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A History of Decentralization

Fiscal Transitions in Late Imperial China, 1850-1911

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Declaration

I certify that the thesis I have presented for examination for the PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Statement of working paper version of the thesis

A working paper version of Chapter 3 in this thesis is available at the Department of Economic History, London School of Economics and Political Science.

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Abstract

This thesis contributes to the literature on state capacity by revisiting a key theme in this field, the making of a modern fiscal state. It focuses on the fiscal transitions of late Qing China and investigates why a withering central government led not to the collapse but to the remarkable transformation of China's fiscal regime during the late 19th century. This thesis primarily employs the new institutionalist framework and investigates how both pre-1850 socioeconomic conditions, such as population boom, and post-1850 political shocks, such as the Taiping Rebellion, ultimately altered and reshuffled the Qing fiscal regime. It examines how central and local government agents and relevant stakeholders reconsidered their endowments and constraints and thereby rationalized their behaviors during the groundbreaking transitions.

This thesis constructs new datasets from the *Late Qing Fiscal Reports* and compiles many other datasets on late Qing indirect taxation, foreign borrowing, public spending, and local state-led industrialization; it also makes use of atlases on late Qing rebellions and wars. With both qualitative and quantitative evidence, this thesis emphasizes the role of local governments and concludes that the unprecedented local fiscal-military autonomy, granted by the precarious Qing central court in the early 1850s, served as the ultimate impetus for the bottom-up fiscal restructuring and expansion in this turbulent era. The self-serving local governments played a vital role because of their incentive and information advantage. Within several decades, a centralized, rigid and land-tax-based fiscal regime was transformed into a decentralized and dynamic one. Such a local-centered fiscal regime became increasingly responsive to socio-economic challenges and accountable to public goods provision and economic growth.

This thesis aims to make several contributions to the literature. Firstly, it transcends the current fiscal-military state benchmark by analyzing the Qing China, a bureaucratic empire where its regime accountability, elite structure, and geopolitical condition differed greatly from those of a European nation state. Hence it demonstrates the significance of studying the 'fiscal Great Divergence'. Secondly, it provides more nuances regarding state capacity by identifying and distinguishing 'central capacity' and 'local capacity' and considering not only 'taxation capacity' but also 'expenditure capacity'. Thirdly, it reinterprets the paths and mechanisms of China's modernization and develops a coherent narrative for various bottom-up transitions driven by local governments. Finally, it offers general implications on how fiscal capacity triggered and facilitated industrial modernization, a central theme in the Great Divergence debate.

I split the dedication of the study seven ways

To

Kenneth Shen
Jeremy Zhu
Leo Shi
Kevin Cao
Samuel Xie
Matthew Kuang
And Alexander Zhao

Acknowledgements

In Chinese historical writing, it is a time-honored tradition to justify and criticize today's political and socioeconomic phenomena by revisiting historical events and seeking lessons, the best manifestation of which must be the political strife between Wang Anshi and Sima Guang and the writing of *Zi Zhi Tong Jian* ('History as a Mirror') in the Northern Song Dynasty (960-1127). My thesis focuses on a series of late Qing fiscal transitions from 1850 onwards, but my primary motivation stems from my interest in contemporary Chinese political economy. When I was an undergraduate student in China ten years ago, both 'public sphere' and universities emphasized the discourse of China's economic reforms. One strand of facts regarding fiscal changes, for example, were the 1994 Tax Reform, irreversible land finance, soaring housing prices, and astonishing local government debt issues; any responsible lecturer in an economics or business major could not sidestep such imperatives in his or her syllabus. In the BSc and MSc dissertations I was interested in the role of today's local governments in economic development from a fiscal view, and when I applied for the PhD program, I revisited the identical issue for historical China and decided to study China's state building in the late 19th century. During that unprecedentedly turbulent era, the central-local conflicts were intense while the fiscal changes were remarkable (strikingly similar to what happened after 1978!), for which I aim to offer a concise and coherent explanation through this thesis. I always highlight the positive role of local governments in the political and economic development of a large nation; this proposal is not only historical but also contemporary, and not only empirical but also normative. I hope that this thesis, as a preliminary but meaningful attempt, can cast light upon the dilemmas of intergovernmental relations and fiscal reforms of today's world.

In the making of this thesis during the past years I cannot measure adequately the significant influence of my advisors: Prof. Kent Deng (LSE) reviewed the draft of all chapters line by line and provided a considerable number of critiques and suggestions in a detailed way; Prof. Debin Ma (Oxford) offered creative inspirations and critical insights during all stages of my research; Dr. Eric Schneider (LSE) kindly took care of my progress and offered thoughtful tips for my research design, structuring, writing, and presentation. I am particularly grateful to two examiners who were extremely dedicated to reading and commenting on my thesis: Prof. Richard Von Glahn (UCLA) provided numerous insights on several imperatives such as the driving forces of modernity, the Self-Strengthening Movement, railway construction, and the New Policy; Dr. Lars Laamann (SOAS) encouraged me to focus on the opium plantation and taxation, and the rural recession and involution of late Qing and early republican China. Both

examiners contributed substantially to the future development of this manuscript, and I was greatly impressed by their efficient, rigorous, and generous guidance throughout the process.

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During this journey, I received a different kind of support from the faculty of Fudan University, my alma mater; I wish to acknowledge the indispensable help regarding career development from Dr. Xiaorong Zhang, Prof. Kemin Wang, Prof. Changjiang Lv, Prof. Yihan Xiong, Prof. Hui Li, and Prof. Gangsheng Bao; I am very grateful to Fudan University that has always provided an ideal platform for its graduates in a generous way. I also wish to thank my parents – my best role models – as both of them have been dedicated to their jobs for decades as civil servants in the fields of land and taxation; compared with their work that substantially benefits a local population, my paperwork looks so nascent. Furthermore, I received studentships and funds from the Ministry of Education, P. R. of China, and the LSE in the past few years; their helpful financial support always reminds me of the transnational social responsibility that I should take as a social science researcher – to understand the politics and economy of our times and to bridge the gaps of different cultures.

The chapters in the thesis were completed in different phases. I was living by the Regent's Canal at King's Cross during the writing of Chapter 1. Then I moved to Southwark: Chapter 3 was completed in a café next to the Shakespeare's Globe, and Chapter 6 was done in another café in front of London Bridge Station. During the pandemic, I intensively worked on Chapters 4 and 5 in a loft at Butler's Wharf near Tower Bridge. As the pandemic was alleviated, I moved back to the Western Central, finished Chapters 2 and 7 in the cafés at the diverse and stylish Fitzrovia, and revised the whole manuscript in our office at Holborn. In short, I appreciate London, a beautiful, enjoyable, inclusive, and thriving global city that brings infinite possibilities and endless joy to my life.

Finally, I pay special tribute to my partner, a tall, fit, bright, and charming man who always keeps me company and makes me who I am during these years. He shares with me all the cheer, pride, hope, and love, with which I embark on this adventurous journey and never feel regretful.

Notes to Readers

(I)

This study follows the convention of the literature and uses the 'silver tael' (*yinliang*) as the currency unit for the Qing Chinese public finance. However, the silver tael as a unit of account might vary across regions. Throughout, this study uses the *kuping* tael – an imaginary standard unit of silver mainly for taxation purposes – and converts other units to the *kuping* one. For instance, the amount of the 1901 reparation loan in Chapter 5 is recorded as 458 million *kuping* taels, instead of 450 million *haiguan* taels mentioned in most secondary literature and textbooks.

One *kuping* tael equals 37.27 grams of silver. If a reader is interested in international benchmarking, the following table will help (Xu, 1996, Appendix II, for exchange rates). Please note the volatile exchange rate between GBP and silver during the late 19th century.

Silver Tael (*Kuping*)	Silver Gram	GBP in 1865	GBP in 1885	GBP in 1905
0.1	4	0.03	0.03	0.01
0.5	19	0.16	0.14	0.07
1	37	0.31	0.28	0.14
5	186	1.57	1.39	0.69
10	373	3.15	2.79	1.38
50	1,864	16	14	7
100	3,727	31	28	14
500	18,635	157	139	69
1,000	37,270	315	279	138
5,000	186,350	1,573	1,393	688
10,000	372,700	3,145	2,786	1,375
50,000	1,863,500	15,725	13,930	6,875
100,000	3,727,000	31,450	27,860	13,750
500,000	18,635,000	157,250	139,300	68,750
1,000,000	37,270,000	314,500	278,600	137,500
5,000,000	186,350,000	1,572,500	1,393,000	687,500
10,000,000	372,700,000	3,145,000	2,786,000	1,375,000
50,000,000	1,863,500,000	15,725,000	13,930,000	6,875,000

(II)

The Chinese names, locations, terms, and quotes in this study are given in Pinyin instead of Wade-Giles, such as *lijin*, Zongli Yamen, and Qing Dynasty, instead of *likin*, Tsung-li Ya-men, and Ch'ing Dynasty.

Meanwhile, for the names of Chinese scholars (in an ethnic sense) who published their works in English, this study follows the names printed on their works, such as Ho Ping-Ti and Chang Chung-Li.

For Chinese places with conventional English names, this study only adopts Canton, Hong Kong, and Macau. For others such as Chefoo and Amoy, this study simply uses Yantai and Xiamen, in Pinyin.

(III)

This study gives the Qing reign title(s) to denote a period in some cases. The following table lists the reigns of all Qing emperors from 1644 onwards.

Reign Title	Reign
Shunzhi	1644-1661
Kangxi	1662-1722
Yongzheng	1723-1735
Qianlong	1736-1795
Jiaqing	1796-1820
Daoguang	1821-1850
Xianfeng	1851-1861
Tongzhi	1862-1874
Guangxu	1875-1908
Xuantong	1909-1911

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Preface

It is inappropriate to attribute China's prolonged stagnation in the first half of the 19th century to the statecraft of emperors Jiaqing (reigning 1796-1820) and Daoguang (reigning 1821-50). Both were fully aware of the nationwide explosive population growth, ecological deterioration, and bureaucratic inefficiency. However, both found it impossible to overcome the formidable institutional flaws and remake a prosperous era as their predecessors had ever done. The political and socioeconomic malaise was visible, but even the most prestigious senior officials such as Tao Shu and Lin Zexu could only introduce minor fine-tuning changes in certain aspects. Although these five decades witnessed no serious threats to the empire, resentment and concern began to accumulate among both elites and mass people. Genuine institutional transitions, however, were yet to be triggered by a substantial dynastic crisis that everyone had to encounter.

It was the destructive Taiping Rebellion (1851-64) that broke the Qing deadlock. Rebels spread from the southwestern periphery to the vast Middle and Lower Yangzi region, thus disturbing the Qing economic centers for over a decade. The centralized and rigid *ancien régime* failed to tackle the rebellion; therefore, the central court had to delegate its fiscal-military responsibilities to local governments. With this expedient solution, the empire survived the Taiping crisis, although the long-term cost was an irrevocable decline in the central authority. During and after the crisis, local officials with unprecedented fiscal-military autonomy were motivated to introduce novel and profound changes to the Qing regime. Such acquiesced bottom-up transformations reshaped the intergovernmental power balance in China by enhancing the local government capacities for nearly a century. It was their pioneering endeavors that made the history of China's state modernization during late Qing and early republican eras.

The Qing elites who rescued the empire from the mid-19th-century crisis, particularly officials and gentry class who were engaged in complex local public affairs, had realized the unsustainability of the centralized, static, and rigid regime for a long time. The abrupt Taiping Rebellion was simply a juncture for their desired transitions. One will find the thoughts of local officials and gentry class surprisingly pragmatic and progressive when reviewing their debates regarding China's modernization in that turbulent era. Neither powerful officials such as Zeng Guofan and Li Hongzhang nor foresightful thinkers such as Zheng Guanying and Feng Guifen were necessarily inspired by the so-called 'Western challenges'. Contrastingly, they provided warnings, reflections, and solutions to the Qing political and socioeconomic malaise based on their indigenous observations.

Among various late Qing imperatives, this study focuses on the fiscal system from the bottom-up view and presents numerous intriguing local fiscal phenomena. In Chapter 3, an urgent military fund remitted from Zhejiang to Hunan and Hubei was withheld midway in Anhui by its governor Jiang Wenqing for local military exigencies in the autumn of 1852. In Chapter 4, the *lijin* stations of the Jingzhou and Yuezhou prefectures jointly lowered the *lijin* rate, thereby attracting more taxpayers and seizing a share from the Yichang and Jianghan maritime customs under Hart's control. In Chapter 5, the Qing central court leveraged the *lijin* income of the Middle and Lower Yangzi region, without local consent, for foreign debts to pay the massive war reparations. This aroused strong opposition from the Jiangsu-Anhui-Jiangxi governor Liu Kunyi who regarded the *lijin* as a justifiable local government income. In Chapter 6, the Jiangsu governor Ni Liangyao, encountering a military emergency, made the first attempt to bypass the Board of Revenue and directly seek funds from governors of other provinces; after 1853, local governors were accustomed to coordinating and lending mutually without informing the Board of Revenue.

A reader familiar with the early Qing statecraft, fully manifested in Philip Kuhn's 'soul stealer' narrative, may find such fiscal phenomena unimaginable under Yongzheng (reigning 1723-35) or Qianlong (reigning 1736-95). Their presence after 1850 therefore indicated the significant changes of central-local fiscal relations as a key imperative of the late Qing political economy. The objective of this study is to provide a coherent institutional explanation for such changes.

1

Theoretical Perspectives

The state is a secondary concept in the grand analytical frameworks of several most influential theorists for the modern Western world (Lachmann, 2010, Chapter 2). Karl Marx's thoughts center on labor and class struggle and regard the state merely as a tool that serves the interests of the ruling class. The work of Anderson (1974) on the rise of absolutist state as a recent representative still employs this framework. According to Max Weber, the rise of the modern state and bureaucracy is a byproduct of modernity, nurtured by the disenchantment, the Protestant ethics, and the consequential development of capitalism (Weber, 1930). Moreover, the classic liberalism presented by Adam Smith holds a simplistic and functionalist view of the role of the state by describing it as an interest-free nightwatchman (Smith, 1904).

The year 1985 was a milestone when a group of scholars began to develop the 'bringing the state back in' paradigm and to emphasize the importance of studying state capacity from a global comparative perspective (Evans et al., 1985). From that time onwards, the state has no longer been a background board for other social sciences themes. Instead, as an actor with its own interests and objectives, it has interacted continuously with various social powers in the political and socioeconomic repertoires (Mann, 1986). The literature has been witnessing a shift from a society-centered to a state-centered perspective, and thereby state formation and development have become a central topic in historical sociology (Tilly, 1975, 1990) and new

institutional economics (North and Thomas, 1973; North, 1981, 1990).

1.1. The Making of a Fiscal State

Taxation is a core element in the definitions of a state by both Charles Tilly and Douglas North. Studies on fiscal institutions are important because they not only enhance our understanding of government agents *per se*, such as ruling elites (Lachmann, 2010) and bureaucracy (Ardant, 1975), but also offer nuanced analyses on state-society interactions such as economic development (Mathias and O'Brien, 1976) and redistribution (Lindert, 2004). Numerous historians, economists, political scientists, and sociologists have contributed to fiscal state literature with flourishing Western European evidence, and the distinction among these subjects is not clear-cut. This section outlines the evolution of analytical frameworks for fiscal state studies in different subjects. We depart from the pioneering work by Joseph Schumpeter.

Departure from a Domain State

Schumpeter (1954) highlights modern European fiscal changes to establish a Whig-style analysis of state building. He makes a groundbreaking contribution by conceptualizing the transitions from the 'domain state' to the 'tax state' in late medieval times. Most of the income for a domain state comprised rents from estates and natural resources within its feudal territory. At the turn of the 15th to 16th century, an increasing number of wars and the intensive use of mercenaries aggravated the monarchs' financial situations and forced them to introduce a common taxation system, through which a state could develop a bureaucracy and establish representative institutions, marking a redefinition of state-society relationship and a great leap from feudalism to capitalism. The emphasis on taxation is a genuine contribution of Schumpeter (1954), but the dichotomy of domain and tax states has also received criticisms (Bonney, 1995, 1999). Many post-medieval regimes, whether in the absolutist era or today, may still generate incomes in a domain-state pattern such as profits from state-owned enterprises (He, 2013, introduction). Hence, Schumpeter's framework does not successfully conceptualize a modern state from a fiscal view.

Ormrod et al. (1999) provide a more nuanced roadmap for the evolution of the state, including the phases of a tribute, domain, tax, and fiscal state. The distinction between tax and fiscal states is a major advancement[1] because introducing taxation *per se* does not necessarily indicate the stronger fiscal capacity for a state. For example, taxation does not necessarily mean the strengthening of legitimacy, as the extraction of an autocracy can be destructive and

[1] He (2013, p. 4) coins the equivalent terms 'traditional tax state' and 'modern tax state' respectively.

unsustainable. Neither does taxation itself mean stronger accountability to the governed. Moreover, the tax revenue of a state may be limited and fluctuating if the bureaucracy is inefficient and the tax base is set improperly. Therefore, beyond the tax state during the absolutist era, a stricter conceptualization for the fiscal state is sensible, including monetization (Neal, 2015), centralized fiscal management (Dincecco, 2009), and more importantly, the ability to employ long-term credit tools (Brewer, 1990; O'Brien and Hunt, 1999). The last criterion echoes the 'financial revolution' discourse coined by Dickson (1967) who affirms the development of public debt markets and private financial sectors in 17th-century England.

Nevertheless, however sophisticated our conceptualization may be, the boundaries for domain, tax, and fiscal states are always flexible and contingent. Within Europe, governments continued to obtain revenue from sources other than taxation, such as monopoly sales, during the modern times (Ogilvie, 1992; Root, 1994). Even in the Golden Age (1950-73), many Western European governments generated considerable income by running nationalized enterprises (Owen, 1999), which can be regarded as the feature of a domain state. Meanwhile, we have little knowledge of the nature of a state within a certain phase. Consider an example outside Europe: during the Han Dynasty (206 B.C. - 220), China established a uniform land tax system and imposed a monopoly on sales of salt and iron (Qian, 2001, Chapter 1; Von Glahn, 2016, Chapter 3); during the next two millennia, its fiscal regime remained a hybrid of domain and tax states if existing concepts apply. However, this does not mean there were no changes in the fiscal capacity of ancient China for such a long period.

Explaining the Transitions

Beyond such conceptualization for different phases, explaining the fiscal transition – even if we accept the above terms – is more challenging. The scholarship identifies several strands of structural factors. First, as previously mentioned, Dickson (1967) and Brewer (1990) highlight the early takeoff of the financial sector as a condition of British fiscal state building. Second, indirect taxation accounted for a growing share in the total government revenue since the Tudor reign, suggesting the essential role of commercial prosperity (Mathias and O'Brien, 1976; Mathias, 1979; O'Brien, 1988; O'Brien and Hunt, 1999). Third, Brewer (1990) and O'Brien and Hunt (1999) consider how the Weberian bureaucracy improved the efficiency of taxation. Finally, the literature connects the internal wars to the development of British taxation capacity during the absolutist period (Braddick, 1996, 2000; O'Brien, 2002). The above studies tend to emphasize that such structural factors preceded the making of a fiscal state; however, it is very difficult to construct causal links. Furthermore, the initial studies focus overwhelmingly on the British fiscal state in the 17th century, and their external validity is doubtful even within Western

Europe.

Therefore, numerous historical sociologists expand their horizons to the whole of Europe and stress the importance of a common geopolitical factor – international wars – in the making of fiscal states. The term 'fiscal-military state' coined by Brewer (1990) has only been widely recognized in recent decades, but the tradition of studying wars can be traced to the pre-WWI historian Otto Hintze. His papers mention the role of wars in the birth of bureaucracy and representative institution, whereas public finance itself receives less attention (Gilbert, 1975). Among later generations of historical sociologists, Tilly (1975, 1990) tries to develop the most comprehensive framework to explain the origin of European nation states. His works are state-centered, and the eminent thesis 'war made the state' depicts the intense military conflicts as an ultimate driving force of military mobilization and fiscal strengthening.[2] The nation states achieved both, and hence outperformed empires and city states by the dusk of absolutism.

In comparison with Tilly's grand thesis, Finer (1997) and Epstein (2002) focus only on certain aspects. Finer (1997) as a political scientist is more interested in the political agenda during modern state building, particularly the changing nature of wars, the strengthening of the state apparatus, and power centralization. Epstein (2002) embarks on a path of economic history and asserts that a key objective of state building was to alleviate negative externalities of the market and promote economic growth by introducing unified public finance and rule of law. Hence, the evolution of the state was closely linked to economic phenomena such as the prosperity of trade and the maturation of capital markets.

Other works centering on wars usually offer more specific mechanisms of fiscal-military transitions by combining certain structural factors and timings of transitions. Downing (1992) regards resource mobilization as a critical nexus between military pressure and the form of government. If a country strongly relied on domestic fiscal resources to win a war, intense military modernization would lead to the strengthening of the absolutist monarch; however, in a country where military pressure was absent or where other ways to finance armies existed, the constitutional system inherited from late medieval times could be preserved. Ertman (1997) studies the wars, too, but considers the vital role of taxation infrastructure (patrimonial or bureaucratic) and political regime (absolutist or constitutional), and the timing of involvement into geopolitical competition for a state. If a state was involved in intense military conflicts after the 1450s, it was able to extract resources with a professional bureaucracy and develop its representative institution; if before the 1450s, it had to rely on patrimonial governance and absolutism to fight the wars. Moreover, the work of Poggi (1978) also deserves our acknowledgement. He links the intense warfare to state building but stresses the internal

[2] They are referred to as 'coercion' and 'capital' accumulation, respectively (Tilly, 1990).

changes. Feudal manors and autonomous cities could not protect themselves in the geopolitical competition and hence resorted to the solution of nation states.

The historical sociological literature generally emphasizes the state-centered paradigm and considers both a battery of structural factors and the shocks and timings for fiscal-military transitions. However, 'path dependency' narratives prevail, and relevant mechanisms of historical changes, though nuanced, do not fully consider the degree of freedom for the actors *per se* – namely how their endowments, constraints, and objectives shaped their choices, and how many potential institutional outcomes there could be.

Therefore, new institutional economics (North and Thomas, 1973; North, 1981, 1990) develops a more coherent framework to explain the making of a modern fiscal state, and North and Weingast (1989) offer a classic historical institutionalist case of the British fiscal state after the Glorious Revolution.[3] They incorporate a series of structural factors and consider the role of wars, but more importantly, they conceptualize the games of political actors and thereby coin the 'constitutions and commitment' mechanism for the rise of the British fiscal state. Parliamentary supremacy equipped the representative institution with exclusive authority to raise new taxes and monitor budgets; prerogative powers of the king were eliminated, and the independence of judiciary was guaranteed; the Bank of England, founded in 1694, handled the government loan accounts, and its independence became another crucial constraint for the king to raise capital for wars. With the unremitting contention and compromise of political actors, constitutionalism terminated the unrestrained borrowing during the Stuart reign and strengthened the credibility of public debts in the long run. Drelichman and Voth (2008) apply the same method to analyze a counter example, Castile in the 16th-17th centuries, where the wealthy Philip II bypassed the *Cortes* and relied on the silver inflow from America to finance the wars; in this game, the crown was so strong that the representative institution had no bargaining power. Hence no 'constitutions and commitment' emerged.

The combination of historical and rational-choice institutionalisms contributes to the literature, not only by recognizing structural factors and shocks but also by accepting multiple potential outcomes of institutional evolution. This enables the actors in the repertoires to rationalize their behaviors and to determine the results. Meanwhile, the persistence of 'bad' institutions is coherently explained (North, 1990). Theoretical works on rational-choice institutionalism (Levi, 1988; Besley and Persson, 2008, 2009, 2010; Genniaoli and Voth, 2015) have a weaker sense of history, but they model the political games in a sophisticated way and consider the odds of multiple potential outcomes.

Regarding empirical studies from the institutionalist perspective, Kiser and Linton (2002)

[3] For a comparative study between England and France, see Stasavage (2002).

concretize state building as the struggle between the king, elites and mass people, the form of which differed across countries, and during which the actors could adjust their strategies continuously. The success of the 1381 mass resistance in Britain signaled the crown and accounted for the early acceptance of the British representative institution by the crown; Castile, in comparison, suppressed mass uprisings successfully in 1520-21, making the *Cortes* marginalized for centuries. Similarly, Rosenthal (1998) models the actors' interactions by proposing that collaboration between crown and nobility gave birth to a strong representative institution in Britain, while contention between the crown and mass people regarding taxation was conducive to persistent absolutism in France. Furthermore, several papers extend this paradigm and provide quantitative surveys for numerous observations. Dincecco (2009) emphasizes the joint importance of two factors – fiscal centralization and limited government – in European fiscal state building and provides panel regressions. Karaman and Pamuk (2013) review the combination of political and economic patterns and hold the opinion that when facing wars, either representative institution in urbanized-commercial economies or authoritarianism in rural-agrarian economies could better aggregate domestic resources for state building.

In a nutshell, despite reservations about the external validity of the Eurocentric fiscal-military state theories, this study holds the view that the new institutional economics offers the most rigorous analytical framework in the methodological sense.

1.2. Reconsidering the Framework

Based on different strands of literature, we can broadly define a fiscal state by the following criteria: first, a unified legal and bureaucratic system with state sovereignty; second, highly monetized taxation and a broad tax base, in which indirect taxation accounted for a large proportion; third, the mature application of long-term credit tools with credible commitment from the state. However, the current fiscal-military state framework suffers from both internal (European) and external (non-European) validity problems.

It focuses overwhelmingly on Western European nation states and usually assumes that their fiscal-military systems evolved independently, while institutional learning within Europe is understated.[4] Meanwhile, the literature provides very few insights into how religious powers, as important political and economic actors in early modern Europe, shaped the trajectory of fiscal-military state building. Third, current studies pay much less attention to public expenditure than to government income. It is doubtful whether the massive military

[4] There are exceptions: Ertman (1997) considers the spread of bureaucracy among countries; Epstein (2002) introduces the financial institutional learning among Italian city states, the Low countries and Britain since late medieval times.

expenditure of European nation states was conducive to the sustainable development of state capacity (Baugh, 1965; Harling, 1996; Braddick, 2000). The rapid growth of public welfare spending with the introduction of redistribution schemes in the Western world was a 20th-century phenomenon after military spending had already declined (Hoffman, 2015). For such changes, other factors such as suffrage have played a crucial role (Lindert, 2004). Finally, Johnson and Koyama (2017) review the literature and find very few empirical studies on fiscal state and economic growth despite the pioneering attempt by Dincecco and Katz (2016).

The external validity problem from a global scope is visible, too. It is difficult to generalize the current framework to various regimes – such as city states and empires – because of their heterogeneity in country size, economic nature, social class structure, and pattern of military mobilization. It is challenging to embed the Italian and Swiss city states into the current fiscal-military state framework (Altorfer-Ong, 2007). This is also true of the empires, as many comparative studies have to analyze the Austro-Hungarian Empire, the Ottoman Empire, the Qing Chinese Empire, and the European nation states under the same framework (Karaman and Pamuk, 2010, 2013; Dincecco, 2009; He, 2013). The term 'empire' also refers to the colonial empire in the modern period; however, it is not sensible to assume that the colonial states in Kenya and Northern Rhodesia once had the same initial conditions and objectives as Britain and France when they tackled their fiscal imperatives (Gardner, 2012; Frankema and Van Waijenburg, 2014; Van Waijenburg, 2018).

Both internal and external validity problems force us to rethink the framework of the fiscal-military state, and it can be particularly helpful to reexamine the following four issues. The first is the role of wars. The literature finds an undisputed positive role of international wars in modern Western Europe, but this may not apply to other geopolitical environments. For instance, in Sub-Saharan Africa, international wars can stifle fiscal state building in both colonial and post-colonial periods (Dincecco et al., 2019). In another case, Japan established a modern fiscal state during the Meiji Reform (1868-1890s), while international wars were absent (He, 2013). Furthermore, in the long Chinese history, the main forms of warfare prior to 1840 were agrarian-nomadic conflicts and peasant rebellions rather than external wars;[5] even after 1840, the role of international wars was secondary in facilitating China's fiscal transitions, indicated in Chapters 3-6 of this study. In general, the current literature understates the role of internal insurrections such as civil wars or rebellions, and a limited number of existing studies suggest contradictory results: Besley and Persson (2008) propose a negative effect, supported by Colombian evidence (Cárdenas et al., 2014); meanwhile, Rodríguez-Franco (2016) shows how, in theory, internal conflicts foster rather than impede fiscal

[5] Some recent papers attempt to address the pattern of warfare in ancient China (Ko et al., 2018; Fernández-Villaverde et al., 2020; Chen and Ma, 2020).

development, empirically grounded by Slater (2010) and Ch et al. (2018).

The second issue is the type of political regime and the nature of elites. When discussing the fiscal-military state, nearly all subjects – fiscal history, historical sociology, political science, and new institutional economics – place the representative institution centrally by studying the timing of its creation, the dominant elites within it, and its contribution to the 'credible commitment'. An effective representative institution, unlike the Castilian *Cortes* during the Philip II reign, could provide a platform for political repertoires of contention and compromise between the crown and elites. Political participation was institutionalized and predictable; meanwhile, the bureaucracy was necessary but functional in the analyses. However, this may not apply to other regimes. In imperial China for instance, the legitimacy was vaguely defined as 'mandate of heaven', and the hierarchical bureaucracy was the dominant actor for two millennia particularly after the Tang-Song Transformation through which meritocracy was consolidated (Miyakawa, 1955; Naito, 2004). Institutional changes were usually initiated and implemented within the government, while social powers, especially merchants, were never independent interest groups (Mann, 1987; Tan, 2013). Since the society was embedded in rather than independent from the political system,[6] seeking the sprouts of independent commercial class and strong representative institution is an inappropriate starting point to establish a fiscal-military state theory for such a regime.

The third issue is the tax base. From the 17th to the 19th century, both indirect taxation and government debt enjoyed remarkable growth in the Western world. This was closely related to the economic conditions – such as financial development and trade prosperity – and further accelerated by the Industrial Revolution (Epstein, 2002). For contemporary times, contrastingly, direct taxation has become increasingly important (Besley and Persson, 2011) as a channel of redistribution and social welfare provision. However, this temporal pattern may not be accepted as a law on a global scale. Prior to the mid-19th century, direct taxation on land dominated in China and Japan, but we cannot regard them as strong fiscal states by today's European standards. Similarly, for many West African colonial states, trade tax revenue was a mainstay in the late 19th century (Gardner, 2012), but we cannot simply claim that the Nigerian fiscal regime was superior to the Chinese or Japanese one based on the 19th-century European criteria. Hence, it is risky to assume that a state must embark on a Whig-style path for fiscal modernization, benchmarked by Western Europe, without considering its legitimacy, local economic conditions, and geopolitical environments.

The final issue is the principal-agent problem, the severity of which was mainly explained by the size of a country and the distance from the periphery to a power center. The literature,

[6] Brook (2004, introduction) offers a critical discussion on the state-society interactions of imperial China, especially how the society adapted to and even reshaped the top-down state penetration.

based on nation states, underlines the efficiency and economy of scale resulting from fiscal centralization (Dincecco, 2009; Johnson and Koyama, 2017, pp. 3-6). Japan took this initial step, too, during late 19th century (He, 2013), and its size and geographical distribution of elites and resources accounted for its success of fiscal modernization (Koyama et al., 2015). Furthermore, Italian city states in the early modern period found fiscal centralization undoubtedly simple and sensible (Fratianni and Spinelli, 2006). However, a fundamental question for empires was whether fiscal centralization was necessary and justifiable. For example, in imperial China, the *prima facie* fiscal centralization was maintained in the long Ming-Qing history at the tremendous cost of principal-agent problems (Sng, 2014; Ma and Rubin, 2019). Moreover, the colonial empires also needed a contingent solution other than fiscal centralization: for instance, London would find it costly and even impossible to implement the fine-tuned fiscal management for Rhodesia or Kenya in a top-down way. Therefore, a trade-off between fiscal centralization and decentralization mattered for regimes of different characteristics, particularly given the high cost of communication between core and peripheries in the 18th and 19th centuries.

This study aims to revise the current fiscal-military state framework by reexamining the fiscal changes of late Qing Chinese Empire (1850-1911), a key observation in the Great Divergence debate for the two recent decades. The next chapter will indicate that the literature on modern China's fiscal transitions is balkanized despite flourishing. It will introduce the historical background and set the scene for Chapters 3-6 through a critical literature review.

2

Scenario Setting

All four theoretical issues on the fiscal-military state mentioned at the end of Chapter 1 – role of wars, regime type and elite nature, tax base, and principal-agent problem – can be rethought in the Qing Chinese context. As the last imperial dynasty, the Qing inherited fundamental institutional arrangements during China's long history and established a mature political regime characterized by the ultimate central authority with the 'mandate of heaven' and Confucian gentry grounded by meritocracy.

Its political and social elites had two distinct features. Within the officialdom, a hierarchical bureaucracy under the central authority formed during the Han Dynasty (202 B.C. – 220) and persisted for almost two millennia (Qian, 2011); the Tang-Song Transformation effectively eliminated the aristocracy, consolidated the meritocratic Civil Service Examinations (*keju*), and guaranteed the upward social mobility for commoners during the later dynasties (Miyakawa, 1955; Naito, 2004). Therefore, during the Qing period, government officials were vital driving forces in promoting various institutional transitions. Outside officialdom, the gentry class was the only dominant elite group. Members with certain exam titles were indoctrinated into the Confucian lines of thought through standardized education and exam systems and thereby undertook huge social responsibilities; during a certain year of the early Qing period, approximately one million gentry members across the empire assisted local governments in public affairs with their useful and necessary local information and expertise (Chang, 1955,

Chapter 2). Meanwhile, merchants were in a secondary place. The state in general adopted a *laissez faire* philosophy for economic affairs, and merchants had no institutionalized channels of political participation. Powerful merchant groups, such as those in Shanxi and Huizhou, were embedded into the political system and formed patronage networks with the state by obtaining franchising rights for salt, financing lineage members to take the Exams, etc. (Cai et al., 2008; Tan, 2013; Brandt et al., 2014). Hence, considering the nature of the Qing elites, the fiscal-military narratives of this study will center on behaviors of officialdom and gentry class.

Furthermore, it is worth mentioning at the beginning of this chapter that the maturation of the Qing economy was a precondition of government taxation. The California School values the approach of reciprocal Eurasia comparisons (Wong, 1997) and proposes that the Qing economic success, especially in the Lower Yangzi region, was on a par with that of northwestern Europe during the 18th century (Pomeranz, 2000). The output level of agricultural and handicraft ('proto-industrial') products grew in both extensive and Smithian patterns: arable land expansion and population boom were remarkable (Wang, 1973, Chapters 3 and 5; Cao, 2001); specialization for primary and secondary sectors (Xu and Wu, 2000; Li, 2000, 2002) and development of a national transportation system increased long-distance trade and accelerated market integration (Wang, 1992; Peng, 2006; Shiue and Keller, 2007; Von Glahn, 2016, Chapter 8). However, the evaluation of the Qing economic performance is in an ongoing debate, and the California School is questioned from the perspectives of low labor income (Allen et al., 2011; Deng and O'Brien, 2016, for criticisms) including demographic crisis (Elvin, 1973; Huang, 1985, 1990; Richardson, 1999, Introduction and Chapter 1), cultural and ideological rigidity (Zhao and Hall, 1994; Mokyr, 1992, 2005; Zhao, 2015), and resilient but stagnant institutions (Brandt et al., 2014). A comprehensive assessment of the Qing economic performance and the timing of the Great Divergence (Broadberry et al., 2018; Deng and O'Brien, 2021, for criticisms) is beyond the scope of this research. However, the literature reaches a consensus, from demographic and growth-accounting viewpoints, that the early Qing economy was relatively successful whereas the first half of the 19th century witnessed the withering of the state and the onset of various socioeconomic crises (Von Glahn, 2016, Chapter 9, for a review). We depart from this consensus to reexamine the Qing fiscal literature.

2.1. Two Contradictions in the Qing Fiscal Studies

In the light of the Qing economic trend, academic works on the Qing public finance can be divided into the 'early Qing' (pre-1850) and 'late Qing' (post-1850) groups for convenience.[7]

[7] However, we may still overlook the fiscal performance of the pivotal period, the first half of the 19th century (Zhu, 2018, Part 1, for general criticisms). Ni (2013) provides a survey but does not offer critical views on this mid-Qing recession.

This rich but balkanized literature has a huge gap in understanding early and late Qing fiscal capacities. This is manifested in the two key contradictions – degree of centralization and intensity of taxation, respectively – presented in this section.

Most scholars believe that over-centralization and ultra-low taxation were the deep-rooted reasons for the stagnation and even decline of pre-1850 Qing state capacity. In the meantime, the literature attributes the post-1850 Qing fiscal chaos and even the fall of the empire in 1911 to the lack of fiscal centralization and the radical tax increase during those decades. Ironically, the scholarship criticizes both centralization and decentralization, and both light and heavy taxation; hence a coherent explanation of the Qing fiscal performance is urgently needed.

The Early Qing Fiscal Regime: Too Centralized and Too Small?

The early Qing fiscal regime was highly centralized, and Wang (1973) makes the pathbreaking contribution in surveying its mainstay – the land taxation. He finds that from the view of national unification and bureaucratization, the early Qing taxation system was well structured: there was a clear hierarchy from the Board of Revenue (*hubu*) to provinces; within a province, the provincial commissioner (*buzhengshi*) was responsible for coordination and remittance, and he assigned collection tasks to magistrates at lower levels – prefectures and counties. Other works (Chen, 1988; Liao, 2010; Ni, 2017b) offer surveys for the monopoly of salt sales and domestic customs systems and stress similar vertical control from the Board of Revenue to the salt regions and customs houses. Local officials at all levels were merely tax collectors in the name of central government and had no autonomy or *ad hoc* tax sources; the collected revenue was usually divided into retainment (*cunliu*),[8] for stipulated local uses, and remittance (*qiyun*) to the upper level, for central use (*jiexiang*) or interprovincial assistance (*xiexiang*). Hence, the role of the Board in the early Qing era was vital. To monitor the national budget and redistribute resources among regions timely and effectively, the Board introduced a series of regulations including winter estimation (*donggu*) and spring-autumn ordering (*chunqiubo*) from the revenue side, as well as report and clearance (*zouxiao*) from the expenditure side. For a local official, taxation accounted for a large proportion of his annual performance appraisal.

During the two centuries (1644-1850) the Board sticked to the fixed numbers of fiscal revenue and expenditure under a centralized and rigid managerial scheme; meanwhile, Chang (1955, 1962) notices the striking stagnation of the small bureaucracy *per se*. During the two

[8] Regarding land taxation, a local government on average only retained no more than a quarter of its revenue for itself, and the fund must be used for *ex ante* stipulated purposes such as postal system maintenance and exam organization (Chen, 2010, Chapter 8). For salt sales and domestic customs systems, the officials only retained a small fund for their own operations and had to remit all remaining revenue to the upper level. The low retainment was a common and serious fiscal problem at the local level during the early Qing era (Zelin, 1984).

centuries, the number of Qing officials increased slightly from 24,150 to 26,355, and the size of the gentry class was a constant 1-1.1 million (Chang, 1955, Chapter 2), while the total population of the empire tripled from 153 to 436 million (Cao, 2001, Chapter 16). Hence, by the onset of the mid-19th-century upheavals, a local magistrate on average had to govern over 150,000 commoners, three times the number in the mid-17th century. However, the Qing fiscal infrastructure remained surprisingly unchanged.

A direct consequence of the early Qing institutional choice – fiscal centralization and a small bureaucracy – was persistent low taxation, which subsequently reinforced the Qing institutional choice. Shen (2002) and Chen (2010, Chapter 4) notices the low and stable government revenue from three major tax bases (land, salt, domestic customs) over centuries. Furthermore, for per capita level, Brandt et al. (2014) calculate the per capita tax burden measured in absolute amount and share in wage and find that the Qing per capita burden was far lower than that of both Western Europe and the Russian or Ottoman Empire. The gap was even widened after 1750. Per capita measures are by no means perfect for international comparisons because it is difficult to capture and quantify the non-cash extraction from a state, such as tax in kind and *corvée*. However, even within Chinese history, Liu (2005) suggests that the per capita tax burden declined continuously for a millennium: the per capita tax burden in the early Qing period was reduced to 15% in the year 1000, which was explained not only by the Qing stagnation *per se* but also by the highly commercialized and dynamic Song political economy (Liu, 2015).

Why did a centralized and small fiscal regime persist during 1644-1850? Current debates provide both ideological and pragmatic explanations. On the one hand, Wakeman (1985, Chapters 6-14) and Kuhn (1992, Chapters 2, 3 and 9) discuss the Qing legitimacy issues intensively, and Zhang (2019) explicitly proposes that the Ming-Qing transition caused a conservative turn in fiscal thoughts and that low taxation was a tool to consolidate the Qing legitimacy. Moreover, the Qing rulers, not to mention the resilient gentry class, were prone to low taxation and benevolent governance in line with Confucianism (Wong, 1997; Rosenthal and Wong, 2011; Deng, 2012, 2015).[9]

On the other hand, Ma and Rubin (2019) suggest that low taxation was a rational choice for the throne in such a typical principal-agent case. The vast territory and growing population increased the costs of information and surveillance for the throne. Furthermore, if the throne insisted on increasing taxes, most of the incremental government revenue could be absorbed by taxation costs and possible local corruptions; meanwhile the throne took greater risks of tax resistances and even uprisings. Hence the throne in theory chose to maintain the low-tax status

[9] For the latest historical analyses on the role of Manchus in modern Chinese history, see Laamann (2013).

and acquiesce to the pervasive local informal surcharges.[10] In fact, almost all research in this field mentions the influential declaration 'freezing land tax' (*yongbu jiafu*) by the Kangxi emperor in 1712, and Iwai (2011) coins the term 'quotaism' (*yuan'e zhuyi*) for this low-tax statecraft. The Board of Revenue ignored the ever-changing demographic and economic dynamics and resorted to rigid quota management for tax revenue and public expenditure. Local bureaucrats were granted no autonomy or incentive to cultivate broader tax bases in such a centralized fiscal scheme.

The Qing state chose to tax the primary sector overwhelmingly with its centralized and small apparatus, which was another key reason for its low revenue. The Qing rulers inherited the late Ming land-poll taxation practice, including the notable achievement of the 1580 Single Whip Law (*yitiaobian fa*) which aimed to integrate land tax and *corvée* into a single silver payment (Liang, 1989, Chapters 2-4, 7, 10, 13, 15-16; Iwai, 2011, Part 2). In fact, the Qing state advanced by merging land and poll taxes (*tanding rudi*) during the Yongzheng reign (1722-1735) (Zhou, 2000, Chapter 1). Meanwhile, the Qing state maintained the Ming grain tax transport system (*caoyun*) (Huang, 1979) to feed the royal household, military system and central government operations, and its annual revenue in kind was considerable (Chen, 2010, Chapter 5).[11] In comparison with the onerous efforts in maintaining the direct taxation apparatus, Chen (1988), Liao (2010) and Ni (2017b) observe that the early Qing state invested much less in developing indirect taxation systems such as salt sales and domestic customs. Various miscellaneous taxes such as deed tax and pawn tax were in such a marginalized place that little quality data on them are obtained (Wang, 1973, Chapter 4). A general conclusion by all above works is that during the early Qing period, the Board held ultimate control over three major tax revenues (land for 70%, salt sales and domestic customs for 26%) whereas other miscellaneous taxes accounted for a rather small share (4%).[12] The traditional Confucian statecraft required heavy indirect taxation to 'suppress commerce' (*yishang*), but the early Qing taxation pattern was exactly the opposite (Xu and Jing, 1990).

Since the early Qing state tailored the budget with its limited and fixed revenue, its public spending pattern also remained static. However, besides the routine royal household spending, official salary payment, etc., the early Qing state was committed to three major public goods

[10] A key implication from Ma and Rubin (2019) is that due to the absence of 'credible commitment' from the throne, information asymmetry and principal-agent problem were deeply entrenched in the Qing regime.

[11] The economic impact of the grain tax transport system was unexpectedly enormous. Liu (2019) follows the groundbreaking works of Liang (1989) and proposes that such a 'tribute system' (*gongfu tizhi*) served as not only a taxation apparatus but also a complement of market economy.

[12] The early Qing state developed several channels for non-tax incomes, the most important among which were exam and official title sales (*juanna*) (Xu, 1950; Chang, 1955) and merchant donations (*baoxiao*) (Mann, 1987; Chen, 1988, Chapter 6; Wang, 2014, Chapter 1; Brandt et al., 2014, pp. 74-6). They were marginal and irregular, but as the Qing fiscal balance worsened in the first half of the 19th century, both played an important role in mitigating the fiscal shortage despite their unsustainability.

provisions in a centralized way. The first was security. The Qing state invested over 60% of its annual revenue in a centralized military system with 0.8 million *baqi* and *luying* soldiers (Chen, 1992). The massive military spending paid off before 1800: the empire was able to govern a vast territory with very few social insurrections. The second was water control projects particularly along major rivers. Local communities were only able to undertake minor projects along the reaches, while central government assumed major responsibility for the expensive grand works (Yang, 2012, Chapter 3; Cai and Han, 2019). The third public good in line with the 'benevolent governance' (*renzheng*) was disaster relief. Will (1990) and Will and Wong (1991) offer the most insightful surveys on how the Qing state constructed a well-functioned granary system for not only disaster relief but also price stabilization and short-term lending to peasants. Their works show that the system played a crucial role in mitigating the negative social impact of droughts and floods especially prior to 1750.

What were the socioeconomic consequences of this centralized and small fiscal regime? In the short run, the early Qing fiscal regime did witness the overall agricultural growth because the incremental output, driven by population boom and arable land expansion, was largely out of the state's control, not to mention the frequent universal land tax exemption during the early Qing period. Meanwhile, the handicraft sector was thriving and the interregional trade was prosperous during the 18th century, both of which benefited from the nearly ignorable domestic customs taxation. However, Von Glahn (2016, Chapter 8) warns that we should regard the early Qing statecraft as being *laissez faire* rather than developmental.[13] In fact, the widely recognized 18th-century prosperity could be explained simply by the absence of improper or radical government intervention; however, low taxation was never introduced with the intention of stimulating economic growth.[14]

Unfortunately, the long-term consequences of absolute centralization and ultra-low taxation were detrimental. The early Qing state was able to run it smoothly only when demographic crises and resource constraints were absent. However when such challenges loomed, the fiscal regime immediately became unsustainable. This is consistent with Shi (2009) who uses an alternative measure, the central silver reserve, to construct the narrative. Although this index reflects only the central situation, it reveals that the Qing state realized small but steady surpluses before 1795. However, the uprisings and disasters during the Jiaqing period (1796-1820) quickly erased the accumulated legacy of the Qianlong reign (1736-95); subsequently,

[13] Contrastingly, Rowe (2001, p. 287) provides an overstatement of the Qing statecraft by claiming that the early Qing state was 'doing everything possible to augment the per capita economic productivity'.

[14] This *laissez faire* economic philosophy was also reflected in the Qing monetary system (Frank, 1998; Von Glahn, 1996, 2007). Again, the Qing state was absent in monitoring the supply of silver and copper species, but we still observe the impressive silver inflow from late Ming to early Qing times as a natural consequence of the growing domestic cash crop and handicraft sectors.

the Board barely made ends meet and the fiscal liquidity problem became transparent. The following part categorizes different strands of literature that consider three long-term challenges for a centralized and low-tax fiscal regime.

First, we focus on the declining capacity of the Qing central state. The severe principal-agent problem between the throne and local officials shaped a 'quotaist' regime (Iwai, 2011), resulting in a prolonged deterioration of the Qing fiscal infrastructure (Hoffman, 2015, p. 309 for a definition). Since land tax revenue was a mainstay, the Qing central state revised the national land survey in 1647 based on the Wanli (1572-1620) record of the Ming Dynasty and edited it further in 1685 and 1734. However, regular updates to the records were impossible because of the lack of incentive and funding. Wang (1973, Chapters 2, 3 and 5) finds that since the mid-18th century peasants began to evade new land registration and that 80% of newly cultivated land was not registered after 1750. Local officials widely acquiesced to registration evasion because more registered land meant a higher taxation target to fulfill in future. Ho (1959, Chapters 6-7) even finds that some officials reported a lower figure for newly registered land on purpose. Fulfilling the stipulated taxation goal was essential for an official's career path; if he failed, he was very likely to resort to misreporting, a common strategy of which was to exaggerate the degree of natural disasters and apply for exemptions. During 1800-50 such misreporting became very pervasive in the Middle and Lower Yangzi region, and it even persisted into the late 19th century (Zhou, 2019, Chapters 5 and 10). The serious discrepancy between land registration and actual cultivation after 1750 indicated the low quality of the Qing fiscal infrastructure, especially information management system. Hence, Peng (1947) believes that the Board's control over local taxation began to decline considerably earlier than the mid-19th century.

Qian (2001) warns that the Qing neglect of statistical management made it challenging and costly to monitor demographic changes, extract social resources and provide sufficient public goods. This is very insightful: the deterioration of fiscal infrastructure and the low taxation capacity reinforced each other, and the Qing central state found itself incapable of implementing the 'benevolent governance' during the first half of the 19th century. Financing the imperial *baqi* and *luying* troops became burdensome and no longer worthwhile: Kuhn (1980) offers a classic study on how local militias needed to be employed to suppress the White Lotus Rebellion (1796-1804) due to the poor performance of imperial troops. Water control projects also underwent a malaise. The deteriorating conditions of major rivers and canals caused more floods from 1800 onwards, and the Qing central state was compelled to expropriate other fiscal resources to tackle this problem (Ni, 2013, Chapter 2). Furthermore, the disaster relief system withered quickly. Will (1990, Part 3) observes the pervasive desolation of the granary system

by the end of the 18th century, and He (1981, Chapter 4) finds Hunan's situation even worse during the mid-19th century, marking that the central state broke with its long-standing tenets of benevolence. The statement by Ni (2013, Chapter 5) regarding the Qing finance during 1800-50, 'still some distance from a tipping point' (*you liangbian wu zhibian*), was still too optimistic. In fact, low taxation led to low public good provision, which in turn further reduced the level of taxation. The Qing central state was trapped in a vicious circle, and eventually it retreated from numerous public affairs.

The second consequence of a centralized and small fiscal regime was the tension in intergovernmental relations. Since the Board controlled nearly three quarters of the national tax revenue (Chen, 2010, Chapter 5), the fiscal deficit was always a conceivable challenge for a local magistrate, not to mention that the throne frequently expropriated the *de jure* local part during military emergencies. Facing the population boom and consequential heavy workload, a diligent magistrate had to abandon the small-state tenet of Confucianism and maintain a large team of runners and clerks. Wang (1973, Chapters 2-3) finds that in 1900 the Qing central state required a magistrate to hire only 10-14 clerks and runners, but the actual number proved to be 'dozens'. Informal employees accounted for the vast majority in local governments, and they, rather than magistrates, were the *de facto* connectors between commoners and political power. Chu (1962) and Hsiao (1967) offer pioneering works on the operations of a Qing local government and emphasize the inevitable role of runners and clerks in tax collection, legal dispute settlement, ritual activities, etc. Both tend to emphasize their demerits, especially corruption in their tax farming which eroded the Qing legitimacy. Two representative land taxation studies (Wang, 1973; Zhou, 2019) acknowledge certain limitations of tax farming by runners and clerks, too. However, they find this practice surprisingly resilient both temporally and spatially, and most peasants were not keen on paying taxes on spot due to high transaction costs. This resilience suggests that the corruption of runners and clerks might be exaggerated in the literature. Hence Reed (2000) reexamines the Qing archives in Sichuan and proposes the 'informal legitimacy' of runners and clerks. To maintain a long-term relationship with both formal bureaucrats and mass people, runners and clerks could not be as extractive as they wished; instead, they developed and enforced a series of standardized internal regulations that were implicitly agreed by all stakeholders.[15]

Since a magistrate had to run a team of runners and clerks, the stipulated local fund by the Board was certainly insufficient even in the early 18th century when the population pressure was lighter. A common practice was to maximize the central-acquiesced surcharges and even to create illegal ones, as noticed by several works on the local Qing state (Chu, 1962; Hsiao,

[15] Cong (1995) and Li (2008) also imply the pragmatic constraints on runners and clerks and the low possibility of their massive corruption, but both employ evidence from northern China during late Qing and early republican times.

1967; Reed, 2000). Moreover, Wang (1973) initially proposes that the Qing fiscal regime had a dual structure: the 'quota' part, monitored openly by the Board, and the 'surcharge' part, known to a certain extent but uncontrolled by the Board. He attempts to re-estimate the scale of a 'real' Qing public finance based on data in 1753 (Wang, 1973, Chapter 4). In his estimation, all major tax revenues expanded by different rates. Annual revenue from land taxation, salt sales and customs increased by less than 25%. Miscellaneous tax revenue increased by over four times, possibly because the studied region of Wang (1973) had an excessively large number and overrepresented the national image (Von Glahn, 2016, Table 9.7). The 1753 total tax revenue of the Qing Empire was revised by Wang (1973) from 56 million to 74 million silver taels, but this estimation is only suggestive. Iwai (2011) also regards surcharges – the underwater bulk of an iceberg – as a natural product of the centralized and 'quotaist' fiscal system and hypothesizes that the expanding scale of the 'surcharge' finance accurately manifested the rapid population growth. However, he does not offer quantitative evidence for it.

Compared with Wang (1973) and Iwai (2011), the work by Zelin (1984) advances by focusing not only on surcharges *per se* but also on how the Qing central state attempted to control them. Attrition fee (*huohao*), her research focus, was introduced by local governments as a surcharge for taxpayers, as silver was prone to wear and tear in transactions. The collected attrition fee mitigated local fiscal shortage to a certain extent. As Tang (1987, Chapter 7), Zhou (2000, Chapter 1) and Chen (2010, Chapter 4) estimate, the share of attrition fee in total land tax revenue was 7-10% during the 18th-19th centuries. The contribution of Zelin (1984) is to reassess the attrition regularization reform (*huohao guigong*). The Yongzheng emperor (reigning 1722-35) attempted to make the attrition fee a legitimate and transparent subsidy for local officials and aimed to set caps for the local attrition fee and monitor its collection and allocation. In a short term, the attrition regularization reform was a success because this transparent fee effectively crowded out other local surcharges. However, the drawbacks emerged immediately after the death of the Yongzheng emperor. Despite this subsidy, a local official could still be trapped in a fiscal shortage, not to mention that the successor, the Qianlong emperor (reigning 1736-95), frequently expropriated the *ex ante* stipulated local subsidy for other central exigencies.[16]

More importantly, although the attrition regularization appeared to grant certain local autonomy, its essence was to consolidate the centralized 'quotaist' fiscal regime. In fact, the discrepancy between central and local finance remained unsolved. The Qing central state preserved its authority and imposed rigid control over local finance – both 'quota' and

[16] Hao and Liu (2020) offer quantitative evidence and regard it to be a key reason for the reform's long-term failure.

'surcharge' parts – and refused to consider heterogeneous socioeconomic conditions or grant formal autonomy for 266 prefectures in a giant empire. Local officials were not permitted to increase the attrition fee, whereas the inflation driven by silver inflow and the population boom was accelerating massively after the Yongzheng era. Zelin (1984, Chapter 7) and Zhou (2019, Chapter 9 and Conclusion) notice that to run the local governments, the officials had to introduce other types of surcharges, which were neither justified nor forbidden by the Board from the mid-18th to mid-19th century, as suggested by Ma and Rubin (2019). This phenomenon was initially noticed by a Qing scholar Huang Zongxi and further conceptualized by Qin (2002) and Zhou (2017): whenever a local surcharge was forbidden or institutionalized, a new one would appear tenaciously; through several waves of central interventions, such surcharges became more pervasive, which completely contradicted the central vision of benevolent governance. This was increasingly risky for the dynastic longevity after the mid-18th century, as various surcharges increased the probability of tax resistance (Kuhn, 1978; Wong, 1997, Chapter 10).[17] Ironically, it was not local governments and their surcharges, but the central state with its rigid fiscal management, that accounted for the increasing number of tax resistance riots.

The third long-term consequence of this centralized and small system, as stressed in the literature, was the poor institutionalization for political participation of social powers, including gentry and commercial classes. As a local government was surprisingly small, collaboration from social powers was essential for the Qing local governance. The gentry class in line with Confucianism played an overwhelming role: candidates who passed the low-level Examinations could serve as runners and clerks, and more importantly, the upper gentry class provided expertise and served as coordinators between magistrates and mass people (Chang, 1955). Therefore. with the evidence from Chu (1962) and Hsiao (1967) we can infer that the Qing local public expenditure, like its taxation, also had a shadow part which was undertaken by the gentry class. Although quantifying the shadow expenditure is difficult, Kuhn (1980, Chapter 2) points out that the contribution of the gentry class became conceivable from late 18th century onwards, well manifested in the suppression of the White Lotus Rebellion (1796-1804) in which the weak and incapable imperial troops had to give way to local militias. In other fields such as disaster relief, Will (1990, Part 3) finds that the official granary system declined severely in the 19th century, so it is reasonable to infer that the gentry class took greater responsibility for the Qing state. However, before 1850, the social status of mass gentry members was vaguely justified by Confucianism, and there was no substantial formal institution for their political participation despite their vital role. During and after the 1850s, the gentry class began to

[17] Bernhardt (1992) offers a more nuanced analysis by considering a game of three actors – state, landlords and peasants – and distinguishing rent resistance and tax resistance.

intervene more formally (Bai et al., 2021), but the path was long and difficult (Kuhn, 2002, Chapter 1).

In addition to the gentry class, the merchants, especially regional tycoons, also undertook fiscal and social responsibilities, but they never attained political status in the early Qing era (Kirby, 1995; Ma, 2011). State-merchant relationship was tense in the early Qing period, and patronage prevailed in the strong merchant groups based on provincial identities (Shanxi) and lineages (Huizhou) (Ma, 2004a; Cai et al., 2008; Zelin, 2009; Von Glahn, 2016, Chapters 8-9). Monopolized salt sales brought both wealth for merchants and revenue for the Qing state, but as the government frequently asked for donations from salt tycoons in the Huai-Yang region, Wang (2014) identifies their irreversible decline in early 19th century. Guilds for handicraft sectors were another nexus of the state-merchant patronage at the local level; a guild formed an alliance with the local government and even served as a tax farmer, which is heavily criticized in the literature.[18] In a nutshell, Tan (2013) provides an insightful comparative survey of modern British and Chinese merchants and their relationships with the political power; lack of an independent commercial class accounted for the different political – including fiscal – institutions of the Qing China from Britain. Therefore, if one departs from exploring the possibility of establishing a representative institution in China, he will find it almost impossible to develop a fiscal-military transitional narrative for 19th-century China.

The Late Qing Fiscal Regime: Too Decentralized and Too Large?

The first half of the 19th century witnessed the prolonged political and socioeconomic malaise of the empire, which the centralized and small fiscal regime was no longer able to tackle. As this study shows in Chapters 3-6, the post-1850 Qing fiscal transitions were pathbreaking and most changes were introduced in a bottom-up pattern. The scale of annual fiscal budget grew steadily from 40 million silver taels in 1850 to nearly 100 million in 1900, and it doubled further in the last Qing decade (1901-11). The current literature mainly comprises descriptive surveys on the late Qing fiscal transitions (Deng, 1998; Zhou, 2000; Zhou, 2002; Shi and Xu, 2008), but a systemic assessment is severely lacking, the only attempts at which are made by He (1981), Hamashita (2006) and He (2013).

Apparently, the negative effects of an over-centralized and ultra-small fiscal regime were greatly mitigated since the empire broke with its agrarian statecraft after 1850. However, it is confusing that the literature overwhelmingly regards the late Qing fiscal transitions as a failure. Scholars' reasons are twofold: first, the power of the central state was greatly undermined,

[18] See Rowe (1984), Mann (1987) and Motono (2000) for case studies. They focus more on the late Qing period though.

which was unconducive to a comprehensive fiscal modernization reform; second, the abrupt introduction of new taxes, particularly indirect ones, stifled trade and market integration and caused pervasive social resentment which even accounted for the fall of the empire. If we believe that criticisms regarding the early Qing centralized and small fiscal regime are adequate, we should not satirize the late Qing period again for its decentralization and increasing taxation.

We firstly focus on the literature regarding the withering of the Qing central state since the mid-19th century. The role of Westerners attracts considerable attention of scholarship. Duus (1989) coins the term 'informal imperialism' and points out that the Western powers had no intention of colonizing China. Instead, with their victories in wars, they imposed the treaty port system in China for long-term economic gains and severely eroded the sovereignty of the Qing state. As China was undergoing unprecedented political changes at the same time, both Marxist scholars in China (Li, 2013, Chapter 5 for a survey) and overseas ones, under the influence of Fairbank (1978, 1980, 1983), tend to link Western interventions to the trajectory of China's modernization. The 'Western Challenge, Chinese Response' paradigm (Fairbank, 1978, 1980, 1983), prevailing during the Cold War era, considers China's political and socioeconomic repertoires all as responses to Western shocks. Hence, for fiscal imperatives, this strand of literature stresses the foreign driving forces and their negative impacts. For example, the introduction of China's modern maritime customs system in 1861, under the control of Sir Robert Hart, is often regarded as a challenge to the Qing central court, because under this system the Qing court was deprived of tariff sovereignty, and a considerable proportion of maritime customs income was spent on war reparations (Wang, 1987; Chen, 1993). Since this income was also used for foreign borrowing repayment, the scholars underrate the role of foreign borrowing in the late Qing fiscal transitions as a result (Xu, 1962; Wu, 1985; Liu, 2007; Zhang, 2002, for a survey). Tang (1992) finds a mutually reinforcing relationship among maritime customs income, foreign borrowing, and war reparations, which all brought severe and long-lasting deadweight losses to the Qing central state.

The research in recent decades acknowledges the limitations of Fairbank's framework and turns to the domestic political and socioeconomic dynamics (Dernberger, 1975; Cohen, 1984). Therefore the late Qing fiscal changes are more considered as solutions to China's indigenous crises. However, the current literature holds a negative opinion on the late Qing endeavors in general. The most significant domestic fiscal shift, as this study shows in Chapter 3, was that the devastating Taiping Rebellion (1851-64) triggered the fiscal decentralization and made the local governors unprecedentedly autonomous and strong. Spector (1964) initially uses the term 'regionalism' to profile the post-1850 local fiscal pattern, and Moore (1967, Chapter 4) even describes the provincial gentry as 'separatists' in his famous comparative study. In the

Chinese literature, the pioneering work by Wei (1986) is concerned about how fiscal decentralization and local autonomy eventually led to the demise of the Qing central court in 1911. Another fierce criticism from He (1981) regards governors as an obstacle to China's fiscal development: since the Xianfeng (1851-61) and Tongzhi (1862-74) reigns, 'the power of governors transcended that of the central court', and 'personnel, military and administrative affairs were all in the hands of powerful governors rather than the central court'.[19] He (1997) even finds evident decentralization of prefectures and counties within a province, by which the governors themselves were also constrained. Several studies by Chen (1997; 2008, Chapters 7 and 9) agree with the above opinions and suggest that although fiscal decentralization helped the empire tackle the mid-19th-century crises such as the Taiping Rebellion, the Qing central state had to make greater efforts in fiscal recentralization in the following decades. Ironically, all efforts resulted in failures, and Chi (1976) and Chen (1979) even see the Qing demise as a reason for the rise of China's warlordism during 1916-27. He (2013) recently contributes to the literature by comparing the fiscal transitional trajectories of Britain, Japan, and China. Although he acknowledges the local fiscal flexibility and growth potential brought by governors, in general he still identifies the fiscal decentralization as a key reason for the absence of a modern fiscal state for pre-1894 China. However, he does not consider the possible costs and consequences of fiscal centralization for China, and the direct comparison between an empire and nation states under the existing European fiscal-military state theories seems very risky.

Among the recent works on the withering of the late Qing central state, Dai (1993), Hamashita (2006) and Ma J. (2004) offer more inspiring explorations. All three investigate the joint impacts of Western shocks and domestic central-local conflicts on the decline of the central state. Dai (1993) and Hamashita (2006) focus on the critical role of Hart's maritime customs in intensifying the Qing central-local fiscal relations, and Ma J. (2004) considers foreign borrowing, a novel fiscal practice that further strengthened local fiscal autonomy since the 1850s. Their works assume that under the nature of fiscal-military decentralization, the Qing central and local powers had different objectives, endowments, and constraints and that they interacted with Western powers in different ways. Their works provide a more coherent explanation for the tripartite game, among central court, local governors, and Western powers. Dai (1993) and Ma J. (2004) remain negative about such new fiscal practices, as they find the central-local conflicts costly and long-lasting. However, Hamashita (2006) is exceptionally

[19] Liu (1990, Chapter 4) objects to the prevalent view by discovering the central capacity in fiscal control and coordination after 1850. This view is questionable. During 1850-1911, the fiscal-military decentralization took the form of *prima facie* 'responsibility delegation' from the central state, but we can never interpret it as a manifestation of the central authority. In many cases it had no choice but to grant autonomy to the local governors in exchange for the survival of the dynasty. Furthermore, the central state had to acquiesce to various autonomous local behaviors and approve them in an *ex post* way.

optimistic, stating explicitly that, 'in sharp contrast, a thriving power was going to replace the declining central government; it was the local Qing society' (Hamashita, 2006, p. 35).

The literature is not only concerned about the absence of a strong Qing central state but also alarmed by the introduction of new taxes after 1850. The novel indirect tax on transported goods – *lijin* – introduced by local governments has been heavily criticized (Beal, 1958; He, 1972). In a recent survey Zhou (2006) still uses the expression 'a nationwide calamity' to describe the spread of local *lijin* practice during the Taiping emergency. Fu (1982, Chapter 19) is exceptional in noticing the growing share of proto-industry and trade in the late Qing economy and justifying the introduction of such an indirect tax to strengthen the Qing fiscal capacity. However, most scholars (Liao and Gu, 2012, for a survey) are concerned about *lijin*'s demerits such as cutting merchants' and customers' welfare and stifling market integration; Feng (2011) even studies the causal link between the 1931 *lijin* abolishment and the grain price convergence in republican China and implies that the persistence of *lijin* had discouraged grain trade from the 1850s to the 1930s.

In addition to taxation, the growth of other new government incomes is also criticized by scholars. For instance, Xu (1962) and Tang (1992) find that foreign loans, especially war reparation ones, were detrimental to China's long-term fiscal sustainability because they were usually secured by future tax revenue, thereby eroding China's fiscal sovereignty. However, they fail to recognize the positive returns from many loans, such as the Western Expedition loans that helped the Qing governor Zuo Zongtang finance his armies and regain Xinjiang in 1881. Even with regard to the infrastructural loans that brought conceivable benefits to Chinese economy, scholars such as Mi (2007) tend to highlight their dark side that Western powers simply tried to control China's railways and telegraphs for their own long-term interests.

Finally, the current literature questions whether the growing government revenue during the late Qing period was spent adequately. Negative opinions prevail. For instance, the staggering military spending is regarded as a dangerous sign of warlordism (Chi, 1976; Chen, 1979; Sheridan, 1977, 1983). Meanwhile, the Self-Strengthening Movement, where local governors invested intensively in modern industries, is usually criticized for its low efficiency and corruption (Perkins, 1967, 1975; Chan, 1977; Eastman, 1988, Chapter 8). Furthermore, several scholars focus on the performance of the growing taxation apparatus after 1850. Kuhn (1978, 1980) and Rowe (1984) hold a neutral view by characterizing post-1850 formal political participation of diverse local elites as a natural product of the withering central state. Contrastingly, Eastman (1990) and Duara (1991) emphasize the severe deterioration of the local apparatus after 1911 due to the demise of the old gentry class and nascent and vulnerable

rural society during the republican era.[20]

To summarize, the current literature largely underrates the late Qing fiscal performance for both the absence of central authority and the abrupt taxation expansion. A battery of works attempt to revise this view from diverse angles such as maritime customs and modern bureaucracy (Strauss, 1998, Chapters 3-5; Van de Ven, 2014), the *lijin* (Hamashita, 2006, Chapter 4 and Conclusion; Halsey, 2015, Chapters 3-4), foreign borrowing (Hou, 1965; Xu, 1996), public industrial investment (Rawski, 1989; Xiao Y., 1999; Elman, 2005; Halsey, 2015, Chapters 6-7), and local governance (Rowe, 1984, 1989; Sato, 2017). However, a coherent interpretation of late Qing fiscal transitions, particularly from the perspective of fiscal-military decentralization, remains of great significance.[21]

2.2. Research Overview

The literature regards both centralization and decentralization, as well as both low and high taxation, as reasons for the Qing fiscal failure in different periods, and Section 2.1 finds these two contradictions somewhat confusing. This study agrees with the current criticisms for the over-centralized and low-tax regime of the early Qing era: the demerits of such a fiscal regime brought disastrous consequences to the empire in the mid-19th century and manifested the urgent necessity of an irrevocable fiscal transformation. Meanwhile, this study aims to stress that scholarship's criticisms of the decentralized and expansive fiscal regime of late Qing era are largely inadequate. This section reconsiders the two key issues – degree of centralization and intensity of taxation – and introduces how the following chapters will proceed.

First, centralization or decentralization? The current fiscal-military state framework reviewed in Chapter 1 overwhelmingly focuses on the European nation states. When it defines fiscal capacity, it examines the central capacity by default while a distinction between central and local capacities is absent. This is justifiable for nation states, as the economy of scale brought by a higher level of fiscal centralization exceeds the benefits from local autonomy and flexibility (Dincecco, 2009). However, for the giant states in global history – such as the Roman Empire, the Ottoman Empire, and even today's China and the United States – ignoring the distinctive characteristics of central and local government agents is arbitrary and even risky. Regarding the 19th-century Qing China, most works mentioned in Section 2.1 omit weighing the merits and demerits of the post-1850 fiscal decentralization. A trade-off between fiscal centralization and decentralization in this context is challenging; however, it is clear that one cannot be

[20] For a revisionist view on the 'involution' (Duara, 1991) of rural governance during 1912-49, see Remick (2004). For a more optimistic view on the late Qing local bureaucracy and governance, see Halsey (2015, Chapter 4).

[21] In the meantime, the monetary perspective is relevant and important in the late Qing fiscal transitions (Hao, 1986; Lin, 2006; Peng, 2007; Von Glahn, 2007; He, 2013; Ma, 2013) but out of this study's scope.

inherently predominant than the other. In fact, a spectacular literature on 'fiscal federalism' (Qian and Weingast, 1996; Qian and Roland, 1998; Zhang and Zhou, 2008) has emerged in contemporary public economics and proved how institutionalized fiscal decentralization promotes economic growth and political development from a global perspective, not to mention that numerous scholars (Xu, 2011, for a survey) regard fiscal decentralization as a key reason for China's remarkable growth during the past four decades. However, most historical studies still take the top-down view and overlook the intergovernmental relations. Hence, this study focuses on the extent to which the post-1850 fiscal decentralization shaped the pattern of China's fiscal transitions. It hypothesizes that fiscal-military decentralization, triggered by the Taiping crisis, enabled local governments to enjoy excessive tax revenue as long as they undertook a fixed portion to finance the central court. This arrangement greatly incentivized them to cultivate new tax sources and rationalize local public expenditures in a long run. Therefore, most novel fiscal practices in the late Qing period were launched in a bottom-up pattern.

Second, low or high taxation? A fully extractive regime without doubt can stifle state development and economic growth, but a state with ultra-low taxation, such as the Qing Empire in the late 18th and early 19th century, could not even serve as a competent nightwatchman. All 'benevolent' tax exemptions in the early Qing era, such as universal land tax exemption and prolonged low commercial taxation, worked well only for a short term. The negative externalities of ultra-low taxation were manifested in the poor public goods provision during 1800-50, including weak and corrupt imperial troops, the Grand Canal with concerning navigation conditions, and the demise of the granary system. Therefore, from a long-term view, higher taxation in the Qing context enabled the state to provide necessary public goods, prevent negative externalities, and thereby promote economic growth.[22] The tax increase in the late Qing period was an arduous catch-up process for the fiscal capacity to converge towards a minimal level that could provide fundamental public goods to over 400 million people in this giant empire. Even though the scale of the Qing budget, central plus local, grew from 40 million silver taels in 1850 to 240 million in 1910, the per capita level could not equate with many European countries. Hence, this study hypothesizes the growing taxation and spending to be a positive signal and finds it meaningless to construct a narrative among tax increase, anti-Qing movements, and the fall of the empire.[23] In fact, the 1911 Revolution was surprisingly mild, and the local governance and industrial modernization showed great resilience afterwards.

[22] Even though the Nanjing government abolished the *lijin* in 1931, it was planning to impose a heavier *tongshui* (uniform VAT) (Yang, 1985, Chapter 2).

[23] Tax resistance existed in the late Qing era, but the primary reason was not heavy taxation but inequality among large and small households (*daxiaohu wenti*) (Zhou, 2019, Chapter 3).

The objective of this study is to evaluate the fiscal transitions of the late Qing China under the nature of fiscal-military decentralization. Which international shocks and domestic crises triggered the major fiscal changes of the empire? How was the fiscal-military decentralization initiated, and to what extent was the Qing central court forced to do so in 1852-53? Over the following decades, why did a withering central government witness not a collapse but a remarkable fiscal transformation in a bottom-up way? In more detail, why and how did local governments expand their tax base and rationalize their spending pattern, and was it conducive to long-run political modernization and economic growth? By reconsidering the trade-offs between centralization and decentralization and low and high taxation, this study emphasizes that the precarious Qing central court granted local governments unprecedented fiscal-military autonomy in the early 1850s, which served as the ultimate impetus for the bottom-up fiscal expansion and restructuring in this turbulent era. The self-serving local governments mattered for their incentive and information advantage in fiscal-military imperatives. Hence within several decades, a centralized, rigid, and agrarian fiscal regime was transformed into a decentralized and dynamic one that was responsive to local socioeconomic conditions and accountable to local public goods provision and economic growth. Despite the absence of a central blueprint, the thriving local endeavors marked the start of China's modern state building. Although China was far from the destination of making a modern state by 1911, it would never return to an agrarian and self-sufficient empire.

Regarding methodology, the following chapters employ the new institutionalist framework discussed at the end of Section 1.1,[24] and consider not only structural factors and exogenous shocks, but also various political actors' choices and behaviors based on their objectives, endowments, and constraints (North, 1990; Hall and Soskice, 2001; Thelen, 2004; Ogilvie, 2007; all above for theoretical perspectives). First, all chapters discuss the socioeconomic factors by the onset of fiscal changes, such as demographic pattern, sectoral structure, and preexisting fiscal infrastructure. Second, they treat the major exogenous shocks as triggering conditions for fiscal changes. For instance, domestic uprisings such as the Taiping Rebellion (1851-64) and the Small Sword Society (1853) brought enormous challenges to local officials and required their prompt actions without *ex ante* central consent; international incidents such as the Second Opium War (1856-60) hit the original customs network of China by imposing a new maritime customs system via the Treaties of Tianjin (1858) and Beijing (1860). Third, all chapters consider the objectives, endowments, and constraints of the actors – usually government agents – in specific scenarios, such as the throne and local governors under the Taiping shadow, or conservative and Self-Strengthening officials who debated the introduction

[24] From a methodological view, He (2013) is a rigorous work that employs new institutionalism.

of railways in China. Structural factors and exogenous shocks laid foundations for institutional changes, but the actors were very likely to enter different equilibria through their choices. Hence Chapters 3-6 track such choices, the consequential institutional spread, and how such arrangements consolidated the actors' incentives and interests in a reinforcing process.[25]

This study avoids treating the Qing Empire as one single research unit. The risks of doing so have been widely recognized in the literature, so narrowing down the scope and conducting regional studies have been a common practice (Pomeranz, 1993, 2000). However, focusing on specific regions such as Lower Yangzi or Northern China could encounter the external validity problem, and the implications might be misleading for China in general. To seek a balance as Skinner (1977) does, this study not only deconstructs the Qing state into multiple layers but also uses the spatial and temporal variations of fiscal transitions to make implications for China as a whole. For example, the next chapter begins by examining how the Taiping Rebellion threatened numerous regions, but to a varying extent; it also finds that the ministers in the Board of Revenue as well as local governors and military officers presented completely different solutions; hence it can identify who raised the novel indirect taxation solution – the *lijin*, why the Board had to acquiesce to it, and how the *lijin* practice spread over different provinces at different paces; finally it summarizes how the *lijin* institution as a whole restructured the Qing taxation pattern in the long term. Under the nature of post-1850 decentralization, many novel fiscal practices were introduced in a bottom-up way, and this study finds it useful to identify the first movers, capture spatial and temporal variations, and understand the fiscal transitions on a national scale.

The remaining chapters proceed as follows. Chapter 3 introduces the start of fiscal-military decentralization. The early-19th-century Qing public finance had suffered from centralization and low taxation, and the abrupt Taiping Rebellion devastated the original land, salt and customs taxations and thus triggered the unprecedented transitions. The Taiping rebellious regime failed to attract the gentry elites and mass people, whereas the Qing state took this opportunity to strengthen its capacity. To suppress the rebels, the precarious Qing central state, without other solutions, was forced to grant local governments the greatest fiscal-military autonomy. Hence the self-serving local governments not only established their own armies and militias but also introduced a novel tax, the *lijin*, to finance them. The *lijin* was an indirect tax on goods in transportation, usually levied at the transportation hubs on key roads and waterways. Although the long-distance trade was disturbed by the rebels, the resilient short-distance trade still provided local governments with sufficient tax sources. The timely *lijin* income and strong local forces helped the Qing regime survive the Taiping crisis, and after

[25] The next major milestone that broke the equilibrium of decentralization was the North Expedition (1924-27). The demise of warlordism and the rise of a nascent party state after 1927 is out of this study's scope.

1864 the fiscal autonomy – backed up by the indispensable *lijin* revenue – was preserved by the local governments in the following decades. This chapter uses relevant atlases (Guo, 1989; Hua, 1991), chronologies (CMH, 2003; TSU, 2013), and archival materials consisting of memorials and edicts (FHAC, 1996) to quantify the intensity of Taiping warfare in different provinces over the decade and to track the central and local solutions to the crises. It uses the available surveys *A History of Lijin* (Luo, 1936) and *1908 Late Qing Fiscal Reports* compiled by Chen (2015) to map the rise, spread, and postwar persistence of the *lijin* institution across provinces. This chapter constructs the link between the Taiping Rebellion and the rise of China's local indirect taxation at the local level and concludes that the *de facto* local public finance was formed and manifested in the considerable *lijin* income.

Chapter 4 continues discussing indirect taxation but expands the scope to all three indirect taxation systems of late Qing era, namely the *lijin*, domestic (*changguan*) and maritime (*yangguan*) customs. In fact, before 1850 the Qing had already developed a domestic customs network to tax the goods in transportation, but this centralized network was only able to capture very few long-distance flows of goods, thereby making a limited fiscal contribution to the empire. After 1850 it was seriously challenged by the new institutions. First, the *lijin* institution set stations extensively and rationally to tax the short-distance trade, and the annual income became much more significant than the domestic customs. In the Lower Yangzi region, which was attacked by the Taiping rebels for over a decade, the devastated domestic customs were completely replaced by the *lijin* stations, marking the 'transfer' of a considerable central revenue to the local hands. The other challenge for domestic customs originated from the new maritime customs imposed by Westerners after the Qing defeat in the Second Opium War. A new, professional, and independent apparatus under Sir Robert Hart was responsible for taxing long-distance trade via steamships and pushed domestic customs to tax sailboats only. The maritime customs achieved steady income growth from 1861 while domestic customs became almost invisible. This chapter aggregates the domestic customs revenue dataset by Ni (2017b), the maritime customs revenue dataset by Tang (1992), and the *lijin* dataset in Chapter 3 to examine the overall performance and structural change of the late Qing indirect taxation as a whole. Furthermore, it employs data on population (Cao, 2001), wages (IISH, 2019) and GDP (Broadberry, et al., 2018; Ma and de Jong, 2019) to measure the Qing indirect taxation capacity over time. This chapter concludes that two novel institutions – the *lijin* and maritime customs systems – formed an unintentional 'duopoly' and served as two new cash cows for the empire because of their distinct tax base and accountability, while the old domestic customs system was crowded out. From 1850 to 1900, the share of non-land taxation in total government revenue grew rapidly from less than 30% to over 60%. Finally, this chapter reveals an

interesting competition between *lijin* and maritime customs due to the commutation tax (*zikou banshui*) scheme, in which the merchants engaged in the import-export trade could choose to pay either the *lijin* or the commutation tax (to maritime customs). In the competition both institutions applied great efforts to attract more taxpayers, which had never been witnessed in the early Qing era.

Chapter 5 connects taxation to debt financing and investigates how the Qing local state tackled fiscal shortfalls. Before 1850, the Board of Revenue was responsible for redistributing resources among provinces and managing all local exigencies. However, after 1850, the steadily growing indirect tax revenue and the access to foreign capitals via the treaty port system enabled local governments to employ foreign loans, secured by local future revenue, to mitigate local fiscal constraints. This chapter quantifies the late Qing foreign loan records in Xu (1962), PBCCO (1991), and Xu (1996) and studies the fundamentals of over 230 loans during 1853-1912; it also links this foreign borrowing dataset to the late Qing taxation datasets and finds a connection between local taxation capacity and borrowing capacity for provinces. At the initial stage, the local officials raised small-scale foreign loans without *ex ante* central consent for local military exigencies, but in the long term, as local governments became more accountable to local public affairs under fiscal-military decentralization, the governors began to launch developmental projects such as telegraph and railway projects. Such projects were intentionally driven by foreign loans and hence expanded the local public spending level permanently. The notable growth of foreign borrowing accounted for the bottom-up introduction of China's modern infrastructure. In comparison, the Qing central state resorted to foreign borrowing in a very late phase for two massive war reparations. They brought disastrous and prolonged consequences to the Qing fiscal regime by crowding out other investment opportunities and intensifying the central-local conflicts. Therefore, this chapter deduces that most loans with long-term prospects for the public interest were initiated by local governments in the late Qing era.

Chapter 6 summarizes the pattern of the aforementioned local fiscal practices and finds a coherent institutional explanation for them. Section 6.1 finds that the adoption of the apportionment scheme in 1853 greatly enhanced the incentives of local governments in fiscal affairs. In an M-form fiscal structure, the Board of Revenue refrained from monitoring the national budget; instead, it turned to the Beijing part only and commanded the provinces to remit fixed portions as an obligation. Meanwhile, as long as local governments fulfilled the portions, they were able to control the excessive revenues and their local budgets were no longer supervised by the Board. Hence, they were highly incentivized not only to cultivate new fiscal resources such as the *lijin* and foreign loans but also to rationalize the spending structure as

they became accountable to local public affairs. Section 6.2 focuses on this issue. It employs both the *lijin* data sources in Chapter 3 and other Qing compilations such as *Qingchao Xu Wenxian Tongkao* (Liu, 1936) to map the changing structure of the Qing government spending. After 1853, the share of the Board's spending declined sharply, and it was responsible only for royal household consumption, central official salary payment, central troops, etc. with the fixed portions remitted from provinces. In contrast, local spending on modern military investments, etc. grew steadily in both amount and share, and the spending patterns of different provinces became diverse and well manifested the nature of fiscal decentralization. Finally, Section 6.3 quantifies and merges several datasets on China's modern industrial enterprises (Liu, 1937; Du, 1991; Zhang, 1992) to study an important type of local spending since 1860 – the Self-Strengthening industrial investment – and its long-term economic effects. In a vacuum of central planning, autonomous governors introduced modern industries intentionally for both military purposes and long-term economic gains at the local level. This marked the start of China's industrialization, and such Self-Strengthening enterprises brought considerable external economy of scale to private entrepreneurs, which even laid foundations for the notable industrial development in the early republican era.

Chapter 7 concludes, and provides some revisional thoughts regarding the current fiscal-military state framework. Furthermore, it considers the limitations of this study and explains briefly the abnormal fiscal expansion of the empire during the New Policy decade (1901-11).

3

Forced Decentralization

The power of the Board of Revenue declined, while that of the regional governors grew.

Zeng Guofan

(Li (ed.), 1876, 'zougao' 20, Jiangxi yali qing zhaojiu zhengshou zhe)

Political disorder matters. There is a rich literature regarding the role of political disorder in modern state formation, and many works emphasize how political disorder is conducive to the greater fiscal capacity of a state. However, the fiscal-military state framework overwhelmingly employs Western European evidence. From a global perspective, the impact of political disorder on fiscal capacity becomes more contingent because of heterogenous socioeconomic conditions, resource endowments, cultures, and exogenous shocks in different countries. The 19th-century China offers us an alternative case to revisit the relationship between political disorder and fiscal development.

This study focuses on how the static, centralized, and agrarian fiscal regime of the Qing Empire was transformed into a dynamic, decentralized, and diverse one, driven by several waves of political disorder during the second half of the 19th century. To begin with, Chapter 3 points to the Taiping Rebellion (1851-64, *Taiping Tianguo Yundong*) as the starting point of the

late Qing fiscal transitions. Among numerous political shocks for the crumbling empire including international wars and domestic uprisings during the 19th century, the Taiping Rebellion was the greatest threat to the Qing reign, and from that time onwards, the image of a static and self-sufficient agrarian empire began to fade (Wakeman, 1975, Chapter 8; Kuhn, 1980; Spence, 1990, Chapter 8; Platt, 2012). The rebellious regime disturbed the prosperous Middle and Lower Yangzi regions and its expeditionary forces spread across inland China for over a decade, leading to significant population loss and agricultural depression.

From the fiscal-military perspective, the Taiping Rebellion caused a severe recession of the Qing land taxation and triggered the rapid rise of its local indirect taxation, and this process intertwined with the irrevocable military and administrative decentralization during late Qing era. The central court, with a vulnerable tax base and weak imperial army, had to delegate the responsibility for suppressing the rebellion to local governments by acquiescing to the establishment of private armies and militias. To finance them, local governments under the Taiping shadow bypassed the centralized land taxation system and introduced a novel tax on goods transportation – the *lijin*. It was the first time in the long Ming-Qing history (1368-1911) that the state institutionalized local public finance by developing indirect taxation.[26] During the post-Rebellion era, the self-serving local *lijin* institution persisted and provided indispensable fiscal resources for local public budget out of the Board of Revenue's control. To summarize, the rapid growth and resilient persistence of the local Qing indirect taxation was strongly linked to the Taiping warfare, and it marked the initial endeavors of local political powers in making a more dynamic and sustainable fiscal system. It was such a turbulent era that triggered one of the most profound fiscal transitions in modern Chinese history.

This chapter aims to construct this 'rebellion-decentralization-*lijin*' narrative by employing primary resources and cultivating provincial- and prefectural-level data across China Proper.[27] With relevant atlases and official memorial collections for the Taiping Rebellion suppression (Guo, 1989; Hua, 1991; FHAC, 1996; CMH, 2003; TSU, 2013) this chapter codes the monthly intensity of the Taiping warfare at the prefectural level and investigates the significant temporal variation. With the archival materials on the *lijin* taxation, particularly Luo (1936) and Chen (2015), this chapter tries to establish a novel prefectural-level dataset on *lijin* taxation

[26] The earlier Song Dynasty (960-1279) never ignored the taxation on commercial sectors. The Song state developed a prominent fiscal system, characterized by its dependence on indirect taxation, a unified monetary system, the meritocracy-oriented taxation bureaucracy and the sprouts of credit instruments with government promotions and involvements (Liu, 2015). The invasion of the Mongols and their rule (1271-1368) destroyed the Song achievements and the later Ming Empire (1368-1644) rolled back to a static and rigid agrarian mode (Iwai, 2011). However, the Song fiscal state was quite centralized, and no *de facto* local public finance was introduced.

[27] Some high-quality *lijin* studies only focus on a specific region, such as Gu (2007), Hou (2008) and Halsey (2015, Chapter 4). Regional cases matter but may be misleading; for example, Motono (2000) studies the Shanghai *lijin* taxation and finds that the local guilds formed an alliance with the officials and monopolized the *lijin* collection. However, this chapter argues that on a national scale, tax farming was very rare; even in the metropolitan Shanghai or Tianjin, no more than 10% of the *lijin* revenue was contributed by the guilds (Luo, 1936, Chapters 7 and 10).

across 18 provinces. The remainder of this chapter proceeds as follows. Section 3.1 surveys the Taiping Rebellion, including its rise and fall, its extractive and unstable governance, and why the geopolitical nature of the Qing-Taiping confrontation made the Qing resource mobilization and counterattack possible. Section 3.2 considers the fiscal crisis of the Qing central state from both revenue and expenditure aspects in the early 1850s and explains why it was forced to grant fiscal-military autonomy to local governments. Section 3.3 introduces the novel fiscal solution by local governments, the *lijin* taxation on local goods transportation. It discusses the initial introduction of the *lijin* in Yangzhou and its rapid spread to other warzones within years and finds a strong correlation between the Taiping warfare severity and the scale of local *lijin* taxation. Since the land taxation was recessive, the *lijin* served as a substitute and effectively mitigated the local fiscal crisis. After the Taiping's fall, the Board of Revenue failed to consolidate the *lijin* institution, which was still preserved from central intervention by local governments. The *lijin* institution as a *de facto* local apparatus played an increasingly important role in the late Qing fiscal regime, and it was much more efficient, flexible, and accountable to local affairs than the centralized Qing land taxation.

