y
R-squared	0.742	0.743	0.745			
Kleibergen–Paap F-stat.				12.859	10.910	10.542
Observations	22,545	22,545	22,545	22,545	22,545	22,545
Mean of dep. var.	0.364	0.364	0.364	0.364	0.364	0.364

Appendix A.6 Exposure to patriotism and bank performance

The analyses in Section 5.1–5.3 show that, in regions with stronger patriotic sentiment, more people were willing to subscribe to government bonds after 1914, making these regions attractive for bank expansion. In this section, we examine bank-level data to assess whether exposure to anti-tax unrest indeed improved bank performance.

For the explanatory variable, we construct a panel measure of each bank-year's additional exposure to patriotic sentiment. This is calculated as the weighted sum of the number of anti-tax unrest events in prefectures where a bank opened new branches in that year, with the weight being the number of new branches opened in each prefecture.[38] To account for bank size, this measure is scaled by the bank's total number of branches.

If banks expand strategically into patriotic regions to attract government bond investors, increased exposure to these areas should enhance bond holdings and profitability. We assemble financial statements for the years 1922–1926 from nineteen major Chinese banks, sourced from Economic Research Department (1933). We measure bank performance using return on assets (ROA), defined as net profit to total assets (×100). Bond holdings are less straightforward, as government bonds could appear on balance sheets as either reserves for banknotes or marketable securities (Ho and Li, 2014).[39] Based on historical narratives, we assume that 30% of banknote issuance was backed by government bonds and 75% of marketable securities were government bonds.[40] Additionally, we consider bond holdings and profit growth, defined as the difference between current-year and previous-year bond holdings (profits), scaled by the previous year's total assets (×100). Bank-level controls include total assets (log), cash-to-asset ratio (×100), and

[38] For instance, consider a bank that established five new branches within the year—two in Prefecture A and three in Prefecture B. The bank's additional exposure to patriotic sentiment in that year, as measured by anti-tax unrest, is calculated as the sum of the unrest episodes in Prefecture A multiplied by two and those in Prefecture B multiplied by three.

[39] Marketable securities, as recorded in bank balance sheets, refer to investments in financial instruments that can be easily traded in the market. They are typically liquid assets held by banks for managing short-term needs or for investment purposes; these include stocks, bonds, and other financial instruments that can be readily converted into cash. Based on a survey of 28 banks from 1921 to 1934, Lan (2005) found that more than three-quarters of these marketable securities consisted of government bonds.

[40] Beginning in 1928, banks were officially required to back the issuance of banknotes with 40% government bonds as reserves (Braggion, Manconi, and Zhu, 2020). Before 1928, the ratio was not stipulated. With some variation across banks, this ratio was about 30% in the largest official banks in China, including the Bank of China and the Bank of Communications (Qian, 1984).

leverage (debt-to-asset ratio $\times 100$).

We regress banks' bond holdings and profitability on their lagged exposure to patriotic sentiment, controlling for bank characteristics and including bank and year fixed effects. Table A6 reports summary statistics and Table A7 reports the results. We find that increased exposure to patriotic regions significantly boosts both banks' bond holdings and performance. These findings provide direct evidence that exposure to patriotism enhanced bank performance.

Table A6. **Summary statistics for bank level variables**

	Obs.	Mean	S.D.	Min	Max
Exposure to anti-tax unrest	114	0.223	0.685	0	6
ROA (%)	114	3.003	1.903	-0.592	9.861
Bond-to-asset ratio (%)	114	8.446	4.908	0.272	27.594
Total assets (million yuan)	114	43.771	85.101	1.844	505.815
Leverage ratio (%)	114	65.893	12.295	31.171	92.914
Cash ratio (%)	114	7.293	4.611	1.128	23.565

Table A7. **The effects of anti-tax unrest on bank performance**

This table examines the effects of anti-tax unrest on bank performance. Based on the financial statements of 19 major Chinese modern banks from 1922 through 1926, we construct bank-year level financial measures. The dependent variable in column 1 and 2, Bonds/assets, refers to the amount of government bonds held by the bank scaled by total assets (× 100). The amount of government bonds holdings in the bank is the sum of 30% of banknotes and 75% of marketable securities. The dependent variable in column 3 is the bond-holding difference between the current and previous years, scaled by previous year's total assets. The dependent variable in columns 4 and 5 is ROA, defined as the net profit to total assets ratio (× 100). The dependent variable in column 6 is the profit difference between the current and previous years, scaled by previous year's total assets. The main explanatory variable, *Additional exposure to unrest*, is constructed by calculating the weighted sum of anti-tax unrest events in the prefectures where a bank has established new branches within a specific year, with the weighting based on the number of new branches in each prefecture. This weighted sum of unrest is then scaled by the total number of branches in the bank. Columns 2–3 and 5–6 control for bank-level covariates, including the bank' s total assets (log), cash-to-asset ratio (× 100), and leverage or debt-to-asset ratio (× 100). The explanatory variables are all lagged for one year. Bank and year fixed effects are included. Standard errors are clustered at the bank level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Government bond holding			Profitability		
	Bonds/assets		(Growth of bonds)/assets	ROA		(Growth of profits)/assets
	(1)	(2)	(3)	(4)	(5)	(6)
Additional exposure to unrest (lagged)	0.566**	0.768***	1.402**	0.307***	0.268***	0.443***
	(0.232)	(0.265)	(0.318)	(0.060)	(0.064)	(0.094)
Assets (log, lagged)		0.801	-4.088		0.906	-0.984
		(2.533)	(3.992)		(0.626)	(1.139)
Leverage (lagged)		0.091	0.186		-0.028	0.048*
		(0.067)	(0.114)		(0.018)	(0.026)
Cash-to-asset (lagged)		-0.023	0.182		0.012	0.157***
		(0.186)	(0.194)		(0.046)	(0.052)
R-squared	0.760	0.767	0.082	0.836	0.837	0.171
Observations	95	95	95	95	95	95
Mean of dependent variable	9.152	9.152	1.690	2.021	2.021	0.019

Appendix A.7 The 1921 banking crises and the role of patriotism

China experienced nationwide banking panics and widespread mistrust of the financial sector in 1921, triggered by two distinct crises.

The first was a large-scale bank run that began in Beijing in November 1921. Citizens there withdrew massive amounts of deposits from the Bank of China and the Bank of Communications, which were not only the two largest banks at that time but also functioned as *de facto* central banks. This panic quickly spread to other cities where these banks operated branches, including Jinan, Hankou, and Shanghai (Wu, 2019).

This Beijing-originated bank run had two underlying triggers. First, in the early 1920s, the central government's fiscal deficit had grown substantially due to rising military expenditures from ongoing warlord conflicts. This led to a default on foreign indemnity payments in October 1921 (Reinhart and Rogoff, 2008) and forced the government to consolidate previously issued national bonds due to repayment difficulties (Yan, 2015). Such a fiscal crisis eroded public confidence in the government's credibility and solvency. A second trigger was the government's diplomatic failure at the Washington Naval Conference (1921–1922). News and even rumors about this failure, widely reported through telegraphs and newspapers, intensified public fears of losing state sovereignty and facing complete colonization by foreign powers like Japan (Wu, 2019). These combined factors led citizens to lose confidence in the two state-owned banks.

Simultaneously, another banking crisis occurred in Shanghai, driven by the collapse of unregulated stock and commodity exchanges. These had become highly speculative and profitable businesses in the early 1920s (Zhu, 1998). Following the establishment of Shanghai's first commodity exchange in 1920, 136 exchanges and 12 trust companies were created within a year, with the trust companies serving as investment agents for these exchanges. However, in August 1921, the central government began enforcing stricter regulations, banning unregistered exchanges. This regulatory crackdown led to the widespread failure of both exchanges and trust companies. By April 1922, only six exchanges and two trust companies remained operational (Zhu, 1998). This failed speculation had spillover effects on the banking sector. Between 1921 and 1923, six

private banks in Shanghai that had invested in these exchanges went bankrupt (Yang, 1930), leading to widespread fears about the safety of deposits throughout Shanghai and its neighboring cities' banking system.

Under such widespread panics, and with the government unable to alleviate the crises, regions with historically patriotic civilians who had founded the Republican regime demonstrated greater resilience. For instance, members of chambers in Shanghai and Tianjin, who had also been significant buyers of government bonds since 1914, along with patriotic scholars like Liang Qichao (1873–1929), delivered public speeches and published articles in major newspapers (L'impartial (Dagong Bao), 1921; The China Press, 1921). These efforts called for citizens to maintain confidence in government banks, to disregard rumors, and to cease withdrawing their deposits as a patriotic act supporting the state. All these initiatives helped the banks in these areas, particularly the official ones, resume operations even after enduring bank runs.

In contrast, in some prefectures without a historical presence of patriotic figures, the banking panics were more prolonged. A notable example is Zhoukou in Henan province, the hometown of Yuan Shikai (1859–1916). Zhoukou, home to branches of both the Bank of China and the Bank of Communications, was also affected by the banking panics that originated in Beijing. According to Banker's Weekly on December 7, 1921 (Banker's Weekly, 1921), China's leading finance-specialized magazine established in 1917, while the Bank of China branch in Zhoukou partially stabilized the market, the Bank of Communications branch, which primarily focused on remittance services, ultimately closed. This closure was driven by the collapse of the remittance business, as no one stepped forward to dispel the rumors or rebuild public confidence in the banks.

