Size and Dynastic Decline:
The Principal-Agent Problem in Late Imperial China 1700-1850

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Abstract

I argue that one reason for China's relative economic decline in the 19th century was its size. A ruler governing a big country faces a severe principal-agent problem. Given his monitoring difficulties, his agents have strong incentives to extort from the taxpayers, especially the politically weak ones. To prevent over-exploitation that could foment rebellion, the ruler has to keep taxes low. The result is the paradox of low state revenue despite a heavy tax burden on the poor. Economic growth could further exacerbate the situation as it increases the incentives for corruption. I apply this model to late imperial China and find that its predictions are well supported by empirical evidence. The Qing state taxed lightly and official land tax burdens were especially low in regions far from the capital. Furthermore, the fiscal and managerial capacity of the Qing dynasty began to contract steadily during the prosperous 18th-century, sowing the seeds for China's socio-economic problems of the 19th-century.

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1 Introduction

China poses many questions that standard economic theories seem unable to answer. This paper deals with one of them: why was China unable to take advantage of the opportunities presented by the Industrial Revolution to modernize its economy in the 19th century?

On surface, there is a simple answer: the Chinese emperor. Economists have often argued that dictatorships are antithetical to economic development due to the dictator's propensity to expropriate at will (North and Weingast, 1989; DeLong and Shleifer, 1993). A prominent view, drawing from Marx, held that China's development was hampered by the presence of an autocratic, managerial, and interventionist state (Wittfogel, 1957; Balazs, 1964; Landes, 2006). In the words of David Landes,

> ...China lacked a free market and institutionalized property rights. The Chinese state was always stepping in to interfere with private enterprise—to take over certain activities, to prohibit and inhibit others, to manipulate prices, to exact bribes.

However, the applicability of this argument on late imperial China is questionable, for the Chinese emperor was a stable dictator.[1] As Mancur Olson (1993) taught us, a stable dictator is a "stationary bandit" who understands that excessive exaction in the short run involves a long run cost, in terms of less future tax revenue and more political instability. He will therefore demonstrate self-restraint when he expropriates through taxation. He may even actively provide public goods to improve the economic well-beings of his subjects, since this will allow him to collect more taxes in the future.

The orthodox interpretation of Chinese history is further undermined by the empirical findings of China historians in recent decades. Although Kenneth Pomeranz's claim in *The Great Divergence* that the levels of development in the Lower Yangzi delta and England were comparable in the 18th century is still a subject of intense debate, his book has helped foster an emerging consensus that the Chinese society and economy in the 18th century were quite developed in some ways.[2] Commercialization, helped by the monetization of taxes and the inflow of silver from Japan and the New World, linked the lives of ordinary people to the world outside their villages (Li, 1998; Wu and Hsü, 2000). The social status of merchants improved during this period (Mann, 1987). There is also strong empirical evidence suggesting

[1] The Japanese historian Naito Konan pointed out that the position of the Chinese emperor became more secure from the Song dynasty (960-1279) onwards. Usurpation became extremely rare as aristocratic power was suppressed through the introduction of the examination system to select officials (Miyakawa, 1955).

[2] See Huang (2002); Brenner and Isett (2002); Xue (2007); Allen (2009); Allen et al. (2011) for critiques of Pomeranz (2000).

that a high degree of market integration was present in China at the dawn of the Industrial Revolution (Li, 2000; Shiue and Keller, 2007).

Where political institutions are concerned, the notion of a despotic regime incapable of adopting "progressive" changes is also giving way to an acknowledgement that the Chinese state demonstrated certain "early modern tendencies" in the 18th century. Externally, the Qing dynasty (1644-1911) extended its domain into Tibet and parts of Central Asia through a combination of well-executed military campaigns and skilful diplomacy (Perdue, 2005). Domestically, the state was actively involved in the provision of public goods, including the construction and maintenance of a nationwide granary system to combat famine (Will, 1990), as well as active flood control in North China (Leonard, 1996; Dodgen, 2001; Li, 2007).

These empirical findings have, in some sense, created more questions than answers. If all was well and fine with China in the 18th century, why was it incapable of mounting a more resolute response to the coming of the West in the 19th century? Was China's relative economic stagnation in the 19th century merely a consequence of historical contingency, or were there structural factors at work that contributed to this reversal of fortune?

This paper argues that the explanation to the puzzle can be found in China's size. The geographic size of the Chinese empire created a severe principal-agent problem in the way it was governed. This in turn led to an inefficient tax and administrative system. Fiscal weaknesses of the state were initially masked by the huge tax base, which compensated for the low tax rate forced upon the state. Over time, however, economic expansion in the 18th century intensified corruption and put further squeeze on state finances. The result was the paradox of a weakening state despite an expanding economy. Subsequent cuts in public goods provision and growing political instabilities eventually put a halt to sustained economic growth in the early 19th century, and rendered China ill-prepared to handle the military and technological shocks from the West in the age of industrialization.

Specifically, size carries two dimensions in the hypothesis: geographic and economic.

Geographic size matters as the cost of transmitting information over distance is non-zero, especially in a pre-modern world. As such, distance increases the cost for the ruler to monitor state agents dispersed across the country. Moreover, a large geographic size is usually associated with wide regional diversity and heterogeneity, which introduces additional noise into the ruler's information. Regional differences in climate, crops cultivated, per capita income, and other socio-economic conditions often implies that some degree of flexibility is required when a policy designed by decision makers in the capital is implemented by agents at the local level. Yet this necessity also makes it harder for the ruler to determine whether an act of some agent is one of corruption or one driven by the need to adjust to local conditions.

In a large (and stable)[3] dictatorship, even if the interests of the ruler and the society are aligned due to the ruler's long-term perspective, excessive exploitation can still come from his agents who have shorter decision horizons and less encompassing interests.[4] While the ruler is motivated not to overtax the population to preempt rebellion, his agents have private incentives to expropriate rent and undersupply public goods. If the ruler is unable to keep corruption in check, he will have to keep the tax rate low and his bureaucracy small to mitigate this "tyranny at the bottom" effect.

The effect of economic size on state finances is more ambiguous. A bigger economic output enlarges the tax base, but it also increases the temptation for state agents to corrupt. The more costly it is for the ruler to monitor his agents, the more corruption will grow with output. To keep exploitation by the state and its agents sustainable, the ruler will then have to respond to economic expansion by adjusting the tax rate downwards. In an economy associated with severe monitoring difficulties within the government, economic growth may actually hurt the state, as the negative effect of growth (lower tax rate due to worsening corruption) could overwhelm its positive effect (bigger tax base) eventually.

The issue of size is particularly relevant to China, given that for the last two millennia, the land mass between the Great Wall and the South China Sea was more often than not under the rule of a single central authority. Mao himself highlighted the importance of distance in shaping the performance of political institutions in China when he told Nixon during the latter's visit to China,"I have not been able to change [China]. I have only been able to change a few places in the vicinity of Beijing (Kissinger, 1998, p. 60)."[5]

In addition, China has consistently accounted for around one-quarter of humanity—[6] give and take a few percentage points—since the birth of Christ. As living standards in pre-modern societies were usually not very far from subsistence level (Ashraf and Galor, 2011), this in turn implies that for the best part of the pre-1850 world, China had been the largest economy in the world.[7]

[3]Unstable dictators behave like "roving bandits" since their horizons are too short for them to consider taking steps to nurture the economy so as to benefit from higher tax revenues in the future (Olson, 1993). Hence, geographic size is irrelevant to this class of dictatorships.

[4]This paper does not examine non-dictatorships for the following reason: in a dictatorship, the ruler has limited scope to up the monitoring of his agents since his monopoly of power implies that monitoring can only be top-down, not bottom-up. Hence, if he sets up a new agency to monitor existing agencies, the newly created agency will require personal monitoring from him too. In a non-dictatorship, bottom-up monitoring is possible and this demands a different framework of analysis.

[5]A field specialist noted that even in contemporary China,"...there is a feeling among many inhabitants that law is enforced rather arbitrarily. This increases with distance from the national capital and major regional cities (Edmonds, 1990, p. 61)."

[6]The term is borrowed from the title of Lee and Wang (1999).

[7]For the rest of the thesis, population is used as a proxy to economic output. However, this is not an assumption and it plays no part in driving the results of the model. Economic growth without population expansion would have delivered the same results, as long as the growth in output is not driven by technological

To the rulers of the Qing, the last imperial dynasty of China, the challenges that size posed to effective governance were more acute than ever. Qing China in 1800 is significantly bigger than China or the United States today. Even if we disregard the thinly populated regions of Manchuria, Mongolia, Tibet, and Xinjiang, the region known as China proper is still bigger than India and Pakistan combined, or ten times the size of California. Pre-modern communication technologies did not help. In 1853, when the Taiping rebels captured Wuchang, a major Middle Yangzi city about 1000 kilometers from Beijing, the news took 8 days to reach the capital. To send an official report of the highest priority between Beijing and Shanghai through the imperial postal relay stations would take 10 days (Xie, 2002).