This chapter speaks to several strands of the literature. First, many studies – reviewed in Chapter 1 – recognize the positive role of international wars in shaping a stronger fiscal regime, but the role of internal insurrections – civil wars or rebellions – is debated. Besley and Persson (2008) suggest a negative effect, supported by contemporary Colombian evidence (Cárdenas et al., 2014); however, Rodríguez-Franco (2016) considers the stance of local elites and constructs a framework to show how internal conflicts can foster rather than undermine taxation, which is empirically supported by Slater (2010) and Ch et al. (2018). This chapter offers the case study of the Taiping Rebellion suppression to show how an internal political shock was conducive to fiscal changes in a positive sense. Considering China's giant size with a unified political regime and cultural background, 266 prefectures in 18 provinces provide meaningful variation in the severity of the Taiping warfare and enable an investigation of the consequential fiscal outcomes in different regions.

Second, the literature proposes that from early-20th century onwards, direct taxation ought to be the mainstay of a fiscal state (Besley and Persson, 2013). However, for late imperial China with the 'mandate of heaven' as the legitimacy, indirect taxation was more attractive to the state because it was less costly, less risky, and more responsive to the local economy. This chapter suggests that the merits of direct or indirect taxation are highly contingent and that the legitimacy of a regime and the cost of taxation should be given priority.[28]

Third, this chapter revisits the intergovernmental relation issues. Recent fiscal capacity

[28] Bernhardt (1992), Yang (2012) and Zhou (2019) contribute greatly to the research on post-Taiping fiscal changes of China from the perspective of direct taxation (overwhelmingly land taxation).

literature emphasizes the importance of power centralization and uniform taxation in the process of fiscal modernization (Dincecco, 2009; He, 2013). This chapter finds this claim contingent because in a giant empire such as the Qing China, centralization was not necessarily linked to the effectiveness of the fiscal regime. In fact, during the early Qing times, the state established a sophisticated hierarchical bureaucracy with a universal and centralized fiscal regime; however, such centralization led to severe principal-agent problems, as discussed in Chapter 2. In contrast, this chapter suggests that decentralization and the consequential local autonomy strengthened accountability, enhanced fiscal-military capacities and guaranteed the social order at the local level after 1850.[29] It inspires us to rethink the trade-off between centralization and decentralization, a long-lasting debated topic in historical and contemporary Chinese studies (Xu, 2011; Zhou, 2017).

Finally, this chapter reconsiders the driving forces of China's state modernization. Fairbank (1978, 1980, 1983) highlights the role of the Westerners and interprets the repertoires of institutional transitions in China merely as responses to the Western shocks. Nevertheless, this chapter suggests that the indigenous shocks were, if not more, equally important, since the Qing China had formed an inherent political and socioeconomic equilibrium with great inertia (Cohen, 1984; Deng, 1999). This chapter adds fiscal evidence to this debate.

3.1. The Taiping Rebellion

Among numerous international wars and indigenous social unrests in the turbulent 19th century, the Taiping Rebellion was regarded as the greatest challenge to the Qing reign. The aim of the rebellion was to overthrow the Qing rule, which was clarified at the moment of its outbreak in southwestern China. The Taiping regime occupied the most prosperous economic regions in southern China during its heyday; meanwhile, it frequently sent expeditionary forces to the inland provinces for over a decade and caused pervasive social panic. This section provides a chronology for the Taiping Rebellion and constructs a novel prefectural-level dataset on the Taiping warfare. The extent and duration of the Taiping impact on prefectures varied significantly: the rebels might pass by or plunder a prefecture one-off; they might seize several towns and extract the resources for short-term defense; they might formally rule a prefecture. This section quantifies the heterogeneity of their impacts. Then it describes the nature of the Qing-Taiping confrontation in detail. The Taiping regime never established a closed border; instead, it was only able to seize isolated cities and towns, while the vast rural area remained

[29] The *lijin* practice in late Qing China was not unique in global history. Middleton (2005), Spaulding (2011) and Johnson and Koyama (2017) documented in detail the prevalent tolls along the River Rhine after 1648. The institutional setting was quite similar, as the principalities and powers along the Rhine set toll stations and taxed the goods in transit. After the French Revolution such practices declined (Acemoglu et al., 2011).

under the Qing control. This was a key condition for the Qing resource mobilization and counterattack, which was greatly under-explored in previous studies.

A Chronology

After repeated failures in the Civil Service Examinations, Hong Xiuquan, the founder of the rebellious regime, created an indigenous religious organization, the God Worship Society (*baishangdijiao*) in 1843 and attempted to reconcile Christian doctrines with traditional Chinese secret religions (Spence, 1996, Chapters 1-9; Platt, 2012, Chapters 1-3). Within several years the society absorbed numerous peasants, and military camps were established in the mountainous middle Guangxi region.[30] Their military conflicts with the Qing official troops broke out in late 1850, and in January 1851 Hong declared his opposition to the Qing rule in Jintian (in Xunzhou prefecture). From then until April 1852 continuous armed conflicts occurred between the rebels and the Qing troops within Guangxi; almost every season witnessed large-scale battles involving over 10,000 soldiers from both sides (Guo, 1989, pp. 33-46; CMH, 2003, pp. 498-500). The Taiping troops occupied certain towns in this initial phase, but all were abandoned soon. No stable rule was established in Guangxi.

In May 1852 the main forces entered Hunan from the corridor at Guilin, which greatly shocked the Qing central court (Wang, 1881, Chapter 1). During the second half of 1852 the rebels blitzed and plundered Hunan without effective resistance from the weak and inefficient Qing imperial troops (Luo, 1939, Chapter 1). The only exception was Changsha, which the rebels intensely attacked for three months without a success (Guo, 1989, p. 55). The Taiping forces did not plan to rule Hunan and moved northwards immediately. In January 1853 they occupied several transportation hubs – Yuezhou, Hanyang and Wuchang – in the Middle Yangzi region (CMH, 2003, p. 502). No formal rule was established, either. They sailed down the Yangzi River and fiercely attacked the downstream ports. Jiujiang and Anqing fell in February, as did Jiangning[31] in March, which was set as the capital of the rebellious regime (Guo, 1989, p. 57; Spence, 1990, Chapter 8; TSU, 2013, Chapter 2). In the following decade the Taiping leadership made continual and arduous efforts to govern the surrounding region but was only able to control isolated cities and towns. Rural governance appeared to be both challenging and costly (Mi, 1983; Bernhardt, 1992, Chapter 3).

[30] In Guangxi the resource conflicts between the Hakka immigrants and the local powers were intense in the 19th century. Hong, as a Hakka immigrant, gained wide support from his ethnic group and the Society rapidly became strong and popular (Wakeman, 1975, Chapter 8). Meanwhile Platt (2012) proposed that the local plague in 1850 won Hong with greater mass support since the patients believed that the Society would heal them.

[31] Jiangning was the name of the prefecture, where today's Nanjing ('Southern capital') is located. Sometimes it was referred to as Jinling. Its Taiping name was Tianjing ('heavenly capital'). In this study I will use Jiangning throughout.

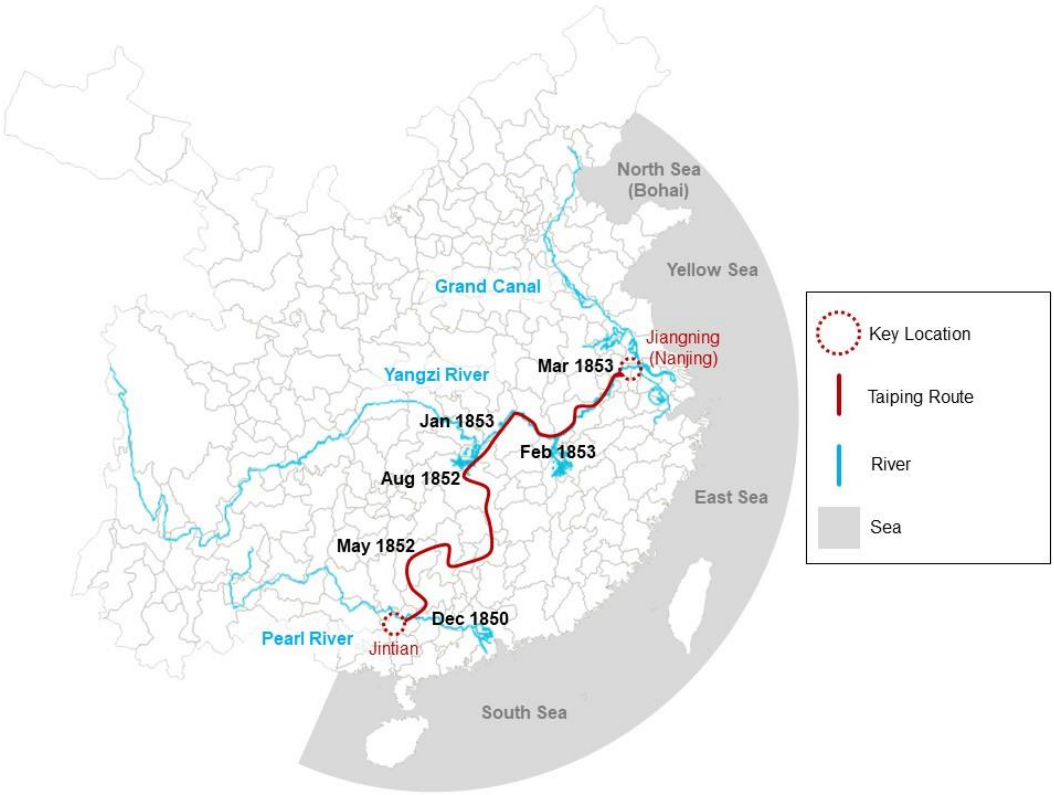


Figure 3.1. The Initial Marches of the Taiping Troops, 1850-1853

Source: see text.

From 1853 to 1864 the Taiping regime launched seven long-distance marches to control more land and extract labor, grains, and properties. Tens of thousands of Taiping soldiers were sent to the front line, but not all of the marches brought gains. Throughout the Western Expedition (1853-56), South Jiangsu Expedition (1860) and Zhejiang Expedition (1861-62), the Taipings established formal rule over a number of prefectures and won resources for their future actions. However, other marches resulted in tens of thousands of casualties. From 1862 the Qing state began to counterattack and regained most plundered prefectures in the Middle and Lower Yangzi region (TSU, 2013, Chapters 5-6). In the Taiping capital area, ruthless battles were fought for 27 months until the Taiping's fall in July 1864 (CMH, 2003, pp. 541-55). Sporadic guerillas fled to the coastal Fujian and Guangdong, but all rebels were eliminated within two years (Guo, 1989, pp. 143-6).

There is a consensus in the literature that the Taiping Rebellion broke out in the southwest and predominantly affected the Middle and Lower Yangzi regions. However, current quantitative studies usually use a dummy variable or count the number of months under the Taiping rule to measure the Taiping impact on a specific region (Li and Lin, 2015). These measurements are rough and misleading because they do not effectively capture the extent or

duration of the Taiping warfare for different regions from 1850 to 1866. Hence this chapter aims to construct a new Taiping warfare dataset at the prefectural level.

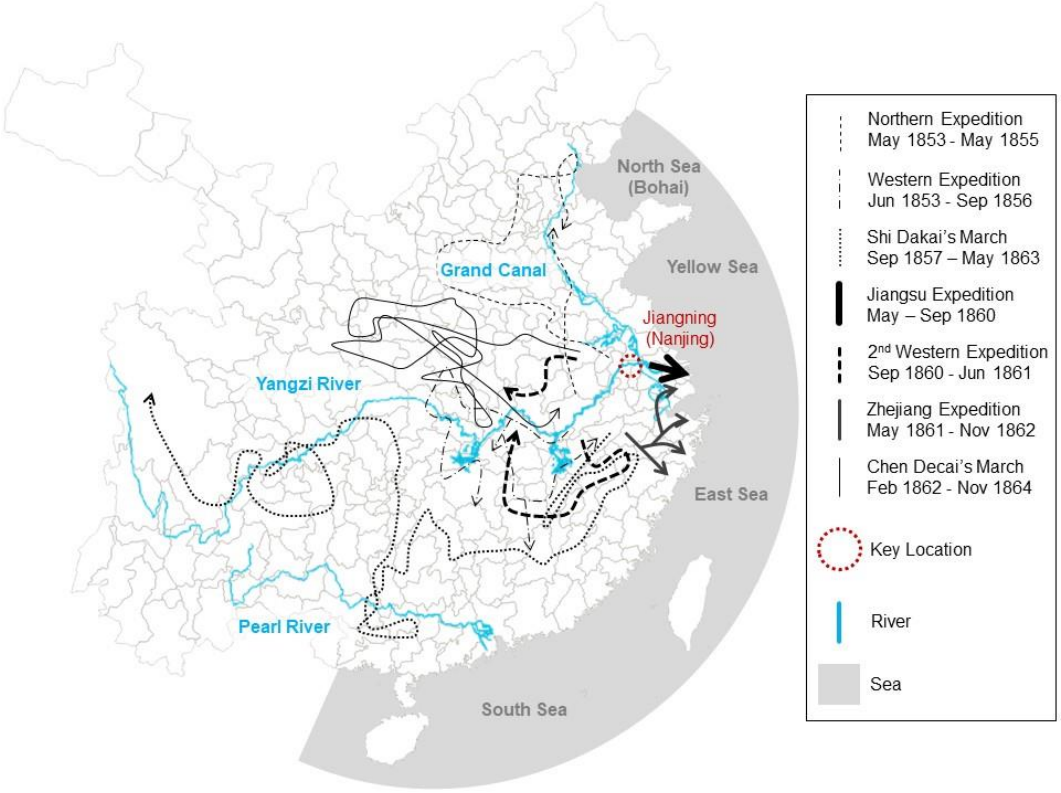


Figure 3.2. Expeditions of the Taiping Troops, 1853-1864

Source: see text.

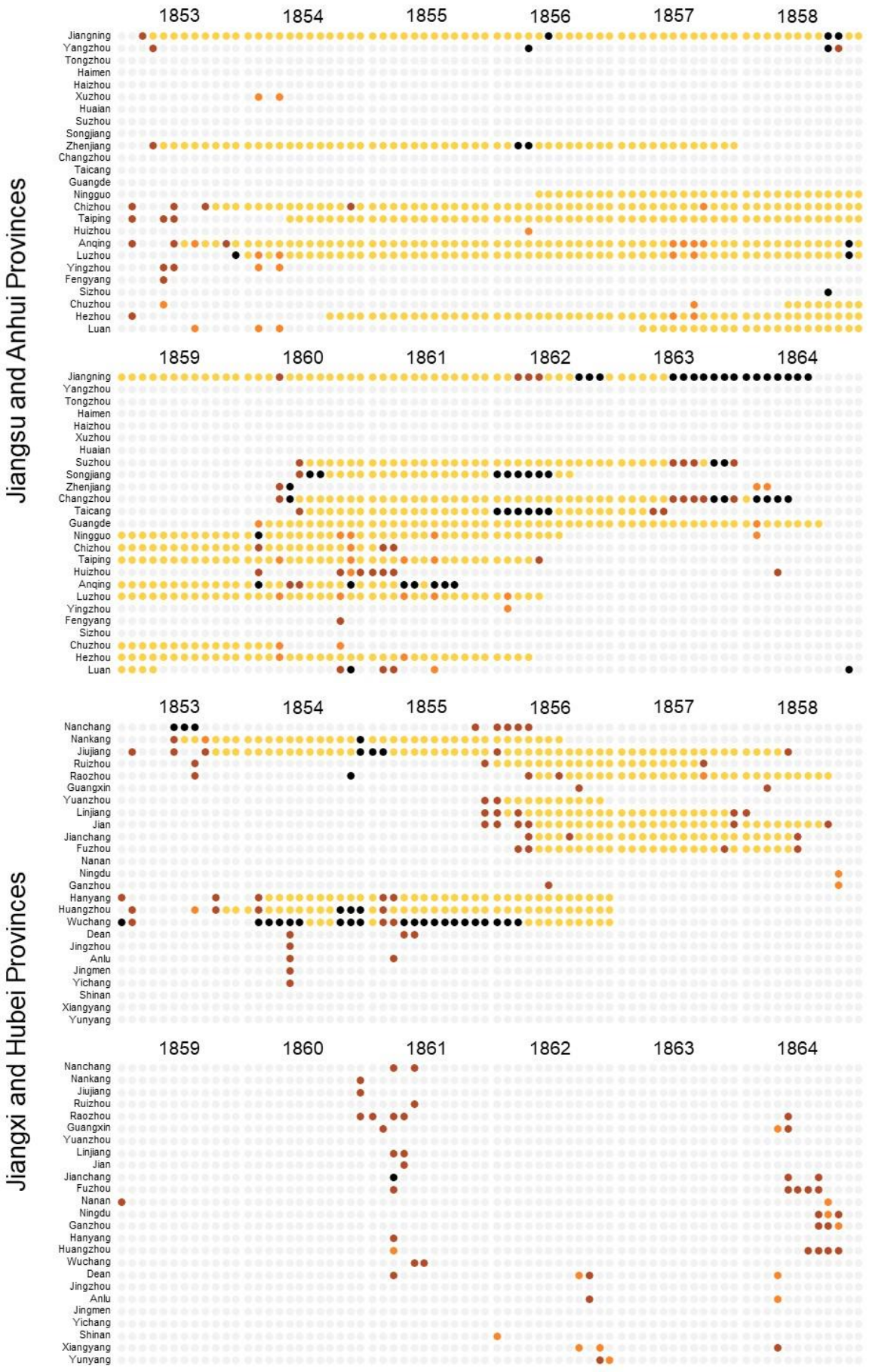
Regarding my main data sources, Guo (1989) records the geographical information for the Taiping military actions from 1850 to 1866, and FHAC (1996) compiles the Qing official edicts and memorials concerning the rebellion suppression, from which the severity of each armed conflict can be inferred.[32] For example, one of the most important memorials, Yang Yuebin's briefing for the recovery of Jinling (Yang yuebin deng zoubao kefu jinling dagai qingxing zhe, in FHAC, 1996, Vol.26-1864-261) on 16th June 1864 (lunar calendar) described the battle details during the entire month, the strategies implemented, the routes chosen, and time taken to reoccupy the city. It narrated that on the night of recovery, 'tens of thousands' of Taipings were killed; on the Qing side, 'from the end of May to mid-June, over 2,000 Qing soldiers were sacrificed and over 4,000 were injured.' Based on this information we can measure the Taiping warfare severity for the Jiangning prefecture in July 1864 (solar calendar). With this method, this chapter quantifies the information on all tracked battles month by

[32] I use Hua (1991), CMH (2003) and TSU (2013) for cross checks.

month at the prefectural level, and Figure 3.3 presents three groups of examples.

The first group includes the Lower Yangzi prefectures at the Taiping-ruled center. Except certain northern prefectures, the Taiping forces caused severe and lasting damage after 1853, and the battles in the final phase were extremely intense. The second group shows the details for two Middle Yangzi provinces, Hubei and Jiangxi. Three waves of warfare occurred: the Taiping troops plundered these prefectures one-off when they marched north in 1853; after the successful Western Expedition (1853-56), the Taiping regime ruled many prefectures until 1858; the third wave was the Second Western Expedition (1860-61) and sporadic disturbances from the guerillas after its fall. The overall Taiping impact on the Middle Yangzi prefectures was lighter than the Lower Yangzi, but with stronger uncertainty and volatility. The third group provides details for Zhili and Henan provinces in northern China: the first wave was the unsuccessful Northern Expedition (1853-55) and the second was the Chen Decai's Western March (1862-64) at the dusk of the Taiping regime. Some previous studies, using a dummy to identify the Taiping impact, may have found that the Taiping troops disturbed northern China and even placed the Qing capital area at risk. However, a safer conclusion drawn from a national image is that the Taiping impact on northern China was much less serious.

By sorting and locating all Taiping military actions from 1850 to 1866, this chapter measures in four ways the Taiping impact on 266 prefectures in 18 provinces of China Proper: a dummy, a dummy that only considers large battles, a duration that counts the number of months in war, and a severity score that incorporates all disturbances to different extents and weighs their importance. Compared with those in previous studies, these four measurements consider temporal and spatial changes for 266 prefectures comprehensively because every single battle, including its duration and severity, is tracked. A general conclusion from Figure 3.4 is that despite the pervasive Taiping turmoil on a national scale, both 'among-province' and 'within-province' variations in severity were strikingly large.


Jiangsu and Anhui Provinces
1853
1854
1855
1856
1857
1858
Jiangning
Yangzhou
Tongzhou
Haimen
Haizhou
Xuzhou
Huaian
Suzhou
Songjiang
Zhenjiang
Changzhou
Taicang
Guangde
Ningguo
Chizhou
Taiping
Huizhou
Anqing
Luzhou
Yingzhou
Fengyang
Sizhou
Chuzhou
Hezhou
Luan
1859
1860
1861
1862
1863
1864
Jiangxi and Hubei Provinces
Nanchang
Nankang
Jiujiang
Ruizhou
Raozhou
Guangxin
Yuanzhou
Linjiang
Jian
Jianchang
Fuzhou
Nanan
Ningdu
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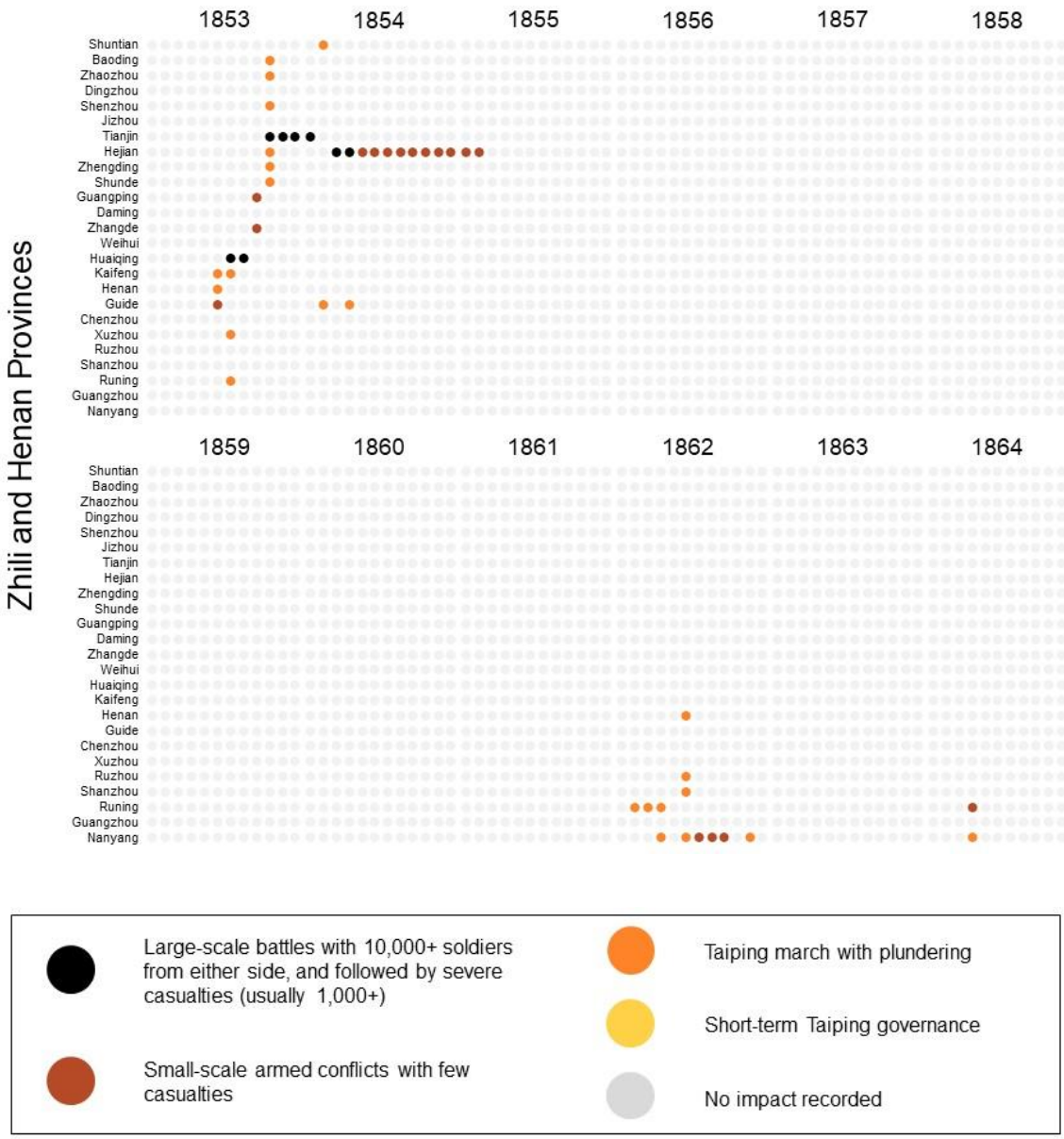


Figure 3.3. Counting the Taiping Impact over Time for Prefectures

Notes: 1. The six prefectures in northern Zhili, namely Koubei, Chengde, Yizhou, Xuanhua, Zunhua and Yongping, are excluded to save space. All of them were unaffected by the rebellion. 2. The data points for 1850, 1851, 1852, 1865 and 1866 are removed in this figure as all are 'unaffected' for the prefectures above.

Source: see text.

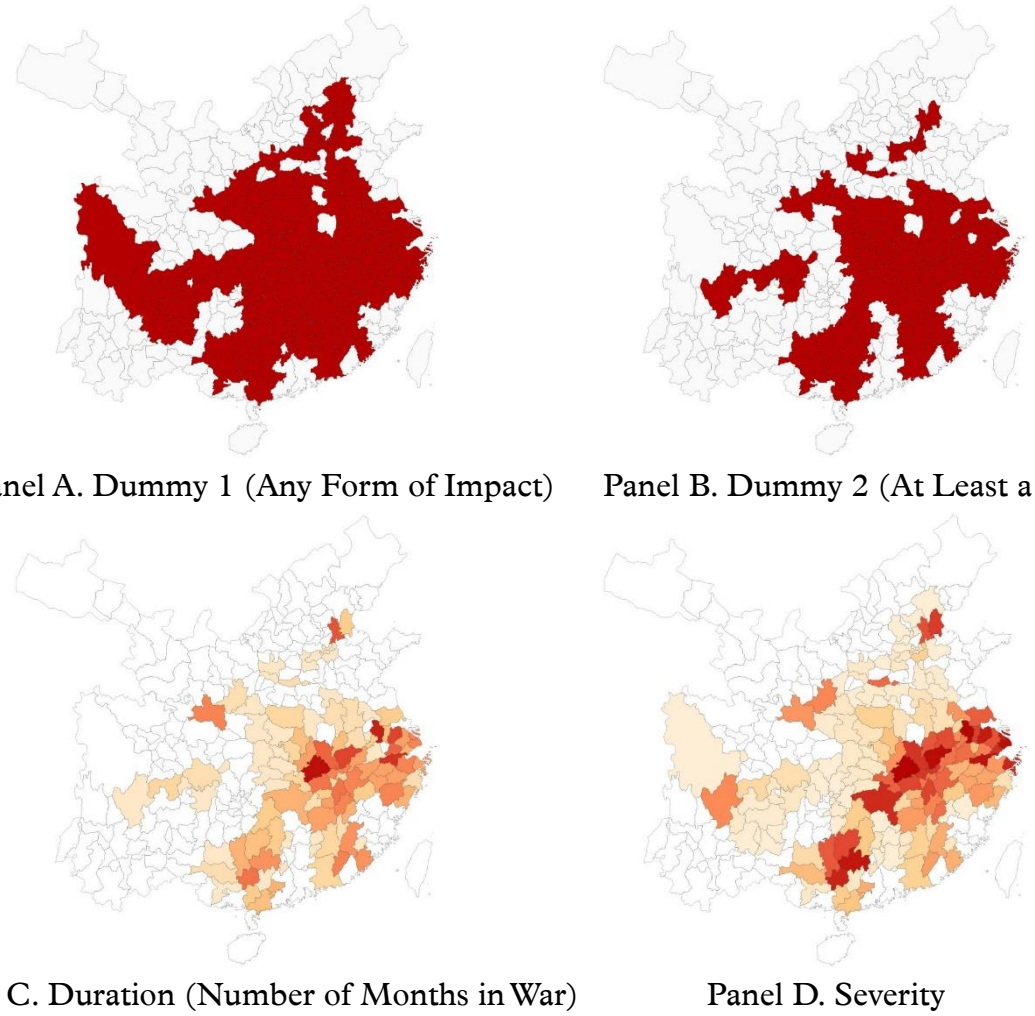


Figure 3.4. The Taiping Impact at the Prefectural Level, 1850-1866

Note: 1. For calculating methods of 'duration' and 'severity', see Table A.1 in Appendix A.
Source: see text.

Another useful crosscheck is to calculate the population change. The population loss from the Taiping Rebellion was staggering and spatially heterogenous, the estimations for which vary from 46.9-95.1 million by Li and Lin (2015), 73.3 by Cao (2001) to 100 by Ho (1959).[33] Figure 3.5 maps the prefectural-level population density change from 1851 to 1880 (Cao, 2001,

[33] Millions of people died in armed conflicts, massacres, and famines. In Anqing for example, fierce battles lasted 18 months and both sides invested over 100,000 soldiers, resulting in the Qing victory and a massacre of its enemies (Platt, 2012, Chapter 9). In the Taiping capital area from 1856 to 1860 the Taiping troops destroyed two major Qing camps near the Yangzi River, each for twice; during the battles the Qing side suffered over 10,000 casualties. The final siege and anti-siege over the capital lasted for two years while each side sent more than 100,000 soldiers (FHAC, 1996, Vol.26).

Chapter 16) and the key pattern is similar to Figure 3.4. This measurement is tentative because there are other noises in the population data such as the effect of the Nian Rebellion (1851-68) and Shaanxi and Gansu Muslim Rebellion (1862-73).

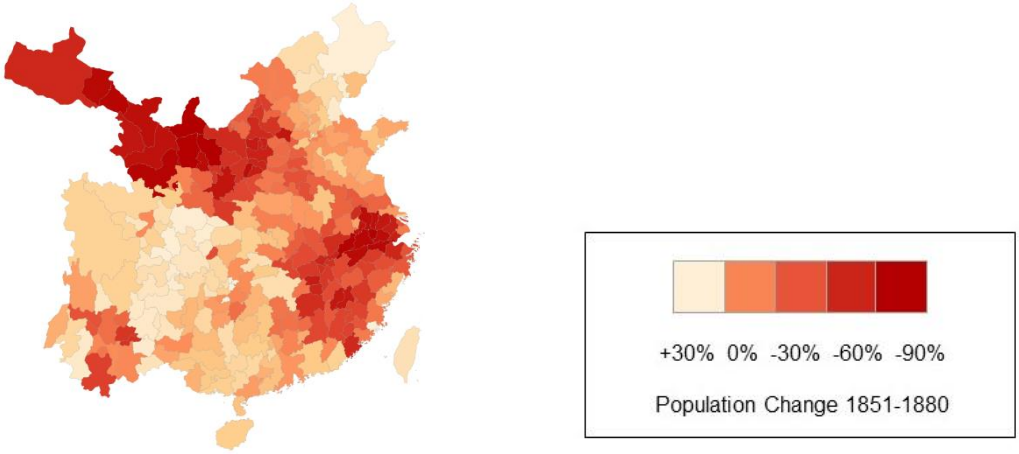


Figure 3.5. Population Change at the Prefectural Level, 1851-1880
Note: 1. *Population change = (1880 population – 1851 population) / 1851 population.*
Source: Cao (2001).

In a word, the Taiping Rebellion was distinctive among all mass rebellions during the 19th-century China. It was not the first, because it shared an indigenous folk religious belief with the White Lotus Rebellion (1796-1804, *bailianjiaoluan*), the Heaven and Earth Society (1852-1874, *tiandihui*), etc. Meanwhile, it was not strange to the Qing state: the government had effectively employed temporary local militias during the earlier White Lotus Rebellion, and this solution was adopted again when the Taiping rebels were raging (Kuhn, 1980, Chapter 2). However, the Taiping Rebellion was so destructive that the pre-1850 Qing fiscal-military regime could no longer be maintained. First, the Qing territory under the Taiping shadow was considerably large, and the Middle and Lower Yangzi region had played a vital role in the national economy.[34] Second, the Taiping Rebellion lasted for rather a long time. More importantly, it was single headed, whereas other long uprisings such as Nian Rebellion (1851-68) and Guizhou and Yunnan Ethnical Rebellion (1854-74) were multi-headed. Those rebels took actions independently and hardly collaborated, hence causing much lighter disturbance to the Qing rule.[35]

[34] If we bring in the 'macro-region' framework (Skinner, 1977), the Taiping troops impacted all macro-regions in China except Manchuria.
[35] The tragedy of the commons was often seen in other social unrests especially the Heaven and Earth Society and the Guizhou Ethnical Rebellion. Numerous independent leaders repelled each other, and all were easily suppressed.

The Nature of the Taiping Regime

Why was the devastating Taiping Rebellion conducive to the stronger local fiscal capacity of the Qing Empire? The loyalty of the local elites and officials to the Qing regime mattered (Slater, 2010; Rodríguez-Franco, 2016; Ch et al., 2018, for theories and other empirical evidence). Before discussing their actions, this part focuses on the pattern of the Taiping rule and the Qing-Taiping confrontation. Such conditions explain why most local elites and Qing officials were loyal to the Qing court and able to react.

From 1853, the Taiping regime expended arduous efforts to occupy and govern the Middle and Lower Yangzi provinces with the Anqing-Jiangning corridor being the center. In the early 1850s the Taiping regime substantially controlled the vast Middle Yangzi region; after 1856 its territory shrunk, and the troops tried to seize southern Jiangsu and Zhejiang. During the Taiping rule, very few Qing elites turned to the Taiping camp. The ruler Hong Xiuquan, a *de facto* autocrat, failed to establish a well-functioning authority, not to mention a genuine government; repetitive coups, mutinies and Hong's purges made the Taiping rule self-destructive and short-lived (Platt, 2012, Parts 2-3). The Taiping statecraft, if there was one, was a combination of egalitarianism and utopian socialism ornamented with certain Christian elements, but no perceivable social reforms were seen; meanwhile the Taiping regime was extremely hostile to Confucianism and even committed routine murders of Confucian scholars (Deng, 2012, Chapter 4). Hence the Taiping regime hardly attracted competent think tanks and administrators from the Qing gentry class (Wakeman, 1975, Chapter 8; Spence, 1990, Chapter 8). In fact, it was a story of the Gresham's Law: the illiterate speculators with nothing to lose were more likely to be recruited into the Taiping regime.

The Taiping regime was thus unable to establish a fiscal system or run the economy due to the lack of intellectual input. Intense military actions made all fiscal and economic policies short-sighted and extractive, which were even imposed with violent threats. Hence, the Taiping regime won no peasantry supporters in the Middle and Lower Yangzi region. A typical way for the Taipings to finance themselves was to confiscate the Qing resources. They were usually able to seize the local Qing reserve as soon as they occupied a city: when they won Yuezhou in 1852, over 5,000 public and private vessels were confiscated; at the beginning of 1853 when Wuchang and Anqing fell, all inventories in the provincial treasury including the remitted land tax revenue from affiliated prefectures became the Taipings' windfall (Guo, 1989, pp. 53-7). In addition to confiscation, the rebels introduced a coercive 'donation' (*juan*). Upon their arrival, they attempted to identify landlords and wealthy gentry and expropriated their properties; meanwhile the mass peasants, in fear of robbery, donated in currency or kind (Mi, 1983, pp. 210-3). In this sense the Taipings behaved like roving bandits and merely sought one-off gains.

Moreover, the long-term endeavors they made in developing a taxation system were also minimal. The Taiping regime tried to recover social order in its territory, collected the previous Qing taxation records, and 'widely notified the masses to pay the taxes in kind and currency as before' (Mi, 1983, p. 213). Despite its egalitarian propaganda, the Taiping land taxation displayed little difference from the Qing one, with the surcharge being 3-5.5 times the formal tax (Bernhardt, 1992, Chapter 3). The messy Taiping fiscal system even made the basic bookkeeping impossible. Considering the poor fiscal conditions, the Taiping rule provided no catalyst for agricultural production or commerce; it attempted to build its apparatus on security, taxation, land redistribution, cultural reforms, etc. but the progress was ignorable because all available resources were appropriated for military purposes (Deng, 2012, Chapter 4).

Lastly, the Taiping regime was even incapable of establishing a closed border, and this is a key condition to understanding how the local elites and officials fought back for the Qing regime. The Qing-Taping confrontation was different from that of other mutually exclusive regimes in Chinese history like the Southern Song (1127-1279) and the Jin (1115-1234) Dynasties. The Taiping regime had no clear border, the territories were changing, and the strategies of its expansion were highly contingent. Its troops occupied certain cities and towns that were weakly connected via roads and waterways. Meanwhile in the vast rural area where the Taiping regime had no effective control, agricultural production and local commerce were still possible, and the local militias and governors' armies were organized and trained under the acquiescence of the Qing court (Wang, 1881, Chapters 2-11; Luo, 1939, Chapters 2-4; Kuhn, 1980, Chapters 3-4). The Taiping-ruled cities and towns provided insufficient labor, resources and weapons for themselves, while the rural area in the Middle and Lower Yangzi region, with a great number of small self-sufficient economic systems, provided steady streams of resources for the Qing side.

In a word, the nature of the Taiping rule mattered. Although the Qing governance was by no means perfect in the early 19th century, the self-destructive and anti-Confucian Taiping regime, with its short-sighted and extractive fiscal and economic policies, won no support from either gentry class or mass peasants across the Middle and Lower Yangzi provinces. Since the rebellious regime was incapable of establishing a closed border, local resistance from the Qing side was active and effective: with the available labor and resources, the local Qing powers enhanced their fiscal-military capacity and eventually suppressed the rebellion.

3.2. The Qing Central Fiscal Crisis

The Taiping Rebellion was among the most severe man-made disasters in global history that caused a sharp population decline as well as economic depression especially in agriculture. In

addition to direct economic consequences, this rebellion reshaped the intergovernmental relations of the Qing Empire from the fiscal-military perspective. This section commences by discussing the Qing fiscal crisis at the outbreak of the rebellion (1850-52) and then shows how all the central solutions failed. Finally it explores how the forced power decentralization was triggered by the Qing throne and why local fiscal-military autonomy made the rebellion suppression possible.

The Qing Fiscal Crisis and the Initial Central Solutions

Since the rebels spread quickly from Guangxi to the Middle and Lower Yangzi provinces in 1852-53, a national fiscal crisis for the Qing court loomed from both revenue and expenditure sides. Regarding revenue, all major government incomes – land taxation, salt sales revenue and domestic customs income – declined drastically. The pervasive chaos brought great uncertainty to agricultural production in the warzone and severely undermined the local land taxation capacity. Domestic customs and salt sales systems were also disrupted as the Taiping rebels disturbed and even devastated key transportation hubs along the Yangzi River and the Grand Canal, a matter discussed in detail in Chapter 4. Furthermore, the Qing taxation system had, to a considerable extent, relied on the functioning of the central remittance (*jiexiang*) and interprovincial assistance (*xiexiang*) systems, but the warfare dismantled them and greatly undermined the coordinating ability of the Board of Revenue. In another word, even if a prefectural magistrate in Hubei or Jiangxi was able to collect the stipulated local revenue in 1853, he would find it impossible to remit it to Beijing for redistribution.

Figure 3.6 outlines the Qing fiscal revenue structure and indicates how the fiscal shortage arose instantly after the spread of the rebels. During the 1840s, the Qing state had collected 35 million silver taels per year. Land tax had accounted for over 60%. During the rebellion however the annual land tax revenue was almost halved. Salt tax revenue had accounted for 13%, and it almost diminished in the late 1850s mainly due to the severe chaos in the Huai River region. Customs income, which had accounted for another 16%, was less impacted: although the income from domestic long-distance trade was halved, international trade became the new cash cow, discussed in Chapter 4. *Ceteris paribus*, during 1853-64 the annual shortage of the Qing state was approximately 15 million taels – 45% of its prewar annual revenue.[36]

[36] Meanwhile, the legacy of the Qianlong reign (1736-95), over 80 million silver taels in the central reserve, had been erased during the Jiaqing (1796-1820) and Daoguang (1821-50) periods (see Chapter 5). By the outbreak of the Taiping Rebellion, the cash holding of the Board of Revenue was fewer than three million taels (Shi, 2009).

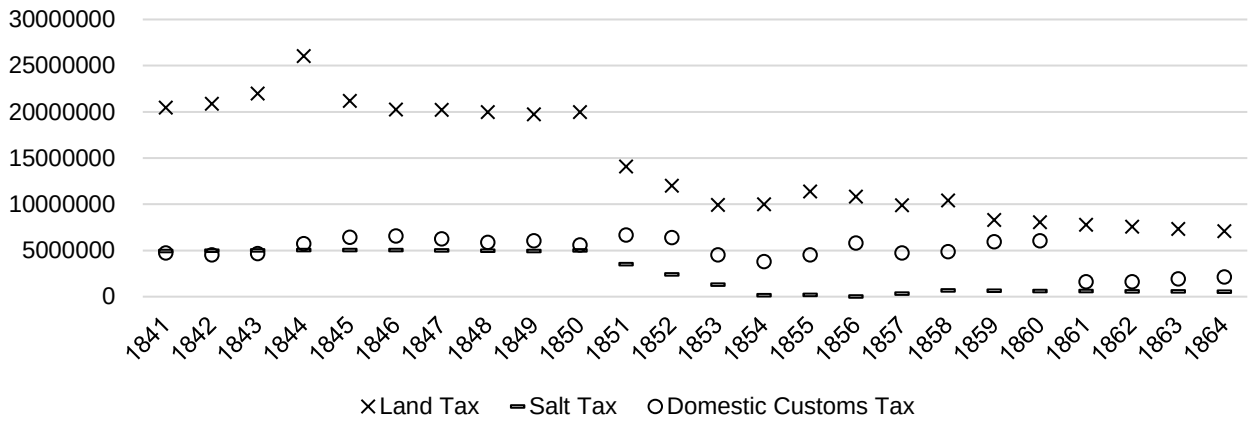


Figure 3.6. Three Major Revenues for the Qing Empire, 1841-1860 (in Silver Taels)
Notes and sources: 1. Data from land tax are from Ni (2013, 2017a). 2. The data for salt tax from 1841 to 1850 are from Ni (2013). No accurate data for salt tax during the rebellion. Ni (2017) obtains some for Lianghuai salt region, and from the 1840s' records (Ni, 2013) I infer that the Lianghuai salt region took a share of 42% in the national salt tax revenue and thus I can estimate the national salt tax revenue. 3. For customs tax data, see Chapter 4.

Besides revenue, the Taiping Rebellion transformed the Qing expenditure structure significantly. During the pre-1850 peacetime, annual government expenditure had been 31-38 million silver taels to break even. After 1850, the temporary military spending grew rapidly. Peng (1981) sorts the *ex post* official memorials and finds that the 14-year warfare cost 171 million silver taels,[37] so the *ad hoc* military expenditure for suppressing the Taiping Rebellion should be 12 million taels per year.

For the two centuries before 1850, the Qing fiscal management was surprisingly simple and static. Tax sources were limited but stable, and the Qing state tailored the budget with its available revenue, whereas the Board of Revenue had barely achieved surpluses during the first half of the 19th century. Consequently this system was fragile when facing unexpected shocks (see Chapter 5). According to the above estimation the Taiping Rebellion brought a staggering fiscal shortage of 27 million silver taels annually, which severely worsened the Qing balance sheet and pushed the central finance to the verge of collapse. In 1853, the central state issued several urgent edicts to command all its organs to 'raise funds promptly regardless of means' (FHAC, 1996, Vol.3-108) but all the top-down solutions by the Board of Revenue were cliché and could not alleviate the crisis.

Imperial title sales had been the most frequently adopted method to cover the Qing deficit. From the winter of 1850 the Board of Revenue began to release the 'temporary vacancies' (*zankai shili*) and in 1852, it even authorized local governors to release vacancies autonomously

[37] Meanwhile Peng (1981) himself believed that the real number should be doubled. Also see Zhou (2000, pp. 151-3) and Ni (2017a, p. 99).

(FHAC, 1996, Vol.2-500, Vol.3-49, Vol.4-62-70). This solution was seriously flawed because an individual only paid once in a lifetime for a specific title. In the first half of the 19th century the Qing state had sold vacancies too frequently – almost every two years from 1821 to 1849 – and exhausted the demand of the masses (Luo, 1936, Chapter 1); furthermore, the increasing number of sales diluted the value of titles and made them much less attractive. During 1851-53 the temporary revenue from title sales was only several million taels in total, so this solution was soon abandoned at all levels.

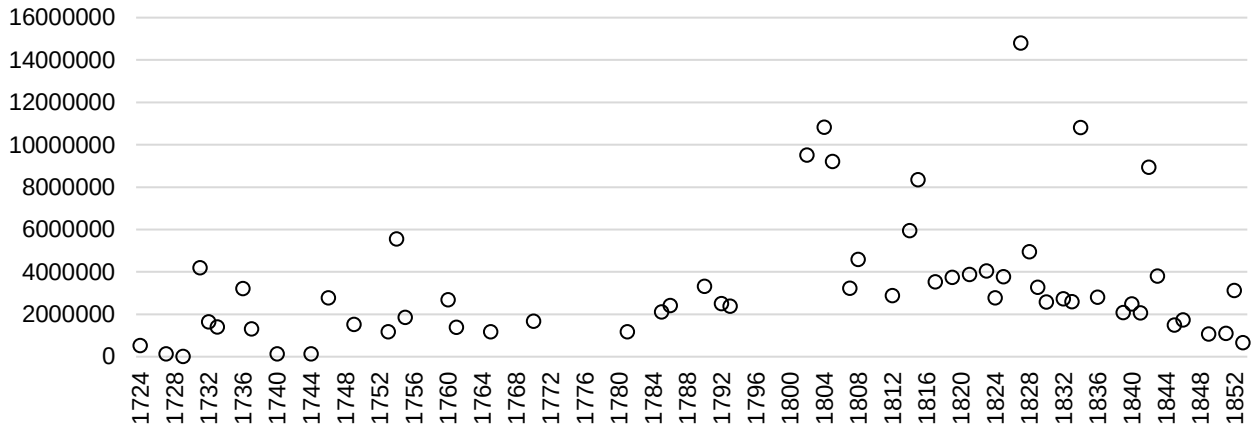


Figure 3.7. The Qing Annual Revenue from Title Sales, 1724-1853 (in Silver Taels)
Source: Luo (1936, Chapter 1).

Another solution by the Qing central state was to issue the 'big cash' (*daqian*) through the debasement of copper coins and issuance of paper notes, which immediately received negative responses from the market (Zhou, 2000, Chapter 3; Shi and Xu, 2008, Chapter 2; Yan, 2015, Chapter 1; Ni, 2017a, Chapter 3). Under the central command, almost all provinces adopted this method during 1853-54 radically while the raw materials and face values of coins varied. The provincial minting bureaus simply issued slightly heavier coins with stamped values that far exceeded their intrinsic metal values. Such coins were issued via officials' and soldiers' salary payment and circulated in the market. Meanwhile, private banks and pawnshops arbitraged by melting original coins and minting larger ones. Soon the market responded: for example, the price level experienced a five-fold jump in Beijing where the big coins were intensively minted (Peng, 2010, Chapter 4). The Qing government also issued paper notes[38] but did not guarantee their convertibility to silver taels. Hence the public trust was destroyed instantly; in the end even the government *per se* refused to accept its notes (He, 2013, Chapter 5). All big coins and notes were soon depreciated to their original values, and through the decade the Qing state

[38] The paper notes were given different names. *Guanpiao* referred to those with a nominal value in silver taels; *baochao* referred to those with a nominal value in copper coins (Ni, 2017a, Chapter 3).

failed to make any profit from this channel.

Table 3.1. The Issuance of Big Cash during the Early Xianfeng Reign

Province	Raw Materials	Time of Introduction	Face Values
Fujian	Copper, iron and lead	June 1853	1 for 5 / 10 / 20 / 50 / 100
Jiangxi	Copper and lead	July 1853	1 for 10 / 20 / 50
Shanxi	Copper and iron	July 1853	1 for 10 / 50
Yunnan	Copper, iron and lead	July 1853	1 for 10 / 50
Guangxi	Copper	Nov 1853	1 for 10 / 50
Guizhou	Copper	Nov 1853	1 for 10 / 50
Gansu	Copper and iron	Feb 1854	1 for 2 / 5 / 10 / 50 / 100 / 500 / 1000
Jiangsu	Copper, silver, iron and lead	Feb 1854	1 for 5 / 10 / 20 / 30 / 50 / 100 / 500 / 1000
Shaanxi	Copper, iron and lead	May 1854	1 for 10 / 50 / 100 / 500 / 1000
Hubei	Copper and iron	May 1854	1 for 5 / 10 / 50 / 100
Zhili	Copper, iron and lead	June 1854	1 for 5 / 10 / 50 / 100
Hunan	Copper and iron	July 1854	1 for 10 / 50 / 100
Henan	Copper, iron and lead	July 1854	1 for 10 / 50 / 100 / 500 / 1000
Sichuan	Copper, iron and lead	Nov 1854	1 for 10 / 50 / 100
Shandong	Copper	Nov 1854	1 for 2 / 50 / 100
Zhejiang	Copper and iron	Dec 1854	1 for 5 / 10 / 20 / 30 / 40 / 50 / 100

Notes: 1. Within Fujian Province, Taiwan had its own minting bureau which issued the '1 for 5' big coins in March 1854. 2. Yunnan set a Dongchuan Minting Bureau (*baodongju*) outside its provincial capital, which issued the '1 for 10' big coins in September 1853. 3. Zhili had two extra bureaus in Jizhou and Chengde which issued the same types of coins as Zhili provincial bureau, in July 1854 and August 1854 respectively.
Source: Zhou (2000, Chapter 3).

In addition to the fiscal malfunction, the incompetent military forces were a major concern to the Qing central court. It was incapable of commanding the corrupt and weak imperial troops when the Taipings spread across southern China in the early 1850s. The low quality of the Qing imperial troops was a reason: due to the long-term domestic peace, the local *luying* troops were less invested and disciplined by the Qing court after mid-18th century and became the hotbed of corruption; the weapons were outdated, and many soldiers claimed salaries for a living but were never trained properly, not to mention qualified to fight a war (Wang, 1881, Chapter 1; Luo, 1939, Chapter 1; Chi, 1976, Chapter 2). Another deep-rooted reason for the Qing setback in the early 1850s was its centralized decision-making process. Imperial troops of

different provinces were fighting independently under the central command, and interprovincial coordination was difficult to achieve. For example, the troops for a specific province had no incentive to cross the provincial border even if they were very likely to eliminate the rebels (Platt, 2012, Chapter 6). Lack of coordination among different green camps accounted for why the Qing government was unable to prevent the rebels from spreading.

The Start of Decentralization

The abrupt and complete fiscal-military failure of the Qing court in the initial phase pointed to a deep-rooted institutional flaw of the empire, over-centralization. On the one hand, during the previous two centuries the highly centralized regime had won the empire with a strong central authority and legitimacy, a strictly hierarchical bureaucracy, a loyal meritocratic gentry class, and a unified and integrated market to a certain degree. However, this highly centralized system was too rigid to adapt to any potential challenge considering its vast territory, large population, complicated social structure, and accumulating principal-agent problems within the officialdom. The mid-19th century was the timing for a profound change. When the Taiping rebels were raging across southern China, the final solution by the desperate Qing throne, proving to be successful one decade later, was the forced fiscal-military decentralization. It was the most pathbreaking institutional transition in late imperial China.

The decentralization was 'forced' because the central court had considerable concerns about its negative consequences such as regionalism and even disintegration of the empire. Meanwhile, it was rather confident about the loyalty of local elites and officials because the Taiping regime was self-destructive, short-sighted and extremely hostile to Confucianism as described in Section 3.1. Furthermore, decentralization was the cheapest way for the central state to survive the Taiping crisis and could incentivize the local elites and officials to the greatest extent.

In the winter of 1852, the Qing central court made the decision by appointing the first 43 commissioners responsible for supervising local militias; it soon publicly delegated the task of rebellion suppression to provincial governors and even local gentry elites and granted them with autonomy (Cui, 2020).[39] Under the central acquiescence, prestigious regional governors were able to establish their own forces such as the Xiang Army by Zeng Guofan and the Huai Army by Li Hongzhang, which were much more competent than the official troops according

[39] This was not the first time for the Qing state to organize militias to suppress mass uprisings: it did so at the outbreak of the White Lotus Rebellion (1796-1804). However, the militias were still nascent, and the Qing state was able to revoke the militias' autonomy when the White Lotus rebels were eliminated (Kuhn, 1980, Chapter 1). In the 1850s the Qing court re-employed this strategy but for this time the military autonomy was never revoked.

to the *ex post* judgement;[40] their soldiers were even required to study the Confucian classics and to be without reservation loyal to their governor and home province (Luo, 1939, Chapter 8). From then on, the Taiping rebels began to encounter substantial counterattacks and to suffer from setbacks. Besides military changes, administrative decentralization proceeded simultaneously. The inefficient hierarchical bureaucracy could not tackle the turbulent situation efficiently, and some magistrates fled from or died of warfare. The Civil Service Examinations as a method of official recruitment were suspended in the warzone. Powerful governors resumed control over appointments and promotions of local officials, through which they began to nurture their own think tanks beyond the Exams system and weaken the central authority in the long term (Wang, 1881, Chapters 1-2; Liu, 1998, pp. 65-8).

Military and administrative decentralization inherently required fiscal decentralization, as the governors' forces and local militias needed to finance themselves, not to mention that the Board of Revenue could not provide support via its remittance system. This signal was seen even before 1853; for example, in 1852 the Guangxi governor complained about the slow and insufficient interprovincial assistance and had to appropriate other fiscal resources for military exigencies (Liu, 2014b). As the central coordination was absent, the unapproved local retainment of *de jure* central tax revenue became common. Records in June 1853 indicate that provinces under the Taiping shadow began to retain various revenues without *ex ante* central consent. Chapter 6 will revisit this critical change.

However, searching available funds within the existing system was an expedient solution for local governments. After all, the total fiscal revenue of the empire had been at an ultra-low level for centuries. Meanwhile, all new central proposals such as title sales and 'big cash' policies did not work. The local governments sought a genuine institutional breakthrough that could bring them steady income to suppress the Taiping Rebellion.

3.3. The Rise and Persistence of the Lijin Institution

This section focuses on the groundbreaking local fiscal innovation during the Taiping Rebellion – the introduction of a novel commercial tax. Instead of unhelpful title sales and catastrophic 'big cash' policies by central government, the workable solution to financing the Qing military actions was proposed and put into practice in a bottom-up way.

This section firstly introduces how this new indirect tax, the *lijin*, was introduced in Yangzhou and widely adopted by other regions under the Taiping threat. It also discusses why the *lijin* practice was workable given the specific political and socioeconomic contexts. Then this section

[40] According to Lindley (1866), the fatality rate of the Xiang Army was 1/61 that of the Qing imperial troops.

considers the postwar persistence of the *lijin* institution, why it was preserved by provinces from central intervention, and how it irrevocably changed the tax revenue structure of the late Qing state. Finally, it constructs a novel dataset for *lijin* taxation at the prefectural level and surveys the heterogenous *lijin* operations across provinces.

The Introduction and Spread of the *Lijin* during the Taiping Rebellion

In March 1854, a memorial from Lei Yixian, handler of Yangzhou military affairs (*bangban Yangzhou junwu*) and assistant minister of the Board of Penalty (*xingbu shilang*), caught the attention of the central court, in which he claimed how he introduced a novel tax in Yangzhou, a key warzone only 100 kilometers from the Taiping capital.

During the summer of 1853 Lei was supervising the local army in Yangzhou, the frontline of the Qing-Taiping confrontation, but both Henan and Jiangsu Military Supply Offices (*liangtai*) refused to finance Lei as they were in financial crises, too (FHAC, 1996, Vol.9-36, Vol.10-288).[41] Lei's army exhausted all available funds, including local land tax revenue in currency and kind, rent from government assets, title sales income, and private support from his colleagues. However, his crisis was not mitigated as the warfare became intense. Without notifying his superiors, in August Lei targeted the grain sector in the towns along the Lixia River as an experiment and imposed the *lijin*,[42] being 1% of the total transaction amount, on grain merchants (FHAC, 1996, Vol.13-305-306). This alternative revenue immediately alleviated Lei's trouble and he promoted this system on the north bank of the Yangzi River (Yangzhou section) by setting *lijin* stations at the transport nexuses and taxing a wide range of goods in transit, which by the time had not been authorized by the Board of Revenue at all.

After the initial success of this practice, he sent an *ex post* memorial to the central court in March 1854. Subsequently in November 1854 Lei persuaded his superior Shengbao, imperial envoy (*qinchai dachen*), cabinet member (*neige daxueshi*) and minister of Board of Rites (*lǐbu shangshu*), to write another series of memorials to the central court, and their efforts paid off (Sheng, 1877, Vol.56-13). The Board of Revenue and the throne had to acquiesce to this practice, and the local *lijin* institution gained its legitimacy in an *ex post* way. This breakthrough was the first time for the Qing central state to acknowledge *de facto* local indirect taxation during its two-century rule, marking the initial step of China's modern fiscal transformation.

At this chaotic moment, the Board of Revenue was far from capable of promoting the *lijin* institution itself. Instead, institutional learning among local officials worked well, and this new tax was introduced autonomously by regions with the Taiping warfare (Zhou, 2008). Among

[41] Meanwhile, Jiangsu needed to tackle the Shanghai Small Swords Society Rebellion in 1853.
[42] For the term *lijin* and its historical ambiguity in Chinese, see Zhou (2006).

266 prefectures in China Proper, Yangzhou was the pioneer in 1853, and three years later, 34 prefectures, mainly in the Middle and Lower Yangzi region, introduced it. In 1860, 95 prefectures in 17 provinces owned its *lijin* institution, and by the fall of the Taiping regime this number became 147, in all 18 provinces. Since the Qing state had already survived the Taiping crisis in the mid-1860s, prefectures that continued to set new stations aimed to finance other local exigencies such as suppressing the Shaanxi and Gansu Muslim Rebellion (1862-73). By the end of the imperial era, 211 prefectures had at least one *lijin* station, and over 70% of them did by 1864 because of the Taiping Rebellion. Figure 3.8 maps the spread of the *lijin* institution with a dummy variable at the prefectural level.

Furthermore, the provincial *lijin* revenue data (Luo, 1936; revised in Zhou, 2011) show the same pattern: considering the decentralized fiscal nature and the shortage of regular fiscal revenue, the local military actions forced the regions under the Taiping shadow to introduce this new way of taxation. Figure 3.9 compares the growth of annual *lijin* revenue for several groups of provinces. In the Middle and Lower Yangzi provinces, the annual *lijin* revenue grew rapidly since its introduction and by 1864 the annual revenue for a province reached two million taels. This was a considerable income: before 1850, the average land tax revenue for the Middle and Lower Yangzi provinces had been approximately 2.6 million (see Chapter 5). Hence, the *lijin* income served as a timely substitute. In comparison, the northern and northwestern provinces did not open *lijin* stations timely because of the relatively light Taiping impact.[43] Their introduction of *lijin* was a story of institutional spillover, as they used this alternative revenue to mitigate other local fiscal constraints; however, this learning effect was very limited.

Figure 3.9 also compares the per capita *lijin* burden for all groups and finds an evident gap. Due to the data limitation, it uses the 1851 population data as the weight; considering that the Middle and Lower Yangzi provinces suffered from larger population loss during the rebellion, the actual gap among groups ought to be wider. To summarize, given the lack of central coordination, local governments can be treated as independent units, and the significant spatial variation in *lijin* taxation is an adequate 'war making state' story, but a key difference from Tilly (1990) is that the Taiping Rebellion is an internal war.

[43] These northern provinces were disturbed by the Taipings mainly in 1853. By that time the lijin tax did not exist.

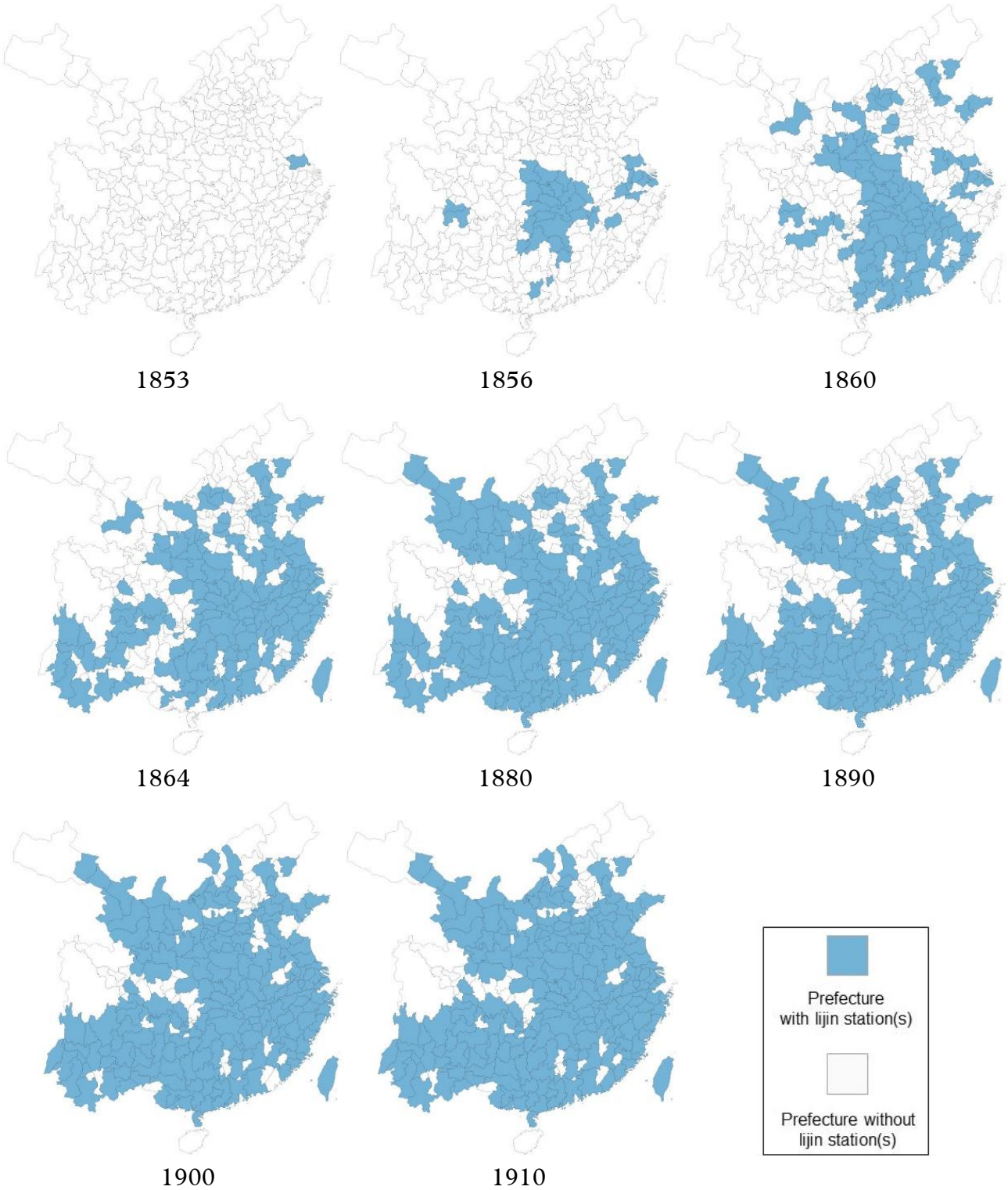
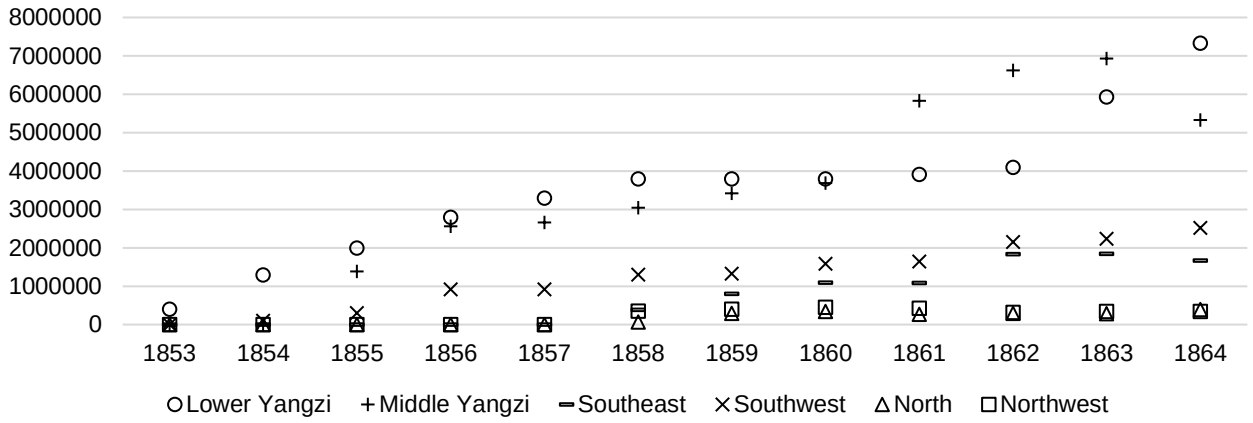
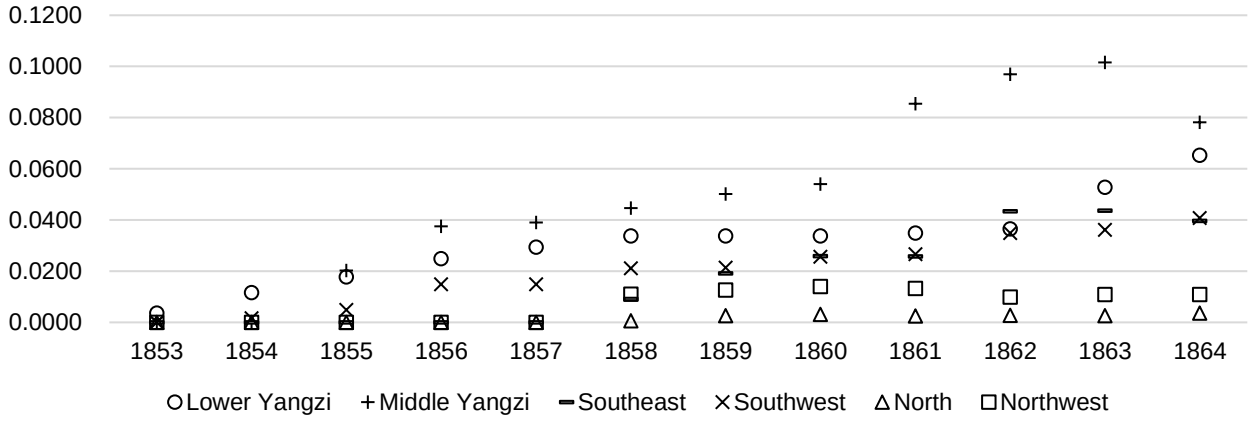


Figure 3.8. The Spread of the *Lijin* Institution

Source: see text.



Panel A. Total *Lijin* Revenue (in Silver Taels)



Panel B. Per Capita *Lijin* Revenue (in Silver Taels)

Figure 3.9. Annual *Lijin* Revenue by Region, 1853-64

Note: 1. The 1851 population data are employed to calculate the per capita level.
Source: Cao (2001); Zhou (2011).

Why was the *lijin* institution so quickly recognized and promoted by the Taiping-impacted local governments? The deep-rooted flaw of the pre-1850 Qing indirect taxation was the key. Chapter 4 will discuss the Qing domestic customs system in detail, and this part provides an overview. Indirect taxation on commerce had been extremely light. The domestic customs tax, as a central tax, had accounted for no more than 20% in total fiscal revenue before 1850. No more than 40 domestic customs were responsible for taxing goods in transportation in a giant empire covering 4.3 million km^2. Domestic customs along key waterways and land or coastal borders aimed to tax long-distance goods transportation, while most short-distance ones were neglected. Although the early Qing economy witnessed exponential population growth, arable land expansion, notable proto-industrialization and regional market integration especially during the 18th century (Wong, 1997, Chapters 1-2; Von Glahn, 2016, Chapter 8), the incremental part of the national economy, especially secondary and tertiary sectors, was

beyond the scope of the Qing fiscal regime. Miscellaneous taxes targeted merchants, such as brokerage tax and pawnshop tax; however, their share was ignorable in the government income (Wang, 1973, Chapter 4).

During the first half of the 19th century, several foresightful officials such as Lin Zexu and Zeng Guofan had noticed the hidden trouble of ultra-low taxation and even written memorials to warn the Qing court, but no top-down measures were taken due to the lack of incentives (Luo, 1936, Chapter 1; Zhou, 2000, Chapters 1-2). To mitigate the local fiscal shortage, some officials had introduced a proto-*lijin* practice known as 'one-percent crowdfunding' (*yiwenyuan*) on a small scale (Zhou, 2006; Fu, 1982, Chapter 19). With the crowdfunding (1% of the transaction amount) among local guilds in metropolitan areas such as Hankou and Shanghai, local officials and elites were able to finance specific projects for public security, water control, etc. However, crowdfunding was not taxation. It was one-off, voluntary, and unauthorized by the central government. Local officials had suffered from a severe lack of local public funding during the early and middle Qing era,[44] and many noticed that indirect taxation had considerable potential given the Smithian growth pattern of the empire. The unexpected Taiping Rebellion provided a perfect opportunity for a long-awaited fiscal transition: once the *lijin* practice was acquiesced to by the central court, local officials immediately began to tax the local trade for an alternative income and finance the Taiping-related military forces. Furthermore, the *lijin* was a safe and smart solution for local officials to minimizing the central-local conflicts: the three major government incomes – from land, salt sales and domestic customs – were still under the central control, whereas the *lijin* system simply bypassed them and cultivated an independent but more lucrative tax base at a local level.[45]

In a word, the rise of the *lijin* was a story of 'war making state', and the Taiping Rebellion played an indispensable role. Meanwhile, the rapid expansion of indirect taxation reflected the long-term rigidity of the Qing fiscal regime prior to 1850. Interestingly, it appeared that local officials had been thinking of this change for some time, which was why the reasoning behind the 1853 memorial by Lei Yixian, the *lijin* creator, was so thoughtful and groundbreaking. In his famous memorial (FHAC, 1996, Vol.13-305-306) to argue for *lijin*'s legitimacy, he described the strengths of indirect taxation in detail. First, compared with other alternatives, indirect taxation was 'steady and unlimited like flowing rivers'. To be specific, 'Donations from

[44] The Qing population almost tripled from 1644 to 1850, but the size of bureaucracy was as small as that in the 17th century. The scale of government taxation or expenditure was frozen during the two centuries. Chapters 5 and 6 will revisit the fiscal shortage problem.

[45] The nature of the Qing-Taiping confrontation made the *lijin* taxation workable. As described in Section 3.1, the Taiping regime never established a closed border and the Taiping-ruled cities and towns were weakly linked by roads and waterways, while they had no control over the vast rural area where the local commerce persisted tenaciously. Hence the local Qing officials were able to extract the available resource – taxes on the flexible short-distance trade – continuously under the Taiping shadow.

rich tycoons were limited, while taxation on goods transportation was infinite.' Second, the *lijin* burden was pegged to the value of transported goods and was more elastic and reasonable. 'Fewer gains (for a merchant) meant fewer taxes while more meant more. The burden was completely determined by a merchant's income.' Thirdly, a pulling effect enabled merchants to transfer the *lijin* burden to their customers, which is the core feature of indirect taxation. 'The merchants' payment in fact came from customers… so that the mass people paid the *lijin* in an invisible way without noticing it.' Finally, since the *lijin* was created to suppress the rebellion from the beginning, resistance from taxpayers was minimal. 'The gentry class and mass people were concerned about the security of their properties, and the war was closely related to everyone's life. This made it much easier to introduce the *lijin* system.' Lei Yixian certainly did not learn the Western tenet 'no taxation without representation', but his statement about the essence of taxation was strikingly insightful.

The Persistence of the *Lijin* after the Taiping Rebellion

Forced decentralization helped the empire wipe out the Taiping rebels despite the declining Qing central authority. Although the rebellion was eliminated, the *lijin* taxation was so cost-effective that after the Taiping crisis it was preserved by local officials at all levels. The central-local fiscal conflict in fiscal-military imperatives was increasingly acute in the following decades.

In fact, when the suppression was still in progress, some central officials proposed that the *lijin* was detrimental to the Qing rule (FHAC, 1996, Vol.16-584; Li, 1908, Vol.241; Liu, 1936, Vol.49-21). In 1861 the Board of Revenue drafted a series of *lijin* regulations, which were opposed by local governors collectively. In 1864 when the Taiping regime fell, the Board planned to abolish the *lijin* system, which was fiercely resisted again by the powerful governors. During the post-rebellion decades, the Qing central state applied various measures to consolidate its control over the *lijin* institution across provinces, but all ended up in failures (Luo, 1936, Chapter 2).

Without the unprecedentedly strong and autonomous local governors, the Qing central court would not have survived the Taiping crisis. Therefore, the governors prevailed the collective bargaining with the Qing central court in the 1860s, not to mention that they were suppressing other uprisings such as the Nian Rebellion (1851-68) and the Shaanxi and Gansu Muslim Rebellion (1862-73) for the Qing court. The fiscal-military autonomy of local governors was further consolidated during the post-Taiping decades, while the decline of the central authority became irrevocable. As a result, the *lijin* institution, the cash cow of local governments, became the *de facto* local apparatus in the name of postwar recovery and local

defense (Ni, 2017a, pp. 178-81).[46]

The persistence of the *lijin* taxation reshaped the structure of the Qing fiscal revenue, as depicted in Figure 3.10. Although several ways of central taxation recovered after the Taiping crisis, their fiscal importance in the late 19th century was in a sharp contrast to that in the 1840s. The salt sales system was rebuilt and its income recovered to the pre-1850 level. Domestic customs encountered great setbacks, and maritime customs income experienced remarkable growth, both of which are discussed in Chapter 4. Land taxation recovered (Wright, 1962, Chapter 8; Zhou, 2019, Chapter 7-8), but the share of its revenue in total government income fell to 40% in the 1890s. They were all *de jure* central taxes.

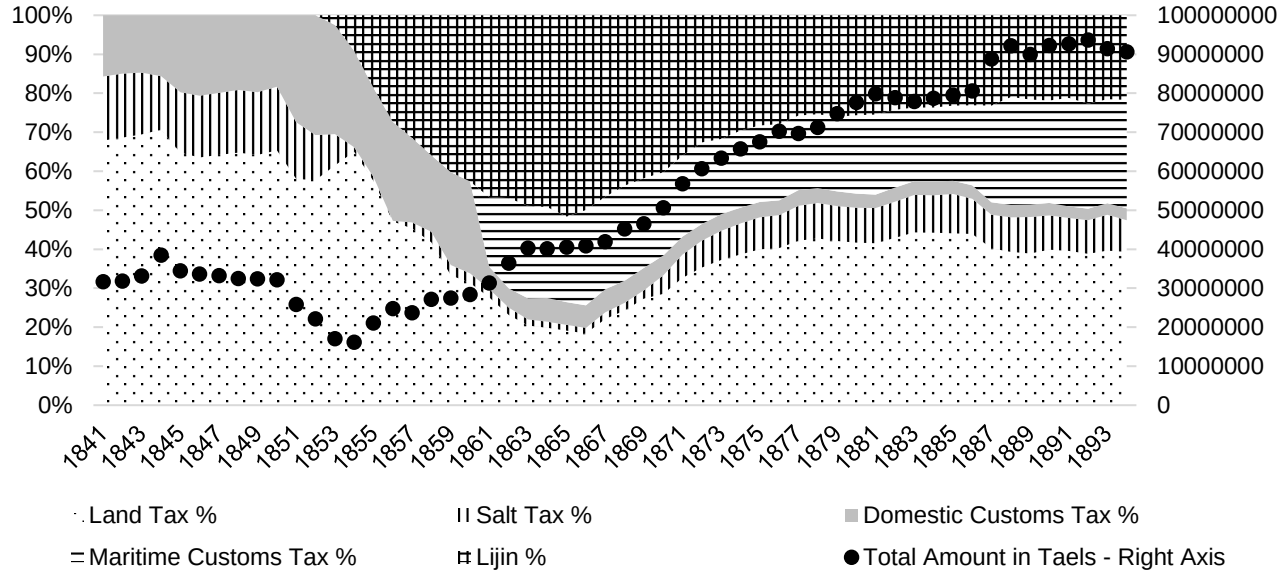


Figure 3.10. Qing National Fiscal Revenue Structure, 1841-1894 (in Silver Taels)

Notes and sources: 1. Data are from Liu (1901), Tang (1992), Ni (2013, 2017a), and Zhou (2011). 2. For years with missing data, I construct exponential, logarithmic or linear models with existing data points, and interpolate values case by case. 3. Miscellaneous taxes (<4% of national revenue) are omitted due to lack of high-quality data.

In contrast, the *lijin* since its emergence played an increasingly important role. During 1853-64, the rapid and steady growth of the *lijin* income was driven by military needs, and the annual national level increased from 0.4 million to 17.6 million silver taels with an annual growth rate of 46%. The share of the *lijin* in the national government revenue once reached 40-50% during

[46] Here is an example of how the increasingly autonomous provinces challenged the withering central state in the post-Taiping era. In 1864-68 the Board of Revenue attempted to be more decisive and commanded Jiangsu, Hubei and Hunan to close or consolidate their *lijin* stations and remit a fixed portion to Beijing. However, in the meantime the Board encountered great difficulties in raising funds for Zuo Zongtang's costly expeditions in northwestern China while the eastern provinces refused to help, with the excuse of shrinking *lijin* income. As a compromise the Board had to withdraw its intervention on local *lijin* affairs (Luo, 1936, Chapter 2; Ma J., 2004, Chapter 2).

the mid-century crisis. After 1864 the *lijin* institution was still run by local governments and the annual average income totaled over 20 million. In the 1890s, despite the recovery of other types of central taxation, the *lijin* still took a stable share of approximately 20% in the total Qing revenue as shown in Figure 3.10.

In sharp contrast to the pre-1850 image, the annual fiscal revenue for the Qing state, central and local combined, more than doubled in the second half of the 19th century. Regarding the incremental part, the autonomous and independent local *lijin* taxation, a *de facto* local institution, made a significant contribution. This was not only a growth in number but also a profound change in central-local fiscal structure.

Measuring the *Lijin* Taxation at the Prefectural Level

In the current literature, all quantitative evidence on the *lijin* taxation is constructed at the provincial level (Zhou, 2011), but this section aims to map the nationwide spatial variation of the *lijin* taxation for 266 prefectures with primary resources (Chen, 2015). Unlike most Qing fiscal records well documented by central government, the *lijin* records are considerably inconsistent and incomplete since local governments were unwilling to disclose them, which makes it very challenging to measure the prefectural *lijin* operations.

This section makes a breakthrough by coding the information in *The Late Qing Fiscal Reports* (*Wanqing Caizheng Shuomingshu*, compiled by Chen (2015)). In the last three years of the Qing Empire (1908-11) the new Board of Finance (*duzhibu*) launched the Fiscal Reorganization Campaign (*qingli caizheng*) as part of the Constitutional Reform: the *ad hoc* Bureaus of Fiscal Reorganization (*qingli caizhengju*) conducted unprecedentedly detailed surveys to uncover the black box of local fiscal operations since the Taiping crisis. 20 supervisors were sent to provinces and responsible for surveying the local fiscal revenue and expenditure and compiling relevant reports. Their outputs disclosed various information on late Qing local fiscal conditions including the *lijin* operations, most of which had been unknown to the central authority since 1853.[47] Two concerns arise when these materials are reexamined. First, since the most reliable information was cross-sectional, compiled in 1908-11, it is difficult to establish a yearly panel dataset for all prefectures over decades. Secondly, very few provinces recorded *lijin* revenue data at the prefectural level; hence it is necessary to find other alternative measures.[48]

Considering the first limitation, this section establishes a cross-sectional *lijin* dataset at the prefectural level. As indicated in the above discussions, over 70% of the *lijin* stations were

[47] In addition to *The Reports*, the *lijin* surveys by Luo (1936) and the relevant materials in BL (2006) are used for a crosscheck.
[48] Among 18 provinces in China Proper, only Jiangsu, Zhejiang and Shaanxi recorded the prefectural annual *lijin* revenue for a certain year of the 1900s in their reports.

introduced by 1864 and there were merely fine-tuning changes afterwards. Although the dataset here reflects the 1908 situation, it should well represent the general pattern of the *lijin* taxation for the entire late Qing era. For the second concern – the lack of revenue data – this section employs the number of the *lijin* bureaus and stations as a key measure at the prefectural level. This should be a reasonable measure of the local *lijin* taxation capacity. The local *lijin* institution was spontaneous and autonomous, with little central planning or intervention. Moreover, as this was a tax on goods in transportation, directly collected along roads and waterways, the geographical distribution of the *lijin* bureaus and stations must be rational so that the local governments could capture the flows of goods. Workloads of bureaus and stations must be comparable, too. Those with light workload could be abolished while a busy one could be split into two new ones.

Therefore, it is necessary to survey the organizational structure of the *lijin* institution across provinces and verify the comparability of the *lijin* stations' sizes among and within provinces. Although the Board of Revenue provided no guidelines, all provinces owned a similar structure for the *lijin* apparatus through mutual learning. Within a province, the provincial bureau was responsible for general supervision and coordination; since the employees there played a managerial role, the sizes of provincial bureaus remained comparable to its subordinates, and there was no siphon effect on the lower-level stations.[49] Under a provincial bureau, the main *lijin* stations were the major touchpoints for taxpayers.[50] Besides, as some regions had complex geographical conditions or heavy workloads, there could be additional stations under certain main ones.[51] Table 3.2 summarizes the organizational structure for the *lijin* institution within a province.

To ensure that the sizes of the *lijin* bureaus and stations were comparable, Table 3.3 collects the only available numbers of employees per bureau or station from the reports of Jiangsu, Hubei, Jiangxi, Hunan, and Shandong provinces. A provincial bureau had 24-39 managerial employees. For main stations, if the outlier Shanghai Railway *lijin* station is excluded, each main station had 33 employees on average. The range of numbers varied between 21 and 56. Finally for the additional stations, the numbers had a wider range between 3 and 11 due to the varying geographic conditions and workloads. In general, a rule of thumb from the existing records was that each provincial bureau or main station hired approximately 30 employees.

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[49] Usually there was one provincial bureau within a province. Three provinces had more than one. Zhili had two, Tianjin and Daming divisions; Anhui had three, Shengcheng, Wanbei and Wannan divisions; Jiangsu had three, Jinling (Jiangning), Suzhou and Songhu (Shanghai) divisions.

[50] Different names such as *ju*, *chang* and *ka* were used. For simplicity this chapter uses the name 'station' for all provinces.

[51] The numbers of additional stations varied significantly. For example in Guangxi and Gansu, the main stations took most responsibility and only a small number of them owned one or two additional stations; in Jiangsu and Zhejiang however, usually each main station could own over five additional stations; in Shanghai the largest main station set up over 20.

Table 3.2. The Structure of the *Lijin* Institution within a Province

Name	Provincial Bureau *(shengju)*	Main Station *(zhengqia)*	Additional Station *(fenqia)*
Level	High	Middle	Low
Responsibility	General supervision	Tax collection	Tax collection and inspection
Number	1 or 2 for a province	0, 1 or more for a prefecture For provinces, Min: 6 in Zhili Med: 36 in Hunan Max: 74 in Zhejiang	0, 1 or more for a prefecture For provinces, Min: 12 in Zhili and Shandong Med: 59 in Anhui Max: 390 in Jiangsu

Note: 1. Four provinces, Hubei, Guizhou, Sichuan and Shanxi, had no records for the numbers of additional *lijin* stations.
Source: see text.

Table 3.3. Available Records for Number of Employees in *Lijin* Bureaus and Stations

Name	Provincial Bureau *(shengju)*	Main Station *(zhengqia)*	Additional Station *(fenqia)*
Number of Employees Per Bureau or Station	Hunan: 39 Jiangsu (Suzhou Div.): 24 (plus 16 runners) Jiangsu (Shanghai Div.): 28 (plus 20 runners) Shandong: 28 (plus 20 runners)	Jiangsu: Shanghai Railway: 76 Wusongjiang: 32 Minhang: 31 Wuku: 21 Yanjiaqiao: 21 Liuhe: 36 Hubei: Shashi: 22 Jiangxi: Hukou: 56 Ertaokou: 44	Jiangsu: Wusongjiang, Minhang, Wuku and Yanjiaqiao: 4 for each Liuhe: 5 for each Hubei: Shashi: averagely 3 for each Jiangxi: Ertaokou: averagely 11 for each

Source: see text.

Meanwhile, the reports of Jiangsu (Suzhou and Songhu divisions), Jiangxi, Hunan and Shandong provinces mentioned their total numbers of *lijin* employees during 1905-08. Since this section obtains the numbers of stations for provinces, Table 3.4 calculates the estimated average number of employees per station for a crosscheck. Consider Jiangsu (Suzhou and Songhu only) as an example: 1,566 employees worked in 27 main stations, and each main

station owned eight additional stations on average. Therefore, for one main station plus eight additional ones, the number of employees should be 56, which is consistent with the facts in Table 3.3. So are the Middle Yangzi provinces Jiangxi and Hunan. The only data for northern China was from Shandong where a smaller number was acceptable as it was much easier to tax in the northern plain of China.

Table 3.4. Crosscheck for Number of Employees in the *Lijin* Bureaus and Stations

Province	Total Number of Employees in 1905-08	Number of Main *Lijin* Stations	Average Number of Employees Per Stn. (1 Main + N Additional)
Jiangsu (Suzhou+Songhu)	1566	27 (8 additional per main stn.)	1566 / 27 = 58
Jiangxi	1937	54 (2 additional per main stn.)	1937 / 54 = 36
Hunan	2431	36 (5 additional per main stn.)	2431 / 36 = 68
Shandong	208	16 (1 additional per main stn.)	208 / 16 = 13

Note: 1. Numbers in the second column are from the *Reports*. Those in the third column are collected by this study, described later.
Source: see text.

Since the sizes of the *lijin* stations were comparable, this section regards the number of the *lijin* stations as a reasonable measure of the local *lijin* taxation capacity.[52] Here is an example of data collection in the six prefectures of southern Jiangsu: Suzhou, Changzhou and Zhenjiang prefectures were supervised by Suzhou division; Songjiang and Taicang were by Songhu division; Jiangning were by Jinling division. The names of the *lijin* stations were listed in *The Reports*, many of which were simply the names of towns, rivers or even communities that have persisted until today. Figures 3.11 plots the locations of the main *lijin* stations and implies the rationality of their geographical distribution. The stations were set along roads and waterways, and for regions such as Shanghai with more intensive commercial activities, more stations were set to tax the goods in transit. The geographical distribution of the *lijin* stations also explained how the local Qing governments were able to generate alternative income to suppress the Taiping Rebellion despite warfare: although the Taiping regime occasionally occupied certain cities, the rural area with townships was out of their control and short-distance goods

[52] Another cross check: since three provinces, Jiangsu, Zhejiang, and Shaanxi, provided the annual *lijin* revenue data at the prefectural level, this section plots the revenue against the number of main stations for them and finds a strong correlation.

transportation among them was still possible; the Middle and Lower Yangzi region was inherently suitable for local goods transportation because of its intricate waterway networks.