Appendix B Figures and tables

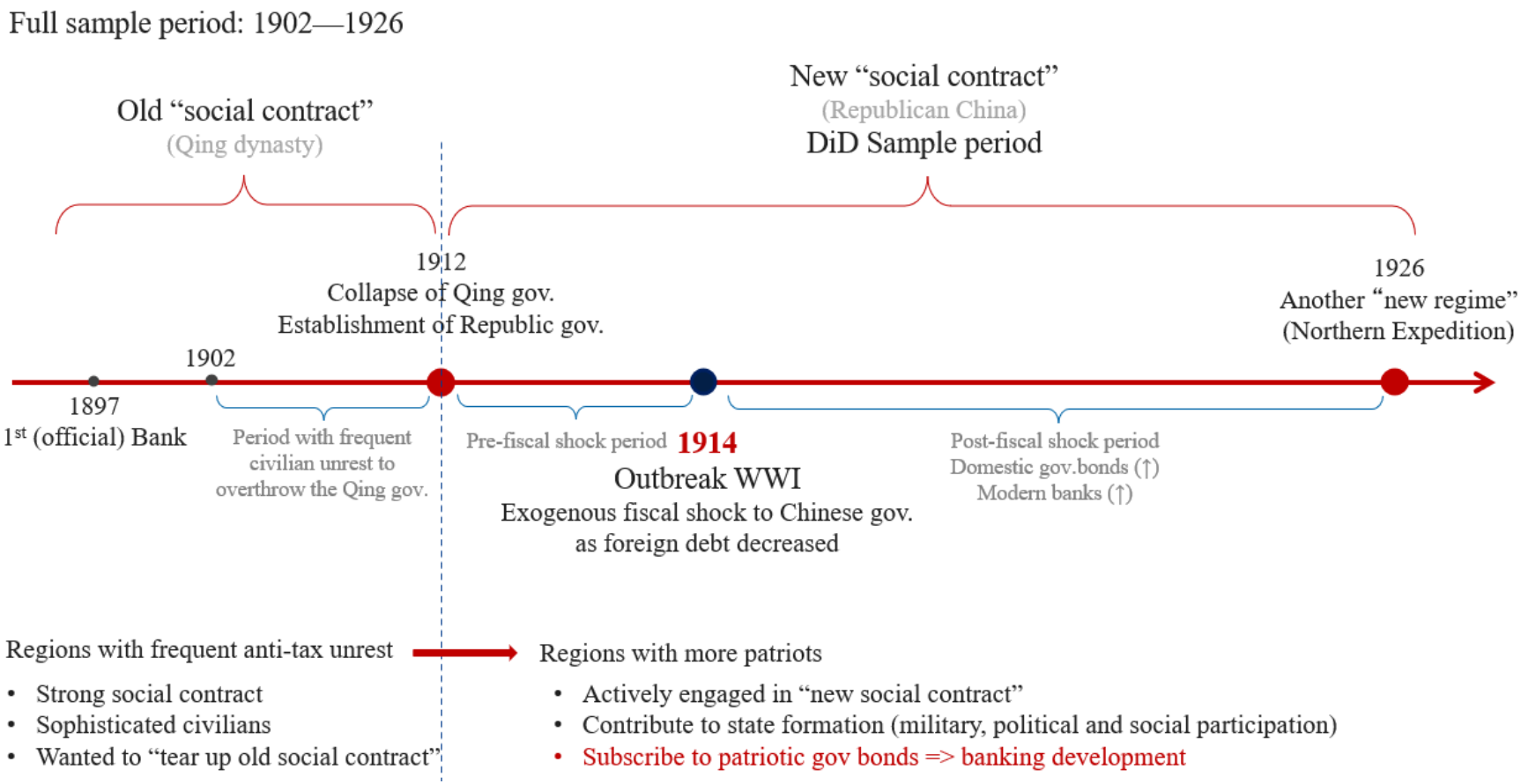


Figure B1. **Timeline**

Panel A: The Qing government's violent crackdown on the Sichuan Railway Protection Movement
Source: *Minli Huabao* [Minli Pictorial], 1911. *Xinnian Guangan Hua* [New Year's Impressions Illustration], p.1

Panel B: Monument to remember the martyrs killed in the Railway Protection Movement
Source: https://en.wikipedia.org/wiki/Railway_Protection_Movement
Location: People's Park, Chengdu, Sichuan province

○川軍人籌議中央財政

北京大總統各部院武昌黎副總統南京黃留守各省都督臨時省議會各報館鑒民國以軍隊爲精神尤以財政爲命脈熊總長與六國銀行團訂立借款章程不特監財政並欲監督軍隊失敗已達極點全蜀軍界死不承認亟速予廢約免召滅亡惟查國基甫定軍隊驟增需用浩繁司農仰屋荷呼庚之可得寧飲鴆以自甘決非空言所能補救且中央向無直接收入之款一切支出惟由外省輸將際此時艱窮於羅掘遲延幾終至淪胥非合四百兆同胞出而擔任別無良法蜀爭路首倡破約主義所幸志士呼號天下響應不數月間推倒清廷其約遂廢今民國方新忽又險象以最少之借款損最大之國權輕重緩急比較天淵非舉國一心傾資倒篋竭力相助詎其結果必爲人奴同人等屬在軍界尤切痛心兹集同人商訂分別捐款以爲[illegible]上級軍官佐捐一月薪金全數中級軍官佐捐一月薪金十分之七下級軍官佐捐一月薪金十分之六約可得銀數萬金暫由都督府彙齊兌解中央政府調塡之數誠知無補尤望海內同胞羣以爲衆擎裘成集腋先將三百萬墊款取消徐議節薪減餉倡辦國民公債國民銀行國民捐以爲後盾務使中央財政有舒展自如之勢則外人不敢染指大局賴以維持軍界幸甚民國幸甚四川陸軍全體軍官佐叩三十一

Panel C: *Chuanjunren Chouyi Zhongyang Caizheng* [Sichuan Military Discusses Central Finance]
Source: *Minli Bao* (Minli Daily), June 3, 1912.

Figure B1. **Sichuan Railway Protection Movement**

Authors' translation of [Sichuan Military Discusses Central Finance] (emphasis added):

To President, Ministries, and Courts in Beijing; Vice President Li in Wuchang; Governor-General Huang in the Two Capitals; Governors and Temporary Provincial Assemblies of All Provinces; Newspapers and Media Outlets:

The Republic relies on its military for strength and on its finances for survival. Minister Xiong has negotiated loan agreements with the consortium of six foreign banks, not only placing financial oversight in foreign hands but also subjecting our military to foreign control—this is an utter failure. The military community in Sichuan firmly refuses to recognize this agreement and demands its immediate annulment to prevent national ruin.

However, we recognize that the foundations of the Republic are still fragile. The sudden expansion of the military requires vast resources, and the Treasury is already depleted. Though securing funds is urgent, resorting to foreign loans is akin to drinking poison to quench thirst —mere words cannot resolve this crisis. The central government lacks independent revenue and has always relied on provincial contributions for expenses. In this time of hardship, such indirect and delayed funding will inevitably lead to collapse. There is no solution except for all four hundred million compatriots to shoulder this burden together.

Sichuan took the lead in resisting the Qing government's foreign railway loans, and thanks to the efforts of patriots nationwide, *the imperial court was overthrown within months, rendering the treaty void. Now, as our newly founded Republic faces another crisis, the loss of sovereignty in exchange for a minimal loan is an even greater threat.* ***If the entire nation does not unite and contribute to financial self-sufficiency,*** *we will inevitably*