Furthermore, the Chinese economy expanded substantially during the late 17th and the 18th centuries. A lack of technological breakthroughs implies that economic growth during this period was largely extensive in nature, powered primarily by demographic expansion. Nonetheless, it remained impressive. Between 1650 and 1850, the Chinese population grew by a factor of three, from less than 150 million to over 400 millon (Perkins, 1969), with no evidence of a significant drop in the living standards of the average Chinese before the mid-19th century (Baten et al., 2010). As we shall see later, this did not benefit the Qing state, which saw its tax revenue fell in the midst of the economic expansion.

The predictions of the hypothesis are cross-checked with historical observations and empirical data. First, the relationship between distance and agency costs is tested by examining regional differences in land tax burdens, as well as the spatial distribution of administrative units in late imperial China. In line with the predictions of the hypothesis, I find that both the land tax per capita and the number of counties per square area were significantly higher in regions adjacent to Beijing than in regions far away from it, even after controlling for regional disparities. In other words, the late imperial Chinese state turned weaker and smaller as one moved away from the capital.

Next, using hand-collected as well as published historical fiscal records of the Qing dynasty, I have reconstructed the Qing state's tax revenues between 1650 and 1850. The time series depict a hump-shaped pattern. The Qing state's fiscal capacity peaked early in the the 18th century and contracted steadily from then on, even as the economy continued to power ahead through extensive expansion.

Finally, I provide historical evidence to demonstrate that the contraction of the regime's fiscal capacity led to a gradual and sustained reduction in the supply of state-provided public goods. This development became evident in the second half of the 18th century, and it predated the military and socio-economic troubles which kicked in after 1796. The nature and timing of these spending cuts strongly suggests that persistent fiscal problems on the

advances that also improve the ruler's monitoring capabilities.

revenue side affected the economy adversely, through the under-provision of public goods that protected property rights. Before the modern West began taking steps to open up China by force, the Celestial Empire was already sinking under its own weight.

The rest of this paper is organized as follows. Section 2 places the research in the context of the existing literature. Section 3 discusses the historical background. A model is set up in Section 4 to establish the hypothesis formally and show that for a big country under autocratic rule, sustained economic growth could sow the seeds of its own demise by hurting the state fiscally and instilling political instability.

The empirical aspects of the paper is covered in Section 5. 5.1 tests the relationship between geographic distance and agency costs, or the variation in agency costs over space, while 5.2 presents empirical evidence on the paradox of economic growth and fiscal decline in China during the 18th century (variation over time). Section 6 discusses the historical evidence on how fiscal weaknesses of the Qing state turned into a growing drag on the economy, so much so that by the early 19th century, China had become too preoccupied with its domestic problems to deal with the rise of the West proactively. Section 7 concludes.

2 Literature Review

A common theme in the literature is the proposition that democratic checks and balances are prerequisites for growth. North and Weingast (1989), Acemoglu et al. (2005), and many other works have argued that without constraints on predatory dictators, excessive taxation and redistributive policies would lead to economic stagnation—an often cited example being the failure of France and Spain to keep pace with England and Netherlands economically in early modern Europe.

This view has been disputed by other scholars, who pointed out that absolutist regimes like France and Spain actually taxed less than England and Netherlands (Mathias and O'Brien, 1976; Hoffman and Norberg, 1994; Dincecco, 2009). Some economic historians contended that the problem with these absolutist regimes was not arbitrary despotic power, but institutional fragmentation. According to Hoffman and Rosenthal (1997), the ability of the French rulers to impose new taxes was severely constrained by the "divided fiscal authority" within their regime. In the words of Stephan Epstein, "the practice of absolutist rule [was] contested at every turn by feudal lords, town councils, corporate entities and religious institutions" (Epstein, 2000, p. 14). This in turn led to the inability of the absolutist state to solve coordination problems and provide public goods efficiently.

Neither paradigm fit into the experience of late imperial China. As we shall see later, the Qing state extracted relative little. Hence, China's developmental woes cannot be attributed

to a strong state. However, China had also overcome the problem of jurisdictional fragmentation by the 10th century.[8] From the Song dynasty (960-1279) onwards, measures were painstakingly implemented to prevent independent centers of power from emerging within the realm. A non-hereditary bureaucracy replaced the aristocracy. Passing civil service examinations became the main avenue to joining the political elite. Accordingly, there were fewer incidents whereby the authority of the emperor was openly and directly challenged by the elite class. Late imperial China had a weak state, but the source of its weakness was not jurisdictional fragmentation, but a more classical principal-agent problem which arose due to the emperor's inability to monitor his bureaucrats effectively.[9]

Propositions that the state plays an indispensable role in the promotion of a healthy economy can be broadly classified into two categories. In the weak form, the state has to acquire sufficient capacity to ensure the security of property and person (Smith, 1776; North, 1990). On the other hand, strong form arguments see a more proactive role for the state in economic development—either to resolve "coordination failures" (Epstein, 2000) and generate the big push in industrialization (Rosenstein-Rodan, 1943; Murphy et al., 1989), to reorganize property rights and remove inflexibilities in the existing property rights regime so that individuals and communities can take full advantage of the economic opportunities present (Rosenthal, 1990; Bogart and Richardson, 2008; Lamoreaux, 2011), or to implement social policies (child labor laws, public education, and so on) that allow the society to escape from the Malthusian trap (Doepke, 2004). The hypothesis here focuses on the weak form view of the role of government, although it is not incompatible with stronger form arguments.

Empirically, there is some evidence suggesting that absolutist states often lack the capacity to manage economic development. Jones and Olken (2008) found that nearly all countries have experienced extended periods of economic growth. Autocracies do not lag behind democracies when it comes to triggering growth. However, they experience growth collapses that are often associated with monetary and political instabilities more frequently.

Worsening corruption was the main driver that generated the socio-economic instabilities in Qing China during the first half of the 19th century. The increasingly pervasive rent-seeking activities of corrupt state agents denied the late imperial Chinese state sufficient resources

[8] This is suggested in the Naito Hypothesis, formulated by the Japanese historian Naito Konan and widely cited by China historians (Miyakawa, 1955).

[9] Although scandals did occur from time to time, civil service examinations were extremely effective in promoting social mobility. Ho Ping-ti showed that 50% of the top-degree holders during the Ming dynasty and 37.2% of top-degree holders during the Qing dynasty came from commoner families. According to him, "all types of literature agree that the most striking characteristic of the post-Tang society was that, on one hand, social success depended more on individual merit than on family status, and that, on the other hand, high-status families had little means of perpetuating their success if their descendants were inept" (Ho, 1962, p. 257). By this measure, China in the late imperial age seems to look like an "open access society" more than a "natural state" in the terms of North et al. (2009).

to maintain social order and protect the empire and its subjects against natural disasters, bad harvests, and foreign aggression. Within the literature on corruption, some authors have argued that corruption could improve economic efficiency, either by allowing entrepreneurs to bypass unnecessarily restrictive regulations or by incentivizing bureaucrats to work harder (Leff, 1964; Huntington, 1968; Lui, 1985). In this sense, this thesis is more in line with the strand of the literature which emphasizes the overall harmful consequences of corruption (Rose-Ackerman, 1978; Shleifer and Vishny, 1993; Mauro, 1995; Bardhan, 1997).[10]

Particularly, this thesis highlights the regressive nature of corruption. High corruption in Qing China, which according to the estimates of Ni and Van (2006) consumed 22% of China's agricultural output in 1873, did not affect all taxpayers equally. It was those with the least political and economic resources to protect themselves who suffered most from rapacious state agents. The model here demonstrates that this is not just a matter of equity, as it has efficiency ramifications too. In a fiscal system characterized by the ruler's poor access to information, the state's ability to tax hinges primarily upon the ability of the politically disadvantaged to pay.[11] As corruption reduces the surplus of this underprivileged group available for the ruler to capture, it aggravates the state's fiscal weakness and lack of capacity to solve collective action problems.

This thesis is also related to the small literature on the size of nations. Alesina and Spolaore (1997) pioneered the use of cost-benefit analysis in studying the determinants of country size.[12] Here, I leave out the discussion on the benefits that China might have reaped from its size, and focus entirely on the costs that size and centralized control imposed on the pre-industrial Chinese society and economy. As Owen Lattimore (1940), Ray Huang (1988), and others have pointed out, the need to coordinate defense efforts against nomadic incursions and to manage the flood-prone Yellow River might have generated impulses that pushed China towards early political unification. To keep the discussion focused and its scope manageable, this thesis takes a unified Chinese empire during the late imperial era as the point of departure, and leaves the question of why it was so to future research.