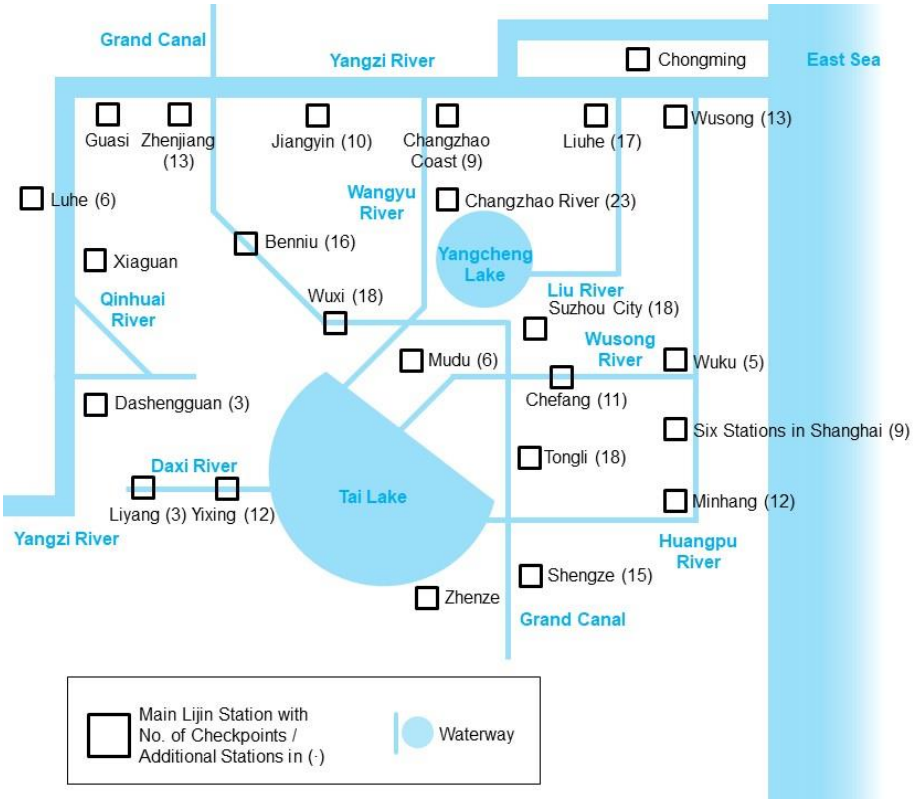


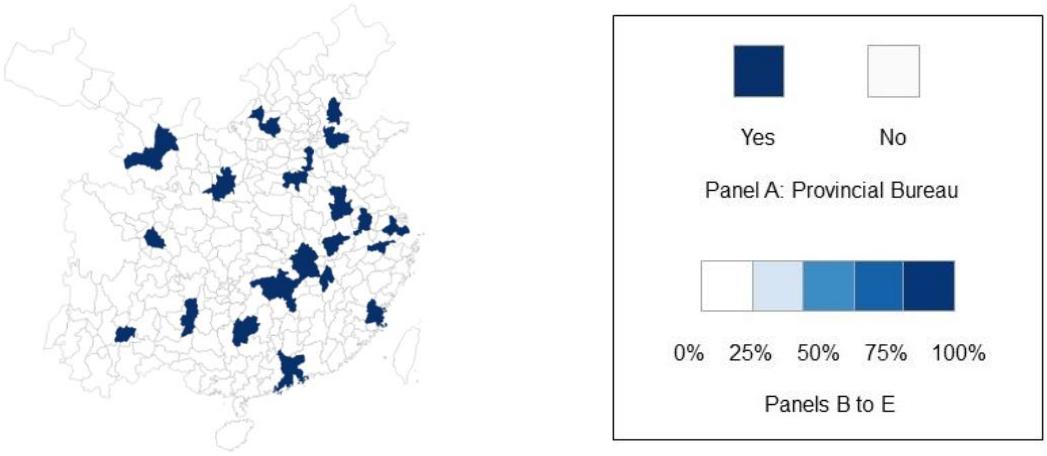
Figure 3.11. *Lijin* Stations in Southern Jiangsu

Source: see text.

After counting the numbers of stations for all 266 prefectures in 18 provinces, this section constructs a cross-sectional dataset where each prefecture has three values, namely the numbers of provincial bureau, main stations, and additional stations. Furthermore, this section provides two alternative measures of prefectural *lijin* taxation based on the above discussion. The first estimates the number of the *lijin* employees within a prefecture. With reference to Tables 3.3 and 3.4, I assume that each provincial bureau had 30 employees and that each main station with a cluster of additional ones had 54 employees in the southeastern coastal, Middle and Yangzi provinces and 13 in the remaining provinces.[53] The second alternative measure is the annual *lijin* revenue for a prefecture by the end of the 19th century. Since Zhou (2011) collects annual *lijin* revenue for each province, this section calculates the average provincial revenue in 1890-99 and assumes that within a province, the workload for each *lijin* station was similar. The prefectural annual *lijin* revenue should be proportional to its number of stations,

[53] The guesstimated total number of *lijin* employees for all 18 provinces is consistent with Luo (1936, Chapter 3).

and the provincial revenue can be allocated to prefectures as an approximate estimation. Figure 3.12 provides the visualization for all these measures on a national scale.



Panel A. Provincial Bureaus

Panel B. Main Stations

Panel C. Additional Stations

Panel D. Estimated Number of Employees

Panel E. Estimated 1890s Revenue

Figure 3.12. *Lijin* Taxation at the Prefectural Level

Notes: 1. Four provinces lacked relevant information in Panel C. 2. The prefectural-level data are weighted by the land size in Panels B to E.

Source: see text.

The prefectural-level data in the above figure indicates two features of the *lijin* taxation – independence among different regions, and the strong impact of the Taiping Rebellion. Since this chapter also constructs an original prefectural-level dataset for the Taiping warfare in Section 3.1, it is useful to reexamine the story at a micro level, which is quite lacking in the literature.

Figure 3.13 employs the cross-sectional data and plots the *lijin* taxation to the Taiping impact at the prefectural level. It uses different measures for the Taiping impact, and a significantly positive correlation holds. In another word, despite the moderate institutional learning by certain regions without Taiping warfare, suppressing the rebellion remained the key impetus for local governments to introduce the *lijin*; after 1864, they preserved the *lijin* institution well and only made fine-tuning adjustments, so that the *lijin* became the mainstay of local public finance. Understanding the role of Taiping Rebellion matters; there could be booming trade in regions with little or light Taiping impact, such as Beijing, Chengdu, and Jinan, but they never had an opportunity to build a strong *lijin* system during the second half of the 19th century.

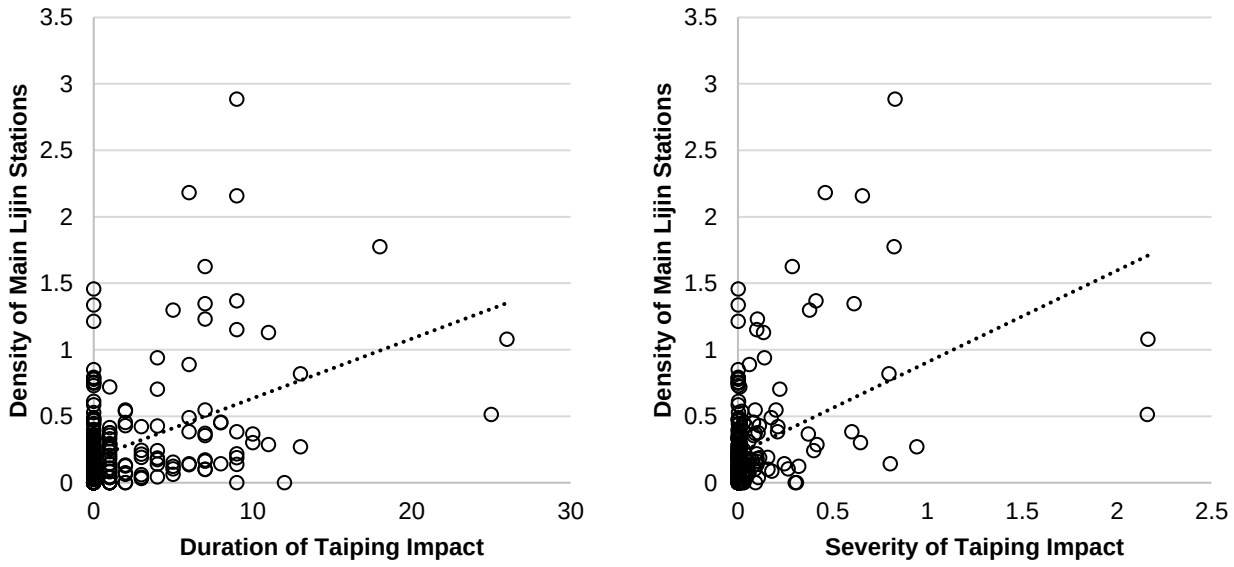


Figure 3.13. Taiping Impact and *Lijin* Taxation at the Prefectural Level

Source: see text.

Moreover, the prefectural-level 1820 land taxation data by Liang (1980) make it feasible to examine how the *lijin* taxation substituted the land taxation during the Taiping crisis at the micro level. When warfare became intense after 1851, the Qing land tax revenue shrunk sharply. Firstly thousands of soldiers and commoners died of armed conflicts every year, and many fled

(Li and Lin, 2015); furthermore, the insufficient labor input constrained the labor-intensive agricultural production in the warzone. Meanwhile the short-sighted Taiping regime was unable to maintain agricultural infrastructure such as the irrigation system. Both landlords and peasants were reluctant to invest in agriculture for fear of uncertainty and insecurity. Agricultural recession and the consequential lack of land taxation were important conditions for the rise of the *lijin*. If agricultural production was normal and the land tax was collected smoothly, the Qing officials could simply retain the revenue for military purposes. However, as described earlier, the national land tax revenue shrunk by 45%, which forced the local governments in the warzone to turn to the *lijin*. Given other factors constant, the prefectures with heavier pre-Taiping land tax burden would rely more on the *lijin* under the shadow of the war.

To capture both the pre-Taiping land tax burden and the warfare severity, this part introduces a propensity score at the prefectural level – the 1820 land tax revenue (Liang, 1980) times the impact of the Taiping warfare. Figure 3.14 plots the density of the *lijin* stations to this propensity score, and there is a strong positive correlation. The mechanism is that the Taiping impact strengthened the role of the *lijin* as a substitute for land tax. For the prefectures with heavier land taxation prior to 1850, the warfare would push them to generate more alternative revenue – the *lijin* – to compensate for the shortage of land taxation and finance the urgent military actions.

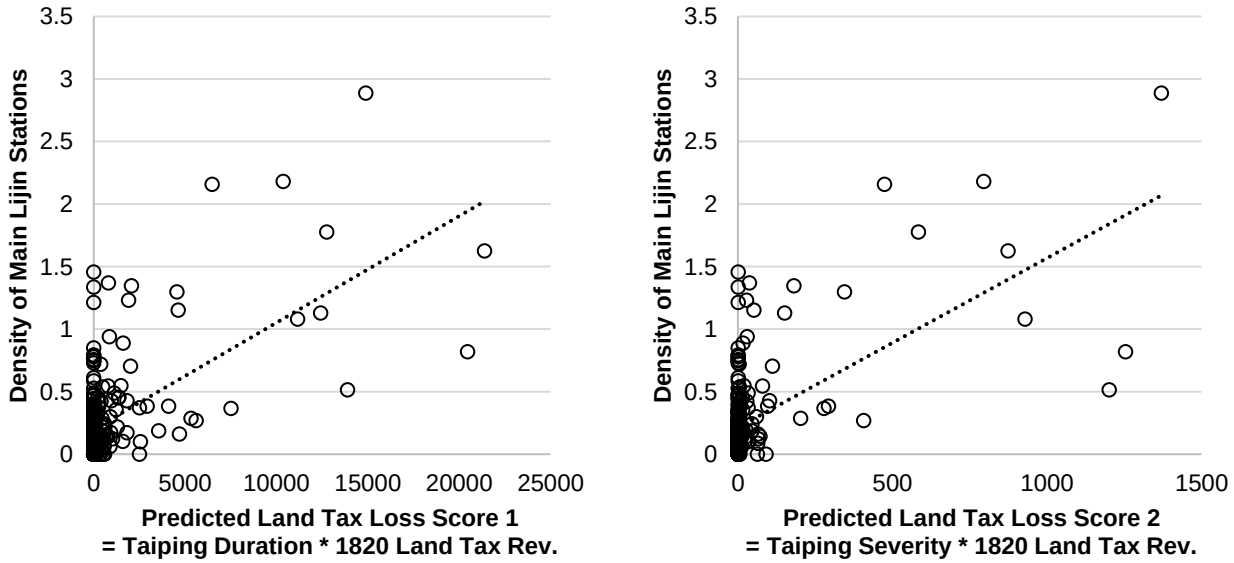


Figure 3.14. Taiping Rebellion, Land Tax Loss and *Lijin* at the Prefectural Level
Source: see text, and Appendix A.

A Survey on the *Lijin* Institution

The final question of the chapter is why the *lijin* taxation made a notable contribution to the Qing fiscal regime even after the Taiping crisis. In fact, the *lijin* system was run for decades (1853-1931) even after the fall of the Qing Empire. Chapter 4 will provide a comparative study of the *lijin* system and other late Qing indirect taxation institutions, while this part discusses the *lijin* separately and concludes that the *lijin* system persisted at the local level because of its incentive structure, flexibility, and low risk of mass tax revolts.

The *lijin* institution was self-serving, and local governments especially at the provincial level had considerable autonomy to set or withdraw stations, hire or dismiss employees, and adjust tax rates without central supervision. As most of the *lijin* income was retained for local use, local governments had reasonably strong incentives to keep the *lijin* system efficient and flexible. For example, the personnel management of the *lijin* system was out of the Board of Personnel's (*libu*) control. Within a province, the provincial bureau, under the governor, directly appointed managers for *lijin* stations without central approval. Based on local conditions, a station hired a certain number of clerks and patrolmen, most of whom were without an exam degree (Luo, 1936, Chapter 3).

Table 3.5. The Structure of Staff for the *Lijin* Stations

Main Station	Location	Number of Employees	Manager *(Weiyuan)*	Clerk *(Sishi)*	Patrolman *(Xunding)*
Shanghai Railway	Songjiang, Jiangsu	76	2	50	24
Wusongjiang ⋆	Taicang, Jiangsu	72	3	37	32
Minhang ⋆	Songjiang, Jiangsu	67	1	36	30
Wuku ⋆	Songjiang, Jiangsu	45	1	24	20
Yanjiaqiao ⋆	Songjiang, Jiangsu	53	1	28	24
Liuhe ⋆	Taicang, Jiangsu	121	2	71	48
Shashi ⋆	Jingzhou, Hubei	68	1	39	28
Yuezhou	Yuezhou, Hunan	114	5	53	56
Hukou	Jiujiang, Jiangxi	56	2	34	20
Ertaokou ⋆	Jiujiang, Jiangxi	69	3	34	32

Notes: 1. Only the managers held an exam degree of a certain level. 2. Yuezhou had another 170 runners, 192 sailors and 60 temporary porters for tea *lijin* collection in the season of tea trade. Ertaokou had another 64 temporary sailors. 3. The data of stations with ⋆ included the employees of additional stations/checkpoints.
Source: see text.

Table 3.5 provides the available personnel information for ten *lijin* stations in the Middle and Lower Yangzi provinces. As discussed in the previous part, the sizes of most *lijin* stations

were comparable, and such self-serving stations would not keep unnecessary positions to accommodate redundant employees. Taxation on some commodities such as tea was highly seasonal, and a *lijin* station would only hire additional runners seasonally, too. Within-province and even within-station personnel management also mitigated the principal-agent problem compared with the traditional Qing hierarchical bureaucracy: should there be any abuse by an employee, the station, the provincial bureau and even the governor himself would be better informed.

Meanwhile, the operational expenses for *lijin* stations were strictly monitored by provinces. Most of them used less than 10% of the income to run the system, which was much more cost-saving than running the regular Qing bureaucracy (Chen, 2010, Chapter 5; Deng, 2012, Chapter 3). Figure 3.15 plots the provincial *lijin* operational expense rates with the data in Luo (1936). The Middle and Lower Yangzi provinces even had a lower expense rate than the 10% benchmark due to the economy of scale in taxation. For example, a Middle Yangzi province (Jiangxi, Hunan or Hubei) spent approximately 0.1 million taels every year to run the *lijin* apparatus. This was the salaries of only six grade-two (*erpin*) central officials (Li, 1908, Vol.251).

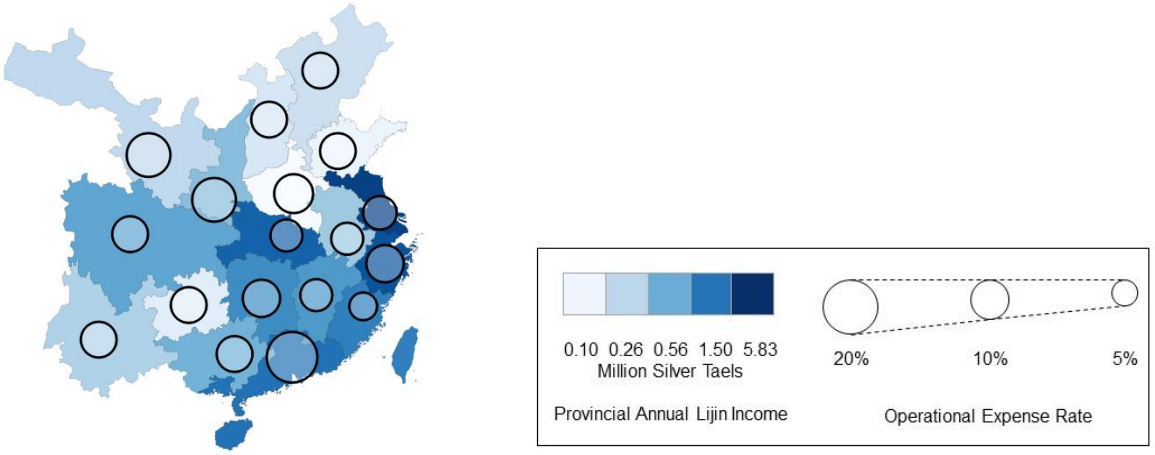


Figure 3.15. Annual *Lijin* Income and Operational Expense for Provinces, 1890s
Notes: 1. The provincial annual *lijin* income is the mean value of 1890-99 in Zhou (2011).
Source: see text.

In addition to organizational efficiency and flexibility, the *lijin* taxation process *per se* was more responsive to local economy than the traditional Qing land taxation had done. Since the *lijin* was a tax on goods, it could be collected during their production, transportation, or sales, named departure *lijin* (*chuchandi lijin*), transit *lijin* (*tongguodi lijin*), and terminal *lijin* (*xiaoshoudi lijiin*) respectively. All three types were flexibly adopted in different provinces, but the transit *lijin* accounted for a dominant share and is the focus of this chapter. To tax the goods in transit, the *lijin* stations were set in the trade and transportation hubs and the key junctions of roads

and waterways. The departure *lijin* was imposed on some indigenous products such as silk in Hunan and tea in Zhejiang before transportation; a pass would be issued and verified during transportation. The terminal *lijin*, adopted in a few provinces only, targeted the stationary merchants and their stores and accounted for a small share.

Table 3.6. *Lijin* Types and Rates for 18 Provinces

Province	Transit *lijin* rate and procedure	Departure *lijin*	Terminal *lijin*	Tax farming by guilds
Jiangsu	5% per station	No	No	Shanghai
Anhui	2% per station	No	No	
Zhejiang	West: 2.75%-5.5% (up to twice) East: 2.5%-10% (up to four times)	Silk only	No	
Jiangxi	2.5%-10% (up to four times)	No	No	
Hunan	3%-6% (up to twice)	Tea only	Yes	
Hubei	2% per station	No	No	Hankou
Fujian	2.5%-10% (up to four times)	No	No	
Guangdong	3.75%-7.5% (up to twice)	No	Yes	Canton
Guangxi	2% per station	A wide range of products	No	
Yunnan	5% on average	No	Unknown	
Guizhou	Unknown	No	Unknown	
Sichuan	2%-4% (up to twice)	No	No	
Zhili	1.25% on average	No	Yes	Tianjin
Henan	1.625% on average	No	Opium only	
Shandong	2% (once)	No	No	
Shanxi	1.5% on average	No	Opium only	
Shaanxi	4% (once)	No	Yes	
Gansu	1%-2% per station	Tea only	Yes	

Notes: 1. The merchants paying departure *lijin* for tea, silk, etc. were usually eligible to enjoy a low transit *lijin* rate. 2. The taxation process of Fujian, Jiangxi and eastern Zhejiang was called 'double-tax-double-check' (*liangqi liangyan*). When merchants passed the first and third stations, they paid the *lijin*; when passing the second and fourth, they paid a 'verification tax' (*yanshui*). No substantial differences between the *lijin* and the *yanshui*; hence the goods were levied four times in total if the transport distance was long enough.
Source: see text.

All provinces emphasized the importance of direct collection via stations, and tax farming was extremely rare to prevent the 'involution' (Duara, 1991) of the collectors. Tax farming was only adopted in highly commercialized cities such as Shanghai, Tianjin and Canton, where certain guilds collected the *lijin* from their members and remitted the *ex ante* agreed portion to the *lijin* stations. However, even in Shanghai, the most prosperous treaty port of China, the guilds contributed less than 10% of the annual income for the Songhu division.[54] On a national scale, direct collection via stations – significant progress made by governors – minimized the collectors' illegal rents and improved the extractive efficiency of the local governments.

The tax rates varied across provinces. Lei Yixian, the *lijin* creator, set it as 1% in Yangzhou in the initial phase. As the *lijin* institution spread to different regions, the tax rates and procedures became diverse to adapt to local geographical and economic conditions in different regions. The total *lijin* burden for a batch of goods usually depended on the transport distance, whereas in different provinces, a batch of goods could be taxed once, twice or multiple times. For example, Shandong taxed goods in transit only once and issued a pass for future inspection; Hunan taxed them once or twice, and the total *lijin* rate must not exceed 6%; Jiangsu, Anhui, Hubei, Guangxi and Gansu taxed them at every station without an upper limit. Therefore, it is challenging to compare the *lijin* burdens among provinces directly. A general conclusion is that the average *lijin* burden in the northern provinces was quite low (1%-4%), while the Middle and Lower Yangzi provinces set higher rates with a larger variation (2%-20%). For example, a batch of goods might be taxed at 15%-20% in southern Jiangsu where the *lijin* stations were densely set. In a word, the taxation rates and procedures were stipulated locally, showing a sharp contrast to the rigid and centralized land taxation system.

When Lei Yixian launched the *lijin* experimentation in 1853, the grain sector was the target. After it was widely applied across China, the taxable goods covered a wide range of produce relevant to daily life.[55] The regulations on the taxable goods were strikingly detailed, and five provinces attached their goods lists in *The Reports*. Jiangsu stipulated 1241 types of taxable goods and Zhejiang specified 682 (Chen, 2015, 'Sushu', 'Zhejiang'). Guangxi had the most detailed list with 1942 types of goods in 29 categories (excluding salt and opium) (Chen, 2015, 'Guangxi'), where multiple taxation was a concern. The primary products such as wood and bamboo were taxed, as were the woodenware and bamboo ware, which substantially increased

[54] Motono (2000) studied how the guilds in Shanghai tax-farmed the *lijin* collection, but he does not consider its magnitude in the total *lijin* income of Shanghai, not to mention its external validity for China as a whole. From a national scope his study exaggerates the role of guilds in the late Qing *lijin* institution. Similarly, Mann (1987, Chapters 6-7) also holds a quite negative view on the *lijin* institution based on several regional cases.

[55] Zhou (2011) divides the *lijin* into general *lijin*, tea *lijin*, salt *lijin* and opium *lijin*. Note that the foreign opium *lijin* (*yangyaoli*) was taxed by the maritime customs (see Chapter 4), not the domestic *lijin* stations.

the *lijin* burden of merchants.[56]

Table 3.7. Taxed Goods in Guangxi *Lijin* Institution

Category	No. of goods type	Category	No. of goods type	Category	No. of goods type
Grain	5	Metal	36	Bamboo ware	6
Wood	107	Mineral	15	Chinaware	47
Bamboo	21	Cloth	59	Paper	108
Herb	271	Clothing	141	Paint	18
Fruit	34	Accessory	128	Tea	4
Animal skin	15	Jewelry	28	Liquor	21
Animal fur	4	Silk product	84	Tobacco	6
Livestock	10	Wool product	13	Food	84
Wild animal	97	Appliance	40	Uncategorized	355
Aquatic product	65	Woodenware	120		

Source: see text.

Although the *lijin* institution received many criticisms since its inception in 1853 (see Chapter 2), an unshakable fact was that the *lijin* taxation caused very few mass tax revolts during late Qing era. With the mandate of heaven as the orthodox legitimacy, tax resistance was always a major threat to the Qing reign (Wong, 1997, Chapter 10). In late 19th-century China, land taxation contributed little to the making of a modern fiscal state due to its low flexibility, limited growth potential and high costs of statistics and operations. Contrastingly, imposing an indirect tax on transported goods brought much lower costs for the local governments, whereas the potential income was considerable, but the risk of the mass tax revolts was minimal because of its variable tax burden. During 1852-53, irrevocable political decentralization made local governors more accountable to the local public affairs particularly the fiscal-military imperatives, so the self-serving governors needed to find the most cost-effective way to finance themselves. The *lijin* was an ideal choice. This explained why governors such as Zeng Guofan or Li Hongzhang always defended it; in fact, all impeachments for the *lijin* abolishment were initiated by the officials in Beijing during the Tongzhi (1862-74) and Guangxu (1875-1908) reigns (Luo, 1936, Chapter 2).

★★★

Political disorder plays a crucial role in strengthening the fiscal capacity for a state. This

[56] The number of goods types is not an ideal proxy for how mature the local market economy was. For example, Jiangsu had 1241 taxable types, but 518 of them were herbs; in Zhejiang with similar geographical conditions there were only 73 herbs because the officials took a simpler classification (Chen, 2015, 'Zhejiang'). Since only 5 out of 18 provinces had such lists, the implications drawn should be very tentative.

chapter considers a domestic uprising in the chaotic mid-19th-century China and studies how the forced fiscal-military decentralization triggered the transitional process of China's fiscal modernization. The Taiping crisis with the sharp decline of land taxation pushed local governments to introduce a novel indirect taxation system and to finance the military exigencies by and for themselves. After the crisis, the self-serving local *lijin* institution persisted for decades, and the *lijin* income became an indispensable local fiscal resource, marking the birth of the legitimate local public finance in modern China.

This chapter highlights the importance of the late Qing decentralization in the fiscal transitions and leaves some questions to be answered in the following chapters. Chapter 4 visits other Qing indirect taxation apparatus, the domestic and maritime customs, and discusses how the *lijin* interacted with them. Chapter 5 considers the governors' public borrowing as a result of their growing fiscal autonomy. Chapter 6 addresses the expenditure aspect, investigates the local public spending pattern, and connects the local fiscal autonomy to the bottom-up Self-Strengthening industrialization.

4

Indirect Taxation

Donations from rich tycoons were limited, while taxation on goods transportation was infinite.

Lei Yixian

(FHAC, 1996, Vol.13-305-306)

As outlined in Chapter 3, the Taiping Rebellion played a significant role in the fiscal-military state building of late Qing China. Scholars such as Fairbank (1978, 1980, 1983), Mao (1995) and Lovell (2014) stress how the First Opium War (1840-42) led to the decline of the empire, but this study regards the Taiping Rebellion as a turning point of the Qing governance. Since the centralized, rigid, and vulnerable fiscal regime was unable to finance the massive military actions to suppress the Taiping Rebellion, the Qing court was forced to grant fiscal, military, and administrative autonomy at the local level for dynastic longevity. The forced and expedient power decentralization yielded an unexpected gain. After years of the Taiping warfare, the central state held considerably weaker control over provinces, the autonomy of which served the ultimate impetus for the making of a more dynamic and responsive state. During this bottom-up transformation, the amount of national tax revenue and public expenditure reached an unprecedentedly high level. Chapter 3 concludes that the

introduction of the *lijin* as a novel indirect tax was the local governments' initial attempt to strengthen China's fiscal capacity. This chapter continues to discuss China's indirect taxation during late Qing period but expands the scope by providing a comparative survey of three indirect taxation institutions, namely the *lijin*, domestic and maritime customs.

Here is a sketch for the pre-1850 Qing taxation. 70% of the annual tax revenue was from land, whereas the remainder comprised customs revenue, monopoly income of salt sales, etc., the volumes of which were quite stable for centuries. However, when the Qing Empire ushered in its end in the 1900s, the annual fiscal revenue more than doubled. As Chapter 3 indicates, land taxation and salt sales contributed very little to the incremental part and there were merely fine-tuning changes to their operations. Meanwhile, various indirect taxes, especially those on transported goods, grew steadily and accounted for the remarkable fiscal expansion in the second half of the 19th century. This chapter aims to assess this expansion.

Section 4.1 evaluates the efficiency of the pre-1850 Qing domestic customs network. This unified network taxed transported goods on specific routes and was controlled by central government. Its annual income accounted for over 10% of the national tax revenue, and the nominal level grew very moderately from the 17th century onwards. Section 4.2 discusses why domestic customs experienced an irreversible decline after 1850. The Taiping warfare devastated several key customs in the network and caused a sharp decline in the domestic customs income. Meanwhile, the *lijin* was introduced where military actions occurred. It immediately filled the gap of indirect taxation and was retained at the local level irrevocably. Moreover, the defeat in the Second Opium War (1856-60) as an exogenous shock deprived the Qing Empire of its tariff sovereignty and gave birth to the novel Chinese maritime customs run by Western staff. The maritime customs, independent of domestic customs, were mainly responsible for collecting international trade taxes under the treaty port system imposed by Western powers, their annual income growth being notable. Therefore, during the final decades of the Qing Empire, the simplistic and static domestic customs withered, but a new 'duopoly' by the *lijin* and maritime customs came into being. Both were more effective and responsive taxation apparatus. Section 4.3 demonstrates how the *lijin* and maritime customs, for the interests of local and central governments respectively, competed by attracting more taxpayers due to the introduction of commutation tax. In short, through the five-decade fiscal transitions, flourishing indirect taxation broke the long-lasting low-level fiscal balance, became the most important fiscal income, and reshaped the central-local relationship of the Qing Empire, which was the most significant imperative in the fiscal state building of late imperial China.

This chapter aims to make two major contributions. Firstly, many research works are skeptical and even negative about the indirect taxation of modern China, but the criticisms as

a whole are contradictory and inconsistent. For example, He (1981), Zhou (2006, 2008) and Feng (2011) argue that heavy *lijin* burden severely discouraged interregional trades; meanwhile Tang (1992) points out that the maritime customs imposed so low rates that undermined the national fiscal capacity. Hence the scholars reach no consensus on what role indirect taxation should play and how high the indirect tax rate should be. This chapter holds a positive view on the late Qing indirect taxation. In the mid-19th century, both central and local officials acknowledged the unsustainability of the land-based public finance; instead, taxing commerce especially transported goods was cheap, workable, and sustainable given the technological and geographical conditions of 19th-century China. Indirect taxation made a substantial contribution to the late Qing public finance; more importantly it was leveraged for government debts and facilitated the public spending growth, which is examined in Chapters 5 and 6. This chapter aggregates several datasets on the *lijin* (see Chapter 3), domestic and maritime customs (Ni, 2017b; Tang, 1992) and provides an integrated image of late Qing indirect taxation. It also employs population, price and GDP datasets on China to calculate the relevant tax burden for the convenience of international comparisons.

The second contribution is that this chapter attempts to evaluate three institutions through comparisons. Joint studies on them are rare in the literature (Chen, 2010, Chapter 1 for a survey). Previous works focusing on a single institution tend to attribute its triumph or failure to the quality of bureaucracy (Zhou and Wang, 2012, for a case study of maritime customs) but this explanation is unsatisfactory. If the domestic customs were outperformed by the maritime ones because of corrupt and incompetent Chinese officials, how do we explain the notable growth of the *lijin* revenue? After all, the indigenous *lijin* institution was at the local governments' control, and many *lijin* clerks even failed to pass the Civil Service Examinations. This chapter argues that accountability and taxation targets mattered. Both *lijin* and maritime customs performed robustly well because they were cash cows of local and central governments respectively; hence, the accountability was clear and strong. Meanwhile, their targets differed: the *lijin* was for short-distance trade while the maritime customs taxed long-distance trade by steamships. In another word, both of them were 'specialized', while the old domestic customs became undoubtedly redundant.[57]

4.1. The Pre-1850 Domestic Customs

Despite the unified territory, strong national identity and meritocratic bureaucracy, taxation was expensive for a giant pre-modern empire such as the Qing China. Typical challenges of

[57] Officials in all these institutions were self-interested and rational. Otherwise, there would be no *lijin*-versus-commutation-tax conflicts in Section 4.3.

direct taxation included costly censuses, operations and supervisions, with inevitable risks of tax resistance and even unrests (Wong, 1997, Chapter 10; He, 2013, Introduction). Indirect taxation was more cost-effective, but the government still needed to consider where to tax – places of production, transit, transaction, or consumption – for a higher level of income. Several indirect taxes were found during the Qing Dynasty, but their volumes and methods of taxation varied greatly. The salt tax was collected in production and imposed on the wholesalers. As mentioned in Chapter 2, the central government monopolized salt production and sales by designating licensed merchants to purchase and sell salt within specific regions. The license fees and 'donations' (*baoxiao*) by salt merchants accounted for over 10% of the pre-1850 government income. Moreover, some miscellaneous indirect taxes such as brokerage tax and pawnshop tax were imposed in places of transaction, but their share never exceeded 4% in the national tax revenue and was rarely filed by the Board of Revenue.

Furthermore, most indirect taxation of the Qing Empire took the form of customs tax – the focus of this chapter. This duty on goods was imposed at the transportation hubs on specific routes. This method of taxation was cost-efficient as the Qing state did not have to survey the production or sale of goods; it simply set 'domestic customs' (*changguan*) and monitored the flows of goods for both domestic and international trades.

The Qing domestic customs network was a substantial advance compared with the earlier Ming practices: the Ming finance relied strongly on land-poll and salt taxation while customs tax accounted for merely 3% of the total government income, even in the highly commercialized Wanli reign (1573-1620) (Dai, 1936, Vol.26; Liao, 2010, pp. 20-1). The Qing state consolidated, expanded, and standardized the domestic customs network to a great extent from the late 17th century, and its fiscal role became indispensable.[58] The network went on track from the early 18th century, which is outlined in Table 4.1 (Dai, 1936, Vol.26; Liao, 2010, Chapter 1; Ni, 2017b, Chapter 2).

Table 4.1. General Information on Domestic Customs of Early Qing China

ID	Name of Customs	Geographical Category	Level of Direct Supervisor
1	Guihuacheng	Border	Pre-1769: County 1769-1774: Province Post-1774: Circuit
2	Shahukou	Border	BOR
3	Zhangjiakou	Border	BOR
4	Gubeikou (W)	Border	BOW

[58] The Qing practice is not exceptional. The growth of trade taxes is widely witnessed in the global history of modern state building. For how indirect taxation increased in Britain after the Glorious Revolution, see North and Weingast (1989). For the indirect taxation of the earlier Chinese dynasties such as the Song and the Yuan, see Sun (2003), Liu (2015), and Von Glahn (2016, Chapters 6-7).

ID	Name of Customs	Geographical Category	Level of Direct Supervisor
5	Pantaokou (W)	Border	Pre-1794: County Post-1794: Circuit
6	Tongyongdao (W)	Border	BOW
7	Shanhaiguan	Border & Coast	BOR
8	Wuyuancheng (W)	Border	BOW
9	Dajianlu	Border	Pre-1780: BOR 1780-1882: Province Post-1882: Prefecture
10	Chongwenmen (Chongwen Gate) Zuoyi (Left Wing) Youyi (Right Wing) Zuoliangting (Grain Transport Department)	Grand Canal	*Chongwen Gate:* Pre-1762: Prefecture 1762-1822: BOR Post-1822: Top officials *Left/Right Wings & Zuoliangting:* BOR
11	Linqing Guan Linqing Gongguan (W)	Grand Canal	Pre-1714: BOR 1714-1756: Province Post-1756: Prefecture
12	Huai'an Guan Miaowankou Suqian Gongguan (W)	Grand Canal & Huai River	BOR & BOW
13	Yangzhou Guan Youzha Guan	Grand Canal & Yangzi River	Province
14	Xushu Guan (in Suzhou)	Grand Canal	Prefecture
15	Beixin Guan Nanxin Guan (W) (both in Hangzhou)	Grand Canal	*Beixin:* Pre-1718: BOR 1718-1793: Prefecture 1793-1820: Province Post-1820: Prefecture *Nanxin:* BOW
16	Wuhu Guan Wuhu Gongguan (W)	Yangzi River	Pre-1733: Province Post-1733: Prefecture
17	Xixin Guan Longjiang Guan (W) (both in Jiangning)	Yangzi River	Pre-1728: BOR & BOW Post-1728: Prefecture
18	Fengyang Guan	Grand Canal & Huai River	Pre-1749: Province Post-1749: Circuit
19	Jiujiang Guan	Yangzi River	Pre-1778: Circuit Post-1778: Province
20	Gan Guan	Yangzi River & Gan River	Prefecture
21	Wuchang Chang	Yangzi River	Prefecture
22	Jing Guan (W)	Yangzi River	BOW
23	Chen Guan (W)	Yangzi River & Yuan River	BOW

ID	Name of Customs	Geographical Category	Level of Direct Supervisor
24	Kui Guan	Yangzi River	Pre-1728: Prefecture 1728-1734: BOR 1734-1750: Prefecture 1750-1753: Circuit Post-1753: Prefecture
25	Yu Guan (W)	Yangzi River	Province
26	Wu Chang Xun Chang	Pearl River (West)	Province
27	Taiping Guan (in Shaozhou)	Pearl River (North)	Pre-1722: Prefecture 1722-1770: Province Post-1770: Circuit
28	Yue Haiguan (in Guangdong prov.)	Coast & Pearl River	BOR
29	Min Haiguan (in Fujian prov.)	Coast	Pre-1724: BOR Post-1724: Province
30	Zhe Haiguan (in Ningbo)	Coast	Pre-1720: BOR Post-1720: Circuit
31	Jiang Haiguan (in Shanghai)	Coast & Yangzi River	Pre-1722: BOR Post-1722: Province
32	Tianjin Guan	Coast & Grand Canal	Pre-1716: BOR 1716-1734: Province Post-1734: Prefecture (*Coastal Part, Post-1807:* Province)

Notes: 1. 'Guan', 'Gongguan', 'Haiguan', and 'Chang' denote customs. 2. Chen customs (No.23) was moved from Chenzhou to Changde during the Taiping Rebellion. 3. The table does not include domestic customs opened after 1850, such as Dong customs and New Hubei customs. 4. The table does not include customs outside China Proper, such as Fengtian customs in Manchuria and Yili customs in Xinjiang. 5. The direct supervisor's level is given in the last column. The supreme agent in charge was always the Board of Works (denoted as 'W' in the 'name of customs' column) or the Board of Revenue. 6. 'Circuit' (Dao) in the last column was an informal administrative level between province and prefecture.
Source: see text.

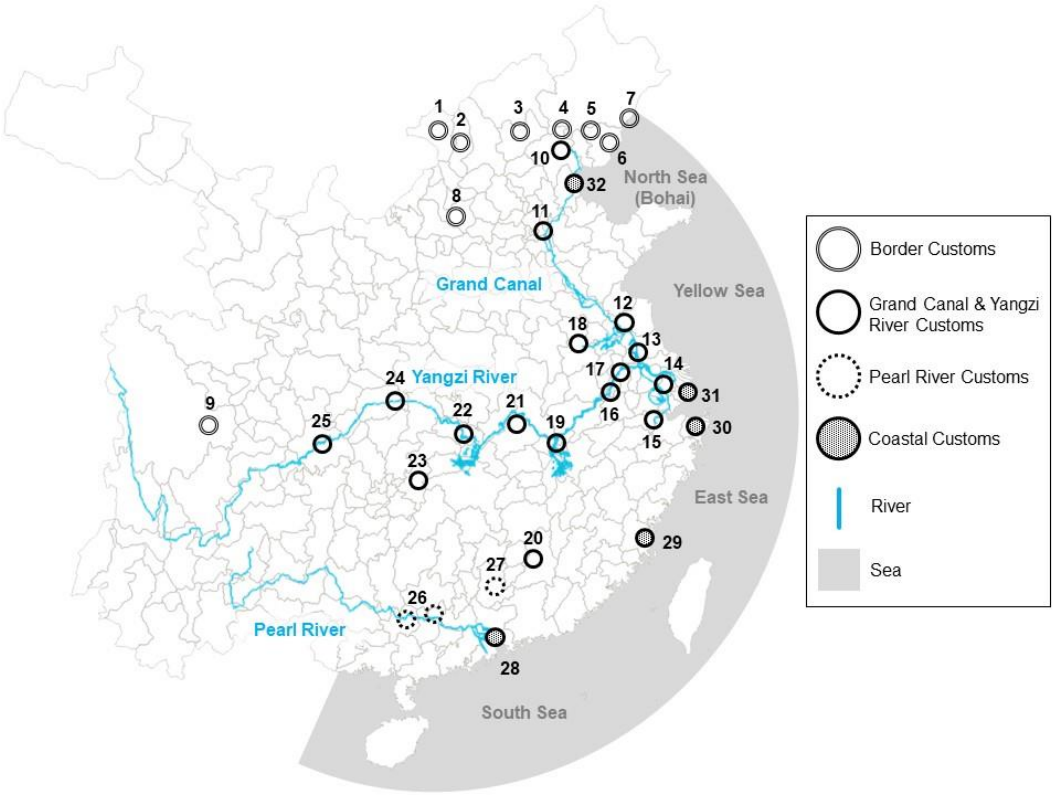
Figure 4.1 focuses on the spatial distribution of domestic customs. Four types of customs are shown in Panel A: first, the border customs were located along the Great Wall and in western Sichuan to capture the cargo flows between the peripheral regions (Manchuria, Mongolia and Tibet) and China Proper; second, the Yangzi River and Grand Canal customs controlled the key water transportation hubs of inland China; third, the Pearl River customs was responsible for taxing cargos of Guangdong and Guangxi; fourth, coastal customs were for

both domestic and international trades.[59] The number of domestic customs was strikingly small and their distribution was sparse: there were no more than 40 domestic customs across 18 provinces covering 4.3 million km^2, which was equivalent to setting only two customs throughout the United Kingdom; five provinces, covering 1.5 million km^2 in total, owned no customs at all; neither did other vast hinterlands such as Tibet and Mongolia.

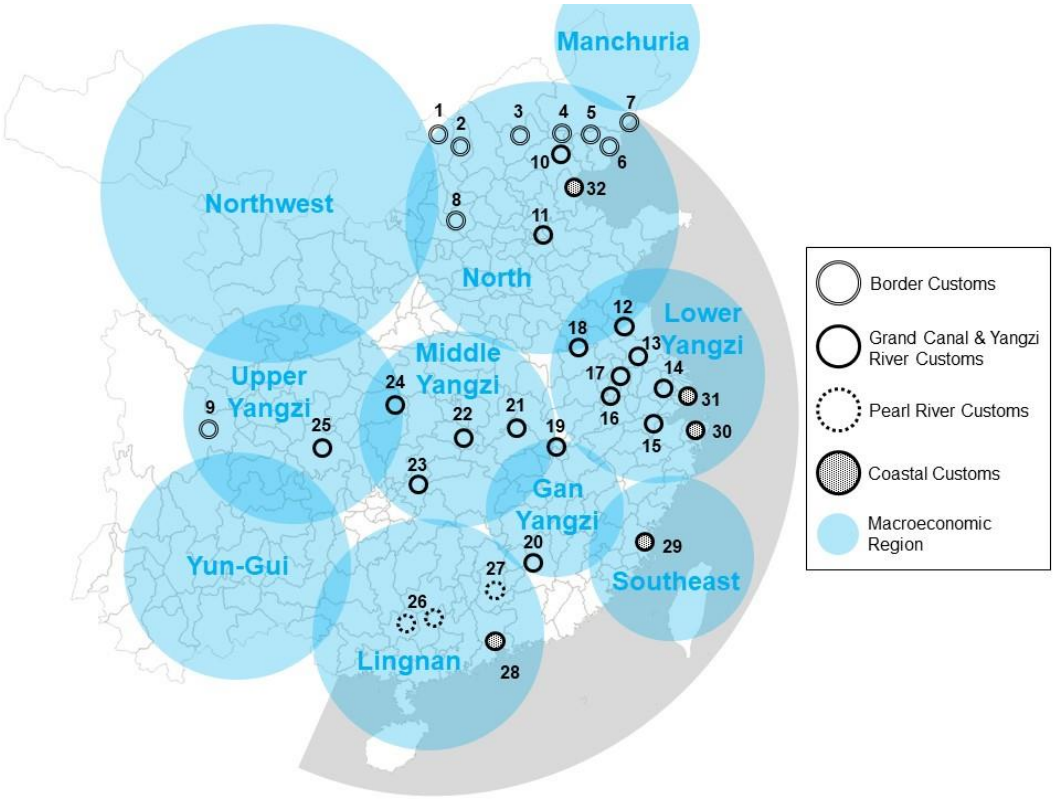
Panel B considers the influential 'macro-region' framework by Skinner (1977) and justifies the spatial distribution of domestic customs. Trade took place within a macro-region, between its core and peripheral areas; they could also be at the border of different macro-regions for exchange of specialized goods. The distribution of customs was consistent with this framework, and the key customs were either in the center of a macro-region or at the border. For example, Jiujiang customs (No.19) were at the junction of three different macro-regions (Middle, Gan and Lower Yangzi) and hence earned the highest annual income among all inland customs prior to 1850. Fujian customs (No.29) were at the core of Southeast and mainly designated to tax the trade within Fujian province (including Taiwan).

Panel C offers a topology of the early Qing trade network where the circles denote the domestic customs. An intuitive implication is that a national trade network was intentionally constructed and maintained by the Qing state for market integration. The waterways played a major role in the long-distance network including the Yangzi River, Grand Canal, Pearl River, and the eastern coastline where the domestic customs were intensively set. Official roads were paved where rivers were scarce or unsuitable for navigation, so some regional commercial centers emerged such as Shaanzhou and Qinzhou but without domestic customs. It is worth noting that the networks of customs and trades were endogenous and mutually reinforcing. The Qing state tended to inherit the Ming institutions and set up customs at the pre-existing commercial centers; to attract cargo transportation and ensure a high customs income, the officials made great endeavors such as eliminating local gangsters and escorting ships in inclement weather (Liao, 2010, pp. 64-7). To eliminate tax evasion, they even discouraged merchants from using alternative routes particularly in Lower Yangzi with an intricate network of canals (Xi, 1903, Vol.90, Vol.92). A key takeaway from Figure 4.1 is that the distribution of customs was surprisingly sparse because the Qing state intentionally taxed long-distance goods transportation by monitoring no more than 40 customs in the national trade network.

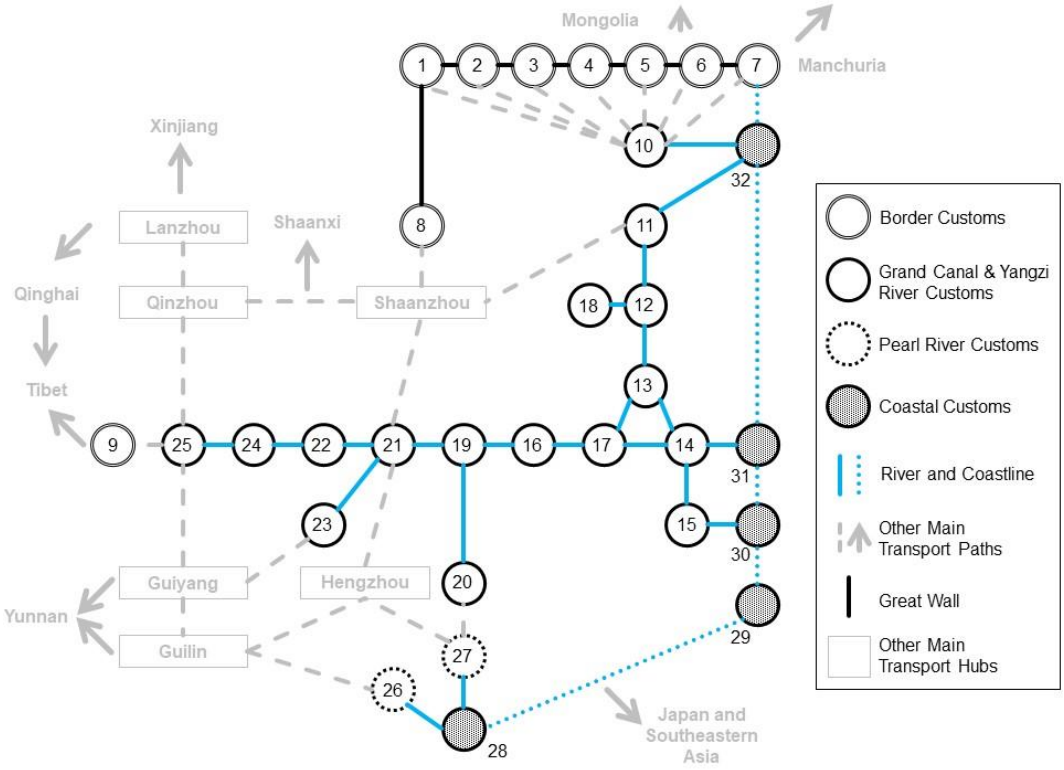
[59] Some customs may be in more than one category, such as Jiang/Shanghai customs (No.31 in the figure).



Panel A. Geographical Distribution of Customs



Panel B. Customs and Macro-Regions



Panel C. Customs and the National Transport Network

Figure 4.1. Domestic Customs and the Transport Network of Early Qing China

Source: see text.

The central government (Board of Revenue and Board of Works) monitored this domestic customs system, controlled all the income, and managed the personnel affairs. The appointed officials directed runners and clerks to collect taxes directly from merchants at the checkpoints. Tax-farming through brokers was strictly prohibited (Liao, 2010, p. 66), which was a huge difference from the land taxation of the same era. Although central government had ultimate control over all customs, the levels of supervisors in different customs varied. Before the Yongzheng reign (1723-35), most supervisors were appointed by central government on a yearly basis. From 1735 some customs still had *ad hoc* supervisors while others were co-supervised by a certain local level such as province or circuit. Numerous case-by-case changes were made such as the Beixin customs (No.15) and Kui customs (No.24). The complicated hierarchy worsened the principal-agent problem and made performance management difficult.

The customs network aimed to introduce unified codes of conduct, including how to formulate and publish tax rates and payment procedures and how to report and remit the annual income to the central government (Tuo, 1818, Vol.16; Tao, date unknown, Vol.10). Considering the giant size of the empire, customs regulations about tax rates and tax bases

were usually adapted for local economic conditions. First, there was no consistent tax rate across China. Although the *Hubu Zeli* indicated that the tax rate was 5%, very few customs followed it (Deng, 2003). Most customs stipulated tax rates by amounts such as '0.05 silver tael per batch of pears or dates' (Zai, 1865, Vol.72, 'Yangzhouguan Shuize'); thus the *de facto* tax rate varied across regions and fluctuated with price level. He (1984) estimates the *de facto* rate to be 3-6%; Considering the moderate inflation in early Qing with the rarely revised regulations, Xu and Jing (1990) and Deng (2003) contend that the tax burden became lighter over time. Second, tax bases varied across regions. Not all commodities were taxed, and exemptions were common especially for grain trades along the Grand Canal in the early Qianlong reign (Tao, date unknown, Vol.14; He, 1987). Moreover, the nationwide market integration with routine long-distance trade, as strong evidence of Smithian growth, also differentiated the tax bases of domestic customs. Figure 4.2 takes grains, textiles and timbers as examples and maps how a well-arranged national trade network functioned.

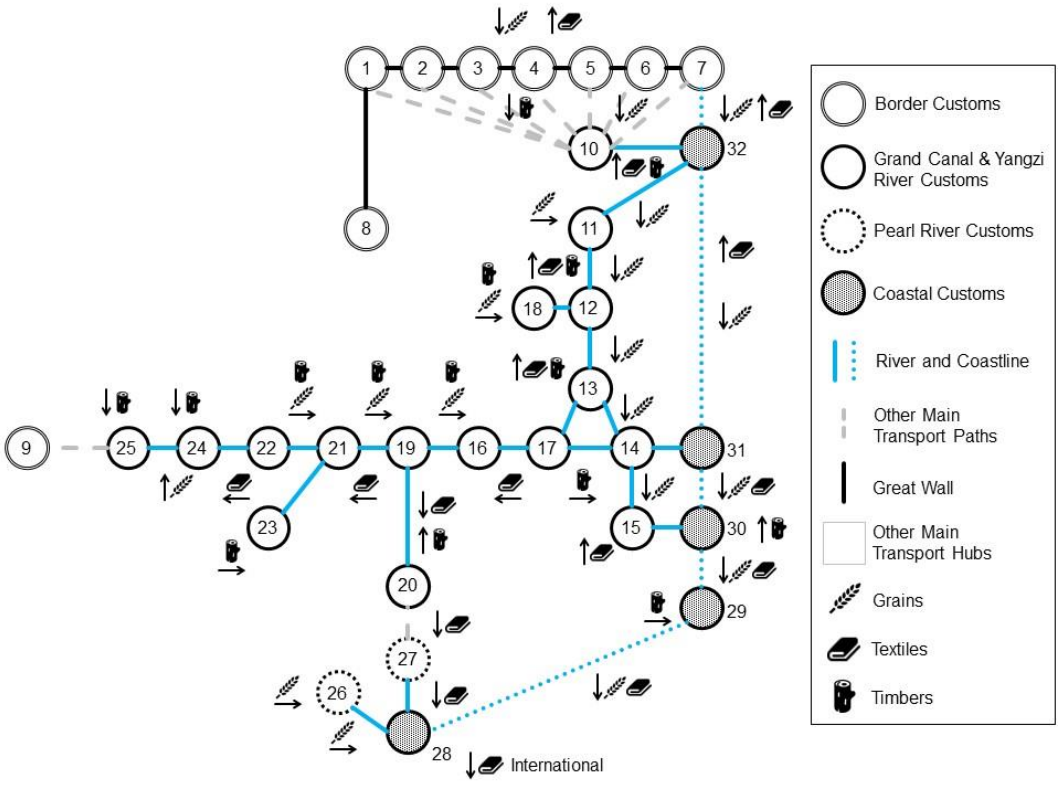


Figure 4.2. Commodity Transportation via Customs of Early Qing China

Source: Liao (2010, Chapters 3-4); Zhang (2003, pp. 35-6).

Grains were transported from the Upper and Middle Yangzi region and North and Northeast China to the Lower Yangzi region which was specialized at production of textiles and other cash

crops (see Chapter 2). Timbers were widely used in shipbuilding and construction sectors especially in the North and Lower Yangzi with a dense population and they were mostly produced by the Upper and Middle Yangzi and Fujian (Li, 2000, pp. 314-5). In return, textile products were shipped from the Lower Yangzi to other regions; many were transported to Canton for international trade (Liang, 1850(?), Vol.8-9; Huang, 2000, Chapter 4). The nationwide specialization, commercialization and market integration in the early Qing period were well identified by the customs officials, who noticed that the operations of different customs varied and were hardly comparable. In Linqing customs (No.11) for example, a memorial in 1824 reported, 'the tax base of Linqing customs was dominantly (1) paper, tea, chinaware, silk, etc. from Middle and Lower Yangzi to the north and (2) beans from Zhili and Shandong to the south; the taxation goal was met only if sufficient ships passed smoothly' (Liao, 2010, p.30).

Therefore, compared with earlier dynasties, the advances of the Qing domestic customs were strongly related to the Smithian growth of the national economy. The question of interest is whether the commercial activities were fully taxed. This part provides a survey of the pre-1850 domestic customs taxation performance by employing the time series data by Ni (2017b). I choose 1735 (the last year of the Yongzheng reign) as the base year and interpolate estimates for the missing values between 1735 and 1850.[60] Figure 4.3 outlines the domestic customs income at the national level. The annual amount exceeded four million silver taels in the first half of the 18th century, ten times that of the late Ming era. As introduced in Chapter 2, this accounted for over 10% of the national government revenue. The nominal level grew continuously in the 18th century, but after the 1790s it became quite stable, five to six million taels, until the mid-19th century. The grain price and general price indices by Peng (2006) are used to calculate the real income over time, with 1735 as the base year. The real level slightly declined in the mid-18th century due to the rising price level. The short-term recession with deflation around 1800 reversed the trend, but the level in the first half of the 19th century remained low. By the eve of the Taiping Rebellion in 1850, the nominal customs income was around six million taels and showed no progress from the late Qianlong reign, while the real income was only three quarters of the amount in 1735.

Figure 4.4 breaks down the nominal income time series. Panel A categorizes all customs and depicts the income series of four groups. The border and Pearl River groups had a very stable annual income but only accounted for 9% of the total. The remainder was contributed by the Grand Canal and Yangzi River and coastal groups. The Grand Canal and Yangzi River customs had an opposite trend to that of coastal ones. In 1735, the former accounted for 75% of the

[60] Due to the discrepancy of lunar and solar calendars, in some solar years, certain customs had doubled revenue numbers (Ni, 2017b). I make them halved to smooth out the data series.

national income while the latter did only 16%. Subsequently, the Grand Canal and Yangzi River customs underwent a long-run stagnation, but the coastal ones experienced significant growth. In 1850 their shares became 50% and 41%, respectively.

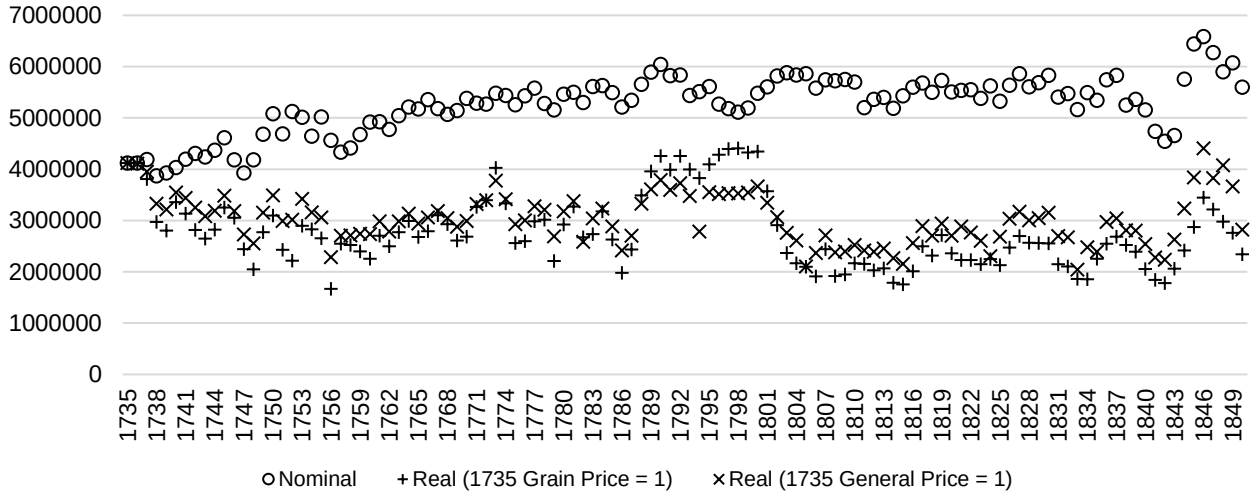
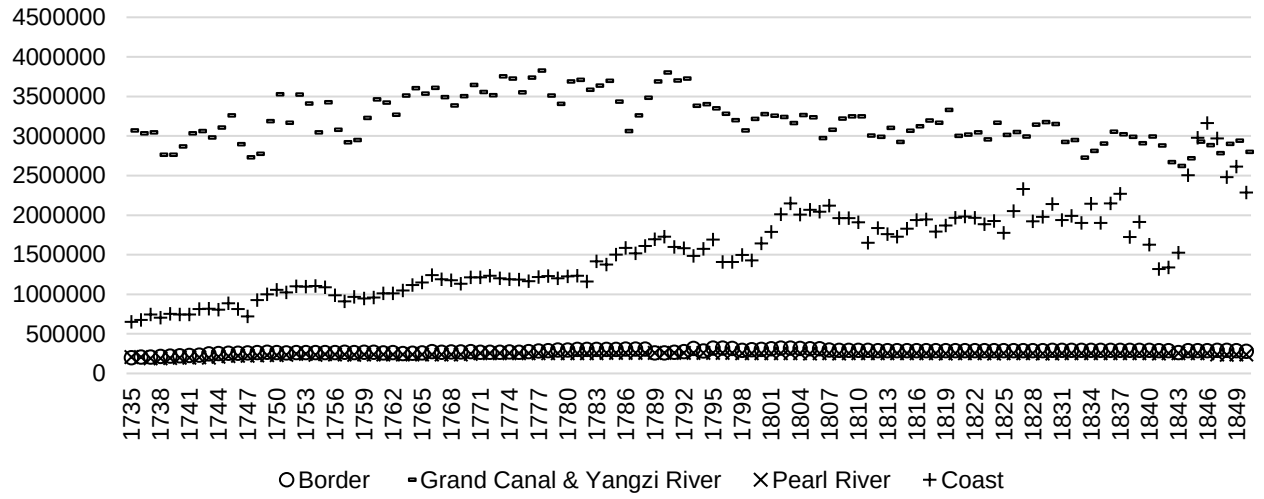


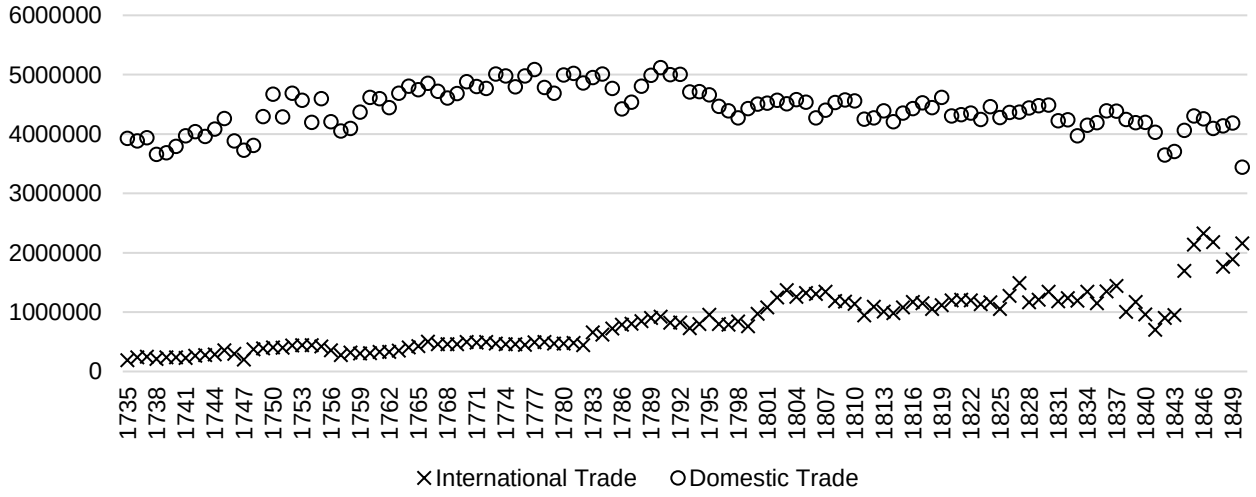
Figure 4.3. Nominal and Real Customs Tax Revenue of Early Qing China (in Silver Taels)
Source: see text.

One can notice the special role of Guangdong customs (No.28), whose income alone accounted for 18% of the national amount throughout the early Qing era and almost explained the notable rise of the coastal group. Guangdong customs, based in Canton city, had an unparalleled geographical location and connected the maritime trades of East and Southeast Asia. The Canton port attracted various Asian Pacific and European merchant ships during the early Qing times and its international trade experienced remarkable growth. In the decade 1806-1815 the number of foreign ships reached 1,184, ten times the number in the 1750s. The gross value of exports from the British East India Company to Canton increased by six times from the 1750s to the 1820s (Yao, 1962, Vol.1).[61] Therefore, splitting domestic and international trade taxation can be helpful to understand their heterogeneity. Since they were not reported separately, Figure 4.4 makes estimations based on qualitative evidence in Liao (2010, pp. 190-207) and plots them in Panel B. The rise of international trade during the early Qing era was evident. In 1735 the share of international trade tax revenue was 5% but by 1850 this number increased to 39%. In another word, the international trade taxation at Guangdong customs was effective and promising, thereby opposing the criticisms of the 'Canton system' in the literature (Liang, 1850(?), Vol.23; Liao, 2010, p. 193 for a review).

[61] Four major coastal customs (Yangzi, Zhejiang, Fujian and Guangdong) had been authorized to international trade; after 1757, Guangdong was designated as the only port for international trade in the entire empire. Meanwhile Fujian customs still had a handful of foreign ships from Luzon Island every year.



Panel A. Customs Tax Revenue by Location

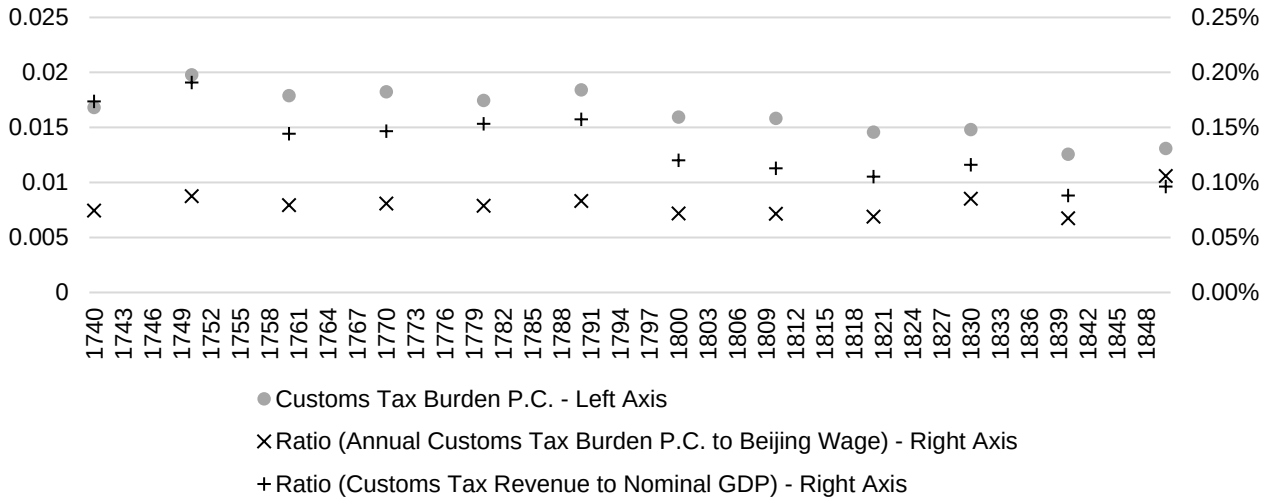


Panel B. Customs Tax Revenue by Trade Type

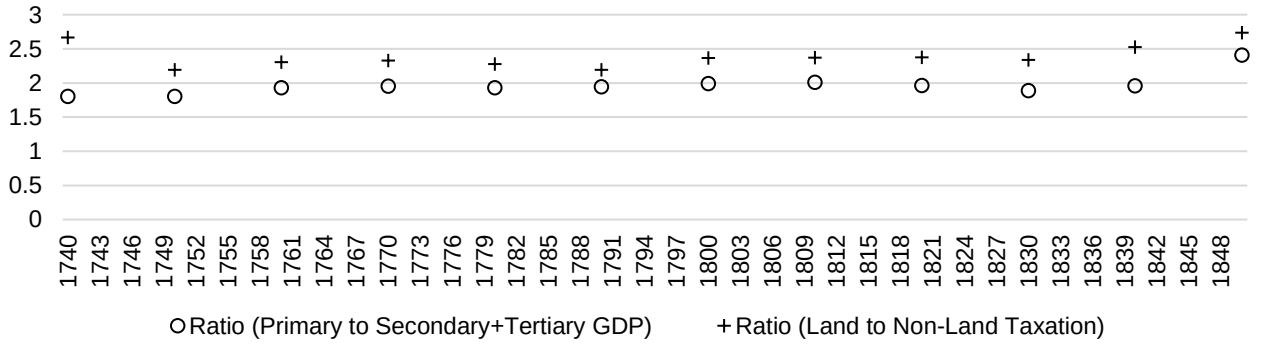
Figure 4.4. The Breakdown of Customs Tax Revenue of Early Qing China (in Silver Taels)
Source: see text.

Figure 4.5 quantifies the indirect taxation capacity of pre-1850 Qing state by employing other datasets. First, population benchmarks and growth rates by Cao (2001) are used to estimate the Qing national population by decade and calculate the per capita customs tax burden, as shown in Panel A. In early 18th century it was 0.016 silver taels, and then it slowly declined to 0.013 taels by 1850. Moreover, this figure refers to the tentative non-skilled male workers' wage data in the *Wuliao Jiazhi Zeli* compiled by IISH (2019) and provides the ratio of per capita customs tax burden to annual wage. It remained constant at 0.08% during the

early Qing period.[62] Furthermore, with the nominal GDP estimations in Broadberry et al. (2018) and Ma and de Jong (2019), this figure calculates the ratio of customs income to GDP as a measure of the extractive capacity of state on commercial activities. The ratio on average was 0.13% for the early Qing era, and it dropped from 0.17% to 0.1% over the period, indicating that the early Qing state had a surprisingly low capacity in extracting resources from merchants.[63]



Panel A. Indirect Tax Burden



Panel B. Sectoral Structure of National Economy and Taxation

Figure 4.5. Indirect Taxation Burden of Early Qing China

Note: 1. The unit for 'customs tax burden per capita' is silver tael. 2. The wage and GDP data used here are very tentative. For criticisms, see Deng and O'Brien (2016, 2021).
Source: see text.

[62] If we consider that the non-skilled male workers' wage in Beijing might be lower than the average of the population (Von Glahn, 2016, p. 361), the actual ratio should become even lower. In another word, domestic customs tax was nearly negligible for the mass people during the early Qing period.

[63] The ratio of the total government income to GDP declined from approximately 2% to 1% from 1740 to 1850, which is consistent with Karaman and Pamuk (2010). For benchmarking they argue that the ratio for England of the same era was over 7%.

Panel B of Figure 4.5 refers to the shares of primary, secondary, and tertiary outputs in Broadberry et al. (2018) and Ma and de Jong (2019) and examine whether the early Qing taxation pattern matched the national economic structure. It calculates the ratios of land to non-land taxation and of agricultural to non-agricultural outputs, respectively. The former was always greater than the latter in the entire period, implying that the Qing fiscal regime was 'over-agrarian'. For the entire period, the agricultural output was double that of other sectors, but the land tax revenue was 2.4 times that of other revenues (including customs, salt, and miscellaneous income). In summary, contrary to the conventional Confucian motto 'emphasizing agriculture and suppressing commerce' (*zhongnong yishang*), the early Qing government did not discourage commercial activities through heavy taxation by domestic customs. There were state controls over salt tycoons through patronage networks (Wang, 2014) but for mass merchants, low and even negligible commercial taxation was closer to the fact. The domestic customs network selectively taxed on long-distance cargo transportation and even imposed a variety of discounts and exemptions (He, 1987; Liao, 2010, Chapter 2), which were effective in facilitating the nationwide Smithian growth especially in the early 18th century.

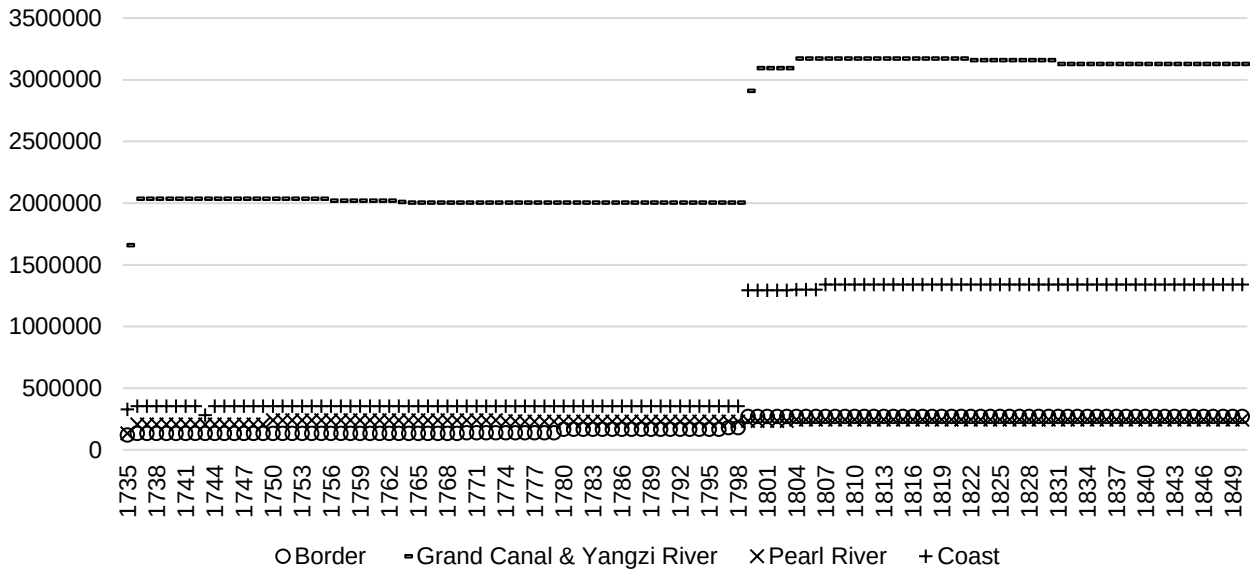
The last focus in this section is the quota management over customs. Unlike the heavily criticized land taxation because of tax farming, the domestic customs network was highly centralized despite the complicated principal-agent links shown in Table 4.1. To incentivize the customs supervisors, central government implemented quota management that was commonly seen in the Qing governance. Quotas were set as revenue benchmarks for customs on a yearly basis and central government evaluated customs officials by simply checking whether the quotas were met, so analyzing the changes of quotas over time can be helpful to understand how the officials' performances were monitored. Panel A of Figure 4.6 sorts and aggregates the quota information in Ni (2017b), and Panel B calculates the gaps between actual revenues and corresponding quotas stipulated by central government. Panel A implies that the stipulated quotas were excessively rigid. Although the Smithian growth pattern facilitated interregional trade, the quotas remained static and there was only one wave of substantial upward adjustments in 1800. Panel B investigates how customs responded to the quota management. The border and Pearl River groups earned very few surpluses and the temporal variation was small. However, the fluctuations of the coastal and the Grand Canal and Yangzi River groups were significant. The surpluses of coastal customs grew from 0.5 to 1.2 million taels during the second half of the 18th century; although the adjusted quota absorbed some in the 1800s, their surpluses soon recovered to over 0.5 million taels. This was consistent with the steadily growing international trade under the Canton system described earlier.

The trend for the Grand Canal and Yangzi River group was more complex. The surpluses

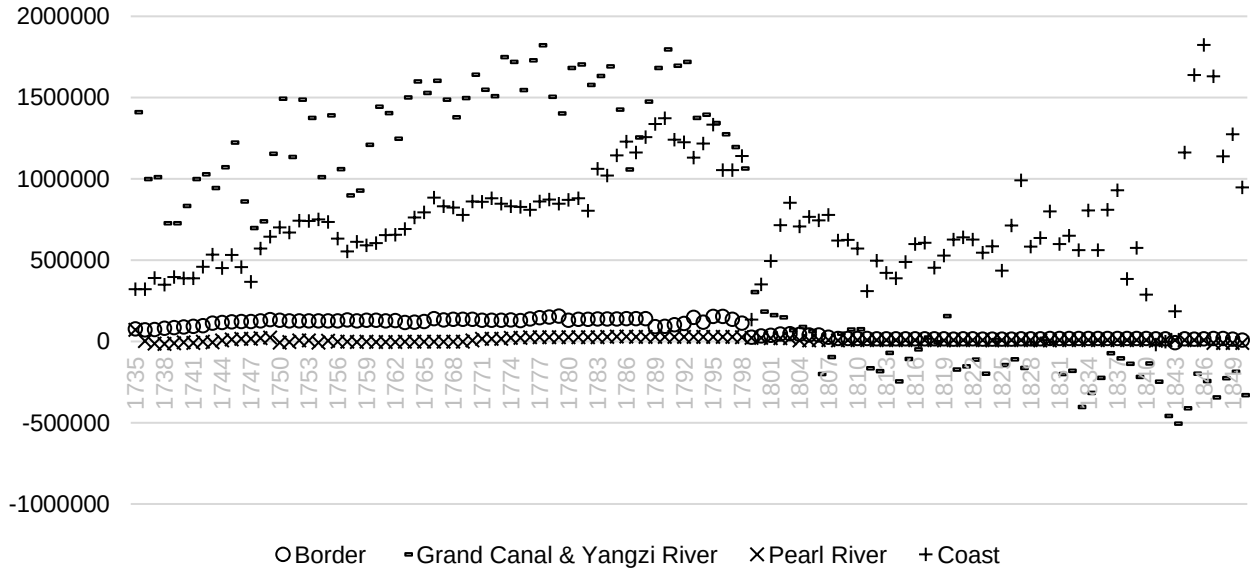
grew during the mid-18th century but subsequently declined very sharply. Inland rivers and canals of China were maintenance-intensive (Cai and Han, 2019), but the population boom accelerated ecological deterioration and increased maintenance costs for the Qing state (Mann and Kuhn, 1978; Wu, 2001; Von Glahn, 2016, p. 363). Lack of maintenance for rivers and canals reduced their navigability, so the officials found it more difficult to achieve the stipulated quotas. Von Glahn (2016, p. 372) comments that the national market integration was giving way to the Skinnerian self-sufficiency within each macro-region, which also undermined the tax base of the Grand Canal and Yangzi River customs. Such customs were almost always in deficit in the first half of the 19th century.

A key question here is whether quota management was efficient and effective during the early Qing period. In fact, quota management was a reasonable choice by central government. Given the size of territory and lack of modern telecommunication infrastructure, quota management was cheap and efficient for the Qing state, under which customs supervisors had clear goals to achieve. A surplus would be a positive indicator of the officials' competence, so that they would make every effort to attract more merchants by improving their services such as speeding up the clearance process and providing tax discounts, which is why we find those surpluses in Figure 4.6.[64] Certainly, the quota management over the Qing domestic customs was not perfect. First, the officials might over-tax merchants with coercion to meet the quota in a year of trade recession. Second, there was no institutionalized scheme to monitor surpluses. The Qing central state claimed its *de jure* ultimate control over the surplus of a customs house, but a customs supervisor might either report it for signaling or conceal it for local or even personal use. It was also probable that officials became very lax as soon as the annual quota had been achieved. We know little about such possibilities (Tao, date unknown, Vol.10; Liao, 2010, p. 57). Quota management seemed simple but required high-quality information and compliance.

[64] The contemporary version of similar quota management in China is coined as 'administrative subcontract' by Zhou (2008) who regards it as a key institutional reason for China's remarkable economic growth since 1978. The 'tournament model' incentivizes local officials to compete for local economic growth as their promotion is determined by the central government.



Panel A. Annual Revenue Quotas for Customs by Central Government



Panel B. Gap between Actual Revenues and Quotas

Figure 4.6. Quota Management for Customs of Early Qing China (in Silver Taels)

Source: see text.

Therefore, quota management *per se* was not the key to understanding the stagnation of customs income. Adequate quota management should be conducive to the increase of customs revenue, but in fact, the Qing central state failed to run it effectively. During the high Qing economic expansion, the Qianlong Emperor (reigning 1736-95) did not peg the tax quota to trade performance, and a large amount of trade was not incorporated into the tax base.[65] When

[65] There were long-lasting debates and policy swinging. The Yongzheng Emperor (reigning 1723-35), famous for his rigorous governance, tried to centralize the fiscal system in many aspects (Zelin, 1984); regarding the customs tax, customs

the inland trade was recessive and the customs could not fulfill the goals in the early 19th century, the quotas were not flexibly lowered, resulting in pervasive deficits and officials' collective disobedience along the Grand Canal and Yangzi River customs (Ni, 2017b, p. 21). In short, ineffective management of the central state over the customs accounted for the long-term stagnation of the customs revenue performance – another manifestation of the rigid 'quotaism' in Iwai's sense.

This section revisits the pre-1850 domestic customs taxation, the key means of indirect taxation by the Qing Empire. The centralized customs network imposed the 3-6% levy on long-distance cargo transportation via specific routes, whereas all other commercial activities were neglected; the failed quota management neither matched the population boom, rising price, and Smithian growth during the 18th century, nor coped with the trade recession properly in the early 19th century. Both reasons accounted for the low per capita customs tax burden and its negligible share in GDP or wage.

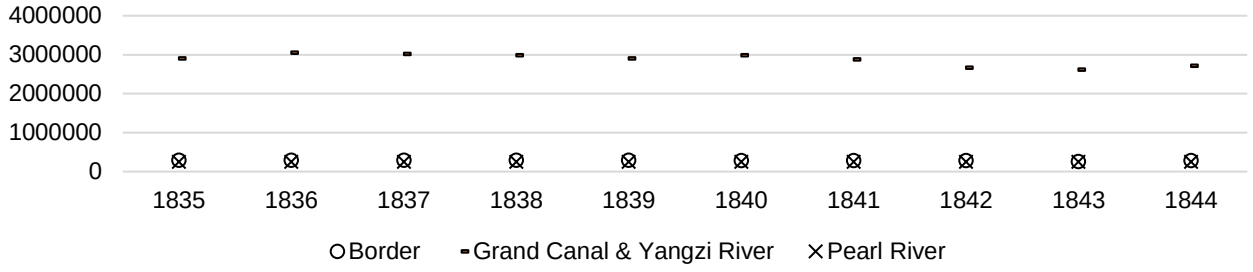
The final comment: what level of indirect tax burden do we expect in the long term? It is straightforward to build a link between low indirect taxation and a flourishing Qing economy with notable market integration during the 18th century, but this 'benevolent governance' proved to be short-lived and fragile. As the national population tripled during the early Qing period, the cumulative side effect of low indirect taxation was enormous. After the 1790s, the navigation capacity of inland rivers and canals deteriorated due to the shortage of public funding, which in turn led to a further decline in annual customs income. This feedback effect played a major role in undermining the tax base of the Grand Canal and Yangzi River customs. In a word, long-run low taxation was not a panacea, and considering the time horizon of state capacity is of great importance.

4.2. The Decline of Domestic Customs

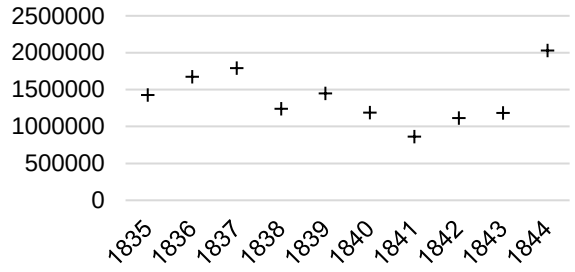
The First Sino-British Opium War (1840-42) played a minor role in reshaping the Qing customs network. Sporadic naval battles affected several southeastern coastal customs to a moderate extent. Figure 4.7 briefly outlines this shock. Panel A shows that the Grand Canal and Yangzi River group encountered a slight setback. Panels B to E show the results for the four major southeastern coastal customs. The war's effect was evident but in a very short run.

supervisors must report both the receivable quota and the surplus. Even if the surplus was less than the previous year, the Board of Revenue would initiate a re-investigation. The Qianlong Emperor was concerned about the ratchet effect in 1741 (Ni, 2017b, p. 19) and wrote that 'the surplus would increase infinitely year by year because customs supervisors always tried to increase it and evade re-investigations'. In 1749 he proposed the 1735 figures to be the benchmarks and insisted that future customs incomes must be comparable to them. Then in 1777 he upgraded it to a moving average benchmarking: the customs income should match that of the past three years. In 1799 it was abandoned, too. The successor, Jiaqing Emperor (reigning 1796-1820) fixed the receivable for all customs again.

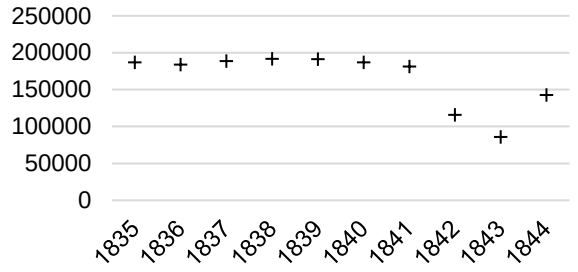
They all recovered only two years after the war. The one-off fiscal loss of the customs system did not exceed two million silver taels.



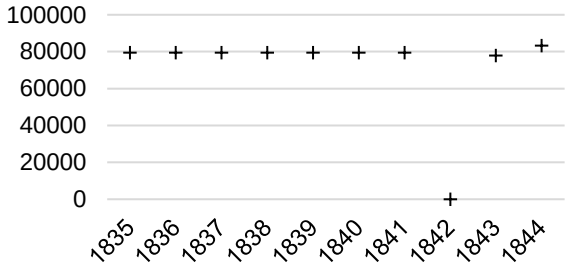
Panel A. All Border, Grand Canal, Yangzi River and Pearl River Customs



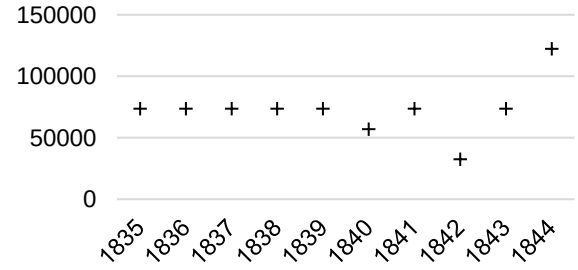
Panel B. Yue (Guangdong) Customs



Panel C. Min (Fujian) Customs



Panel D. Zhe (Zhejiang) Customs



Panel E. Jiang (Yangzi/Shanghai) Customs

Figure 4.7. The Breakdown of Customs Tax Revenue during the Opium War (in Silver Taels)
Source: see text.

However, another two political events in the mid-19th century – the Taiping Rebellion and the Second Opium War – permanently transformed China's indirect taxation pattern. Chapter 3 discusses how the Taiping Rebellion led to the rise of *lijin* at the local level since land and salt taxation were severely interrupted and unable to finance the war. This section attempts to solve other questions in detail – why the domestic customs network failed to cover the expanding fiscal budget of the Qing Empire, and whether the novel local *lijin* and maritime customs systems affected domestic customs operations from the 1850s onwards. Figure 4.8 presents

the performance of the domestic customs in late Qing era. No significant changes were seen in the border and Pearl River groups, but the Grand Canal, Yangzi River and coastal customs underwent an irreversible depression during the late 19th century. We firstly focus on the decline of the Grand Canal and Yangzi River group and then do that of the coastal group.

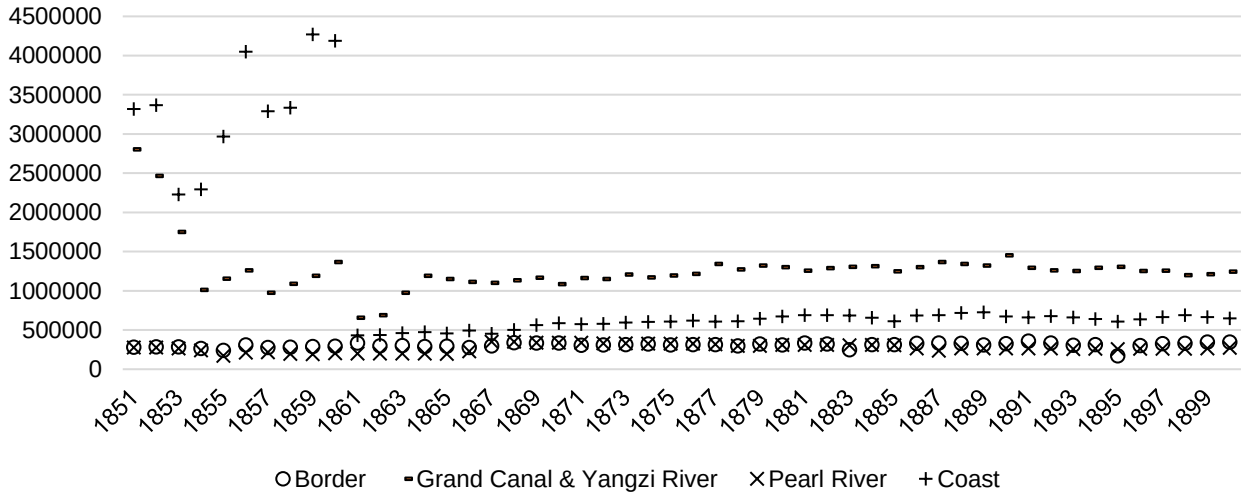


Figure 4.8. The Breakdown of Customs Tax Revenue of Late Qing China (in Silver Taels)
Source: see text.