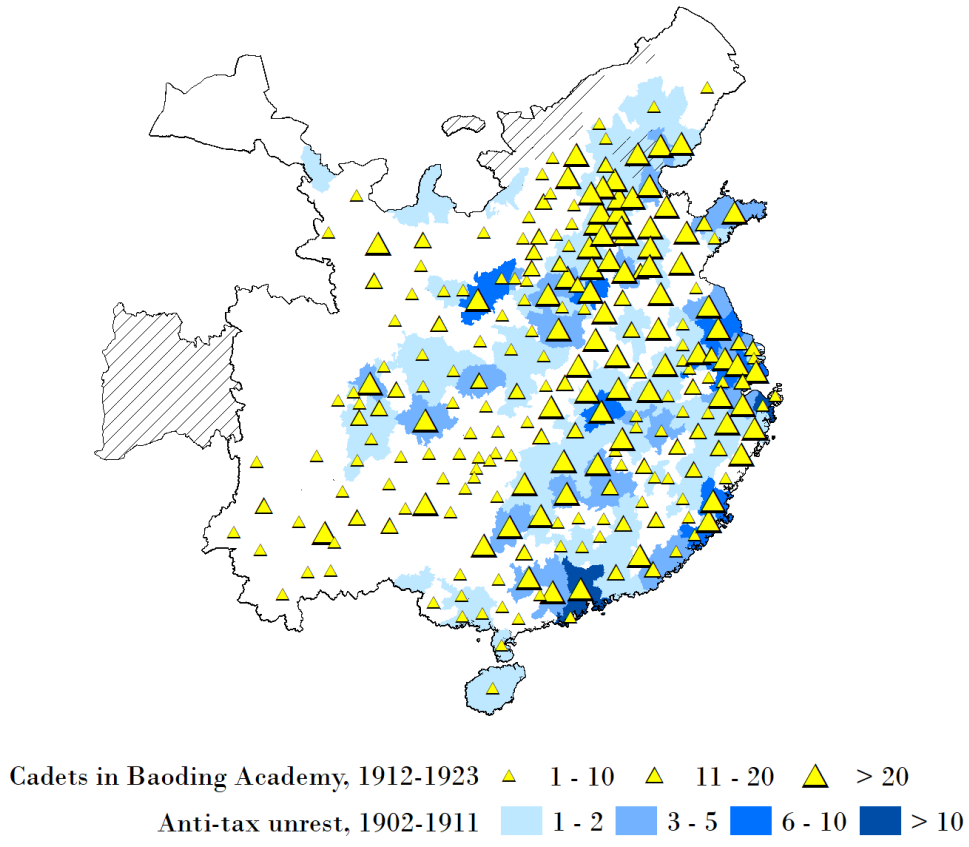
become subjugated once again.

As military officers, we feel this responsibility deeply. Thus, we have collectively decided to contribute a portion of our salaries to address the immediate crisis: Senior officers will donate one month's full salary. Mid-level officers will donate 70% of one month's salary. Junior officers will donate 60% of one month's salary.

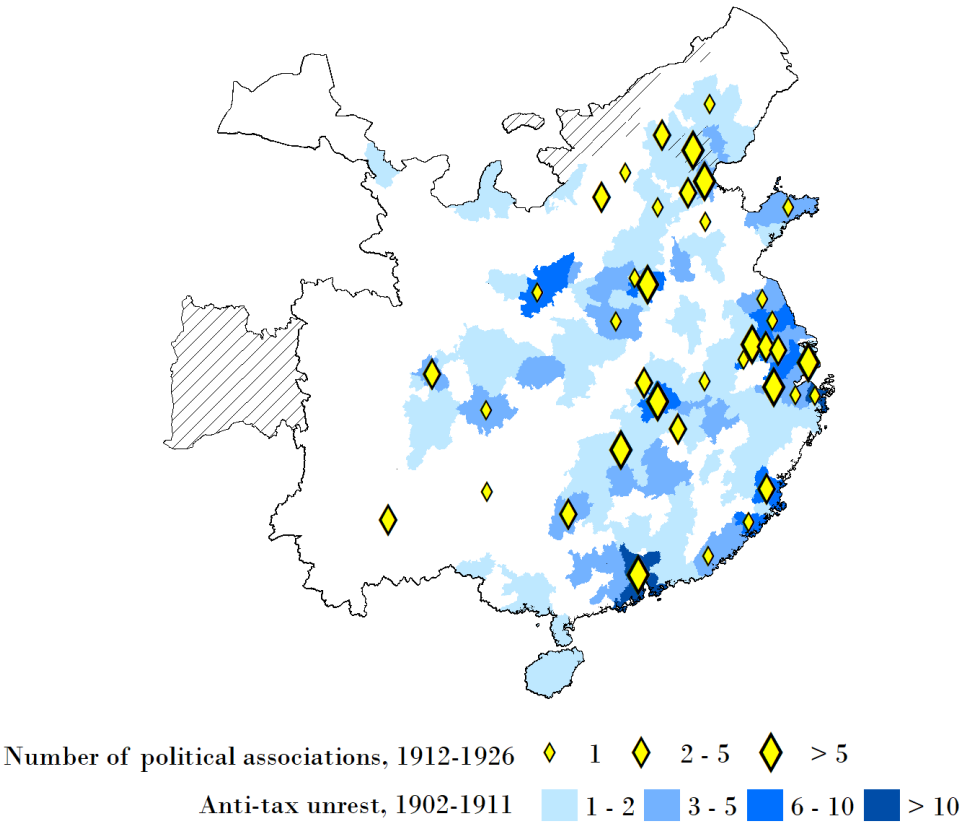
These contributions are expected to raise tens of thousands of silver taels, which will be submitted to the Governor's Office for remittance to the central government. Though this amount is merely a drop in the ocean, we urge our fellow countrymen to unite in this effort. Together, we can eliminate the existing three-million-tael loan, and subsequently, ***discuss further cost-saving measures, including salary reductions and promoting national bonds, a national bank, and voluntary citizen donations.*** *Only by stabilizing the central government's finances can we ensure national sovereignty and deter foreign interference.*

This is vital for both the military and the Republic's survival.

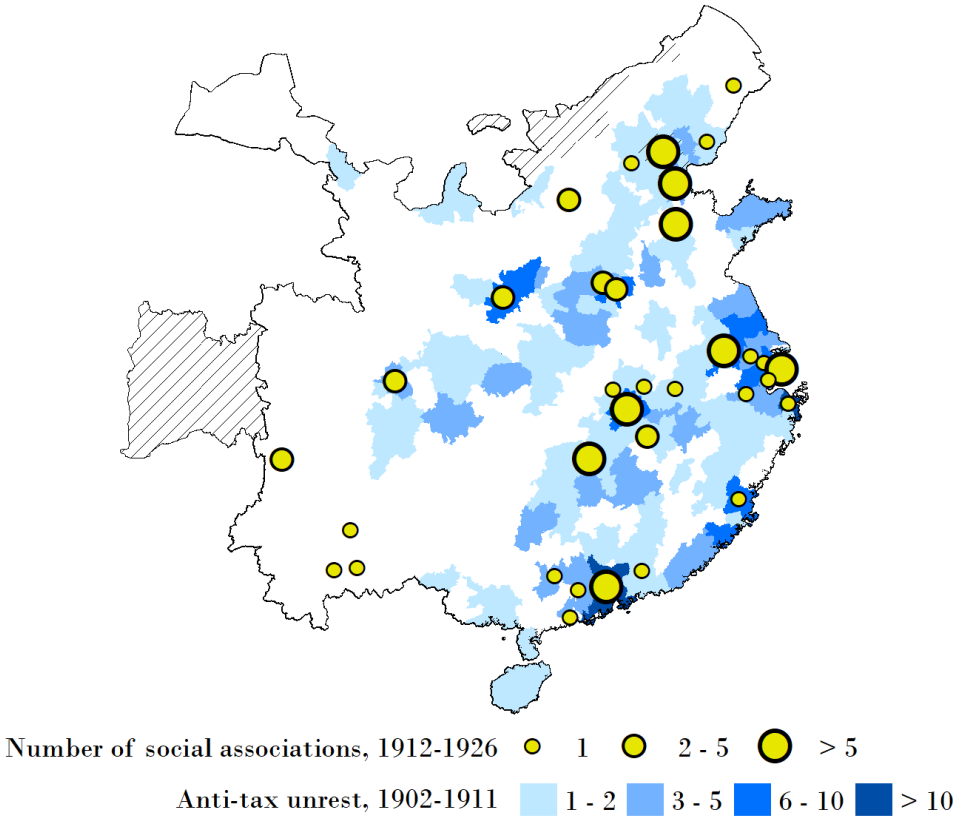
Signed by all officers of the Sichuan Army



Panel A. Anti-tax unrest and number of cadets at the Baoding Military Academy



Panel B. Anti-tax unrest and number of political associations



Panel C. Anti-tax unrest and number of social associations

Figure B3. **Distributions of anti-tax unrest and civic engagement measures**

Notes: This figure maps the prefectural-level correlation between anti-tax unrest (1902–1911) and subsequent civic engagement. The panels display three proxies for Republican-era civic engagement: military participation (number of Baoding Military Academy cadets, 1912–1923; Panel A), political participation (number of political associations, 1912–1926; Panel B), and social participation (number of social associations, 1912–1926; Panel C). Prefectures outside the regression sample are shaded.