A strand of the literature emphasizes the importance of geography in shaping institutions, which in turn influence economic outcomes (Acemoglu et al., 2001, 2002; Easterly and Levine, 2003; Olsson and Hibbs, 2004; Rodrik et al., 2004; Galor et al., 2009). Within this literature, two recent works that deal with the issue of geographic size are of particular relevance here.

[10] See Bardhan (1997) for a comprehensive review on this literature.

[11] If the ruler finds it extremely costly to ascertain if a taxable asset is owned by a local elite (the politically advantaged) or a peasant (the politically disadvantaged), then he is unable to tax the elite at a higher rate, as the elite can always fake his identity to enjoy the lower rate paid by the peasant. Hence, if the ruler has to keep the tax rate low for the peasant (to make up for the extortion suffered by the latter), the elite will enjoy the low tax rate too. For empirical evidence, see footnote 28.

[12] See also Alesina and Spolaore (2003).

Using cross-sectional data from 127 former colonies, Olsson and Hansson (2011) detected a strong negative casuality between territorial size and the rule of law. In addition, the average level of the rule of law tends to be lower in countries where the capital is not centrally located. Stasavage (2010) studied the evolution of representation in Europe across the five centuries from 1250 to 1750 and showed that the effectiveness of representative institutions decreased progressively with the size of the polity in question, as high communication and travel costs created substantial obstacles for representative bodies in large territorial states to convene regularly.

Classical Chinese historiography's characterization of China's history as a series of repetitive dynastic cycles is sometimes criticized on the ground that it contributed to the mistaken impression of China as a stagnated civilization moving eternally in a circle. However, it would equally be a mistake for us to reject the notion that the path of China's historical development demonstrates certain cyclical properties. In recent decades, there has been a revival of interest in the concept of "dynastic", "secular", or "administrative" cycles. Lieberman (2009) defined an administrative cycle as a "three-part oscillation from a phase of growing territorial and political integration, to a phase of maximum integration, to a phase of territorial fragmentation and political collapse" (p. 55). According to Goldstone (1991) and Turchin and Nefedov (2009), long-term population expansion was what drove the final two phases of the cycle. Usher (1989), which was the first to apply rational choice theory to explain dynastic cycles, demonstrated that dynastic cycles do not always arise—they would only emerge in regimes with inherently weak fiscal capacities. This thesis builds on these observations. In particular, I show that inherent fiscal weaknesses (and hence dynastic patterns) are the likely results of a severe principal-agent problem in government, which dooms the state to a small and declining share of the taxpayers' surplus as population grows and the economy expands. Furthermore, I employ historical data to confirm the existence of a fiscal cycle in Qing China between 1650 and 1850.

Finally, on agency problems in historical China, Shiue (2004) and Shiue (2005) found evidence that the Qing government did not operate as a unitary and wholly coordinated entity, as provinces that received disaster relief from the central government frequently took advantage of it by reducing their granary storage levels. Ma (2011) argued that bureaucrats and the general population in late imperial China withheld private information to tie the grabbing hands of the absolutist state, yet the same phenomenon also restrained the Chinese state's ability to protect property rights and support economic growth.

With the exception of Kiser and Tong (1992), which analyzed the fiscal system of Ming and Qing China across space, none of these papers explicitly relate high agency costs in late imperial China to the geographic size of the Chinese polity. This thesis constructs a formal

model and provides empirical evidence to show that agency costs and distance were indeed intrinsically linked. Furthermore, it argues that over time, economic expansion aggravated the impact of the principal-agent problem in China, so that what had been a manageable problem in the early 18th century became impossible to deal with by the first half of the 19th century. The last point is non-trivial, for it helps explain why economists and modern China historians hold such contrasting views over whether political institutions in late imperial China were capable of supporting economic growth.

3 Historical Background

The Qing dynasty (1644-1911) was the last dynasty of China. It was founded in 1616 by the Manchus, an ethnic minority group that originated in northeastern China.[13] In 1644, the young empire captured Beijing, the capital of the Ming dynasty (1368-1644), and it would rule China for the next 267 years.

Until 1850, the Qing emperors had full control over the apparatus of government. In the 1850s, widespread rebellion across the empire forced the imperial court to devolve decision making power to provincial authorities to deal with the crisis. The imperial court never fully recovered these powers after the rebellions were suppressed. For this reason, this paper focus primarily on the period until 1850, when institutions were fairly stable and political power firmly in the hands of the throne, to analyze how a severe principal-agent problem shaped the nature of imperial rule and the subsequent socio-economic outcomes.

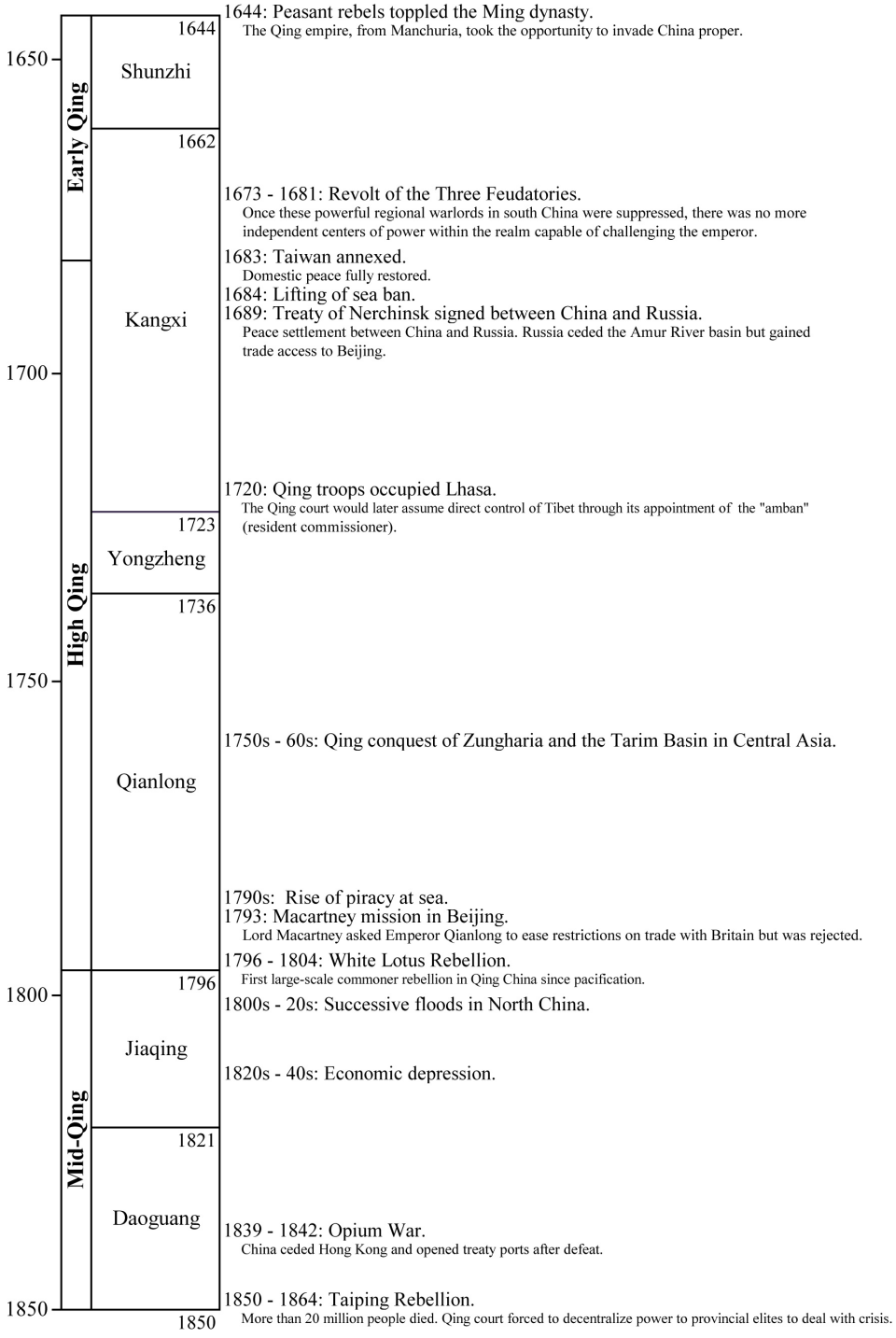
A total of six emperors reigned in succession between 1644 and 1850, each being succeeded by one of his sons (see Figure 1). The longest reign was that of the Kangxi emperor (61 years), and the shortest that of his fourth son Yongzheng (13 years). China historians usually divide the 206 years of rule under these six monarchs into three sub-periods.[14] The first sub-period, the early Qing, is one of military conquest and political consolidation, and it ended in the 1680s after the imperial court suppressed a major revolt led by former Qing administrators in southwestern China.