The Taiping Rebellion and the Decline of Domestic Customs

The Taiping warfare only affected Guangxi and Hunan by 1852; thus most of the national transportation network still functioned normally and very few customs houses were impacted. In early 1853, however, the rebels sailed down the Yangzi River from Yuezhou and plundered Wuhan and Jiujiang, placing several transportation hubs in danger. From March 1853 the Taiping regime began to consolidate its power and establish its rule based on the Anqing-Jiangning region. As described in Chapter 3, the Taiping governance was limited and contingent: during the war, very few regions were under long-term Taiping rule, and the control over many Middle and Lower Yangzi prefectures shifted between the Qing and Taiping powers. However, the Qing state was troubled by the structure of its transportation network. Figure 4.9 reintroduces the customs network and highlights the customs under the Taiping impact, which was heterogenous spatially and temporally over the decade. A smaller square denotes a more severe impact, and hence three customs were at war for quite a long time – Yangzhou (No.13), Wuhu (No.16) and Xixin & Longjiang (No.17) – which unfortunately were the only transportation hubs connecting the Yangzi River and the Grand Canal. Hence their malfunction was sufficient to break down the entire network. The inland long-distance trade

was at a standstill and the tax base of the Grand Canal and Yangzi River customs was greatly undermined.

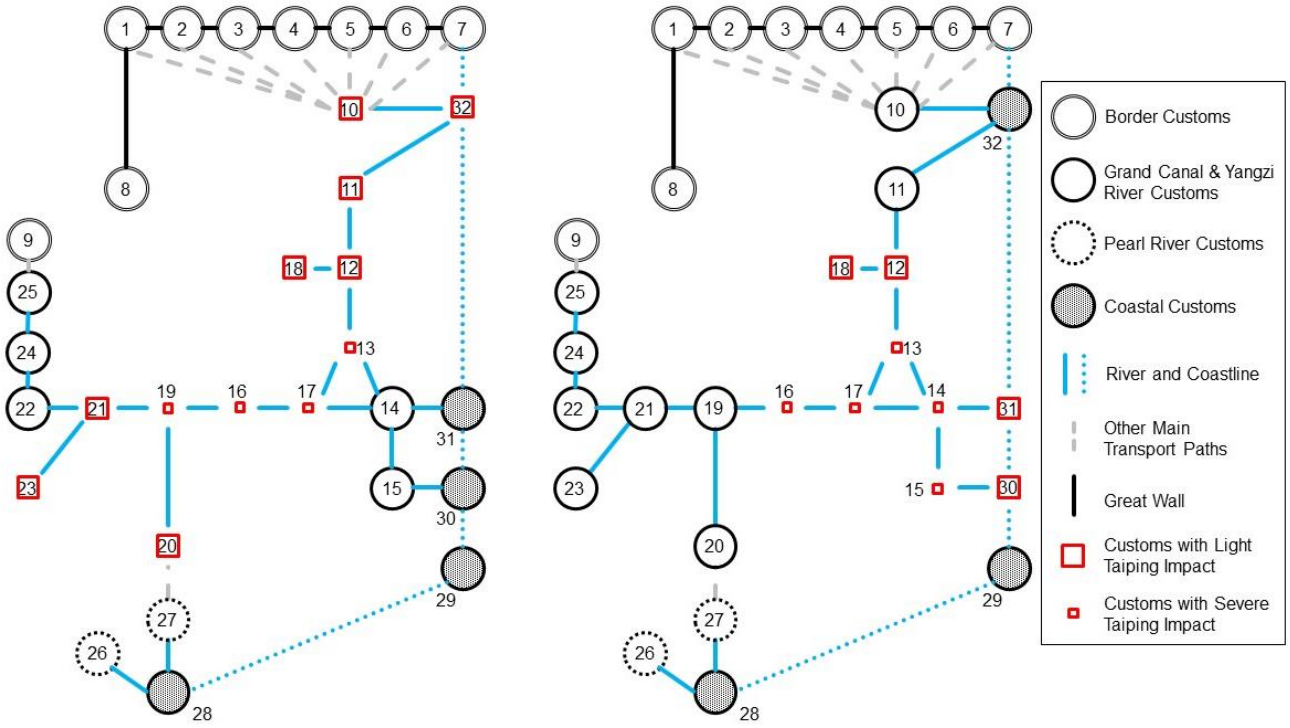
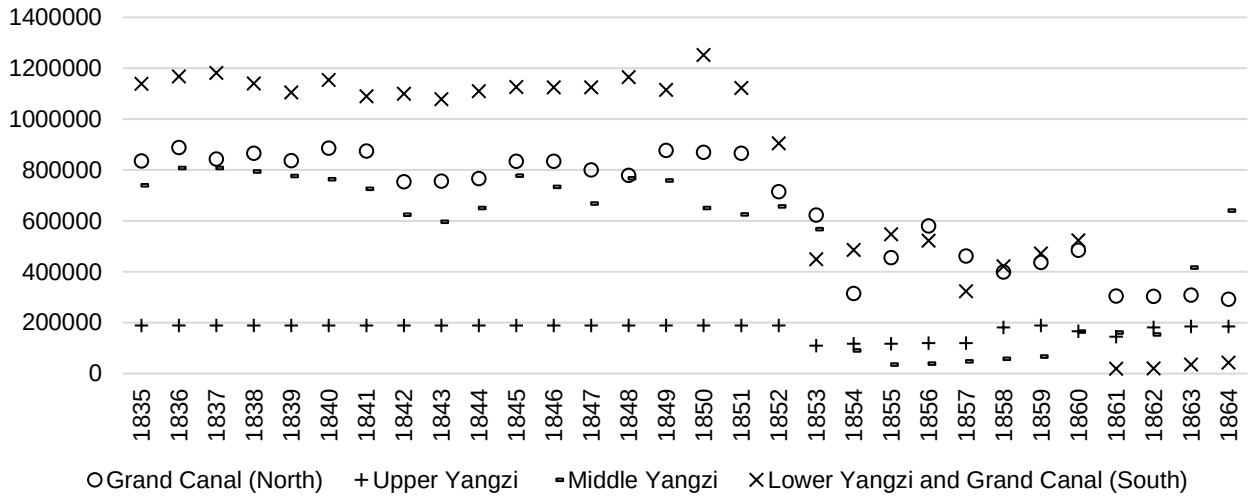


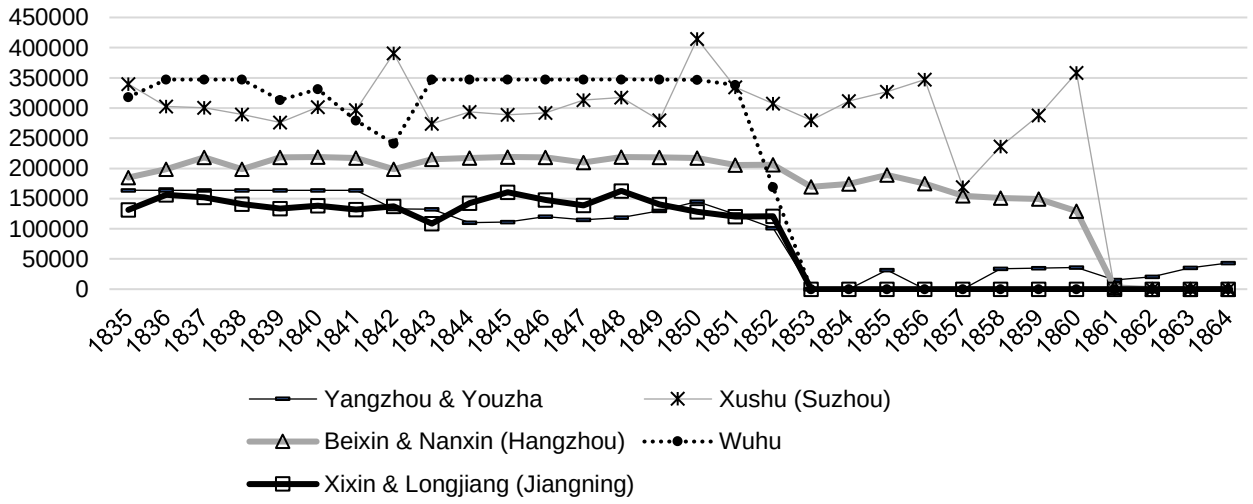
Figure 4.9. The Impact of Taiping Rebellion on the Domestic Customs Network
Source: see Chapter 3.

Figure 4.10 provides further quantitative evidence. Within the Grand Canal and Yangzi River group, we can observe in detail how the customs were 'treated' by the Taiping warfare at different timings and estimate the potential loss of customs income during the war. Panel A provides a breakdown of the Grand Canal and Yangzi River group and finds the heterogenous effect of the war on different sections of the waterways. The income of the Upper Yangzi customs such as the Kui (No.24) and Yu customs (No.25), as a 'control group', fluctuated very slightly. Customs along the northern section of the Grand Canal, in Shandong and Zhili provinces, suffered a 50% loss due to their over dependence on the cargo transportation from the Lower Yangzi. By comparison, the Middle and Lower Yangzi customs underwent a persistent recession: the Middle Yangzi customs income dropped to less than 10% of the prewar level, whereas the Lower Yangzi customs experienced two waves of sharp decline and collected nearly zero income from 1861 to 1864.

Panel B further examines the income data for five crucial customs in the Lower Yangzi region: Yangzhou (No.13), Xushu (No.14), Beixin & Nanxin (No.15), Wuhu (No.16) and Xixin & Longjiang (No.17). Their income decline was consistent with the Taiping warfare. Yangzhou, Wuhu and Xixin & Longjiang was devastated in 1853, and when the Taipings attacked Zhejiang and southern Jiangsu in 1861, the immediate effect on Xushu and Beixin & Nanxin can be seen.



Panel A. Customs Tax Revenue by Location



Panel B. Revenue of Lower Yangzi and Grand Canal (South) Customs

Figure 4.10. Taiping Rebellion and Grand Canal and Yangzi River Customs (in Silver Taels)
Source: see text.

From this figure we can estimate the Taiping 'treatment effect' on the customs loss with a simplified difference-in-difference strategy. Compared with customs with no warfare, the average income of the Middle and Lower Yangzi ones dropped by an additional 51% from 1853

to 1864. On a national scale, the potential loss for the Qing fiscal system was considerable. The annual average loss from the Grand Canal and Yangzi River customs reached 1.76 million taels, in which the Middle and Lower Yangzi regions contributed 74%. The cumulative loss for the entire period was approximately 21 million taels, ten times that in the First Opium War.

The above analysis further supports the narrative in Chapter 3. The malfunction of the domestic customs network worsened the balance sheet of the Qing central state, so the novel indirect tax, *lijin*, served as an efficient and resilient substitute at the local level. Chapter 3 offers a comprehensive survey of the *lijin*, and here Figure 4.11 further illustrates the distinctive geographical patterns of the *lijin* and domestic customs. The domestic customs only focused on the key transportation hubs on specific routes, while the *lijin* system was far more extensive and flexible and taxed on short-distance cargo transportation. It takes six prefectures in southern Jiangsu – namely Suzhou, Songjiang, Taicang, Changzhou, Zhenjiang and Jiangning – as a sample region, and plots the locations of the *lijin*, domestic and maritime (discussed later in this chapter) customs. It was striking that there were merely three domestic customs in the most prosperous region of the Qing Empire. In sharp contrast, the six prefectures introduced 30 main *lijin* stations in total, most of which had numerous affiliated additional stations / checkpoints. The Changzhao River *lijin* station, near Yangcheng Lake, even initiated 23 checkpoints. Compared with domestic customs, the *lijin* system was operated along not only the Yangzi River and Grand Canal but also secondary waterways. For example, there were 12 *lijin* stations (Mudu, Chefang, Wuku, Wusong, Minhang, and seven others within Shanghai) in the corridor from Suzhou to Shanghai, where thousands of mass merchants were engaged in small-amount trade in textiles, etc. Therefore, the Taiping Rebellion greatly hindered long-distance trade, but the active and resilient Skinnerian local trade served as a novel tax base of the Qing state and enhanced its fiscal capacity at the local level during the war.

The Taiping Rebellion was suppressed in the mid-1860s, and the Qing central government attempted to restore the domestic customs system and consolidate the central fiscal power. Meanwhile, the *lijin* system, as a *de facto* local fiscal institution, was well preserved by provincial governors from the central intervention. As two institutions coexisted from then, would there be a competition? During the decades, most customs officials did not mention the crowding-out effect of the *lijin* on domestic customs tax in their memorials. The only exception was the Huai'an customs supervisor who complained that 'the *lijin* stations were mushrooming in the inland waterways' (Ni, 2017a, p. 118) in Jiangsu in the late 1860s. On a national scale we can hypothesize that there was a minimal competition between the *lijin* and domestic customs because their tax bases were usually different.

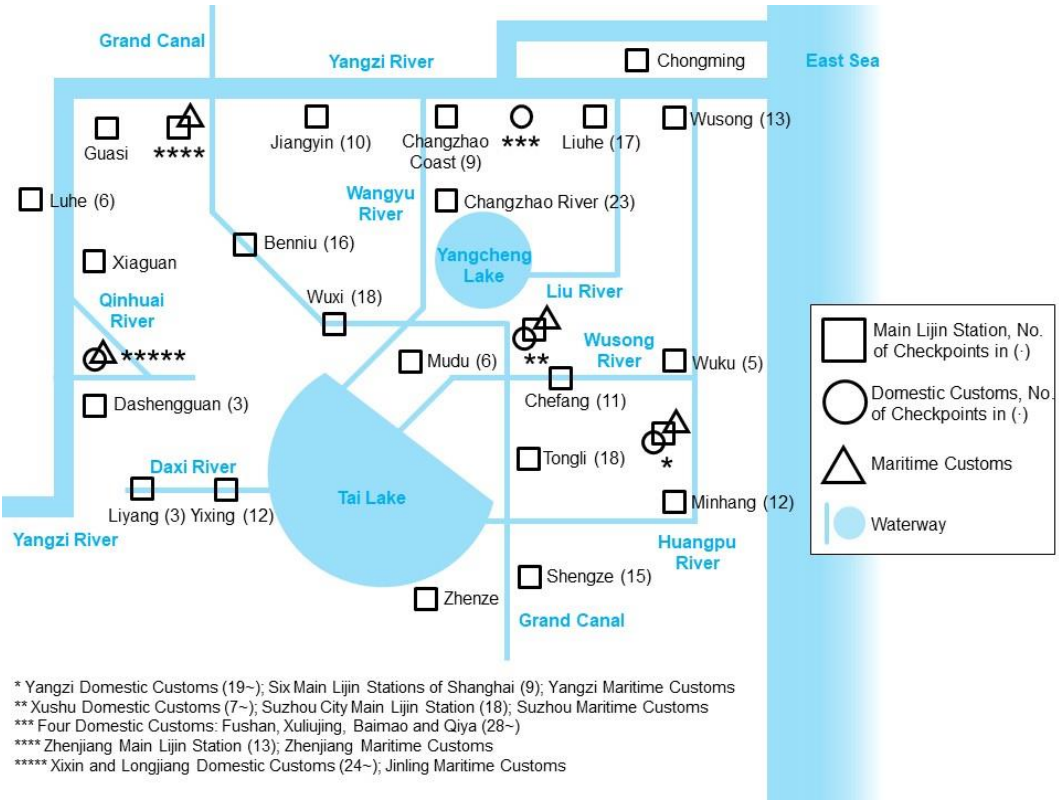


Figure 4.11. Main *Lijin* Stations and Customs in Southern Jiangsu

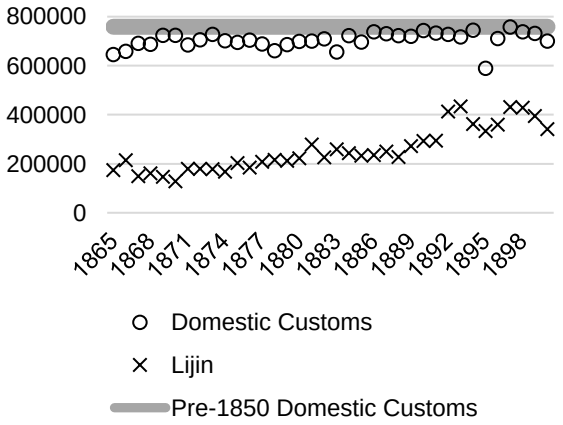
Notes: 1. I aggregate the institutions of different eras on the same map. 2. The Xushu customs had some additional checkpoints – Fushan, Xuliujing, Baimao, and Qiya – at the mouth of the Yangzi River.

Source: see text, and Chapter 3.

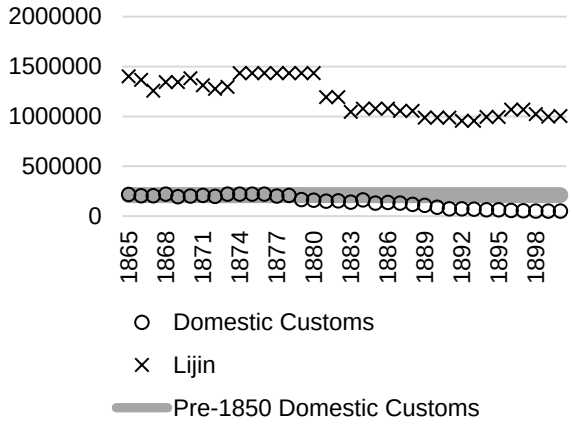
Figure 4.12 examines this hypothesis with the post-Taiping taxation data.[66] Panel A finds that the domestic customs in Shandong and Zhili recovered quickly after the mid-century crisis, and that their annual income, over 0.7 million silver taels, nearly equaled the prewar level. Meanwhile, the *lijin* revenue in Shandong and Zhili grew steadily, too. However, since the Taiping Rebellion impacted the northern China very slightly, the Shandong and Zhili *lijin* systems were nascent, and the annual *lijin* revenue was equivalent to only 30-50% of the domestic customs income. Panel B shows the case of Sichuan in the Upper Yangzi region. The domestic customs were restored after 1865, but during the 1880s a local economic recession hit the trade along the Yangzi River and caused the decline of both *lijin* and domestic customs incomes (Ni, 2017b, p. 124). In Panel C, the Middle Yangzi domestic customs performed well, and their income showed no difference from prewar times. Meanwhile, the annual *lijin* revenue was on average four times the customs income because of the dense population, intricate water transportation network and highly developed short-distance trade in the Middle Yangzi region.

[66] I only consider nine provinces because others had too few inland customs and did not face the co-existence problem.

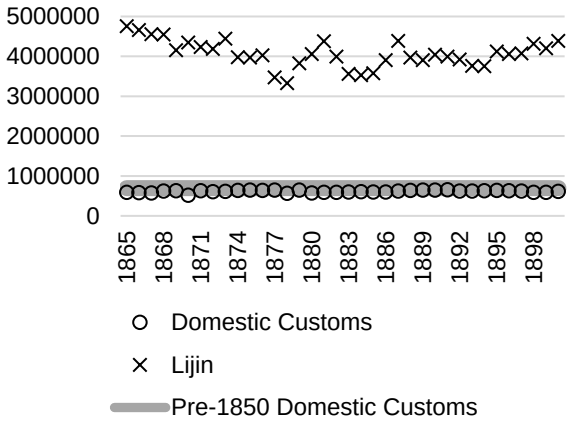
Panel D depicts the outlier, the Lower Yangzi region, where the intense Taiping warfare led to the permanent closure of several star customs such as the Xushu and the Beixin & Nanxin. Provincial governors claimed that they encountered insurmountable difficulties in restoring domestic customs after 1864 (Liu, 1936, Vol.20), and the *lijin*, as an expedient solution, thus became a major form of local indirect taxation. As a result, 84% of the potential domestic customs income, approximately 1.7 million, were 'transferred' to the *lijin* system every year, and the annual *lijin* revenue for three Lower Yangzi provinces reached 7.9 million taels. This was a considerable local income, as in 1850 the nationwide domestic customs income was only six million.



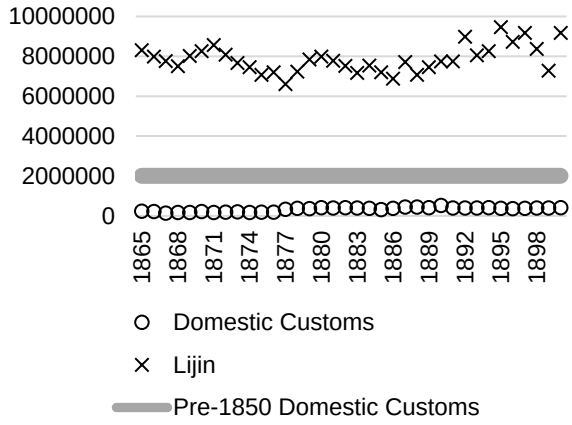
Panel A. Zhili & Shandong



Panel B. Sichuan



Panel C. Hunan, Hubei & Jiangxi



Panel D. Anhui, Jiangsu & Zhejiang

Figure 4.12. Revenues of *Lijin* and Domestic Customs in Post-Taiping Era (in Silver Taels)
Note: 1. The grey line denotes the average income of corresponding domestic customs during 1841-50.
Source: see text, and Chapter 3.

Hence we reject the naïve inference that the *lijin* completely replaced domestic customs after

the Taiping Rebellion. Although the chaos brought staggering losses to the domestic customs, the effect was temporary for most Grand Canal and Yangzi River areas, where the customs recovered quickly and achieved the prewar performance. The only exception was the Lower Yangzi region: the domestic customs failed to restore themselves after 1865, and thus the *lijin* played a dominant role in local indirect taxation. This explains the 1.7-million huge gap in the annual domestic customs income before and after the war for the entire Grand Canal and Yangzi River group. Finally, if we add the *lijin* and domestic customs income for all regions, the Qing indirect taxation capacity was greatly strengthened during this mid-century crisis. Therefore, the *lijin* served far more than a substitute of the domestic customs in late Qing era.

The Introduction of Maritime Customs

Had there been no other institutional changes, the *lijin* and domestic customs would have formed a balance after the Taiping Rebellion, which levied on short-distance and long-distance trades, respectively. However, the fiasco in the Second Opium War (1856-60) as an exogenous shock brought another novel indirect taxation system, the maritime customs, to the Qing Empire. This institutional transplant by Western powers attracts great attention in the literature (Chen, 2010, Chapter 1, for a survey), but this part focuses on the interactions between domestic and maritime customs.

From 1842 the Qing Empire was forced to introduce the 'treaty port' system on terms dictated by Western powers, and the old Canton system collapsed immediately. Foreign merchants no longer needed *gonghang*, the licensed Chinese guilds that had monopolized import-export trade (Liang, 1850(?), Vol.8-9). Instead, the Qing economy was opened up to international trade via treaty ports, and foreign merchants could even establish their concessions subject to Western rule. The Treaty of Nanjing (1842) resulted in substantial changes to the domestic customs, as the Yangzi/Shanghai, Zhejiang, and Fujian customs began to collect international trade tax again after 85 years. Although these coastal customs immediately noticed the significant increase in trade volume, central government only made fine-tuning changes and attempted to maintain the existing domestic customs system under central control. It was evident that the central officials, represented by the imperial envoy Qiying, anticipated neither the constant growth of China's international trade nor the profound changes in the spatial distribution of trade volume, especially the rise of Shanghai (Ren, 2017, p. 69). In September 1853, the Small Swords Society (*xiaodaohui*) Rebellion threatened the function of the Shanghai customs. British, French and American consuls jointly intervened in 1854 and created the *ad hoc* 'maritime customs' to oversee the international trade tax collection of Shanghai, which however were still entrenched in the Qing institutions.

The turning point was the Second Opium War. The Qing fiasco led to the signing of the Treaties of Tianjin (1858) and Beijing (1860), through which Western powers further violated China' tariff sovereignty. More treaty ports were opened, and the 1854 Shanghai practice was introduced to all treaty ports, partly with the Qing acquiesce due to its initial success. A modern maritime customs system was formed. This independent system bypassed the complicated Qing bureaucratic system and reported directly to the Zongli Yamen (Office for General Management of Foreign Affairs) at the central level. A dedicated supervisor Sir Robert Hart oversaw the entire system for half a century (1861-1911) and made it the first modern hierarchical bureaucracy in China (Spence, 1980, Chapter 4; Lu, 1986; Van de Ven, 2014). Its high efficiency and notable taxation performance not only brought considerable revenue to the Qing central state but also had a long-lasting influence on the state building of republican era (Zhou and Wang, 2012; Strauss, 1998, Chapters 3-5; Van de Ven, 2014).

Therefore, after 1861 there were two sets of customs in China. The pre-existing 'domestic customs' system remained intact (until 1901) and continued taxing domestic trade by native sailboats. The 'maritime customs' under Hart were opened in treaty ports and responsible for taxing international trade mainly by steamships.[67]

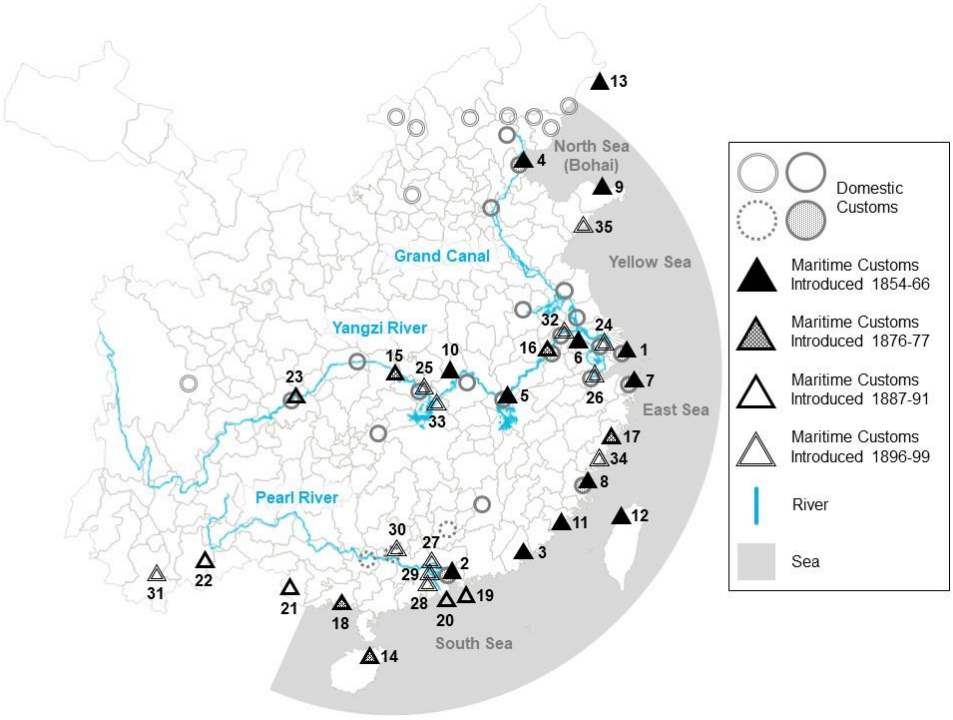
Table 4.2. General Information on Maritime Customs of Late Qing China

ID	Name of Customs	Geographical Category	Year of Opening
1	Jiang Haiguan (in Shanghai)	Yangzi River & Coast (II)	1854
2	Yue Haiguan (in Canton)	Pearl River & Coast (V)	1859
3	Chao Haiguan	Coast (IV)	1860
4	Jin Haiguan	Coast & Grand Canal (I)	1861
5	Jiujiang Guan	Yangzi River (III)	1861
6	Zhenjiang Guan	Yangzi River (II)	1861
7	Zhe Haiguan (in Ningbo)	Coast (II)	1861
8	Min Haiguan (in Fuzhou)	Coast (IV)	1861
9	Dong Haiguan (in Dengzhou)	Coast (I)	1862
10	Jianghan Guan	Yangzi River (III)	1862
11	Xiamen Guan	Coast (IV)	1862
12	Taiwan Guan	Island (IV)	1862
13	Shanhaiguan	Coast (I)	1864
14	Qiong Haiguan	Island (V)	1876
15	Yichang Guan	Yangzi River (III)	1877

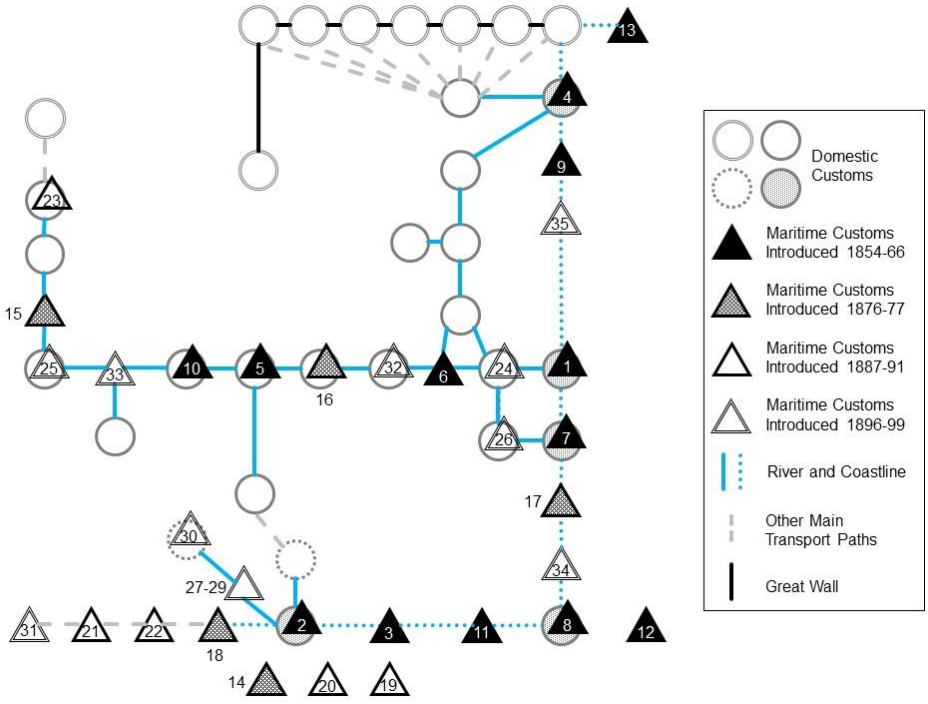
[67] I notice the ambiguity in their division of workload. Some foreign steamships were engaged in inter-treaty-port trade within China, such as soybean cake transportation from Shanhaiguan to Shanghai; in this case they paid a tax (*fujinkou banshui*, reimport half-duty) to maritime, not domestic customs; when the Chinese steamships entered this market in 1873 (Liu, 1990; Halsey, 2015, Chapter 6), they paid the tax to the maritime ones, too. It seemed that the two sets of customs divided their tax base by ship type; however, I also find regular records of foreign sailboats in the maritime customs' annual reports.

ID	Name of Customs	Geographical Category	Year of Opening
16	Wuhu Guan	Yangzi River (II)	1877
17	Ou Haiguan (in Wenzhou)	Coast (IV)	1877
18	Beihai Guan	Coast (V)	1877
19	Jiulong Guan (in Hong Kong)	Coast (V)	1887
20	Gongbei Guan (in Macau)	Coast (V)	1887
21	Zhennan Guan	Border (V)	1889
22	Mengzi Guan	Border (V)	1889
23	Chongqing Guan	Yangzi River (III)	1891
24	Suzhou Guan	Yangzi River & Grand Canal (II)	1896
25	Shashi Guan	Yangzi River (III)	1896
26	Hangzhou Guan	Grand Canal (II)	1896
27	Sanshui Guan	Pearl River & Coast (V)	1897
28	Jiangmen Guan	Pearl River & Coast (V)	1897
29	Ganzhu Guan	Pearl River & Coast (V)	1897
30	Wuzhou Guan	Pearl River (V)	1897
31	Simao Guan	Border (V)	1897
32	Jinling Guan	Yangzi River (II)	1899
33	Yuezhou Guan	Yangzi River (III)	1899
34	Sandu'ao Guan	Coast (IV)	1899
35	Jiao Haiguan (in Laizhou)	Coast (I)	1899
36	Tengyue Guan	Border (V)	1902
37	Qinhuangdao Guan	Coast (I)	1902
38	Changsha Guan	Yangzi River (III)	1904
39	Nanning Guan	Border (V)	1907
40	Dalian Guan	Coast (I)	1907
41	Andong Guan	Border (I)	1907
42	Harbin Guan	Border (I)	1908

Notes and sources: 1. 'Guan' and 'Haiguan' denote customs. 2. The above information is from Tang (1992). The table includes maritime customs opened after 1899 (No.36-42) but they are not shown in Figure 4.13. 3. Tang (1992) finds no revenue and expenditure data for Jiao (No.35) and Dalian (No.40) customs. 4. In the 'geographical category' column the customs are categorized into five types (Skinner, 1977): (I) north and Manchuria, (II) Lower Yangzi, (III) Upper, Middle and Gan Yangzi, (IV) Southeast, and (V) Lingnan and Yungui. 5. According to Tang (1992, pp. 54-60) the Yue customs (No.2) can refer to either 'the customs in Canton city' or 'all nine customs in Guangdong province'; the Min customs (No.8) can refer to either 'the customs in Fuzhou city' or 'all three customs in Fujian province'. I take the former for both cases.



Panel A. Geographical Distribution of Maritime Customs



Panel B. Maritime Customs and the National Transport Network

Figure 4.13. Maritime Customs and the Transport Network of Late Qing China

Source: see text.

Figure 4.13 exhibits the spatial distribution of maritime customs, and many Yangzi and

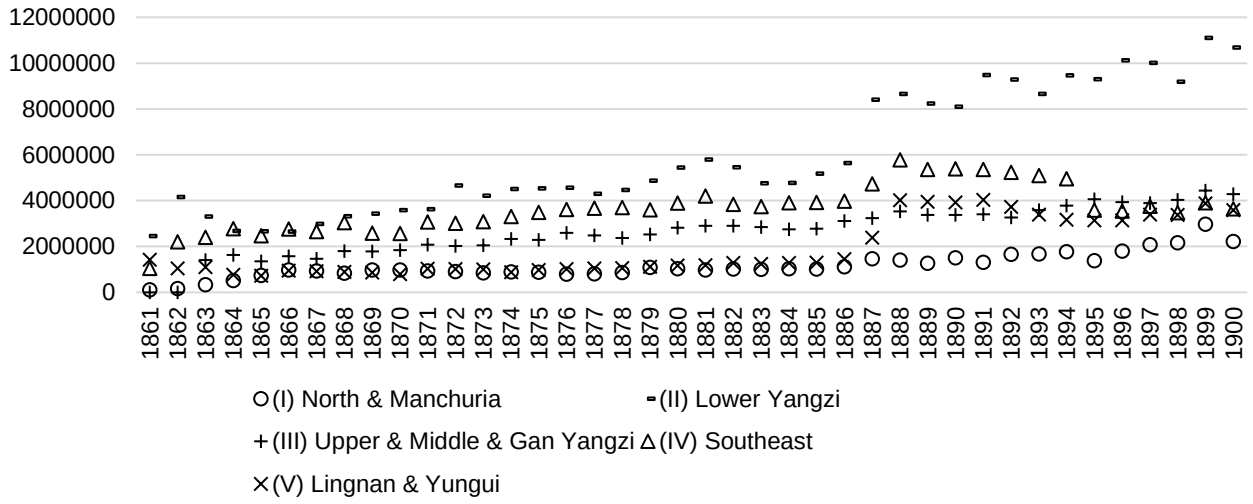
coastal ports had both maritime (in triangle) and domestic (in circle) customs.[68] Moreover, the maritime customs covered other regions that had been less taxed before 1860, such as the coastal Shandong and Sino-Vietnamese border area. Meanwhile, the Grand Canal and Great Wall in the north were omitted. The treaty port system accelerated the globalization of the Qing economy; within the empire, the interregional trade network was restructured and the Yangzi and maritime trade in southeastern China became increasingly important. Hence, regional disparities displayed different patterns from the early Qing era.

With taxation records in Tang (1992) Figure 4.14 evaluates the taxation performance of maritime customs since 1861, which reflected both the late Qing long-distance trade pattern and the strengthening of the Qing fiscal capacity. Panel A presents the time series data for five types of maritime customs income, and finds that their growth was heterogenous and non-linear. The most outstanding achievement was by the Lower Yangzi group, mainly driven by the unparalleled growth of Shanghai which alone contributed 76% to the region. When established, the Lower Yangzi customs earned 2.5 million taels every year, and after four decades its annual income quadrupled. During this period, the income of Shanghai accounted for 30% of the national maritime customs income, which to a great extent explained the remarkable performance of the entire system. Contrastingly, the income of all other regions grew slowly and even fluctuated, the share of which in the national income was only 50% for the entire period.

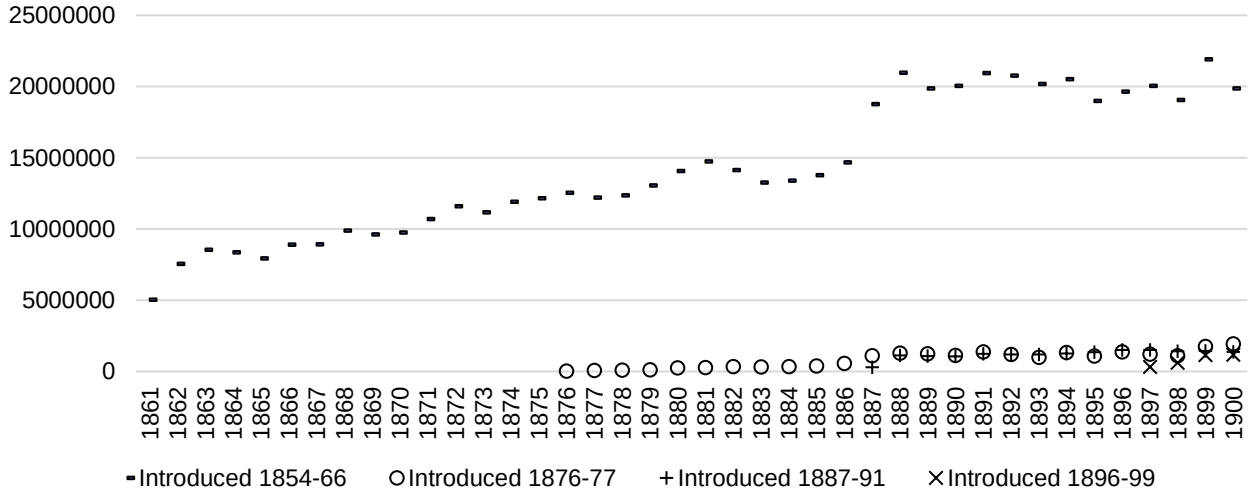
Panel B considers the opening years of maritime customs designated by different treaties and divides them into four groups. Although the number of maritime customs grew from 13 in 1864 to 35 in 1899, those opened earliest made a dominant contribution while the remainder were of little fiscal significance. Two implications emerge. First, the Western powers did not randomly select locations for treaty ports and maritime customs. They were more likely to choose the pre-existing socioeconomic centers in China. Second, opening international trade was not a rapid panacea for regional economic development. Although there were positive cases such as Shanghai, outperforming Canton and ranking the first in trade volume and customs income immediately after opening, many nascent treaty ports experienced very gradual trade growth and made a limited fiscal contribution at least for late Qing period.[69]

[68] Jia (2014) notices the strong relevance between domestic customs and treaty port networks.

[69] Several geographical reasons explained the success of Shanghai. First, it is at the center of the prosperous Lower Yangzi region, the junction of Jiangsu and Zhejiang provinces. Second, it is at the mouth of the Yangzi River. Between 1757 and 1842 Canton had been designated as the only port for international trade, and all commodities were transported through the Gan and Taiping customs and thus entered Canton market via the Pearl River. After the opening of Shanghai, the sailboats found it cheaper to sail down the Yangzi River and trade at the Yangzi Delta (Ni, 2017a, p. 125). The role of Canton declined, as did Gan and Taiping customs. Miyazaki (2017, 'Taiping Rebellion') regards the severe unemployment of porters on the Gan-Taiping-Canton trade route as a reason for pervasive social unrests in the 1850s.



Panel A. Maritime Customs Tax Revenue by Location



Panel B. Maritime Customs Tax Revenue by Year of Opening

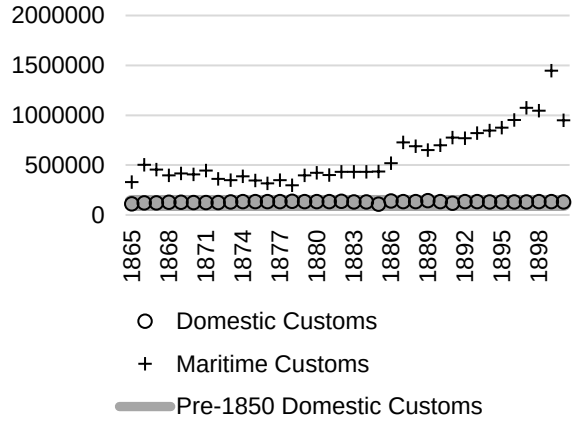
Figure 4.14. Maritime Customs Tax Revenue of Late Qing China (in Silver Taels)

Source: see text.

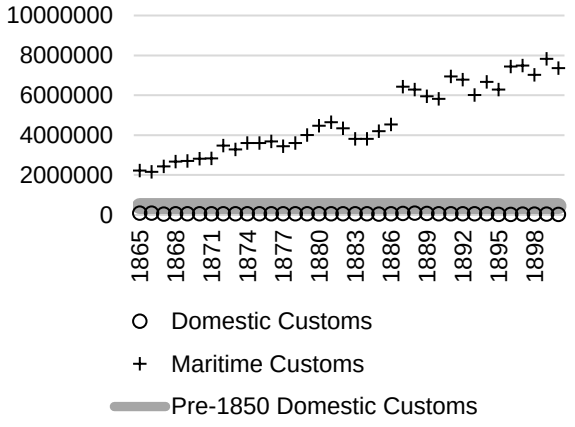
Finally we can investigate how the rise of maritime customs accounted for the decline of the domestic ones by studying the six major cities with both types of customs. Domestic customs officials frequently complained about how maritime customs eroded the domestic customs' tax base (Ni, 2017a, Chapter 2). This is consistent with the quantitative evidence in Figure 4.15, as very few domestic customs' income was comparable with the pre-treaty-port era.

The Tianjin and Fuzhou domestic customs (Panels A and D) were still run normally and their post-1860 performance showed little difference from previously because they mainly collected taxes from the native sailboats. The incremental part of trade volume, however, was contributed by the foreign steamships that paid taxes at the maritime customs. The income gap

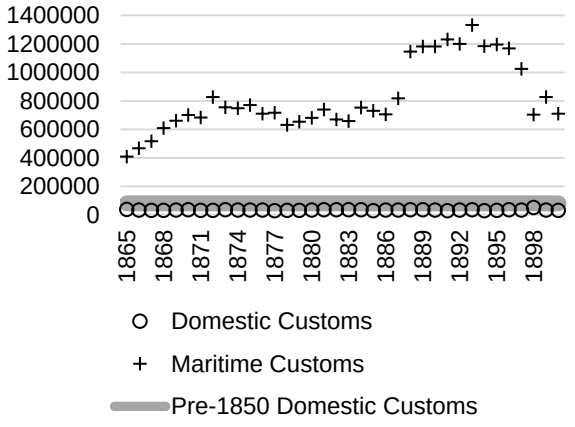
between domestic and maritime customs was strikingly huge.



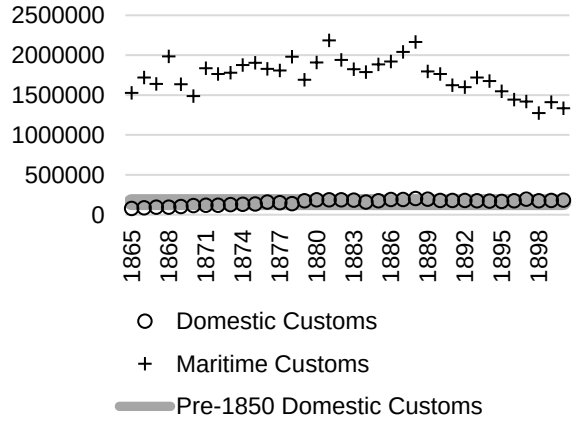
Panel A. Tianjin



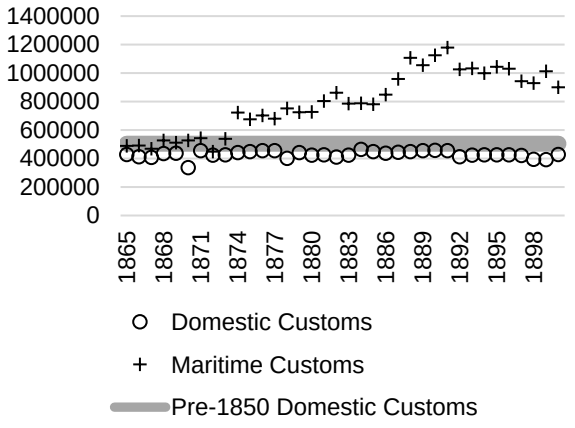
Panel B. Yangzi/Shanghai



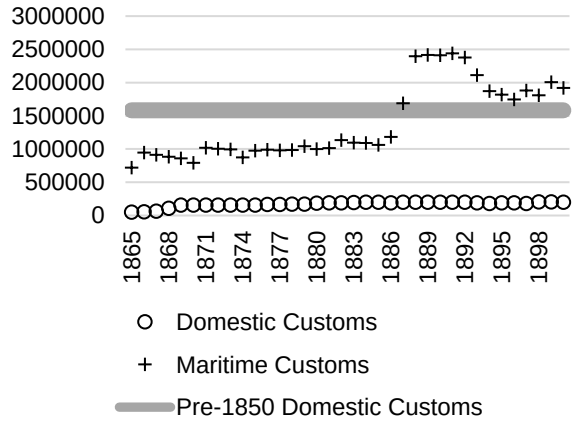
Panel C. Ningbo



Panel D. Fuzhou



Panel E. Jiujiang



Panel F. Canton

Figure 4.15. Revenues of Maritime and Domestic Customs in Post-1860 Era (in Silver Taels)
Note: 1. The grey line denotes the average income of corresponding domestic customs during 1841-50.
Source: see text.

The gap is also apparent in Shanghai, Ningbo, and Jiujiang (Panels B, C, and E). Maritime customs outperformed corresponding domestic ones, and the latter suffered greater losses – 86%, 59% and 15% of the pre-treaty-port-era level, respectively. The outstanding performance of maritime customs was reasonable because their major taxpayers were foreign merchants, and the capacity of steamships was considerably stronger than that of native sailboats. Furthermore, several domestic customs supervisors acknowledged that a growing number of native merchants were also willing to switch to foreign steamships (Liao, 2010, pp. 266-9; Ni, 2017a, pp. 132-9). Since China had no modern shipyards before the 1870s, native merchants had to seek foreign affiliations and transport cargos in the name of foreign steamships. Despite the incurred transaction costs, the key reason for them to do so was safety and efficiency, which was mentioned in most of the memorials by domestic customs supervisors. Moreover, the fiscal effect of this shift was heterogenous among several regions. The income gap between two types of customs was greater for coastal areas (Panels A to D) where steamships had overwhelming advantages over sailboats. However in the inland Jiujiang (Panel E) with a more intricate and seasonal network of narrow rivers, canals, and lakes, the economy of scale for steamships was much less significant, so the income gap between two systems was narrower.

Panel F focuses on the special case, Canton. When the Canton system collapsed after 1842, the Canton domestic customs suffered the most severe loss. On the one hand, international trade taxation was taken over by Hart's maritime customs; on the other hand, international trade was diverted to other coastal treaty ports. During the 1840s, the Canton domestic customs collected 1.6 million taels per annum, over a quarter of the national income, but in the early 1860s, 60% was transferred to the Canton maritime customs and 30% to other ports. From then on, the fiscal role of the Canton domestic customs was insignificant for a long term, as it only taxed on the native sailboats and earned an annual income of 0.05-0.21 million taels.

This section discusses the overall decline of domestic customs during mid-19th century. The pre-1850 star customs underwent severe depression and thus the domestic customs income became far less important for the Qing fiscal state. This setback was heterogenous among regions and can be explained by two factors. First, the Taiping Rebellion caused the permanent closure of several key customs in the Lower Yangzi region that had collected over a quarter of the national income in prewar era. Second, the introduction of the maritime customs eroded the tax base of the domestic system by taxing the cargo transportation of steamships. At least two million taels – one third of the pre-1850 domestic customs income – entered the maritime customs system. In summary, before 1850 the annual national income was approximately six million silver taels, and it shrank by over 50% by the 1870s.

4.3. The Aftermath: The Competition between the Lijin and Maritime Customs

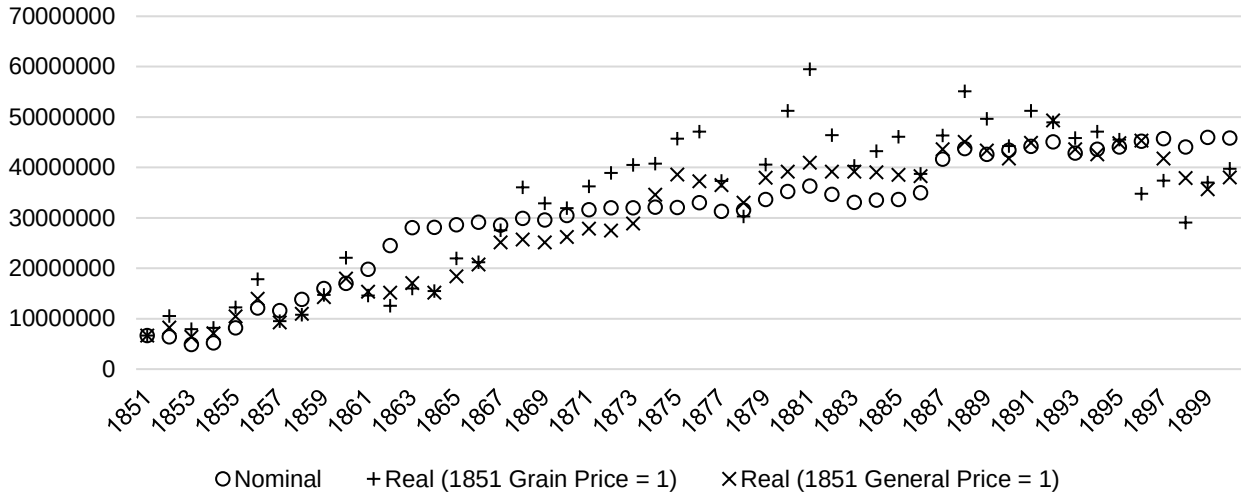
Both internal and external threats in the mid-19th century triggered profound transitions of the Qing indirect taxation apparatus. Within two decades, the domestic customs system almost withered while an unintentional 'duopoly' of the *lijin* and maritime customs formed and played an overwhelming role in the Qing fiscal regime. The focus of this section is on the interactions of these institutions in the late Qing decades.

A Comparison of Three Institutions

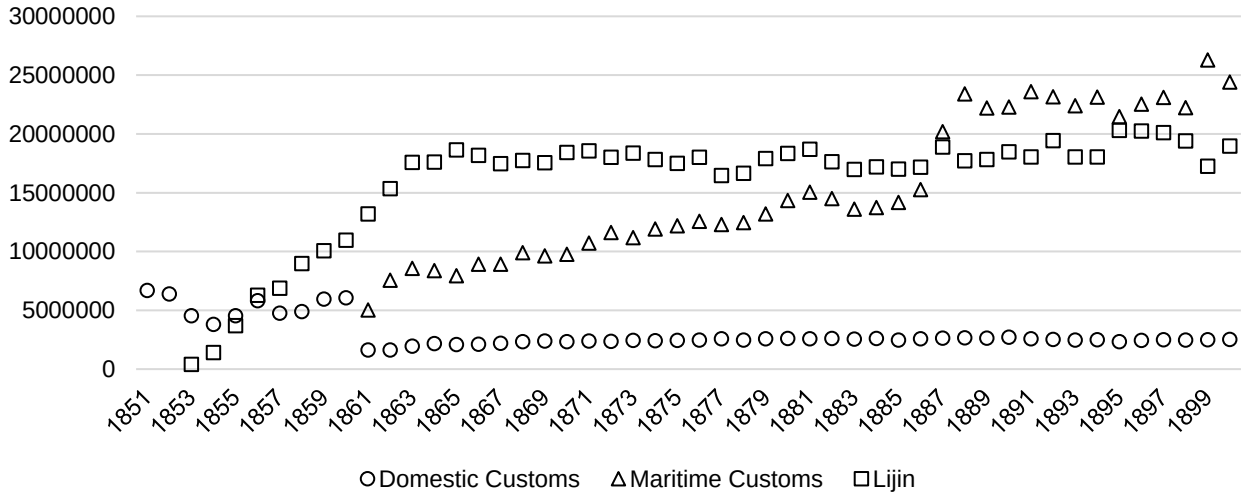
How did the success of both *lijin* and maritime customs systems strengthen the Qing indirect taxation capacity? The answer is summarized in Figure 4.16.[70] Panel A calculates the indirect tax revenue by aggregating *lijin*, domestic and maritime customs incomes, and the pattern of the late Qing indirect taxation completely differed from that of the pre-1850 era. The total nominal income grew steadily, from 6 to nearly 50 million silver taels during the second half of the 19th century. Its proportion in total government revenue increased from 10% to almost 50%, while that of land tax revenue declined from 70% to less than 40%. Hence indirect taxation became the mainstay of the late Qing fiscal regime. Furthermore, Panel A deflates the nominal series with the grain or general price index by Peng (2006) and finds that the real indirect tax revenue increased at a consistent pace and thus overcame the inflation effect.

Panel B provides the income breakdown and clearly illustrates the decline of domestic customs and the rise of *lijin* and maritime customs. The annual *lijin* income grew rapidly at the beginning and then remained at the level of nearly 20 million taels. Meanwhile, the maritime customs enjoyed constant growth mainly driven by Shanghai, and the annual income at the end of the 19th century was approximately 20 million. These two novel institutions' annual income totaled 40 million taels – over ten times the domestic customs income.

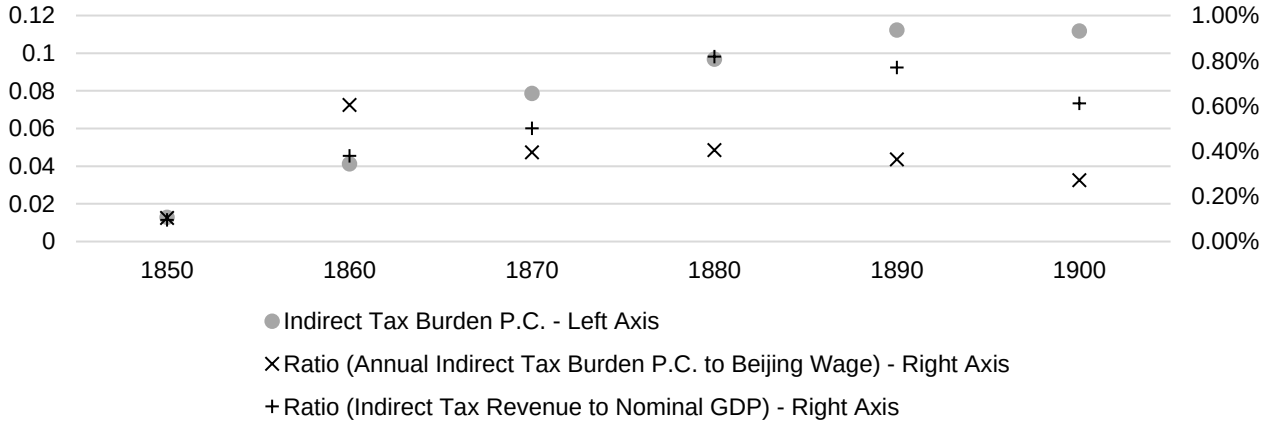
[70] In this chapter I focus on the period 1851-1900 and ignore 1901-11 because there was an abnormal fiscal expansion in this New Policy decade, discussed in Chapter 7; the government income statistics changed drastically and may be unreliable. Another institutional change might also contaminate the revenue data for domestic and maritime customs: to secure the 1901 reparation loan repayment, a maritime customs house could take over a domestic one within 25 kilometers so that there were sharp changes for certain revenue data of both maritime and domestic customs after 1901.



Panel A. Nominal and Real Indirect Tax Revenue (in Silver Taels)



Panel B. Indirect Tax Revenue by Type (in Silver Taels)



Panel C. Indirect Tax Burden (P.C. Level – in Silver Taels)

Panel D. Sectoral Structure of National Economy and Taxation

Figure 4.16. Indirect Taxation Burden of Late Qing China

Note: 1. The wage and GDP data used here are very tentative. For criticisms, see Deng and O'Brien (2016, 2021).

Source: see text.

Panel C extends the evaluation of the Qing indirect taxation capacity to the end of the 19th century with the same method in Section 4.1. The Qing progress during this period was remarkable: the per capita indirect tax burden increased from 0.02 to 0.11 silver taels over five decades. Although the ratio of indirect tax burden to wage did not increase steadily,[71] the ratio of indirect tax revenue to nominal GDP (Ma and de Jong, 2019) on a national scale rose substantially from 0.2% to 0.6%, with the highest point being 0.8%, in a sharp contrast with the early Qing low level. Finally, Panel D calculates the ratios of land to non-land taxation and of agricultural to non-agricultural outputs, respectively. With regard to the sectoral structure, the importance of the primary sector gradually fell from 2.5 to 2. Meanwhile the change of taxation structure was unexpectedly rapid and persistent. Again, the decade 1850-9 was a watershed, within which the ratio of land to non-land taxation dropped from 2.7 to 0.5, driven by both the shrinking land taxation and the growing indirect taxation during the Taiping Rebellion. After the crisis the land taxation recovered, but it was unable to keep pace with the increase of the *lijin* and maritime customs income. In short, for late Qing period, compared with the moderate sectoral structure change over time, the fiscal revenue structure experienced a sudden change and subsequently persisted. The non-land tax revenue doubled the land income, which was exactly opposite to the early Qing pattern.

The *lijin* and maritime customs systems not only expanded the tax base of China as a whole, but also redistributed potential tax sources among different regions after 1850. Some domestic-customs-based commercial centers lost their fiscal significance, while several new regions,

[71] The Beijing wage data (IISH, 2019) need careful interpretations as the local economy in Beijing fluctuated during those decades.

particularly the ports along the Yangzi River and the southeastern coast, became attractive cash cows for the late Qing government because of their high volume of taxable trade. With data from Chapters 3-4, Figure 4.17 estimates the total indirect tax revenue at the prefectural level and reviews the ranking changes over the 19th century.[72] During this ever-changing century, with 1850 as a cut-off, the fiscal role of the Grand Canal prefectures was diminishing. Several of them – Shuntian (Beijing), Suzhou, Huai'an and Hangzhou – had notable performance in the early 19th century, but they were rarely seen after 1850; the role of Canton slightly declined because its monopoly of international trade ceased abruptly. Meanwhile, the prominent Shanghai and Wuhan became the strongest prefectures in indirect taxation, supported up by both local *lijin* stations and maritime customs. In summary, in 1800 there were five Grand Canal, three Yangzi River and two coastal prefectures on the list; one century later, they became five coastal, four Yangzi River and one Grand Canal prefectures. This is consistent with the finding of the previous section that the withering domestic customs institution occurred at the same time as the fall of the Grand Canal.

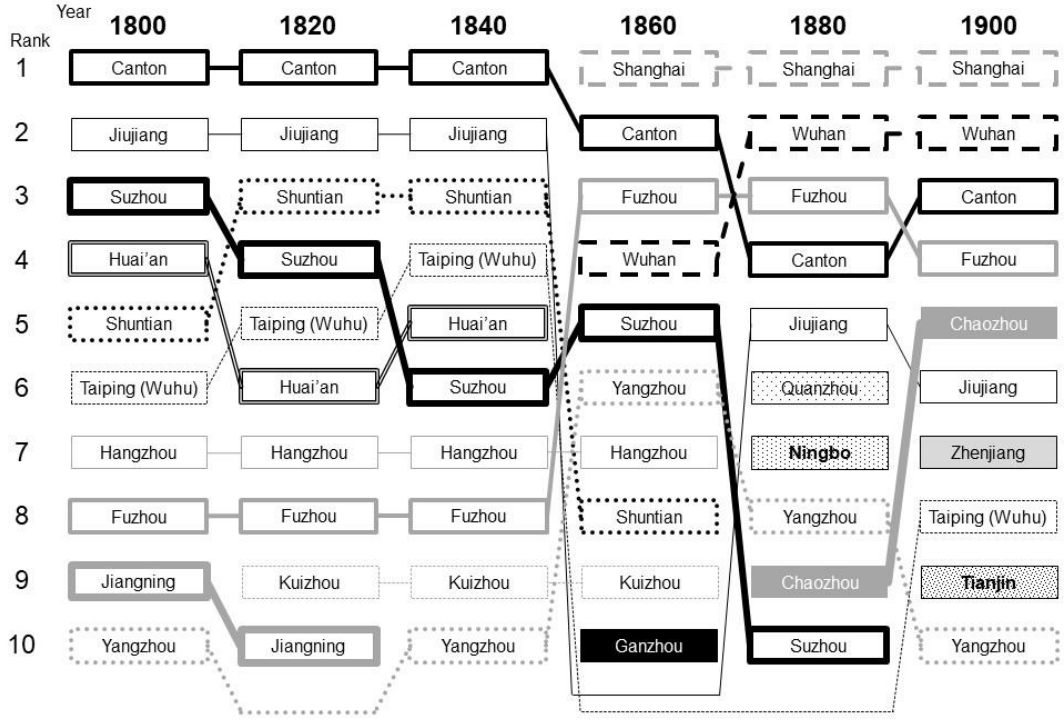


Figure 4.17. Top Prefectures for Indirect Taxation of Late Qing China

Note: 1. 'Shanghai' combines Songjiang and Taicang prefectures. 'Wuhan' combines Wuchang and Hanyang prefectures.

Source: see text, and Chapter 3.

[72] The domestic and maritime customs incomes are assigned to prefectures according to their locations. For the *lijin* I have annual revenue data for provinces and numbers of stations for prefectures, so I use the latter as weights to allocate provincial-level revenue among prefectures.

Why did the *lijin* and maritime customs have notable performances after 1850? First, the *lijin* and maritime customs systems had an advantage over the domestic customs system due to their organizational structure and accountability. The *lijin* was an expedient solution during the internal unrest and served as a *de facto* local fiscal apparatus: prefectures recruited clerks and patrolmen and collected the tax, and a provincial bureau coordinated all stations within its territory and evaluated their performances; the interventions from the Qing central court were always in vain. The allocation of the *lijin* revenue was also determined by a local government, so that it had a strong incentive to preserve the *lijin* institution and to expand its revenue, further discussed in Chapter 6. The maritime customs, as an independent bureaucratic system, had a flat structure: Hart as the supervisor had the authority to recruit, evaluate, promote, and dismiss employees for all maritime customs; his office oversaw all customs and reported directly to the Zongli Yamen of central government to minimize the principal-agent problem. Regarding the spending pattern of maritime customs income, the Zongli Yamen allocated most of it to war reparations, military affairs and foreign debt repayment.[73] In contrast, the domestic customs were deeply entrenched in the complex hierarchical bureaucracy of the Qing Empire. As Table 4.1 indicates, the *de jure* superior of all customs was the Board of Revenue or the Board of Works, while the operations of numerous customs were delegated to officials at a certain local level. This system was co-supervised by both central and local agents, so the accountability was vague and weak. The domestic customs had no *ad hoc* spending reports because all revenues were remitted to the central reserve for regular fiscal purposes such as salary and subsidy payment for officials and royal nobility (Liao, 2010, pp. 71-8); from the 1850s, certain customs even refused remittance and retained the income for a local emergency (Wei, 1986). Mismanagement of remittance and spending aggravated the accountability problem and further undermined the incentives of domestic customs supervisors.

Second, the tax base of these three institutions varied, and the *lijin* and maritime customs had a more solid one. As discussed above, the *lijin* institution mainly taxed local short-distance trade. Its tax base was solid because local trade within each macro-region was indispensable even during a war or social unrest; the dense *lijin* network was able to capture the small cargo transportation within tens of kilometers and the income was considerable despite the small contribution of each taxpayer. The domestic and maritime customs focused on long-distance (including international) trade; the former taxed sailboats while the latter taxed dominantly steamships.[74] Moreover, domestic and maritime customs were not in a fair competition

[73] There were interventions from local governors. See Chapters 5 and 6 for more details.
[74] Their tax base was more vulnerable as the trade volume of key transportation hubs could fluctuate because of a political or economic shock.

because the capacity of a steamship was over ten times that of a sailboat, and its speed more than tripled (Liao, 2010, p. 266). During the second half of the 19th century, sailboats were gradually replaced in the major waterways, which further fostered the growth of the maritime income and eroded the tax base of domestic customs.[75]

Finally, the performance management guidelines of the three institutions differed. The domestic customs system adopted a rigid quota management as described: the quota was unadjusted for centuries, making central government unaware of the local situations and giving customs supervisors very low incentives. The *lijin* performance assessment approaches were heterogenous across provinces, most of which adopted a dynamic quota management by referring to the moving average performance of the recent decade (Luo, 1936, Chapter 4). In sharp contrast, Hart focused less on the revenue goals of maritime customs and adopted the 'remit-as-you-collect' method with strong internal auditing (Zhou and Wang, 2012, pp. 103-18; Van de Ven, 2014). The generously paid employees simply followed the regulations and remitted all revenues, and therefore they were not responsible for a possible decline in revenue in the case of a trade recession, provided that they fulfilled procedural compliance. The flat structure, small size and high independence made Hart's managerial philosophy effective, so a steady growth of the income in late 19th century is conceivable, with acceptable fluctuations for some customs in certain periods.

In summary, the success of the *lijin* and maritime customs systems, compared with the old domestic one, was attributed to their organizational structure, accountability, and tax base; meanwhile, their taxation methods and tax rates made no significant difference. Such comparisons are rare in the literature, except for Zhou and Wang (2012) who propose the overwhelming role of performance management in explaining the different performances of the three institutions. They argue for the merits of an impersonal bureaucracy with strong procedural compliance resembling Hart's maritime customs while expressing serious concerns about the outcome-based quota management in indigenous Chinese institutions. However in my opinion, performance management alone did not fully explain the taxation performance.[76]

The Competition between the *Lijin* and Maritime Customs

The *lijin* and maritime customs institutions had their own potential taxpayers – short-distance

[75] Their taxation procedures and rates were not a major factor for their performances. Tax farming was rare in all three institutions. Regarding tax rates, the *lijin* rate was flexible and based on cargo transportation distance, varying from 1-10% in most cases; the maritime customs rate was 5%; the domestic one was the lowest, at approximately 3-6%.

[76] A counterexample: the *lijin* system adopted quite dynamic quota management, and its revenue was comparable to that of maritime customs.
Implementing procedural compliance could be challenging and costly in a giant organization, while the outcome-based quota management, as long as it was well adopted, could be efficient and cost-effective.

and long-distance trade merchants respectively. However, an intriguing competition between them was witnessed during the second half of the 19th century because of the commutation tax scheme introduced by the Treaty of Tianjin (1858). During customs clearance, foreign merchants had paid an import or export tax for their cargo transportation at certain maritime customs, but when the taxed imports or exports were transported within inland China, they were still required to pay the local *lijin*. As early as 1854 some British merchants had complained about the unreasonable double taxation and lobbied their ambassador for a solution.[77] The Treaty of Tianjin after the defeat of the Second Opium War forced the Qing central government to introduce a new commutation tax scheme. Foreign merchants could pay an extra half duty (*zikou banshui*, translated to 'commutation tax' in this chapter) for imported or exported goods, of 2.5%, during clearance at a maritime custom, while all inland *lijin* incurred was exempt. A foreign merchant could certainly still choose to pay the *lijin* in inland China instead of commutation tax. From 1861, the maritime customs began to issue passes to foreign merchants as proof of commutation tax payment.

This new scheme should have brought no changes to the Qing indirect tax income if we regard central and local governments as a whole. The commutation tax rate of 2.5% was proposed by British diplomats after they surveyed China's inland trade nature in the mid-19th century (Wright, 1950, Chapter 1) so we can assume that this rate roughly reflected the average *lijin* burden for merchants and that the commutation tax simply substituted the *lijin*. However, this substitution aroused strong and long-lasting opposition from local governments. The early literature focuses on conflicts between China and foreign powers and argues that this commutation tax scheme as part of the treaty port system violated China's sovereignty and benefited foreign merchants (Tang, 1992); however, this view is not the key to the local opposition. The commutation tax scheme evoked not the Sino-foreign conflict but the deep-rooted central-local conflict of the Qing fiscal regime. The early Qing fiscal regime had been highly centralized and there had been no institutionalized local finance. The newly established *lijin* institution served as a *de facto* local fiscal apparatus that local governments had strong incentives to preserve. Commutation tax and *lijin* were indifferent to foreign merchants, but the former revenue entered the central reserve while the latter did the local reserve. Local government officials instantly noticed the threats of commutation tax to their *lijin* income and coined the rule of thumb that '*lijin* income declined while commutation tax income grew' (*zikou zeng ze lijin chu*) (Quote from an Eastern Sichuan Circuit Official, 1904, in Lu, 1988, p. 463). Even if foreign merchants chose randomly between *lijin* and commutation tax, the potential tax base of *lijin* was halved. The *lijin* seemed more unpopular for foreign merchants

[77] The British merchants raised two major reasons (Dai, 1993, p. 79). First, clearance at a lijin station could be time-consuming and even troublesome. Second, the tax burden significantly increased.

as commutation taxation required clearance only once at maritime customs while merchants might encounter multiple inspections and taxations by the *lijin* stations if they chose not to pay the commutation tax.

Nevertheless, the local officials did not let the doom be. The time series data in Figure 4.18 imply that the commutation tax scheme was not overwhelmingly advantageous. The maritime customs income from commutation taxation at the national level quadrupled from 0.2 to 0.8 million silver taels during the second half of the 19th century, which was consistent with the overall growth of China's international trade. However, the share of commutation tax income in total maritime customs income fluctuated between 2.5% and 5% while both significant growths (especially the early 1870s) and setbacks (such as 1877 and 1888) were seen during the four decades. The competition between the *lijin* and commutation tax was dynamic in the long term instead of a winner-take-all game. The Qing local officials denounced the commutation tax for its 'endless harm' (Shen, 1880, Vol.1-33-34), but the evidence here may suggest a different picture.

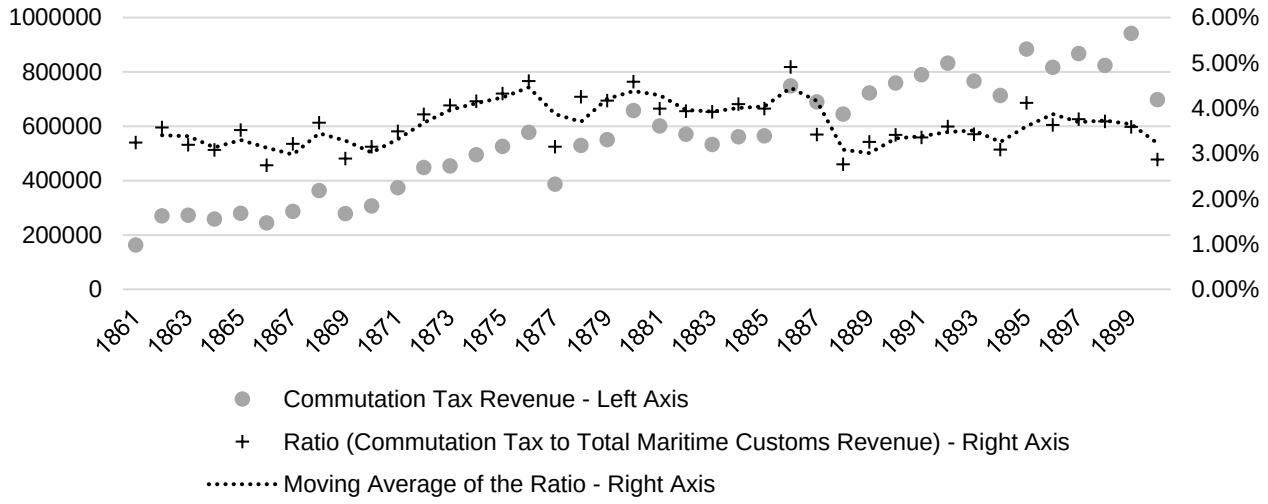


Figure 4.18. Commutation Tax Revenue of Late Qing China (in Silver Taels)
Source: see text.

The competition between the *lijin* and commutation tax showed not only temporal changes but also spatial heterogeneity. The *ex ante* local *lijin* burden well predicted the popularity of the commutation tax when the latter was introduced in 1861. Figure 4.19 plots the correlation between the late-1850s *lijin* tax burden (with different measures) and the early-1860s commutation tax income at the provincial level.[78] Provinces such as Zhili, Shandong and Guangdong were lightly impacted by the Taiping Rebellion so that their *lijin* institution was

[78] I only include the eight provinces with maritime customs by 1864.

nascent and the *lijin* burden was light. Hence foreign merchants were willing to pay the *lijin* and uninterested in the new commutation tax scheme. The Shanhaiguan at the junction of Zhili and Fengtian, for instance, never issued any passes to foreign merchants until 1899.

The Middle and Lower Yangzi provinces, in contrast, had established a mature *lijin* network by 1861 under the Taiping shadow. In encountering the heavier *lijin* burden, the foreign merchants would prefer to pay the attractive commutation tax at 2.5%; once introduced in 1861, relevant maritime customs instantly earned a considerable commutation tax revenue. The *ex ante lijin* burden therefore played a major role in explaining the commutation tax variation across provinces.

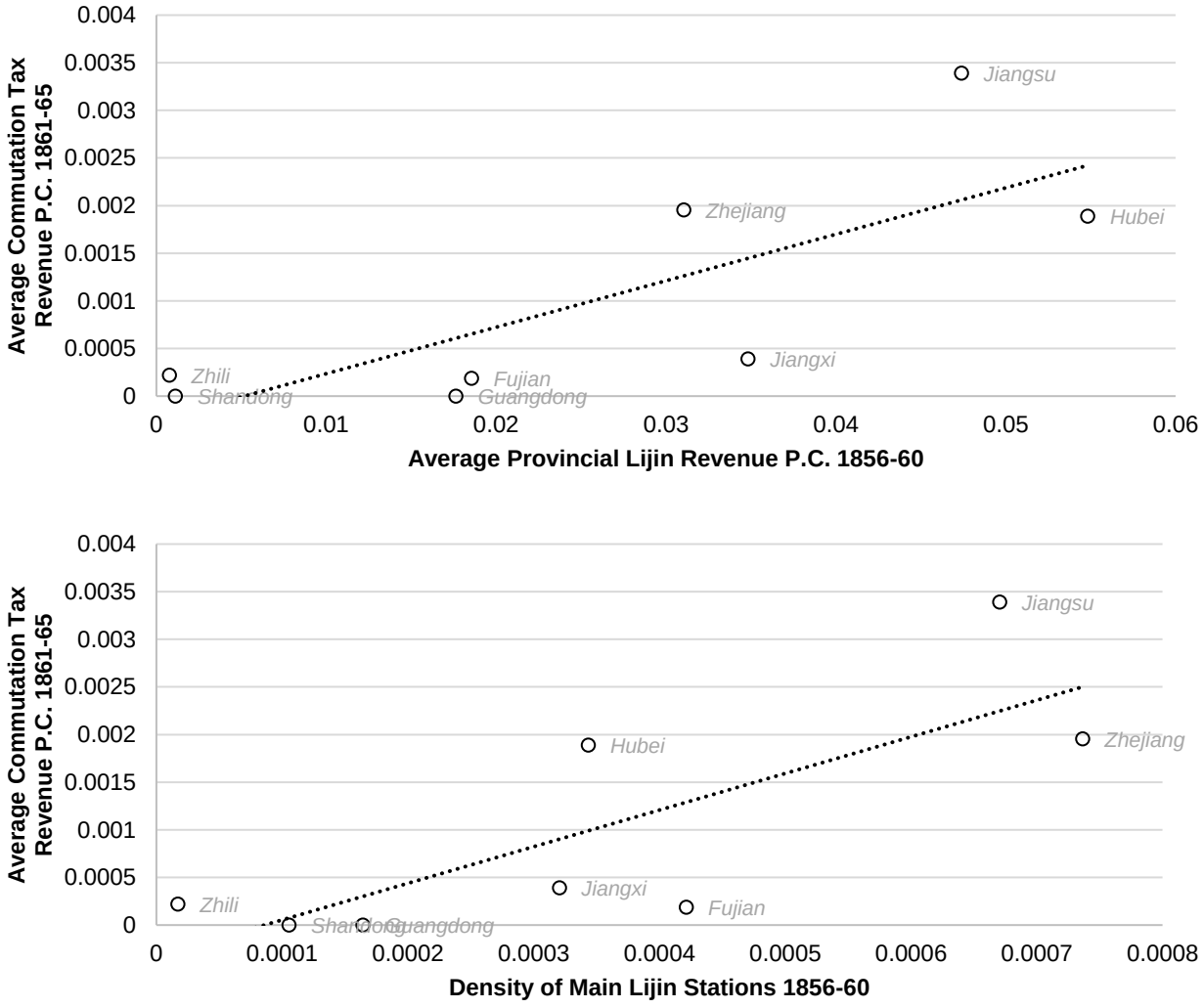


Figure 4.19. *Lijin* and the Introduction of Commutation Tax in the 1860s
Source: see text, and Chapter 3.

Figure 4.19 above only considers the one-off substitution effect in the short term. In fact, all stakeholders soon understood the game and rationalized their behaviors accordingly.

Merchants made flexible choices and hence expected quicker clearance and lower tax burden; both the *lijin* stations and maritime customs attempted to attract taxpayers by simplifying payment procedures, imposing discounts, and even lowering tax rates. Figure 4.20 outlines this dynamic competition in six eastern provinces for which we have complete data for both institutions, and the above mechanism is evident in all six panels.

Consider Fujian (Panel E) as an example. The commutation tax scheme attracted taxpayers from its introduction. The income grew rapidly and peaked in the mid-1870s. The maritime customs employees noticed that Fujian *lijin* stations became increasingly extractive and that more merchants voted with feet and decided to pay the commutation tax (CMCS, 1874, 'Fuzhou'). The officials in the *lijin* stations of Fuzhou and Xiamen also observed the shift and thus worried about the *lijin* income loss. Hence they lowered the *lijin* rate to a level 'equivalent to the commutation tax' (CMCS, 1874, 1875, 1876, 'Xiamen' and 'Fuzhou'). The *lijin* rate for most imported goods such as cotton cloth, pepper, sandalwood, tin, copper, etc. was more than halved. Their action took effect immediately and the growth of commutation tax revenue was inhibited in the late 1870s. Meanwhile the maritime customs 'retaliated', too. For the rest of the 19th century, the *lijin* stations and maritime customs in Fujian competed continuously and none could completely replace the other. Such fine-tuning adjustments and dynamic balances were also seen in all other panels.

Moreover, the *lijin* officials of different provinces even collaborated to attract taxpayers. In 1884, the Jingzhou-Beihekou station of Hubei province and the Yuezhou station of Hunan province proposed jointly that the cumulative *lijin* rate of both stations should be 'slightly lower' than the commutation tax rate to attract merchants and maintain a considerable income (Dan, 1889, Vol.8). These two stations, along the Yangzi River, had suffered severe losses because merchants with commutation tax passes issued by Yichang and Jianghan maritime customs were exempt from *lijin* taxation. The rationality and pragmatism in this case support the dynamic competition pattern.

During late Qing years the merchants always tried to find the cheaper way of paying the tax. Both the *lijin* and maritime customs institutions made great efforts in attracting taxpayers despite their distinctive institutional characteristics. This competition in a positive sense not only benefited the merchants but also made both institutions less predatory (Dai, 1993; Zhou, 2000, pp. 245-50). In adding *lijin* and commutation tax incomes, a steady growth emerges over time for all provinces: even though the competition reduced the tax burden for each taxpayer, the trade volume increased and thus drove the overall revenue growth.

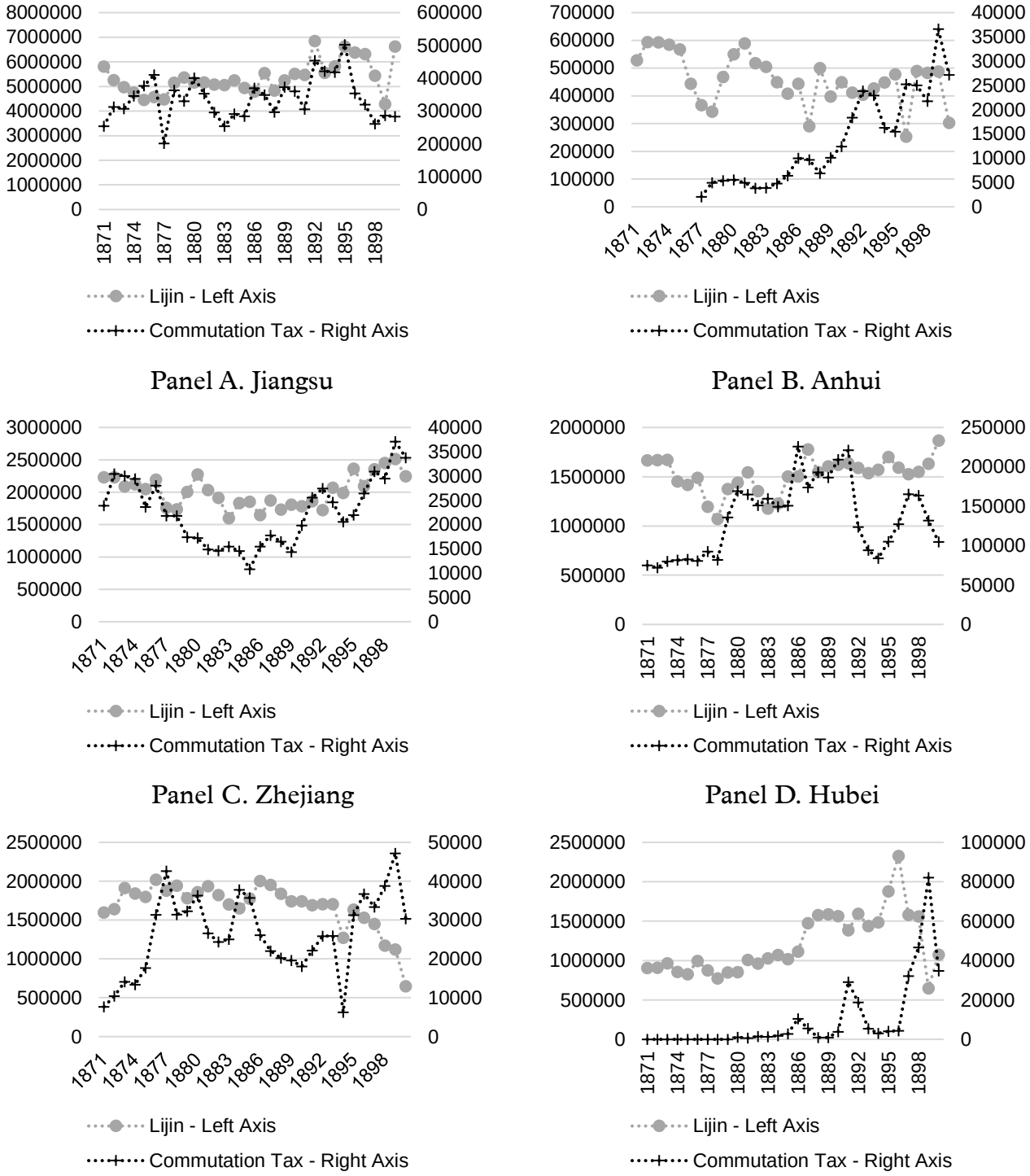


Figure 4.20. Substitution Effect between *Lijin* and Commutation Taxes (in Silver Taels)
Source: see text, and Chapter 3.

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In a nutshell, this chapter expands the scope from the birth of *lijin* to all indirect taxation institutions of the late Qing era, namely the *lijin*, domestic and maritime customs. The domestic

customs income, controlled by central government, was more than halved in the mid-19th century because of the Taiping Rebellion and the Treaty of Tianjin. Meanwhile, two novel institutions, the *lijin* and maritime customs, achieved remarkable income growth for local and central government agents respectively. Indirect taxation had never been so important for the Qing Empire in the second half of the 19th century: by 1900, its annual revenue doubled that of land taxation, and the share of tax revenue in GDP grew significantly.

The *lijin* and maritime customs systems succeeded because of their efficient organization, clear accountability, and solid tax base. Their rationality was fully illustrated in the final case study of this chapter – the introduction of the commutation tax scheme. The dynamic competition between the *lijin* and maritime customs systems reflected a challenging imperative of the late Qing state modernization – the intense intergovernmental conflict between central and local agents. More importantly, the rapid expansion of indirect taxation was the key to understanding the late Qing fiscal transitions, through which local governments were more responsive to economic activities and the central-local fiscal tension became apparent.

5

Foreign Borrowing

Mobilize the intrinsic fiscal resource of our province in advance.

Zhang Zhidong

(Xu (ed.), 1920, 'zougao' Vol.24, Chouban Jiangxi shanhou shiyi zhe)

The focus of the previous chapters is the changing structure of late Qing taxation: Chapter 3 argues that the Taiping Rebellion gave birth to the Qing *lijin* institution, and Chapter 4 examines the decline of the old domestic customs system and highlights that the novel *lijin* and maritime customs incomes became the mainstay of the Qing indirect taxation from the 1860s. Two general conclusions can be drawn: first, indirect tax revenue became indispensable for the empire, the share of which in total government income reached two thirds by the end of the 19th century; second, the authority of the Board of Revenue declined sharply while fiscal autonomy at the local level grew steadily. Based on these conclusions this chapter explores a novel fiscal phenomenon in the late Qing history, namely foreign borrowing. Its scope for foreign borrowing is broader than that of most contemporary studies: this chapter covers not only central and local government loans by foreign banks but also the local-official-led enterprise and infrastructure loans raised dominantly by powerful

local governors. From the supply side, the growth of China's foreign borrowing in the second half of the 19th century coincided with the prosperity of the expansive capital market in Europe.[79] Meanwhile from the demand side, the fiscal power shift from the Board of Revenue to the local governors since the 1850s was a prerequisite for the introduction of foreign borrowing. This chapter aims to unfold this narrative.

Sections 5.1 and 5.2 firstly argue that two factors accounted for the birth and growth of the late Qing foreign borrowing – the rapidly expanding indirect taxation and the unprecedented local fiscal autonomy. The first foreign loan was initiated in Shanghai in 1853, since when foreign loans played an increasingly important role in the Qing fiscal regime particularly after the 1890s. By the fall of the empire in 1912, the sixty-year cumulative amount of foreign borrowing was 1.29 billion silver taels, or an average of 21.5 million per year, equivalent to half of the pre-1850 annual government income; the ratio of foreign borrowing to tax revenue rose from 0.5% in the 1860s to 30-40% in the 1910s. However, this pathbreaking fiscal innovation was introduced by not the Board of Revenue but local governors: during the Taiping emergency, the Board loosened its control over local finance and shifted the responsibility of military financing to local governments; therefore, the regions including Jiangsu and Fujian began to borrow from foreign merchants without any central order or even consent; in the initial phase they employed this strategy modestly to mitigate the local liquidity crisis, to which the central government, without any other solution, had to acquiesce. From the late 1880s, governors began to leverage local resources intentionally for loans in their Self-Strengthening enterprises and infrastructure projects. The institutional learning process took place within governors, and the Qing central court resorted to this instrument in a very late phase for the massive reparation payments, 'new army' investments, etc.

Section 5.3 offers a typology for the foreign borrowing of late Qing China and summarize the channels of how foreign borrowing strengthened or undermined the late Qing fiscal capacity. The typology considers two variables. The first is longevity: did a loan alleviate the liquidity crisis for the government in the short term, or serve as a long-term tool and expand the scale of future taxation and spending? The second is inclusiveness: was a loan for the public interest of taxpayers, or for the exclusive interest of a specific political or social group? Different combinations of such circumstances jointly affected the extent to which a foreign loan played a positive role, and the key finding is that the 'optimal' loans with a long-term prospect and for the public interest, such as railway and telegraph loans, were mainly initiated by local governors rather than central government. The decentralized fiscal-military regime provided local

[79] During the same century, countries such as Greece and Egypt were granted a great number of European loans, but due to their low capacity of meeting sovereign debt obligations, their fiscal systems were eventually taken over by the European powers. See Tomz (2007) for instance.

governments with strong incentives to seek opportunities for long-run investments by borrowing, whereas the rapidly growing indirect tax revenue, substantially in their hands, served as reliable securities for their loans.