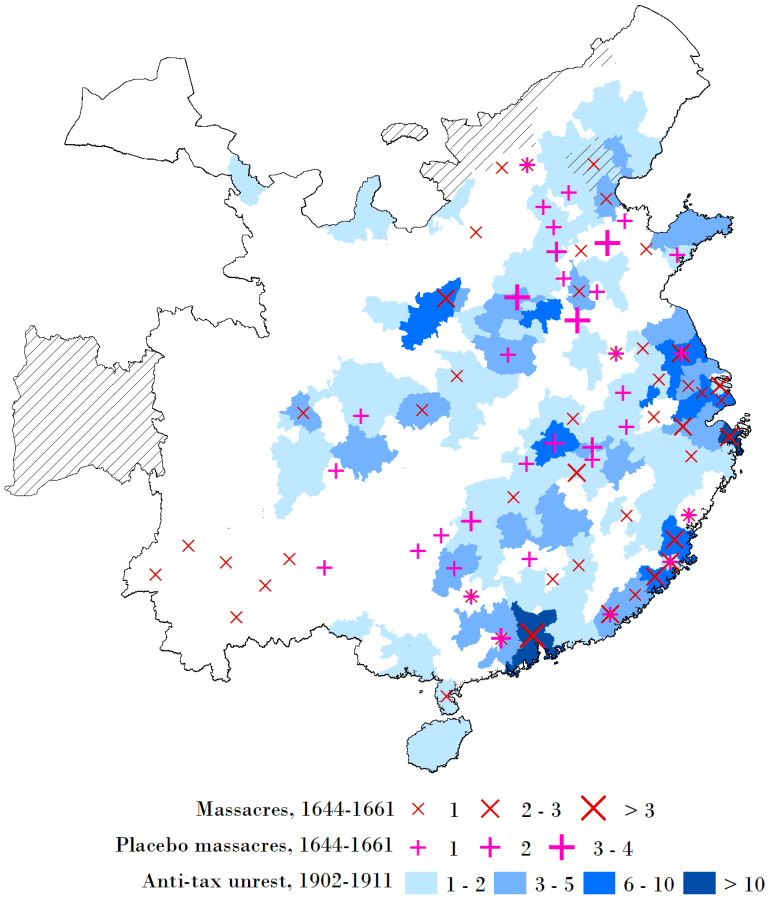


Figure B4. **Placebo IV: non-Qing massacres**

Notes: This figure depicts the spatial distribution of anti-tax unrest, historical massacres by the Qing armies taking place from 1644 through 1661 (IV), and the massacres by non-Qing forces (mostly by Li Zicheng and Zhang Xianzhong) between 1644 and 1661. The data are at the prefectural level. The map covers 298 prefectures from 18 provinces in China proper; prefectures outside the regression sample are shaded.

A brief historical background. After the fall of Beijing in 1644, historical peasant revolt leaders like Li Zicheng and Zhang Xianzhong carried out violent campaigns marked by brutal killings and retaliatory slaughters. These acts often stemmed from political distress, local resistance, or an attempt to consolidate power amid crumbling authority. Li's retreating forces and Zhang's reign in Sichuan became notorious for their ruthless treatment of civilians, sometimes bordering on indiscriminate violence. However, unlike the Qing massacres which were largely state-sanctioned and aimed at suppressing Ming loyalists and asserting imperial rule, the violence under Li and Zhang was more erratic, factional, and driven by fear of betrayal or rebellion from within. Their actions, while devastating, reflected the chaotic and fragmented nature of post-Ming resistance rather than the calculated brutality of a conquering regime.

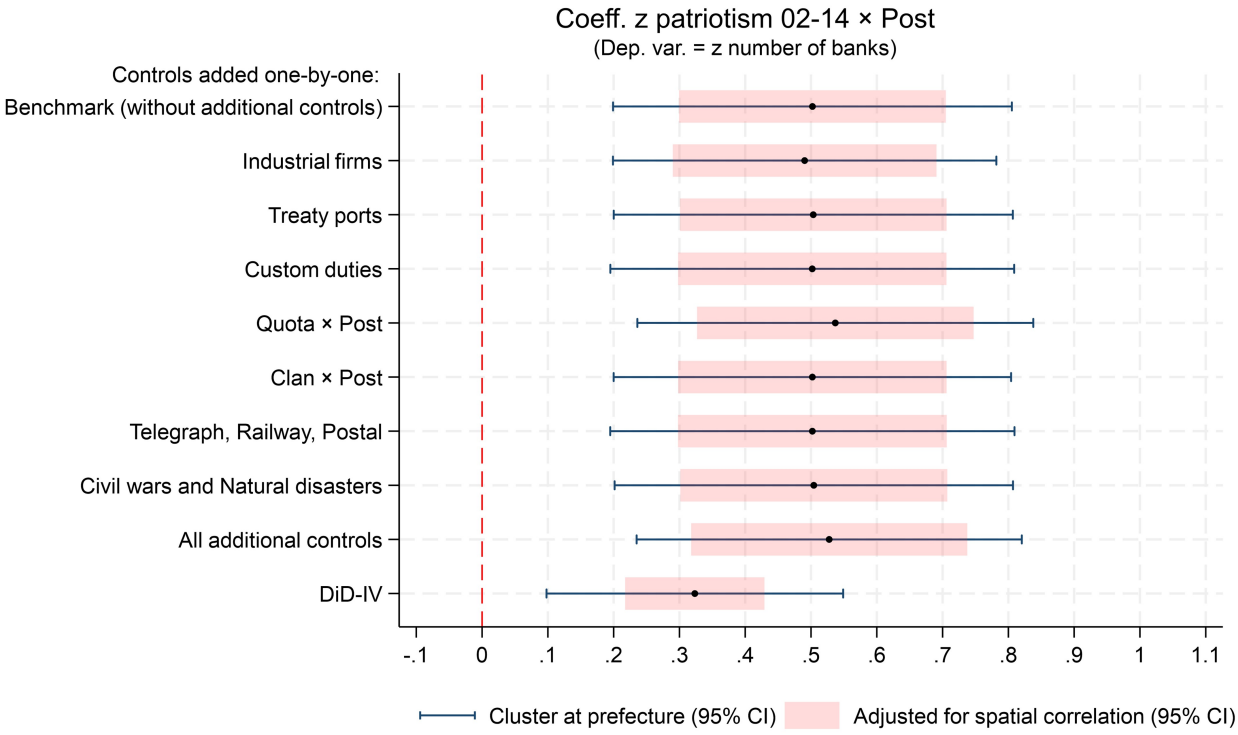
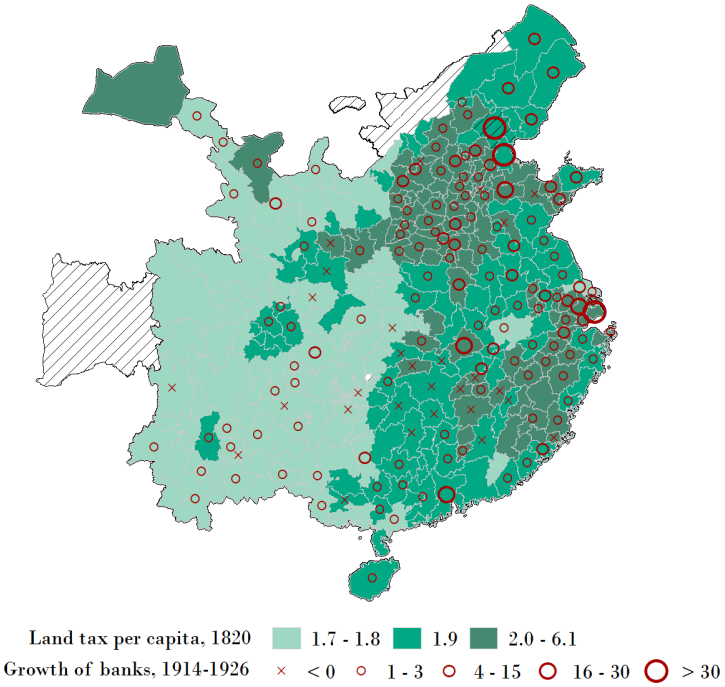
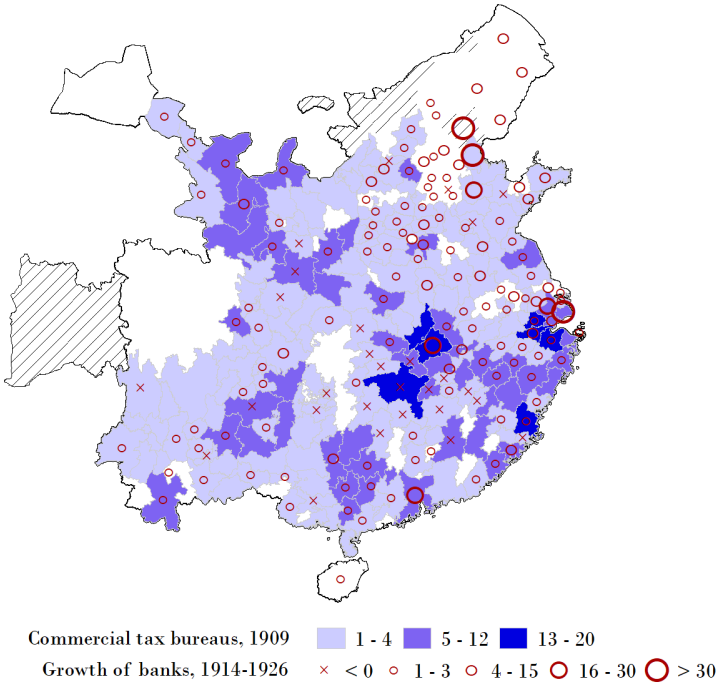