With the restoration of peace, interregional trade resumed and flourished, and China entered a golden age known as the High Qing—our second sub-period. The High Qing officially ended in 1796, when a large-scale uprising erupted in central China and exposed structural weaknesses of the Qing military as well as its civil administration.

The last sub-period, known as the mid-Qing, was characterized by rising socio-economic and monetary instabilities. Towards the end of it, China was handed a humiliating defeat by

[13] The original name of the empire was "Jin" (or Later Jin). It was renamed "Qing" in 1636.
[14] For example, see Fairbank (1992) or Rowe (2009).

Figure 1: Reigns and Major Events of the Qing Dynasty until 1850



the British in the Opium War (1839-42). A bigger disaster arrived in 1850 with the outbreak of the Taiping Rebellion (1850-1864), which devastated the southern half of the country and very nearly toppled the Qing dynasty.

Structure of Government. The emperor sat at the pinnacle of the state apparatus. The core institutions in the central government included the Grand Council (the inner court privy-council) and the Six Boards or Six Ministries (Civil Appointments, Revenue, Rites, War, Punishments, and Public Works).

Until 1850, all important decisions had to be approved by the emperor, who was advised by close aides in the Grand Council. Through the Board of Civil Appointments, he would appoint or ratify the appointment of every official from the county magistrate upwards. Through the Board of Revenue, he would regulate and audit the expenditures of the regional and local governments, down to stationery expenses. Through the Board of Punishments, he would review judicial decisions made across the empire. All death sentences had to receive his sanction (Ch'u, 1962).

Outside the capital, civilian administration was handled by four layers of formal government: province, circuit, prefecture, county. Traditionally, the county was viewed as most critical to a regime's effectiveness or viability, since it sat at the bottom of the formal state hierarchy and was therefore the layer of government that dealt with the subjects of the empire directly. In this sense, the other layers of government were no more than intermediaries between the center and the county (Watt, 1977, p. 360).

The Magistrate. There were about 1500 counties in Qing China, and the number stayed remarkably stable over time. Each county was headed by a magistrate, who was fully accountable to his superiors for all affairs concerning the administration of his jurisdiction.

As the population of China tripled between 1650 and 1850, an average county would govern slightly over 100,000 people in 1700, and nearly 300,000 people in 1850. Given this heavy workload, it was impossible for the magistrate to cover many aspects of government that we are accustomed to expect today. In practice, his daily duties revolved around two themes: (1) the collection of land and miscellaneous taxes, which constituted the bulk of the Qing state's tax revenue;[15] and (2) the administration of justice, which required him to preside over all court hearings held in his jurisdiction, civil or criminal.

[15]Broadly speaking, there were five kinds of taxes collected in Qing China before 1850: the *diding* (land tax stipulated in silver), the grain tax (land tax stipulated in grain), the salt tax, customs duty, and miscellaneous taxes. The two land taxes together accounted for more than 80% of the Qing state's tax revenue, and it was the magistrate's responsibility to collect these taxes and remit the portion owed to the central government promptly.

The imperial court monitored magistrates across the country through several means. In a triennial exercise known as *daji* (grand review), the magistrate's superiors in the central and provincial administrations would review his performance and mete out reward or punishment accordingly.[16] Failure to remit the taxes owed to the central government in full and in time, a huge backlog of civil cases in court, and the presence of unsolved murders and major robbery cases would cost the magistrate dearly during the review (Watt, 1977).

Apart from relying on higher authorities within the civilian bureaucracy to supervise downstream agencies, the late imperial Chinese state also established the Censorate to investigate and impeach shirkers and wrongdoers (Feuerwerker, 1976, p. 49). At any one time, there were 56 censors attached to the provinces to act—in the words of the Qianlong emperor—as the "eyes and ears" (*er mu*) of the imperial court.

The Local Elite. Not all inhabitants residing in his jurisdiction were equal in the eyes of the magistrate. Since the central government kept in touch with influential local households known as the gentry through the censors, the magistrate would need the goodwill of these households to ensure that no complaints about him would reach his superiors (Holcombe, 1895, p. 228).[17]

Put simply, the Qing society comprised of two classes, the gentry and the commoners.[18] Also referred to in the literature as the local elite, a gentry member was one who held an official educational degree. Such a degree was a prerequisite to enter government service in late imperial China, and it could be obtained either by passing state-sponsored examinations or by purchase.

Many gentry members owned sizeable land holdings.[19] Although only a small fraction of them ended up in officialdom,[20] gentry members were granted social and legal privileges by the state to distinguish themselves from the commoners. They wore buttons on their hats as a symbol of their status. If a gentry member had committed a serious offense, punishment should not be applied before the provincial director-of-studies was notified and approval had been given to strip off the offender's title. A magistrate who did not observe these procedures

[16] Punishments typically included pay forfeiture, fine, demotion, removal from office. Rewards usually came in the form of awarding merit points or rank promotion (DQHD, QL juan 6).

[17] The *Veritable Records of the Qing Dynasty* listed many instances where magistrates were demoted or dismissed due to "unfavorable public sentiments" (*yuqing bu qia*), which in most cases means that they were ousted by the local gentry.

[18] According to Zhang (1955, p. 139), the gentry class—including their immediate family members—accounted for 1.3% of the total population during the first half of the 19th century.

[19] Although it is true that a landlord was not necessarily a member of the gentry, a wealthy landlord could always purchase the status of an Imperial Academy student (*jiansheng*) from the state. As such, wealth and gentry status had the tendency to go hand in hand.

[20] During the early 19th century, there were slightly over a million gentry members but only 20,000 official positions to fill up at any one time (Zhang, 1955, p. 111, Table 8).

could be impeached (Zhang, 1955). Consequently, even the most corrupt magistrate would not lay his hands on them. Like the case in other societies, corruption in late imperial China was a regressive affair. Commoners who lacked the political means to protect themselves were the ones bearing the brunt of abuse by rapacious local state agents.

Corruption in The Land Tax Collection Process. Theoretically, land tax liabilities in Qing China were computed at the household level, based on the size and grade of the land that each household owned. The tax liability of a land-owning household was expressed as a fixed sum per plot of land regardless of how much the land actually produced that year. In practice, it was impossible for the imperial court to keep track of how much land taxes every landowning household should pay given the enormous amount of information that it would have to process to do so. Instead, it could only keep track of tax liabilities down to the county level. Each county was assigned a tax quota according to the cultivated acreage and land quality of the county. It was the responsibility of the county magistrate to ensure that taxes owed by residents in his county were collected fairly in accordance to actual ownership.

This created enormous opportunities for the magistrate and his underlings to profit from the tax collection process. As long as they were careful to pick only victims who lacked the political means to resist extortion, and as long as long the taxes due to the central government were always remitted promptly and in full, such actions were unlikely to catch the attention of the imperial court.

The magistrate could over-collect from the taxpayers either directly or indirectly. The easiest way to do so was to manipulate tax notices by adding an minute extra amount to the tax liabilities of every household. The act would usually go unnoticed. Those who did find out would not find it worthwhile to question the claim. Given the size of an average county in late imperial China, this practice of *feisa* or "spraying" could usually return a sizeable yield (Zelin, 1984, p. 49). Another commonly practised approach was for the magistrate to demand that taxes be paid in copper coins instead of silver or grain. He would then set the commutation rate at a level higher than the prevailing market rate to profit from arbitrage.[21]

Some magistrates used their underlings as proxies to avoid directly engagement in extortion. Clerks and runners assigned to receive tax payments often used the pretext that the tax silver or grain presented by a taxpayer was of inferior quality to demand addition payment (Huang, 1694, juan 8). It was customary for them to share their profits with the magistrate,

[21]Late imperial China operated a bimetallic monetary system. Silver bullion was used for tax payment and large transactions, while alloy coins known as "copper cash" (*tong qian*) were used in retail transactions. The state controlled the supply of copper coins through its mints, while the economy relied heavily on running trade surpluses to augment its silver supply due to the scarcity of silver deposits in China. Copper coins and silver bullion could be exchanged in the market at market determined rates.

who would then forward some of what he received to higher officials in the form of gifts (Xia, 1935, p. 411). Ch'u (1962, p. 29) cites a case where the extra silver collected from land tax payments was shared among the magistrate and his underlings in the ratio of 60% to 40%.

The Qing statutes prescribed harsh punishments for corruption. An official who extorted less than one tael of silver could be sentenced to 60 blows of the heavy bamboo.[22] However, it was relative uncommon for such punishments to be meted out. Of the over 400 officials impeached for corruption between 1736 and 1795, very few were prosecuted (Park, 1997, pp. 973, 996).