This chapter makes three contributions to the relevant literature. First, it compiles and crosschecks various late Qing foreign borrowing records in several studies (Xu, 1962; PBCCO, 1991; Xu, 1996) and constructs a foreign loan dataset comprising the fundamentals for each loan. The literature offers well-recognized case studies on specific loans such as the Western Expedition borrowing (Ma, 1997) and the 1901 reparation borrowing (Wang, 1974) but there is no comprehensive survey of over 230 loans regarding their interest rates, locations, securities, purposes, etc. and the changes over time. Second, since the current literature barely connects foreign borrowing to state capacity, Section 5.3 provides a typology and attempts to explain why and how a foreign loan could strengthen or undermine the late Qing fiscal capacity by studying the heterogeneity of all loans and categorizing them. Third, this chapter incorporates foreign borrowing into the general framework of modern state building of China and establishes links among intergovernmental relations, taxation, government borrowing, and public expenditure.[80] Fiscal decentralization in the 1850s was the critical juncture of this narrative: the withering central authority and the growing local military burden incentivized the local governments to seek short-term loans; the considerable and continuously increasing indirect tax revenue under *de facto* local control secured the repayment of borrowing; since local governors realized the merits of foreign borrowing, they leveraged local resources intentionally for long-term loans and expected stable returns from local public investments.

However, it is worth noting that a well-functioning national deficit financial regime was not formed by 1912. Firstly, fiscal-military decentralization widened regional disparity in late Qing years. As local governments became self-serving, the differences regarding fiscal performance became striking among provinces and even prefectures, whereas not every region was able to realize this self-reinforcing process. Secondly, when the central government eventually resorted to foreign borrowing around 1900, a staggering amount of loans were for war reparations which increased the tax burden of mass people significantly but brought no domestic public interest. This chapter demonstrates that such war reparation borrowing bore tremendous opportunity costs and severely restricted the investment opportunities for public infrastructure and economic development.

[80] In the literature only Ma J. (2004) made a preliminary attempt.

5.1. The Pre-1850 Qing Fiscal Shortfall

This section briefly discusses the extra-budgetary expenditure of the Qing state and how the Board of Revenue made ends meet before 1850. The key fact is that no deficit financing tools were employed by the Qing court from the 17th to the 19th century. Why? A major consensus for the pre-1850 Qing fiscal regime – highlighted in Chapter 2 – is that the amount and structure of tax revenue remained simple and static in the long run. Since the Board of Revenue always made the annual budget within its taxation capacity (*liangru weichu*) in a centralized fiscal regime, the government spending pattern remained rigid too for over two centuries. The total budget was approximately 30-40 million silver taels: 65% was for standing army maintenance, 10% for official salaries, and the remainder for public affairs such as water control, postal system, and exam organization (Chen, 2010, Chapter 5). It was highly questionable whether this simplistic budget could keep the local governments functioning considering the remarkable population boom during 1644-1850. Therefore the Qing state developed a cheap 'indirect governance' model by delegating major responsibilities of public welfare provision to the local elite group – gentry class, as discussed in Chapter 2; meanwhile the informal public finance might have grown secretly at the local level but we know little about its scale (Wang, 1973, Chapter 4; Iwai, 2011, Part 2). In a word, the Qing population almost tripled and the size of bureaucracy was as small as that in the 17th century, but we find no changes in the scale of government taxation or expenditure.

The crisis caused by the combination of a population boom and a rigid fiscal regime began to surface in the Jiaqing (1796-1820) and Daoguang (1821-50) reigns, and enormous extra-budgetary expenditure loomed during this period. Given the unadjusted government budget, both emperors found the fiscal management far more challenging than their predecessors. In the peripheral regions of five central provinces, the local governments had to retreat from the mountainous hinterlands, hereby leaving a vacuum of political order, while a great number of desperate landless peasants joined the White Lotus secret society and waged a mass rebellion when the Qing state attempted to ban the society. It cost 150 million taels for the Qing state to suppress this nine-year insurrection, and this White Lotus Rebellion (1796-1804) is widely regarded as a turning point marking the onset of various political and social crises across the empire. In the subsequent decades, more uprisings were ignited by bandits, pirates, landless peasants, dissidents, and minority ethnical groups, thereby placing a heavy burden on the Qing fiscal system.

In addition to rebellion suppression, the growing extra-budgetary expenditure was mainly for water control and disaster relief. Despite a within-budget annual spending of several million taels for water control (Tang, 1987, Chapter 7; Ni, 2013, Chapter 2), the ecological

deterioration particularly along the Yellow and Huai Rivers – driven by population boom, land pressure and deforestation – meant that enormous *ad hoc* funds (*ling'an* / *zhuan'an*) were required for dike maintenance. Four key provinces, namely Jiangsu, Anhui, Henan and Shandong, spent 100 million taels of *ad hoc* funds during the five decades, or an annual average of 2 million. Relevant disaster relief spending usually followed in the Lower Yangzi and North Plain regions.

Figure 5.1 plots several types of extra-budgetary expenditure during the Jiaqing and Daoguang reigns and shows clear spatial variation. Although scholars point out that silver outflow (Lin, 2006) or abnormal climate change (Liu, 1982; Li, 2007) played a role in the Qing social chaos and environmental deterioration during the 'Jiaqing-Daoguang depression' (*jiadao zhongshuai*), this study still suggests that frequent emergencies and the consequential extra-budgetary expenditure were to a great extent endogenous to the static Qing state capacity.

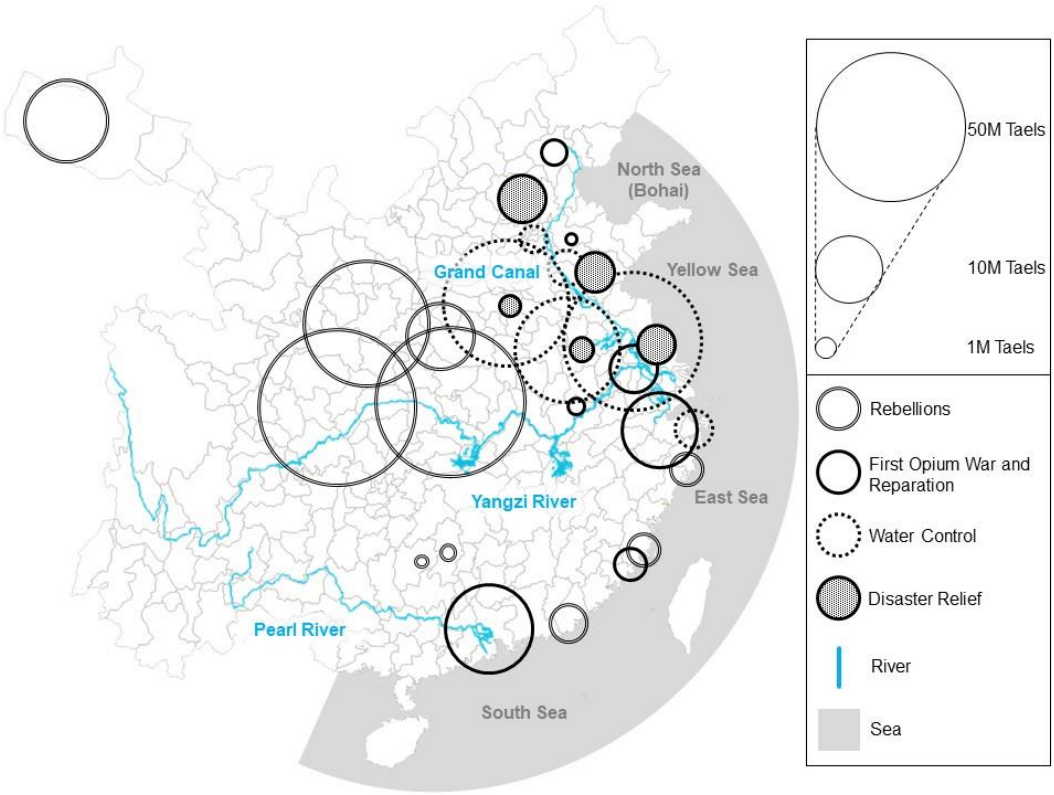


Figure 5.1. Qing Government Expenditure for Exigencies, 1796-1850

Source: Ni (2013, Chapter 2).

The Board of Revenue was responsible for financing such extra-budgetary affairs, and its three solutions were short-sighted and expedient during the first half of the 19th century. First, the treasury surpluses during the Qianlong reign were an enormous legacy. The level of the

treasury reserve was 70-80 million taels in the late Qianlong period but decreased to 10-20 million by the 1830s-1840s (Shi, 2009). Approximately 50 million taels were erased from the treasury to cover the recurrent deficits during these five decades.

The second solution was the title sales (*juanna*), a common top-down practice for the Board of Revenue to be financed. Under the Civil Service Examinations scheme, people could skip the elementary stage by purchasing certain titles, which included regular vacancies (*changkai shili*, the most common title to be *jiansheng*) and temporary vacancies (*zankai shili*, one-off sales of *ad hoc* degrees or positions during a fiscal crisis). During the Jiaqing and Daoguang reigns, this income reached 74 million taels in total, or an annual average of 1.3 million (Tang, 1987, Chapter 2). However by the end of the Daoguang reign, there were considerably fewer potential 'customers' and the value of a *juanna* certificate was significantly diluted because of the excessive sales, as suggested in Chapter 3.

The final solution was donation by merchants (*baoxiao*). Salt tycoons under the patronage network donated money, upon the Qing state's need, in exchange for the franchise right of salt sales. This channel worked well in the first half of the 19th century and the total amount was 21.3 million taels, or an annual average of 0.4 million (Chen, 1988). Compared with 40 million in the Qianlong reign, there was already a substantial decline. *Baoxiao* became too heavy and even unaffordable for salt merchants because of its high frequency.[81]

All the above funding measures must be initiated by the Board of Revenue, while a local government was strictly forbidden from doing so.[82] Such measures merely alleviated the liquidity crises for the Board of Revenue, which had no long-term plans to expand the fiscal budget. The central tax base was simplistic and vulnerable; the state-merchant patronage network, the absence of independent financial agents, and the lack of contract enforcement provided no foundations for a domestic government bond market. In summary, we find no innovations regarding deficit financing in the first half of the 19th century.

Three comments can be made after reviewing how the Qing state attempted to solve the fiscal crises during the Jiaqing and Daoguang reigns. Firstly, all three methods – treasury support, title sales and merchant donation – were unstable and noninstitutionalized in the long run. On average they could contribute 2.7 million taels in total per year, which was still insignificant for the costly military and civil exigencies. Secondly, such methods were unsustainable by nature. In the late Daoguang period all their contributions were shrinking. The treasury was exhausted, the title sales were no longer attractive, and the merchant donations bankrupted numerous tycoons and even ruined the monopoly salt sales system.

[81] For the collapse of Huai-Yang salt merchants, see Wang (2014).
[82] An indirect piece of evidence: when the Taiping Rebellion broke out in 1850-1851, local leaders such as Zeng Guofan must request the authorization of title sales from the Board of Revenue.

Thirdly, the Board of Revenue held tight control over both central and local budgets and developed a unified redistribution plan. For example, Jiangsu, Anhui, Henan, and Shandong encountered intensive water control exigencies but in most cases they were not required to fund themselves. As the fiscal regime was highly centralized, there was a very weak link between local taxation and local expenditure.

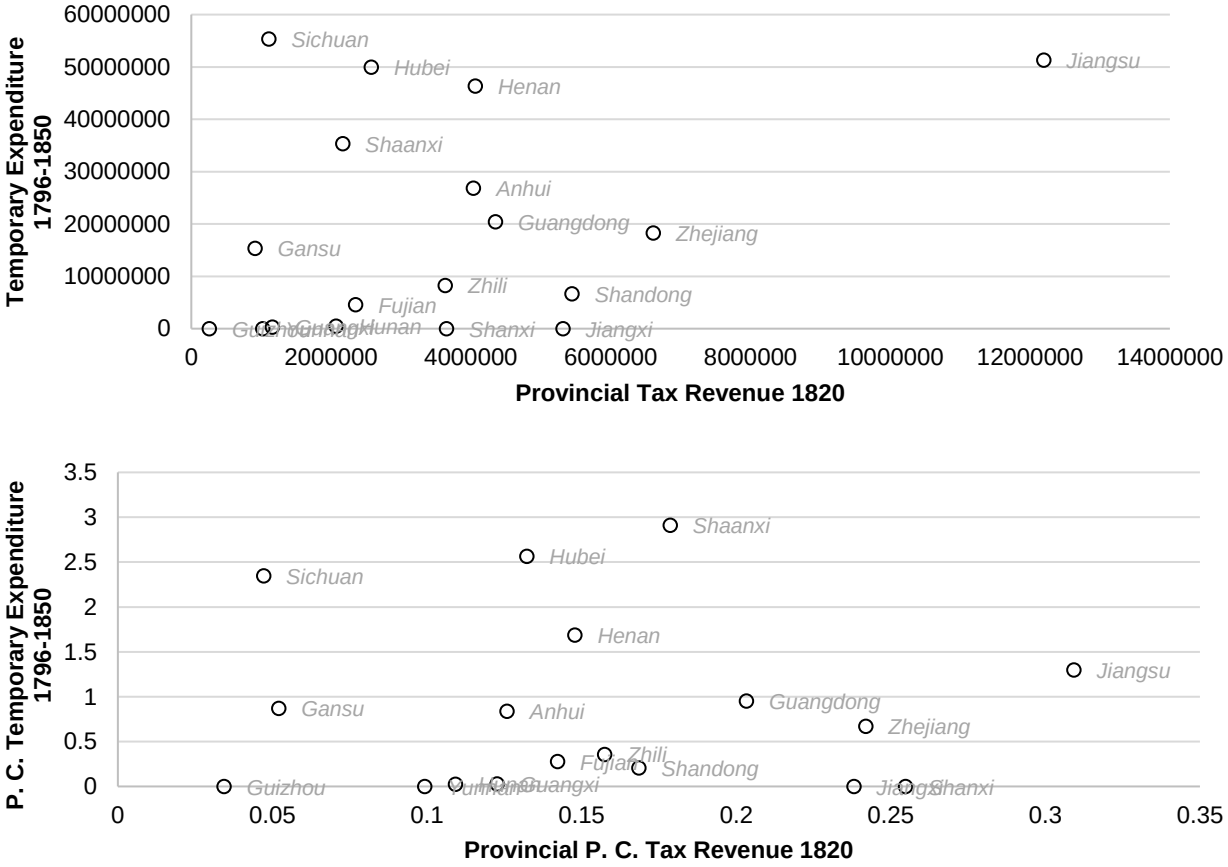


Figure 5.2. Taxation Capacity and Temporary Expenditure for Provinces, 1796-1850

Notes and sources: 1. The land taxation data are from Liang (1980) and I include taxes in kind too. For conversion of grains to silver taels, see Table A.2 in Appendix A. 2. For the salt taxation data, I take the available numbers in 1812 ('huihe jiaqing shiqinian gezhisheng qianliang churu qingdan' in Ni (2013)) Regarding how to match salt sale districts with provinces / prefectures, see Chen (1988). 3. For domestic customs income data, check Chapter 4. 4. It is hard to obtain the provincial miscellaneous tax data. I use (salt sales + domestic customs income) * 0.15 as a rough estimation. 5. The population data are from Cao (2001).

Figure 5.2 estimates the taxation capacity for provinces in 1820 and plots the correlation between provincial taxation capacity and temporary expenditure during 1796-1850. No significant correlation is found for either total or per capita level. Although the low and rigid budget was a serious constraint on local governments during this period, they had neither

authority nor incentive to develop a dynamic local public finance. It implies that during the first half of the 19th century, the Board of Revenue still held effective control over central and local finance in a unified balance sheet and used the interprovincial remittance system (*xiexiang*) to redistribute funds for exigencies.

After 1850 the simplistic and static fiscal regime was soon transformed because two conditions no longer held. First, land taxation was no longer the mainstay of the Qing public finance and provincial governors began to preserve and promote indirect taxation. Second, the central control over local governments was greatly loosened and *de facto* local finance emerged. From that time onwards, the attitude of the Qing state, particularly local agents, toward deficit financing underwent a dramatic U-turn. On the one hand, the introduction of the treaty port system with the growth of the foreign banking sector accounted for it. On the other hand, the changes of domestic conditions mattered. Local governors and even circuit officials (*daotai*) often encountered liquidity crises because of military emergencies such as the Taiping Rebellion or the Nian Rebellion and therefore took the lead to initiate foreign borrowing. In the first two decades (1850s-1870s), they did not even seek the approval of the Board of Revenue; instead, they simply sent an *ex post* memorial to Beijing after a loan had been repaid.

5.2. The Bottom-up Adoption of Foreign Borrowing

This section offers a comprehensive survey of over 230 foreign loans from 1853 to 1912 and attempts to formulate a 'taxation – foreign borrowing – public investment' narrative. In the initial phase, foreign borrowing was exogenously introduced during local military exigencies, and it mitigated local liquidity crises effectively. When local governors realized the power of leverages and sought loans intentionally, foreign borrowing became endogenous to the local taxation capacity. This section investigates the fundamentals of all loans such as types of borrower and lender, interest rate, amount, year to maturity (YTM), and purpose. It finds that foreign loans played an increasingly important role in the late Qing finance as an alternative income; moreover, there was a growing number of loans with a long-term purpose, larger amount and lower interest rate. Finally, this section pays special attention to the late Qing railway system, a direct result of massive foreign borrowing overwhelmingly by local governors.

Local Taxation Capacity and Foreign Borrowing

The bottom-up introduction of foreign borrowing resembles the *lijin* narrative in Chapter 3: under the Taiping shadow, the Board of Revenue was incapable of coordinating the national finance with the interprovincial remittance system and forcibly delegated the fiscal-military

imperatives to local governments. Therefore the latter were urged to finance their militias and private forces with any available resources and even introduced the novel *lijin* institution. This institution extracted new incomes from domestic short-distance trade, while another new tool – foreign borrowing – was based on the new treaty port system. The first five treaty ports attracted over 200 foreign firms (Huang, 1995), and the compradors, as agents between foreign firms and Chinese market, soon became the backbone of this system (Hao, 1971; Fuerwerker, 1983). Where there was a liquidity challenge, local officials would directly seek loans from the well-funded foreign banks while acknowledging that 'native banks (*yinhao* & *qianzhuang*) were incapable of issuing such massive loans frequently' (TTHM, 1983, Vol.6-524).[83] In 1853 the Shanghai circuit official Wu Jianzhang borrowed from foreign merchants to hire warships and defend Shanghai from both Taiping and Small Sword Society rebels. Since the new maritime customs were not yet established, Wu was able to secure the loan with future domestic customs income of Shanghai. Over the following three years, 127,278 silver taels were paid in total (PBCCO, 1991, pp. 1-11) but the structure of principal and interest was unknown. Ma J. (2004, p. 41) estimates the interest rate to be 15% but provides no relevant evidence.[84]

The backgrounds for the next few loans (including the 1854 and 1858 Guangdong-Guangxi governor loans totaling 0.58 million, and the 1857 Fujian-Zhejiang governor loan totaling 0.5 million, etc.) were strikingly similar. All cases involved military urgency, liquidity problem, accessible foreign funds, and local future revenue as securities. Subsequently in the 1860s, short-term borrowing was mushrooming due to rebellion suppression. During 1861-65, Jiangsu, Fujian and Guangdong borrowed 17 times in total. The average amount was 0.19 million taels and the YTM was within 1.5 years. The average high interest rate of 10.74%[85] implied the urgent needs of local officials, who met the debt obligations very timely with local *lijin* or maritime customs incomes. Most local officials reluctantly reported to the central government after loans had already been repaid; the 1861 Fujian governor loan and the 1862 Shanghai circuit official loan were even unreported (PBCCO, 1991, pp. 1-22). Interestingly, the notes of the 1862 Shanghai circuit official loan were found to be resold on the secondary market, but in the meantime the central government was unaware at all (Xu, 1996, Chapter 8). The forced central acquiescence reminds us of the *lijin* case in Chapter 3: the foreign

[83] Other reasons accounted for their choice. For the lack of a sound commercial legal system, see Kirby (1995). For the interest rate differences, see Wang (1957, pp. 150-1): the normal rate by native banks varied from 9% to 20% and usury rate could reach 24-30%.

[84] Xu (1996, Chapters 5-6) points to the 1840s Canton agent default compensation as the first foreign borrowing practice of China: the broke Chinese agents owed debts to foreign merchants and the Canton government fulfilled the debt obligation for the Chinese agents. However I find this practice irrelevant to local public finance. The debts were not initiated by the Canton government; it helped to pay, the only purpose of which was to ease the diplomatic relations with the UK after the Opium War. Hence, I agree with Xu (1962, p. 1) and Mi (1987, p. 438) and point to 1853 Shanghai borrowing as the first Qing practice.

[85] I find the interest rates of ten loans. 10.74% is the mean, unweighted by amount.

borrowing began to grow silently at the local level because of intense military exigencies.

The next major threat to the Qing reign was the Shaanxi-Gansu Muslim Rebellion (1862-73, including the Western Nian Rebellion) and the Xinjiang Crisis (1864-78). The withering central government followed the earlier strategy and delegated fiscal-military power to local officials again, the leader of whom was Zuo Zongtang. The estimated annual military budget for northwestern crises was eight million taels (Liu, 1890, 'zougao' Vol.3), and the Board of Revenue planned to rehabilitate the pre-1850 interprovincial remittance system by instructing other provinces to finance Shaanxi and Gansu. However, the efforts soon proved to be in vain as many provinces disobeyed the orders in public, and Zuo Zongtang was forced to undertake the task of financing the armies himself. Shaanxi and Gansu attempted to expand their *lijin* system, but the progress was negligible due to the impoverished local economy.

Hence a new wave of foreign loans emerged, still at the local level. In April 1867 Zuo instructed his agent Hu Guangyong to seek a foreign loan of 1.2 million taels secured by Fujian maritime customs income.[86] Subsequently in January 1868 Hu borrowed one million again on behalf of Zuo, the security of which was the maritime customs income of all five initial treaty ports. Within the next decade Zuo initiated another four short-term loans from UK firms including Jardine Matheson, Oriental Bank, and HSBC. All six loans referred to as 'Western Expedition borrowing' totaled 15.95 million taels, which was comparable to the annual national revenue of the *lijin* or maritime customs system of the same era. Zuo leveraged available future tax revenue for a considerable military budget, and eventually suppressed all insurrections in Shaanxi and Gansu and retook the entire Xinjiang, which was a very positive signal to other powerful governors.[87]

During the restoration period after the mid-19th-century crises, non-military foreign loans by governors emerged, such as the 1887 Zhengzhou water control (*zhenggong*) loan by Li Hongzhang. This loan totaled two million taels, equivalent to the average title sales plus merchant donation income of the Jiaqing period. Many such loans still aimed to mitigate the short-term liquidity shortage, but loans with long-term prospects began to rise. During the 1880s, Li Hongzhang's China Merchant Steamship and Navigation Company borrowed two over-ten-year loans totaling 1.9 million. Another reformer Zhang Zhidong held a more optimistic outlook on foreign borrowing. He borrowed not only in the Sino-French War (1883-

[86] In an *ex post* memorial Zuo stated that he learned this practice from Jiangsu and that he employed it too when he served as Fujian-Zhejiang governor.

[87] Meanwhile, Hart was establishing his authority over the maritime customs system (see Chapter 4) and complained that the governors used maritime customs income to secure the loan repayment. Hence from the Western Expedition borrowing on, all foreign loans by governors must be *ex ante* approved by the Board of Revenue and the Zongli Yamen if maritime customs income was the security. Some sources (PBCCO, 1991, pp. 42-70; Xu, 1996, Chapters 9-10; Ma J., 2004, p. 48-50) indicate that central government attempted to control the local borrowing from the 1860s, but in my view the central control was ambiguous and insignificant. In most cases over the next few decades, the Board of Revenue and the Zongli Yamen had to acquiesce. Only a handful of local loans were declined (Xu, 1962, Table 1 Appendix).

85) but also for several giant Self-Strengthening enterprises in Canton and Wuhan, as discussed in Chapter 6. The flourishing Hanyeping Firm borrowed over ten times for over 20 million taels and became the largest and the most successful heavy industrial conglomerate of the late Qing period. Furthermore, railway and telegraph loans mushroomed too, and the final part of this section will discuss them in more detail.

The increase of tax revenue under substantial local control should well account for the growth of foreign loans. Why? In the initial phase, foreign borrowing was driven by exogenous exigencies; in this sense, foreign loans merely alleviated local liquidity crises and seemed indifferent to the earlier solutions such as title sales and merchant donation of the earlier period. However, foreign borrowing was pathbreaking because local governors recognized the merits of borrowing and leveraged tax resources intentionally for long-term loans; therefore in the later phase, the size of local foreign borrowing became endogenous to local fiscal resources, and the regions that initiated more long-term developmental loans were able to enter a self-reinforcing cycle. Which fiscal resources could local governors leverage? Chapters 3-4 outline that indirect taxation gradually became the mainstay of the late Qing fiscal regime. The expansion of commercial tax base was uneven across provinces; hence there was an evident disparity in provincial taxation capacity after 1850 that could predict the spatial variation of foreign borrowing.

Figure 5.3 calculates the provincial annual tax revenue (total and per capita levels) in 1850, 1880 and 1910. In 1850, the Board of Revenue was still strong and land taxation was dominant; moreover, the Middle and Lower Yangzi regions were comparable to the North Plain. However from 1850 to 1880, land and salt taxation experienced a severe setback and novel commercial taxation apparatus increased, making southeastern regions the superior cash cow across the empire. Finally in 1910 the spatial variation demonstrates another pattern due to the New Policy in this ever-changing decade. Governors had different tenets in the constitutional reform and introduced new public goods and taxation schemes to varying degrees. The interprovincial inequality was mitigated to a moderate extent. Figure 5.4 plots the relationship between the taxation capacity and amount of foreign loans at the provincial level. The 1850 provincial tax revenue had a weaker explanatory power, but the 1880 and 1910 revenues predicted the amount of provincial foreign loans exceptionally well. It suggests that foreign borrowing was becoming more endogenous to local fiscal conditions over time.

Similar to the *lijin* institution, foreign borrowing practice firstly triggered a learning process among local governors who had *de facto* capacities, whereas the Board of Revenue was incapable of a national planning.[88] Only a handful of loans were associated with central government prior

[88] During late Qing decades, the Board of Revenue still attempted to rehabilitate the original report and clearance (*zouxiao*)

to 1894: the Peking Field Force (*shenjiying*) borrowed moderately for metropolitan defense during the Sino-French War; several other notorious loans (1.76 million in 1884 and 2.48 million in 1887-8) were raised in the name of the Empress Dowager Cixi for the construction of royal courtyards (Yiheyuan, Beihai and Zhongnanhai).

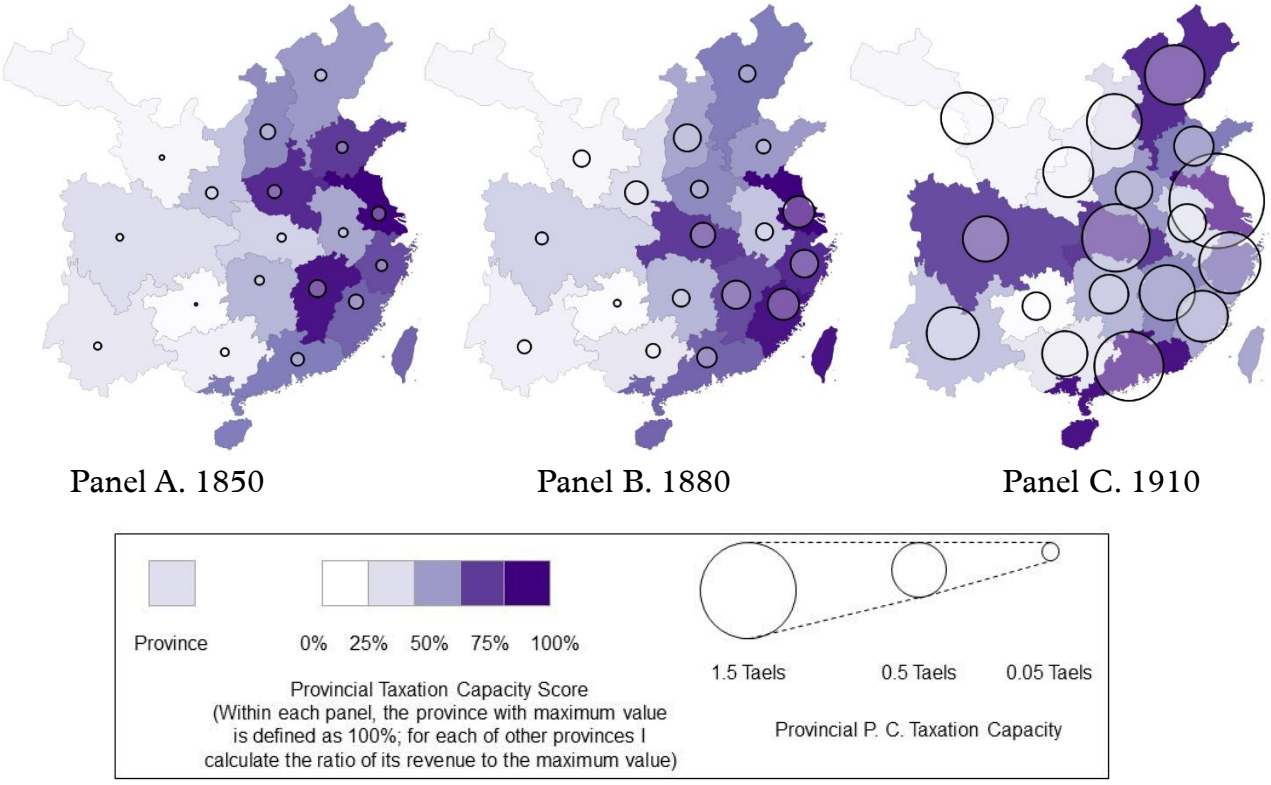


Figure 5.3. Taxation Capacity at the Provincial Level, 1850-1910

Notes and sources: 1. Panel A: the land and taxation data are from Ni (2013); for domestic customs income data, check Chapter 4; for miscellaneous tax data I use (salt sales + domestic customs income) * 0.15 as a rough estimation. 2. Panel B: the land taxation data are from Liang (1980) and I use the 1893 data to make backward estimations; the salt taxation data are from Liu (1901) and I use the 1885 data to make backward estimations; for *lijin*, maritime and domestic customs income data, check Chapter 4; for miscellaneous tax data I use (salt sales + *lijin* & maritime & domestic customs income) * 0.15 as a rough estimation. 3. Panel C: I directly use the provincial total revenue data in the *Fiscal Reports* (Chen, 2015) used in Chapter 3. For more details, see the survey by Han (2014). 4. I include maritime customs income in all panels. Chapter 4 considers maritime customs income as a central revenue from the view of collection process, but in fact this income was completely accessible for local governors, as suggested in the foreign borrowing cases.

and interprovincial remittance systems, although it only made limited progress in the early Guangxu reign (Liu, 2014a, Chapter 1).

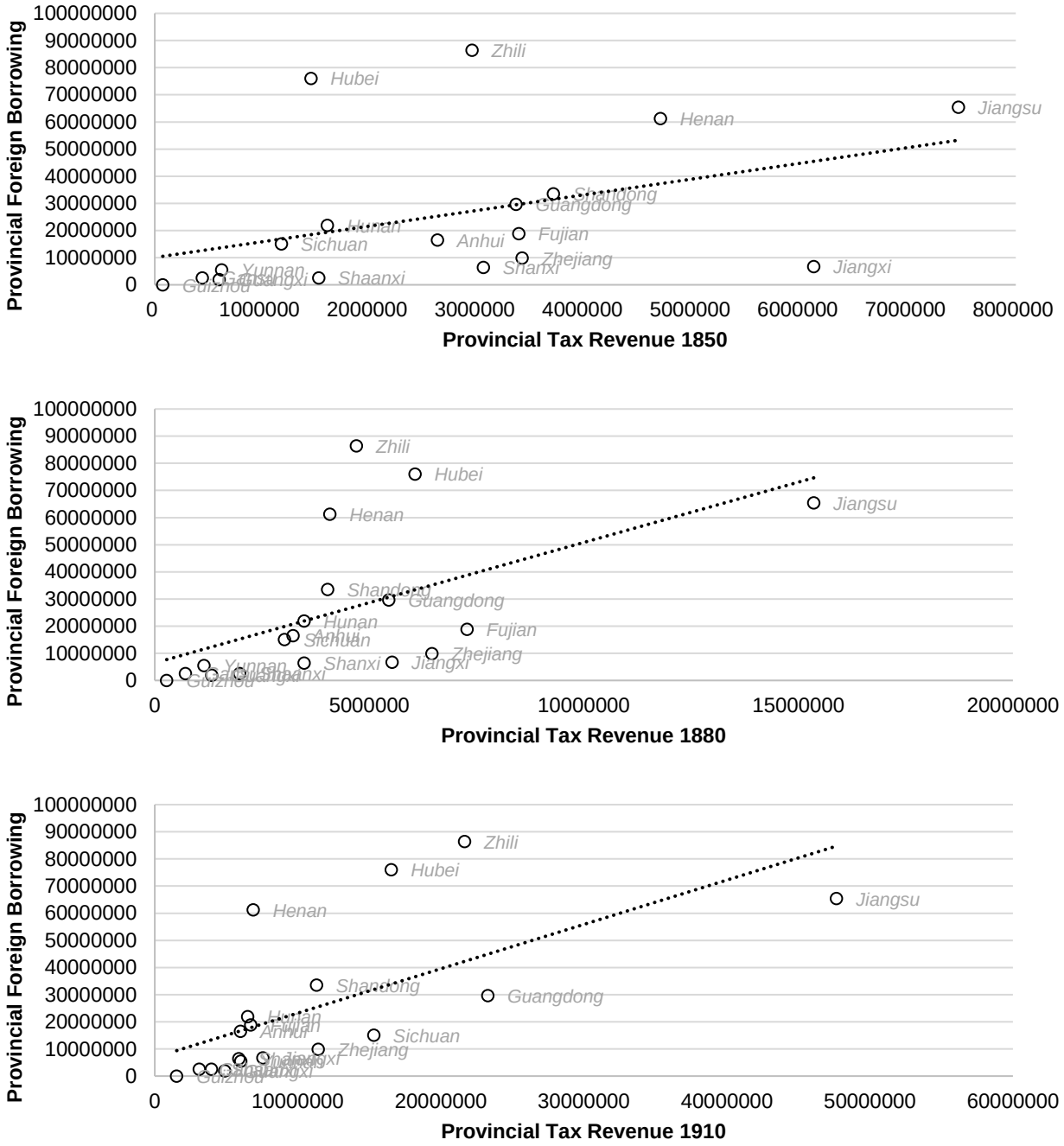


Figure 5.4. Taxation Capacity and Foreign Borrowing at the Provincial Level, 1850-1910
Note: 1. Using per-capita-level data does not change the conclusion. 2. The R^2 for three panels are 0.17, 0.30 and 0.42.
Source: see text, and Figure 5.3.

The central government eventually resorted to foreign borrowing on a large scale by the turn of the century. The amount of two massive war reparations (230 million taels to Japan in 1895, and 458 million taels to 13 countries in 1901) far exceeded the annual Qing tax revenue (approximately 100 million in 1900), so the Zongli Yamen served as a debtor and paid for reparations by foreign borrowing. The reparation to Japan forced the Zongli Yamen to initiate

three loans, namely the Russo-French, Anglo-German, and renewed Anglo-German loans, totaling 309 million taels. The interest rates varied from 4% to 5% and the YTMs from 36 to 45 years.[89] Part of the funds were used in railway and northern fleet investments. Regarding the 1901 reparation, the amount was so tremendous that the Zongli Yamen directly transformed it into a 39-year loan with a 4% interest rate. The massive reparation loans were ambiguously secured by most *de jure* income of the Board of Revenue, which severely undermined the sustainability of the Qing public finance. From 1902, the Qing central government paid an annual average of over 25 million by assigning portions to each province regardless of how the provinces would fulfill them. Discontent and even disobedience were pervasive, as provinces were paying for the central fiascos that were not caused by them. In the final Qing years, a growing number of provinces refused to pay their portions.[90]

In the final 15 years of the Qing Empire, both central and local governments used foreign loans for various diplomatic, military, administrative and economic purposes, and the amount of loans rose rapidly. Figure 5.5 depicts the annual foreign borrowing amount and calculates its ratio to total tax revenue over time. The amount by decade expanded 24.7 times from the 1850s to the 1880s and its ratio to total tax revenue rose modestly from 0 to 3.2%. After 1895, the massive war reparations significantly lifted the borrowing amount, and the ratio increased to an unprecedentedly high level, too. Even if we exclude the reparation loans, the foreign borrowing still transformed the Qing income structure permanently: the amount by decade further expanded 8.7 times from the 1880s to the 1900s, and the ratio grew from 3.2% to 13%.

This section is limited in that it discusses much on loan initiation but little on repayment due to the lack of relevant historical records. Since no severe cases of default are found in the literature, a tentative conclusion is that most loans were repaid timely. Very few were extended or repaid by a new loan: on my list, 19 out of 237 loans were raised to meet earlier debt obligations, the amount of which accounted for only 3% of the total.

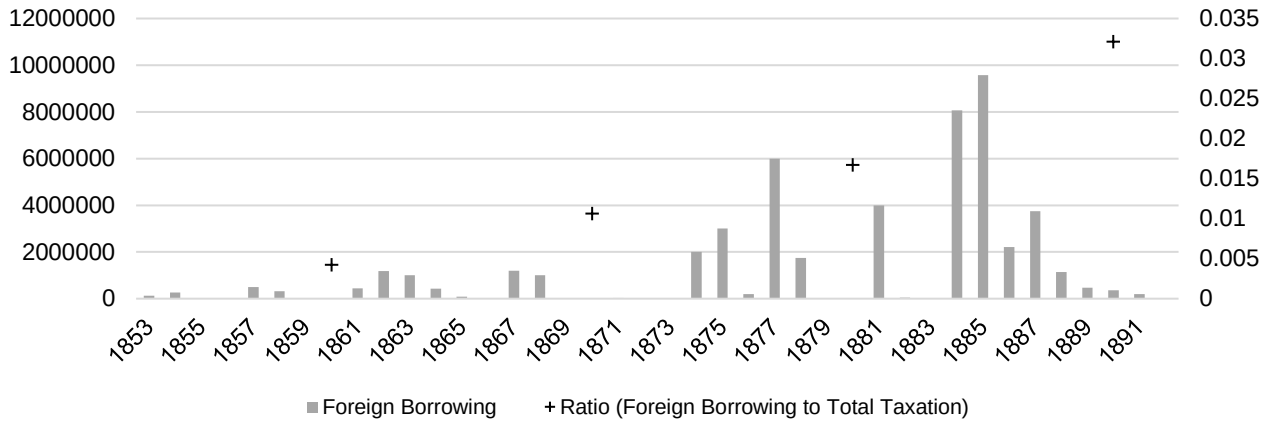
Two reasons accounted for the timely repayment. First, many creditors of such loans were backed up by foreign governments, and a severe default would have led to punitive enforcement in the form of military conflicts. No Qing officials would take this risk, particularly the local ones who borrowed without any *ex ante* central government consent.

Second, over 96% of the total borrowing amount was explicitly secured by tangible resources such as the *lijin* income, fixed capital of an industrial enterprise, coalmine, etc. and thus the debt obligations were easy to meet. The notes of 51% of these loans were issued publicly and

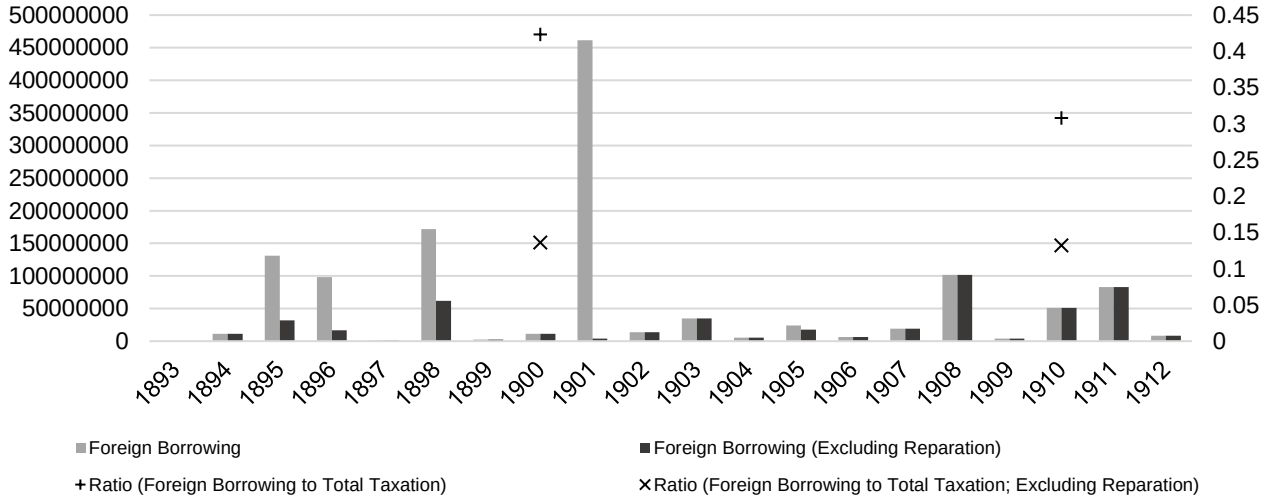
[89] In the renewed Anglo-German loan case, the Board of Revenue even expropriated part of *lijin* income in Jiangsu, Zhejiang and Jiangxi as securities, arousing strong opposition from Liu Kunyi, the Jiangsu-Anhui-Jiangxi governor.

[90] Some provinces even raised other loans to pay for their portions. In 1911, Fujian province borrowed 0.109 million taels at an interest rate of 10.8% from Japanese Bank of Taiwan. This loan was secured by Fujian *lijin* income.

even traded in the European secondary markets.[91]



Panel A. 1853-1892



Panel B. 1893-1912

Figure 5.5. Foreign Borrowing and Total Government Income, 1853-1912

Note: 1. The point estimates of total tax revenue from 1860 to 1900 are the same as Chapter 4. For 1910, I directly assume 240 billion taels. For more details see Chapter 7. 2. I calculate ratios with the formula: *ratio* = $(annual\ average\ borrowing_{year\ (i\text{-}9)\ to\ i)}$ / $total\ tax\ revenue_{year\ i}$.
Source: see text, and Chapter 4.

I retrieve some evidence regarding foreign loan repayment from *lijin* and maritime customs materials used in Chapters 3-4. Both institutions kept incomplete spending records for their

[91] As a comparison, the issuance of the Qing government bonds was disastrous, and no effective central bank was established. The 1894 commercial bond scheme (*xijie shangkuan*) raised 12 million taels and the 1898 credit stock scheme (*zhaoxin gupiao*) did 10 million. Most of the bonds were not repaid as stipulated and such schemes became another version of donation (*baoxiao*): the Qing officials and merchants subscribed for the bonds and voluntarily refused the government repayment to show their loyalty to the throne (Liu, 2008, Chapter 1). After the empire fell, the early republican Beiyang government ran a surprisingly satisfactory public bond scheme because its repayment was explicitly secured by independent maritime customs income (Pan, 2007; Liu, 2008, Chapters 3, 7 and 8).

incomes. Figure 5.6 displays that during the late Qing period a growing proportion and amount of *lijin* and maritime customs incomes were used for foreign loan repayment. In the last decade, 20-25% of their incomes were used to repay both reparation loans under central command and local loans for self-serving purposes. However, this viewpoint is very tentative because many small loans were repaid by *lijin* and maritime customs without leaving a specific record. This figure may still be underestimating the share of their incomes for loan repayment.

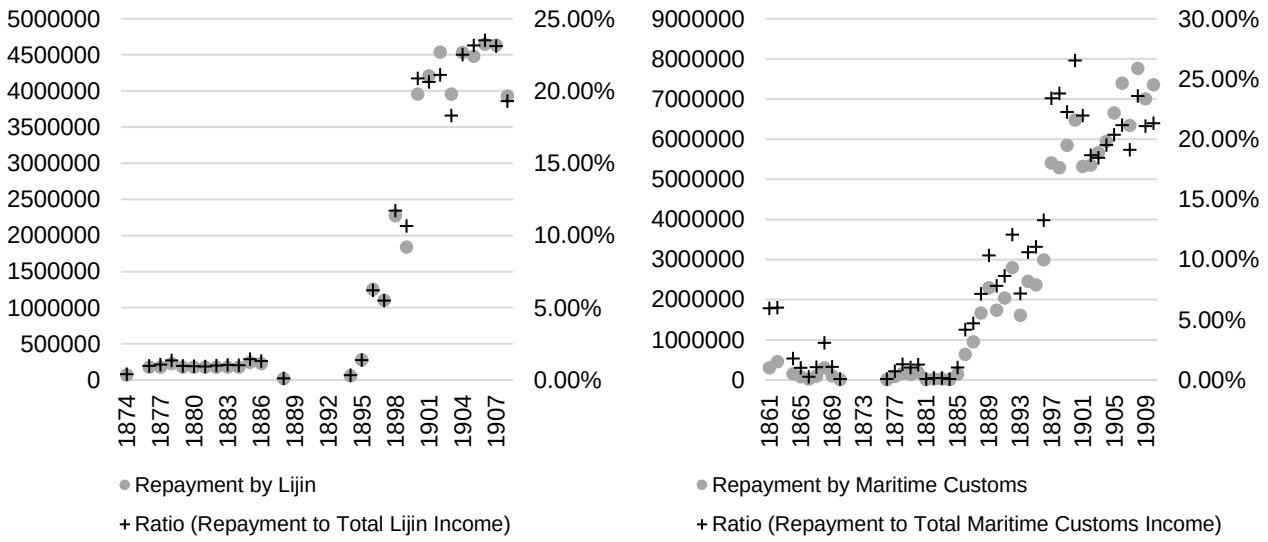


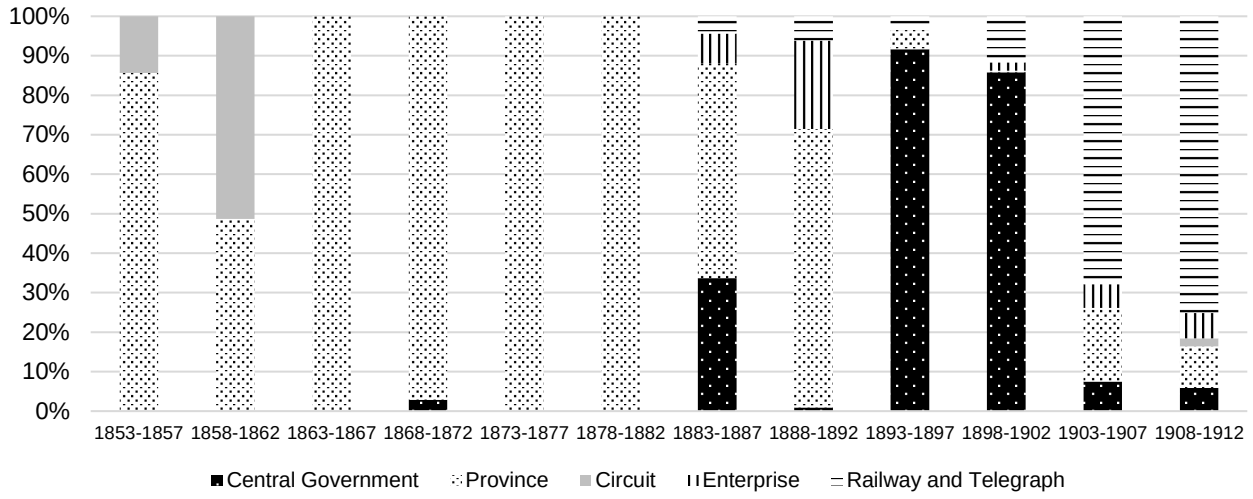
Figure 5.6. Debt Repayment by *Lijin* and Maritime Customs, 1861-1909

Note: 1. Only the massive loans, such as the 1895 Russo-French loan and the 1896 Anglo-German loan, were recorded in the materials I use.

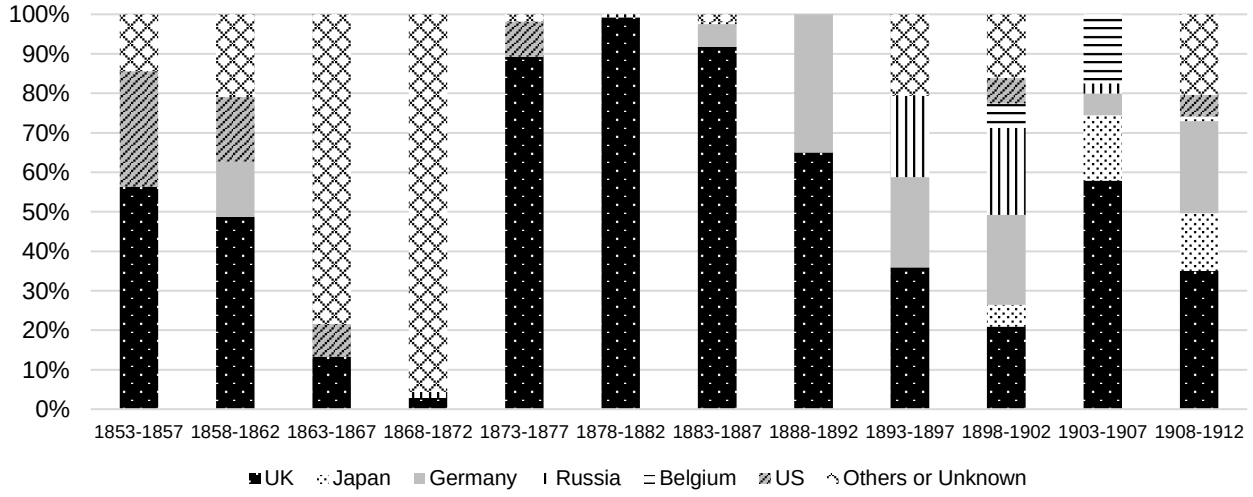
Source: Luo (1936, Appendix); Tang (1992); Chen (2015).

The Characteristics of the Late Qing Foreign Borrowing

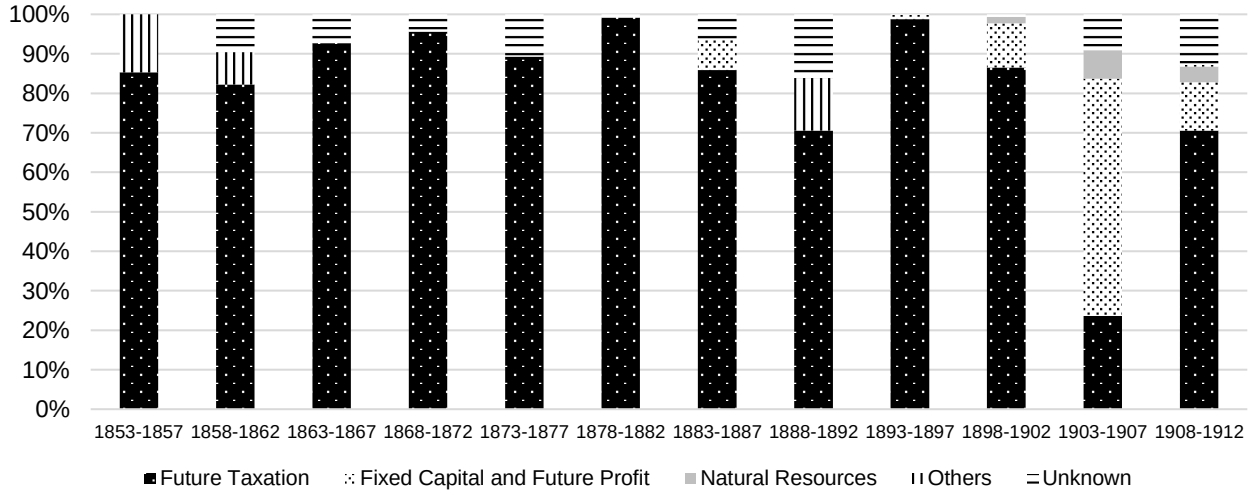
This part discusses the fundamentals of over 230 foreign loans and evaluates the temporal changes in their overall performance. Figure 5.7 firstly classifies them in different ways (by type of borrower, nationality of creditor, type of security and purpose of borrowing) and outlines their structural changes from 1853 to 1912.



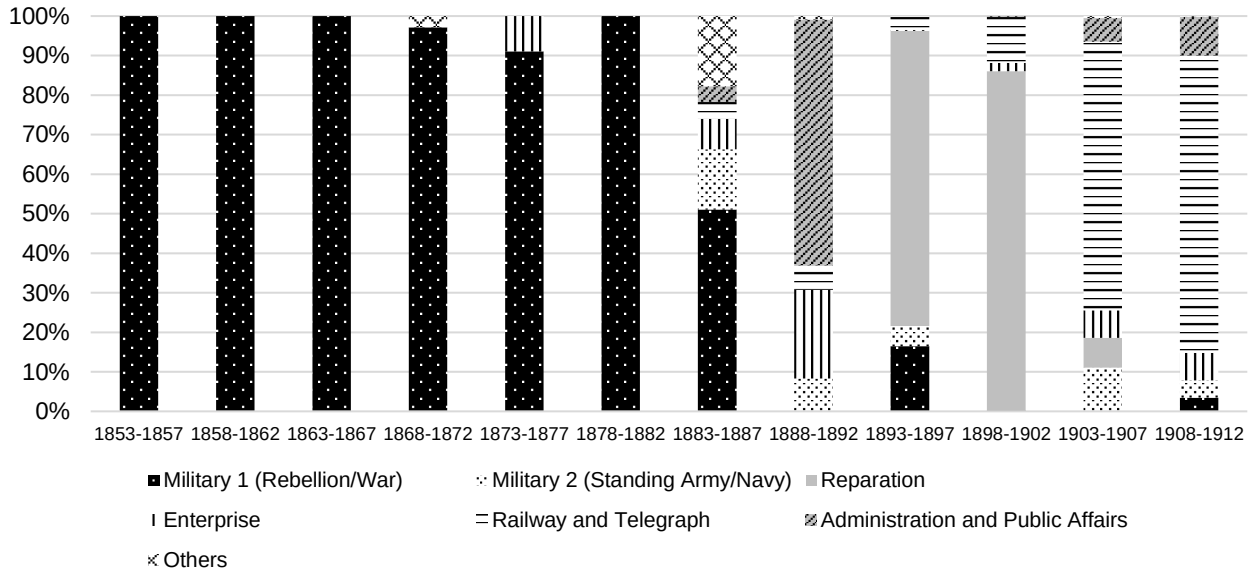
Panel A. Borrower



Panel B. Nationality of Creditor



Panel C. Security



Panel D. Purpose of Borrowing

Figure 5.7. Characteristics of Foreign Borrowing, 1853-1912

Notes: 1. In Panel A, the borrowers of railway and telegraph loans might have multiple identities. Some were local governors and their agents; some were 'commissioner' (*duban*) or 'railway corporation' (*tielu zonggongsi*) that usually borrowed on behalf of governors. Hence I define a separate category 'railway and telegraph'. 2. In Panel D, I define two types of military purposes. If a loan financed a war or rebellion suppression, I classify it as 'military 1'. If a loan was for standing army or navy investment during the peacetime, I classify it as 'military 2'.
Source: see text.

Temporal changes are evident and the 1890s was a watershed in all four panels. Panel A classifies the loans by type of borrower. Prior to 1893, most loans were initiated by local officials. The large share of central loans during 1893-1902 was explained by the aforementioned war reparations, and after 1903, the proportion of central loans returned to a low level again while a large number of new loans were raised for railway investments. Panel B considers the nationalities of creditors, which were usually backed up by foreign governments.[92] The UK and German banks achieved the largest share, and Japanese ones emerged rapidly after the Sino-Japanese War. Panel C categorizes the securities of loans and over 96% of the borrowing amount was explicitly stipulated *ex ante*. The most typical guarantee was future tax revenue especially the *lijin* and maritime customs incomes. This is consistent with the key conclusion that the rapidly growing indirect tax revenue laid the foundations for foreign borrowing.[93] Furthermore, during the 1900s, more railway projects and heavy industrial enterprises began

[92] For example, Deutsch-Asiatische Bank, Sino-Russian Righteousness Victory Bank, and Yokohama Specie Bank, on behalf of Germany, Russia and Japan, respectively, were all *ad hoc* banks for government-related financial services in China during late imperial and early republican times.
[93] In all 237 records, no more than 15 loans used salt taxation as the guarantee and no more than three used land taxation.

to mortgage fixed capital and future profit for their loans. Panel D describes the purposes of loans. Prior to 1882 the loans were dominantly for temporary military actions. In the next decade (1883-92) the borrowing purposes became more diverse. At the turn of the century, reparation loans took the largest proportion and crowded out other types, thereby seriously aggravating the central finance. In the last decade however, the Qing state was still able to develop numerous railway projects through local governors' borrowing; meanwhile the purposes of local administrative loans became more flexible such as disaster relief and financial market rescue.

Table 5.1. Characteristics of Foreign Borrowing, 1853-1912

Panel A. Borrower			Panel C. Type of Borrowing Security		
	Amount	Share		Amount	Share
Central Government	818,466,360	63.42%	Future Taxation	1,051,147,827	81.45%
Province	94,516,036	7.32%	Fixed Capital and Future Profit	162,701,213	12.61%
Circuit	6,149,610	0.48%	Natural Resources	26,858,613	2.08%
Enterprise	37,485,307	2.90%	Others	1,589,776	0.12%
Railway and Telegraph	333,992,543	25.88%	Unknown	48,312,428	3.74%
Total	1,290,609,856	100%	Total	1,290,609,856	100%
Panel B. Nationality of Creditor			**Panel D. Purpose of Borrowing**		
	Amount	Share		Amount	Share
UK	405,747,314	31.44%	Military 1 (Rebellion/War)	85,168,602	6.60%
Japan	87,153,336	6.75%	Military 2 (Standing Army/Navy)	37,047,161	2.87%
Germany	270,769,329	20.98%	Reparation	754,421,292	58.45%
Russia	199,303,059	15.44%	Enterprise	41,471,454	3.21%
Belgium	58,204,857	4.51%	Railway and Telegraph	333,992,543	25.88%
US	58,212,767	4.51%	Administration and Public Affairs	33,216,528	2.57%
Others or Unknown	211,219,194	16.37%	Others	5,292,278	0.41%
Total	1,290,609,856	100%	Total	1,290,609,856	100%

Source: see text.

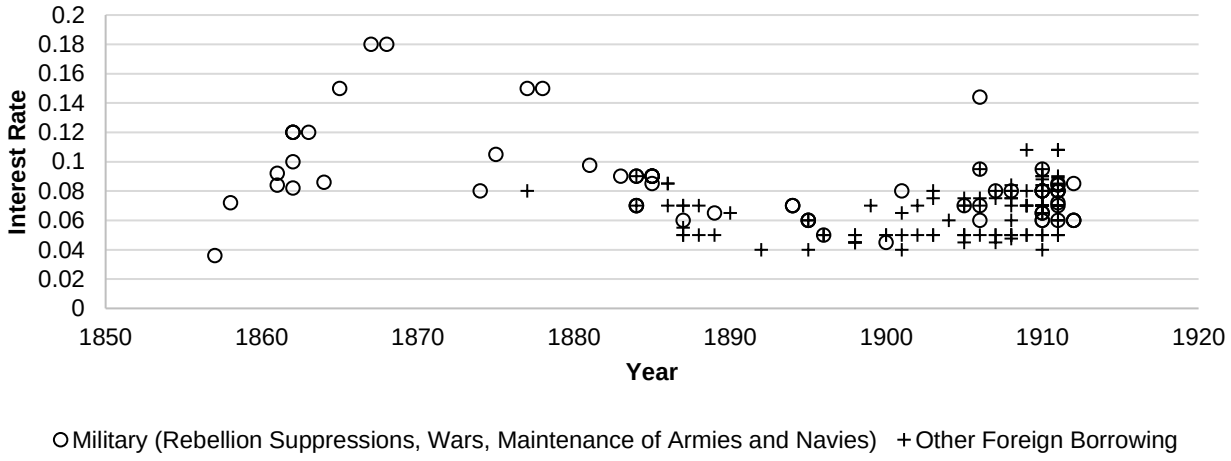
Table 5.1 aggregates the patterns over time and presents a general image of the late Qing foreign borrowing, from which several implications can be drawn. First, the negative impact of

the reparation loans by central government was exceptionally large and long-lasting. Their repayment became a heavy burden and eliminated other public spending possibilities. If we exclude the reparation loans, the central government only borrowed 9% of the total amount as shown in Panel A, indicating its minor role in the foreign borrowing. Second, the amount and share of railway and telegraph loans were considerable and greatly enhanced the modern transportation and telecommunication conditions in China. Third, regarding military borrowing, more loans were driven by temporary needs (6.6%) rather than by standing army and navy updates (2.87%). Finally, although the loans for local administration (2.57%) and enterprises (3.21%) had small shares, their amount, 75 million taels, still doubled the pre-1850 annual income of the Qing Empire.

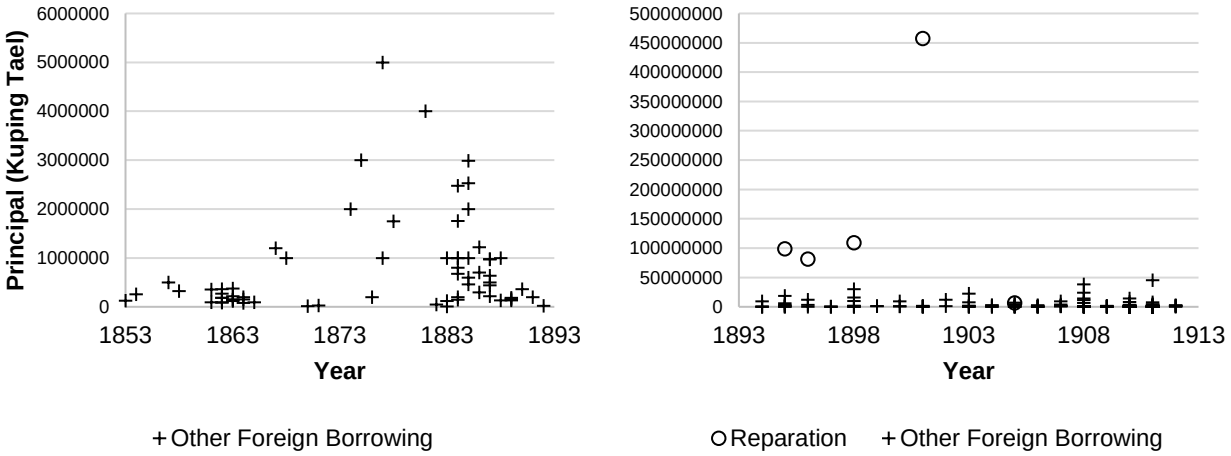
In addition to studying the overall patterns, this part also evaluates the fundamentals of individual loans, shown in Figure 5.8. Over the decades the interest rate declined from over 10% in the 1860s to 6-7% in the 1900s. In general, it was still higher than that of the European markets of the same era. However, compared with the native private lending in Chinese treaty ports, government loans offered by foreign banks still enjoyed a lower rate.[94] Meanwhile, the average amount of individual transactions grew robustly over time, even if I exclude several outliers (namely the reparation loans); moreover, small loans were in great demand for the entire period. Furthermore, the average YTM grew, particularly after 1890, although short-term loans were always popular. Finally, Panel D plots the transaction costs for all loans, the highest of which were for the Sino-French War and the royal courtyards during the 1880s. Transaction costs consisted of two parts, namely volatile exchange rates between silver tael and foreign currencies, and commissions by foreign banks and Chinese compradors.

The decline of interest rate over time was explained partly by this figure *per se*: the larger amount and YTM for a loan (Panels B and C) would reduce its interest rate *ceteris paribus*; meanwhile, in the initial phase plenty of urgent military loans had higher rates, but since the 1880s a growing number of non-military loans lowered the overall interest rate level. Furthermore, from the supply side, the late-19th-century European capital market pursued an expansive strategy (O'Rourke and Williamson, 1999, Chapters 11-12); well-funded banks were eager to grab a share in the Qing government borrowing market and they competed fiercely (Hao, 1986, Chapter 4; Cao, 1991; Xu, 1996, Chapters 14-20). The nature of a buyer's market also accounted for the low interest rate of Chinese borrowing before the First World War. Finally, within the late Qing period, the Qing solvency could not explain the interest rate changes. No temporal variation for solvency was found; due to the external enforcement and explicit securities, the repayment records were very satisfactory.

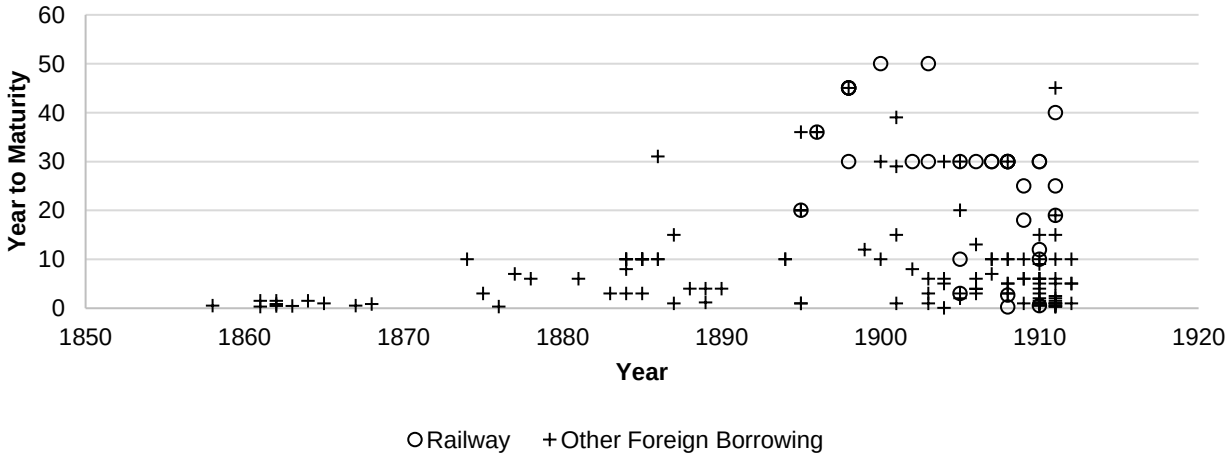
[94] Hao (1986, Chapter 4) estimates the private rate to be around 12%.



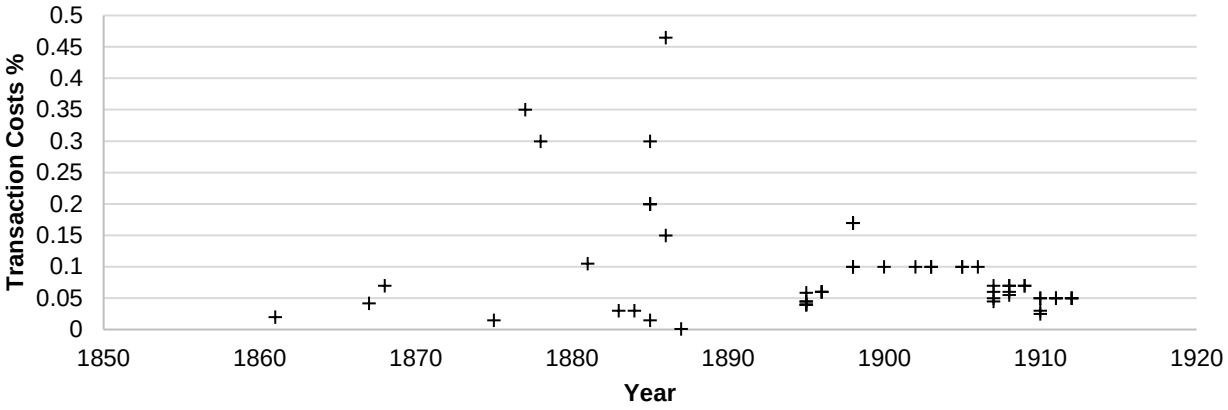
Panel A. Interest Rate



Panel B. Amount



Panel C. Year to Maturity



Panel D. Transaction Costs (Ratio of Commission and Exchange Rate Loss to Principal)

Figure 5.8. Fundamentals of Foreign Borrowing, 1853-1912

Notes: 1. Each observation is a single loan. If a loan had multiple purposes (such as the 1896 renewed Anglo-German loan for war reparation, Beijing-Baoding railway, and northern fleet) I divide it into three loans. 2. I have 237 observations in total. There are 54 missing values in Panel A, 0 in Panel B, and 79 in Panel C. Then in Panel D I only plot those with transaction costs (obs.=60). 3. In Panels A to C: I use circles to denote a special group of loans (for example in Panel A the military loans had the highest rates) and crosses to denote others. In Panel D, I use crosses for all loans. 4. Panel A plots the borrowers' interest rates. If there was a spread between the borrower's and lender's rates, I calculate the excessive repayment amount, divide it by the principal, and plot the ratio in Panel D.

Source: see text.

Foreign Borrowing and China's Railway Network

The late Qing short-term loans for liquidity crisis mitigation were one-off consumables, while some others did leave long-lasting legacies for modern China, the most important of which were railway loans. Authorized railway construction started in 1881 and the network expanded rapidly over the next few decades. By 1912 the railway mileage for 18 provinces of China Proper totaled 5,400 kilometers,[95] among which 4,100 were invested by foreign loans. The amount of loans totaled 305 million silver taels and accounted for a quarter of total foreign borrowing during the late Qing period. Railway played a magnificent economic role in reallocating factor endowments, facilitating market integration and improving the living standards of rural people (Rawski, 1989, Chapters 4 and 6). However, local governors who promoted the introduction and expansion of the railway network encountered fierce obstruction in the Qing court in the initial stage.

From 1872 to 1877, foreign merchants in Shanghai attempted to foster local trade by constructing a 14.5-kilometer Wusong railway, which forced the Qing state to incorporate

[95] Russia and Japan violated China's sovereignty and built another 4,000 kilometers in Manchuria (Mi, 2007, Appendix).

railway facilities into the treaty port system. This nascent line, although dismantled eventually, inspired the Qing governors to propose their native railway network. During the 1880s, Li Hongzhang and other governors in the Self-Strengthening camp wrote memorials continually to urge the Qing court to 'borrow and invest for great future gains' (*jiezhai yi xingdali*) (Wu, 1905, 'zougao' Vol.39-20-25), but a decade passed before the throne determined to reject all the obstinate conservatives in Beijing. In 1889, the Qing court emphasized railway construction as a 'key Self-Strengthening policy' (*ziqiang yaoce*) (Mi, 2007, p. 46) and acquiesced to the governors' foreign borrowing strategy due to the lack of funds. In another word it delegated the responsibility to local governors once again. Although the Railway Corporation (*tielu zonggongsi*) as a *de jure* central institute signed many loan contracts, its commissioner Sheng Xuanhuai must consult the powerful governors such as Li Hongzhang and Zhang Zhidong during the construction of several key lines including Beijing-Wuhan and Tianjin-Nanjing ones (Wu, 1905, 'diangao' Vol.12; Xu, 1920, Vol.154).[96]

Why did local governors rather than central government initially recognize the potential of railway? Again, the accelerating fiscal-military decentralization mattered. First, local governors became directly responsible for national defense and public security from the mid-19th century. Some imperatives such as southeastern coastal defense and northwestern border defense were very costly (Xu, 1996, Chapter 10; Ma J., 2004, Chapter 3), so the self-serving local governors placed more emphasis on the efficiency of military investments than the central Board of Military did. From their point of view, railway significantly improved the efficiency of transportation and reduced the military costs. Second, railway had strong positive externalities and strengthened the local fiscal capacity. It not only facilitated government actions such as official grain transportation and disaster relief but also promoted commerce and optimized the spatial factor allocation (Chen, 1906, Vol.2). Furthermore, Self-Strengthening enterprises such as the Kaiping Coalmine and the Hanyeping Firm enjoyed the external economy of scale as the railway made the coal transportation much cheaper (Ma J., 2004, Chapters 3-4; Mi, 2007, pp. 39-50). A prosperous market, as a result, was conducive to the stronger taxation capacity of the state; as Zhang Zhidong stated in 1889, 'the civil gains emerged and the government gains followed' (*minzhili jixian er guozhili yinzhi*) (Xu, 1920, 'zougao' Vol.25-12). Since the railway-driven trade mainly benefited the indirect taxation apparatus especially the *lijin*

[96] The Qing central government eventually determined to consolidate the national railway network in 1911. The construction of Canton-Wuhan and Sichuan-Wuhan lines had been under local control in the form of stock companies. In May 1911 the Board of Posts and Communications abolished the local stock company schemes and tried to nationalize and centralize these lines. However the Board had no funding at all to complete the lines and planned to borrow again in the name of the central government, which aroused pervasive anger among the masses in Sichuan, Hubei, Hunan and Guangdong provinces and ignited the Railway Protection Movement (*baolu yundong*) (Spence, 1990, Chapter 11; Xiao G., 1999; Mi, 2007, Chapter 4; Hou, 2011). This movement mirrored the long-standing central-local conflicts of the late imperial era and directly caused the final collapse of the empire.

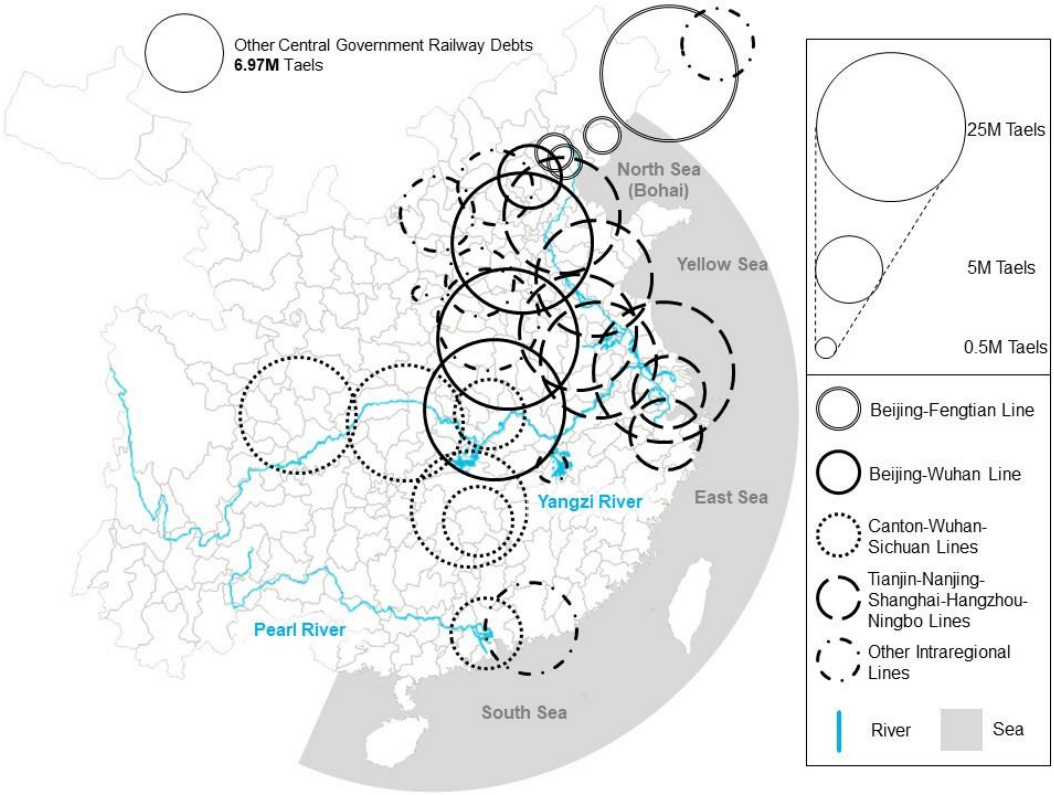
system,[97] the governors favored railway more than the central government did. Third, the railway system *per se* was profitable and hence attractive to local governors, but not to the stubborn conservatives in Beijing. In a word, the nature of fiscal-military decentralization explained why China's modern infrastructure was introduced in a bottom-up way.[98] Although local governors attempted to finance the railway construction with available income such as the *lijin*, they still found it more efficient to initiate massive foreign loans and introduce foreign expertise in management and technology. The repayment was often secured by both local taxation and fixed capital and future profit of the corresponding lines.

In Figure 5.9, Panel A maps the spatial distribution of railway loans. Among the 305-million-tael borrowing in total, the Board of Posts and Communications only raised 6.97 million. The planning by governors was rational: the lines in Manchuria, North Plain and Yangzi regions strengthened the connections between regional economic cores and completely replaced the redundant Grand Canal; meanwhile, the Beijing-Wuhan line and its branch, the Zhengding-Taiyuan line, greatly improved the transportation conditions of China's northern and central hinterlands.

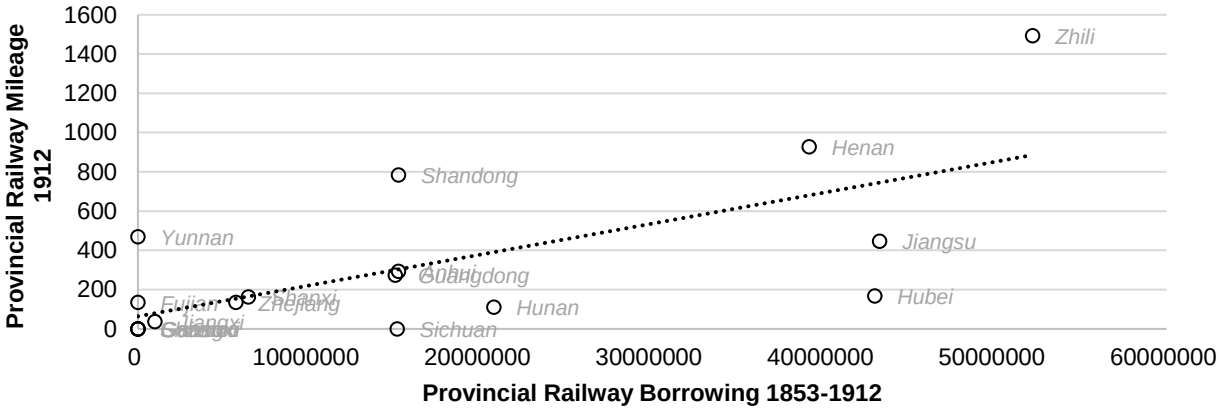
Panel B plots the borrowing amount and railway mileage for provinces, with an R^2 of 0.48. To sum up, the story of railway construction verifies the endogenous relationship between local taxation capacity and public spending under a decentralized fiscal regime, which differed sharply from the public spending pattern of the early Qing times. The provincial taxation and borrowing capacities determined the spending, and the investments in infrastructure brought returns and reinforced the long-term local fiscal capacity. A key advantage of decentralization was that self-serving local governments had strong incentives to nourish local finance and economy. However, it might also worsen the regional inequality and sacrifice the economy of scale for infrastructure.

[97] For example, cities such as Shanghai and Zhengzhou introduced new *lijin* stations after railway lines were introduced.

[98] The story of late Qing telegraph construction had many similarities including the Westerners' tentative introduction in treaty ports, the obstruction from conservatives in central government, the promotion by self-strengthening governors and the initial development driven by foreign loans. The telegraph loans totaled 29 million taels, one tenth of the railway borrowing amount. Because of its low variable cost and ignorable impact on environment, the construction of the national telegraph network accelerated after 1901 and a national network took shape by the fall of the empire. See Halsey (2015, Chapter 7) for a more detailed survey.



Panel A. Geographical Distribution of Railway Borrowing



Panel B. Railway Borrowing and Mileage by 1912

Figure 5.9. Railway Borrowing and Mileage at the Provincial Level, 1853-1912

Source: see text, and Mi (2007).

5.3. A Typology: Foreign Borrowing and Late Qing Fiscal Capacity

There is an abundant literature on the growth of government debts in different subjects. Regarding historical perspectives, historical sociologists and institutional economists still place government debts in the European fiscal-military state framework (see Chapter 1) and consider their growth as a consequence of stronger government commitment (North and Weingast,

1989). Meanwhile, political scientists and welfare economists emphasize how enfranchisement and mass political participation during the first half of the 20th century made the welfare state ideal possible (Lindert, 2004). These paradigms do not apply to the late Qing state: very few loans were initiated to fight international wars or to create a welfare state in the Scandinavian sense. Instead, foreign loans helped the empire, especially local governments, to solve the deep-rooted domestic fiscal shortage problem as well as to introduce long-term developmental programs. This section provides a typology for late Qing foreign loans and aims to understand which loans strengthened the Qing state capacity, how the mechanisms worked, and who raised them.[99] This typology consists of two variables and therefore four types of foreign loans.

The first variable is the 'longevity' of a loan. A low longevity means that a loan is for the one-off liquidity crisis mitigation: the Qing central or local government could borrow for an emergency but had no long-term plans for fiscal expansion. Shanghai in the 1850s was an example. The circuit official encountered both Taiping and Small Sword Society threats unexpectedly and had to borrow from foreign merchants to finance the suppression. The amount was small and the repayment was timely. Other temporary loans such as the disaster relief ones also had a low longevity.

In contrast, a high longevity indicates that central or local government intentionally leverages public resources to initiate loans with long-term prospects. In the late Qing case, central government and local governors, given the shortage of funds, expanded the scale of public spending permanently via foreign borrowing secured by future taxation, fixed capital and income of public sectors, etc. The repayment became a long-term scheme, and the annual government income needed to increase to meet the debt obligations. Industrial development of Self-Strengthening enterprises and infrastructure projects usually required such loans; furthermore, the disastrous war reparation loans by the turn of the century were a negative example. Loans with a high longevity were more institutionalized and entrenched into the regular budget management of the state.

The second variable is the 'inclusiveness' of a loan (Acemoglu and Robinson, 2012; Ogilvie, 2020 for criticisms). Since the Board of Revenue's control withered after 1850, a great number of central and local agents were acquiesced to borrow for various purposes, while their motives might be inconsistent with domestic taxpayers and their gains from borrowing might be grabbed by an exclusive group of people. The earlier discussion covers plenty of highly inclusive loans: since the local governments became self-serving in finance and more accountable to public affairs in this period, they raised a considerable number of loans to invest in heavy industries and infrastructure. During the New Policy decade, central government made limited

[99] Von Glahn (2016, p. 384) comments on the purposes of late Qing foreign borrowing.

efforts, too, in consolidating and updating entities such as the telegraph network and the modern navy.

However, some foreign loans benefited a certain political and social group exclusively. The most notorious loans in the late Qing history, despite the small amount, were for the royal courtyard construction during the 1880s; such loans by royal household eroded the public finance (maritime customs income, to be specific). The massive war reparation loans are also regarded as exclusive. Their repayment was secured by domestic and maritime customs income, salt tax revenue and even certain *lijin* income, without any local consent, bargaining, or even *ex ante* notification. To meet the obligations timely, the central government was forced to introduce radical measures to increase taxation pervasively, so the extractive capacity of the state was permanently enhanced. However, such excessive revenues were not invested in any domestic public affairs. Instead, they were simply remitted from provinces via Shanghai to the pockets of foreign governments, only to compensate for the fiascos of the weak and incompetent Qing throne.

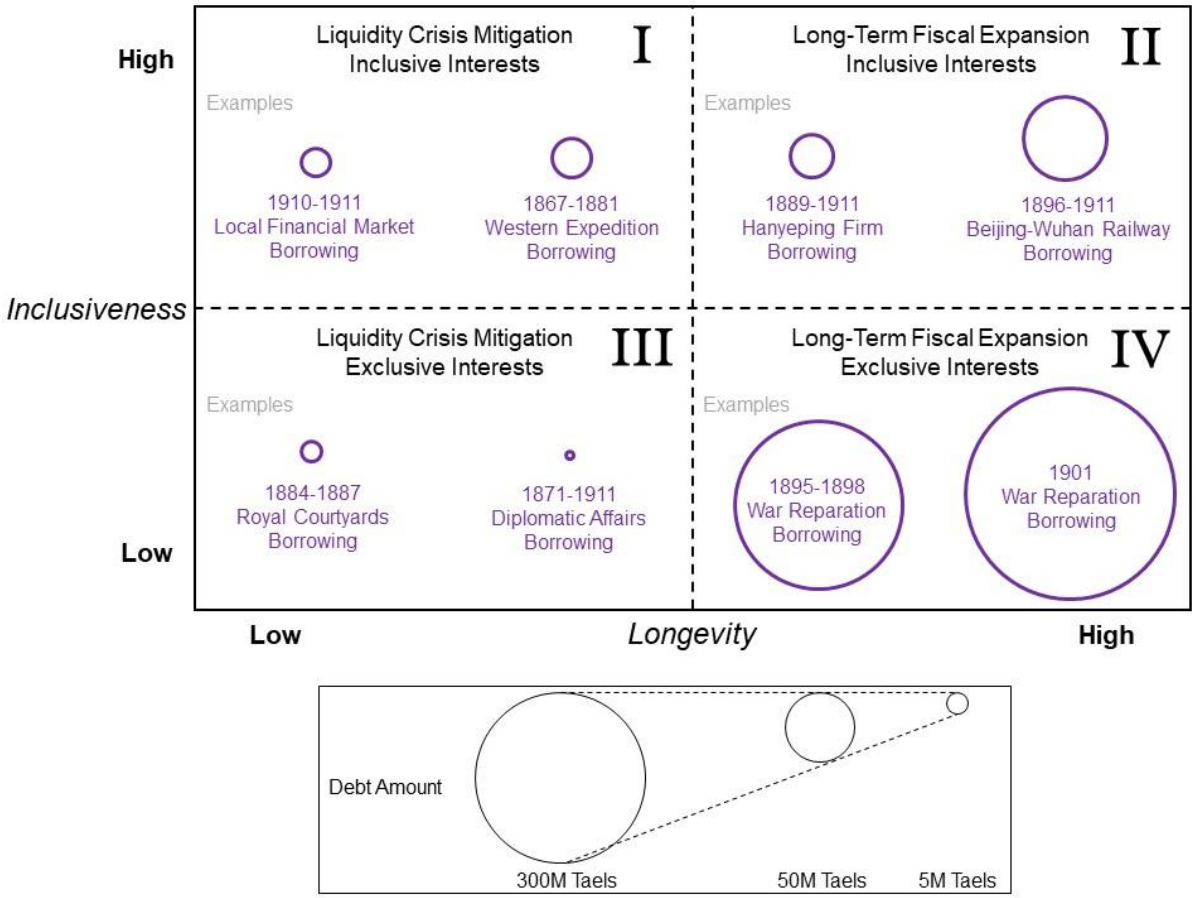


Figure 5.10. A Hypothetical Typology of Late Qing Foreign Borrowing, 1853-1912
Source: see text.

With the two variables – longevity and inclusiveness – Figure 5.10 defines four types of late Qing foreign loans, each in a quadrant. Each quadrant then provides two examples. Type I refers to the loans with the purpose of liquidity crisis mitigation and for the inclusive interests of the public. Usually they were raised during military, administrative, and economic exigencies, such as the aforementioned 16-million Western Expedition loans during 1867-81 by Zuo Zongtang, and the 8.4-million loans by several governors to ease local bank runs during 1910-11. Type II includes the loans with a long-term prospect and for the public interest, usually by the official-led industrial enterprises and railway and telecommunication projects. Type III quadrant involves several loans with one-off purposes and for the exclusive interests of royal households and certain government officials. Finally, Type IV refers to the loans that expanded the scale of fiscal revenue in the long term but brought no public interest, represented by massive war reparation loans.

Four types of loans contributed to the late Qing fiscal transitions to different extents. Type II made the major contribution to the fiscal modernization of China by both enhancing the taxation capacity of the state and improving public goods provision by investing in industrial and infrastructural sectors. Type I also contributed positively to fiscal operations by alleviating liquidity problems for the state, but such loans did not expand the scale of public finance in the long term. Contrastingly, types III and IV undermined the state capacity by eroding the public interest of taxpayers and crowding out other types of investments.[100]

Figure 5.11 classifies over 230 loans into four types and displays their characteristics. Considering that the pre-Qing annual government income was only 40 million taels, the total amount of types I and II and their number of deals were considerable during the late Qing period. Meanwhile, most of them were initiated by local governments and enterprises. Type III loans were minor, totaling 5.4 million taels and raised mainly by central government.

Type IV loans were the overwhelming concern in late Qing foreign borrowing practice. Despite the small number of deals, such loans totaled 754.4 million silver taels, 19 times that of pre-1850 annual government income and seven times that of the year 1900, all of which were initiated by the Qing central government. The impacts of Type IV loans on the Qing political economy were pervasive, severe, and long-lasting. Their harsh conditions of repayment forced the Board of Revenue to grab excessive revenue from provinces, intensifying the long-lasting central-local conflicts and accelerating the decentralization and final collapse of the empire. Ironically, the staggering excessive revenue extracted from taxpayers was continuously

[100] If we have to weigh them, Type IV was superior to Type III. In the late Qing case, the repayment of Type IV loans still strengthened the taxation capacity of the state in the long term, and when the debt obligations were met, that excessive revenue could be used for other developmental purposes.

remitted to the overseas banks. Had such revenue been invested in economic development and public welfare, the late Qing government would have achieved much more significant progress in socioeconomic modernization.