Figure B5. **Additional controls (z-score)**

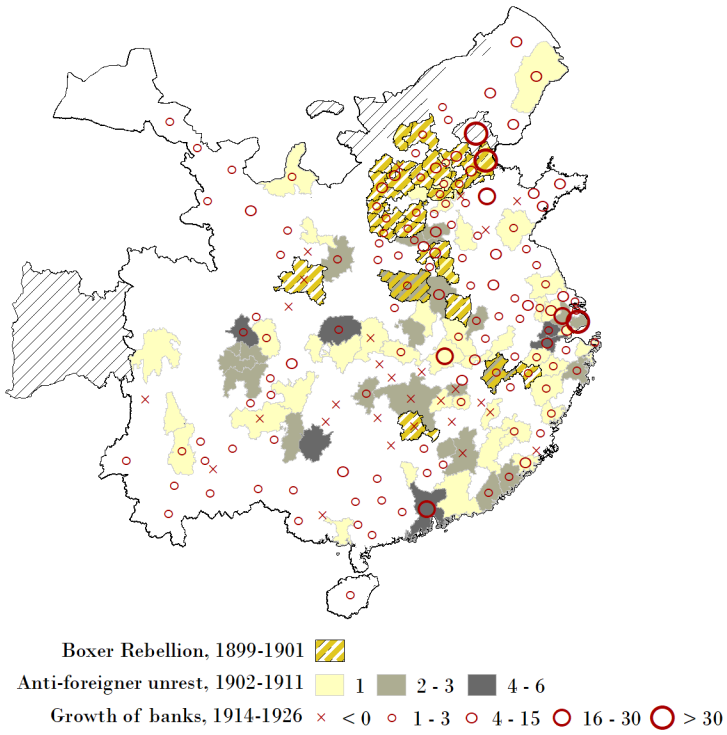
Note: This figure is identical to Figure 5 with two exceptions. First, the dependent variable, Number of banks, is standardized. Second, the main independent variable is *z patriotism 02–14 × Post*, where *z patriotism 02–14* is the z-score of the average z-scores of anti-tax unrest and the three civic engagement measures before 1914.



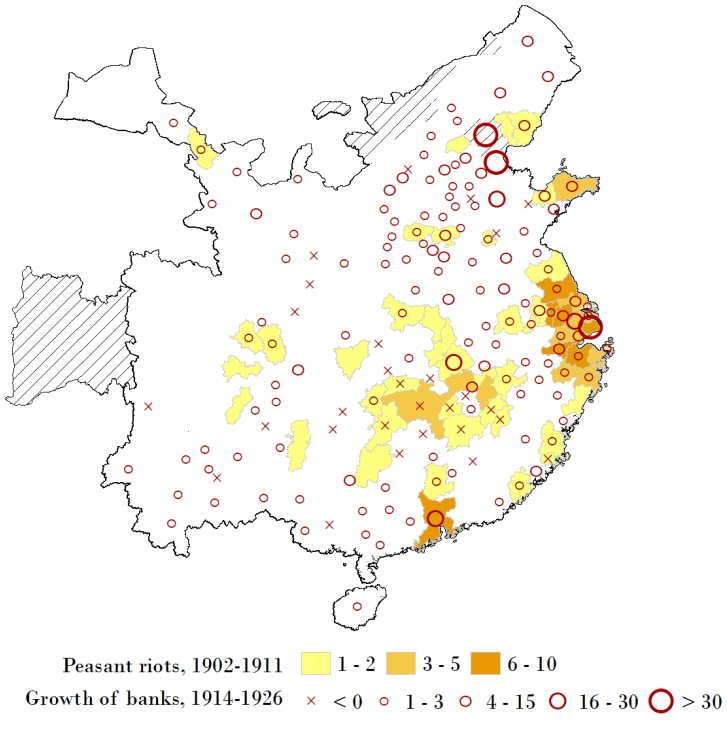
Panel A. Land tax per capita in 1820



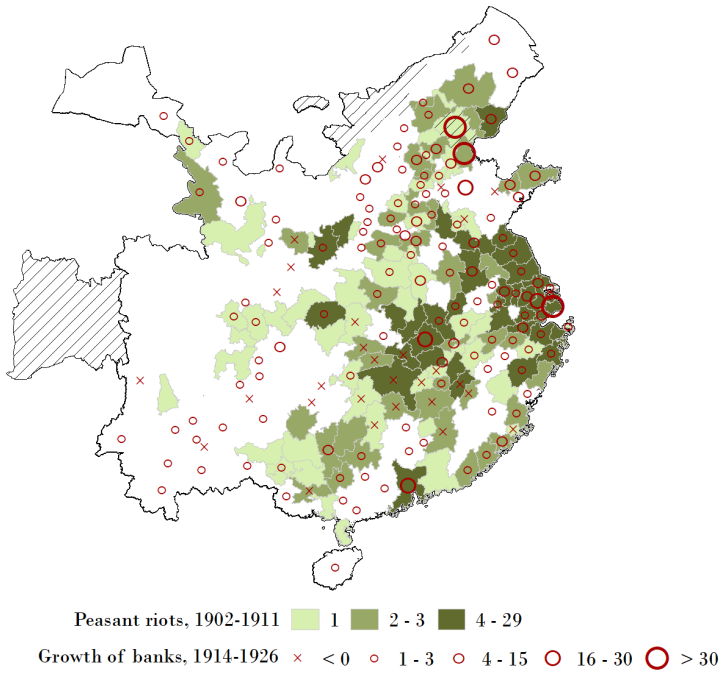
Panel B. Number of commercial tax bureaus



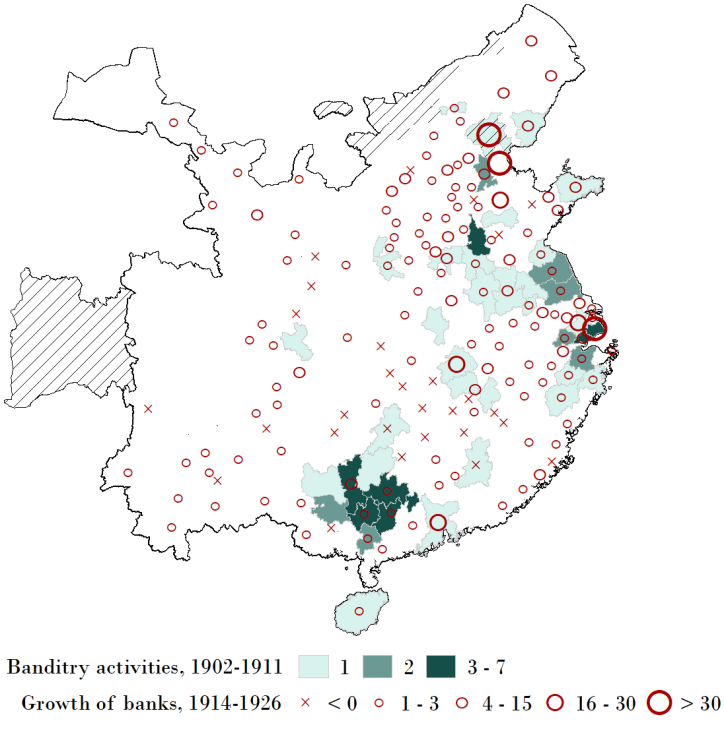
Panel C. Boxer Rebellion/number of anti-foreigner unrest