As Shiue (2004, p. 106) has pointed out, part of the problem lies with the difficulty in ascertaining whether an act was one of corruption. The difficulty was exacerbated by wide regional diversity in China. As stipulated taxes in late imperial China represented the amount that should eventually enter the state coffers, the imperial court had to allow some form of over-collection by local state agents to compensate them for the cost of tax collection.[23] Standardization of these surcharges was practically impossible given regional differences.[24] Predictably, most magistrates took the opportunity to demand more than what was necessary.

How severe was the problem of corruption? Zhang (1962, p. 32) calculated that during the first half of the 19th century, an average magistrate fetched an extra 30,000 silver taels annually, on top of his regular salary of 45 to 80 taels and official salary supplement of 400 to 2259 taels. By this estimate, the extralegal income of the 1500 Chinese magistrates (45 million taels) exceeded the amount of tax silver that entered the state coffers each year (around 40 million taels in the 1840s). This is before we consider the extralegal income of the provincial governors (180,000 taels), circuit intendants (75,000 taels), prefects (52,500 taels), and other officials. According to Ni and Van (2006), the extralegal income of Qing officials, which peaked in 1850, consumed 22% of China's agricultural output in 1873.

While one may question the accuracy of these estimates, contemporary observations suggest that corruption was indeed severe and increasingly so. The French missionary Père Amiot noted in 1782 that corruption was so deep-rooted in the Qing bureaucracy that "it is rare among the Chinese to find anyone in an official post who does not enrich himself" (Park, 1997, p. 999). Chester Holcombe (1842-1912), an American diplomat, commented that,

[22] 1 *kuping* (treasury) tael is equivalent to 37.3 grams of silver, theoretically 1000/1000 fine (Vogel, 1987). In 1800, it would take about 6.8 taels to feed and clothe an average person.

[23] The Kangxi emperor once mentioned in private that he would consider a magistrate who imposed a surcharge rate of no more than 10% on the regular tax an honest official (Ch'u, 1962, p. 219).

[24] This was attempted during the reign of Yongzheng (1723-35), when the Qing court legalized the collection of a "silver meltage fee" on top of the regular land tax to help pay for the cost of regional and local administrations. The sanctioned rates varied from province to province, with a nationwide average of about 12% on the regular tax (Wang, 1973, p. 70). Over time however, uneven inflation eroded the effectiveness of this reform so that legitimate claims could again be made to collect surcharges beyond the sanctioned levels (Zelin, 1984).

> The grave point of weakness and danger in the Chinese financial system, or lack of system, lies, so far as the government revenues are concerned, in the free opportunities which are afforded for extortion, illegal exactions from the people, and every form of officer robbery. It is safe to say that no tax is collected and paid over to the treasury in the exact amount stipulated by law. The subject invariably pays more than he ought, and the Emperor as invariably receives less than his due. And if the exact total of all sums collected for public purposes from every source in any year could be compared with the corresponding total actually devoted to public purposes in the same period of time, the enormous divergence between the two sums would astonish the world (Holcombe, 1895, pp. 348-349).[25]

The discussion here and the model presented in the next section focus on only one form of corruption—the extortion of taxpayers. In reality, corruption can present itself in many ways. For example, quid pro quo deals between state agents and a subgroup of taxpayers (primarily the gentry families) were a huge concern in Qing China. However, this (and other forms of corruption) can be treated as a special case of extortion—if the magistrate waived the tax of some powerful local family for a bribe, he would have to cover the subsequent shortfall in taxes by over-collecting from other taxpayers. Hence, while equating corruption with extortion is a simplification of reality, it does capture the essence of the historical situation in our context.

4 The Model

4.1 The Basic Model

Consider a single period game of taxation involving a ruler, a tax collection agency of measure B, a representative local elite, and a homogenous peasantry of measure N.

Let Y^E denote the income of the local elite, and Y^P the aggregate income of all peasants. Y^P is a function of the peasant population, and is subject to diminishing returns, so $Y^P = Y^P(N)$, and $Y^P(0) = 0$, $Y^P_N(.) > 0$, $Y^P_{NN}(.) < 0$. Furthermore, let y^P denote the income of each individual peasant, so that $Y^P = N \cdot y^P$. To keep the analysis simple, assume that the ruler can perfectly observe Y^E and Y^P.[26]

[25] Although Holcombe was appalled by the level of corruption in 19th century China, he was also deeply impressed by the mechanisms in place to check corruption. Commenting on the Censorate system, he praised that "...few nations have such a complete civil service as China, or one in which the checks and guards against injustice, oppression, and every form of maladministration have been so carefully, and with such apparent wisdom, wrought out (Holcombe, 1895, p. 223)." The contradiction in his statements reflects the practical difficulties of fighting corruption in a country as big as China.

[26] In reality, a state that suffers from a more severe principal-agent problem is less able to observe taxpayers' incomes. Incorporating this observation will strengthen the results.

The ruler taxes the local elite and the peasants at tax rate τ.[27] However, due to the constraints of time and distance, he cannot collect taxes himself. Instead, he entrusts tax agents to collect $\tau \cdot Y^E$ from the local elite and $\tau \cdot Y^P$ from the peasants on his behalf.[28]

Tax Agents. During the process of tax collection, a tax agent may abuse his authority by asking the taxpayers to pay an additional surcharge ϵ, which goes to his own pocket. However, he will never collect a positive amount of surcharge from the local elite as the latter can report the abuse to the ruler directly. Hence, the peasants are the only victims of bureaucratic extortion. Each of them faces an effective tax rate of $\tau + \epsilon$, while the local elite pays only the stipulated tax rate τ.

Abuse of authority is not risk free to the agent. After taxes are collected, the ruler conducts a performance evaluation which gives him a signal for every tax agent whom he has hired. The signal can only take two values: positive or negative. If an agent collects a surcharge of ϵ, there is a probability $q(\epsilon)$ that his signal will turn out to be positive, where $q(0) > 0$, $q'(.) > 0$, and $q''(.) > 0$. The probability of a corrupt agent being caught red-handed increases at an increasing rate with the level of corruption.[29]

The ruler punishes any agent associated with a positive signal by deducting U from the latter's utility. For now, let U be exogenously determined.[30]

The tax agent's problem is to pick an optimal surcharge rate that balances the benefit of corruption with the risk of detection and punishment. Mathematically, it is given by:[31]

[27] With reference to the discussion in the last section, τ represents the taxes that the imperial court explicitly authorized the magistrate to collect, as well as the amount of surcharges collected by the magistrate which the imperial court was willing to tolerate. Surcharges collected by the magistrate to provide local public goods would be counted into τ.

[28] The results will not change qualitatively if we allow the ruler to set different tax rates for the local elite and the peasants. Nonetheless, when informational problems are severe, it is unrealistic to allow the ruler to set different tax rates for different groups of taxpayers if these groups live in the same locality and are engaged in the same mode of production. In Ming-Qing China, peasant households who owned very small plots of land were sometimes granted certain tax exemptions or relief. Some rich landowning households took advantage of this by dividing their landholding into multiple tiny plots and registering them under different names to qualify for the lower tax rates. To cite another example, tax exemptions were initially granted to the families of bureaucrats during the early Qing. This encouraged other households to collude with these families and report their properties under the latter's name. Consequently, these privileges were withdrawn.

[29] An easy way to motivate a monitoring technology of this form is to suppose that whenever agent i collects a surcharge of $\epsilon^i \geq 0$, the ruler will receive a signal $\hat{\epsilon}^i$, where $\hat{\epsilon}^i$ has a normal distribution $N(\epsilon^i, \sigma^2)$ that is bounded between 0 and 1 (i.e. a truncated normal distribution). The ruler punishes the agent whenever $\hat{\epsilon}^i$ is greater than some threshold value $0 < m < 1$. It is easy to check that $q(0) > 0$ and $q'(.) > 0$ are implied by this setup. Ignoring corner solutions, it can further be verified that the agent will never set ϵ^i beyond m. This in turn implies that we can focus on the values of ϵ^i which correspond to $q''(.) > 0$. Here, σ measures the quality of the ruler's information. The higher is σ, the noisier his information.

[30] Since $q(0) > 0$, the ruler's signal is imperfect and punishment may be wrongly meted up. This will be important when we endogenize U later.

[31] The use of efficiency wages to incentivize agents is not considered here because when monitoring is costly and the probability of detecting an act of corruption is low, paying efficiency wages is inefficient (Besley and

$$\max_{0\leq\epsilon\leq r^P} V^A = \epsilon \cdot Y^P(N) - q(\epsilon) \cdot U \tag{4.1}$$

The Ruler. The ruler is self-serving and he wishes to set τ as high as possible. However, his ability to do so is constrained on two fronts. Powerful local elite may resist his demands. Peasants who lack political voice may also resort to armed violence if the tax rate is too high.