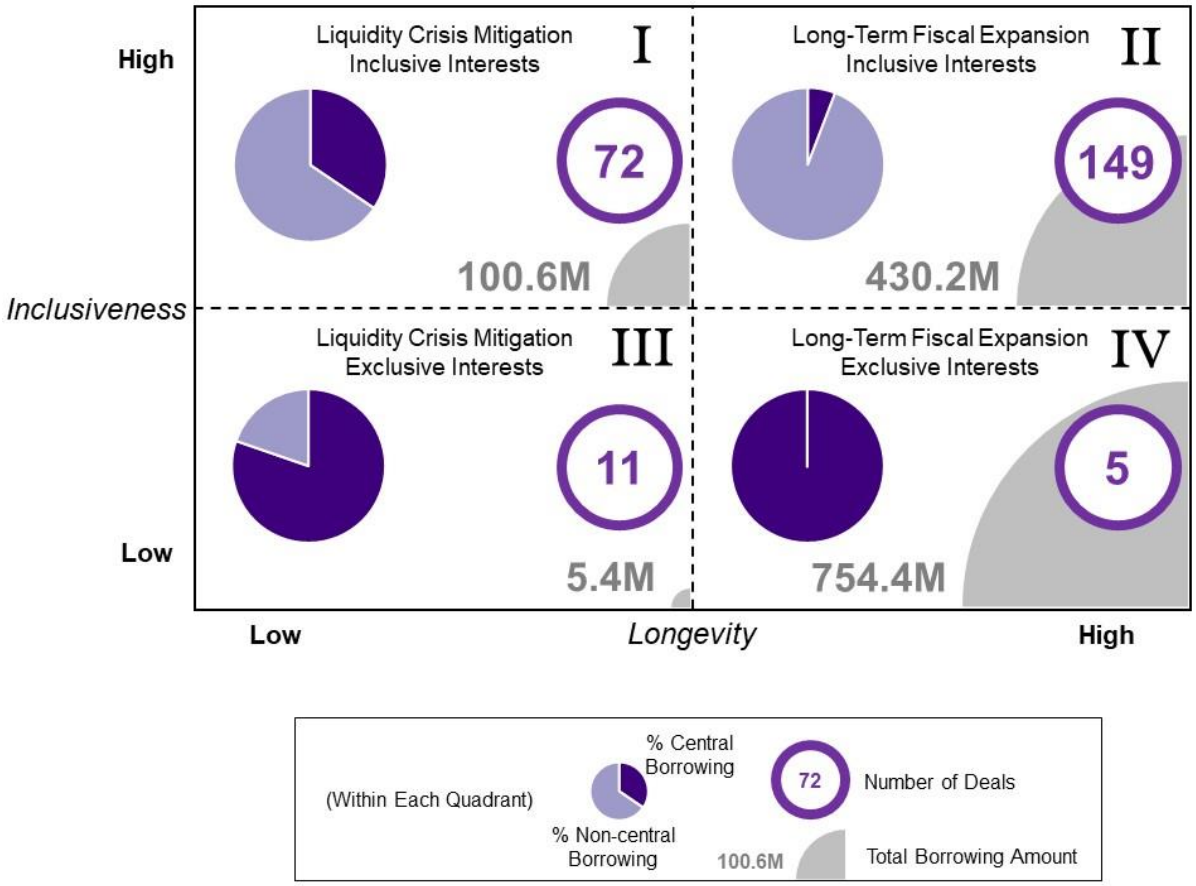


Figure 5.11. A Classification of Late Qing Foreign Borrowing, 1853-1912
Source: see text.

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To sum up, this chapter aims to build connections among intergovernmental relations, taxation, borrowing, and public spending. It argues that the pattern of the Qing extra-budgetary expenditure changed irrevocably after 1850 because of the novel foreign borrowing practice. Fiscal-military decentralization and the expansion of indirect taxation accounted for the bottom-up introduction and growth of foreign loans, which not only mitigated liquidity crises but also expanded the scale of taxation and public spending permanently. Local governments became more accountable to local affairs than pre-1850 and the governors began to introduce developmental projects such as heavy industries and railway projects with foreign loans. By comparison, the Qing central court resorted to foreign borrowing in a very late phase for the war reparations. Finally, this chapter offers a typology for the late Qing foreign loans

and finds that most loans with long-term prospects and for the public interest were initiated by local governments; in contrast, the impacts of the massive war reparation loans were disastrous and long-lasting.

6

Public Spending

It is justifiable and convenient that our provincial revenue is used for our provincial affairs.

Liu Kunyi

(Liu (ed.), 1909, Vol.2-1898-6-24, Bubo nanshi reng zhikuan liudi zhe)

The forced fiscal-military decentralization of the Qing court in 1853 triggered various pathbreaking transitions in a bottom-up pattern, and Chapters 3-5 focus on the strengthening of the late Qing local extractive capacity by investigating the growth of indirect taxation and foreign borrowing. Chapter 5 also stresses that foreign borrowing became endogenous to the growing local extractive capacity and that the local governors were able to challenge the central authority in public imperatives such as modern navy building and railway construction. This chapter provides more details from the perspectives of public spending and economic growth in such a decentralized nature.

Under the Taiping threat, the incompetence of the original central fiscal-military system forced the central court to delegate the responsibility of suppressing the rebellion to the local governors in 1853. The latter not only undertook greater responsibility but also gained unprecedented autonomy in local military, finance, and administration. Although the empire

survived this devastating rebellion with decentralization, the central authority was never restored. In fact, the pattern of fiscal-military decentralization even persisted after the fall of the Qing Empire in 1911. The preceding chapters mention numerous intriguing fiscal phenomena brought by decentralization: in Chapter 3, provinces such as Guangxi and Anhui under the Taiping shadow broke the Board of Revenue's remittance scheme openly by retaining land tax revenue for local use without central consent; in Chapter 4, the *lijin* officials in Fujian, Hubei, and Hunan took the initiative to lower the *lijin* rate and attract more taxpayers in a competition with the commutation taxation scheme by the maritime customs; in Chapter 5, local official leveraged the Shanghai customs income for foreign loans to tackle the Small Sword Society and the Taiping crises, but only reported to the central court reluctantly in an *ex post* memorial. Such practices, common from the 1850s onwards, had been unthinkable even by 1849.

Hence, Section 6.1 attempts to explain why local governments were incentivized to transcend the old centralized fiscal regime once their autonomy was granted. It revisits the decentralization process and highlights that the new 'apportionment' (*tanpai*) scheme replaced the original 'report and clearance' (*zouxiao*) scheme and hence accounted for the sudden local changes. Under the post-1853 apportionment scheme, a local government did not have to remit all collected revenue or report every expenditure to the Board of Revenue; instead, it simply remitted the fixed annual portion stipulated by the Board in advance. Once the portion was fulfilled, the local government assumed ultimate control over the surplus; meanwhile, it became directly responsible for local military and administrative affairs, as the Board refrained from massive redistribution. From the organizational perspective, the national fiscal institution shifted from a U-form to an M-form structure where local governors played an increasingly crucial role; moreover, the Board of Revenue became more result-oriented and hence less concerned about the local compliance in the taxation process.

Section 6.2 extends this analysis to the expenditure side and highlights the growth, flexibility, and diversity of local government spending after 1853. As mentioned in Section 5.1, the pre-1850 fiscal tenet for the empire was to spend within its taxation capacity. Both revenue and expenditure of the early Qing state were rigid and static. Military, social, and ecological exigencies must be financially settled by the Board of Revenue, while independent local fiscal systems were strictly prohibited. However after 1853, the Board only monitored the portions remitted by provinces, while the *de facto* local public finance took shape and enabled local governors to adjust their local spending patterns accordingly. During the second half of the 19th century, the overall Qing government spending pattern underwent a notable change: the local spending for numerous new purposes emerged, completely out of the Board's control or

even consent. This section provides a national picture and employs evidence concerning provincial *lijin* spending to illustrate how local governments were motivated and able to increase their investments in local defense, Self-Strengthening enterprises, and other public goods.

Section 6.3 turns to a general economic theme by linking local spending to China's modern industrialization and discussing one of the most featured local spending during the late Qing period, namely the Self-Strengthening (*ziqiang*/*yangwu*) industrialization. This industrialization attracts great scholarly interest. The Great Divergence literature emphasizes the success of the pre-1800 Qing economy (see Chapter 2). However, the image of prosperity faded quickly in the first half of the 19th century and the handicraft sectors showed no signs of Industrial Revolution. Political changes and industrialization accelerated only after the mid-century crisis. Section 6.3 focuses on this industrialization, the initial endeavors by local governors towards a modern economy, and again highlights the vital role of late Qing fiscal-military decentralization. Wright (1962) claims that the Self-Strengthening practice was a 'restoration' by the Qing Confucian conservatives after the mid-century crisis, but Section 6.3 argues that the local-official-led industrialization was not an attempt to fix the crumbling status quo but a meaningful departure from the agrarian economy. More importantly, the Self-Strengthening firms brought external economy of scale for private entrepreneurs, and the growth of private industrial firms persisted robustly even after the fall of the Qing Empire. Regarding this important economic change, the literature provides case studies for specific regions (Eckstein et al., 1974; Ma, 2008), political figures (Feuerwerker, 1958; Chu and Liu, 1994) and sectors (Kiyokawa, 1987; Ma, 2004b), but a consistent narrative from fiscal-military decentralization to bottom-up industrialization is still in need. Section 6.3 combines the existing enterprise datasets (Liu, 1937; Du, 1991; Zhang, 1992) for late Qing and early republican China and verifies the positive link between local fiscal capacity and industrialization on a national scale.

This chapter speaks to several strands of literature. Section 6.1, as an institutional analysis of local governments' rationale and behavior, visits the intergovernmental relations, a key issue for both historical and contemporary Chinese state (Xu, 2011; Sng, 2014; Zhou, 2017). Studies on how adequate intergovernmental relations are boosting China's economic growth during the reform era are flourishing (Qian and Weingast, 1996; Qian and Roland, 1998; Naughton, 2007; Zhang and Zhou, 2008), while Section 6.1 provides an under-explored historical case and casts light upon the merits of decentralization. Again, it emphasizes the essential role of domestic institutional transitions in accounting for the socioeconomic breakthroughs of modern China (Cohen, 1984) instead of regarding China's transitional repertoires merely as responses to the Western shocks (Fairbank, 1978, 1980, 1983). Section

6.2 contributes to the state capacity literature by discussing the changing pattern of the Qing government spending especially at the local level. This is a useful supplement to the state capacity literature as most studies still focus on the revenue side while overlooking the expenditure side (Hoffman, 2015). Furthermore, Section 6.3 expresses interest in how a state with stronger fiscal capacity triggers industrialization, while the validity of relevant mechanisms is not fully discussed in the empirical literature.[101] With novel Chinese evidence, this section argues that the state-led investments and improved public goods provisions were conducive to China's industrialization in the late Qing and early republican years.

6.1. The 1853 Fiscal Apportionment Scheme

This section offers a general institutional framework for the numerous intriguing fiscal practices of self-serving local governments during late Qing era. After 1853 the report and clearance scheme by the Board of Revenue existed in name only, while the new apportionment scheme reshaped the incentives of local governments, enhanced the local fiscal capacity in both revenue and expenditure sides, and eventually led to the collapse of central public finance in 1911. This scheme even shaped the central-local relations in fiscal-military aspects during the early republican period.

During the first half of the 19th century, the Board of Revenue was still able to run the centralized report and clearance scheme despite the frequent uprisings and natural disasters. Under this scheme, the Board had ultimate control over local revenue and expenditure, while local fiscal apparatus were merely executors under the Board's supervision. Independent local fiscal practices such as unauthorized taxation or unapproved local spending were strictly prohibited.[102] The Board supervised the provincial commissioners (*buzhengshi*) to collect the land tax, and they could only retain a very small portion for stipulated purposes such as postal system maintenance (Chen, 2010, Chapter 5); the remaining land tax revenue must be reported twice a year to the Board and remitted to Beijing or other provinces under the Board's

[101] For general evidence, see Dincecco and Katz (2016). Several mechanisms can be effective: first, strong fiscal capacity provides national defense, social order, a disinterested bureaucratic apparatus, and an effective civil legal system, which all offer security and long-term horizon for secondary and tertiary sectors and pave the way for steady long-term investments (North, 1990; Acemoglu and Robinson, 2012; Johnson and Koyama, 2017). Second, with sufficient fiscal resources the state can invest in infrastructure and promote market integration; it can also invest in other public goods such as mass education and vocational training to accumulate human capital (Ogilvie and Carus, 2014; Cantoni and Yuchtman, 2014; Rasul and Rogger, 2016; Dittmar and Meisenzahl, 2020). Third, the state with strong fiscal capacity can adopt preferential policies and provide funding to mitigate technological and financial constraints for industrial firms; it can simply invest in state-owned sectors, too (Rodrik, 1994; Chang, 2006; Bardhan, 2016). The validity of some channels is controversial. For example, research on the Dutch Republic and England questions the link between a strong state and domestic development because the state was likely to invest in costly international wars instead of domestic public welfare (Johnson and Koyama, 2017). Some studies also doubt the role of bureaucracy in economic development because of information and incentive problems (Tullock, 1965).

[102] As discussed in Chapter 2, the scholarship believes that the 'invisible' local public finance was growing in line with the population boom from 1644 to 1850, but reliable time series data are severely lacking (Wang, 1973, Chapter 4; Iwai, 2011, Part 2; Wei, 1986, p. 209).

commands. The Board also appointed grain transport directors (*liangchudao*), salt sales intendants (*yanyunshi*), and domestic customs supervisors (*changguan jiandu*) for other major taxes and checked their annual performances. Regarding expenditure, the Board was responsible for making a national budget and redistributing funds among provinces through an interprovincial assistance system; unexpected local military and socioeconomic emergencies must be financially settled by the Board, too, as described in Section 5.1. Under this scheme, local governments had extremely low incentives to launch local developmental programs due to the lack of autonomy in both taxation and spending. The prevailing tenet for local officials was not to develop, but to maintain the status quo without committing errors.

As the Taiping rebels spread, the Board's authority declined sharply because of both severe tax losses and its withering coordination capacity.[103] The Board, with an expectation of a quick victory, remitted over 16 million silver taels to Guangxi without hesitation in 1851 (Shi and Xu, 2008, p. 58), but as the war continued, the Board found itself incapable of providing further support. In spring 1852 when the Guangxi governor Zou Minghe requested additional funding again, the Board planned to urge Guangdong province to contribute one million taels, Canton customs to do 0.2 million, and Gansu troops to do 0.16 million; meanwhile it ordered the Lianghuai salt region to remit 0.3 million to Guangxi, which was meant to finance the Yunnan troops (FHAC, 1996, Vol.3-75). The plan seemed thorough and thoughtful, but it was unrealistic for several provinces to assist Guangxi by remitting funds for thousands of kilometers under the Taiping shadow, not to mention that those provinces *per se* were alarmed. Even Zou himself realized that the Board's interprovincial assistance plan was an empty promise. When the Taipings plundered Hunan in mid-1852, the Board sent more instructions regarding interprovincial assistance, but very few of which were applied in practice. On the one hand, the assisting officials such as the Shandong governor Li Hui and Sichuan governor Yurui insisted that they had no surpluses to help; on the other hand, the assisted officials such as the Jiangxi governor Zhang Fu complained that the promised funds did not arrive at all (FHAC, 1996, Vol.7-555, Vol.8-222, Vol.9-216, Vol.9-260, Vol.10-325, Vol.10-615, Vol.12-79). The interprovincial assistance system encountered a complete fiasco, so the provinces began to challenge the authority of the Board.

Jiangxi and Anhui took the lead in retaining the *de jure* central revenue for local defense. In September 1852 the Anhui governor Jiang Wenqing retained 1.3 million taels of land and customs tax revenues; he even retained another 0.07 million in transit that was sent by Zhejiang

[103] Why had the Board been able to finance the military actions smoothly during the Kangxi (1662-1722), Yongzheng (1723-35) and Qianlong (1736-95) reigns? Most early Qing wars such as the Jinchuan Battles (Jinchuan zhiyi) were concentrated in specific peripheral regions so that the Board could command several provinces to provide intensive support (Wakeman, 1975, Chapter 6; Spence, 1990, Chapters 3-5). The Taiping rebels, as a contrast, spread to the most prosperous economic regions of the empire, and many provinces faced exigencies simultaneously.

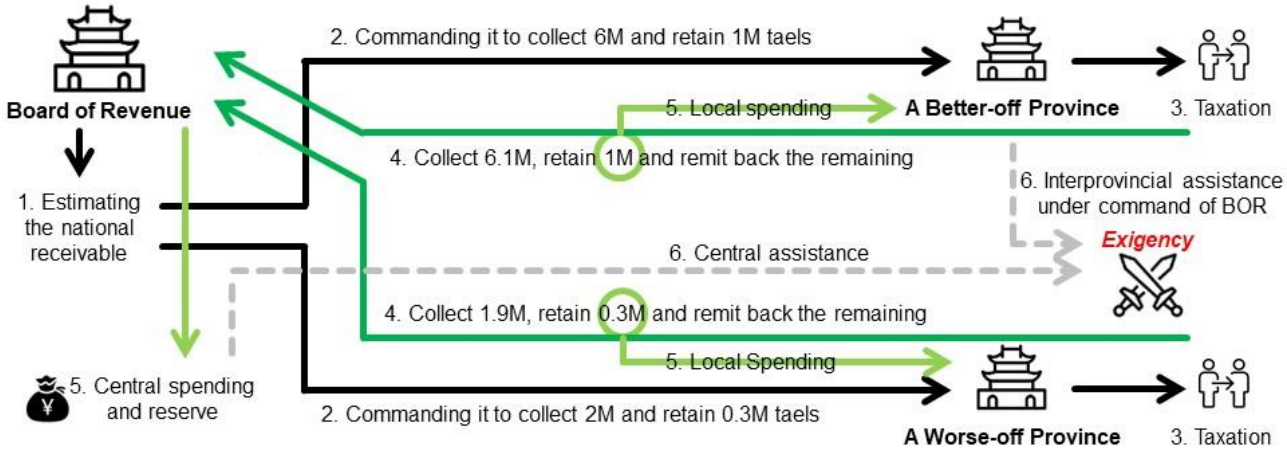
to support Hubei and Hunan; the throne warned Anhui sternly but took no action (Li, 1876, 'zougao' Vol.1-3; FHAC, 1996, Vol.4-13). Similarly, the Jiangxi governor Zhang Fu sent six *ex post* memorials indicating that he retained not only Jiangxi revenue but also interprovincial assistance funds in transit such as 0.15 million sent from Guangdong to Jiangsu, while the Board did nothing but protest (FHAC, 1996, Vol.5-79, Vol.8-514, Vol.9-86, Vol.9-339, Vol.9-403, Vol.10-629).

In mid-1853, the Board abandoned the chaotic and inefficient interprovincial assistance system openly. The minister Qi Junzao clarified that local governments could finance military actions autonomously and reduce the spending for other purposes; meanwhile an assistant minister Wang Qingyun admitted that the Board had lost control over the statistics for the regular report and clearance scheme (FHAC, 1996, Vol.6-361; Wang, 1861, Vol.3-1530-1542). From then, the Board gradually refrained from supporting local military actions in the Taiping crisis. For example, the Hunan-Hubei governor Zhang Liangji (transferred to Shandong in the same year) requested the Board to fund his troops repeatedly in 1853 but his requests were all rejected resolutely (FHAC, 1996, Vol.4-549, Vol.12-492, Vol.14-617). Local governments eventually obtained both fiscal and military autonomy, resulting in the rise of the *lijin* institution as introduced in Chapter 3.

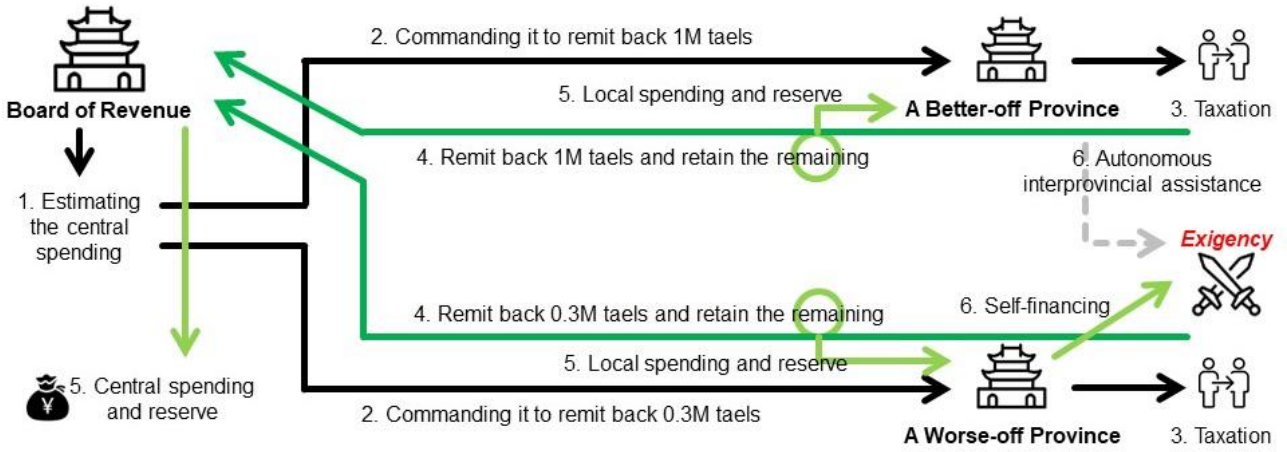
Since then, it became unrealistic and unnecessary for the Board of Revenue to monitor the massive local spending (Liu, 2014b, pp. 70-1), and its absence persisted even after the Taiping crisis (He, 1981; Wei, 1986; He, 2001). The old report and clearance scheme existed in name, and relevant documents were no longer the key to understanding the Qing public spending pattern, as the rapidly growing local public finance hardly followed the report and clearance procedures. Instead, the new routine task for the Board was to finance the central apparatus only. Under a new 'apportionment' scheme, the Board estimated the fiscal need of Beijing every winter and directly stipulated portions for provinces; the latter simply fulfilled them regardless of taxation measures. This scheme became the 'new normal' for the Qing state during and after the Taiping crisis. Figure 6.1 illustrates the differences between the two schemes.

Both schemes were games of numbers, but the incentives of local governments differed completely. Under the report and clearance scheme, the Board had stipulated the local remittance amount according to their historical taxation capacity; whether or not they had fulfilled the requirement, they could only retain a fixed amount and remit all the remaining to Beijing or other provinces under the Board's commands. Under the new apportionment scheme, the Board stipulated local portions based on the needs of the central apparatus – to be specific, salaries of central officials, administrative spending of six boards and other institutions, military spending of the capital region, royal household spending, and very few

public projects.[104] Provinces must fulfill the portions, but as an exchange, they had unprecedented autonomy in the excessive part.



Panel A. Pre-1853 'Report and Clearance'



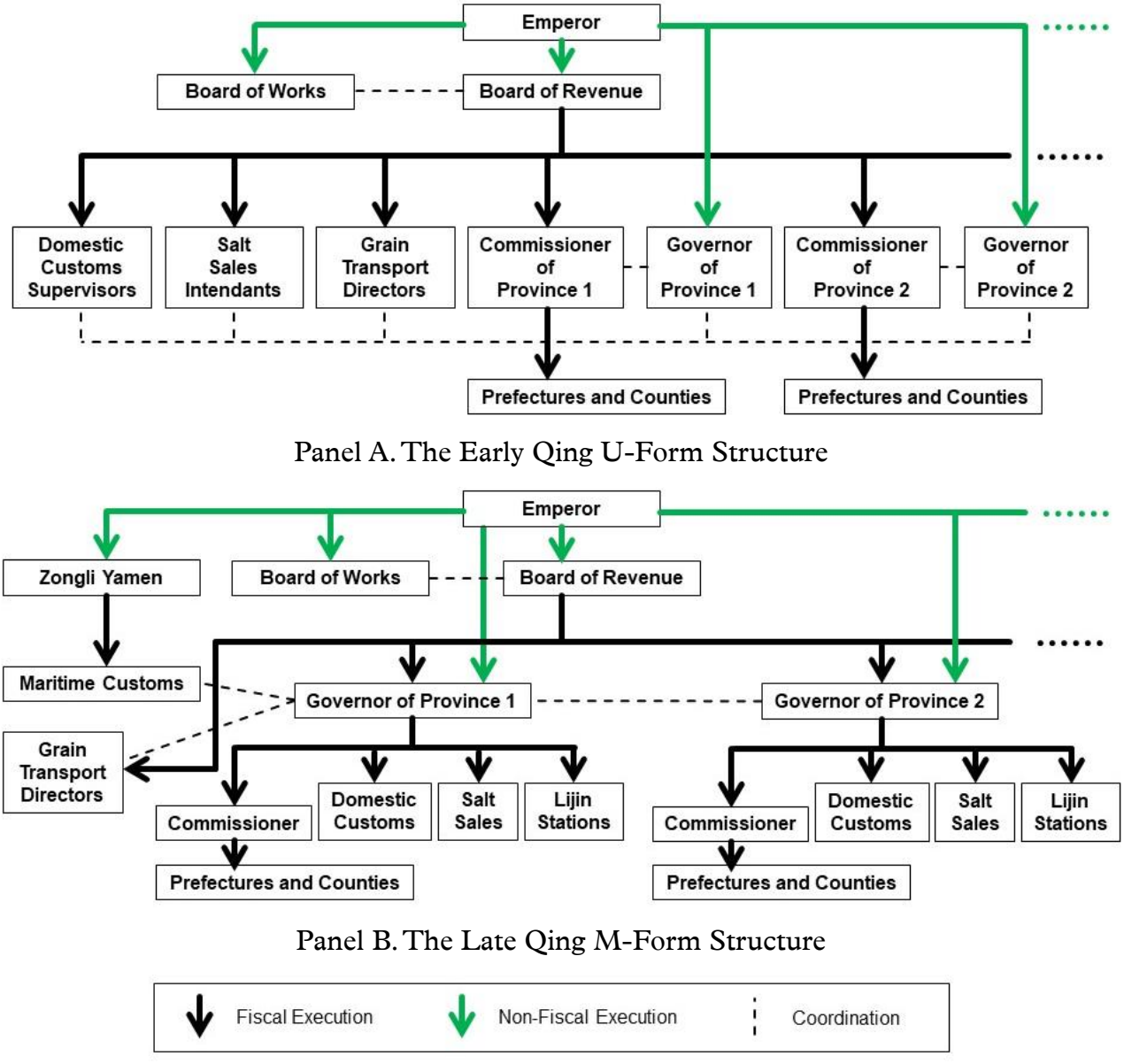
Panel B. Post-1853 'Apportionment'

Figure 6.1. A Comparison of 'Report and Clearance' and 'Apportionment' Schemes
Source: see text.

In 1861, provincial portions set by the Board totaled 7 million taels, a quarter of the pre-1850 national land tax revenue, and they were soon raised to 20 million. The actual annual remittance during 1860-1900 however was approximately 12 million because of continuous

[104] If the central spending grew, the Board simply increased portions. For example, when the central government had to repay the 1895 and 1901 war reparation loans, as discussed in Chapter 5, all provinces found their portions heavier (Xu, 1962, p. 78, Table 8).

central-local bargaining and compromise (Jamieson, 1897; Liu, 1936, p. 8270; Wei, 1986, p. 223-4; BL, 2006, Vol.24). The size of the central apparatus was stable in the late imperial era; even during the radical New Policy decade (1901-11), its fiscal need only grew to 16 million taels. However, the national public spending expanded from 40 to 100 million taels during 1850-1900 and reached over 240 million by 1911. Under the apportionment scheme, the share of central spending in the national spending declined drastically. Why?



Panel A. The Early Qing U-Form Structure

Panel B. The Late Qing M-Form Structure

Figure 6.2. A Comparison of U-Form and M-Form Fiscal Structures

Source: see text.

Two institutional outcomes by the apportionment scheme accounted for the dominance of local spending. Firstly, from the organizational perspective, the early Qing U-form structure

was transformed to the post-1853 M-form one, as illustrated in Figure 5.2. Under the old report and clearance scheme, the Board managed local taxation by tax source and directly supervised the officials for land taxation (in provinces), grain transportation, salt sales, domestic customs, etc. In comparison, the apportionment scheme greatly enhanced the power of governors since the portions were set on a provincial basis. The commissioners, salt sales intendants, etc. within a province became the *de facto* subordinates of a governor and their power was severely undermined (Li, 1876, 'zougao', Vol.20, 'jiangxi yali'; Wei, 1986, p. 212). In this M-form structure, a governor not only gained autonomy in taxation but also undertook greater responsibility in fulfilling the Board's portion and managing numerous local administrative, military, and economic affairs. A province became a self-serving entity, and the interprovincial competition arose; governors were more incentivized than the central court to cultivate socioeconomic resources, introduce developmental programs and defend local interests.[105]

Secondly, under the apportionment scheme, the Board of Revenue focused more on whether the central apparatus could be financed timely. It became more result-oriented and less concerned about local compliance in the taxation process.[106] Meanwhile, the Board refrained from monitoring the excessive local revenue and spending, and acquiesced local governments to cultivate new tax sources and adjust spending patterns. This change greatly motivated the governors to expand the scale and optimize the structure of the local budget, and fiscal patterns among provinces became dynamic and diverse as the famous governor Li Hongzhang commented that 'it was unreasonable to impose uniform rules on all provinces' (Wu, 1905, 'yishu hangao' Vol.3, 'haifang'). Local governments took diverse measures to increase their income, such as the introduction of *lijin* and foreign borrowing, as discussed in Chapters 3 and 5; Sichuan introduced an additional land surcharge (*anliang jintie*) from the 1850s, and Guangdong created a new gambling tax, the annual revenue of which totaled 4.3 million taels in 1908, equivalent to half of the central officials' annual salaries (Chen, 2015, 'Sichuan', Vol.4, and 'Guangdong', Vol.8).

Interestingly, although the old interprovincial assistance system withered, provinces were able to 'coordinate and lend mutually without informing the Board' (Liu, 1936, p. 8279).[107]

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[105] Wei (1986, pp. 220-1) discusses the organizational changes within provinces. Some provinces bypassed the traditional hierarchy and set up new offices such as Postwar Recovery Bureau (*shanhouju*) and Coastal Defense Bureau (*haifangju*), while others simply endued new functions to the original commissioners.

[106] This explains the 1911 Fujian borrowing mentioned in Chapter 5. To fulfill the central portion regarding the 1901 reparation loan repayment, Fujian province simply borrowed another 0.109 million taels from Japanese Bank of Taiwan, secured by Fujian *lijin* income.

[107] The Jiangsu governor Ni Liangyao took the lead: in 1853 Jiangning (Nanjing) fell into the Taiping hands and Ni was in a fiscal trouble. He sought assistance by directly writing to the Fujian-Zhejiang governor Wang Yide and Shanxi governor Hafen. Although Wang and Hafen did not offer substantial help, the Board of Revenue was alarmed and warned Ni sternly (FHAC, 1996, Vol.5-381, Vol.6-184, Vol.6-578).

Hence, the Board's apportionment scheme eventually made itself marginalized.

6.2. The Changing Pattern of Late Qing Public Spending

Since the Board of Revenue had made the national budget within its static annual revenue, the Qing public spending as a result had remained centralized and rigid from 1644 to 1850 (Tuo, 1818, Vol.12). Tang (1987, Chapter 7) and Peng (1990) identify six major purposes of the pre-1850 Qing government spending: royal household consumption, official salaries, military, postal system, exam organization, and water control. The lack of consistent bookkeeping for government spending makes it difficult to track its changing pattern over time. Regarding the early Qing era, Chen (2010, Chapter 5) compiles multiple sources and provides two sets of estimations for the mid-Kangxi (1690s) and mid-Qianlong (1760s) reigns respectively. Total government spending grew moderately during the early Qing period, and the proportions of the major expenditures remained stable: approximately 63% was for standing army maintenance at both central (18%) and provincial (43-47%) levels, over 10% for all official salaries, and the rest (25%~) for local administrative and socioeconomic affairs. Under the report and clearance scheme, local governments were only authorized to retain about 25% of the national revenue, while the rest must be handled by the Board of Revenue.[108] This pattern was barely maintained by the onset of the Taiping crisis.

The apportionment scheme triggered rapid changes in local public spending structure. After 1853, the new apportionment scheme implicitly encouraged local governments to rationalize their structure and expand their scale of public spending, some of which even initiated foreign borrowing for a higher level of spending as discussed in Chapter 5. New spending on local defense, administration and infrastructure grew rapidly, and both governors and the Board of Revenue found it difficult to incorporate such spending into the existing bookkeeping framework. The Xinjiang governor Tao Mo satirized that 'if an official complied with the Board's codes, his agency would not function normally' (Du, 1905, Vol.50-24). When the Qing government archives such as Liu (1901), Xi (1903), and Li (1908) surveyed the early Guangxu (1870s-90s) national spending, they made the simple dichotomy by listing 'regular' (*changli*) spending and 'new' (*xinzeng*) spending separately. Most of the latter was emanated from the local level and the annual amount totaled 30-40 million taels, thereby doubling the national budget. This matches the fact in Chapter 3 that the national government income doubled during the late 19th century.

Regarding the incremental part, 18-27 million taels were invested in local military affairs:

[108] Note that 43-47% of the Qing spending was for the provincial-level troops (*baqi* and *luying*). However, this military fund must be remitted nominally from the Board and was regarded as a central-handled-local-used fund.

first, after the mid-century crisis, local governments disdained the imperial *luying* troops and maintained their own standing armies (Liu, 1936, p. 8232);[109] second, the coastal, Middle and Lower Yangzi provinces paid eight million taels annually for coastal and river defense (Liu, 1936, p. 8247); third, several coastal provinces invested four million taels per year in the southern and northern modern navies (Chen, 2010, p. 150); finally, military spending statistics *per se* might be misleading because they contained the governor-led heavy industrial investments, discussed in the next section (Liu, 1936, p. 9507; Chen, 2010, p. 150). Besides considerable military spending, the remainder was for loan repayment, as discussed in Chapter 5, and local public affairs.

Finally after the two major fiascos of the Qing central court in 1895 and 1901, the scale of the Qing public spending was expanded further by the staggering annual reparation loan repayment. The Qing court was unable to provide accurate spending statements for this turbulent period, and this section employs Hart's rough estimate in 1901 (Liu, 1936, pp. 8248-9). The spending of the central apparatus was still at a low level of 10-20 million taels, while the national amount reached 101 million.

Figure 6.3 depicts four cross-sectional images for 1690, 1760, 1890 and 1901, and attempts to categorize various types of spending with consistent standards. It indicates that the original budget under the Board's control shrank rapidly in the late Qing period whereas local governments made an overwhelming contribution in expanding the scale of public spending. This kept pace with the growing local revenue under the apportionment scheme, and almost all local governors abandoned the tenet of thrift and resorted to a more dynamic managerial philosophy. The prestigious Hunan-Hubei governor Zhang Zhidong even stated that 'a government must spend money to expect gains' when he promoted the New Policy in the 1900s (Xu, 1920, 'zougao' Vol.32, 'qing zhuanchou jukuan'), demonstrating an impressive U-turn from the rigid pre-1850 fiscal management.

It is challenging to match a specific government revenue to its corresponding expenditure as most of the Qing revenues were pooled before spent. However, the post-1850 novel fiscal institutions, namely *lijin* and maritime customs systems, kept certain yearly spending records for their incomes despite their inaccuracy and incompleteness (Luo, 1936; Tang, 1992). This section compiles and analyzes the available provincial *lijin* spending reports from 1853 to 1908 (Luo, 1936, Appendix) to justify the late Qing local fiscal-military autonomy under the apportionment system.

[109] The number of such soldiers (*yong*) for all provinces totaled 0.54 million in 1886 (Li, 1908, Vol.19, Vol.21; Liu, 1936, p. 9510). As a comparison, the traditional imperial troops (*baqi* and *luying*) had 0.8 million soldiers and they cost over 20 million taels a year before 1850 (Chen, 1992). Hence the post-Taiping local standing armies were more cost-effective.

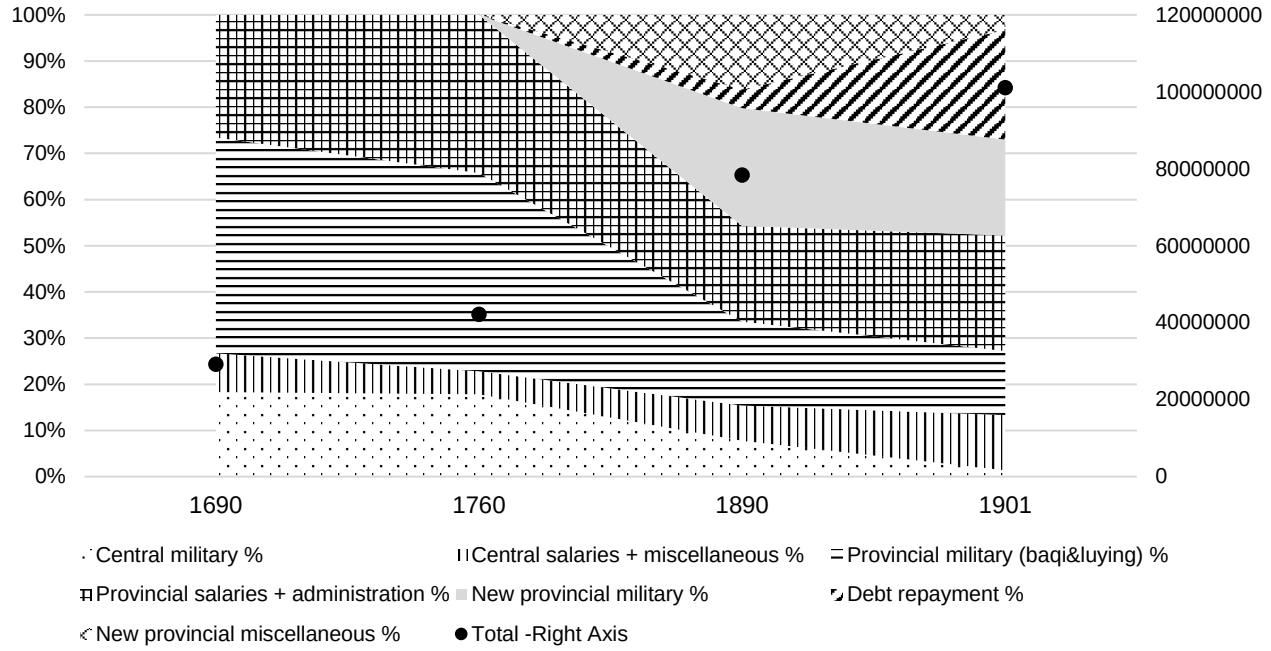

Figure 6.3. The Qing Government Spending Structure, 1690-1901

Notes: 1. The unit for the right axis is silver tael. 2. In 1690 and 1760, the provincial military (*baqi* and *luying*) spending was strictly 'central-handled-local-used', while in 1890 and 1901, provinces took great responsibilities for financing them and the Board was refrained. 3. The figure implies that the share of *de facto* central spending dropped from 26% to 13%, and that the share of spending handled by the central government dropped from 73% to 13%.
Source: see text.

Three concerns arise. First, certain *lijin* spending purposes were vaguely defined and even misleading. For example, most provinces recorded their annual portions to the Board of Revenue, but we are still unaware of how the remitted funds were allocated within the central apparatus. Moreover, for several provinces, the military and coastal defense spending included the local heavy industrial investments, many of which were unspecified, however. Second, the provinces with mature *lijin* systems kept more detailed reports, which caused a selection bias among all provinces. For example, no southwestern and northwestern provinces left detailed spending records for our analyses, the pattern of which might be very different from the inferences based on existing reports. Third, the analyses below only show how the *lijin* revenue was spent, but in the meantime the local governments were enhancing their control over other tax sources, too. Even the maritime customs income, a definite central tax from the collection perspective, was often seized by powerful governors such as Li Hongzhang and Zuo Zongtang for foreign debt repayment (see Chapter 5) and other local purposes (Zhou, 2000, pp. 244-5). In a word, the image of autonomous local public spending is far from clear, and the analyses below are only suggestive; however, the spatial variation is evident, and the general implications

drawn still support the key ideas of this chapter.

Figure 6.4 shows the proportions of five types of *lijin* spending for eight provinces with detailed records over time. To begin with, most provinces used 10-20% of their *lijin* income to pay the Board's portion. Shandong was an outlier (48%) but the number was only for 1860-74; since Shandong was very slightly impacted by the Taiping Rebellion, it was reasonable that Shandong remitted more *lijin* revenue to fulfill the central obligation rather than finance its military forces especially in the initial phase of *lijin* introduction.

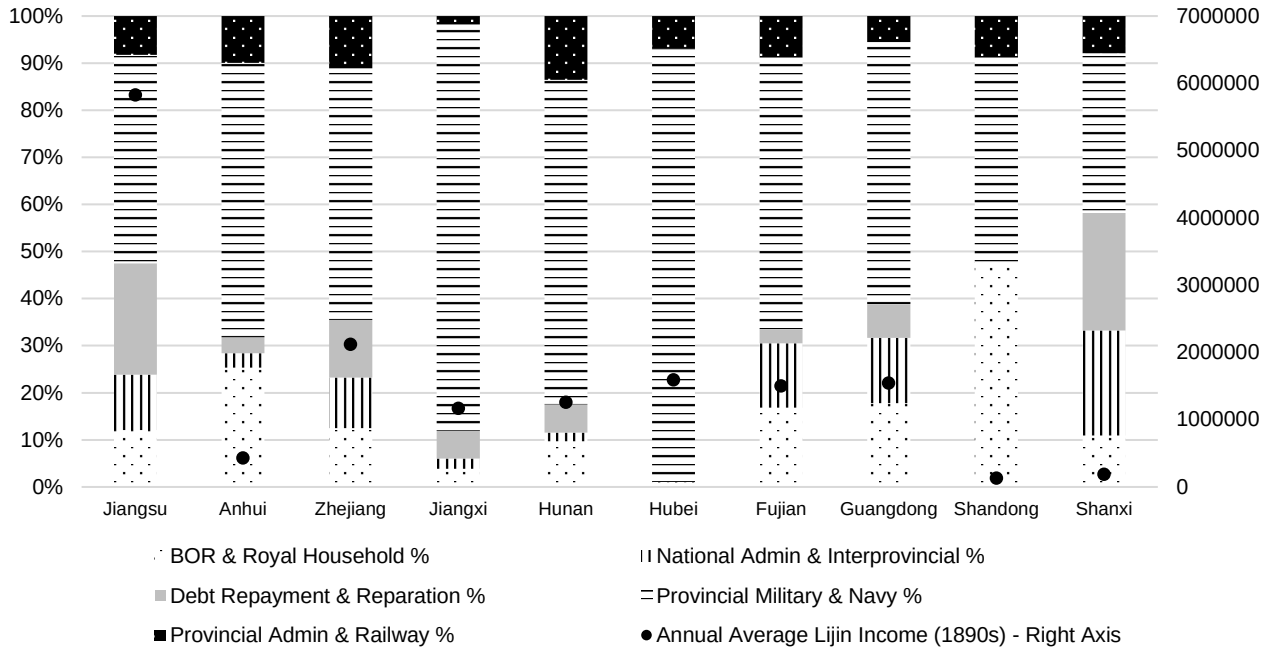

Figure 6.4. The Spending Pattern of the *Lijin* Income for Ten Provinces

Notes and source: 1. Data are from Luo (1936, Appendix). The years with available records: Jiangsu, 1869-1908; Anhui, 1869-1908; Zhejiang, 1864-1907; Jiangxi, 1868-1907; Hunan, 1873-1908; Hubei, 1869-1908; Fujian, 1853-1903; Guangdong, 1861-1908; Shandong, 1860-74; Shanxi, 1860-1908. This figure only presents the average pattern for a province and does not consider temporal variation. 2. The unit for the right axis is silver tael.

The figure also indicates that ten provinces paid 8% on average for national administrative[110] and interprovincial spending, and 9% for debt repayment and reparation; spatial variation for both types of spending was significant. Wealthier provinces such as Jiangsu in the south and Shanxi in the north tended to undertake greater responsibilities in such spending, showing a continuity from pre-1853 arrangements. However, late Qing interprovincial assistance was

[110] The term 'national administrative spending' (*guojia xingzhengfei*) was misleading. As Table 6.1 shows, a very small share of them was for the central government, while the majority showed no difference from the interprovincial spending. Hence Figure 6.4 combines both.

more flexible and diverse, and new spending purposes emerged, too.

Table 6.1 lists the national administrative and interprovincial spending for three Lower Yangzi provinces as an example. Military supports accounted for a large proportion, and the traditional assistance in water control and disaster relief persisted to a certain degree; for such affairs, the three Lower Yangzi provinces mainly served as helpers. Moreover, Jiangsu spent regularly on Self-Strengthening enterprises such as the Shanghai Machinery Bureau (Luo, 1936, Appendix Table 18).

Table 6.1. Lower Yangzi *Lijin* Spending on National Administrative and Interprovincial Affairs

Province	Purpose	Annual Amount in Silver Taels	Year(s) of Spending
Jiangsu	Interprovincial military assistance to Xinjiang, Gansu, Guizhou, Yunnan, Northeast, etc.	3,000-656,833	1869-1908
	Jiangnan exam organization	2,020-24,600	1870, 73, 76, 79, 82, 94-1908
	Water control for Shandong	100,000	1874
	Disaster relief for Zhili, Henan, Shanxi, Anhui, etc.	4,000-102,071	1873, 78-80, 82-83, 90, 92-95, 98-99
	Grain transportation	10,000-18,000	1869, 78-79
	Self-Strengthening enterprises	10,000-20,000	1899-1902, 04-08
	Extra support to central apparatus	1,800-10,000	1892-95, 1906-08
Zhejiang	Interprovincial military assistance to Xinjiang, Gansu, Guizhou, Yunnan, etc.	5,000-739,266	1864-97
	Jiangnan exam organization	1,786-5,416	1864-72, 74, 76, 80, 86, 89, 90, 92, 94, 95, 98, 1904
	Water control for Shandong and Henan	20,000-80,000	1875, 87-88
	Disaster relief for Zhili	1,126-30,000	1864-74
	Education for Beijing	2,500	1906-07
	Extra support to central apparatus	700-160,000	1888-89, 91-97,
Anhui	Interprovincial military assistance to Xinjiang, Wuliyasutai, Gansu, Henan, Fujian, etc.	2,500-30,305	1869, 79-81, 83-85, 89-90, 1900
	Lending to Jiangsu	8,000-32,000	1901-08

Source: see text, and Figure 6.4.

Thirdly, the most common purpose of the *lijin* spending for all ten provinces was local military affairs. On average, 59% of the local *lijin* spending was for various local military

purposes, including the maintenance of standing armies and militias, coastal and river defense, and investments in modern munitions for both armies and navies. It is worth noting that very few funds were for the traditional imperial troops. Meanwhile, this type of spending might also be misleading as several provinces invested in non-military affairs with such funds. Jiangsu and Fujian spent thousands of silver taels annually in academies and Self-Strengthening enterprises such as the Jinling Machinery Bureau and the Fuzhou Shipyard (Luo, 1936, Appendix Tables 25 and 84). In the north, Shandong province supported not only its own industries but also Fuzhou Shipyard (Luo, 1936, Appendix Table 102).

Finally, 8% of the *lijin* revenue on average was used in local public affairs, and the patterns for different provinces became diversified. All ten provinces spent regularly on daily operations of bureaucracy, water control and disaster relief, but more importantly, the spending on modern public goods emerged by the end of the 19th century, as listed in Table 6.2. Education and railway expenditures were common in the southern provinces; meanwhile, Fujian's steady investments in telecommunication for decades were very impressive. The only evidence for northern China was from Shanxi, and the spending on education was massive for certain years.

Table 6.2. *Lijin* Spending on Modern Public Goods

Province	*De Facto* Purpose	Annual Amount in Silver Taels	Year(s) of Spending
Jiangsu	Modern education	7,000-20,419	1906-08
	Medical care	6,000	1908
	Railway	8,300-120,000	1890-1900, 04
Zhejiang	Railway	1,5000	1890-95
Anhui	Modern education	1,512-8,030	1896, 98-1908
	Geographical surveying	6,400	1895
	Railway	12,500-42,498	1890-1908
Hunan	Modern education	953-88,233	1898-1908
	Geographical surveying	28,338	1896
	Railway	15,000-30,000	1891-1908
Fujian	Telecommunication, etc.	856-97,895	1875-98
Guangdong	Railway	18,400-40,515	1890-94, 97-1906, 08
	Modern education	7,728-8,372	1894-1907
Guangxi	Modern education	70-4,730	1903, 05-06
Shanxi	Modern education	700-77,281	1904-08
	Surveying	9,369	1908

Note: 1. The most common local administrative spending, namely water control, disaster relief, and government operation, is not listed in the table. Most provinces spent for such purposes every year.
Source: see text, and Table 6.1.

The above implications are drawn from ten provinces with detailed records for consecutive years; moreover, Table 6.3 describes the general *lijin* spending pattern for other eight provinces of China Proper that lacked detailed spending reports. Yunnan, Sichuan, and Shaanxi stated clearly that part of their *lijin* income was intended for central portions and interprovincial military assistance, while Guangxi, Zhili, Henan and Gansu were able to retain nearly all *lijin* revenue for local use. The diversity of such provincial patterns is perceivable, but the concrete structure of the *lijin* spending for these provinces is far from clear due to the lack of data.

Table 6.3. *Lijin* Spending Pattern for Eight Provinces

Province	Region	Annual Average *Lijin* Income (1890s) in Taels	*Lijin* Spending Pattern
Guangxi	Southwest	561,000	8%: *lijin* administration 92%: local military, loan repayment, other local administration, etc.
Yunnan	Southwest	338,000	67%: central portion, etc. 33%: local administration
Guizhou	Southwest	188,000	Unknown
Sichuan	Southwest	100,5000	Central portion, railway, loan repayment, interprovincial military assistance, local administration, etc.
Zhili	North	243,000	Local military, disaster relief, local administration, etc.
Henan	North	80,000	Loan repayment, disaster relief, local military, local administration, etc.
Shaanxi	Northwest	472,000	10-15%: *lijin* administration 85-90%: Interprovincial military assistance, local military, other local administration
Gansu	Northwest	262,000	11%: *lijin* administration 89%: local military, other local administration

Source: see text, and Table 6.1.

This part makes a preliminary attempt to compare and evaluate the *lijin* spending patterns at the provincial level with available records from provincial *lijin* bureaus. Despite the data limitation, several general implications can be drawn from such evidence. First, most provinces used part of their *lijin* income to fulfill their obligation to the Board of Revenue and royal household, though to varying extents. The 1853 apportionment scheme reshaped the central-

local relations, and a delicate balance was maintained by both sides during the post-Taiping decades. Provinces chose to pay the fixed portions to the center in exchange for legitimate fiscal-military autonomy; the central court acquiesced them to do so for the dynastic longevity. Second, although the Board's interprovincial assistance system deteriorated, there were still a considerable number of 'national administrative' and interprovincial funds among provinces for various purposes. Historical inertia accounted for this continuity, but personal friendships and mutual agreements among governors mattered, too (Liu, 2014b, pp. 71-2). Without the Board's coordination, such mutual assistance became even increasingly flexible and timely. Third, the local military spending took up the dominant share for all provinces. This considerable amount was determined during the Taiping Rebellion and the trend persisted after 1864 even in the provinces that were only slightly impacted. On the one hand, provinces disdained the traditional imperial troops and maintained their own armies and militias; on the other hand, the provincial military systems did launch a series of bottom-up modernization reforms such as updating munitions, constructing arsenals, and opening academies. Finally, the diversified spending patterns of local public affairs among provinces well reflected the nature of fiscal decentralization. The amount was limited as a whole, but the local endeavors in introducing railway, modern education, etc. were still pathbreaking.

6.3. The Self-Strengthening Industrialization

This section focuses on a new type of local spending in late Qing era, namely the Self-Strengthening industrial investments from 1861 onwards by local governors who recognized the importance of modern technologies through their intense military actions. The unprecedented fiscal autonomy paved the way for the ambitious and powerful governors, making the Self-Strengthening Movement the initial wave of modern China's industrialization in a bottom-up way. This section begins by evaluating the direct economic impacts of the Taiping Rebellion and proving its insignificance in explaining the rise of China's modern industries. Then it discusses how the local governors introduced heavy industries intentionally in the nature of fiscal-military decentralization, and how their nascent developmental schemes gradually covered infrastructure and light industries. In the long run, the industrialization was not interrupted by the Sino-Japanese War (1894-95) or the fall of the empire in 1911; in fact, the early established Self-Strengthening industries brought considerable external economy of scale to the private sectors in both late Qing and early republican years, despite huge regional disparities determined by variation of local fiscal-military power and infrastructural conditions.

The Insignificance of the Taiping Rebellion in Industrialization

This study now aims to link the fiscal imperative to a more general economic topic of the late imperial China, industrialization, which is at the core of the Great Divergence debate (Pomeranz, 2000; Li, 2000; Brandt et al., 2014; Court, 2019). Regarding the origin of the British Industrial Revolution, the literature emphasizes several paradigms: the factor price thesis (Broadberry and Gupta, 2009; Allen, 2011), the scientific enlightenment with production and application of scientific knowledge (Mokyr, 2005; Landes, 2006), and constitutionalism and the rise of inclusive institutions (North, 1990; Acemoglu et al., 2004). However, explaining the global spread of Industrial Revolution is more challenging.[111] In the mid-19th-century Chinese case, the Self-Strengthening industrialization process was hardly embedded into the above paradigms. Certain studies (Li, 2015) suggest the role of Taiping Rebellion *per se* in triggering China's industrialization. This part surveys from this angle but finds little evidence for this hypothesis.

First, the real wage increase was not observed although Taiping Rebellion resulted in approximately 70 million casualties. Both nominal and real wages of unskilled labor in Chinese cities showed a very slight fluctuation in the mid-19th century but never exceeded those in the 18th century (IISH, 2019).[112] Hence the factor price ratio of labor to capital did not experience a substantial change and would not drive the spontaneous spread of capital-intensive production. This is consistent with the narrative in the next part: the establishment of modern industries in the late Qing era must rely on the intentional participation of local governors with their resources in the initial phase.

Secondly, all *laissez faire* economic recovery after the rebellion was agrarian (Wright, 1962). There was no natural shift in employment from primary to secondary sectors (Guo et al., 2019), and no spontaneous urbanization was witnessed. During the moderate interregional migration, most peasants merely claimed and cultivated the ownerless lands, and the economic recovery was resilient but still Smithian. This matches the evidence in Chapter 3 that the annual Qing land tax revenue quickly returned to the prewar level after the Taiping's fall.

Third, there is an unsubstantiated hypothesis among scholarship that during the Taiping crisis the Qing state received excessive donations by promising exam quota expansions to the donors' regions, so that people were more incentivized to invest in exam preparation in regions with larger quota expansion, which led to a mass human capital accumulation after 1864. This

[111] Scholars have studied the role of investment (Gerschenkron, 1962), culture (Clark, 1987), trade policy (Harley, 1992), human capital (Becker and Woessmann, 2009), etc.

[112] Why was there no increase in wages? A possible answer is that although the labor supply declined, the aggregate demand for manufacturing goods dropped accordingly, so the manufacturers were not urged to replace human labor with machinery. Moreover, the rebellion destroyed available fixed capital to a great extent, which strongly discouraged the promotion of capital-intensive production methods (Jones, 1988).

is highly questionable. As discussed in Chapter 3, the fiscal role of such title sales in the suppression should never be exaggerated because frequent sales prior to 1850 had exhausted the interest of potential buyers; such sales led to a rapidly growing mass gentry class and diluted the value of titles (Chang, 1955, Chapters 2-3); it is doubtful whether the mass people still held particular enthusiasm for it, not to mention that the examined contents mismatched the skill requirements for modern industries. Baten et al. (2010) provide time series data on the 19th-century human capital in China. The adult height was not improved for decades after the rebellion; the decline of age heaping was observable only in a late phase: it was firstly witnessed from the 1870 birth cohort, and when they were adults, the Self-Strengthening Movement had lasted for over 20 years.

Finally, no evidence indicates that the Qing state launched civil legal reforms for private property protection or contract enforcement immediately after the Taiping crisis. Such attempts were witnessed as late as 1905 and they encountered great setbacks during the first half of the 20th century (Kirby, 1995). In the initial phase of industrialization, local governments had to fill in the vacuum with informal institutions such as personal network, mutual trust, and preferential policies (Eastman, 1988, Chapter 8).

In a word, the Taiping Rebellion *per se* did not account for the start of the native industrialization of China, while the nascent modern firms in China by that time were mainly illegal ones in light industries and services by Westerners, and concentrated in a few treaty ports.[113] This section suggests that governors' endeavors explained the Self-Strengthening industrialization, and their unprecedented fiscal autonomy after 1853, together with the changes of their incentives and responsibilities, was the key to understanding the entire story.

Measuring Industrialization at the Prefectural Level

Before unfolding the 'fiscal autonomy-industrialization' narrative, this part attempts to construct a prefectural-level industrial firm dataset. Sun (1957) undertook the pioneering work by collecting profiles of industrial firms in modern China (1840-1949); his work was inherited by Du (1991) who revises the collection and introduces new sources.[114] There are over 4,000

[113] Foreigners were not authorized to establish manufacturing firms in China until the signing of the Treaty of Shimonoseki (1895). However, they had introduced various light industries in Chinese treaty ports in defiance of law far before 1895 (Feuerwerker, 1980; Eastman, 1988, p. 170).

[114] Archival materials on China's modern industrial development are highly dispersed (Guan, 2018). First, the Qing government published no statistics; the early republican (Peking) government published annual statistics on agriculture and commerce from 1912 to 1921 but there were many missing data; then the Institute of Economic and Statistical Research of the Nanjing government published a national industrial report in 1937, which is also used in this section for a crosscheck. Second, local governments and research institutes published relevant reports such as *The Second Industrial Statistics in Tianjin 1935*. Third, commercial newspapers such as *Shun Pao* and *Jianghan Daily* produced regular publications. Finally, the Japanese agencies such as the Embassy of Japan in Beijing and the Manchukuo Ministry of Economy surveyed China's industries for the purpose of invading China. Du (1991) has merged most of the above.

records for industrial firms established prior to 1927 in Du (1991), and this study locates them at the prefectural level and studies the spatial variation of industrialization. Du (1991) records the establishing year, start-up capital, sector and ownership for every firm, so it is feasible to categorize the firms with different methods and examine the rise of heterogenous firms in different stages of modern China. For instance, Table 6.4 lists the industrial firms established by 1911 for Wuchang prefecture, the provincial capital of Hubei. Among all 266 prefectures of China Proper, Wuchang ranked in the 11th place regarding the number of industrial firms.

Table 6.4. Modern Industrial Firms in Wuchang Prefecture by 1911

Company	Year Established	Initial Capital	Ownership	Industry	Founder(s)
Hubei Guangji Xingguo Coalmine (湖北广济兴国煤矿)	1876	93	GDSB	Energy	Sheng Xuanhuai; Li Mingxi
Hubei Weaving Bureau (湖北织布局)	1892	1456	Official	Textile	Zhang Zhidong
Wangfu Ma'anshan Coalmine (汪复马鞍山煤矿)	1893	-	Official	Energy	Zhang Zhidong
Wangsanshi Coalmine (王三石煤矿)	1893	-	Official	Energy	Zhang Zhidong
Hubei Reeling Bureau (湖北缫丝局)	1894	140	GDSB	Textile	Zhang Zhidong; Huang Jinquan
Tanshanwan Coalmine (炭山湾煤矿)	1896	168	Private	Energy	Liu Renxiang
Daye Coalmine Bureau (大冶煤矿总局)	1897	209	GDSB	Energy	Zhang Zhidong
Wuchang Leather Factory (武昌制革厂)	1902	70	Official	Leather	Zhang Zhidong
Yaohua Glass Factory (耀华玻璃厂)	1904	699	Private	Glass	Jiang Kezan
Asian New Earth Society (亚新地学社)	1904	10	Private	Printing	Shao Bogeng
Wuchang Jincheng Electric Firm (武昌竞成电气公司)	1906	2797	Private	Electricity	Zhou Bingzhong
Hubei Guangyixing Firm (湖北广艺兴公司)	1906	40	Private	Papermaking	Cheng Songwan
Guangsheng Textile Firm (广生织业公司)	1907	-	Private	Dyeing	Xu Kezhan
Hubei Cement Factory (湖北水泥厂)	1907	420	Private	Cement	Cheng Zufu

Company	Year Established	Initial Capital	Ownership	Industry	Founder(s)
Baishazhou Umbrella Factory (白沙洲伞厂)	1907	50	Private	Miscellaneous	Huang Youxian
Zhenli Brick Tea Firm (振利茶砖总公司)	1909	699	Private	Tea	Wan Guoliang
Hubei Printing Bureau (湖北印刷局)	1909	42	Official	Printing	Chen Kuilong
Hubei Woolen Factory (湖北毡呢厂)	1910	300	Joint	Woolen	Zhang Zhidong; Chen Kuilong
Futakou Coppermine (富他口铜煤矿)	1910	-	Private	Mining	Song Weichen
Baishazhou Papermaking Factory (白沙洲造纸厂)	1910	700	Official	Papermaking	Zhang Zhidong
Gongye Lianxisuo (工业练习所)	1910	42	Private	Printing	-
Steamship Transport of Hanyeping Firm (汉冶萍公司轮驳转运)	1911	197	GDSB	Transport	Sheng Xuanhuai

Notes: 1. Initial capital is in 1,000 silver dollars. 2. GDSB denotes *Guandu Shangban*.
Source: see text.

The next part and Appendix B use two alternative measures for local industrialization. The first is generated through the same process based on another compilation by Zhang (1992); this enables us to combine all Du (1991) and Zhang (1992) entries and eliminate the overlapping ones. The second is based on Liu (1937) who offers a cross-sectional picture of China's industrialization in 1937, the onset of the Second Sino-Japanese War (1937-1945). Liu (1937) creates three indices by sector – number of firms, number of workers and amount of fixed capital, at the county level. Such county-level indices are aggregated into prefectural-level ones.[115] This measure reflects the cumulative industrial achievement from 1861 to 1937 on a national scale and offers us an opportunity to examine whether the local industrialization showed a persistent spatial pattern.

The Self-Strengthening Movement

The bottom-up industrialization by late Qing local governors since 1861 was coined as the Self-Strengthening Movement (Sun, 1957), and the cultural historical literature stresses the role of mindset: the enlightened political elites accepted Western thoughts selectively, adopted

[115] Data for Yunnan, Guizhou and Gansu provinces are not provided in Liu (1937).

Western technologies especially heavy industrial ones, and aimed to protect China from foreign threats (Wright, 1962; Wakeman, 1975; Spence, 1980, 1990). This ideological shift mattered. However, it was the acquiesced local fiscal-military autonomy that made the industrialization possible. Since governors became directly accountable to the local governance, they had to employ the most cost-effective approaches to generate more income and meanwhile make every tael worth it. The pragmatic Self-Strengthening industrialization matched their goals: such investments not only improved the efficiency of military actions but also brought steady gains in the long run to the local governments themselves. In this sense, the governors behaved like 'stationary bandits', as modeled by Olson (2000), and the nature of late Qing fiscal-military decentralization explained why most of the key players in this industrialization were local rather than central politicians.

Initially, the military benefits caught the attention of local governors. From 1861 onwards Zeng Guofan, Li Hongzhang and others in the Self-Strengthening camp began to invest in heavy industries to produce Western-style machinery, weapons, warships, etc. after they found that the superior Western guns could have helped them suppress the domestic rebels more easily. The most famous enterprises in the initial stage included the Anqing Arsenal in 1861, the Jiangnan Machinery Bureau in 1865 and the Jinling Machinery Bureau in 1866. Shipbuilding was urgent for local governors, too, and Zuo Zongtang made the pioneering contribution in 1866 by opening the Fuzhou Shipyard. Mining was another focus, and the firms were based more on local resource endowments such as the Kaiping Coalmine in Zhili, the Daye Coalmine in Hubei, and the Jilong Coalmine in Taiwan. Most mining enterprises were for fuels, but there were also tens of copper, gold, and lead mines across 18 provinces. In the initial phase of the local-led industrialization, the governors overwhelmingly established heavy industrial enterprises mainly for military purposes.

By the 1870s, officials such as Li Hongzhang realized that the strong heavy industries were merely surface manifestations of the Westerners' strengths and that the source of national power lay in the economic wealth of the masses (Hsu, 1983, p. 284; Hao, 1986; Spence, 1990, Chapter 9). On this premise, Li and other governors such as Zhang Zhidong started to create a remarkable number of infrastructural and light industrial firms. The China Merchants' Steam Navigation Company (CMSNC), founded by Li in 1873 as a representative, aimed at seizing the market share of China's inland river and coastal shipping from foreign firms and achieved a notable success (Chu and Liu, 1994, Chapter 5; Halsey, 2015, Chapter 6). Zhang Zhidong also created a wide range of enterprises when he was the Guangdong-Guangxi governor (1884-89) and Hunan-Hubei governor (1889-1907) (Li, 2003, Chapter 1). Such enterprises covered sectors of textile (spinning, weaving, reeling, and dyeing), leather making, papermaking, etc.

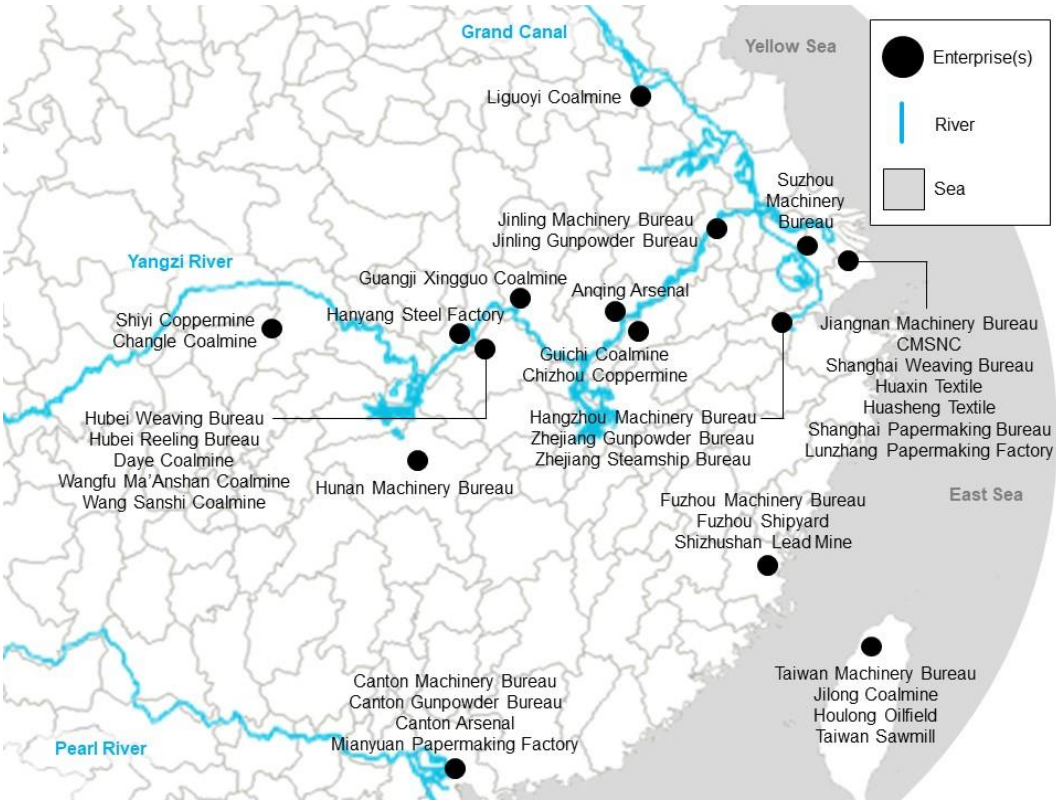

Figure 6.5. Self-Strengthening Firms in Southeastern China by 1894

Note: 1. This figure only maps the enterprises in Jiangsu, Anhui, Zhejiang, Jiangxi, Hubei, Hunan, Fujian and Guangdong provinces.

Source: see text.

The diversification of industrialization in this phase made conglomeration feasible. For instance, Li Hongzhang founded several coalmines in Zhili, and the CMSNC was able to transport coal from Zhili to the Lower Yangzi region for his machinery bureaus; Li also built a local railway line in the 1880s to transport coal within Zhili for other industrial purposes (Ma J., 2004, Chapters 3-4). In Wuhan, the Hanyang Steel was a masterpiece of the governor Zhang Zhidong; in the meantime, he opened up two nearby coalmines, in Daye and Pingxiang, to provide fuel for the steelwork. This strong conglomerate was thus named as 'Hanyeping'. More importantly, the coal was used in Zhang's light industries such as Hubei Weaving and Reeling Bureaus, and the Hanyang-produced steel was used in the key railway projects proposed by Zhang himself, including the unparalleled Beijing-Wuhan line mentioned in Section 5.2 (Esherick, 1998, Chapter 3; Li, 2003, Chapter 1). Through conglomeration such clustered Self-Strengthening industries could benefit from synergy. Figure 6.5 maps the early established Self-Strengthening enterprises in the Yangzi and southeastern provinces. Powerful governors' bases such as Shanghai and Wuhan began to take off and replaced the old economic centers

especially along the Grand Canal.

The patterns and sizes of Self-Strengthening enterprises varied, but there were still a few similarities. First, the local governors' fiscal support was indispensable. In the initial phase when heavy industries were established intensively, private powers could hardly afford them. Most firms were much more capital-intensive than the traditional handicraft mills: the annual reinvestment of the Jiangnan Machinery Bureau was 0.4 million silver taels, and that of the Fuzhou Shipyard was 0.6 million (Ni, 2017a, pp. 262-4).[116] As shown in the *lijin* spending records in Section 6.2, the local *lijin* revenue, from Shanghai and Fuzhou respectively, was used to finance them, although sometimes such spending was filed in military or administrative accounts. Moreover, the governors sought other available funds for their enterprises: for instance, although the maritime customs income was a *de jure* Zongli Yamen revenue, Li Hongzhang frequently bargained for a share from the Shanghai maritime customs income and invested in the Lower Yangzi heavy industries (Chu and Liu, 1994). Undoubtedly governors were expecting greater gains when they invested, rather than being driven merely by their changes in mindset; Zhang Zhidong's motto that 'a government must spend money to expect gains' (Xu, 1920, 'zougao' Vol.32, 'qing zhuanchu jukuan') justified their rationale.

Second, the Self-Strengthening enterprises introduced foreign technological and managerial expertise intentionally. For example, Fuzhou Shipyard hired French supervisors, technicians and foremen; it even set up an affiliated academy to run vocational training for Chinese employees. Li Hongzhang's machinery bureaus in the Lower Yangzi region also imported foreign equipment and raw materials in the initial stage. The costly introduction of Western experience paved the way for not only Self-Strengthening enterprises but also the private firms in a later stage (Kennedy, 1978; Liu, 1990; Chu and Liu, 1994).

Third, public ownership dominated the movement. The governance structures of Self-Strengthening enterprises slightly differed and could be classified as 'official' (*guanban*), 'official-merchant-joint' (*guanshang heban*), and 'official-supervision-merchant-management' (*guandu shangban*). Although there were only a dozen certified *guandu shangban* enterprises among all late Qing modern industries, Feuerwerker (1958, pp. 9-10) claims that almost all enterprises with political backgrounds in late Qing China had certain *guandu shangban* ingredients. This organizational form was a novel hybrid that merged traditional Chinese official-merchant patronage with the Western joint-stock partnership (Eastman, 1988, p. 173): enterprises absorbed investments from local governments and merchants; merchants ran the daily operations under official supervision; profits were shared with local governments, too, as a return on their inputs, which were *de facto* business taxation from proto-SOEs. The impacts

[116] As a benchmark, the annual land tax revenue for the richest Lower Yangzi prefectures was approximately 0.6 million silver taels in 1820 (Liang, 1980, Table B(Yi)-77).

were twofold: the principles of Western corporate governance were alien to China, and the official involvement in enterprises was frequent and strong; on the other hand, enterprises did benefit from local official support through *ad hoc* preferential policies and even monopoly franchises (Liu, 1964, p. 53). Hence besides fiscal and technological inputs by the governors, such tacit support accounted for the survival and takeoff of major enterprises such as the CMSNC (Halsey, 2015, Chapter 6).

Although some studies indicate that the Self-Strengthening enterprises were inefficient and corrupt (Perkins, 1967, 1975; Chan, 1977; Hao, 1986), their achievements remained considerable and drew wide foreign attention. For example, the product quality and output level of the 1860s' Jiangnan Machinery Bureau were comparable with those of the European ones, and it also impressed Japanese visitors in the 1870s (Eastman, 1988, Chapter 8; Deng, 2012, Chapter 5). Another prominent model in steel industry, the Hanyeping Firm in Wuhan was years ahead of Japanese plants, and in the 1910s, it even became a takeover target of Japanese investors because of its massive size and high quality (Brandt et al., 2014, p. 82).

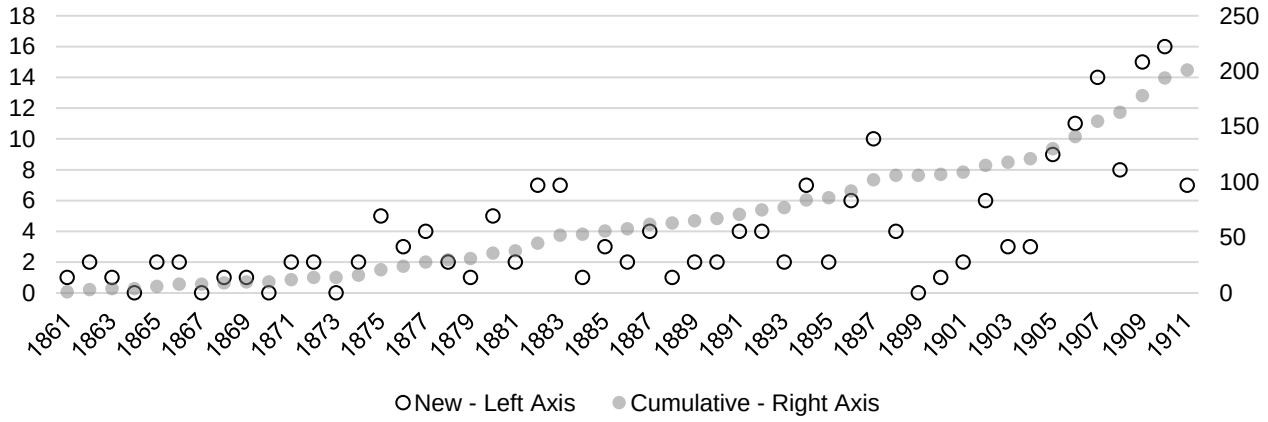

Figure 6.6. The Number of Self-Strengthening Enterprises, 1861-1911
Note: 1. This figure only considers the enterprises in 18 provinces of China Proper.
Source: see text.

The Qing defeat in the Sino-Japanese War (1894-95) was thought to be a pervasive setback to China's industrialization and even the bankruptcy of the governors, but the data I compile tell an opposite story. In the final imperial years, the governors were even more aware of the necessity of industrialization and thus continued investing in enterprises without being discouraged by the 1895 fiasco. The New Policy decade (1901-11) triggered the mass political participation of various local elites including the enlightened gentry class (Hou, 2011; Sang, 2016), and they further stressed their local identity and autonomy by availing public and semi-public industrial investments, represented by the prominent gentry-merchants Zhang Jian and

Zhou Xuexi (Eastman, 1988, p. 175). Figure 6.6 plots the number of Self-Strengthening enterprises – official, joint, and *guandu shangban* – over late Qing period, and the growth trend was steady and persistent.

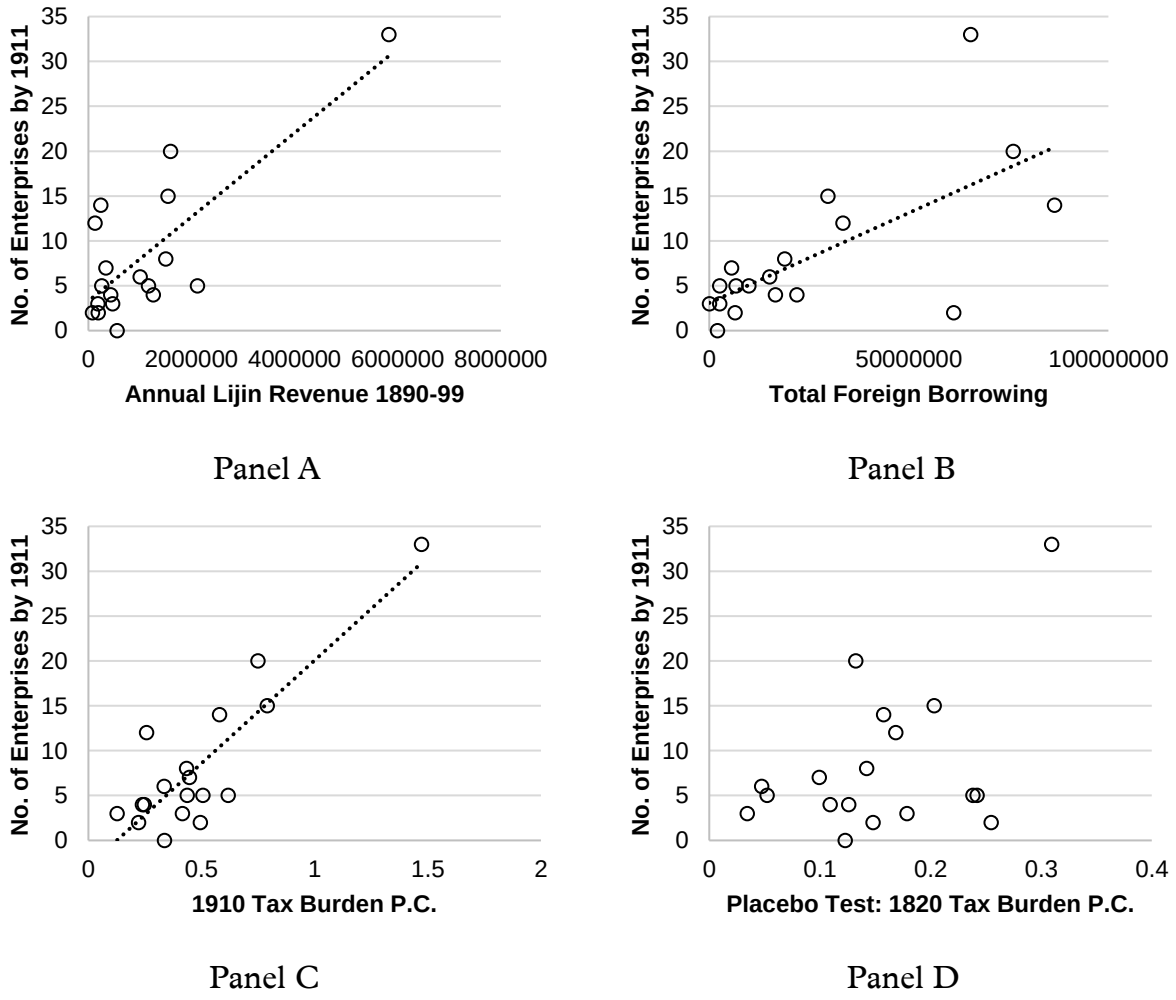

Figure 6.7. Provincial Fiscal Capacity and Self-Strengthening Enterprises

Note: 1. This figure only considers 18 provinces of China Proper. 2. The unit for tax revenue and per capita burden is silver tael.

Source: see text, and Chapter 5 for taxation and foreign borrowing data.

Since the data for taxation and foreign borrowing are available in Chapters 3 and 5, it is meaningful to examine the relationship between local fiscal capacity and Self-Strengthening achievement under the nature of decentralization for the late Qing period. Figure 6.7 plots this relationship at the provincial level with different measures (Panels A to C). The *lijin* capacity or foreign borrowing alone provided good explanations of the local Self-Strengthening achievements, and the 1910 per capita tax burden, as a more accurate measure of local fiscal capacity, had a stronger predictive power (R^2=0.75); after all, the year 1910 was the peak of

decentralization at the dusk of the empire. To rule out the inherent economic and fiscal patterns of provinces, Panel D runs a placebo test by plotting the number of Self-Strengthening enterprises against the 1820 local taxation capacity. As envisaged, no relevance was found as in 1820 the fiscal regime was still static and rigid under the Board's supervision.

From Self-Strengthening to Private Sectors

The Self-Strengthening industrialization was not the end of this fiscal spending story. More importantly, it provided an enduring impetus for China's industrialization by private powers, and the steady growth lasted from late Qing to early republican times (Rawski, 1989; Xiao Y., 1999). Figure 6.8 offers a general picture combining both Self-Strengthening and private enterprises. During the gestation period (1861-95) China established over 200 modern firms in heavy and light industries, and over the subsequent 15 years, the number reached 1,000. After the Qing's fall in 1911, the central government withered but fiscal-military autonomy of regional states displayed considerable resilience and further catalyzed the industrial takeoff in the hothouse atmosphere during the WWI and interwar years. By 1927 the total number of modern industrial enterprises exceeded 3,200.

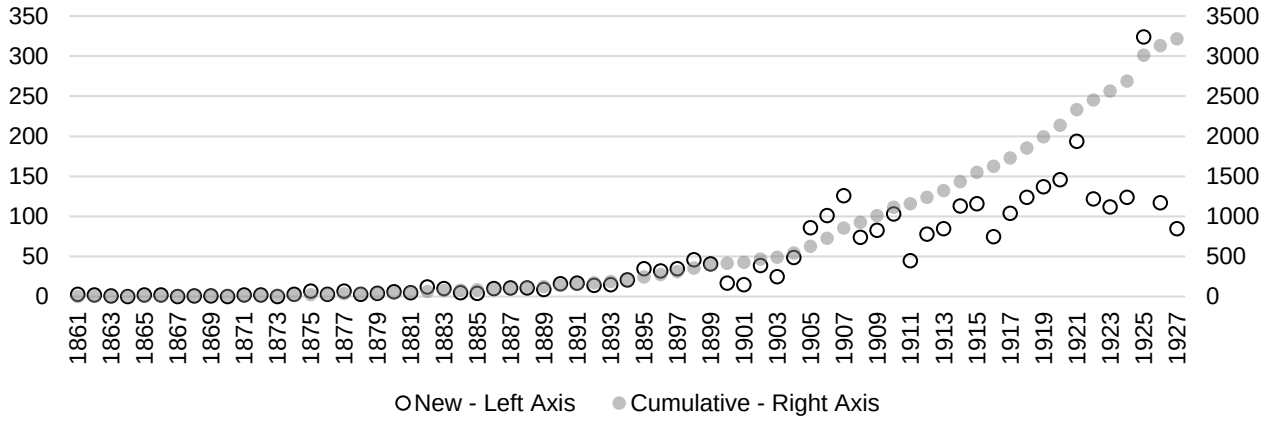

Figure 6.8. The Number of Modern Industrial Enterprises, 1861-1927
Note: 1. This figure only considers the enterprises in 18 provinces of China Proper.
Source: see text.

During early republican era, the value of industrial output increased at an annual average rate of 9.4% (Rawski, 1989). In this 'golden age of Chinese bourgeoisie' (Bergère,1989), native consumer goods gradually replaced foreign ones, the imports of which declined sharply, while the increasing imports of producer goods indicated a substantial native industrial expansion (Eastman, 1988, pp. 177-8; Rawski, 1989, Chapters 1-2). Although early republican China was

satirized for political fragmentation and warlordism with a vacuum of central authority (Chi, 1976; Chen, 1979; Sheridan, 1977, 1983), the remarkable modern industrial growth should be attributed to it, too.[117] The historical accumulation mattered, as the industrial base laid by late Qing Self-Strengthening endeavors played a massive role. Figure 6.9 maps the spatial variation of the industries for 266 prefectures from 1895 to 1927, and Figure 6.10 breaks the total numbers down by region over time. The 1895 and 1911 images reflect the late Qing efforts, while the new progress during 1912-27 showed an evident continuity in spatial patterns from late Qing to early republican era.[118]

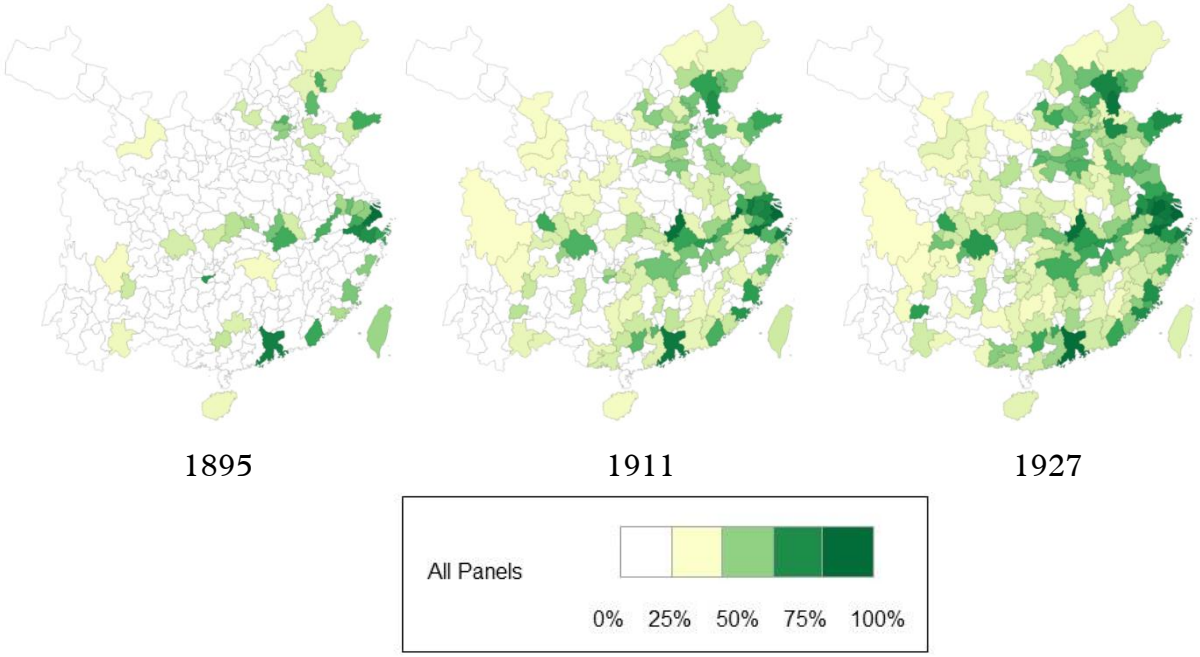

Figure 6.9. Number of Industrial Firms at the Prefectural Level

Note: 1. The figure presents the number of firms, unweighted by land size or population.
Source: see text.

[117] Local governments in early republican China (1912-27) facilitated industrialization both intentionally and unintentionally. On the one hand, the prestigious late Qing politicians such as Li Hongzhang and Zhang Zhidong shaped the mindset and rationale of a new generation of self-serving political elites who held a strong local identity and behaved like stationary bandits in Olson's sense (Gillin, 1967; Esherick, 1998; Li, 2018, for a survey); on the other hand, the statist planning and intervention were minimal in most regions given the chaotic national politics, and the private entrepreneurs were able to promote industrial development without fearing for unreasonable government interventions (Rawski, 1989).

[118] After 1927 the central planning and intervention returned while the motivations of local governments and entrepreneurs were suppressed again. China embarked on another path of industrial expansion, statist planning, and this shift foreshadowed the radical statist economic reforms in the following decades (Eastman, 1988, pp. 178-84; Kirby, 1990).

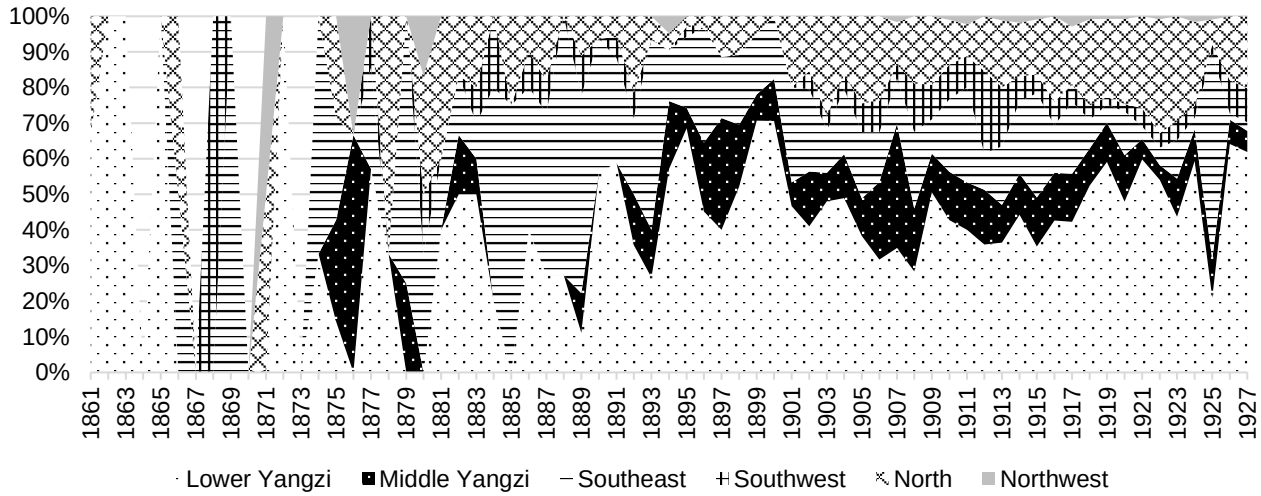

Figure 6.10. Newly Established Modern Industrial Enterprises by Region, 1861-1927
Note: 1. This figure only considers the enterprises in 18 provinces of China Proper.
Source: see text.