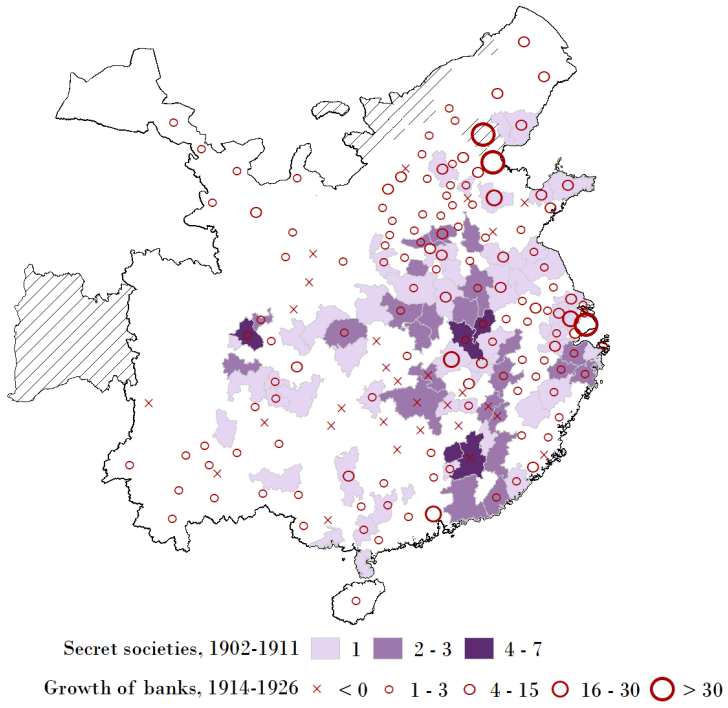
Panel D. Number of anti-gentry unrest



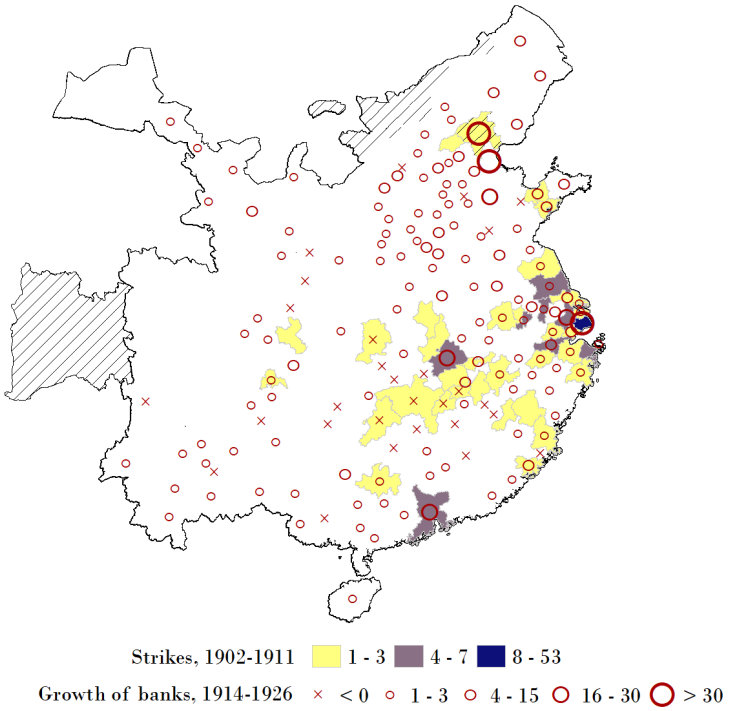
Panel E. Number of peasant riots



Panel F. Number of banditry activities



Panel G. Number of secret societies



Panel H. Number of strikes

Figure B9. **The distribution of placebo treat variables**

Notes: These figures map of the growth of modern banks and of the placebo "treat" variables as discussed in Section 5.4. The growth of modern banks refers to the difference in number of banks between 1926 and 1914. The placebo "treat" variables include: the level of land tax per capita in 1820 (Panel A), the number of commercial tax bureaus around 1909 (Panel B), the number of anti-foreigner unrest events 1902–1911 and the occurrence of the Boxer Rebellion (Panel C), the number of anti-gentry unrest events 1902–1911 (Panel D), the number of peasant riots 1902–1911 (Panel E), the number of banditry activities from 1902–1911 (Panel F), the number of secret societies from 1902–1911 (Panel G), and the number of strikes from 1902–1911 (Panel H).

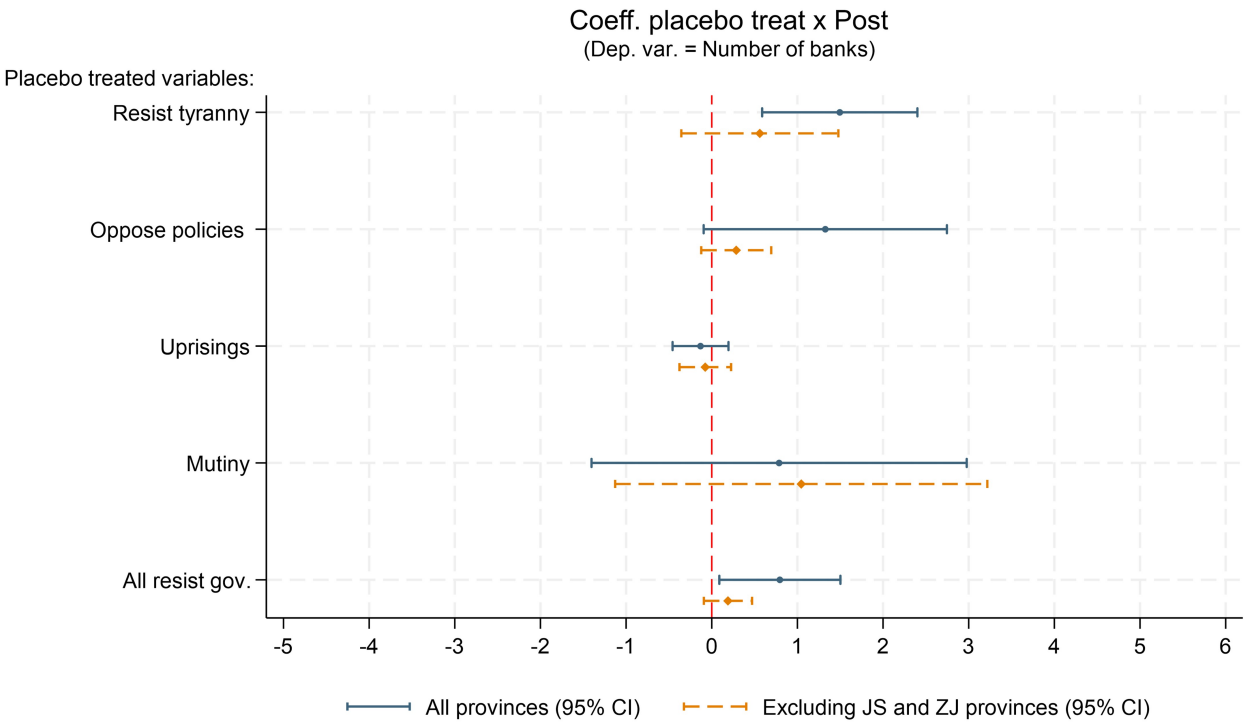


Figure B10. **Falsification tests: alternative anti-government unrest**

Note: This figure displays the coefficients of alternative anti-government unrest as placebo treat variables. In all models, the dependent variable is the number of modern Chinese banks in each prefecture for each year, and the placebo explanatory variable is structured as treat × post. The placebo "treat" variables include the incidence of (1) resistance to tyranny (collective protests against abusive local officials) (51 events), (2) opposition to specific late-Qing policies (115 events), (3) generic uprisings (37 events), (4) military mutinies (20 events), and (5) the sum of the above between 1902 and 1911 (221 events). Note that an event can take multiple forms. When aggregating, we count one for each event. All controls and model specifications are identical to those in column 2 of Table 4. Coefficients for the placebo treatment variables are reported for the full sample and for a subsample that excludes Zhejiang and Jiangsu provinces.

Figure B11. **Robert Morris Statue**

Note: This is an author-taken photograph of the Robert Morris statue located beside the First Bank of the United States in Philadelphia. The statue commemorates Robert Morris (1734–1806), a Founding Father who served as a patriot, statesman, and financier of the American Revolution. Morris played a pivotal role in financing the Revolutionary War and was instrumental in establishing the nation's first congressionally chartered national bank, Bank of North America.

Table B1. **Anti-tax unrest and civic engagement (full table)**

This table examines the effects of anti-tax unrest on civic engagement activities. The regression models are identical to Table 2 except that all coefficients of the controls are explicitly presented here. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Military participation

	Number of cadets at the Baoding Military Academy			
	After 1912		Diff.(After 1912-Before 1912)	
	1	2	3	4
Anti-tax unrest	6.509***	3.513**	4.598***	3.053***
	(1.415)	(1.433)	(1.064)	(1.006)
Pop. density in 1910		10.281***		7.311***
		(2.578)		(1.690)
Land area		13.903***		8.411***
		(2.860)		(2.091)
Distance to coast		1.825		0.854
		(2.544)		(1.980)
River density		3.118		0.814
		(2.998)		(2.050)
Altitude		-5.098		-0.757
		(3.698)		(2.187)
Ruggedness		650.445*		164.407
		(360.052)		(170.144)
Distance to Beijing		-17.763**		-6.178*
		(7.322)		(3.238)
R-squared	0.094	0.256	0.121	0.210
Observations	286	286	286	286

Panel B. Political and social participation

	Number of political associations		Number of social associations	
	1	2	3	4
Anti-tax unrest	0.939***	0.906***	0.621***	0.599**
	(0.356)	(0.349)	(0.222)	(0.237)
Pop. density in 1910		-0.308		-0.107
		(0.322)		(0.191)
Land area		0.125		0.310
		(0.219)		(0.194)
Distance to coast		0.174		0.188
		(0.147)		(0.138)
River density		0.871*		0.638**
		(0.520)		(0.280)
Altitude		-0.618		-0.377
		(0.698)		(0.335)
Ruggedness		28.795		21.498
		(41.580)		(23.148)
Distance to Beijing		0.200		-0.030
		(0.289)		(0.228)
R-squared	0.155	0.149	0.178	0.176
Observations	286	286	286	286

Table B1. **Anti-tax unrest and civic engagement (full table) (cont.)**

C. Principal component (PC) and standardization (z-score)

	PC civic engagement 12–26		z civic engagement 12–26	
	1	2	3	4
Anti-tax unrest	0.299***	0.268***		
	(0.092)	(0.098)		
z anti-tax unrest			0.480***	0.407***
			(0.130)	(0.144)
Pop. density in 1910		0.013		0.056
		(0.083)		(0.058)
Land area		0.183**		0.181***
		(0.078)		(0.060)
Distance to coast		0.076		0.056
		(0.051)		(0.040)
River density		0.270**		0.185**
		(0.125)		(0.084)
Altitude		-0.196		-0.148
		(0.162)		(0.108)
Ruggedness		12.969		11.258
		(10.442)		(7.390)
Distance to Beijing		-0.110		-0.152*
		(0.099)		(0.088)
R-squared	0.216	0.230	0.227	0.265
Observations	286	286	286	286