Let the ruler's bargaining power vis-à-vis the local elite be measured by r^E, where $0 < r^E < 1$. The ruler is politically incapable of taxing away more than r^E fraction of the local elite's income. Hence, $\tau \leq r^E$. If the ruler is despotic and there are few explicit checks on his power, r^E takes a value close to 1.

Similarly, to avoid peasant revolt, the ruler has to ensure that the effective tax burden on the peasants does not exceed r^P. So $\tau + \epsilon \leq r^P$, where $0 < r^P < 1$.[32]

Apart from setting τ, the ruler also determines the value of B, the size or coverage of his tax agency. Here, B is normalized so that $0 \leq B \leq 1$. For example, if $B = 1$, the ruler taxes the entire economy. If $B = 0.5$, the ruler can only extract taxes from half of the economy, and so forth.[33]

Maintaining a big tax agency is costly as intermediate layers of government are required to manage the tax agents. Let the cost be represented by $C(B)$. Given the pyramid structure of hierarchies, $C(B)$ is a convex function, and $C'(.) > 0$, $C''(.) > 0$.[34]

Summing up, the ruler's problem is given by:

$$\max_{0\leq\tau,\ B\leq 1} V^R = \tau \cdot B \cdot [Y^E + Y^P(N)] - C(B) \tag{4.2}$$

$$s.t. \qquad \tau \leq r^E \tag{4.3}$$

$$and \qquad \tau + \epsilon \leq r^P \tag{4.4}$$

The timing of events is as follows. First, the ruler determines τ and B. After which, tax

McLaren, 1993). A simple example will make this clear: A tax agent has the opportunity of extorting \$1000 from a taxpayer with a 0.2 probability of getting caught. For simplicity, suppose $U = 0$. We can calculate that the efficiency wage paid to the agent must exceed \$4000 to ensure that his payoff of not engaging in corruption exceeds his expected payoff of being corrupt. Therefore, the ruler (and the taxpayer) is better off allowing the agent to corrupt than to collect taxes from the taxpayer to pay the efficiency wage.

[32]While overtaxing the peasants would lead to rebellion and detection of abuse, the tax agents do not take (4.4) into consideration due to coordination problems among themselves. In other words, the ruler has an encompassing interest, the tax agents do not.

[33]Think of this setup as follows: Suppose the geographic size of the ruler's domain is π square distance. Given technological limitations, the maximum area that a tax agent can physically cover on duty is μ square distance, where $\mu << \pi$. Hence $B = 1$ if the ruler employs $\frac{\pi}{\mu}$ tax agents.

[34]For example, suppose every two officials require 1 intermediate supervisor. To hire 4 tax agents, the ruler will need to hire 2 supervisors. To hire 8 tax agents, 6 supervisors are required. Here, doubling the number of tax agents requires a tripling of supervisors.

agents individually select a value of ϵ to maximize their individual payoffs. They then proceed to collect taxes from the local elite and the peasants. Upon the completion of tax collection, the ruler punishes those agents associated with positive signals.

4.2 Analysis

Consider the two constraints in the ruler's problem. It is easy to see that out of (4.3) and (4.4), only one will bind in equilibrium. Which one binds depends on the nature of the regime. If the problem of fragmented jurisdiction is severe and the ruler's ability to set the tax rate is constantly contested by powerful feudal lords or urban oligarchies, (4.3) is likely to bind. On the other hand, if the ruler is vested with absolute power, (4.4) will likely be the binding constraint. This is especially so if corruption is severe and ϵ is high in equilibrium.

From now on, I shall only consider the case where (4.4) binds, which I call the case of a despotic state (as opposed to the case of fragmented jurisdiction).

A key determinant that drives the results of this model is the slope of the $q(.)$ function, which represents the degree of the principal-agent problem that confronts the ruler. If $q(.)$ is relatively flat, the ruler does not enjoy access to accurate information and acts of extortion are more likely to escape his detection. Hence, let us define the severity of the principal-agent problem as follows:

Definition 1. *The principal-agent problem is more severe in Country X than in Country Z iff:*

$$q'_X(\epsilon) < q'_Z(\epsilon) \quad \forall \quad \epsilon \geq 0$$

Result 2. *The more severe the principal-agent problem, the higher the level of corruption:*

$$\epsilon^*_X > \epsilon^*_Z \quad if \quad q'_X(\epsilon) < q'_Z(\epsilon) \quad \forall \quad \epsilon \geq 0 \tag{4.5}$$

Proof. The agents' problem gives us the following first order condition:

$$Y^P(N) = q'(\epsilon^*) \cdot U \tag{4.6}$$

This condition plus Definition 1 and the property $q''(.) > 0$ together imply Result 2. □

Result 2 also implies that fiscal inequality is higher where the principal-agent problem is more severe. Even though everyone faces the same stipulated tax rate, the peasants always pay more due to bureaucratic extortion. If agency cost is particularly high, the de facto

regressiveness in the tax system is likely to be especially acute.[35]

Result 3. *The more severe the principal-agent problem, the weaker the ruler's ability to tax:*

$$\tau_X^* < \tau_Z^* \quad if \quad q_X'(\epsilon) < q_Z'(\epsilon) \quad \forall \quad \epsilon \geq 0 \tag{4.7}$$

Proof. Since we are analyzing despotic states, constraint (4.4) binds in equilibrium. Hence, Result 3 follows directly from Result 2. □

Results 2 and 3 predict that where the principal-agent problem is most severe, corruption is most prevalent and the tax rate is lowest. That a severe principal-agent problem leads to a weak state does not imply that peasants pay less taxes in these regimes. Instead, we have a paradoxical situation whereby the ruler taxes little but the burden on the peasants is heavy.

Furthermore, since constraint (4.4) binds for a despotic state, the ruler's ability to collect more taxes is constrained by the peasants' ability to pay. If the principal-agent problem is severe (τ^* is low), even if the general economy prospers, the ruler may not be enriched in any meaningful way.

This observation may help explain why the Chinese imperial court was more interested in maintaining political stability than in promoting economic development, and why it showed more enthusiasm in fostering agricultural growth than in encouraging commercial expansion (Mokyr, 1990, pp. 237-8). The late imperial Chinese state's emphasis on light taxation and care for the people had greatly impressed Enlightenment thinkers such as Leibniz, Voltaire, and Quesnay, who praised the emperor's annual rite of plowing a furrow of soil to show his care for the common people's livelihood, and the Chinese state's effort to maintain a nationwide granary system to provide famine relief to its subjects (Perdue, 2004). The results here suggest that the emphasis on benevolent rule in Chinese political culture may be driven by rational motives.

Result 4. *The more severe the principal-agent problem, the smaller the bureaucracy:*

$$B_X^* < B_Z^* \quad if \quad q_X'(\epsilon) < q_Z'(\epsilon) \quad \forall \quad \epsilon \geq 0 \tag{4.8}$$

Proof. The first order condition of the ruler's problem is given by:

$$\tau^* \cdot [Y^E + Y^P(N)] = C'(B^*) \tag{4.9}$$

This condition, Result 3, and the property $C''(.) > 0$ together imply Result 4. □

[35] This is in line with the findings of recent empirical papers on corruption and inequality, which point to a significant correlation between the two variables. See Lambsdorff (2007) for a review of these papers.

An international comparison of the size of pre-modern governments provides some anecdotal evidence that geographic size is indeed positively correlated with agency costs. In 1750, there was on average one civilian official per 11,250 people in Qing China, and one per 10,000 people in Tsarist Russia (Pintner, 1980, p. 192). The direct tax system of Louis XIV's France alone hired 3,000 officers, or one in every 7,700 people (Collins, 2009, pp. 208 and 245). England, traditionally a nation of small government, already had one royal official for every 4,000 people by the 16th century (Sacks, 1994, p. 36). The smallness of the Chinese state is evident by comparison.[36]

The result is also in line with William Skinner's observation that there were more counties in China during periods of disunity than during periods of unification. In the sixth century when China was divided into three empires, the three administrations of Northern Zhou, Northern Qi, and Chen together governed approximately 2300 counties. Less than half a century later, when Sui, an offshoot of Northern Zhou, reunified China, the number of counties, now under a single central authority, shrunk to 1255 (Skinner, 1977, p. 22).

At some level, Result 4 echoes the claim made in Banks and Weingast (1992) that politicians would not set up agencies that are particularly difficult to monitor. Intuitively, since managing a bureaucracy is costly, the ruler will try to keep it small unless a bigger bureaucracy brings him more tax revenues. Simple as this result may appear, it actually provides important insights into the difficulties of state-building in countries plagued by high agency costs.