How was the local-official-led Self-Strengthening Movement conducive to the larger-scale industrialization?[119] First, there was a technological spillover effect via technology transfer and learning. The initial introduction of modern technologies in shipbuilding, engineering, chemistry, etc. was costly. The Self-Strengthening enterprises took the lead so that the private ones enjoyed the external economy of scale. In the 1860s the Jiangnan Machinery Bureau and the Fuzhou Shipyard, for instance, opened affiliated academies with foreign advisers to study mechanical skills and navigation (Spence, 1990, Chapter 9; Chu and Liu, 1994). Such academies also launched translation projects for technical works on an ambitious scale, which provided a powerful impetus for the accumulation and dissemination of Western scientific knowledges. Although the powerful governor Zeng Guofan pursued Confucian values, he emphasized the importance of such translated works in the meantime, and even asked his eldest son Zeng Jize to write an approving preface to *Elements of Geometry* translated jointly by a Chinese mathematician and a British missionary (Spence, 1990, Chapter 9).

The early established enterprises became starting points for local knowledge dissemination. For example the Tianjin Machinery Bureau, founded in 1866, was the largest arsenal in northern China with 2,000 employees, and after the 1900s these skilled workers were scattered to serve in different plants of Tianjin and spread the engineering knowledges (Chu and Liu, 1994). A similar story was found in the Jiangnan Arsenal of Shanghai (Wright, 1962; Liu, 1964; Chu and Liu, 1994). In addition to technological spillover, some private firms received *ad hoc* support from resourceful local officials because of their strategic importance and growth

[119] The Western influences, tangible and intangible, mattered in the process. For the magnitude of impacts via the treaty port system, see Jia (2014).

potential, such as the merchant Cao Ziwei's papermaking plants in 1882 supported by Li Hongzhang, and Zhu Zhiyao's oil pressing mills in 1897 by Sheng Xuanhuai (Du, 1991).

The trickle-down from Self-Strengthening to private firms is depicted in Figure 6.11 (left), which plots the number of newly established private firms during 1912-27 to that of Self-Strengthening ones by 1911 at the prefectural level. A positive relationship is identified. Figure 6.12 suggests the same result by offering a breakdown of firm numbers over time: the Self-Strengthening Movement focused more on heavy industries, and as time passed, the infrastructural and light firms began to emerge. On a national scale, this structure became stable after the 1910s.

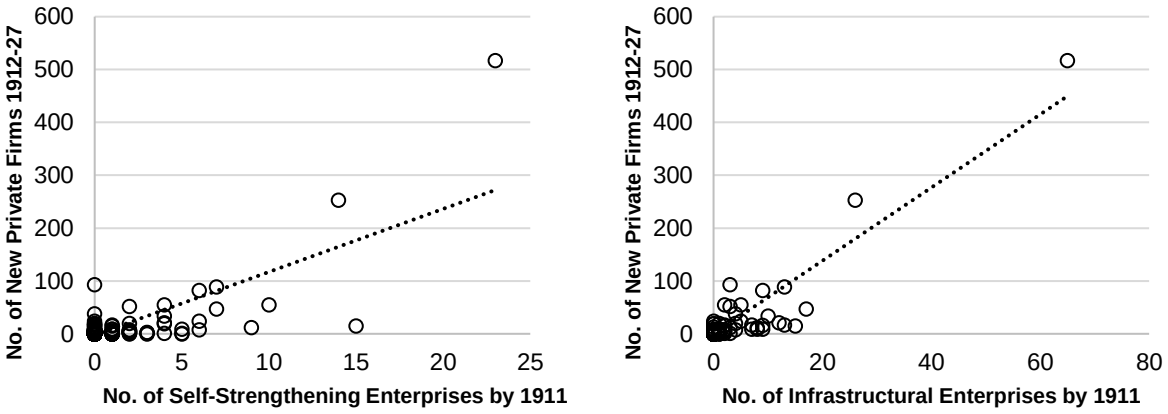

Figure 6.11. Self-Strengthening Enterprises, Infrastructure and Overall Industrialization
Note: 1. This figure only considers 266 Qing prefectures of China Proper.
Source: see text.

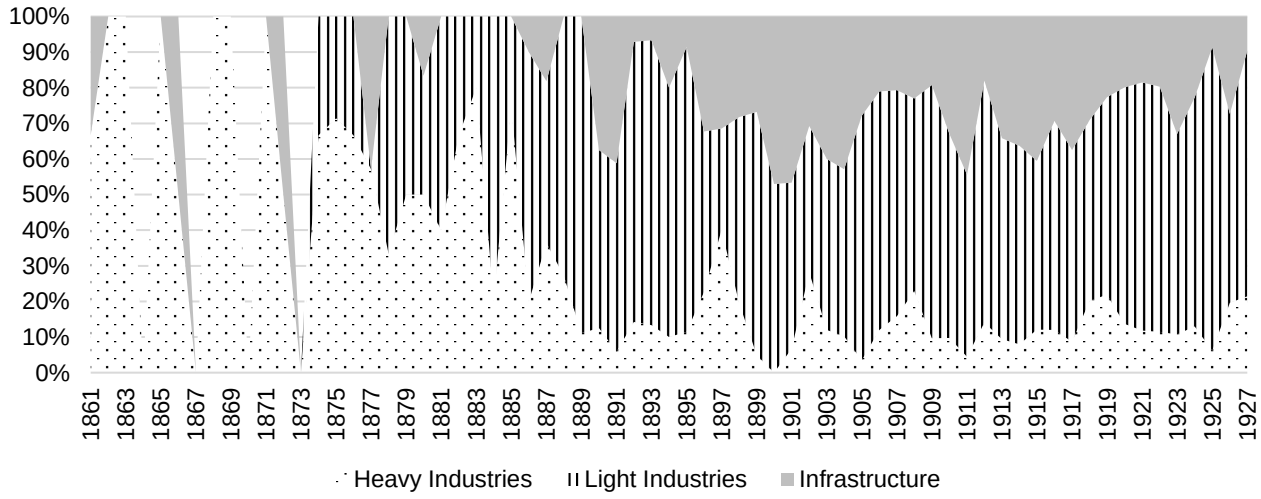

Figure 6.12. Newly Established Modern Industrial Enterprises by Sector, 1861-1927
Note: 1. This figure only considers the enterprises in 18 provinces of China Proper.
Source: see text.

Beside the spillover effect, fiscal-military autonomy *per se* led to lasting local industrialization as early as 1870. As stressed at the beginning of this chapter, the ability of a state to support industrialization is usually overlooked in the literature, so an investigation from this perspective is in urgent need. Several mechanisms mattered. An important public good provided by local governments was security. As mentioned in Section 6.2, local governments were more accountable to local security and thus invested more in local defense as, indicated by the *lijin* spending reports. In fact, there was never devastating chaos like the Taiping Rebellion in China after 1864, and the local peace and security for decades enhanced the confidence of investors and induced the industrial investments.

Another public good financed by local governments that boosted industrialization was infrastructure, which led to higher market integration and lower transaction costs. Local fiscal spending in infrastructure took flexible forms: for example, the *lijin* records indicate that most provinces were responsible for routine local water control; meanwhile, some Self-Strengthening sectors *per se* were supportive, such as telegraphy (Halsey, 2015, Chapter 7), electricity and water supply firms; railway investments flourished, too, as discussed in Chapter 5, and it greatly improved the long-term business conditions of cities and towns along the lines. In general, provinces with greater local fiscal capacity had a longer railway mileage and a higher telegraph coverage in the 1900s and therefore provided better conditions for local industries and commerce. Figure 6.11 (right) counts the number of enterprises in infrastructural sector (telegraphy, electricity, water supply, public transport, etc.) at the prefectural level and verifies their significant role in bringing new private firms of other sectors in 1912-27.[120] Appendix B offers more details.

***

This chapter reconciles the findings in the earlier chapters, establishes an institutional explanation, surveys the changing public spending patterns, and draws some general economic implications based on the fiscal narratives. Both the late Qing statesmen and the historians of later generations described the political and economic changes after the 1860s as a remarkable 'restoration' after the empire survived a series of challenges in the mid-19th century. However, this study demonstrates the misuse of the term 'restoration'.

The fiscal transitions in 1853 marked by the introduction of the apportionment scheme were

[120] Another tentative finding is that modern native banks, with political backgrounds, mushroomed after the 1900s and supported industries by mitigating their financial constraints. The operations of such banks were closely related to local fiscal conditions. If we count the numbers of financial firms (both banking and non-banking) at the prefectural level and use them to predict the number of industrial firms, a strong correlation will be captured. However more careful investigations will be necessary.

a watershed, through which an M-form fiscal structure took shape. Consequently the local governors became unprecedentedly strong in the fiscal-military sense. The Board of Revenue withered, and the local governments were highly incentivized to cultivate new fiscal resources such as the *lijin* income and rationalize the local spending structure as they became accountable to various local public affairs. Meanwhile, introducing Self-Strengthening enterprises in a vacuum of central planning was a rational strategy for governors to expect long-term local gains, and such industrialization fundamentally differed from the early Qing Smithian pattern of economic expansion. Moreover, the Self-Strengthening enterprises brought considerable external economy of scale to private entrepreneurs, and the nature of late Qing fiscal-military decentralization laid the foundations for the notable industrial growth in the early republican era.

7

Concluding Remarks

It was unreasonable to impose uniform rules on all provinces.

Li Hongzhang

(Wu (ed.), 1905, 'yishu hangao' Vol.3, Lun haifang chouxiang)

The discussions on fiscal decentralization and transitions in Chapters 3-6 indicate that the post-1850 Qing fiscal regime would no longer revert to a centralized, static, and agrarian mode. Instead, the bottom-up endeavors by local governments transformed this regime into a decentralized, dynamic, and diverse one. By 1911, when the empire fell, the fiscal control of the central state over provinces became almost invisible, while the autonomous local fiscal-military systems were unprecedentedly strong. This accounted for the surprisingly mild nature of the 1911 Revolution and the resilience of local governance before and after the transformation of the regime. After all, local governments had been trying to delink themselves from rigid central control for six decades.

Findings

It is essential to review the structural factors – socioeconomic conditions and original fiscal institutional arrangements of the early-19th-century Qing Empire – before explaining the post-1850 fiscal transitions. The national population tripled during 1644-1850, but the size of the bureaucracy and scale of fiscal budget were staggeringly small and static. Despite a justifiable choice driven by both ideology and rationality, the Qing state suffered a fiscal malaise manifested by the stagnation of government income, the deterioration of fiscal infrastructure, under-provision of public goods, and even the retreat of state from numerous public affairs. Local governments encountered frequent fiscal shortfalls and were forced to expand informal public finance and even delegate huge responsibilities to the social elites – gentry class and merchant groups. Meanwhile, the Qing taxation pattern failed to match its sectoral structure. Before 1850, land tax revenue was the mainstay (70+%) of national government revenue while the non-agricultural part of the Smithian economy – proto-industry, trade and other services – was severely under-taxed despite its notable growth. Local officials were widely concerned about the flaws of this centralized and low-tax fiscal regime, but regrettably their caveats remained on paper during the first half of the 19th century, and no stakeholders, especially from the central level, were motivated to make any changes.

The abrupt Taiping Rebellion was a triggering condition for the fiscal transitions. This devastating insurrection was ignited in the peripheral Guangxi and the rebels spread to the prosperous Middle and Lower Yangzi region within a few years. The fiscal impacts were twofold. First, excessive military spending increased rapidly; second, the centralized and small taxation system generated extremely limited revenue under the Taiping shadow. Warfare disrupted the national transportation network, undermined both tax collection and remittance, and more than halved the national government revenue from three major sources (land, salt sales and domestic customs). The Board of Revenue found it exceedingly challenging to run the rigid interprovincial assistance system, as a consequence of which the regional governors and military officers under the Taiping shadow openly questioned the Board's authority and distanced themselves from its original tenets. The unhelpful alternative solutions imposed by central government – title sales and big cash issuance – contributed little to the Qing finance, and the corruption and inefficiency of centralized imperial troops loomed large. By the end of 1852, the *ancien régime* was on the verge of collapse.

Why did the Qing central state resort to fiscal-military decentralization? In fact, following the Tang Dynasty (618-907) that was eventually ruined by military separatism (Qian, 2001, Chapters 2-3), successors in the next millennium usually considered power decentralization taboo because of its strong negative impacts on the central authority. However, in the case of

Taiping Rebellion, the nature of the rebellion put the Qing state in a favorable position. The Taiping regime was incompetent, extractive, short-sighted and anti-Confucian, and thus the social elites were unanimously on the Qing side. Furthermore, the Taiping regime only controlled key cities and towns but failed to establish a closed border, which meant that local powers, loyal to the Qing regime, were still able to mobilize fiscal and military resources from the vast rural area. The predictable returns from fiscal-military decentralization outweighed the side effects of regionalism during the Taiping crisis; hence the Qing central state chose to grant the greatest autonomy to local governments by recognizing the legitimacy of militias in late 1852 and openly admitting the breakdown of the centralized 'report and clearance' scheme in mid-1853. Decentralization refrained the central state from partaking in key fiscal-military affairs and transferred the responsibility to the local level. The latter not only established private armies and militias but also financed those troops independently. It is also important to note that decentralization was a contingent choice under specific historical conditions in 1853. If such conditions had changed, the choice of the Qing central court might have been completely different. Had the Board of Revenue still held the 80-million-tael legacy left by the Qianlong Emperor at the outbreak of the rebellion, the Board would have simply used this fund. Had the Taiping founder Hong Xiuquan aimed to establish a regional kingdom in Guangxi rather than marched towards Middle and Lower Yangzi provinces, decentralization would have been much more unnecessary for the Qing state.

The major institutional transition in 1853 reshaped intergovernmental fiscal relations for the post-Taiping decades. The Board of Revenue abandoned monitoring the national budget; instead, it was only responsible for a limited number of central affairs such as central official salary payments and royal household consumption, for which it required provinces to send fixed portions to Beijing every year. Once local governments had fulfilled this obligation under the 'apportionment' scheme, they were able to claim the excessive fiscal revenue; in the meantime, they had to undertake greater responsibilities in local public affairs. From an organizational perspective, the national fiscal structure was transformed from U-form to M-form. Under the pre-1853 U-form structure, the Board had played a vital role: it had supervised national taxation by source (mainly land, salt, and domestic customs) and monitored the national budget, including various forms of account management (such as military, salary payment) and interprovincial assistance. However, in an M-form structure, the governors and their provinces became much more important than the functional departments. Since they were independent and self-serving fiscal units, incentives for fiscal expansion and rationalization were significantly strengthened: these units were acquiesced to cultivate new tax sources, and their spending became more flexible and cost-efficient with minimal intervention

from the Board. The profound change in intergovernmental relations and incentive structure accounted for the bottom-up pattern of several late Qing fiscal innovations.

The introduction of the *lijin* institution was the first breakthrough to strengthen local taxation capacity after a prolonged fiscal stagnation. Local officials under the Taiping shadow neither generated sufficient income from the original taxation methods nor received assistance from the Board, and thus introduced a new tax, the *lijin*, targeting local trade activities. It was firstly launched in Yangzhou during the summer of 1853 and spread to most warzones over the next decade. The *lijin* was an indirect tax on transported goods that provided local militias and governors' armies with steady and considerable income for rebellion suppression. After 1864 when the rebellious regime fell, the Board attempted to intervene in and even abolish this practice, but all its efforts ended up in vain. The *lijin* institution was well preserved by local governments for decades and served as a *de facto* local apparatus. In the long run, by developing *lijin* taxation, local governments strengthened their autonomy and flexibility, overcame their over-dependence on land taxation, and mitigated their prolonged fiscal shortage.

How did the *lijin* institution interact with other indirect taxation systems in the Qing Empire? Before 1850 the Qing central state had had its own indirect taxation apparatus, a domestic customs network that merely taxed a small amount of long-distance trade along key waterways and borders. Hence, commerce in general had been severely under-taxed, while the rigid quota management over customs and deteriorating navigation conditions of waterways stifled the growth of domestic customs income as early as the late 18th century. The local *lijin* institution, by contrast, focused on a wide range of local short-distance trade, and hence the tax base was much larger than that of domestic customs. During and after the Taiping crisis, local *lijin* revenue as a whole gradually became a mainstay of the Qing indirect taxation, while the central domestic customs income became much less important.

Another novel indirect taxation practice after 1850 was imposed exogenously by Western powers. The defeat of the Qing Empire in the Second Opium War led to the signing of the Treaties of Beijing and Tianjin which stipulated that the Westerners should impose a uniform import-export tax rate and supervise customs taxation in China's treaty ports. In 1861 the new independent maritime customs system took shape and was supervised by Sir Robert Hart for decades. Although regarded as a central revenue, it was frequently seized by governors for local military, administrative and economic purposes. This independent system bypassed the complicated Qing bureaucratic hierarchy, and its flat structure and strong accountability brought about notably high efficiency and thus a continuously thriving annual income, which became another indispensable form of revenue for late Qing government. Maritime customs mainly taxed long-distance goods transportation via steamships, greatly undermining the tax

base of the domestic customs system and initiating its further decline.

Therefore, the *lijin* and maritime customs institutions formed an unintentional 'duopoly' in the late Qing indirect taxation while domestic customs were marginalized. The *lijin* and maritime customs were notable for their clear-cut tax bases and accountability; both brought considerable revenues for the Qing state – for local and central levels, respectively – and completely reversed the early Qing land-dependent revenue pattern. However, the conflicts between central and local governments were intensified over time, clearly manifested in the commutation tax scheme. To save time in customs clearance and simplify payment procedures, foreign steamships could choose to pay an extra commutation tax for imported or exported goods at certain maritime customs only once, while all payable inland *lijin* was waived. The commutation tax revenue indisputably went to the central treasury, which elicited strong resentment from local *lijin* institutions in many provinces. This case indicated that under the fiscal-military decentralization, local fiscal institutions were no longer the subordinates of the central state. Instead, their incentives for preserving local interests became unprecedentedly strong. For example, to redeem their potential losses from the commutation tax scheme, some local *lijin* bureaus and stations willingly lowered the *lijin* rate to attract more taxpayers from maritime customs.

The local fiscal-military autonomy, thriving indirect taxation, and accessibility of foreign capital in China's treaty ports jointly accounted for another bottom-up fiscal innovation of the late Qing era – foreign borrowing. Faced with military exigencies in 1853, a Shanghai local official raised for the first time foreign loans secured by the future revenue of the Shanghai customs to mitigate the local fiscal shortage, and only reported to the central government via an *ex post* memorial. This practice was soon adopted by several governors for local military emergencies, the most influential case of which was the six Western Expedition loans initiated by Zuo Zongtang to suppress the Shaanxi-Gansu Muslim Rebellion and regain Xinjiang. Due to its lack of funds, the central state had to acquiesce to Zuo's borrowing, and his immense success became a positive signal for other governors. More importantly, the governors began to deliberately leverage local fiscal resources for long-term projects such as railway and telegraph lines. The amount of local foreign borrowing became endogenous to local taxation, and the local capacity for generating non-tax income was greatly enhanced especially after the 1880s. Given the external enforcement from foreign lenders and the explicit securities of loans, the repayment records of local governments were highly satisfactory. Furthermore, the Qing central state resorted to foreign borrowing at the end of the 19th century to fund the staggering war reparations. Central-local conflicts were intensified further, as the Zongli Yamen urged provinces to pay portions over the long term to repay these massive loans. Local governments

were reluctant to do so, as the repayment of such loans precluded other opportunities for local public investment. The central authority withered irrevocably, and the throne was eventually abandoned by provinces in 1911.

As local governments became more accountable to local public affairs, they had to rationalize the spending structure and find more cost-efficient ways to fulfill local needs. During the late Qing decades, military spending still accounted for a substantial proportion of the government budget, but local governments were no longer dedicated to maintaining the inefficient and corrupt *luying* troops. Instead, numerous funds were invested in provincial militias and modern standing armies and navies. Meanwhile, the local governments provided other public goods, such as water control and disaster relief, and implemented interprovincial assistance programs in a much more flexible way than in early Qing era. Furthermore, without any central blueprint, local governors started introducing modern industries with local fiscal resources for both defense purposes and long-term economic gains. The Self-Strengthening Movement covered a series of heavy and light industries and marked the start of China's native industrial modernization. Numerous official-led enterprises intentionally brought in Western technological and managerial expertise and thus offered external economy of scale for native private enterprises in the later phase. Improvements of local infrastructure such as construction of railway and telegraph lines, proposed and financed by local governments, were also conducive to a conceivable industrial takeoff for not only the late Qing but also early republican periods. While the Qing central court remained rather conservative, local governments resorted to a more dynamic and developmental statecraft. This shift was closely related to the nature of fiscal-military decentralization after the mid-19th century.

Chapters 3-6 regard the decentralization during the Taiping crisis as a triggering condition for late Qing fiscal transitions. This condition reshaped the objectives, tasks, endowments, and constraints of local actors, and hence a series of bottom-up transitions in taxation, borrowing, and spending were irreversibly initiated. Experimentation usually took place on a limited scale, and successful practices would spread quickly to different regions. The central state gradually refrained from many fiscal-military imperatives and was forced to acquiesce to such transitions. It did attempt to intervene in certain local affairs such as *lijin* taxation, modern army building, and railway construction, but due to the lack of information, incentive, and expertise, it was incapable of launching any developmental programs for modernization. Its clumsy efforts further intensified the central-local conflicts and eventually brought an end to the empire. By contrast, late Qing local governments as 'stationary bandits' were sufficiently incentivized to undertake such fiscal transformations.

These chapters also emphasize the spatial variation of numerous provinces and prefectures,

which was evident in both pre-1850 structural factors and post-1850 exogenous shocks. Identifying this helps us construct the causal narratives of institutional changes. For instance, in Chapter 3, we do not find mature *lijin* institutions in Zhili and Shandong provinces, despite their vital role in agricultural production and interregional trade for northern China. The absence of intense Taiping warfare accounted for their nascent *lijin* systems. In Chapter 4, maritime customs seized a large share of revenue from the domestic customs since 1861, but in Jiujiang its domestic customs income remained on a par with that of maritime customs, because the intricate waterway networks in the Middle Yangzi region made sailboats – the targets of domestic customs – inevitable, and the steamships could not dominate. By comparison, in Canton the domestic customs were instantly crowded out by maritime customs due to the wide use of steamships in the Pearl River Delta. In Chapter 5, several southeastern provinces took the lead in borrowing from foreign banks in the 1850s. However, this was not the case for Jiangxi and Hunan provinces, although they also encountered great fiscal shortfalls. Hence, access to foreign funding via the treaty port system mattered in our foreign borrowing story. In Chapter 6, numerous prefectures introduced modern industries with their local funding, but only Wuhan (Wuchang and Hanyang prefectures) was blessed with all positive factors – superior geographical condition, traditional political influence, mature *lijin* taxation, strong maritime customs, and enduring developmental statecraft of its governor Zhang Zhidong – and therefore became one of the top three industrial cities (on a par with Shanghai and Tianjin) of republican China. Thus, given the nature of late Qing decentralization, examining the spatial variation of provinces and prefectures instead of China as a whole, is a more meaningful research method of constructing causal links for various fiscal changes. Beyond Chapters 3-6, the appendices offer more detailed econometric analyses.

Finally, all bottom-up transitions since 1850 engendered substantial and irreversible changes to the fiscal regime at the aggregated level. From the revenue perspective, the national fiscal revenue by the onset of the Taiping Rebellion had been approximately 40 million silver taels, over 70% of which had been land tax revenue; regarding expenditure, the Board had monitored over 75% of the national budget mainly for official salary payments, military, and water control, while local governments had retained a small and fixed amount for stipulated purposes only.

After five decades, the national fiscal revenue had more than doubled to nearly 100 million silver taels in 1900, and the share of land taxation had declined to approximately 40%. New indirect taxation, *lijin* and maritime customs, became the mainstay of the Qing finance and jointly contributed to half of the total government revenue. Regarding non-tax revenue, foreign borrowing became increasingly important: even if we exclude the massive war reparation loans, the ratio of annual borrowing to tax revenue still reached 13% in the 1900s. In terms of

spending, the Board handled no more than 15% of the budget for certain central affairs, with the remainder in local hands. New post-1850 spending items – modern military building, debt repayment, and modern public goods – accounted for 50% of the national budget. Thus, the expansion in both revenue and spending of the post-1850 Qing fiscal regime was more than evident, and local governments made the major contribution. During 1850-1900, the per capita tax burden rose from 0.1 to 0.25 silver taels, and the share of tax revenue in GDP rose from 0.8% to 1.4%.[121] Although it remained far below the level of Western countries, the progress *per se* was notable and even accelerated during the New Policy decade (1901-11). Throughout the entire republican period (1912-49), the role of land taxation became increasingly marginalized; instead, customs taxation, salt sales, *lijin* (the later *tongshui*) taxation, and borrowing became the mainstay of government income. Although China embarked on an onerous path of state rebuilding and modernization, a small, rigid, and agrarian state in line with the Confucian statecraft would never have a second opportunity on earth.

Contributions and Limitations

How does this study expand the boundary of the current fiscal-military state framework reviewed in Chapter 1? It does so by focusing not on a nation state in the Western European sense but on a giant bureaucratic empire where the regime accountability, elite structure and geopolitical condition were distinctive. Three general implications can be drawn.

First, this study reevaluates the role of political disorder in institutional transitions. International wars played a central role in Western Europe, and the consequential development of representative institutions, standing armies, and taxation effectively consolidated the capacity of a state. However in the late Qing case, international wars played a minor role, while domestic insurrection was a driving force for fiscal transitions. Faced with the Taiping crisis, both officials and elites chose to be loyal to the Qing regime; hence the military exigencies unexpectedly strengthened the Qing fiscal-military capacity which had never been triggered in peacetime. This narrative matched the 'war making state' paradigm of Tilly (1990), the only difference being that the Qing Empire encountered an internal crisis.

Second, the role of representative institutions and a powerful commercial class in Western European fiscal development has received sufficient attention from the literature, but was almost absent in the late Qing case. This study focuses on the premature bureaucracy in the

[121] Taxation data for 1901-11 were extremely controversial. If we take the survey results of the Fiscal Reorganization Campaign, the Qing government revenue doubled again in ten years (from 100 to over 200 million silver taels during the 1900s). A widely accepted number was 240 million taels by the fall of the empire (Han, 2014). Hence the per capita tax burden grew to 0.55 taels, and the share of tax revenue in GDP increased to 2.11%, taking into consideration the growth of both population and GDP. If we take the tax revenue number of Wang (1973, Chapter 4) – 292 million taels – the estimates for the late Qing progress will be more optimistic.

Qing state and considers officials and gentry elites as key actors in late Qing fiscal transitions. Moreover, because there were no representative institutions, the social tension in the Qing Empire was also manifested in different forms. The Qing legitimacy was the vaguely defined 'mandate of heaven' in line with Confucian tenets, and thus eliminating tax resistance by the mass people was a priority, while contention from merchant groups under patronage networks was much weaker. Hence, this study shows how, given the specific social structure and regime legitimacy, local officials bypassed costly and risky direct taxation and developed cost-efficient and secure indirect taxation systems.

Finally, the geographical conditions of the Qing Empire impel us to make central the principal-agent problem. Consideration of the capacity of the Qing central state only leads to a rather negative conclusion about the late Qing fiscal performance and a failure to understand the diverse fiscal changes in numerous regions. A more meaningful approach, therefore, is to distinguish the central and local states. This study stresses the importance of studying local governments in an empire system and proposes that the late Qing fiscal transitions were launched in a bottom-up way by local governments after a prolonged malaise under a centralized, rigid, and static regime. The incompetent central court was forced to grant the greatest autonomy to local governments, as a result of which the latter became self-serving fiscal units and broke up with the traditional Qing statecraft. In this way, this study reevaluates the path of late Qing fiscal modernization in a more positive way and develops a coherent explanation for the pioneering local behaviors and intriguing intergovernmental interactions. This approach transcends the rigid 'Western challenge, Chinese response' model and identifies more effectively the driving forces, actors, and mechanisms for the fiscal transitions. In fact, intergovernmental relation analysis has been extremely nuanced in contemporary studies, but it remains understated in historical ones.

This study is subject to several potential limitations. First, it has reservations about the taxation data of the New Policy decade (1901-11). As described in Chapter 3, the objective of the 1908 Fiscal Reorganization Campaign was to uncover the black box of local fiscal operations during and after the Taiping crisis. The survey results indicated that during 1900-08 the national government income grew from 100 to 240 million silver taels (Han, 2014). Explaining this staggering change is extremely challenging. During this decade, repaying the war reparation loans impelled local governments to collect an extra revenue of 20-30 million taels every year; the economy of three northeastern provinces (Manchuria) took off from the 1880s (Eckstein et al., 1974) and were able to collect 25 million taels every year in the 1900s; the existing national taxation might enjoy 10% growth (by 10 million taels). However, we still fail to explain an abrupt gap of 80 million silver taels during 1900-08. The time series data are

far from satisfactory, and a more reasonable explanation is that the 1908 Fiscal Reorganization Campaign uncovered an excess revenue of 80 million taels that had been concealed at the local level since the Taiping emergency (Shi and Xu, 2008; Liu, 2014a). Hence this revenue should be amortized to the entire late Qing period, and we should reconstruct the time series revenue data for the late Qing state. However, no reliable approaches for amortization are found at this stage. In Chapters 3-6, this study assumes that provinces and prefectures concealed their unreported revenue to the same extent, so that their spatial variations in taxation, spending, etc. continued to be reliable.

Second, this study focuses overwhelmingly on taxation, borrowing and spending issues while paying less attention to monetary factors. Only the 'big cash' issuance during the Xianfeng reign was briefly discussed in Chapter 3; however, the Qing monetary reforms and central endeavors in establishing a central bank from the late 19th century are beyond the scope of this study. Because the Qing state adopted a bimetallic system, the late Qing monetary reforms could substantially influence the efficiency of fiscal operations, not to mention the potential impacts from various international monetary shocks. Future investigations from this perspective are therefore necessary.

Third, this study does not assess the fiscal phenomena during the New Policy decade in detail, including the uprisings regarding tax resistance and the long-term impacts of the massive provision of modern public goods. Studies on the New Policy decade (Esherick, 1998; Xiao G., 1999; Li, 2003; Hou, 2011) identify some thought-provoking phenomena: though local governments made great efforts in introducing modern public goods such as modern education and health care, the mass uprisings became pervasive, and some people even burned down the New Policy facilities to vent their resentment.[122] In future research it will be intriguing to study how the legitimacy and accountability of the Qing central and local states were transformed during this ever-changing decade, how the fiscal apparatus adapted to the New Policy agenda, whether the New Policy facilities worked, and how the mass people perceived and responded to the radical fiscal expansion.

Finally, although this study highlights the merits of fiscal-military decentralization in the late Qing period, it must be acknowledged that such decentralization was contingent and far from institutionalized. Although the incentive structure of local governments was greatly improved since 1850, negative externalities of decentralization such as regional inequality and the tragedy of the commons became increasingly conceivable. In fact, the Qing central court attempted to institutionalize central-local power sharing during the 1900s but encountered tremendous resistance from the local level (Liu, 2014a, Chapters 5-6). After the demise of the empire in

[122] Bai and Jia (2016) offer a non-fiscal explanation for the uprisings by highlighting the abolishment of the Civil Service Examinations.

1911, the central authority of the early republican regime was completely absent. Some regions like Sichuan simply abandoned serving as a stationary bandit and instead entered a 'race to the bottom', the widespread social trauma of which persisted even in the 1930s. To understand China's path towards a prominent modern state, future investigations should emphasize the continuity of decentralization from late Qing to early republican periods and examine the diverse patterns of local fiscal-military autonomy across regions in the long term.

Bibliography

Acemoglu, D., and Robinson, J. A., 2012, *Why Nations Fail*, Crown Business.

Acemoglu, D., Cantoni, D., Johnson, S. and Robinson, J. A., 2011, The Consequences of Radical Reform: The French Revolution, *American Economic Review*, 101(7): 3286-3307.

Acemoglu, D., Johnson, S. and Robinson, J. A., 2004, Institutions as the Fundamental Cause of Long-Run Growth, *NBER Working Paper*, No. 10481.

Allen, R. C., 2011, Why the Industrial Revolution Was British: Commerce, Induced Invention, and the Scientific Revolution, *Economic History Review*, 64(2): 357-384.

Allen, R. C., Bassino, J.-P., Ma, D., Moll-Murata, C., and Van Zanden, J. L., 2011, Wages, Prices, and Living Standards in China, 1738–1925: In Comparison with Europe, Japan, and India, *Economic History Review*, 64: 8-38.

Altorfer-Ong, S., 2007, *State-Building without Taxation: The Political Economy of Government Finance in the 18th-century Republic of Bern*, London School of Economics, PhD Dissertation.

Anderson, P., 1974, *Lineages of the Absolutist State*, Routledge.

Ardant, G., 1975, Financial Policy and Economic Infrastructure of Modern States and Nations, in Tilly C., *The Formation of National States in Western Europe*, Princeton University Press, 164-242.

Bai, Y., and Jia, R., 2016, Elite Recruitment and Political Stability: The Impact of the Abolition of China's Civil Service Exam, *Econometrica*, 84(2): 677-733.

Bai, Y., Jia, R., and Yang, J., 2021, The Nexus of Elites and War Mobilization, *NBER Working Paper*, No.28667: 1-37.

Bardhan, P., 2016, State and Development: The Need for a Reappraisal of the Current Literature, *Journal of Economic Literature*, 54(3): 862-892.

Baten, J., Ma, D., Morgan, S., and Wang, Q., 2010, Evolution of Living Standards and Human Capital in China in the 18-20th Centuries: Evidences from Real Wages, Age-Heaping, and Anthropometrics, *Explorations in Economic History*, 47(3): 347-359.

Baugh, D. A., 1965, *British Naval Administration in the Age of Walpole*, Princeton University Press.

Beal, E. G., 1958, *The Origin of Likin, 1853–1864*, Harvard university Press.

Becker, S. O., and Woessmann, L., 2009, Was Weber Wrong? A Human Capital Theory of Protestant Economic History, *Quarterly Journal of Economics*, 124(2): 531-96.

Beijing Library (BL), 2006, 清末民国财政史料辑刊 (*Compilation of Fiscal Materials for the Late Qing and Republican Periods*), National Library Press.

Bernhardt, K., 1992, *Rents, Taxes, and Peasant Resistance: The Lower Yangzi Region, 1840-1950*, Stanford University Press.

Besley, T., and Persson T., 2009, The Origins of State Capacity: Property Rights, Taxation, and Politics, *American Economic Review*, 99(4): 1218-1244.

Besley, T., and Persson, T., 2008, Wars and State Capacity, *Journal of the European Economic Association*, 6(2-3): 522-530.

Besley, T., and Persson, T., 2010, State Capacity, Conflict, and Development, *Econometrica*, 78(1): 1-34.

Besley, T., and Persson, T., 2011, The Logic of Political Violence, *Quarterly Journal of Economics*, 126(3): 1411-1445.

Bonney, R., 1995, *Economic Systems and State Finance*, Oxford University Press.

Bonney, R., 1999, *The Rise of the Fiscal State in Europe c. 1200-1815*, Clarendon Press.

Braddick, M. J., 1996, The Early Modern English State and the Question of Differentiation, 1550-1700, *Comparative Studies in Society and History*, 38(1): 92-111.

Braddick, M. J., 2000, *State Formation in Early Modern England, c. 1550-1700*, Cambridge University Press.

Brandt, L., Ma D., and Rawski T. G., 2014, From Divergence to Convergence: Reevaluating the History Behind China's Economic Boom, *Journal of Economic Literature*, 52 (1): 45-123.

Brewer, J., 1990, *The Sinews of Power:War, Money and the English State, 1688–1783*, Harvard University Press.

Broadberry, S., and Gupta, B., 2009, Lancashire, India and Shifting Competitive Advantage in Cotton Textiles, 1700-1850: The Neglected Role of Factor Prices, *Economic History Review*, 62: 279-305.

Broadberry, S., Guan, H., and Li, D., 2018, China, Europe and the Great Divergence: A Study in Historical National Accounting, 980-1850, *Journal of Economic History*, 78(4): 955-1000.

Brook, T., 2004, *The Chinese State in Ming Society*, Routledge.

Cai, G., and Han, J., 2019, 天下在河上：中国运河史传 (*The Empire on the Water: A History of Canals in China*), Eastern China Normal University Press.

Cai, H., Zhou L. and Wu Y., 2008, 宗族制度、商人信仰与商帮治理：关于明清时期徽商与晋商的比较研究 (The Clan Rule, the Faith of Merchants and the Management of Merchant Organizations: A Comparative Study on Merchants of Anhui Province and Shanxi Province in the Period of the Ming and Qing Dynasty), *Management World*, 8: 87-118.

Cantoni, D., and Yuchtman, N., 2014, Medieval Universities, Legal Institutions, and the Commercial Revolution, *Quarterly Journal of Economics*, 129(2): 823-887.

Cao, J., 1991, 近代中国与利用外资 (*Modern China and Foreign Investment Utilization*), Shanghai Social Sciences Academy Press.

Cao, S., 2001, 中国人口史第五卷 (*A History of Population for China,Vol. 5*), Fudan University Press.

Cárdenas, M., Eslawa, M. and Ramírez, S., 2014, Why Internal Conflict Deteriorates State Capacity: Evidence from Colombian Municipalities, *Defence and Peace Economics*, 27 (3): 353-377.

Ch, R., Shapiro, J., Steele, A. and Vargas, J. F., 2018, Endogenous Taxation in Ongoing Internal Conflict: The Case of Colombia, *American Political Science Review*, 112 (4): 996-1015.

Chan, W. K. K., 1977, *Merchants, Mandarins and Modern Enterprise in Late Qing China*, Harvard University East Asian Research Center.

Chang, C.-L., 1955, *The Chinese Gentry*, University of Washington Press.

Chang, C.-L., 1962, *The Income of the Chinese Gentry*, University of Washington Press.

Chang, H.-J., 2006, *The East Asian Development Experience: The Miracle, the Crisis and the Future*, Palgrave Macmillan.

Chen F., 1997, 清代中央财政与地方财政的调整 (Adjustments of Central and Local Government Finance of Qing Dynasty), *Historical Studies*, 5: 100-114.

Chen, F., 1988, 清代盐政与盐税 (*Salt Policies and Taxes in the Qing Dynasty*), Zhongzhou Guji Press.

Chen, F., 1992, 清代军费研究 (*A Study on Qing Military Expenditure*), Wuhan University Press.

Chen, F., 2008, 清代财政政策与货币政策研究 (*Studies on Qing's Fiscal and Monetary Policies*), Wuhan University Press.

Chen, F., 2010, 清代财政史论稿 (*Papers on Qing Fiscal History*), Commercial Press.

Chen, F., 2015, 晚清财政说明书 (*Compilation of Late Qing Financial Reports*), Hubei People's Press.

Chen, J., 1979, *The Military-gentry Coalition: China under the Warlords*, University of Toronto and York University, Joint Center on Modern East Asia.

Chen, S. (Shiqi 陈诗启), 1993, 中国近代海关史: 晚清部分 (*Chinese Modern History of Customs: Late Qing*), People's Press.

Chen, S. (Shuo 陈硕) and Gao, L., 2012, 央地关系：财政分权度量及作用机制再评估 (Central-local Relations: Measurements of Fiscal Decentralization and Re-evaluation on Its Mechanism), *Management World*, 6: 43-59.

Chen, T., 1906, 刘壮肃公奏议 (*Liuzhuangsugong Zouyi*), Taipei Wenhai (reprinted in 1968).

Chi, H., 1976, *Warlord Politics in China, 1916-1928*, Stanford University Press.

Chinese Academy of Meteorological Sciences (CAMS), 1981, 中国近五百年旱涝分布图集 (*Atlas of Droughts and Floods in China for the Last Five Centuries*), China Maps Press.

Chinese Maritime Customs Services (CMCS), 1861-1910, *Trade Reports,* London School of Economics Library Archives.

Chinese Military History Editorial Team (CMH), 2003, 中国历代战争年表 (*Chronology of Wars for Dynastic China*), CPLA Press.

Chu, S.-C., and Liu, K.-C., 1994, *Li Hung-Chang and China's Early Modernization*, Routledge.

Chu, T.-T., 1962, *Local Government in China under the Ch'ing*, Harvard University Press.

Clark, G., 1987, Why Isn't the Whole World Developed? Lessons from the Cotton Mills, *Journal of Economic History*, 47: 141-73.

Cohen, P. A., 1984, *Discovering History in China: American Historical Writing on the Recent Chinese Past*, Columbia University Press.

Cong, H., 1995, 近代冀鲁豫乡村 (*Modern Countryside of Hebei, Shandong and Henan*), China Social Sciences Press.

Court, V., 2019, A Reassessment of the Great Divergence Debate: Towards a Reconciliation of Apparently Distinct Determinants, *European Review of Economic History*, 00:1-42.

Cui, M., 2020, 从御匪到救时：道咸之际清廷团练动员的兴起 (From Defense to Rescue: The Rise of Qing Militias during Daoguang and Xianfeng Periods), *Social Sciences Studies*, 5: 176-186.

Dai, Q., 1936, 清朝文献通考 (*Qingchao Wenxian Tongkao*), Commercial Press.

Dai, Y., 1993, 近代中国海关与中国财政 (*Modern Chinese Customs and Chinese Public Finance*), Xiamen University Press.

Dai, Y., 1993, 论晚清的子口税与厘金 (Commutation Tax and Lijin during Late Qing Period), *Chinese Socioeconomic Historical Studies*, 4: 78-87.

Dan, X., 1889, 湖南厘务汇纂 (*Hunan Liwu Huizuan*), Harvard Yanjing Library.

Deng, G., 1999, *The Premodern Chinese Economy - Structural Equilibrium and Capitalist Sterility*, Routledge.

Deng, K. G., 2012, *China's Political Economy in Modern Times: Changes and Economic Consequences, 1800-2000*, Routledge.

Deng, K. G., 2015, *Mapping China's Growth and Development in the Long Run, 221 BC to 2020*, World Scientific Press and Imperial College Press.

Deng, K. G., and O'Brien, P. K., 2016, Establishing Statistical Foundations of a Chronology for the Great Divergence: A Survey and Critique of the Primary Sources for the Construction of Relative Wage Levels for Ming–Qing China, *Economic History Review*, 69(4): 1057-1082.

Deng, K. G., and O'Brien, P. K., 2021, The Kuznetsian Paradigm for the Study of Modern Economic History and the Great Divergence with Appendices of Literature Review and Statistical Data, *London School of Economics Economic History Working Paper*, WP321: 1-40.

Deng, S., 1998, 晚清财政与中国近代化 (*Late Qing Public Finance and China's Modernization*), Sichuan People's Press.

Deng, Y., 2003, 清代前期税则制度的变迁 (Changes of Taxation Regulations in Early Qing Period), *Chinese Historical Studies*, 3: 155-170.

Dernberger, R. F., 1975, The Role of the Foreigner in China's Economic Development, 1840-1949, in Perkins, D., *China's Modern Economy in Historical Perspective*, 19-47.

Dickson, P. G. M., 1967, *The Financial Revolution in England: A Study in the Development of Public Credit*, 1688-1756, Routledge.

Dincecco, M., 2009, Fiscal Centralization, Limited Government, and Public Revenues in Europe, 1650-1913, *Journal of Economic History*, 69 (1): 48-103.

Dincecco, M., and Katz, G., 2016, State Capacity and Long-Run Economic Performance, *Economic Journal*, 126 (2): 189-218.

Dincecco, M., Fenske, J., and Onorato, M. G., 2019, Is Africa Different? Historical Conflict and State Development, *Economic History of Developing Regions*, 34(2): 209-250.

Dittmar, J., and Meisenzahl, R. R., 2020, State Capacity and Public Goods: Institutional Change, Human Capital and Growth in Early Modern Germany, *Review of Economic Studies*, 87(2): 959-996.

Downing, B., 1992, *The Military Revolution and Political Change: Origins of Democracy and Autocracy in Early Modern Europe*, Princeton University Press.

Drelichman, M., and Voth, H.-J., 2008, Institutions and the Resource Curse in Early Modern Spain, in Helpman E., *Institutions and Economic Performance*, Harvard University Press, 120-147

Du, H., 1905, 光绪财政通纂 (*Guangxu Caizheng Tongzuan*), in Beijing Library (BL), 2006, 清末民国财政史料辑刊 (*Compilation of Fiscal Materials for the Late Qing and Republican Periods*), National Library Press, Vol.21-24.

Du, X., 1991, 民族资本主义与旧中国政府 (*National Capitalism and the Governments of Old China*), Shanghai Social Sciences Academy Press.

Duara, P., 1991, *Culture, Power, and the State: Rural North China, 1900-1942*, Stanford University Press.

Duus, P., 1989, Introduction: Japan's Informal Empire in China, 1895-1937: An Overview, in Duus, P., Myers, R. H., and Peattie, M. R., *The Japanese Informal Empire in China, 1895-1937*, Princeton University Press, xi-xxix.

Eastman, L. E., 1988, *Family, Fields and Ancestors: Constancy and Change in China's Social and Economic History, 1550-1949*, Oxford University Press.

Eastman, L. E., 1990, *The Abortive Revolution: China under Nationalist Rule, 1927-1937*, Harvard University Press.

Eckstein, A., Chao, K. and Chang, J., 1974, The Economic Development of Manchuria: The Rise of a Frontier Economy, *Journal of Economic History*, 34(1): 239-264.

Elman, B. A., 2005, *On Their Own Terms: Science in China, 1550–1900*, Harvard University Press.

Elvin, M., 1973, *The Pattern of the Chinese Past: A Social and Economic Interpretation*, Stanford University Press.

Epstein, S. R., 2002, *Freedom and Growth: The Rise of States and Markets in Europe, 1300-1750*, Routledge.

Ertman, T., 1997, *Birth of the Leviathan: Building States and Regimes in Medieval and Early Modern Europe*, Cambridge University Press.

Esherick, J., 1998, *Reform and Revolution in China: The 1911 Revolution in Hunan and Hubei*, University of Michigan Press.

Evans, P. B., Rueschemeyer, D. and Skocpol, T., 1985, *Bringing the State Back in*, Cambridge University Press.

Fairbank, J. K., 1978, *The Cambridge History of China: Vol 10, Late Ch'ing 1800-1911 (Part I)*, Cambridge University Press.

Fairbank, J. K., 1980, *The Cambridge History of China: Vol 11, Late Ch'ing 1800-1911 (Part II)*, Cambridge University Press.

Fairbank, J. K., 1983, *The Cambridge History of China: Vol 12, Republican China 1912-1949*, Cambridge University Press.

Feng, Y., 2011, 裁厘改统与民国时期市场整合——基于上海、芜湖、天津三地粮价的探讨 (Lijin Abolishment, Tongshui Introduction, and Market Integration of Republican China: Investigating Grain Prices in Shanghai, Wuhu and Tianjin), *China Economic Quarterly*, 11(1): 83-114.

Fernández-Villaverde, J., Koyama, K., Lin, Y., and Sng, T.-H., 2020, The Fractured-Land Hypothesis, *Centre for Economic Policy Research Discussion Paper*, DP15209: 1-63.

Feuerwerker, A., 1958, *China's Early Industrialization: Sheng Hsuan-Huai (1844-1916) and Mandarin Enterprise*, Harvard University Press.

Feuerwerker, A., 1983, Chapter 3: The Foreign Presence in China, in Fairbank, J. K., *The Cambridge History of China, Volume 12, Part 1*, Cambridge University Press.

Finer, S. E., 1997, *The History of Government from the Earliest Times*, Oxford University Press.

First Historical Archives of China (FHAC), 1996, 清政府镇压太平天国档案史料 (*Archival Materials for the Suppression of the Taiping Rebellion by the Qing Government*), Social Sciences Literature Press.

Frank, A. G., 1998, *ReOrient: Global Economy in the Asian Age*, University of California Press.

Frankema, E., and Van Waijenburg, M., 2014, Metropolitan Blueprints of Colonial Taxation? Lessons from Fiscal Capacity Building in British and French Africa, c. 1880-1940, *Journal of African History*, 55(03): 371-400.

Fratianni, M., and Spinelli F., 2006, Italian City-States and Financial Evolution, *European Review of Economic History*, 10: 257-278.

Fu, Y., 2017, 明清社会经济史论文集 (*A Collection of Papers on Ming-Qing Social and Economic History*), People's Press.

Gardner, L. A., 2012, *Taxing Colonial Africa: The Political Economy of British Imperial Rule*, Oxford University Press.

Gennaioli, N., and Voth, H.-J., 2015, State Capacity and Military Conflict, *Review of Economic Studies*, 82(4): 1409-1448.

Gerschenkron, A., 1962, *Economic Backwardness in Historical Perspective*, Harvard University Press.

Gilbert, F. (ed.), 1975, *The Historical Essays of Otto Hintze,* Oxford University Press.

Gillin, D. G., *Warlord: Yen Hsi-Shan in Shansi Province, 1911-1949*, Princeton University Press.

Gu, L., 2007, 清代江苏厘金研究 (*Lijin System of Jiangsu in Qing Dynasty*), Shanghai Normal University, Master Dissertation.

Guan, Q., 2018, 近代中国的工业发展：与日本比较 (*Industrial Development in Modern China: A Comparison with Japan*), Renmin University of China Press.

Guo, Y. (Yisheng 郭毅生), 1989, 太平天国历史地图集 (*The Atlas of the Taiping Rebellion*), China Maps Press.

Guo, Y. (Yongqin 郭永钦), Zhang, Z., Van Leeuwen, B., and Xu, Y., 2019, A View of the Occupational Structure in Imperial and Republican China, 1640-1952, *Australian Economic History Review*, 59(2): 134-157.

Hall, P. A., and Soskice, D. W., 2001, *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, Oxford University Press.

Halsey, S. R., 2015, *Quest for Power: European Imperialism and the Making of Chinese Statecraft*, Harvard University Press.

Hamashita, T., 2006, 中国近代经济史研究：清末海关财政与通商口岸市场圈 (*Modern Chinese Economic History: Late Qing Maritime Customs Finance and Treaty Port Market Area*), Jiangsu People's Press.

Han, X., 2014, 晚清财政规模估算问题初探 (A Preliminary Survey of the Scale of Late Qing Public Finance), *Chinese Economic Historical Studies*, 3: 25-41.

Hao, Y., and Liu, K. Z., 2020, Taxation, Fiscal Capacity, and Credible Commitment in Eighteenth - Century China: The Effects of the Formalization and Centralization of Informal Surtaxes, *Economic History Review*, 73(4): 914-939.

Hao, Y.-P., 1971, *The Comprador in Nineteenth Century China: Bridge between East and West*, Harvard University Press.

Hao, Y.-P., 1986, *The Commercial Revolution in 19th-Century China: The Rise of Sino-Western Mercantile Capitalism*, University of California Press.

Harley, C. K., 1992, International Competitiveness of the Antebellum American Cotton Textile industry, *Journal of Economic History*, 52: 559-84.

Harling, P., 1996, *The Waning of 'Old Corruption': The Politics of Economical Reform in Britain, 1779-1846*,

Clarendon Press.
He, B., 1984, 清代户部诸关初探 (A Preliminary Exploration on the Branches of Board of Finance Qing Dynasty), *Nankai University Journal*, 3: 36-44.
He, B., 1987, 乾隆年间的免税措施 (Tax Exemptions during the Qianlong Period), *Historical Archives*, 4: 87-93.
He, H., 1997, 从清末刚毅、铁良南巡看中央与地方财政的关系 (Late Qing Southern Tours of Gangyi and Tieliang: Reviewing Central-Local Fiscal Relations), *Academia Sinica Institute of History and Philosophy Collection*, 68(1): 55-115.
He, H., 2001, 清季中央与各省财政关系的反思 (Rethinking of Late Qing Central-Local Fiscal Relations), *Academia Sinica Institute of History and Philosophy Collection*, 72(3): 55-115.
He, L. (Liangdong 何良栋), 1902, 皇朝经世文四编 (*Huangchao Jingshiwen Sibian*), Hongbao Shuju.
He, L. (Lie 何烈), 1972, 厘金制度新探 (*New Investigations on Lijin System*), Soochow University Press.
He, L. (Lie 何烈), 1981, 清咸同时期的财政 (*Public Finance in the Xianfeng and Tongzhi Reigns in Qing Dynasty*), Taipei National Institute for Compilation.
He, W., 2013, *Paths toward the Modern Fiscal State*, Harvard University Press.
Ho, P.-T., 1959, *Studies on the Population of China, 1368-1953*, Harvard University Press.
Hoffman, P. T., 2015, What Do States Do? Politics and Economic History, *Journal of Economic History*, 75: 303-332.
Hou, C.-M., 1965, *Foreign Investment and Economic Development in China, 1840–1937*, Harvard University Press.
Hou, P., 2008, 清代浙江厘金研究 (*Lijin System of Zhejiang in Qing Dynasty*), Shanghai Normal University, Master Dissertation.
Hou, Y., 2011, 清末立宪运动史：二十世纪初中国政治改革风潮 (*A History of the Late Qing Constitutional Movement: Trends of Political Reforms in China at the Beginning of the 20th Century*), Renmin University of China Press.
Hsiao, K.-C., 1967, *Rural China: Imperial Control in the 19th Century*, University of Washington Press.
Hsu, I. C. Y., 1983, *The Rise of Modern China*, Oxford University Press.
Hua, Q., 1991, 太平天国地理志 (*Geography of the Taiping Rebellion*), Guangxi People's Press.
Huang, G. (Guangyu 黄光域), 1995, 外国在华工商企业词典 (*The Universal Dictionary of Foreign Business in Modern China*), Sichuan People's Press.
Huang, G. (Guosheng 黄国盛), 2000, 鸦片战争前的东南四省海关 (*Customs in Four Southeastern Provinces before the Opium War*), Fujian People's Press.
Huang, P. C., 1985, *The Peasant Economy and Social Change in North China*, Stanford University Press.
Huang, P. C., 1990, *The Peasant Family and Rural Development in the Yangzi Delta, 1350-1988*, Stanford University Press.
Huang, R., 1979, *Taxation and Governmental Finance in 16th Century Ming China*, Cambridge University Press.
IISH/IISG, 2019, *Historical Prices and Wages (HPW): Datafiles*, International Institute of Social History in Amsterdam.
Iwai, S., 2011, 中国近代财政史研究 (*A Study of the Fiscal System in Late Imperial China*), Social Sciences Academic Press.
Jamieson, G., 1897, 中国度支考 (*Zhongguo Duzhi Kao*), Shanghai Tushu Jicheng Ju (accessed via Peking University Library).
Jia, R., 2014, The Legacies of Forced Freedom: China's Treaty Ports, *Review of Economics and Statistics*, 96(4): 596-608.
Johnson, N. D., and Koyama, M., 2017, States and Economic Growth: Capacity and Constraints,

Explorations in Economic History, 64: 1-20.

Jones, E. L., 1988, *Growth Recurring: Economic Change in World History*, University of Michigan Press.

Karaman, K., and Pamuk, S., 2010, Ottoman State Finances in European Perspective, 1500–1914, *Journal of Economic History*, 70(3): 593-629.

Karaman, K., and Pamuk, S., 2013, Different Paths to the Modern State in Europe: The Interaction between Warfare, Economic Structure, and Political Regime, *American Political Science Review*, 107 (3): 603-626.

Kennedy, T. L., 1978, *The Arms of Kiangnan: Modernization in the Chinese Ordnance Industry, 1860-1895*, Westview Press.

Kirby, W. C., 1990, Continuity and Change in Modern China: Economic Planning on the Mainland and on Taiwan, 1943-1958, *Australian Journal of Chinese Affairs*, 24: 121-141.

Kirby, W. C., 1995, China Unincorporated: Company Law and Business Enterprise in 20th Century China, *Journal of Asian Studies*, 54 (1): 43–63.

Kiser, E., and Linton, A., 2002, The Hinges of History: State-Making and Revolt in Early Modern France, *American Sociological Review*, 67(6): 889-891.

Kiyokawa, Y., 1987, Transplantation of the European Factory System and Adaptations in Japan: The Experience of the Tomioka Model Filature, *Hitotsubashi Journal of Economics*, 28: 27-39.

Ko, C. Y., Koyama, M., and Sng, T. H., 2018, Unified China and Divided Europe, *International Economic Review*, 59(1): 285-327.

Koyama, M., Moriguchi, C., and Sng, T.-H., 2015, Geopolitics and Asia's Little Divergence: A Comparative Analysis of State Building in China and Japan after 1850, *GMU Working Paper in Economics*, No.15-54: 1-39.

Kuhn, P. A., 1980, *Rebellion and Its Enemies in Late Imperial China: Militarization and Social Structure, 1796-1864*, Harvard University Press.

Kuhn, P. A., 1992, *Soulstealers: The Chinese Sorcery Scare of 1768*, Harvard University Press.

Kuhn, P. A., 2002, *Origins of the Modern Chinese State*, Stanford University Press.

Laamann, L., 2013, *Critical Readings on The Manchus in Modern China (1616-2012)*, Brill.

Lachmann, R., 2010, *States and Power*, Polity.

Landes, D. S., 2006, Why Europe and the West? Why Not China?, *Journal of Economic Perspectives*, 20(2): 3-22.

Levi, M., 1988, *Of Rule and Revenue*, University of California Press.

Li, B., 2000, 江南的早期工业化：1550-1850 (*Jiangnan's Early Industrialization, 1550-1850*), Social Science Academic Press.

Li, B., 2007, "道光萧条"与"癸未大水"——经济衰退、气候剧变及 19 世纪的危机在松江 ('Daoguang Depression' and '1823 Great Floods': Economic Recession, Climate Cataclysm and the 19th-Century Crisis in Songjiang), *Social Sciences*, 6: 173-178.

Li, B., 2013, 理论、方法、发展、趋势：中国经济史研究新探 (*Theory, Method, Development, Trends: New Directions for Research on China's Economic History*), Zhejiang University Press.

Li, H. (Hanzhang 李瀚章), 1876, 曾文正公全集 (*Zengwenzhenggong Quanji*), China Bookstore Press (reprinted 2011).

Li, H. (Hongzhang 李鸿章), 1908, 光绪朝大清会典事例 (*Guangxuchao Daqing Huidian Shili*), Commercial Press.

Li, H., 2008, 华北村治：晚清和民国时期的国家与乡村 (*Rural Governance in North China: State and Countryside in Late Qing and Republican Periods*), Zhonghua Shuju.

Li, H., 2018, 集中化地方主义与近代国家建设——民国北京政府时期军阀政治的再认识 (Concentrated Regionalism and Modern State Building: Reexamining Warlord Politics during Beiyang Period), *Modern Historical Studies*, 5: 67-84.

Li, N., and Lin, C., 2015, 太平天国战争对近代人口影响的再估计——基于历史自然实验的实证分析 (A Re-estimation of the Effect of Taiping Rebellion on Population Loss in Modern China: An Empirical Analysis Based on Historical Natural Experiment), *China Economic Quarterly*, 14 (4): 1325-1346.

Li, X., 2003, 张之洞与清末新政研究 (*Zhang Zhidong and Late Qing New Policy*), Shanghai Bookstore Press.

Liang, F., 1980, 中国历代户口、田地、田赋统计 (*Statistics on Household, Land and Land Tax for China's Dynasties*), Shanghai People's Press.

Liang, F., 1989, 梁方仲经济史论文集 (*A Collection of Papers on Economic History by Liang Fangzhong*), Zhonghua Shuju.

Liang, T., 1850(?), 粤海关志 (*Yuehanguan Zhi*), Guangdong People's Press (reprinted 2002).

Liao, S., 2010, 清代常关与区域经济研究 (*Domestic Customs and Regional Economic Studies of the Qing Dynasty*), People's Press.

Liao, S., and Gu, L., 2012, 百年来厘金研究述评 (Literature Review on Lijin in the Past Century), *Chinese Socioeconomic Studies*, 4: 88-97.

Lin, M., 2006, *China Upside Down: Currency, Society, and Ideologies, 1808–1856*, Harvard University Asia Center.

Lindert, P. H., 2004, *Growing Public: Social Spending and Economic Growth since the Eighteenth Century*, Cambridge University Press.

Lindley, A. F., 1866, *Heavenly Kingdom*, Day and Son.

Liu, B., 2007, 近代中国外债史稿·中国财政小史 (*A Draft History of Modern Chinese Foreign Borrowing & A Brief History of Chinese Public Finance*), Wuhan University Press.

Liu, D., 1937, 中国工业调查报告 (*Reports on the Industries of China*), Research Institute of Economic Statistics.

Liu, G., 2005, *Wrestling for Power: The State and Economy in Later Imperial China, 1000-1770*, Harvard University, PhD Thesis.

Liu, J., 1936, 清朝续文献通考 (*Qingchao Xu Wenxian Tongkao*), Commercial Press.

Liu, K.-C., 1964, British-Chinese Steamship Rivalry in China, 1873-85, in Cowan, C. D., *The Economic Development of China and Japan: Studies in Economic History and Political Economy*, Praeger.

Liu, K.-C., 1990, 经世思想与新兴企业 (*Pragmatism and Newly Emerging Enterprises*), Lianjing Shiye Publishing Company.

Liu, N., 1909, 刘坤一奏疏 (*Liu Kunyi Zoushu*), Yuelu Shushe (reprinted in 2013).

Liu, W. G., 2015, The Making of a Fiscal State in Song China, 960-1279, *Economic History Review*, 68 (1): 48-78.

Liu, W., 1998, 甲午前四十年间督抚权力的演变 (Powers Changes of Governors, 1855-1895), *Modern Chinese Historical Studies*, 2: 59-78.

Liu, X., 2008, 北洋政府内国公债发行研究 (*Domestic Public Debts during Beiyang Period*), Hunan Normal University, PhD Dissertation.

Liu, Y. (Yangyang 刘泱泱) (ed.), 1890, 左宗棠全集 (*Zuo Zongtang Quanji*), Yuelu Shushe (reprinted in 2009).

Liu, Y. (Yueyun 刘岳云), 1901, 光绪会计表 (*Guangxu Kuaiji Biao*), Jiaoyu Shijie She (Accessed via Columbia University Press).

Liu, Z. (Zenghe 刘增合), 2014a, "财"与"政"：清季财政改制研究 (*Finance and Politics: A Study on Late Qing Fiscal Transformations*), SDX Joint Publishing Company.

Liu, Z. (Zenghe 刘增合), 2014b, 太平天国运动初期清廷的军费筹济 (How the Qing Court Financed the Armies at the Outbreak of the Taiping Rebellion), *Historical Studies*, 2: 55-72.

Liu, Z. (Zhaomin 刘昭民), 1982, 中国历史上气候之变迁 (*Climate Changes in Chinese History*), Commercial Press.

Liu, Z. (Zhiwei 刘志伟), 2019, 贡赋体制与市场：明清社会经济史论稿 (*Tribute System and Market: Papers on Ming-Qing Socioeconomic History*), Zhonghua Shuju.

Lovell, J., 2014, *The Opium War: Drugs, Dreams and the Making of China*, The Overlook Press.

Lu, H., 1986, 赫德传 (*The Life of Sir Robert Hart*), Shanghai People's Press.

Lu, Z., 1988, 清代四川财政史料（下）(*Qing Sichuan Fiscal Archives Vol.2*), Sichuan Social Sciences Academy Press.

Luo, E., 1939, 湘军新志 (*Xiangjun Xinzhi*), Changsha Commercial Press.

Ma, D., 2004a, Growth, Institutions and Knowledge: A Review and Reflection on the Historiography of 18th-20th Century China, *Australian Economic History Review*, 44 (3): 259-277.

Ma, D., 2004b, Why Japan, not China, Was the First to Develop in East Asia, Lessons from Sericulture, 1850-1937, *Economic Development and Cultural Change*, 52(2): 369-394.

Ma, D., 2008, Economic Growth in the Lower Yangzi Region of China in 1911-1937: A Quantitative and Historical Analysis, *Journal of Economic History*, 68 (2): 355-392.

Ma, D., 2011, Law and Economy in Traditional China: A 'Legal Origin' Perspective on the Great Divergence, in Ma D. and van Zanden J. L., *Law and Long-Term Economic Change: A Eurasian Perspective*, Stanford University Press, 46-67.

Ma, D., 2013, Chinese Money and Monetary System, 1800–2000, Overview, in Caprio G., *Handbook of Key Global Financial Markets, Institutions, and Infrastructure*, Elsevier, 57-64.

Ma, D., and Chen, S., 2020, States and Wars: China's Long March towards Unity and Its Consequences, 221 BC – 1911 AD, *Centre for Economic Policy Research Discussion Paper*, DP15187: 1-47.

Ma, D., and Rubin, J., 2019, The Paradox of Power: Principal-agent Problems and Administrative Capacity in Imperial China and other Absolutist Regimes, *Journal of Comparative Economics*, 47 (2): 277-294.

Ma, J., 2004, 外债与晚清政局 (*Foreign Debts and Late Qing Political Situations*), PhD Dissertation, Renmin University of China.

Ma, L., 1997, 试析左宗棠西征借款与协饷的关系 (An Analysis of the Relationship between the Western March Borrowing of Zuo Zongtang and the Fiscal Transfer System), *Historical Archives*, 1: 106-111.

Ma, Y., and de Jong, H., 2019, Unfolding the Turbulent Century: A Reconstruction of China's Historical National Accounts, 1840-1912, *Review of Income and Wealth*, 65(1): 75-98.

Mann, M., 1986, *The Sources of Social Power, Vol. I: A History of Power from the Beginning to 1760 AD*, Cambridge University Press.

Mann, S. J., 1987, *Local Merchants and the Chinese Bureaucracy, 1750–1950*, Stanford University Press.

Mann, S. J., and Kuhn, P. A., 1978, Dynastic Decline and the Roots of Rebellion, in Fairbank, J. K., *The Cambridge History of China, Vol.10 Part I*, Cambridge University Press, 107-62.

Mao, H., 1995, 天朝的崩溃：鸦片战争再研究 (*The Collapse of the Prosperous Dynasty: Revisiting the Opium War*), SDX Joint Publishing Company.

Mathias, P., 1979, *The Transformation of England: Essays in the Economic and Social History of England in the Eighteenth Century*, Methuen.

Mathias, P., and O'Brien P., 1976, Taxation in Britain and France, 1715-1810: A comparison of the Social and Economic Incidence of Taxes Collected for the Central Governments, *Journal of European Economic History*, 5 (3): 601-650.

Mi, R., 1983, 太平天国的财政收入及其得失 (Fiscal Revenues of the Taiping Heavenly Kingdom: An Evaluation), *Modern Chinese Historical Studies*, 2: 204-223.

Mi, R., 1987, 近代中国外债 (Foreign Borrowing in Modern China), in Sun, J., 中国经济史论文集 (*Papers on Chinese Economic History*), Renmin University of China Press.

Mi, R., 2007, 帝国主义与中国铁路：1847-1949 (*Imperialism and Chinese Railway, 1847-1949*), Economics and Management Press.

Middleton, N., 2005, Early Medieval Port Customs, Tolls and Controls on Foreign Trade, *Early Medieval Europe*, 13 (4): 313-358.

Miyakawa, H., 1955, An Outline of the Naito Hypothesis and Its Effects on Japanese Studies of China, *Far Eastern Quarterly*, 14 (4): 533-552.

Miyazaki, I., 2017, 宫崎市定亚洲史论考 (*Ichisada Miyazaki's Studies on Asian History*), Shanghai Guji Press.

Mokyr, J., 1992, *The Lever of Riches: Technological Creativity and Economic Progress*, Oxford University Press.

Mokyr, J., 2005, The Intellectual Origins of Modern Economic Growth, *Journal of Economic History*, 65(2): 285-351.

Moore, B., 1967, *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World*, Beacon Press.

Motono, E., 2000, *Conflict and Cooperation in Sino-British Business, 1860-1911*, Macmillan Press.

Naito, K., 2004, 中国史通论 (*A General History of China*), Social Science Academic Press.

Naughton, B., 1991, Chapter 10: Pattern and Legacy of Economic Growth in the Mao Era, in Lieberthal, K., *Perspectives on Modern China*, ME Sharpe.

Naughton, B., 2007, *The Chinese Economy, Transitions and Growth*, MIT Press.

Neal, L., 2015, *A Concise History of International Finance: From Babylon to Bernanke*, Cambridge University Press.

Ni, Y., 2013, 清朝嘉道财政与社会 (*Public Finance and Society in Jiaqing and Daoguang Periods of Qing Dynasty*), Commercial Press.

Ni, Y., 2017a, 从国家财政到财政国家：清朝咸同年间的财政与社会 (*From the Finance of State to a Fiscal State: The Public Finance and Society in Xianfeng and Tongzhi Periods of Qing Dynasty*), Science Press.

Ni, Y., 2017b, 清代关税：1644-1911 (*Customs Taxes of the Qing Dynasty, 1644-1911*), Science Press.

North, D. C., 1981, *Structure and Change in Economic History*, W. W. Norton.

North, D. C., 1990, *Institutions, Institutional Change and Economic Performance*, Cambridge University Press.

North, D. C., and Thomas, R., 1973, *The Rise of the Western World: A New Economic History*, Cambridge University Press.

North, D. C., and Weingast B. R., 1989, Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in 17th-Century England, *Journal of Economic History*, 49 (4): 803-832.

O'Brien, P. K. and Hunt P. A., 1999, England, 1485-1815, in Bonney R., *The Rise of the Fiscal State in Europe c. 1200-1815*, Clarendon Press, 53-100.

O'Brien, P. K., 1988, The Political Economy of British Taxation, 1660 - 1815, *Economic History Review*, 41 (1): 1-32.

O'Brien, P. K., 2002, Fiscal Exceptionalism: Great Britain and its European Rivals: From Civil War to Triumph at Trafalgar and Waterloo in the Political Economy of British Historical Experience, 1688-1914, in Winch, D. and O'Brien P. K., *The Political Economy of British Historical Experience, 1688-1914*, Oxford University Press, 245-265.

O'Rourke, K. H., and Williamson, J. G., 1999, *Globalization and History: The Evolution of a Nineteenth-Century Atlantic Economy*, MIT Press.

Ogilvie, S., 1992, Germany and the Seventeenth-Century Crisis, in Parker, G. and Smith, L. M., *The General Crisis of the Seventeenth Century*, Routledge, 57-86.

Ogilvie, S., 2007, 'Whatever Is, Is Right?' Economic Institutions in Pre-Industrial Europe, *Economic History Review*, 60(4): 649-684.

Ogilvie, S., 2020, Thinking Carefully about Inclusiveness: Evidence from European Guilds, *Journal of Institutional Economics*, 0: 1–16.

Ogilvie, S., and Carus, A.W., 2014, Institutions and Economic Growth in Historical Perspective, *CESifo Working Paper*, No. 4861.

Olson, M., 2000, *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships*, Basic Books.

Ormrod, W. M., Bonney M., and Bonney R., 1999, *Crises, Revolutions and Self-sustained Growth: Essays in European Fiscal History, 1130-1830*, Shaun Tyas.

Owen, G., 1999, *From Empire to Europe: The Decline and Revival of British Industry since the Second World War*, Harper Collins.

Pan, G., 2007, 北洋政府时期国内公债总额及其作用评析 (The Amount of Domestic Debts and Their Roles During Beiyang Era), *Modern Chinese Historical Studies*, 157 (1): 76-94.

Peng, K., 2006, 清代以来的粮价：历史学的解释与再解释 (*Grain Price since the Qing Dynasty: Interpretations and Reinterpretations from a Historical View*), Shanghai People's Press.

Peng, X., 2007, 中国货币史 (*Monetary History in China*), Shanghai People's Press.

Peng, Y., 1947, 清末中央与各省财政关系 (Fiscal Relations between Central Government and Provinces in Late Qing Dynasty), *Social Sciences Journal*, 9 (1): 83-110.

Peng, Z., 1990, 清代财政管理体制与收支结构 (Qing Fiscal Management and Revenue-Spending Structure), *China Social Sciences Graduate Academy Journal*, 2: 48-59.

Peng, Z., 2010, 十九世纪后半期的中国财政与经济 (*Chinese Public Finance and Economy in the Second Half of 19th Century*), Renmin University of China Press.

People's Bank of China Counselor Office (PBCCO), 1991, 中国清代外债史资料：1853-1911 (*Archives on Qing Foreign Borrowing History, 1853-1911*), China Finance Press.

Perkins, D. H., 1967, Government as an Obstacle to Industrialization: The Case of Nineteenth-Century China, *Journal of Economic History*, 27(4): 478–492.

Perkins, D. H., 1975, *China's Modern Economy in Historical Perspective*, Stanford University Press.

Platt, S. R., 2012, *Autumn in the Heavenly Kingdom: China, the West and the Epic Story of the Taiping Civil War*, Atlantic Books.

Poggi, G., 1978, *The Development of the Modern State: A Sociological Introduction*, Stanford University Press.

Pomeranz, K., 1993, *The Making of a Hinterland: State, Society, and Economy in Inland North China, 1853-1937*, University of California Press.

Pomeranz, K., 2000, *The Great Divergence: Europe, China and the Making of the Modern World Economy*, Princeton University Press.

Qian, M., 2011, 中国历代政治得失 (*The Gains and Losses of Chinese Dynastic Politics*), SDX Joint Publishing Company.

Qian, Y., and Roland, G., 1998, Federalism and the Soft Budget Constraint, *American Economic Review*, 88: 1143-1162.

Qian, Y., and Weingast, B., 1996, China's Transition to Markets: Market-Preserving Federalism, Chinese Style, *Journal of Policy Reform*, 1(2): 149-185.

Qin, H., 2002, 并税式改革与"黄宗羲定律" (Tax-Merging Reform and the Law of Huang Zongxi), *Rural Cooperative Economy and Management*, 3: 6-7.

Rasul, I., and Rogger, D., 2016, Management of Bureaucrats and Public Service Delivery: Evidence from the Nigerian Civil Service, *Economic Journal*, 128: 413-446.

Rawski, T. G., 1989, *Economic Growth in Prewar China*, University of California Press.

Reed, B. W., 2000, *Talons and Teeth: County Clerks and Runners in the Qing Dynasty*, Stanford University Press.

Remick, E. J., 2004, *Building Local States: China during the Republican and Post Mao Era*, Harvard University Asia Centre Press.

Ren, Z., 2017, 从榷税到夷税：1843-1854 年粤海关体制 (From Domestic Tax to Maritime Tax: Institutions of Canton Customs, 1843-54), *Historical Studies*, 4: 62-78.

Richardson, P., 1999, *Economic Change in China, c. 1800-1950*, Cambridge University Press.

Rodríguez-Franco, D., 2016, Internal Wars, Taxation and State Building, *American Sociological Review*, 81

(1): 190-213.

Rodrik, D., 1994, Getting Interventions Right: How South Korea and Taiwan Grew Rich, *NBER Working Paper*, No. 4964.

Root, H. L., 1994, *The Fountain of Privilege: Political Foundations of Markets in Old Regime France and England*, University of California Press.

Rosenthal, J.-L. and Wong, R. B., 2011, *Before and Beyond Divergence: The Politics of Economic Change in China and Europe*, Harvard University Press.

Rosenthal, J.-L., 1998, Chapter 2: The Political Economy of Absolutism Reconsidered, in Bates, R., *Analytic Narratives*, Princeton University Press.

Rowe, W. T., 1984, *Hankow: Commerce and Society in a Chinese City, 1796–1889*, Stanford University Press.

Rowe, W. T., 1989, *Hankow: Conflict and Community in a Chinese City, 1796-1895*, Stanford University Press.

Rowe, W. T., 2001, *Saving the World: Chen Hongmou and Elite Consciousness in Eighteenth-Century China*, Stanford University Press.

Sang, B., 2016, 走进共和：日记所见政权更替时期亲历者的心路历程 (*Towards the Republic: Trajectories of Mindsets of the Witnesses during the Changes of the Regime*), Beijing Normal University Press.

Sato, Y., 2017, 近代中国的乡土意识：清末民初江南的地方精英与地域社会 (*Local Identity in Modern China: Local Elites and Society in Lower Yangzi during Late Qing and Early Republican Periods*), Beijing Normal University Press.

Schumpeter, J. A., 1954, The Crisis of the Tax State, in International Economic Association, *International Economic Papers*, 5-38.

Shen, B., 1880, 沈文肃公政书 (*Shenwensugong Zhengshu*), Zhaohua Press (reprinted in 2018).

Shen, X., 2002, 清代财政收入规模与结构变化述论 (A Survey on the Scale and Structure of Qing's Fiscal Revenue), *Beijing Social Sciences*, 1: 84-90.

Sheng, K., 1877, 皇朝经世文续编 (*Huangchao Jingshiwen Xubian*), Publishing house unknown.

Sheridan, J. E., 1977, *China in Disintegration: The Republican Era in Chinese History, 1912-1949*, The Free Press.

Sheridan, J. E., 1983, Chapter 6: The Warlord Era: Politics and Militarism under the Peking Government, 1916-28, in Fairbank, J. K., *The Cambridge History of China, Volume 12, Part 1*, Cambridge University Press.

Shi, Z., 2009, 清代户部银库收支和库存统计 (*Statistics on the Revenues, Expenditures and Silver Reserves of the Board of Revenue for the Qing Dynasty*), Fujian People's Press.

Shi, Z., and Xu, Y., 2008, 晚清财政：1851-1895 (*Late Qing Public Finance 1851-1895*), Shanghai University of Finance and Economics Press.

Shiue, C. H., and Keller, W., 2007, Markets in China and Europe on the Eve of the Industrial Revolution, *American Economic Review*, 97(4): 1189-1216.

Skinner, G. W., 1977, *The City in Late Imperial China*, Stanford University Press.

Slater, D., 2010, *Ordering Power: Contentious Politics and Authoritarian Leviathans in Southeast Asia*, Cambridge University Press.

Smith, A., 1904, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Methuen (Reprinted by MetaLibri, 2007).

Sng, T.-H., 2014, Size and Dynastic Decline: The Principal-agent Problem in Late Imperial China 1700-1850, *Explorations in Economic History*, 54: 107-127.

Spaulding, R. M., 2011, Revolutionary France and the Transformation of the Rhine, *Central European History*, 44 (2): 203-226.

Spector, S., 1964, *Li Hung-Chang and the Huai Army*, University of Washington Press.

Spence, J. D., 1980, *To Change China: Western Advisers in China, 1620-1960*, Penguin.

Spence, J. D., 1990, *The Search for Modern China*, W. W. Norton.

Spence, J. D., 1996, *God's Chinese Son*, W. W. Norton.

Stasavage, D., 2002, Credible Commitment in Early Modern Europe: North and Weingast Revisited, *Journal of Law, Economics and Organization*, 18(1): 155-186.

Strauss, J. C., 1998, *Strong Institutions in Weak Polities: State Building in Republican China, 1927-1940*, Oxford University Press and Clarendon Press.

Sun, W., 2003, 中国关税史 (*A History of Chinese Customs Taxes*), China Finance and Economics Press.

Sun, Y., 1957, 中国近代工业史资料第一辑 (*Archives on the Industrial History of Modern China, Vol. 1*), Science Press.

Taiping Tianguo Historical Museum (TTHM), 1983, 吴煦档案选编 (*Selective Archives for Wu Xu*), Jiangsu People's Press.

Taiwan Sanjun/National Defense University (TSU), 2013, 中国历代战争史第 18 册 (*History of War for Dynastic China, Vol. 18*), CITIC Publishing House.

Tan, L., 2013, Market-Supporting Institutions, Gild Organizations and Industrial Revolution: A Comparative View, *Australian Economic History Review*, 53 (3): 221-246.

Tan, Q., 1982, 中国历史地图集 (*Historical Atlas of China*), China Maps Press.

Tang, X., 1987, 中国近代财政经济史论文选 (*Selected Essays of Modern Chinese Fiscal and Economic History*), University of Southwestern Finance and Economics University Press.

Tang, X., 1992, 中国近代海关税收和分配统计：1861-1910 (*Statistics on Taxation and Distribution of Modern Chinese Maritime Customs, 1861-1910*), Zhonghua Shuju.

Tao, Y., Date Unknown, 关税成案辑要 (Guangshui Cheng'an Jiyao), in Yang, Y., 2014, 清代成案选编 (*Selected Case Laws of the Qing Dynasty*), Social Sciences Academic Press.

Thelen, K., 2004, *How Institutions Evolve: The Political Economy of Skills in Germany, Britain, the United States, and Japan*, Cambridge University Press.

Tilly, C., 1975, *The Formation of National States in Western Europe*, Princeton University Press.

Tilly, C., 1990, *Coercion, Capital, and European States, 990-1990*, Blackwell.

Tomz, M., 2007, *Reputation and International Cooperation: Sovereign Debt across Three Centuries*, Princeton University Press.

Tullock, G., 1965, *Bureaucracy*, Liberty Fund.

Tuo, J., 1818, 嘉庆大清会典 (*Jiaqing Daqing Huidian*), Phoenix Press (reprinted in 2021).

Van de Ven, H., 2014, *Breaking with the Past: The Maritime Customs Service and the Global Origins of Modernity in China*, Columbia University Press.

Van Waijenburg, M., 2018, Financing the African Colonial State: The Revenue Imperative and Forced Labor, *Journal of Economic History*, 78 (1): 40-80.

Von Glahn, R., 1996, *Fountain of Fortune: Money and Monetary Policy in China, 1000–1700*, University of California Press.

Von Glahn, R., 2007, Foreign Silver Coin in the Market Culture of Nineteenth Century China, *International Journal of Asian Studies*, 4(1): 51–78.

Von Glahn, R., 2016, *The Economic History of China: From Antiquity to the Nineteenth Century*, Cambridge University Press.

Wakeman, F. Jr., 1975, *Fall of Imperial China*, The Free Press.

Wakeman, F. Jr., 1985, *The Great Enterprise: The Manchu Reconstruction of the Imperial Order in Seventeenth-Century China*, University of California Press.

Wang, J., 1987, 赫德与近代中西关系 (*Hart and Modern Sino-Foreign Relations*), People's Press.

Wang, K., 1881, 湘军志 (*Xiangjun Zhi*), Yuelu Shushe (reprinted 1983).

Wang, S., 1974, 庚子赔款 (*1901 Reparation*), Taiwan Academia Sinica Institute of Modern History.

Wang, X., 1861, 王文勤公日记 (*Wangwenqingong Riji*), Jiangsu Guangling Guji Keyinshe (reprinted in 1998).

Wang, Y., 1957, 中国半封建半殖民地经济形态研究 (*Economic Studies on the Semi-Feudal Semi-Colonial China*), People's Press.

Wang, Y.-C., 1973, *Land Taxation in Imperial China, 1750–1911*, Harvard University Press.

Wang, Y.-C., 1992, Secular Trends of Rice Prices in the Yangzi Delta, 1638-1935, in Rawski T. G. and Li L. M., *Chinese History in Economic Perspective*, University of California Press, 35-68.

Wang, Z., 2014, 明清徽商与淮扬社会变迁 (*Ming-Qing Huizhou Merchants and Changes of the Huai-Yang Society*), SDX Joint Publishing Company.

Weber, M., 1930, *The Protestant Ethic and the Spirit of Capitalism*, Allen and Unwin.

Wei, G., 1986, 清代后期中央集权财政体制的危机 (The Crisis of Centralized Fiscal Regime of Late Qing), *Modern Historical Studies*, 1: 207-230.

Will, P.-E., 1990, *Bureaucracy and Famine in Eighteenth-Century China*, Stanford University Press.

Will, P.-E., and Wong, R. B., 1991, *Nourish the People: The State Civilian Granary System in China, 1650–1850*, University of Michigan Center for Chinese Studies.

Wong, R. B., 1997, *China Transformed: Historical Change and the Limits of European Experience*, Cornell University Press.

Wright, M. C., 1962, *The Last Stand of Chinese Conservatism: The T'ung-Chih Restoration, 1862-1874*, Stanford University Press.

Wright, S. F., 1950, *Hart and the Chinese Customs*, Mullan.

Wu, C., 1985, 中国资本主义与国内市场 (*Chinese Capitalism and Domestic Market*), Chinese Social Sciences Press.

Wu, C., 2001, 中国的现代化：市场与社会 (*The Modernization of China: Market and Society*), SDX Joint Publishing Company.

Wu, R., 1905, 李文忠公全集 (*Liwenzhonggong Quanji*), Taipei Wenhai (reprinted in 1984).

Xi, Y., 1903, 皇朝政典类纂 (*Huangchao Zhengdian Leizuan*), Publishing house unknown.

Xiao, G., 1999, 危机中的变革：清末现代化进程中的激进与保守 (*Reforms in the Crisis: Radicalism and Conservatism during the Late Qing Modernization*), SDX Joint Publishing Company.

Xiao, Y., 1999, *State and Industrial Development in Early Republican China, 1912-1927*, Harvard University, PhD Dissertation.

Xu, C., 2011, The Fundamental Institutions of China's Reforms and Development, *Journal of Economic Literature*, 49(4): 1076-1151.

Xu, D. (Daling 许大龄), 1950, 清代捐纳制度 (*Institutions of Purchasing Degrees and Titles in Qing Dynasty*), Peking University Press.

Xu, D. (Dixin 许涤新), and Wu C., 2000, *Chinese Capitalism, 1522–1840*, St. Martin's Press and Macmillan Press.

Xu, T. (Tan 许檀), and Jing, J., 1990, 清代前期商税问题新探 (A Re-Investigation on the Commercial Tax in Early Qing Dynasty), *Chinese Economic Historical Studies*, 2: 87-100.

Xu, T. (Tongshen 许同莘), 1920, 张文襄公全书 (*Zhangwenxianggong Quanshu*), Guangya Shuju.

Xu, Y. (Yi 许毅), 1996, 清代外债史论 (*Discussion on the History of Foreign Debts in Qing Dynasty*), Chinese Fiscal and Economic Press.

Xu, Y. (Yisheng 徐义生), 1962, 中国近代外债史统计资料：1853-1927 (*Statistics for the History of Foreign Debts in Modern China, 1853-1927*), Zhonghua Shuju.

Yan, X., 2015, *In Search of Power and Credibility: Essays on Chinese Monetary History (1851-1945)*, London School of Economics, PhD Dissertation.