Table B2. **Anti-tax unrest and government bond face value**

This table examines the effects of anti-tax unrest on government bond target (face) value. The dependent variable, target value (in million yuan), refers to the total face value of provincial government bonds issued in each year. The main explanatory variable, *Anti-tax unrest × Post*, is the number of anti-tax unrest events in each province during 1902–1911 interacting with the post-1914 dummy. Other controls follow Table 3. Standard errors are clustered at the province level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Target value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
Anti-tax unrest × Post	-0.054***	-0.043***	-0.025***
	(0.009)	(0.012)	(0.008)
Interest rate (weighted avg)	11.143	32.523*	10.010
	(12.278)	(17.534)	(12.470)
Collateral (weighted avg)	0.510	-0.086	0.407
	(0.592)	(1.208)	(0.703)
Maturity (weighted avg)	0.278**	0.188	0.268*
	(0.126)	(0.133)	(0.149)
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.271	0.370	0.176
Observations	255	255	255
Mean of dependent variable	0.879	0.382	0.425

Table B3. **Anti-tax unrest and government bond subscription, robustness**

This table examines the effects of anti-tax unrest on government bond issuance. In panel A, the dependent variable, collected value (in million yuan), refers to the amount of funds raised by provincial government through bond issuance in each year. The main explanatory variable, *PC patriotism 02–14 × Post*, is the patriotism measured by first principal component of anti-tax unrest and the three civic engagement measures between 1912–1914 interacting with the post-1914 dummy. Other controls follow Table 3. In panel B, the dependent variable is the standardized collected value, and the explanatory treatment variable is the standardized anti-tax unrest. Bond-related controls are also standardized. Standard errors are clustered at the province level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Patriotism measured by principal component

	Collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
PC patriotism 02–14 × Post	-0.006	0.148**	-0.087
	(0.119)	(0.057)	(0.064)
Bond controls	Y	Y	Y
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.764	0.729	0.783
Observations	255	255	255
Mean of dependent variable	0.544	0.226	0.276

Panel B. Standardization

	z collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
z patriotism 02–14 × Post	-0.019	0.103*	-0.090
	(0.076)	(0.050)	(0.065)
Bond controls	Y	Y	Y
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.764	0.728	0.783
Observations	255	255	255

Table B4. **Government bond subscription: Alternative investment opportunities**

This table examines the effects of anti-tax unrest on government bond issuance while controlling for the additional measure of alternative investment opportunities, measured by the local loan rate, which is the average interest rate of local loans within a province in a given year. Other model specifications and variable definitions are identical to Table 3. Panel A focuses on the full sample and Panel B excludes Zhejiang and Jiangsu provinces. Standard errors are clustered at the province level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Full sample

	Collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
Anti-tax unrest × Post	0.020	0.034**	-0.007
	(0.019)	(0.012)	(0.008)
Local loan rate	-0.007	-0.002	-0.003
	(0.008)	(0.006)	(0.004)
Bond controls	Y	Y	Y
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.834	0.728	0.924
Observations	202	202	202
Mean of dependent variable	0.641	0.276	0.312

Panel B. Excluding Zhejiang and Jiangsu provinces

	Collected value (in million yuan)		
	All bonds	Voluntary bonds	Compulsory bonds
	1	2	3
Anti-tax unrest × Post	0.020	0.021**	0.001
	(0.012)	(0.008)	(0.005)
Local loan rate	-0.007	-0.003	-0.002
	(0.009)	(0.007)	(0.004)
Bond controls	Y	Y	Y
Controls × Post	Y	Y	Y
Province and Year FE	Y	Y	Y
R-squared	0.837	0.733	0.928
Observations	172	172	172
Mean of dependent variable	0.616	0.249	0.343

Table B5. **Horse race between anti-tax unrest and civic engagement**

This table examines the horse race effects between anti-tax unrest and civic engagement activities on banks. In columns 1–4, the dependent variable is the number of banks in each prefecture in each year. The main explanatory variable, *Anti-tax unrest × Post*, is the number of anti-tax unrest events in each prefecture from 1902 through 1911 interacting with the post-1914 dummy. Civic engagement prior to the 1914 WWI shock is measured by (i) the number of cadets at the Baoding Military Academy during the years 1912–1914, (ii) the number of associations promoting political ideologies established during the years 1912–1914, (iii) the number of associations aimed at social welfare established during the years 1912–1914, and (iv) the first principal component of the three. In column 4, variables are standardized. *z civic engagement* is the z-score of the average z-score of the three civic engagement measures. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of banks				*z* number of banks
	1	2	3	4	5
Anti-tax unrest × Post	0.371**	-0.012	-0.057	-0.193	
	(0.165)	(0.109)	(0.103)	(0.171)	
z anti-tax unrest × Post					-0.041
					(0.063)
Cadets at the Baoding Military Academy 1912–14 × Post	0.013				
	(0.024)				
Political associations 1912–14 × Post		0.638***			
		(0.032)			
Social associations 1912–14 × Post			1.718***		
			(0.245)		
PC civic engagement 1912–14 × Post				2.201***	
				(0.325)	
z civic engagement 1912–14 × Post					0.535***
					(0.132)
Controls × Post	Y	Y	Y	Y	Y
Prefecture and Year FE	Y	Y	Y	Y	Y
R-squared	0.755	0.789	0.791	0.794	0.786
Observations	4290	4290	3930	4290	4290

Table B6. **Reverse causality: Anti-tax unrest and modern banks, 1902–1911**

This table addresses the issue of reverse causality by analyzing panel data on banks and anti-tax unrest events from 1902 through 1911. Columns 1 and 2 examine whether modern banks promote anti-tax unrest. The dependent variable is the number of anti-tax unrest events, while the explanatory variable is the number of banks in each prefecture in each year, examined both in the current year (column 1) and with a one-year lag (column 2). Columns 3 and 4 examine whether anti-tax unrest instantly influenced the number of banks. The dependent variable is the number of banks, and the explanatory variable is the number of anti-tax unrest events in each prefecture in each year, examined both in the current year (column 3) and with a one-year lag (column 4). The number of observations in column 4 shrank because the number of anti-tax unrest events is not available for the year 1901. We control for prefecture and year fixed effects. The analysis encompasses 286 prefectures from 18 provinces within China proper. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Anti-tax unrest		Number of banks	
	1	2	3	4
Number of banks	0.023			
	(0.020)			
Number of banks (lagged)		-0.002		
		(0.022)		
Anti-tax unrest			0.042	
			(0.041)	
Anti-tax unrest (lagged)				-0.031
				(0.051)
Prefecture and Year FE	Y	Y	Y	Y
R-squared	0.174	0.173	0.618	0.653
Observations	2,860	2,860	2,860	2,574

Table B7. **Exclusion restriction: Reduced-form regression**

This table provides the reduced-form regression. The dependent variable is the number of modern Chinese banks in each prefecture for each year. In column 1, we regress the number of banks directly on the instrumental variable *Massacres* × *Post*, where *Massacres* refer to the number of massacres occurring in each prefecture from 1644 through 1661. In column 2, we further include the explanatory variable of interest, *Anti-tax unrest* × *Post*, to provide a horse-race estimation. The controls are identical to those in column 2 of Table 4. Columns 3-4 use standardized variables. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures, covering the period from 1912 through 1926. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Number of banks		z number of banks	
	1	2	3	4
Massacres × Post	1.151**	0.576		
	(0.444)	(0.456)		
Anti-tax unrest × Post		0.315*		
		(0.160)		
z patriotism 1902–14 × Post			0.132**	-0.090
			(0.051)	(0.067)
z massacres × Post				0.542***
				(0.155)
Controls × Post	Y	Y	Y	Y
Prefecture and Year FE	Y	Y	Y	Y
R-squared	0.754	0.755	0.754	0.782
Observations	4,290	4,290	4,290	4,290

Table B8. **Placebo IV: Massacres by late-Ming peasant revolt leaders**

This table reports the first stage of placebo IV. The dependent variable, *Anti-tax unrest × Post*, is instrumented by *Non-Qing massacres × Post*, or massacres conducted by non-Qing forces, primarily those led by historical peasant revolt leaders Li Zicheng (1606–1645) and Zhang Xianzhong (1606–1647) and their followers between 1644 and 1661. Model specifications are identical to Panel B of Table 5. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Anti-tax unrest × Post			z patriotism 1902–14 × Post
	(1)	(2)	(3)	(4)
Non-Qing massacres × Post	0.391*	-0.009	0.029	
	(0.236)	(0.252)	(0.260)	
z non-Qing massacre × Post				-0.017
				(0.061)
Controls × Post		Y	Y	Y
Prefecture and Year FE	Y	Y	Y	Y
R-squared	0.798	0.840	0.829	0.825
Observations	4,290	4,290	3,930	4,290
Sample	Full	Full	Excl. JS & ZJ pro.	Full