4.3 The Process of Growth

We now consider the game under a multi-period, infinite horizon environment. Effectively, only the ruler and the local elite are long run players. The tax agents are short run players as their positions are non-hereditary. The peasants make their own reproductive decisions, and each generation is replaced by their offsprings in the next time period. N is therefore now endogenously determined. While the peasants are not short-sighted and they care about their offsprings, coordination difficulties imply that they are unable to influence population growth either individually or as a class.

Otherwise, all previous settings are preserved. The timing of events at time t can be summarized as follows:

1. The ruler sets tax rate τ_t and size of tax agency B_t to tax the local elite and N_t peasants;

2. Each tax agent chooses his optimal rate of extortion ϵ_t and proceeds to collect taxes;

[36] As Needham and Huang (1974) put it, "Chinese bureaucratic government always appeared impressive in breadth while remaining shallow in depth".

3. Tax collection ends. The ruler evaluates all tax agents and punishes those associated with positive signals;

4. Peasants make private decisions on how many children to produce. These decisions collectively determines N_{t+1};

5. t ends and $t+1$ begins.

The ruler and the tax agents solve the same respective problems as before.[37]

The Peasants. Every peasant derives utility from his consumption as well as from the number of children he produces. To him, the two "goods" are complements and are subjected to diminishing marginal utility.[38]

At time t, a peasant's problem is given by:

$$\max_{c_t^P, n_{t+1}>0} u_t^P = u^P(c_t^P, n_{t+1}) \tag{4.10}$$

$$s.t. \qquad c_t^P + n_{t+1} \leq [1 - r^P] \cdot y_t^P \tag{4.11}$$

where $u_1^P(.) > 0$, $u_2^P(.) > 0$ $u_{11}^P(.) < 0$, $u_{22}^P(.) < 0$, $u_{12}^P(.) > 0$.

The above implies that the peasant population will evolve according to:

$$\frac{N_{t+1}}{N_t} = \frac{N_t \cdot n_{t+1}}{N_t} = g([1 - r^P] \cdot y_t^P) \tag{4.12}$$

where $g'(.) > 0$.

Condition (4.12) implies that the direction and rate of population growth depends on the peasant's net income per capita. This is in the spirit of Malthus. However, the story here is not a Malthusian one. As will be clear soon, in this model, population growth leads to suboptimal outcomes not because it triggers subsistence crises, but because demographic and economic expansion erodes fiscal and political stability by promoting corruption.

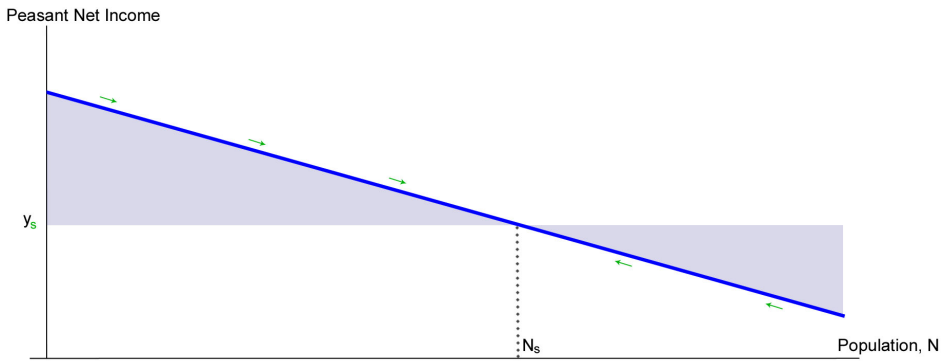
Let y_s denote the subsistence level of income, or the net per capita peasant income which corresponds to $\frac{N_{t+1}}{N_t} = 1$. As illustrated in Figure 2, if the initial population size is small, net per capita peasant income is high. Therefore, population will grow until net income level falls to y_s. On the contrary, if the economy suffered from overpopulation to begin with and net

[37] This presupposes that the ruler will not or cannot influence population growth. This condition is satisfied as long as the principal-agent problem is severe enough so that there is no room for him to cut taxes below the level that binds the no-revolt constraint (4.4), even if he wishes to do so.

[38] This setup is modified from Hansen and Prescott (2002).

per capita peasant income is below the replacement level, population will shrink until net per capita peasant income rises to y_s.

Figure 2: Converging to The Steady State Population Level



Result 5. *Corruption worsens with population growth:* $\frac{d\epsilon^*}{dN} > 0$.

Proof. This follows from the tax agents' optimality condition (4.6). □

Since the ruler has to ensure that the peasants are not overtaxed, Result 5 and the no-revolt constraint (4.4) in turn imply that:

Result 6. *The equilibrium tax rate* τ^* *falls with population growth:* $\frac{d\tau^*}{dN} < 0$.

Population growth has two effects on the ruler's finances, one positive and the other negative. On the positive side, it increases the aggregate output (and hence the tax base), but at a diminishing rate. On the negative side, the growth of the economic output $Y^P(N)$ encourages corruption. This decreases the tax rate or the fraction of the economic surplus available for the ruler to capture. The next result shows that in the case of a severe principal-agent problem, the negative effect of growth could eventually dominate its positive effect, so that growth actually hurts the ruler.

Result 7. *If* $q'''(.) \leq 0$*, there exists a population* N^{Max} *such that if* $N < N^{Max}$*, the ruler's revenue increases with population growth. If* $N > N^{Max}$*, the ruler's revenue decreases with population growth.*[39]

Proof. The ruler's period revenue at time t is given by:

[39] Under the setup laid down in footnote 29, the condition that $q'''(.) \leq 0$ is satisfied as long as σ is sufficiently high (as long as the ruler's information is sufficiently noisy).

$$v_t^R = \tau_t \cdot B_t \cdot [Y^E + Y^P(N_t)] - C(B_t) \tag{4.13}$$

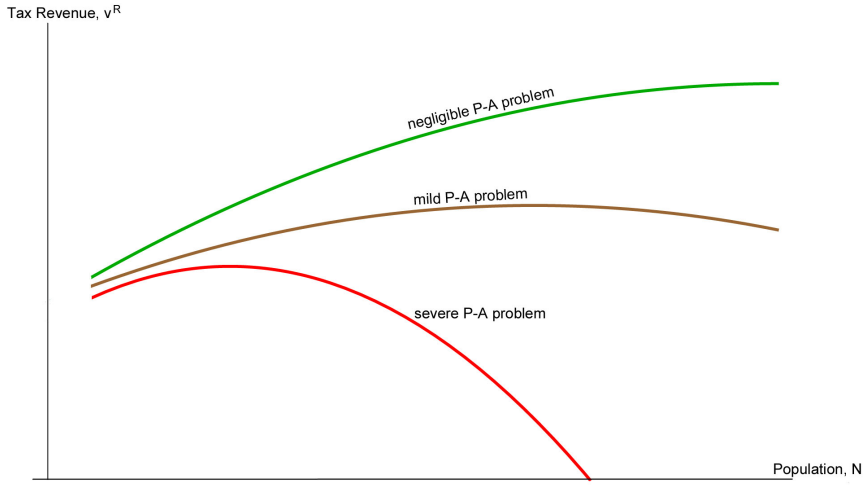
By envelope theorem, we have:

$$\begin{aligned} \frac{dv^R}{dN} = \frac{\partial v^R}{\partial N} \quad &= \frac{d\tau}{dN} \cdot B^* \cdot [Y^E + Y^P(N)] + \tau \cdot B^* \cdot Y_N^P(N) \\ &= [-\frac{q'(\epsilon)}{q''(\epsilon)} - \frac{Y^E}{q''(\epsilon) \cdot U} + \tau] \cdot B^* \cdot Y_N^P(N) \end{aligned} \tag{4.14}$$

If $q''(.) > 0$ and $q'''(.) \leq 0$, $\frac{q'(\epsilon)}{q''(\epsilon)} + \frac{Y^E}{q''(\epsilon) \cdot U}$ increases in N while τ decreases in N. Let N^{Max} represents the population level where $\frac{q'(\epsilon(N))}{q''(\epsilon(N))} + \frac{Y^E}{q''(\epsilon(N)) \cdot U} = \tau(N)$. If $N > N^{Max}$, growth leads to a contraction of state revenue. □

Recall that $q'(.), q''(.) > 0$. The more severe the principal-agent problem, the less sensitive $q(.)$ is to changes in ϵ, and the more likely $q'(.)$ will increase with ϵ at a constant or diminishing rate. If indeed it is the case that $q'''(.) \leq 0$, corruption will grow substantially as output expands.