Yan, Z., 1955, 中国近代经济史统计资料选辑 (*Selected Economic Historical Statistics in Modern China*),

Science Press.
Yang, G., 2012, 国家权力与民间秩序：多元视野下的明清两湖乡村社会史研究 (*State Power and Civil Order: Historical Studies on Hunan and Hubei Rural Society during Ming-Qing Times from Diverse Perspectives*), Wuhan University Press.
Yang, Y., 1985, 民国财政史 (*A History of Republican Public Finance*), Chinese Financial and Economic Press.
Yao, X., 1962, 中国近代贸易史资料：1840-1895 (*Archives on China's Modern Trade, 1840-1895*), Zhonghua Shuju.
Zai, L., 1865, 钦定户部则例 (*Qinding Hubu Zeli*), Harvard Yanjing Library.
Zelin, M, 1984, *The Magistrate's Tael: Rationalizing Fiscal Reform in Eighteenth-Century Ch'ing China*, University of California Press.
Zelin, M., 2009, The Firm in Early Modern China, *Journal of Economic Behavior and Organization*, 71: 623–637.
Zhang, J., and Zhou, L., 2008, 为增长而竞争：中国增长的政治经济学 (*Competition for Growth: The Political Economy of China's Growth*), Shanghai People's Press.
Zhang, K., 2002, 20 世纪中国近代外债史研究回顾 (A Review of the History of Foreign Debts in Modern China in the 20th Century), *Chinese Economic Historical Studies*, 2: 92-100.
Zhang, P., 2013, 立宪派与辛亥革命 (*Constitutionalists and the 1911 Revolution*), SDX Joint Publishing Company.
Zhang, T., 2019, Fiscal Policy and Institutions in Imperial China, *Oxford Research Encyclopedia: Asian History*, 1-25.
Zhang, Y. (Yan 张晏) and Gong, L., 2005, The Feishuizhi Reform, Fiscal Decentralization and Economic Growth in China, *China Economic Quarterly*, 10: 75-108.
Zhang, Y. (Yufa 张玉法), 1992, 近代中国工业发展史 (*The History of Industrial Development in Modern China*), Taipei Laureate Books.
Zhang, Z., 1996, 前近代中国社会的商人资本与社会再生产 (*Commercial Capital and Social Reproduction in Pre-Modern Chinese Society*), Shanghai Social Sciences Academy Press.
Zhao, D. and Hall J. A., 1994, State Power and Patterns of Late Development: Resolving the Crisis of the Sociology of Development, *Sociology*, 28 (1): 211-229.
Zhao, D., 2015, 国家、战争与历史发展：前现代中西模式的比较 (*State, War and Historical Development: A Comparison between Pre-modern Chinese and Western Patterns*), Zhejiang University Press.
Zhou, J., 2019, 维正之供：清代田赋与国家财政，1730-1911 (*The Supreme Tribute: The Qing Land Taxation and Public Finance, 1730-1911*), Beijing Normal University Press.
Zhou, L., 2008, 转型中的地方政府：官员激励与治理 (*Local Government in Transition: Incentive and Governance of Officials*), Gezhi Press.
Zhou, L., and Wang, J., 2012, 行政发包制与雇佣制：以清代海关治理为例 (Administrative Subcontract and Bureaucratic Employment: Governance of the Qing Customs), in Zhou, X., Liu, S., and Zhe, X., 国家建设与政府行为 (*State Building and Government Behaviors*), China Social Sciences Press, 97-128
Zhou, X., 2017, 中国国家治理的制度逻辑：一个组织学研究 (*The Institutional Logic of Governance in China, An Organizational Approach*), SDX Joint Publishing Company.
Zhou, Y., 2000, 晚清财政与社会变迁 (*Late Qing Public Finance and Social Changes*), Shanghai People's Press.
Zhou, Y., 2006, 关于清代厘金创始的考订 (An Examination on the Origins of Lijin in Qing Dynasty), *Qing Historical Studies*, 3: 88-98.
Zhou, Y., 2011, 晚清厘金历年全国总收入的再估计 (A Re-estimation of the Time Series of Total Lijin Revenue for the Late Qing Times), *Qing Historical Studies*, 8(3): 1-24.
Zhou, Z., 2002, 晚清财政经济研究 (*Late Qing Fiscal and Economic Studies*), Qilu Shushe.
Zhu, W., 2018, 走出中世纪 (*Out of the Medieval Times*), CITIC Publishing House.

Appendix A. Econometrics for Section 3.3

This section verifies the causal link from the Taiping Rebellion to the *lijin* taxation and discusses relevant mechanisms with prefectural-level evidence. The main data sources for both the Taiping impact and *lijin* taxation are introduced in Chapter 3.

Quantifying the Taiping Impact and *Lijin* Taxation at the Prefectural Level

Through sorting and locating all Taiping military actions for over a decade, this section measures in four ways the Taiping impact on 266 prefectures in all 18 provinces of China Proper: a dummy, a dummy that only considers large battles, a duration that counts the number of months in war, and a severity score that incorporates all disturbances and weighs their importance.

Meanwhile, I count and locate the *lijin* bureaus and stations nationwide, and the number of bureaus and stations within a prefecture is a reasonable measure of the local *lijin* taxation scale. I establish a cross-sectional dataset for 266 prefectures, and for each I obtain the numbers of provincial bureaus, main stations and additional stations. Furthermore, I construct two alternative measures of prefectural *lijin* taxation for robustness checks. The first considers estimating the number of the *lijin* employees in a prefecture. The second estimates the annual *lijin* revenue for a prefecture. Table A.1 provides a summary of calculating methods for key variables. Descriptive statistics are in Table A.3.

Empirical Strategies and Main Results

I use cross-sectional data for 266 prefectures to study the impact of the Taiping Rebellion on the *lijin* taxation. The specification is

$$Lijin_i = \beta_0 + \beta_1 \, Taiping_i + \boldsymbol{W}'_i \boldsymbol{\beta} + \varepsilon_i$$

where i denotes prefectures. I use several measures introduced in Table A.1 for dependent and key independent variables, $Lijin_i$ and $Taiping_i$ respectively. $\boldsymbol{W}'_i$ consists of several sets of control variables that may affect the *lijin* taxation. First, the initial geographical conditions including access to the coast, the Yangzi River and the Grand Canal, the log of land size, and the latitude. Second, the initial political and economic conditions predetermined before 1850, including the log of population in 1820, and the distances to the nearest provincial capital and domestic customs. Third, other post-1850 disturbances which might shape the local *lijin* institutions such as the duration of foreign treaty ports and dummies for other rebellions of the same era. Calculating methods for control variables are in Table A.2, and Table A.3 presents descriptive

statistics. ε_i denotes the error term. For all regressions the standard error is robust and clustered at the provincial level. β_1 is the coefficient of our interest and I expect it to be positively significant.

This part mainly uses OLS regressions to verify the impact of the Rebellion on the *lijin*, and the exogeneity of the Taiping military actions to pre-1850 local economic conditions is an underlying assumption. I regress the different measures of the Taiping impact to the pre-Rebellion geographical, political, and economic conditions and finds that no such factors are consistently significant, shown in Table A.4. Furthermore, I count the monthly battles between the Taiping and the Qing during 1853 and 1864 and construct count variables such as *Taiping Duration (Jan.1853-Dec.1854)*, *Taiping Duration (Jan.1855-Dec.1856)*, etc. for each prefecture; then I use Poisson regressions to check whether locations of the earlier Taiping battles could predict the ones in years later. I find that the prediction power is extremely weak, shown in Table A.5. Furthermore, Chapter 3 offers numerous pieces of qualitative evidence to support the exogeneity of the Taiping Rebellion.

The baseline regression results are shown in Table A.6. I use the density of main *lijin* stations as the dependent variable and four measures of the Taiping impact as key independent variable. Columns 1 to 4 are the results without controls. Columns 5 to 8 add the control variables for initial geographical conditions and pre-Rebellion political and economic factors. Columns 9 to 12 add further controls for other post-1850s shocks that might push or hamper the indirect taxation. All columns give significant coefficients for the Taiping impact no matter which measure I use, and the key coefficients become smaller when I add more controls.

With the fitted models I estimate the marginal effect of the Taiping Rebellion on the *lijin* taxation. In Column 12 of Table A.6 for example, the coefficient for *Taiping Severity* is 0.239: if there were large-scale battles between the Taiping and the Qing powers for extra three months, the density of main *lijin* stations would increase by 0.072 (0.239*3*100/1000); considering the median prefectural land size to be 12,140 km^2, such extra warfare would bring about 0.9 new main stations. This is considerable as Table A.3 implies that about half of the prefectures had no more than two main *lijin* stations.[123] I can also take control variables for a comparison. In the same column, the coefficient for *Treaty Port Duration* is 0.006, significant at 1% level: if there was a treaty port for 12 years, the density of the main stations would increase by 0.126 exactly. Therefore a 12-year treaty port and 3-month intense Taiping warfare would make the same contribution on the local *lijin* taxation. Besides, in Columns 5 to 12, some initial conditions always played a strikingly strong role: if a prefecture was by the Yangzi River or the

[123] Put it another way: a one-standard-deviation increase in the *Taiping Severity* indicates a 0.057 increase for the density of main *lijin* stations (mean = 0.261).

Grand Canal, the density of the main stations would increase by at least 0.156, which means 1.89 new main stations – a huge effect given the median among prefectures was two main stations.

As a robustness check I replace the density of main stations and consider the weighted number of the *lijin* employees or annual revenue to examine whether the Taiping impact is significant. These are still OLS regressions at the prefectural level. Results are given in Table A.7, and I only present regressions with *Taiping Severity* as the independent variable here. All key coefficients are significant and those with controls are smaller.[124] Similarly I can estimate similar marginal effects from Columns 2 and 4 of Table A.7. In Column 2, the coefficient of *Taiping Severity* is 9.924, and extra 3-month battles would increase the weighted amount of the *lijin* staff by 2.977; considering the median land size of a prefecture, there would be 36 new *lijin* employees – approximately the number of employees for one main station. In Column 4, the coefficient of *Taiping Severity* is 16.350, and extra 3-month battles would increase the weighted annual *lijin* revenue by 4.905, which meant an extra revenue of 60,000 silver taels per year. This can be a considerable independent revenue for a prefecture. The land tax dataset (Liang, 1980) implies that the average prefectural land tax revenue in 1820 on a national scale was 186,000 taels, and even in the richest Lower Yangzi region, the provincial capitals Jiangning and Hangzhou collected only 556,000 and 708,000 taels respectively. Hence the *lijin* taxation provided a stable and considerable revenue for local fiscal budget which went completely out of the central control.

Furthermore, I am concerned about whether other historical changes instead of the Taiping Rebellion triggered the rise of the *lijin*, and regressions in Table A.8 use those changes to predict the density of main *lijin* stations.[125] Since the 1850s the reign of the Qing Empire was threatened by its defeats in several international wars, resulting in the forced opening of treaty ports and the huge amount of war reparation. During the 2nd Opium War (1856-1860), the Sino-French War (1883-1885) and the Sino-Japanese War (1894-1895), intense battles by both armies and navies might bring rapidly growing military spending, and Columns 1 to 4 consider the role of them. Columns 1 to 3 use dummies for a specific war and Column 4 counts the total number of wars at the prefectural level. As they indicate, no international wars explain the variation of *lijin* taxation. Column 5 considers another factor that frequently led to heavier taxation in the Qing China – natural disasters. I construct an indicator to measure the overall severity of natural disasters from 1851 to 1911 by compiling the data in CAMS (1981). Table

[124] In Column 2 of Table 4, a one-standard-deviation increase in the *Taiping Severity* indicates a 2.362 increase for the weighted number of *lijin* employees (mean = 7.704). In Column 4, a one-standard-deviation increase in the *Taiping Severity* indicates a 3.891 increase for the weighted annual *lijin* revenue (mean = 7.903).

[125] Using *Weighted Number of Lijin Employees* or *Weighted Annual Lijin Revenue* as the dependent variable gives robust results. Even if I do not include any controls, none of the columns give significant positive results.

A.2 introduces the calculating method. I regress the density of main *lijin* stations to it and find the key coefficient significantly negative. This may contradict our intuition as natural disasters usually led to more irregular spending on disaster relief (Will and Wong, 1991), which called for more fiscal revenue by the state. However, the disasters like floods and droughts in fact impeded the *lijin* taxation because the *lijin* was a levy on the goods in transit and it required the transport network to be well maintained. This justifies the negative role of natural disasters.

Mechanisms

This part verifies the mechanisms in this historical narrative. Firstly I provide evidence for the two-phase development of the *lijin* taxation, 'expansion' in the 1850s-1860s and 'persistence' afterwards. Meanwhile, for the post-Rebellion era, the *lijin*, as an indirect tax, should be responsive to the local economic conditions if I take the postwar recovery into consideration. Secondly, I discuss the fiscal structure *per se* – how warfare led to population loss and thus facilitated the recession of agricultural production and decline of land taxation. Prefectures with greater loss would have more urgent needs to generate the *lijin* revenue as a compensation. Finally I argue that in the long run the *lijin* would strengthen the local autonomy, and I offer evidence on the novel representative politics during the New Policy decade.

I begin with considering the two-phase development of the *lijin* taxation over time. Given the limitation of primary materials it is impossible to track the formation of each *lijin* station and construct a panel dataset in number of stations. However, *the Reports* imply the first time for a prefecture to own a *lijin* station. I will flexibly use certain cross sections in the analysis below.

I firstly investigate the expansion of the *lijin* institutions during the rebellion. I count the battles and generate new count variables such as *Taiping Duration (Dec.1850-Dec.1856)*, *Taiping Duration (Jan.1857-Dec.1860)*, etc. and use them to predict whether there were the *lijin* operations within four years. Table A.9 provides results of logistic regressions with *Lijin Dummy* for a specific year as the dependent variable. All columns show that more battles were linked to a higher probability for the *lijin* taxation to arise.[126] Then I examine the post-Taiping persistence of the *lijin* taxation. After the Rebellion the Qing central government advocated the abolition of the *lijin* system but was fiercely resisted at all local levels. Under a compromise the *lijin* bureaus and stations became regular institutions in the name of financing postwar recovery and local defense. Hence the *lijin* system showed its great inertia: most stations stayed intact, and new stations did emerge because of local institutional learning under new fiscal

[126] The conclusion holds if I change the measures for the Taiping warfare. Results are robust no matter how I set control variables.

constraints.[127] However, as Chapter 3 indicates, the spatial variation of the *lijin* stations took shape during the crisis, while further changes were merely fine-tuning. I regress the density of main *lijin* stations in the 1900s to the *lijin* dummy for a specific year during the rebellion and check whether an early *lijin* introduction led to heavier *lijin* taxation in the later phase. The results are in Table A.10. In Columns 1 and 2, only 34 prefectures introduced *lijin* by 1856 and the long-run prospect was far from clear. By contrast, the remaining columns show that an early *lijin* introduction predicted the density of main stations in the 'persistence' phase well. In Column 6 for example, if a prefecture had introduced the *lijin* system by 1864, the density of the main *lijin* stations in the 1900s would increase by 0.101, which means 1.2 extra main *lijin* stations given the median prefectural land size. Besides, in the 'persistence' phase I expect the postwar economic conditions to impact the scale of the *lijin* taxation, too. There are very few indicators about economic conditions at the prefectural level, and I use the only available data, population density in 1880 and 1910 (Cao, 2001) to proxy them. Results are given in Table A.11. The prefectural population density in either 1880 or 1910 predicted the scale of the *lijin* taxation very well no matter whether I add controls.

Then I focus on the Qing fiscal revenue structural change during the crisis. Agricultural stagnation and the consequential lack of land taxation were an indispensable condition for the rise of the *lijin*. If agricultural production was normal and the traditional land taxation system was run smoothly, the Qing officials could appropriate the existing land tax revenues for urgent military use. However, as implied in Chapter 3, the Qing fiscal regime was under great pressure: the national level of land taxation shrunk by nearly 50%, and such a decline of land taxation in the warzone pushed the local governments to tax merchants. Given other factors constant, the prefectures with heavier pre-1850 land tax burden would establish more *lijin* stations when facing the warfare, as the *lijin* revenue could serve as the substitute of land tax revenue. I verify this channel with the existing population and taxation data (Cao, 2001; Liang, 1980). Table A.12 examines the link from population density change to the *lijin* taxation. This tentative evidence is valid only if we assume that population was proportional to agricultural output. All columns give significant results: more severe population decline from 1851 to 1880 was linked to a larger scale of *lijin* taxation.

I also employ the 1820 land tax revenue data (Liang, 1980) and examine whether the *lijin* compensated land tax. I add an interaction between the 1820 land tax and the Taiping impact, and the specification is

$$Lijin_i = \gamma_0 + \gamma_1 Land\ Tax_i + \gamma_2 Taiping_i + \gamma_3 Land\ Tax_i * Taiping_i + \boldsymbol{W}'_i\boldsymbol{\gamma} + \varepsilon_i$$

[127] For example, the northwestern Gansu province witnessed an expansion of the *lijin* institutions during the 1870s because of the fiscal needs to suppress the Northwestern Muslim Rebellion and regain Xinjiang. See Chapter 5.

where i denotes prefectures. $Land\ Tax_i$ denotes the per capita land tax revenue in 1820 – the only year we have data – for prefecture i. W_i consists of aforementioned control variables. ε_i denotes the error term. The standard error is robust and clustered at the provincial level. γ_3 is the coefficient of interest. Results are presented in Table A.13. The coefficients for the pre-Rebellion land tax and the Taiping impact are not robust as one correlates the other and the interaction intervenes. However, the coefficients for the interaction in all columns are positive and significant at 1% level, implying that the Taiping impact would strengthen the role of the *lijin* as a substitute for land tax. For the prefectures with heavier land taxation before the Rebellion, the warfare would push them to generate more alternative revenue – the *lijin* – to make ends meet and to finance the urgent military actions.[128]

Finally, I discuss the novel and nascent representative politics of the Qing Empire during the 1900s. The local fiscal autonomy, manifested in the *lijin* institution, intertwined with awareness of political self-determination and hence facilitated the withering of the central authority and the rise of local political powers in the final decade of the Qing Empire. This part employs the 1908 provincial parliament election information by Zhang (2013). From 1901 the Qing central state launched a series of radical political reforms including the Civil Service Examinations abolishment, the civil legal reform and the 'preparations for constitutionalism'. One important aspect of the 'preparations' was to formally recognize the rights of local elites in regional affairs and promote the establishment of provincial parliaments (*ziyi ju*) by civil elections (Xiao, 1999; Hou, 2011). Although the central state set quotas for provinces, the election within a province was highly competitive, and prefectures with strong military, fiscal and intellectual capacities had greater voices in a provincial parliament by winning more seats. I assume that the *lijin*, as an important aspect of fiscal autonomy, proxies for local political self-determination. With Zhang (2013) I sort 1,643 successful candidates at the prefectural level and generate a count variable, the number of representatives. Then I regress it to the scale of the *lijin* taxation, and Table A.14 exhibits the results. Columns 1 and 2 are results of Poisson regressions; Column 3 considers the population in 1910 and uses the weighted number of representatives as the dependent variable. All three columns give significant results. Regarding the magnitude, I take Column 6 as an example: if the density of main *lijin* stations increased by one unit (1.2 stations on average), there would be 2.9 more representatives given the median prefectural population.

[128] For all columns, the joint F-tests for γ_1, γ_2 and γ_3 reject the null hypothesis. Besides, the conclusion here holds if I change the measures for the *lijin* taxation.

Table A.1. Calculating Methods for Independent and Dependent Variables

Category	Variable	Definition and Calculating Method
Key Independent Variable	*Taiping Dummy 1*	*Taiping Dummy 1* = 1 if impacted (including passing-by, mild governance, armed conflicts and large-scale battles)
	Taiping Dummy 2	*Taiping Dummy 2* = 1 if impacted (armed conflicts and large-scale battles only)
	Taiping Duration	*Taiping Duration* = *n* if a prefecture was impacted (armed conflicts and large-scale battles only) for *n* months
	Taiping Severity	*Taiping Severity* = $\sum S_i$ / 1000 (i = 1~183) where S_i stands for the severity score (0, 1, 2, 10 or 100) for the month i, and there were 183 months in total (Dec. 1850 to Feb. 1866); **100 points**: large-scale battles with 10,000+ soldiers at least from either side and followed by severe casualties (usually 1,000+); **10 points**: small-scale armed conflicts; **2 points**: passing-by of the Taipings; **1 point**: mild governance by the Taipings; **0 points**: no impact recorded
Dependent Variable	*Density of Main Lijin Stations*	*Density of Main Lijin Stations* = *no. of main stations* / *land size* in km^2 * 1000
	Weighted Number of Lijin Employees	For Middle Yangzi, Lower Yangzi, and Southeastern coastal provinces, *Weighted Number of Lijin Employees* = (30**no. of provincial bureau* + 54**no. of main stations*) / *land size* in km^2 *1000 For the rest of China Proper, *Weighted Number of Lijin Employees* = (30* *no. of provincial bureau* + 13**no. of main stations*) / *land size* in km^2 *1000
	Weighted Amount of Annual Lijin Revenue	*Weighted Amount of Annual Lijin Revenue* = *average provincial revenue* (1890-99) in 10^3 silver taels * (*no. of stations in prefecture* / *no. of stations in province*) / *land size* in km^2 * 1000

Sources: see Chapter 3.

Table A.2. Calculating Methods for Other Variables

Category	Variable	Definition and Calculating Method
Geographical conditions	*Coast*	*Coast* = 1 for a prefecture by the coastline
	River	*River* = 1 for a prefecture by the Yangzi River or Grand Canal
	Latitude	Latitude of the center of a prefecture in degree
	Ln(Size)	Log of land size in km^2
Pre-1850 conditions	*Political Control*	Distance to the nearest provincial capital in km^2
	Ln(1820 Population)	Log of population in 1820 in 10^3
	Distance to a Custom	Distance to the nearest domestic custom in km^2
Post-1850 shocks	*Treaty Port Duration*	Number of years for a prefecture to own treaty port(s) for foreign trade till 1911
	Other Rebellions	Dummy Variables for Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion
Other variables in robustness checks and discussions	*International War*	Dummy Variables for the 1st and 2nd Opium Wars, the Sino-French War and the Sino-Japanese War
	Severity of Natural Disasters	The overall impact of natural disasters (droughts and floods): $Severity = \sum \lvert d_i - 3 \rvert$ (i = 1851~1911) where d_i stands for the score (1 to 5 points) for the year i; **5 points:** severe drought; **4 points:** light drought; **3 points:** no drought or flood; **2 points:** light flood; **1 point:** severe flood
	Population Density Change 1851-80	*Δ Population Density* = (*Population in 1880* in 10^3 – *Population in 1851* in 10^3) / *Land size* in km^2
	1820 Land Tax	Land taxation burden (in both currency and kind) for a prefecture in 1820 in 10^3 silver taels; Grains are converted into silver taels using the prices for the specific region in 1820
	1820 Land Tax Per Capita	*1820 Land Tax p.c.* = *1820 Land Tax* / *1820 Population* in 10^3
	Number of Provincial Parliament (Ziyiju) Representatives	Count variable for the number of representatives in provincial parliament (Ziyiju) in 1908
	Weighted Number of Provincial Parliament (Ziyiju) Representatives	*Weighted Number* = *Number* / *Population in 1910* in 10^3 * 1000

Notes and sources: 1. The values of *Coast* and *River* are generated from Tan (1982); those of *Latitude*, *Ln(Size)*, *Political Control* and *Distance to a Custom* are from CHGIS (Version 6) by Harvard University. The locations of customs are identified in Ni (2017b). 2. The population data are from Cao (2001). 3. The information on the treaty ports is from Yan (1955). 4. The information on other rebellions is from Guo (1989) and that on international wars is from Spence (1990). 5. The severity of natural disasters is generated with the records of the Chinese Academy of Meteorological Sciences (CAMS, 1981). 6. The taxation data of 1820 are from Liang (1980). When I do the conversion from grains to silver taels, I refer to the price information for grains in the Qing Grain Price Database by Institute of Modern History, Academia Sinica in Taiwan (*http://mhdb.mh.sinica.edu.tw/foodprice/*). 7. The data on the 1908 provincial parliament representatives are from Zhang (2013). 8. I generate other variables such as population density and Lijin dummy for a specific year in the following tables. They are self-explanatory by names.

Table A.3. Descriptive Statistics

Category	Variable	Obs.	Mean	SD	Min	Med	Max
Key Independent Variables	*Taiping Dummy 1*	266	0.538	0.500	0	1	1
	Taiping Dummy 2	266	0.368	0.483	0	0	1
	Taiping Duration	266	1.835	3.720	0	0	26
	Taiping Severity	266	0.076	0.238	0.000	0.002	2.163
Dependent Variables	*Number of Main Lijin Stations*	266	2.801	3.316	0	2	20
	Number of Lijin Employees	266	79.722	116.212	0	36	730
	Annual Lijin Revenue	266	71.150	145.552	0	19	966
Control Variables	*Land Size*	266	16148	19407	1270	12140	192200
	Coast	266	0.135	0.343	0	0	1
	River	266	0.184	0.388	0	0	1
	Latitude	266	30.745	5.084	19	31	43
	Longitude	266	111.580	5.872	95	112	122
	Population 1820	266	1411	1242	18	999	6663
	Population 1851	266	1603	1415	22	1128	7981
	Population 1880	266	1319	1251	27	929	6847
	Population 1910	266	1545	1416	33	1121	7577
	Political Control	266	191.621	114.097	0	187	914
	Distance to a Custom	266	261.715	213.013	0	205	1151
	Treaty Port Duration	266	4.282	13.259	0	0	68
	Nian Reb. (Former)	266	0.117	0.321	0	0	1
	Nian Reb. (Latter)	266	0.117	0.321	0	0	1
	Tiandihui Rebellion	266	0.135	0.343	0	0	1
	Xiaodaohui Rebellion	266	0.019	0.136	0	0	1
	Southwestern Ethnic Reb.	266	0.143	0.351	0	0	1
	Li-Lan Rebellion	266	0.090	0.287	0	0	1
	Northwestern Ethnic Reb.	266	0.064	0.245	0	0	1
	Boxer Rebellion	266	0.117	0.321	0	0	1
	1st Opium War	266	0.030	0.171	0	0	1
	2nd Opium War	266	0.026	0.160	0	0	1
	Sino-French War	266	0.019	0.136	0	0	1
	Sino-Japanese War	266	0.015	0.122	0	0	1
	Natural Disaster Severity	266	46.083	11.218	26	44	69
	1820 Land Tax Revenue	266	185.524	305.623	0	90	3056
	Number of Provincial Parliament (Ziyiju) Representatives	266	6.474	5.723	0	5	39

Sources: see Tables A.1 and A.2.

Table A.4. Initial Conditions and the Taiping Rebellion

Dependent Variable	Poisson *Taiping Duration 1850-56*	Poisson *Taiping Duration 1857-60*	Poisson *Taiping Duration 1861-64*	Logistic *Taiping Dummy 1*	Logistic *Taiping Dummy 2*	OLS *Taiping Duration*	OLS *Taiping Severity*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Ln(Size)	-0.424	0.362	-0.243	0.203	-0.635	0.472*	0.028
	(0.535)	(0.486)	(0.217)	(0.290)	(0.506)	(0.257)	(0.020)
Coast	-1.303***	-1.308**	-0.982*	-4.158***	-2.774***	-1.856	-0.053
	(0.466)	(0.643)	(0.590)	(1.074)	(0.746)	(1.211)	(0.099)
River	1.330	0.199	0.531*	2.189**	3.240**	1.835**	0.126**
	(0.895)	(0.657)	(0.306)	(1.113)	(1.502)	(0.818)	(0.049)
Latitude	-0.119	-0.153	-0.485***	-0.545**	-0.382	-0.201	-0.010
	(0.153)	(0.171)	(0.141)	(0.247)	(0.237)	(0.156)	(0.012)
Longitude	-0.044	-0.107	-0.102	-0.180	-0.148	0.085	0.005
	(0.217)	(0.179)	(0.146)	(0.283)	(0.212)	(0.174)	(0.011)
Ln(1820	1.009**	0.506	0.915***	0.752	1.638**	0.331	-0.001
Population)	(0.514)	(0.315)	(0.321)	(0.507)	(0.788)	(0.323)	(0.025)
Political	-0.004***	-0.004**	-0.002	0.001	0.004	-0.005	-0.000*
Control	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.000)
Distance to	-0.002	0.003**	-0.002	-0.006*	-0.007**	-0.001	-0.000
a Custom	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.000)
1820 Land	-0.001	-0.000	-0.000	0.005***	0.003	0.002	0.000
Tax Rev.	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)	(0.000)
Other Rebellions	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.320	10.809	24.106	32.973	21.056	-5.566	-0.228
	(25.422)	(22.708)	(20.855)	(31.174)	(24.741)	(20.051)	(1.123)
Obs.	266	266	266	266	266	266	266
R-squared	-	-	-	0.446	0.508	0.537	0.362

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For logistic regressions, I report the **pseudo** R^2.

The 'other rebellions' include White Lotus Rebellion, Tiandihui Rebellion and Xiaodaohui Rebellion. The dummy for the 1st Opium War is added, too.

Table A.5. The Intensity of the Taiping Warfare by Years

		Poisson				
		Key Independent Variable				
		Taiping Duration 1853-54	*Taiping Duration 1855-56*	*Taiping Duration 1857-58*	*Taiping Duration 1859-60*	*Taiping Duration 1861-62*
Dependent Variable	*Taiping Duration 1855-56*	*(1)* 0.374*** (0.038)				
	Taiping Duration 1857-58	*(2)* -0.001 (0.208)	*(6)* 0.360*** (0.108)			
	Taiping Duration 1859-60	*(3)* 0.136 (0.129)	*(7)* -0.063 (0.237)	*(10)* -0.383 (0.310)		
	Taiping Duration 1861-62	*(4)* 0.173*** (0.050)	*(8)* 0.135*** (0.025)	*(11)* 0.213** (0.095)	*(13)* 0.453** (0.223)	
	Taiping Duration 1863-64	*(5)* 0.091 (0.147)	*(9)* -0.085 (0.082)	*(12)* 0.144 (0.346)	*(14)* 0.523*** (0.121)	*(15)* 0.045 (0.134)

The entries are corresponding coefficients for key independent variables. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For all 15 regressions I add province dummies. The coefficients for province dummies and constant are not presented.

Table A.6. Taiping Rebellion and *Lijin* Taxation

Dependent Variable	OLS			
	Density of Main Lijin Stations			
	(1)	*(2)*	*(3)*	*(4)*
Taiping Dummy 1	0.139*			
	(0.074)			
Taiping Dummy 2		0.209*		
		(0.100)		
Taiping Duration			0.042***	
			(0.010)	
Taiping Severity				0.637***
				(0.166)
Constant	0.187***	0.184***	0.184***	0.213***
	(0.045)	(0.041)	(0.040)	(0.044)
Obs.	266	266	266	266
R-squared	0.034	0.073	0.174	0.163

(Continued)

Dependent Variable	OLS							
	Density of Main Lijin Stations							
	(5)	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Taiping	0.089*				0.120*			
Dummy 1	(0.045)				(0.067)			
Taiping		0.146*				0.115**		
Dummy 2		(0.075)				(0.052)		
Taiping			0.030***				0.021**	
Duration			(0.007)				(0.009)	
Taiping				0.404***				0.239**
Severity				(0.114)				(0.114)
Ln(Size)	-0.151**	-0.150***	-0.155***	-0.158***	-0.152***	-0.152***	-0.155***	-0.156***
	(0.053)	(0.051)	(0.050)	(0.051)	(0.047)	(0.047)	(0.047)	(0.048)
Coast	0.345**	0.347**	0.331**	0.306**	0.217	0.193	0.183	0.168
	(0.154)	(0.136)	(0.123)	(0.126)	(0.132)	(0.123)	(0.115)	(0.116)
River	0.222**	0.214**	0.173**	0.160*	0.185**	0.179**	0.156*	0.156*
	(0.092)	(0.089)	(0.082)	(0.081)	(0.066)	(0.066)	(0.075)	(0.079)
Latitude	-0.004	-0.002	-0.001	-0.004	0.016**	0.015**	0.015**	0.012*
	(0.009)	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Ln(1820	0.060**	0.050*	0.047*	0.065**	0.080***	0.082***	0.078**	0.095***
Population)	(0.026)	(0.024)	(0.025)	(0.026)	(0.021)	(0.023)	(0.029)	(0.030)
Political	-0.000	-0.000*	-0.000	-0.000	-0.000*	-0.000*	-0.000	-0.000
Control	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to	0.000	0.000	0.000*	0.000	0.000	0.000	0.000	0.000
a Custom	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Treaty Port					0.006***	0.006***	0.006***	0.006***
Duration					(0.001)	(0.001)	(0.001)	(0.002)
Other Rebellions					Yes	Yes	Yes	Yes
Constant	1.265**	1.268**	1.286**	1.311**	0.609*	0.664*	0.686*	0.713**
	(0.546)	(0.535)	(0.519)	(0.517)	(0.329)	(0.323)	(0.326)	(0.334)
Obs.	266	266	266	266	266	266	266	266
R-squared	0.368	0.382	0.420	0.410	0.584	0.583	0.596	0.588

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion.

Table A.7. Robustness Check I: Taiping Rebellion and *Lijin* Taxation

Dependent Variable	OLS		OLS	
	Weighted Number of Lijin Employees		*Weighted Annual Lijin Revenue*	
	(1)	*(2)*	*(3)*	*(4)*
Taiping Severity	25.340***	9.924*	40.592**	16.350**
	(6.299)	(5.098)	(16.632)	(6.774)
Ln(Size)		-4.588***		-7.161*
		(1.488)		(3.611)
Coast		6.270		9.648**
		(4.117)		(3.544)
River		6.157*		15.758
		(2.936)		(9.924)
Latitude		0.202		0.824
		(0.254)		(0.716)
Ln(1820		2.997***		4.024*
Population)		(1.031)		(2.298)
Political		-0.010		-0.008
Control		(0.007)		(0.010)
Distance to		-0.001		0.005
a Custom		(0.003)		(0.007)
Treaty Port		0.222***		0.195**
Duration		(0.058)		(0.074)
Other Rebellions		Yes		Yes
Constant	5.791***	25.484**	4.834**	18.483*
	(1.493)	(9.049)	(2.251)	(10.442)
Obs.	266	266	266	266
R-squared	0.203	0.640	0.170	0.548

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion.

Table A.8. Robustness Check II: International Wars, Natural Disasters and *Lijin* Taxation

Dependent Variable	OLS *Density of Main Lijin Stations*				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
2nd Opium War Dummy	0.286				
	(0.242)				
Sino-French War Dummy		-0.133			
		(0.204)			
Sino-Japanese War Dummy			-0.630		
			(0.488)		
Number of International Wars				0.008	
				(0.114)	
Severity of Natural Disasters					-0.004**
					(0.002)
Ln(Size)	-0.151***	-0.160***	-0.149***	-0.155***	-0.162***
	(0.051)	(0.053)	(0.048)	(0.051)	(0.049)
Coast	0.156	0.111	0.158	0.150	0.184
	(0.130)	(0.127)	(0.122)	(0.104)	(0.120)
River	0.186**	0.204**	0.200**	0.201**	0.192**
	(0.076)	(0.078)	(0.075)	(0.072)	(0.069)
Latitude	-0.006	0.000	0.003	0.012*	0.014**
	(0.008)	(0.007)	(0.006)	(0.006)	(0.005)
Ln(1820 Population)	0.102***	0.108***	0.103***	0.105***	0.099***
	(0.034)	(0.033)	(0.031)	(0.033)	(0.028)
Political Control	-0.000	-0.000	-0.000	-0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to a Custom	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Treaty Port Duration		0.017***	0.017***	0.006*	0.006***
		(0.005)	(0.004)	(0.003)	(0.002)
Other Rebellions	Yes	Yes	Yes	Yes	Yes
Constant	1.161**	1.055***	0.884**	0.682*	0.934**
	(0.407)	(0.365)	(0.332)	(0.341)	(0.364)
Obs.	266	266	266	266	266
R-squared	0.463	0.535	0.568	0.571	0.582

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'treaty port durations' for Columns (2) to (3) are different as the wars broke out in different decades.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion. For Columns (1) to (3), I only include rebellions in the same era as the relevant international war.

Table A.9. The Rise of *Lijin*: Taiping Rebellion and *Lijin* Taxation by Stages

	Logistic		
Dependent Variable	*Lijin Dummy for 1860*	*Lijin Dummy for 1864*	*Lijin Dummy for 1868*
	(1)	*(2)*	*(3)*
Taiping Duration 1850-56	0.192*		
	(0.112)		
Taiping Duration 1857-60		1.199*	
		(0.649)	
Taiping Duration 1861-64			0.540***
			(0.206)
Ln(Size)	0.419	0.187	0.280
	(0.394)	(0.394)	(0.410)
Coast	-0.019	0.276	-0.085
	(0.609)	(0.661)	(0.868)
River	-1.225**	1.538***	1.564***
	(0.578)	(0.315)	(0.350)
Latitude	-0.034	-0.111*	-0.143**
	(0.054)	(0.063)	(0.064)
Ln(1820	0.395	0.916***	0.811***
Population)	(0.246)	(0.286)	(0.268)
Political	-0.005**	-0.005	-0.005
Control	(0.003)	(0.003)	(0.003)
Distance to	-0.003**	-0.001	-0.001
a Custom	(0.002)	(0.001)	(0.001)
Other Rebellions	Yes	Yes	Yes
Constant	-4.560	-3.396	-2.389
	(2.809)	(2.997)	(3.281)
Obs.	266	266	266
R-squared	0.197	0.291	0.308

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For logistic regressions, I report the **pseudo** R^2.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion and Li-Lan Rebellion. For Columns (1) to (3) I only include rebellions of the corresponding era, namely 1850-56, 1857-60, and 1861-64.

Table A.10. The Persistence of *Lijin*: Early Introduction and *Lijin* Taxation in a Long Run

Dependent Variable	OLS							
	Density of Main Lijin Stations							
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Lijin Dummy For 1856	0.314	0.129						
	(0.202)	(0.076)						
Lijin Dummy For 1860			0.228**	0.118*				
			(0.081)	(0.059)				
Lijin Dummy For 1864					0.278***	0.101***		
					(0.082)	(0.035)		
Lijin Dummy For 1868							0.269***	0.110***
							(0.080)	(0.037)
Ln(Size)		-0.158***		-0.164***		-0.160***		-0.161***
		(0.051)		(0.051)		(0.050)		(0.050)
Coast		0.177		0.155		0.149		0.154
		(0.115)		(0.123)		(0.119)		(0.120)
River		0.184***		0.216***		0.176**		0.175**
		(0.063)		(0.069)		(0.074)		(0.073)
Latitude		0.013*		0.011		0.013*		0.014*
		(0.006)		(0.007)		(0.007)		(0.007)
Ln(1820 Population)		0.097***		0.093**		0.088**		0.087**
		(0.033)		(0.036)		(0.033)		(0.033)
Political Control		-0.000		-0.000		-0.000		-0.000
		(0.000)		(0.000)		(0.000)		(0.000)
Distance to a Custom Treaty Port		0.000		0.000		0.000		0.000
		0.000		0.000		0.000		0.000
Duration		0.006***		0.006***		0.006***		0.006***
		(0.001)		(0.001)		(0.001)		(0.001)
Other Rebellions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.221***	0.698*	0.180***	0.780**	0.108***	0.750**	0.106***	0.723**
	(0.046)	(0.338)	(0.052)	(0.317)	(0.033)	0.321	(0.035)	(0.313)
Obs.	266	266	266	266	266	266	266	266
R-squared	0.079	0.581	0.085	0.588	0.136	0.583	0.125	0.585

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion.

Table A.11. Post-Rebellion Economic Conditions and *Lijin* Taxation

	OLS			
Dependent Variable	*Density of Main Lijin Stations*			
	(1)	*(2)*	*(3)*	*(4)*
1880 Population Density	1.739**	1.254***		
	(0.640)	(0.312)		
1910 Population Density			1.480**	0.910***
			(0.577)	(0.261)
Ln(Size)		-0.080		-0.092*
		(0.051)		(0.051)
Coast		0.061		0.088
		(0.131)		(0.127)
River		0.131*		0.145**
		(0.066)		(0.066)
Latitude		0.011**		0.011**
		(0.005)		(0.005)
Ln(1820		0.053		0.061*
Population)		(0.031)		(0.031)
Political		-0.000**		-0.000**
Control		(0.000)		(0.000)
Distance to		0.000		0.000
a Custom		(0.000)		(0.000)
Treaty Port		0.006***		0.006***
Duration		(0.002)		(0.002)
Other Rebellions		Yes		Yes
Constant	0.065	0.297	0.066	0.359
	(0.050)	0.358	(0.051)	(0.365)
Obs.	266	266	266	266
R-squared	0.240	0.607	0.212	0.594

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion.

Table A.12. Population Density Changes and *Lijin* Taxation

Dependent Variable	Logistic		OLS	
	Lijin Dummy for 1880		*Density of Main Lijin Stations*	
	(1)	*(2)*	*(3)*	*(4)*
Population Density	-11.654**	-9.591*	-2.069***	-1.284**
Change 1851-80	(4.627)	(4.941)	(0.456)	(0.548)
Ln(Size)		0.055		-0.112**
		(0.324)		(0.046)
Coast		0.794		0.150
		(0.667)		(0.110)
River		1.523***		0.137*
		(0.585)		(0.072)
Latitude		-0.107*		0.000
		(0.059)		(0.006)
Ln(1820		1.274***		0.050**
Population)		(0.249)		(0.022)
Political		-0.004		-0.000
Control		(0.003)		(0.000)
Distance to		0.000		0.000
a Custom		(0.001)		(0.000)
Treaty Port		-0.048		0.017***
Duration		(0.063)		(0.003)
Other Rebellions	Yes	Yes	Yes	Yes
Constant	0.572*	-4.424	0.194***	0.893**
	(0.322)	(3.226)	(0.038)	(0.351)
Obs.	266	266	266	266
R-squared	0.064	0.333	0.291	0.601

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For logistic regressions, I report the **pseudo** R^2.

The 'treaty port duration' for Columns (1) and (2) refers to the number of years for a prefecture to own treaty port(s) for foreign trade till 1880, and that for Columns (3) and (4) refers to the number of years till 1911.

The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion and Northwestern Ethnic Rebellion.

Table A.13. Taiping Rebellion, Prewar Land Taxation and *Lijin* Taxation

Dependent Variable	OLS							
	Density of Main Lijin Stations							
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
1820 Land Tax Per Capita	0.019	-0.175	0.158	0.074	0.356	0.270	0.448*	0.366*
	(0.284)	(0.265)	(0.265)	(0.183)	(0.246)	(0.174)	(0.254)	(0.201)
Taiping Dummy 1	-0.186*	-0.102						
	(0.095)	(0.060)						
Taiping Dummy 2			-0.169*	-0.120**				
			(0.094)	(0.052)				
Taiping Duration					-0.016	-0.013		
					(0.012)	(0.008)		
Taiping Severity							-0.310***	-0.294***
							(0.102)	(0.065)
*1820Tax * D1*	2.438***	1.873***						
	(0.796)	(0.414)						
*1820Tax * D2*			2.517***	1.699***				
			(0.732)	(0.334)				
*1820Tax*Duration*					0.320***	0.208***		
					(0.059)	(0.037)		
*1820Tax*Severity*							5.238***	3.482***
							(0.519)	(0.766)
Geographic Conditions		Yes		Yes		Yes		Yes
Initial Political Conditions		Yes		Yes		Yes		Yes
Treaty Port Duration		0.006***		0.006***		0.006***		0.005***
		(0.002)		(0.002)		(0.002)		(0.002)
Other Rebellions		Yes		Yes		Yes		Yes
Constant	0.185**	0.460	0.169**	0.553*	0.151***	0.596*	0.158***	0.635*
	(0.066)	(0.304)	(0.059)	(0.317)	(0.050)	(0.329)	(0.048)	(0.344)
Obs.	266	266	266	266	266	266	266	266
R-squared	0.334	0.693	0.366	0.683	0.437	0.690	0.473	0.695

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

The 'geographical conditions' include the log of land size, the coast dummy, the river dummy and the latitude. The 'initial political conditions' include the log of population in 1820, the degree of political control and the distance to a custom. The 'other rebellions' include Nian Rebellions (former and latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion.

Table A.14. Consequences of *Lijin* Taxation: Representative Politics

Dependent Variable	Poisson *Number of Representatives*		OLS *Weighted Number of Representatives*
	(1)	*(2)*	*(3)*
Density of Main	0.523***	0.454***	2.552**
Lijin Stations	(0.110)	(0.129)	(1.065)
Ln(Size)		0.195**	0.582
		(0.077)	(0.487)
Coast		-0.225**	-1.024
		(0.114)	(0.631)
River		-0.172**	-0.888*
		(0.074)	(0.494)
Latitude		0.008	0.071
		(0.009)	(0.060)
Ln(1880		0.620***	-1.263***
Population)		(0.063)	(0.343)
Political		-0.002***	-0.003
Control		(0.000)	(0.004)
Treaty Port		0.002	0.012
Duration		(0.003)	(0.017)
Constant	1.707***	-4.377***	6.117
	(0.097)	(0.555)	(5.691)
Obs.	266	266	266
R-squared	-	-	0.127

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2.

Appendix B. Econometrics for Section 6.3

This section makes a first quantitative breakthrough by establishing a novel dataset at the prefectural level across China and building up the link between local fiscal capacity and performance of industrialization in the late Qing context. It overcomes the endogeneity problem by employing the Taiping Rebellion severity as an instrument for local fiscal capacity.

Quantifying Fiscal Autonomy and Industrialization at the Prefectural Level

Although the local governments tried to delink themselves fiscally from the center in many aspects, the *lijin* was still the ideal measurement for the autonomous local fiscal autonomy for its inherent independence and considerable size. For the details of constructing the *lijin* dataset, see Chapter 3 and Appendix A. This part uses the prefectural-level industrialization dataset introduced in Chapter 6; I locate all firms at the prefectural level and use the number of prefectural industrial firms as the key dependent variable. Since Du (1991) reports the establishing year, start-up capital, sector, and ownership for every firm, I create a battery of variables at the prefectural level such as the number of paper-making firms or the number of firms established during 1896-1911, for robustness checks and mechanism discussions. I use two alternative measures for local industrialization based on Liu (1937) and Zhang (1992). Calculating methods for key variables are in Table B.1; descriptive statistics are in Table B.3.

Empirical Strategies

I use cross-sectional data for 265 prefectures[129] across 18 provinces to examine the effect of the autonomous local fiscal capacity on the local industrialization. The specification is

$$Industrialization_i = \beta_0 + \beta_1 Local\ Fiscal\ Capacity_i + \boldsymbol{W'}_i\boldsymbol{\beta} + \varepsilon_i$$

where i denotes prefectures. I use several measures for my dependent and key independent variables; the most frequently used are the log number of industrial firms for $Industrialization_i$ and the density of *lijin* stations for $Local\ Fiscal\ Capacity_i$. $\boldsymbol{W'}_i$ consists of control variables that might influence local industrialization. First, the initial geographical conditions including access to the coast, the Yangzi River and the Grand Canal, the log of land size, the longitude, and the latitude. Second, the initial predetermined before 1860, including the log of population in 1851, and the distance to the nearest provincial capital. Third, other post-1860 shocks which

[129] I combine Songjiang and Taicang prefectures and create a new observation 'Shanghai'.

might promote or impede local industrial development such as the duration of foreign treaty ports, the cumulative severity of natural disasters for the Late Qing times, the numbers of rebellions and international wars. Calculating methods for control variables are in Table B.2, and Table B.3 presents descriptive statistics. ε_i denotes the error term. For all regressions the standard error is robust and clustered at the provincial level. β_1 is the coefficient of our interest and we expect it to be significantly positive. Besides OLS, I also use the negative binomial and Tobit regressions to check the robustness.

Two concerns arise from the baseline specification. First, there is a measurement error for the fiscal capacity indicator. The 'autonomous local fiscal capacity' is hard to be quantified: numerous indicators may work, but I am unconfident of constructing an aggregated score for them because their weights are unknown. Furthermore, the fiscal capacity should capture not only the taxation amount but also efficiency, bureaucratic compliance, and accountability.[130] Second, there is a possible mutual causality between local fiscal capacity and industrialization: more industrial firms could bring more manufacturing goods in transit and thus increase the level of local indirect taxation. Hence this part highlights a major political threat to the Qing reign, the Taiping Rebellion that broke out before my key narrative took place; I introduce a novel identification strategy with the local severity of the Taiping warfare as an instrument for the autonomous local fiscal capacity. With this instrument I can use 2SLS regressions, the specification of whose first stage is

$$Local\ Fiscal\ Capacity_i = \alpha_0 + \alpha_1\ Taiping\ Rebellion_i + \boldsymbol{W}'_i\boldsymbol{\alpha} + e_i$$

where i denotes prefectures. $\boldsymbol{W}'_i$ consists of aforementioned control variables. e_i denotes the error term, robust and clustered at the provincial level.

Here I briefly discuss the two conditions for the instrument. First, there is a strong relevance between the Taiping Rebellion and the autonomous local fiscal capacity measured by the scale of the *lijin* taxation, which is fully discussed in Chapters 3, 6 and Appendix A. The second condition is exclusive restriction. The Taiping impact on a specific region was random to its initial economic conditions, which is also verified in Chapter 3 and Appendix A (Tables A.4 and A.5). It is hard to predict that such a big rebellion must break out in Guangxi which did not suffer the most from natural disaster, opium trade or missionary penetration. Furthermore, the Taiping marching routes were contingent on their own strategies and the characters of Qing magistrates and military officers; such factors had no relationship with local economy.

More importantly, I rule out other possible channels, and proposes that Taiping Rebellion only brought industrialization through the aforementioned 'fiscal capacity' channel. First, the 'high real wage' thesis (Allen, 2011) was not observed. Although Taiping Rebellion caused

[130] Measuring local fiscal capacity is also a widely recognized challenge in contemporary studies on fiscal federalism (Zhang and Gong, 2005; Chen and Gao, 2012).

millions of casualties, we capture no steady increase of real wage from existing time series. Both nominal and real wages of unskilled labor in Chinese cities showed a very slight fluctuation in the mid-19th century and never exceeded those of the 18th century (IISH, 2019). The factor price ratio of labor to capital did not experience a substantial change and therefore would not drive the spontaneous spread of capital-intensive production. This is consistent with the historical background in Chapter 6: the costly establishment of modern industries in late Qing times must rely on the active participation of local governments and their resources. Although we do not have prefectural-level data of wages on a national scale, Table B.4 provides an indirect test with prefectural-level population data (Cao, 2001) and shows that the population loss from the war could not explain the later industrialization.

Second, all *laissez faire* economic recovery after the rebellion was agrarian (Wright, 1962). There was no natural shift from primary to secondary sector, and no spontaneous urbanization was witnessed (Guo et al., 2019). Population recovery and regional migration were evident, but most peasants merely claimed and cultivated the ownerless lands. Therefore the economic recovery was resilient but still Smithian. This is consistent with Chapter 3 implying that during the postwar restoration, the annual total land tax revenues quickly returned to the prewar level within a decade after the Taiping's fall.

Third, some studies argue that during the war the Qing state generated one-off incomes by exam quota sales (*juanna*) (Chang, 1955) and that people were more incentivized to invest in exam preparation in the regions with larger quota expansion, which led to the mass human capital accumulation after the Taiping Rebellion. This mechanism is highly questionable. The fiscal role of exam quota sales in the suppression should never be exaggerated because the frequent sales during the first half of the 19th century had made titles much less attractive, as explained in Chapters 3 and 5. Meanwhile, such sales led to a rapidly growing mass gentry class and diluted the value of titles; it is doubtful whether the mass people still held great enthusiasm for the costly Confucian education, not to mention that the examined contents mismatched the skill requirements for modern industries. Baten et al. (2010) provides time series data on human capital for the 19th-century China. The average adult height showed no improvements even decades after the rebellion. The decline of age heaping was observable but irrelevant: it was firstly witnessed from the 1870 birth cohort, and when they became adults, the Self-Strengthening Movement had lasted for over 20 years.

Finally, no evidence indicated that the Qing state launched civil legal reforms to protect private properties or to enforce contracts instantly after the Taiping Rebellion. Relevant attempts were witnessed as late as 1905 and they encountered great hardship and uncertainty for the next decades (Kirby, 1995). Within the scope of this study, local governments played a

major role and filled in the institutional vacuum with personal and collective trusts, patronage networks and preferential policies (Eastman, 1988, Chapter 8).

Results

I first examine the effect of the local fiscal capacity on industrialization with the baseline specification. I use the density of *lijin* stations as the measure for key independent variable and the number of industrial firms as dependent variable. Results are shown in Table B.5. I am interested in the total number of firms for a prefecture by 1895, when the Qing Empire was defeated in the Sino-Japanese War and forced to allow FDI into China after the Treaty of Shimonoseki was signed; Columns 1, 2, 5 and 6 show the results. The remaining columns use the log of firm number by 1911, when the empire fell, as the dependent variable. The even columns add control variables including initial geographical conditions, pre-determined factors and other shocks of the same era. All columns give significant coefficients for *Local Fiscal Capacity* regardless of truncated years. The key coefficients become halved when I add controls – this applies to all columns. With fitted models I can estimate the marginal effect of the autonomous local fiscal capacity on industrialization. In Column 4 for example, the coefficient for *Local Fiscal Capacity* is 0.705: if the density of the *lijin* stations increased by one unit, the number of firms by 1911 would increase by 70.5%. Given the median prefectural land size to be 12,140 km^2, it means that one extra *lijin* station would lead to a 5.81% increase (1/12140*1000*70.5%) of the firm number. I take the control variables for a comparison: in Column 4, the coefficient for *Treaty Port Duration* is 0.03, significant at 1% level: if there was a treaty port for two years, the number of firms would increase by 6%. Therefore, a two-year treaty port and an extra *lijin* station would make similar contribution to local industrialization. Furthermore, among control variables, only the coefficients for *Treaty Port Duration* are significant in all columns.

Then I examine this relationship with different measures for industrialization, by period, sector, and ownership. In Table B.6, the dependent variable, the number of industrial firms, is truncated in different ways. I first focus on the newly established firms for the specific period 1896 to 1911. The results are shown in Column 1. Then in Column 2, I count the number of new firms for early republican years, 1912 to 1927, when there was nearly no central authority. Column 3 extends the timeline and considers the cumulative number of industrial firms by 1927. All columns give significant results and the coefficients for *Local Fiscal Capacity* are all around 0.7. Columns 4 to 6 use Tobit regressions while some key coefficients are not significant for the long term.

I investigate whether this effect was heterogenous for various heavy and light industries. I

count the number of firms for specific industries by 1911[131] and present the OLS and Tobit results in Table B.7. The general image is consistent with the historical narrative in Chapter 6: heavy industries, especially chemicals and infrastructure, the focus of the Self-Strengthening Movement, were strongly associated with local fiscal capacity.[132] However, the local fiscal capacity was relatively weak in explaining the number of light industrial firms. Furthermore, in Table B.8, I narrow the scope down to public firms only, including the official, joint and official-supervision-merchant-management (GDSB) firms. Most columns give significant results.

Several sets of robustness checks are provided. First, I am concerned about regional disparity: my narrative might be invalid if the north-south disparity of China alone explained the variation of regional industrial development. In Table B.9 I restrict the sample to southeastern provinces and further the Lower Yangzi provinces only. Results are robust for these subsamples, and for the Lower Yangzi region, the magnitudes of key coefficients are much larger than those of the national level. Meanwhile I am concerned about the outliers which might affect the outcomes significantly; in Table B.10 I drop the highly developed industrial cities such as Shanghai and Canton from the sample and the results are robust.

As the second set of robustness checks, I replace the density of *lijin* stations as the key independent variable and instead use the number of the *lijin* employees and the estimated annual *lijin* revenue, both weighted by land size. Results are given in Table B.11. All key coefficients are significant and those with controls are halved, which is consistent with the baseline results.[133] I also change measures for the dependent variable, local industrialization, with data by Liu (1937) and Zhang (1992). Liu (1937) provided a cross-sectional image of China's industrial development on the eve of the WWII for 214 prefectures across 15 provinces. Columns 1 to 6 of Table B.12 present the results, where I create three indicators for each prefecture: the number of industrial firms, the amount of fixed capital for all firms, and the number of workers (child labor included). Both OLS and Tobit regressions give significant results, confirming the persistent impact of autonomous local fiscal capacity on the industrial development over the decades. Besides, with Zhang (1992) I establish a similar indicator for industrialization. The truncated years are 1895 and 1916 (when the Warlord Era begun), and Columns 7 to 10 of Table B.12 show robust results. The magnitudes are slightly smaller than those with Du (1991).[134]

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[131] Using different truncated years gives similar results.

[132] Not all heavy industries were supported by local fiscal capacity. For mining firms, it was because mining relied more on resource endowments. For machinery, it was because I use the number of firms, not fixed capital or start-up capital, as the dependent variable; the arsenals were usually considerably large so that the number of firms may not reflect the image well.

[133] Using different truncated years gives robust results.

[134] For the data with Liu (1937) and Zhang (1992) I also examine the relationship between fiscal capacity and number of firms by region, ownership, different truncated years and sector. The results lead to the same conclusions as the baseline results do.

Finally, I provide some placebo tests. I am interested in whether after 1850 the local governments would undermine the central capacity by expropriating the *de jure* central incomes like salt and land tax revenues. In another word, I am concerned about whether other fiscal dynamics instead of the local fiscal autonomy triggered the industrialization. Table B.13 provides the results for the land taxation. I calculate the per capita land tax burden in 1820 at the prefectural level and assume that the available land tax resources for post-1850 local expropriation were proportional to the conventional per capita land tax burden. I use this burden as the key independent variable and find that no industrial development can be explained. It suggests that local governments might not systemically expropriate these *de jure* central resources. Besides land taxation, I also consider other possible *de jure* central resources for local expropriation such as the salt tax revenues and allocate them at the prefectural level, and none of them were associated with the number of local industrial firms. When I add such central fiscal income as control variables into the baseline regressions, the key coefficients almost stay the same. The placebo tests suggest the indispensable role of the *lijin* taxation in strengthening local fiscal autonomy.[135]

To overcome endogeneity, I run 2SLS regressions with the Taiping warfare as the instrument for local fiscal capacity. Table B.14 uses the total number of months in war to measure the Taiping warfare for a prefecture and provides the results in three panels. Panel A shows the results for the 2SLS regressions, where all columns are significantly positive. Panel B gives the corresponding first-stage results, and the F-statistics are far larger than 10. Panel C exhibits the corresponding OLS results. All even columns include control variables. The coefficients for *Local Fiscal Capacity* in both OLS and 2SLS regressions give the same direction but those in 2SLS double as there is possible measurement error and mutual causality in OLS. Take Column 4 as an example: as I interpret in Table B.5, an extra *lijin* station would lead to a 5.81% increase of the number of industrial firms by 1911, and this effect becomes 14.87% in 2SLS. I also change the measure of the Taiping warfare to check its robustness. The results in Table B.15 show a similar pattern for all panels.[136]

Mechanisms

I examine the relevant mechanisms with provincial-level or prefectural-level evidence. I start

[135] Besides the placebo tests for the key independent variable, I also consider tests for dependent variable. For example, if I replace the number of domestic firms with the number of foreign firms in China, will the mechanism still hold? I create the variable, the number of foreign firms for a prefecture with Huang (1995) and run the placebo tests. The results are insignificant.

[136] Besides, I replicate the whole process 2SLS regressions, and the conclusions hold in general: the trends were persistent over the decades; public firms in specific heavy industries benefited more from the local fiscal capacity; restricting the sample to the southeast or only Lower Yangzi region does not affect the outcomes; changing measures for the *lijin* taxation or industrialization still supports the conclusions.

with looking at the link between the public and private native firms and checking whether there was a spillover effect. Then I focus on the other channels through which the local fiscal capacity could facilitate the industrialization.

First, I am interested in whether the larger number of public firms was associated with that of private Chinese-owned firms – namely the spillover effect. I count the number of public and private firms[137] at the prefectural level with different truncated years and examine their relationship in Table B.16. Columns 1 to 3 use OLS and the rest use Tobit regressions. Regardless of truncated years the number of public firms was significantly related to that of private ones, and the magnitude was considerable. For control variables, only the coefficients for *Treaty Port Duration* are significant robustly.

Second, an investigation from the expenditure side helps us understand the channels for local governments to support industrialization. Local governments firstly provided security by investing more on local defense; they invested on modern infrastructure such as telegraph, electricity and water supply with autonomous incomes, and they were also more able to support local affairs like water control and disaster relief. Chapter 6 provides a survey on late Qing public spending mainly at the provincial level. I also conduct some tests with the prefectural-level data. I count the number of firms in infrastructure (telegraph, electricity, water supply, transport, etc.) at the prefectural level and examine if it explains the number of firms in other sectors. The results in Table B.17 indicate that local infrastructure played an important role in boosting the overall industrialization. Finally, I use the available data on the local financial services to examine whether official-led native banks and non-banking firms (in insurance, etc.) (Du, 1991) supported industries by mitigating their financial constraints. I count the number of financial firms at the prefectural level and use them to predict the number of industrial firms. Both OLS and Tobit regressions in Table B.18 show that a stronger local financial sector was correlated with a larger number of industrial firms, and the effect was economically meaningful.

[137] There was a small number of joint ventures supported by both Chinese and foreign investors. The results are robust no matter whether I drop such firms from the database.

Table B.1. Calculating Methods for Independent and Dependent Variables

Category	Variable	Definition and Calculating Method
Dependent Variable	*Number of Industrial Firms or Log (Number)*	Number of firms aggregated at the prefectural level
Key Independent Variable	*Density of Provincial and Main Lijin Stations*	= *no. of main stations* / *land size* in km^2 * 1000
	Weighted Number of Lijin Employees	For Middle Yangzi, Lower Yangzi, and Southeastern coastal provinces, *Weighted Number of Lijin Employees* = (30**no. of provincial bureau* + 54**no. of main stations*) / *land size* in km^2 *1000 For the rest of China Proper, *Weighted Number of Lijin Employees* = (30**no. of provincial bureau* + 13**no. of main stations*) / *land size* in km^2 *1000
	Weighted Annual Lijin Revenue	= *average provincial revenue* (1890-99) in 10^3 silver taels * (*no. of stations in prefecture* / *no. of stations in province*) / *land size* in km^2 * 1000

Notes and sources: I generate other variables like *Log (Number of Chemical Firms by 1895)* in the following tables. They are self-explanatory by names. See Chapters 3 and 6 for data sources.

Table B.2. Calculating Methods for Other Variables

Category	Variable	Definition and Calculating Method
Geography	*Coast*	*Coast* = 1 for a prefecture by the coastline
	River	*River* = 1 for a prefecture by the Yangzi River or the Grand Canal
	Latitude	Latitude of the center of a prefecture in degree
	Longitude	Longitude of the center of a prefecture in degree
	Log (Land Size)	Log of land size in km^2
Pre-1860 conditions	*Political Control*	Distance to the nearest provincial capital in km^2
	Log (1851 Population)	Log of population in 1851 in 10^3
Post-1860 shocks	*Treaty Port Duration*	Number of years for a prefecture to own treaty port(s)
	Natural Disasters	The overall impact of natural disasters (droughts and floods): $Severity = \sum \lvert d_i - 3 \rvert$ (i = 1851~1911) where d_i stands for the score (1 to 5 points) for the year i; **5 points:** severe drought; **4 points:** light drought; **3 points:** no drought or flood; **2 points:** light flood; **1 point:** severe flood
	Number of Rebellions	Number of mass rebellions including Taiping Rebellion, Nian Rebellions (former & latter stages), Tiandihui Rebellion, Xiaodaohui Rebellion, Southwestern Ethnic Rebellion, Li-Lan Rebellion, Northwestern Ethnic Rebellion and Boxer Rebellion
	Number of Int'l Wars	Number of wars including the 1st and 2nd Opium Wars, the Sino-French War and the Sino-Japanese War
Other variables in discussions	*Population Density Change 1851-80*	= (*Population in 1880* in 10^3 – *Population in 1851* in 10^3) / *Land size* in km^2
	1820 Land Tax Per Capita	= *1820 Land Tax* / *1820 Population* in 10^3 Where *1820 Land Tax* = Land taxation burden (in both currency and kind) for a prefecture in 1820 in 10^3 silver taels; Grains are converted into silver taels using prices for specific region in 1820
	Number of Firms in Finance	Number of banks and non-banking firms (insurance, etc.) aggregated at the prefectural level in Du (1991)
Instrument	*Taiping Duration*	*Taiping Duration* = n if a prefecture was impacted (armed conflicts and large-scale battles only) for n months
	Taiping Severity	*Taiping Severity* = $\sum S_i$ / 1000 (i = 1~183) where S_i stands for the severity score (0, 1, 2, 10 or 100) for the month i, and there were 183 months in total (Dec. 1850 to Feb. 1866); **100 points**: large-scale battles with 10,000+ soldiers at least from either side and followed by severe casualties (usually 1,000+); **10 points**: small-scale armed conflicts; **2 points**: passing-by of the Taipings; **1 point**: mild governance by the Taipings; **0 points**: no impact recorded

Notes and sources: see Table A.2.

Table B.3. Descriptive Statistics

Category	Variable	Obs.	Mean	SD	Min	Med	Max
Key Independent Variables	*Number of Main Lijin Stations*	265	3	4	0	2	21
	Number of Lijin Employees	265	80	119	0	36	730
	Annual Lijin Revenue	265	71	156	0	19	1373
Dependent Variables	*Number of Firms by 1895*	265	1	5	0	0	57
	Number of Firms by 1911	265	4	18	0	0	232
	Number of Firms by 1927	265	12	56	0	1	771
Other Variables	*Land Size*	265	16208	19420	1270	12180	192200
	Coast	265	0.132	0.339	0	0	1
	River	265	0.181	0.386	0	0	1
	Latitude	265	31	5	19	31	43
	Longitude	265	112	6	95	112	122
	Population 1851	265	1609	1429	22	1128	7981
	Population 1880	265	1324	1262	27	924	6847
	Population 1910	265	1551	1424	33	1119	7577
	Political Control	265	192	114	0	188	914
	Treaty Port Duration	265	4	13	0	0	68
	Natural Disaster	265	46	11	26	44	69
	Number of Rebellions	265	1.528	0.965	0	1	6
	Number of Int'lWars	265	0.083	0.390	0	0	3
	1820 Land Tax P. C.	265	0.113	0.104	0	0.081	0.707
	Taiping Duration	265	1.808	3.701	0	0	26
	Taiping Severity	265	0.073	0.236	0.000	0.002	2.163

Source: see Tables B.1 and B.2.

Table B.4. Population Change and Industrialization

	OLS			Tobit		
Dependent Variable	*Log (Firms) By 1895*	*Log (Firms) By 1911*	*Log (Firms) By 1927*	*No. of Firms By 1895*	*No. of Firms By 1911*	*No. of Firms By 1927*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Δ Population	-0.971	-1.279**	-0.930	-9.535	2.082	44.579
	(0.683)	(0.517)	(0.616)	(6.638)	(13.391)	(36.175)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	265	265	265	265	265	265
R-squared	0.556	0.660	0.657	0.186	0.109	0.068

	OLS			Tobit		
Dependent Variable	*Log (Firms) By 1895*	*Log (Firms) By 1911*	*Log (Firms) By 1927*	*No. of Firms By 1895*	*No. of Firms By 1911*	*No. of Firms By 1927*
	(7)	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Local	0.322*	0.664***	0.808***	7.679***	32.251***	88.385**
Fiscal Cap.	(0.155)	(0.158)	(0.178)	(2.969)	(12.320)	(41.932)
Δ Population	-0.499	-0.306	0.254	2.903	48.808	170.064
	(0.528)	(0.541)	(0.624)	(5.108)	(20.357)	(63.926)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	265	265	265	265	265	265
R-squared	0.575	0.684	0.678	0.198	0.135	0.086

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.5. Local Fiscal Capacity and Industrialization

Dependent	OLS				Tobit			
Variable	*Log (Firms) by 1895*		*Log (Firms) by 1911*		*No. of Firms by 1895*		*No. of Firms by 1911*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Local	0.780***	0.389**	1.648***	0.705***	14.604***	7.288**	39.083***	25.561**
Fiscal Cap.	(0.142)	(0.178)	(0.194)	(0.157)	(4.510)	(2.937)	(12.553)	(12.529)
Log (Size)		0.109***		0.222***		3.005**		5.596**
		(0.033)		(0.065)		(1.245)		(2.526)
Coast		0.119		0.190		1.639		-2.158
		(0.144)		(0.148)		(2.000)		(2.810)
River		0.186*		0.386***		4.098*		2.899
		(0.089)		(0.100)		(2.163)		(2.730)
Longitude		0.004		0.016		0.027		-0.033
		(0.005)		(0.015)		(0.185)		(0.396)
Latitude		0.003		0.013		0.088		0.212
		(0.005)		(0.014)		(0.197)		(0.421)
Political		-0.000		-0.001***		-0.005		-0.012
Control		(0.000)		(0.000)		(0.011)		(0.021)
Log (1851		-0.010		0.127*		1.391		6.051**
Population)		(0.018)		(0.067)		(1.380)		(2.626)
Treaty Port		0.012*		0.030***		0.191**		0.493**
Duration		(0.006)		(0.004)		(0.096)		(0.204)
Natural		0.003		-0.002		0.094		0.187
Disaster		(0.003)		(0.005)		0.081		(0.186)
Number of		0.019		0.018		0.784		1.946
Rebellions		(0.027)		(0.048)		(0.848)		(1.874)
Number of		0.331*		0.107		3.473		7.705
Int'lWars		(0.167)		(0.126)		(2.595)		(7.787)
Constant	0.003	-1.560**	0.264**	-4.564**	-15.849***	-63.454***	-18.418***	-124.58***
	(0.053)	(0.713)	(0.107)	(1.702)	(5.148)	(17.269)	(5.935)	(47.389)
Obs.	265	265	265	265	265	265	265	265
R-squared	0.272	0.571	0.355	0.683	0.081	0.198	0.060	0.129

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.6. Local Fiscal Capacity and Industrialization by Period

	OLS			Tobit		
Dependent Variable	*Log (Firms) 1896-1911*	*Log (Firms) 1912-1927*	*Log (Firms) By 1927*	*No. of Firms 1896-1911*	*No. of Firms 1912-1927*	*No. of Firms By 1927*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Local	0.680***	0.723***	0.774***	19.963**	43.744	64.674
Fiscal Cap.	(0.172)	(0.199)	(0.198)	(9.974)	(31.375)	(41.670)
Log (Size)	0.193***	0.232**	0.294***	4.721**	9.158	12.056*
	(0.065)	(0.088)	(0.093)	(2.114)	(6.339)	(7.067)
Coast	0.159	0.526**	0.415**	-1.959	-2.540	-6.538
	(0.131)	(0.192)	(0.181)	(2.728)	(5.737)	(6.611)
River	0.323***	0.499**	0.549***	2.747	10.277*	12.794*
	(0.098)	(0.175)	(0.148)	(1.956)	(5.283)	(7.006)
Longitude	0.012	0.014	0.028	0.028	-0.115	0.240
	(0.015)	(0.017)	(0.020)	(0.339)	(0.939)	(1.148)
Latitude	0.015	0.017	0.015	0.238	0.072	0.354
	(0.014)	(0.013)	(0.015)	(0.345)	(0.512)	(0.737)
Political	-0.002***	-0.002***	-0.002***	-0.016	-0.030	-0.034
Control	(0.000)	(0.001)	(0.001)	(0.016)	(0.038)	(0.054)
Log (1851	0.125*	0.274***	0.301***	4.967**	16.016***	14.116**
Population)	(0.067)	(0.062)	(0.074)	(2.270)	(5.875)	(6.425)
Treaty Port	0.031***	0.024***	0.028***	0.429**	0.490	0.906
Duration	(0.004)	(0.005)	(0.006)	(0.176)	(0.419)	(0.608)
Natural	-0.003	0.003	0.002	0.109	0.651	0.486
Disaster	(0.006)	(0.006)	(0.007)	(0.149)	(0.396)	(0.494)
Number of	0.026	0.025	0.014	1.493	3.363	6.716
Rebellions	(0.048)	(0.050)	(0.050)	(1.413)	(3.855)	(5.098)
Number of	-0.070	-0.113	-0.004	3.723	22.268	32.168
Int'l Wars	(0.214)	(0.228)	(0.160)	(6.040)	(20.188)	(27.372)
Constant	-3.811**	-5.470**	-7.490***	-108.454***	-247.451*	-308.997**
	(1.601)	(2.014)	(2.256)	(41.679)	(139.131)	(152.949)
Obs.	265	265	265	265	265	265
R-squared	0.562	0.631	0.678	0.144	0.089	0.079

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.7. Local Fiscal Capacity and Industrialization by Sector

	OLS							
Dependent Variable	*Log(Firms) by 1911 Machinery*	*Log(Firms) by 1911 Chemical*	*Log(Firms) by 1911 Mining*	*Log(Firms) by 1911 Paper Making*	*Log(Firms) by 1911 Infra-structure*	*Log(Firms) by 1911 Textile*	*Log(Firms) by 1911 Food*	*Log(Firms) by 1911 Other Light Industries*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Local	0.187	0.178**	-0.106	0.266	0.571***	0.382	0.284	0.305**
Fiscal Cap.	(0.151)	(0.069)	(0.105)	(0.171)	(0.136)	(0.245)	(0.174)	(0.106)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	265	265	265	265	265	265	265	265
R-squared	0.373	0.358	0.161	0.342	0.731	0.438	0.501	0.570

	Tobit							
Dependent Variable	*Firm No. by 1911 Machinery*	*Firm No. by 1911 Chemical*	*Firm No. by 1911 Mining*	*Firm No. by 1911 Paper Making*	*Firm No. by 1911 Infra-structure*	*Firm No. by 1911 Textile*	*Firm No. by 1911 Food*	*Firm No. by 1911 Other Light Industries*
	(9)	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*
Local	2.802*	1.581***	-0.512	4.106***	10.122**	4.752	4.652	0.847
Fiscal Cap.	(1.454)	(0.534)	(0.791)	(1.484)	(4.459)	(4.766)	(2.848)	(0.783)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	265	265	265	265	265	265	265	265
R-squared	0.417	0.593	0.078	0.403	0.304	0.182	0.301	0.293

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.8. Local Fiscal Capacity and Industrialization by Ownership

	OLS				Tobit			
Dependent Variable	*Log (Public Firms) By 1895*		*Log (Public Firms) By 1911*		*Number of Public Firms By 1895*		*Number of Public Firms By 1911*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Local	0.370***	0.233**	0.478***	0.252*	4.697***	2.205***	6.454***	1.919
Fiscal Cap.	(0.112)	(0.106)	(0.150)	(0.143)	(0.964)	(0.607)	(1.712)	(1.336)
Log (Size)		0.094***		0.136***		1.841***		2.578**
		(0.030)		(0.040)		(0.677)		(1.149)
Coast		0.009		0.061		-1.313*		0.010
		(0.042)		(0.077)		(0.669)		(1.188)
River		0.071		0.094		2.203***		1.209
		(0.051)		(0.071)		(0.831)		(0.880)
Longitude		-0.011***		-0.012***		-0.210***		-0.110
		(0.002)		(0.003)		(0.078)		(0.112)
Latitude		0.001		0.005		-0.077		0.105
		(0.004)		(0.005)		(0.067)		(0.089)
Political		-0.001***		-0.002***		-0.021***		-0.030***
Control		(0.000)		(0.000)		(0.004)		(0.005)
Log (1851		-0.007		0.007		1.024		1.528**
Population)		(0.019)		(0.027)		(0.806)		(0.707)
Treaty Port		0.005*		0.006*		0.012		0.039
Duration		(0.003)		(0.004)		(0.023)		(0.042)
Natural		0.002		0.001		0.024		0.004
Disaster		(0.002)		(0.003)		(0.026)		(0.042)
Number of		0.037***		0.043*		0.211		0.147
Rebellions		(0.012)		(0.021)		(0.144)		(0.312)
Number of		0.174		0.187		2.726***		2.396*
Int'lWars		(0.140)		(0.180)		(0.813)		(1.414)
Constant	-0.013	0.363	0.011	0.148	-7.406***	-3.120	-9.453***	-28.604*
	(0.020)	(0.273)	(0.031)	(0.428)	(0.960)	(8.472)	(1.549)	(15.268)
Obs.	265	265	265	265	265	265	265	265
R-squared	0.179	0.436	0.158	0.438	0.117	0.506	0.083	0.407

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.9. Local Fiscal Capacity and Industrialization by Region

	Southeastern Provinces Only (Jiangsu, Zhejiang, Anhui, Hubei, Hunan, Jiangxi, Fujian, Guangdong, Guangxi)				Lower Yangzi Region Only (Jiangsu, Zhejiang, Anhui)			
	OLS	OLS	Tobit	Tobit	OLS	OLS	Tobit	Tobit
Dependent Variable	*Log(Firms) by 1895*	*Log(Firms) by 1911*	*Firm No. by 1895*	*Firm No. by 1911*	*Log(Firms) by 1895*	*Log(Firms) by 1911*	*Firm No. by 1895*	*Firm No. by 1911*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Local Fiscal Cap.	0.577*	1.071***	11.937***	38.251**	1.033**	1.265**	19.701***	53.010***
	(0.284)	(0.153)	(4.143)	(15.653)	(0.238)	(0.134)	(4.791)	(13.659)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	113	113	113	113	35	35	35	35
R-squared	0.633	0.794	0.232	0.133	0.773	0.907	0.299	0.144

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.10. Local Fiscal Capacity and Industrialization: Outliers Excluded

	OLS	OLS	Tobit	Tobit
Dependent Variable	*Log (Firms) by 1911*	*Log(Firms) by 1927*	*Firm No. by 1911*	*Firm No. by 1927*
	(1)	*(2)*	*(3)*	*(4)*
Local Fiscal Cap.	0.663***	0.748***	6.622***	13.338*
	(0.170)	(0.214)	(1.821)	(7.160)
Controls	Yes	Yes	Yes	Yes
Obs.	262	263	262	263
R-squared	0.615	0.640	0.191	0.112

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.11. Local Fiscal Capacity and Industrialization: Alternative Measures for *Lijin*

Dependent	OLS				Tobit			
Variable	*Log (Firms) by 1895*		*Log (Firms) by 1911*		*No. of Firms by 1895*		*No. of Firms by 1911*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Lijin	0.024***	0.012**			0.430***	0.209**		
Employees	(0.003)	(0.005)			(0.128)	(0.085)		
Annual Lijin			0.029***	0.011***			0.746***	0.545***
Revenue			(0.006)	(0.003)			(0.067)	(0.054)
Log (Size)		0.100***		0.183**		2.822**		5.171**
		(0.032)		(0.074)		(1.189)		(2.290)
Coast		0.106		0.210		1.611		-1.849
		(0.139)		(0.156)		(2.029)		(2.846)
River		0.165*		0.342***		3.912*		-1.122
		(0.085)		(0.098)		(2.199)		(3.192)
Longitude		0.000		0.016		-0.016		-0.122
		(0.006)		(0.013)		(0.184)		(0.286)
Latitude		0.004		0.013		0.104		0.152
		(0.005)		(0.012)		(0.196)		(0.298)
Political		-0.000		-0.002***		-0.005		-0.022
Control		(0.000)		(0.000)		(0.011)		(0.016)
Log (1851		-0.006		0.138*		1.368		4.135*
Population)		(0.019)		(0.066)		(1.403)		(2.245)
Treaty Port		0.011		0.033***		0.189*		0.534***
Duration		(0.007)		(0.005)		(0.098)		(0.156)
Natural		0.003		-0.003		0.094		0.192
Disaster		(0.003)		(0.005)		(0.084)		(0.158)
Number of		0.023		0.017		0.832		2.526
Rebellions		(0.027)		(0.045)		(0.862)		(1.966)
Number of		0.339*		0.053		3.555		5.549
Int'l Wars		(0.172)		(0.132)		(2.626)		(6.385)
Constant	0.026	-1.211*	0.486***	-4.011**	-15.047***	-56.790***	-12.024***	-89.301***
	(0.045)	(0.696)	(0.083)	(1.544)	(4.870)	(17.302)	(3.450)	(31.002)
Obs.	265	265	265	265	265	265	265	265
R-squared	0.313	0.576	0.337	0.679	0.089	0.198	0.079	0.149

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.12. Local Fiscal Capacity and Industrialization: Alternative Measures for Industries

	Using Liu (1937) Data					
	OLS			Tobit		
Dependent Variable	*Log (Firms) By 1937*	*Log (Fixed Cap.) by 1937*	*Log (Workers) By 1937*	*No. of Firms By 1937*	*Fixed Cap. by 1937*	*No. of Workers By 1937*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Local	1.079***	2.060***	2.264***	1.764**	3.314**	3.629**
Fiscal Cap.	(0.326)	(0.666)	(0.695)	(0.797)	(1.591)	(1.697)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	214	214	214	214	214	214
R-squared	0.555	0.528	0.519	0.212	0.171	0.165

	Using Zhang (1992) Data			
	OLS		Tobit	
Dependent Variable	*Log (Firms) By 1895*	*Log (Firms) By 1916*	*No. of Firms By 1895*	*No. of Firms By 1916*
	(7)	*(8)*	*(9)*	*(10)*
Local	0.372**	0.627***	11.734**	25.210*
Fiscal Cap.	(0.143)	(0.152)	(4.978)	(15.268)
Controls	Yes	Yes	Yes	Yes
Obs.	265	265	265	265
R-squared	0.609	0.648	0.336	0.137

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.13. Placebo Test: Land Taxation and Industrialization

	OLS			
Dependent Variable	*Log (Industrial Firms) by 1895*		*Log (Industrial Firms) by 1911*	
	(1)	*(2)*	*(3)*	*(4)*
Land Tax 1820 p.c.	1.193	0.714	2.100	0.598
	(0.839)	(0.538)	(1.590)	(0.697)
Log (Size)		0.073**		0.143*
		(0.033)		(0.079)
Coast		0.217		0.322*
		(0.188)		(0.161)
River		0.239**		0.492***
		(0.103)		(0.121)
Longitude		0.003		0.018
		(0.007)		(0.015)
Latitude		0.001		0.012
		(0.005)		(0.013)
Political		-0.000		-0.002***
Control		(0.000)		(0.000)
Log (1851		0.006		0.162**
Population)		(0.021)		(0.070)
Treaty Port		0.016***		0.038***
Duration		(0.005)		(0.004)
Natural		-0.001		-0.008
Disaster		(0.002)		(0.005)
Number of		0.010		-0.006
Rebellions		(0.028)		(0.043)
Number of		0.284*		0.050
Int'l Wars		(0.158)		(0.141)
Constant	0.072	-0.987	0.457***	-3.801**
	(0.076)	(0.979)	(0.143)	(1.744)
Obs.	265	265	265	265
R-squared	0.052	0.549	0.047	0.653

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.14. Fiscal Capacity and Industrialization with the Taiping Rebellion as an IV

Dep. Var.	*Log (Industrial Firms) By 1895*		*Log (Industrial Firms) By 1911*		*Log (Industrial Firms) By 1927*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Panel A: 2SLS						
Local Fiscal Cap.	1.151***	1.484**	2.565***	1.804***	3.296***	1.552***
	(0.246)	(0.600)	(0.531)	(0.621)	(0.580)	(0.508)
Controls		Yes		Yes		Yes
Obs.	265	265	265	265	265	265
R-squared	0.210	0.296	0.245	0.602	0.169	0.654
Panel B: Corresponding First Stage, Dep. Var. is *Local Fiscal Capacity*						
Taiping Duration	0.041***	0.022***	0.041***	0.022***	0.041***	0.022***
	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)
Controls		Yes		Yes		Yes
R-squared	0.172	0.500	0.172	0.500	0.172	0.500
F-Stat.	55.64	22.96	55.64	22.96	55.64	22.96
Panel C: Corresponding OLS						
Local Fiscal Cap.	0.780***	0.389**	1.648***	0.705***	1.976***	0.774***
	(0.142)	(0.178)	(0.194)	(0.157)	(0.246)	(0.198)
Controls		Yes		Yes		Yes
Obs.	265	265	265	265	265	265
R-squared	0.272	0.571	0.355	0.684	0.305	0.678

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS and 2SLS estimates, I report the **adjusted** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.15. Fiscal Capacity and Industrialization with the IV: Alternative Measures for Taiping Rebellion

Dep. Var.	*Log (Industrial Firms) By 1895*		*Log (Industrial Firms) By 1911*		*Log (Industrial Firms) By 1927*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Panel A: 2SLS						
Local	1.383***	1.668**	2.894***	2.388***	3.379***	1.793**
Fiscal Cap.	(0.200)	(0.765)	(0.421)	(0.678)	(0.533)	(0.797)
Controls		Yes		Yes		Yes
Obs.	265	265	265	265	265	265
R-squared	0.109	0.196	0.152	0.493	0.151	0.637
Panel B: Corresponding First Stage, Dep. Var. is *Local Fiscal Capacity*						
Taiping	0.617***	0.278***	0.617***	0.278***	0.617***	0.278***
Severity	(0.088)	(0.079)	(0.088)	(0.079)	(0.088)	(0.079)
Controls		Yes		Yes		Yes
R-squared	0.156	0.491	0.156	0.491	0.156	0.491
F-Stat.	49.62	22.24	49.62	22.24	49.62	22.24
Panel C: Corresponding OLS						
Local	0.780***	0.389**	1.648***	0.705***	1.976***	0.774***
Fiscal Cap.	(0.142)	(0.178)	(0.194)	(0.157)	(0.246)	(0.198)
Controls		Yes		Yes		Yes
Obs.	265	265	265	265	265	265
R-squared	0.272	0.571	0.355	0.684	0.305	0.678

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS and 2SLS estimates, I report the **adjusted** R^2. For clarity, the coefficients for control variables and constant are not presented.

Table B.16. Mechanism I: The Spillover Effect from Public to Private Firms

	OLS			Tobit		
Dependent Variable	*Log (Private Firms) by 1895*	*Log (Private Firms) by 1911*	*Log (Private Firms) by 1911*	*No. of Private Firms by 1895*	*No. of Private Firms by 1911*	*No. of Private Firms by 1911*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Log (Public	0.444***	0.607***		0.412*	0.535**	
Firms) by 1895	(0.153)	(0.157)		(0.219)	(0.260)	
Log (Public			0.572***			0.547***
Firms) by 1911			(0.144)			(0.197)
Log (Size)	-0.048	-0.001	-0.022	-0.371	0.058	0.021
	(0.041)	(0.071)	(0.067)	(0.292)	(0.194)	(0.189)
Coast	0.198	0.321**	0.292**	0.488	0.195	0.173
	(0.159)	(0.132)	(0.131)	(0.420)	(0.223)	(0.213)
River	0.085	0.411***	0.400***	0.396	0.544***	0.534***
	(0.098)	(0.104)	(0.104)	(0.286)	(0.145)	(0.142)
Longitude	0.001	0.022	0.023*	-0.005	0.056*	0.057*
	(0.003)	(0.013)	(0.012)	(0.022)	(0.032)	(0.031)
Latitude	0.000	0.014	0.011	-0.002	0.012	0.010
	(0.003)	(0.010)	(0.009)	(0.024)	(0.031)	(0.030)
Political	-0.000	-0.001**	-0.001*	-0.000	-0.001	-0.001
Control	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Log (1851	0.038	0.157**	0.149**	0.985***	0.663**	0.637**
Population)	(0.028)	(0.060)	(0.059)	(0.318)	(0.259)	(0.253)
Treaty Port	0.013**	0.034***	0.033***	0.029***	0.041***	0.039***
Duration	(0.005)	(0.004)	(0.004)	(0.008)	(0.005)	(0.005)
Natural	0.000	-0.006	-0.005	0.009	0.004	0.004
Disaster	(0.002)	(0.004)	(0.004)	(0.014)	(0.010)	(0.010)
Number of	-0.019	-0.038	-0.041	-0.203	-0.126	-0.126
Rebellions	(0.028)	(0.037)	(0.038)	(0.175)	(0.092)	(0.092)
Number of	0.177*	-0.103	-0.105	0.211	-0.187	-0.194
Int'l Wars	(0.098)	(0.202)	(0.205)	(0.177)	(0.212)	(0.218)
Constant	0.087	-3.201**	-3.061**	-5.134	-12.075***	-11.729***
	(0.435)	(1.393)	(1.364)	(3.707)	(3.426)	(3.344)
Obs.	265	265	265	265	265	265
R-squared	0.617	0.678	0.693	0.496	0.317	0.322

The entries are corresponding coefficients. **Robust** standard errors, **clustered** by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the **adjusted** R^2; For Tobit estimates, I report the **pseudo** R^2.

Table B.17. Mechanism II: The Role of Infrastructure

	OLS		Tobit	
Dependent Variable	*Log (Firms) by 1895 (without Infrastructure)*	*Log (Firms) by 1911 (without Infrastructure)*	*No. of Firms by 1895 (without Infrastructure)*	*No. of Firms by 1911 (without Infrastructure)*
	(1)	*(2)*	*(3)*	*(4)*
Log (Firms) by 1895	0.850***			
Of Infrastructure	(0.160)			
Log (Firms) by 1911		0.753***		
Of Infrastructure		(0.128)		
Firm No. by 1895			3.340***	
Of Infrastructure			(0.370)	
Firm No. by 1911				2.593***
Of Infrastructure				(0.141)
Controls	Yes	Yes	Yes	Yes
Obs.	265	265	265	265
R-squared	0.566	0.688	0.226	0.218

The entries are corresponding coefficients. Robust standard errors, clustered by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the adjusted R2; For Tobit estimates, I report the pseudo R2. For clarity, the coefficients for control variables and constant are not presented.

Table B.18. Mechanism III: The Role of Financial Services

	OLS		Tobit	
Dependent Variable	*Log (Firms) by 1895*	*Log (Firms) by 1911*	*No. of Firms by 1895*	*No. of Firms by 1911*
	(1)	*(2)*	*(3)*	*(4)*
Log (Firms) by 1895	1.705***			
Of Finance	(0.347)			
Log (Firms) by 1911		0.926***		
Of Finance		(0.180)		
Firm No. by 1895			13.144***	
Of Finance			(1.811)	
Firm No. by 1911				11.333***
Of Finance				(0.598)
Controls	Yes	Yes	Yes	Yes
Obs.	265	265	265	265
R-squared	0.627	0.698	0.264	0.215

The entries are corresponding coefficients. Robust standard errors, clustered by province, are reported in parentheses. The *, ** and *** denote statistical significance at 10%, 5% and 1% level. For OLS estimates, I report the adjusted R2; For Tobit estimates, I report the pseudo R2. For clarity, the coefficients for control variables and constant are not presented.