Table B9. **Land tax, commercial tax, and anti-tax unrest**

This table examines whether the level of tax could predict anti-tax unrest. In Panel A, the dependent variable is the number of anti-tax unrest events from 1902 through 1911 in each prefecture. The explanatory variables are the logarithm of per capita land tax in 1820 in each prefecture (column 1) and the number of commercial tax bureaus in each prefecture (column 2). In Panel B, the dependent variable is the number of modern banks in each prefecture for each year. The explanatory variables include both Anti-tax unrest and the measures of tax burden interacting with the post-1914 dummy. In both panels, control variables include the logarithm of prefectural population in 1910, the logarithm of prefectural land area, the logarithm of the prefecture's distance to the coast, the logarithm of the river density within each prefecture, the logarithm of the prefectural altitude, the ruggedness of the terrain, and the logarithm of the prefecture's distance to capital (Beijing). The analysis encompasses 286 prefectures from 18 provinces within China proper. Standard errors are robust and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Anti-tax unrest explained by tax burden

	Anti-tax unrest	
	1	2
Land tax per capita in 1820 (log)	2.893**	
	(1.344)	
Commercial tax bureaus		0.258***
		(0.052)
Controls	Y	Y
R-squared	0.204	0.334
Observations	286	286

Panel B. Banks explained by anti-tax unrest and tax burden

	Number of banks	
	1	2
Anti-tax unrest × Post	0.395***	0.300**
	(0.141)	(0.121)
Land tax per capita in 1820 (log) × Post	0.781	
	(2.738)	
Commercial tax bureaus × Post		0.145
		(0.106)
Controls × Post	Y	Y
Prefecture and Year FE	Y	Y
R-squared	0.755	0.756
Observations	4,290	4,290

Table B10. **The effects of anti-tax unrest on official and private banks**

This table examines the effects of anti-tax unrest on official banks (Panel A) and private banks (Panel B). The same regression models are used in both panels, differing only in their dependent variables. In Panel A, the dependent variable is the number of official banks, which were initiated by governmental bodies. In Panel B, the dependent variable is the number of private banks, which were fully owned by private businessmen. The explanatory variable, Anti-tax unrest × Post, represents the number of anti-tax unrest events in each county from 1902 through 1911, interacted with a post-1914 dummy. Columns 1–3 report the regression results using OLS, while columns 4–6 report results using the IV-2SLS approach, where *Anti-tax unrest* × *Post* is instrumented by *Massacres* × *Post*. Here, *Massacres* refer to the number occurring in each county from 1644 through 1661. Control variables are added progressively across columns: baseline controls match those in Table 4, column 2 with additional controls as specified in Figure 5. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures, covering the period from 1912 through 1926. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Panel A. Official banks

	Number of official banks					
	OLS			IV-2SLS		
	1	2	3	4	5	6
Anti-tax unrest × Post	0.194***	0.135***	0.160***	0.195***	0.145	0.167*
	(0.038)	(0.047)	(0.049)	(0.073)	(0.092)	(0.092)
Controls × Post		Y	Y		Y	Y
Additional controls			Y			Y
Year and Prefecture FE	Y	Y	Y	Y	Y	Y
R-squared	0.821	0.836	0.843			
Kleibergen–Paap F-stat.				16.182	10.194	8.905
Observations	4,290	4,290	4,290	4,290	4,290	4,290
Mean of dep. var.	1.171	1.171	1.171	1.171	1.171	1.171

Panel B. Private banks

	Number of private banks					
	OLS			IV-2SLS		
	1	2	3	4	5	6
Anti-tax unrest × Post	0.372**	0.243*	0.163*	0.510**	0.444*	0.369*
	(0.170)	(0.128)	(0.089)	(0.248)	(0.245)	(0.214)
Controls × Post		Y	Y		Y	Y
Additional controls			Y			Y
Year and Prefecture FE	Y	Y	Y	Y	Y	Y
R-squared	0.622	0.631	0.640			
Kleibergen–Paap F-stat.				16.182	10.194	8.905
Observations	4,290	4,290	4,290	4,290	4,290	4,290
Mean of dep. var.	0.692	0.692	0.692	0.692	0.692	0.692

Table B11. **Official and private banks**

This table aims to provide suggestive evidence of the penetration of official banks compared to that of private banks. In column 1, the dependent variable is the number of official banks, and the explanatory variables are *Anti-tax unrest* × *Post* and the number of private banks (lagged one year). In column 2, the dependent variable is the number of private banks, and the explanatory variables are *Anti-tax unrest* × *Post* and the number of official banks (lagged one year). The regressions include baseline controls, as well as the additional controls identical to those in Table 4, column 2 and in Figure 5. Prefecture and year fixed effects are included. The analysis encompasses 286 prefectures, covering the period from 1912 through 1926. Standard errors are clustered at the prefecture level and are reported in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

	Official banks	Private banks
	1	2
Anti-tax unrest × Post	0.094*	
	(0.052)	
Private banks (lagged)	0.115**	0.182
	(0.047)	(0.123)
Official banks (lagged)		0.540***
		(0.187)
Controls × Post	Yes	Yes
Additional controls	Yes	Yes
Prefecture and Year FE	Yes	Yes
R-squared	0.845	0.648
Observations	4,290	4,290

References (Appendix)

Banker's Weekly, 1921, Gebu jinrong ji shangkuang: Zhoukou [Financial and commercial market conditions in various trading ports: Zhoukou], *Banker's Weekly* .

Braggion, Fabio, Alberto Manconi, and Haikun Zhu, 2020, Credit and social unrest: Evidence from 1930s China, *Journal of Financial Economics* 138, 295–315.

Cameron, Meribeth E., 1963, *The Reform Movement in China(1898-1912)* (Stanford University Press).

Economic Research Department, the Bank of China, 1933, *Minguo Ershiyi Niandu Zhongguo Zhongyao Yinhang Yingye Gaikuang Yanjiu, 1932 [An Analysis of the Accounts of the Principal Chinese Banks, 1932]* (Zhongguo Yinhang Zongguanlichu, Shanghai).

Ho, Chun-Yu, and Dan Li, 2014, A mirror of history: China's bond market, 1921–42, *The Economic History Review* 67, 409–434.

Imbens, Guido W, and Donald B Rubin, 1997, Bayesian inference for causal effects in randomized experiments with noncompliance, *The Annals of Statistics* 305–327, Publisher: JSTOR.

Jiang, Wei, 2017, Have instrumental variables brought us closer to the truth, *The Review of Corporate Finance Studies* 6, 127–140.

Lan, Rixu, 2005, *Zhongguo Jinrong Xiandaihua zhi Lu: Yi Jindai Zhongguo Shangye Yinhang Yinglixing Fenxi wei Zhongxin [The Road to China's Financial Modernization: A Profitability Analysis of Modern Chinese Commercial Banks]* (Shangwu Yinshuguan, Beijing).

Li, Xizhu, 2013, Provincial officials in 1911–12: Their backgrounds and reactions to revolution—an inquiry into the structure of "weak center, weak regions" in the late Qing, in *China: How the Empire Fell* (Routledge, London).

L'impartial (Dagong Bao), 1921, Jinrong konghuang zhong zhi yaoyan [Rumors in the banking panics], *L'impartial (Dagong Bao)* .

Qian, Jiaju, 1984, *Jiuzhongguo Gongzhai Shiliao, 1894–1949 [Historical Source Materials on the History of Chinese Government Bonds, 1894–1949]* (Zhonghua Shuju, Beijing).

Rambachan, Ashesh, and Jonathan Roth, 2023, A more credible approach to parallel trends, *The Review of Economic Studies* 90, 2555–2591.

Reinhart, Carmen M., and Kenneth S. Rogoff, 2008, This Time is Different: A Panoramic View of Eight Centuries of Financial Crises, Technical Report w13882, National Bureau of Economic Research.

The China Press, 1921, Runs on Peking banks proceed, *The China Press* .

Worthing, Peter, 2007, Toward the Minjiu Incident: Militarist conflict in Guizhou, 1911-1921, *Modern China* 33, 258–283.

Wu, Jingping, 2019, *Jindai Zhongguo de Jinrong Fengchao [Financial Agitations in Modern China]* (Dongfang Chuban Zhongxin, Shanghai).

Xinhai Revolution and Wuchang Uprising Memorial Museum, 1991, *Xinhai geming shi dituji [Atlas of the History of the Xinhai Revolution]* (SinoMaps Press, Beijing).

Yan, Hongzhong, 2015, Jindai zhongguo de zhengfu zhaiwu yu jinrong fazhan [Governmental debts and financial development in modern China], *Caijing Yanjiu (Journal of Finance and Economics)* 41, 108–120.

Yang, Yinpu, 1930, *Shanghai Jinrong Zuzhi Gaiyao [Overview of Financial Institutions in Shanghai]* (Commercial Press, Shanghai).

Zhang, Yufa, and Rongtai Li, 1999, *Zhonghua Minguo Renmin Tuanti Diaochalu [Directory of People's Organizations in the Republic of China]* (Guoshiguan, Taipei).

Zhu, Yingui, 1998, Jindai shanghai zhengquan shichang shang gupiao maimai de sanci gaochao [Three peaks in stock trading on the modern shanghai stock market], *Zhongguo Jingjishi Yanjiu [Chinese Social-Economic History Research]* 58–70.