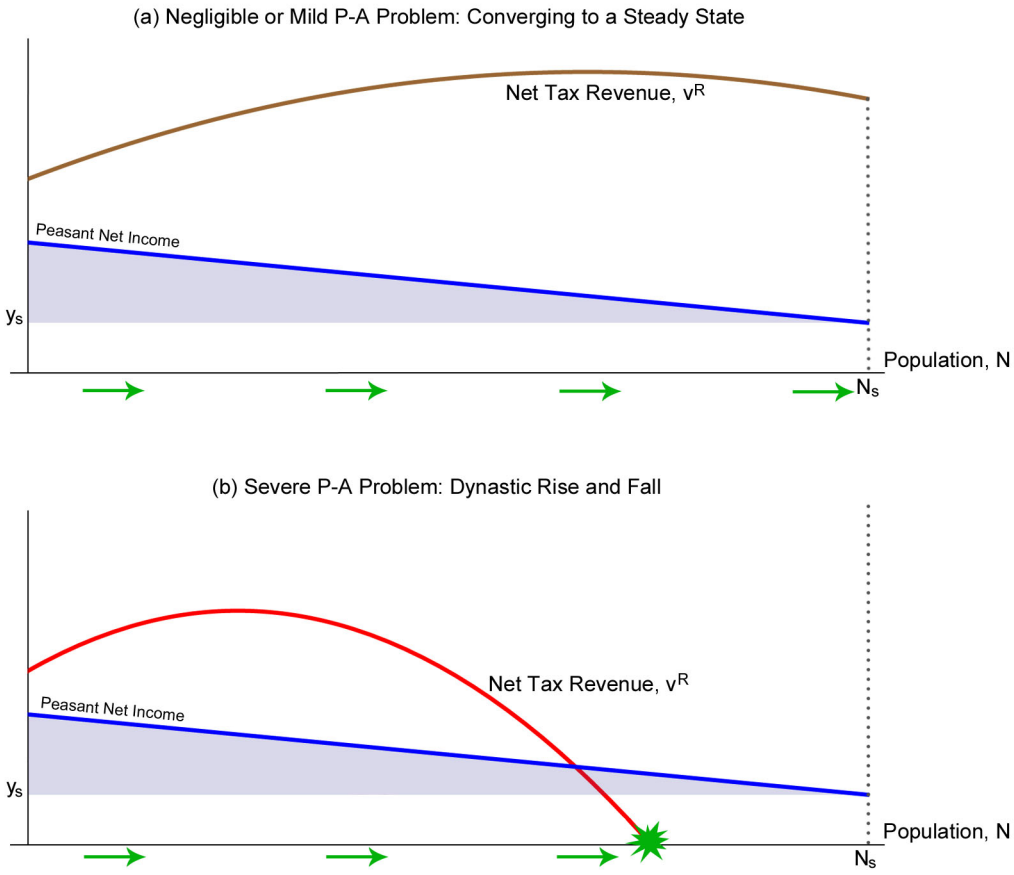
Figure 3: Degree of Principal-Agent Problem and Evolution of Fiscal Strength



As shown in Figure 3, population and economic expansion will always be beneficial to the ruler only if the principal-agent problem is negligible. Otherwise, the more severe the principal-agent problem, the earlier the tipping point where population growth turns from a boon to a bane for the ruler will arrive.

By combining Figure 2 and Figure 3, we have a theory on why and under what circumstances dynastic decline may emerge.

Figure 4: Two Outcomes



As Figure 4 illustrates, dynastic patterns emerges only if corruption has the tendency to worsen substantially in the face of population and economic expansion. Starting at a point where $N < N_s$, since the peasants are living above subsistence after taxation, population will grow. This in turn leads to a fall in the per-capita income of the peasants due to diminishing returns. If the principal-agent problem is mild, population growth will eventually come to a halt when the after-tax per-capita peasant income falls to y_s. At this point, the economy enters a steady state and will stay there until some exogenous shock occurs to knock it out of the steady state.

On the other hand, if the principal-agent problem is severe, state revenue dwindles fairly

quickly as N approaches N_s from the left. If state revenue drops to 0 before the after-tax per-capita peasant income falls to y_s, the regime goes bankrupt and collapses before it enters the steady state. Here, we observe a clear pattern of dynastic rise and fall. The establishment of the dynasty brings order and stability initially. This allows economic expansion to take place. However, in a paradoxical manner, the regime finds itself increasingly incapable of managing the prosperity which it helped create, and growth leads to collapse.[40]

Historians generally concur that corruption grew over time in Qing China (Fairbank, 1992; Naquin and Rawski, 1987; Rowe, 2009), and that the Qing rulers seemed increasingly unwilling to deal with the problem as it worsened.[41] Classical Chinese historiography attributes this to the gradual loss of moral vigor among the ruling class.[42] However, this view has been challenged by modern China historians, who have pointed out that the traditional consensus that the 19th-century emperors were uninspiring and conservative was unduly colored by the problems that emerged during their reigns which these leaders could do little about.[43] As the model suggests, a rise in corruption need not imply less vigilant rulers. State affairs in 19th century China had simply become intractable and would have overwhelmed even the ablest and most dedicated ruler.

4.4 When and why the ruler shows tolerance towards corruption

So far U_t, the level of punishment that the ruler metes out to tax agents suspected of corruption, is assumed to be exogenously determined. Allowing the ruler to set the value of U_t does not necessarily eliminate or mitigate the problem of control that he confronts. In fact, under reasonable assumptions, a rational ruler may show greater leniency towards corruption as it worsens, even though the activity is obviously detrimental to his interests as it channels a portion of the society's surplus that he could have captured to the private pockets of corrupt tax agents.

[40] That a society under despotic rule could evolve into a stationary state or into a dynastic cycle was proposed in Usher (1989). This thesis builds on the insight to show that agency costs are likely to determine which of the two outcomes would prevail.

[41] See the discussion in Mann and Kuhn (1978) on the Jiaqing emperor's reluctance to take the steps necessary to tackle the problem of corruption.

[42] The late Qian Mu, perhaps the best known classical Chinese historian of the 20th century, claimed that the decline of the Qing dynasty was caused by: (1) the deterioration in the leadership qualities of successive Qing emperors; (2) the increasingly corrupt behaviors of the officials and their underlings; and (3) sustained population growth (Qian, 1940, pp. 865-870).

[43] Li (2007) portrays a competent Jiaqing emperor who successfully orchestrated a flood control and famine relief campaign when a massive flood hit northern China in 1801. Dodgen (2001) sees Jiaqing's successor Daoguang as an earnest leader who worked diligently with his high officials to stabilize the increasingly fragile Yellow River flood control system, but was unfortunately thwarted by a depleted state budget and the deteriorating ecological environment. By studying the private testimonies written by individual officials who were interviewed by the emperor, Pierre-Étienne Will (2008) draws the conclusion that Daoguang "demonstrates a rather good command of the issues" and "certainly was a professional and dedicated ruler."

Instead of homogeneous tax agents, suppose now that there are two types of them: the corrupt type and the honest type. A corrupt agent weighs the benefit of corruption against the risk of punishment to decide his best course of action. On the other hand, an honest agent is incorruptible and never abuses office.

ω fraction of tax agents belong to the corrupt type and $1-\omega$ fraction belong to the honest type at any time. ω is exogenously determined and the precise value it takes does not matter to our analysis, as long as $0 < \omega < 1$.[44]

Suppose that the ruler cannot distinguish which type a particular tax agent belongs to but he has to keep honest people in the bureaucracy.[45] These two conditions are non-trivial, for they imply that the ruler cannot punish his servants freely.

Let the payoff function of an honest tax agent serving at time t be:

$$v_t^{Honest} = H - q(0) \cdot U_t - K(N_t) \tag{4.15}$$

H in the above equation is a strictly positive normalizing constant. It can be taken to represent a sense of warm glow felt by the honest tax agent for acting in an unselfish manner. $K(N_t)$ represents the tax agent's cost of performing his duty.[46]

At time t, an honest tax agent will only serve the ruler if $v_t^{Honest} > 0$. Given that $q(0) > 0$, there is a small but strictly positive probability that he may be wrongly accused of corruption. To prevent honest tax agents from opting out of service ex-ante, the maximum level of punishment that the ruler can mete out ex-post is:

$$U_t = \frac{H - K(N_t)}{q(0)} \tag{4.16}$$

If $N < N_s$ to begin with, population will grow over time. To keep honest tax agents in the bureaucracy, the ruler will have to lower U_t progressively so that equation (4.16) is not violated. As to be expected, his apparent indifference towards maladministration will in turn encourage corrupt agents to up the ante according to optimality condition (4.6).

To sum up, when officials are heterogeneous, overzealous anti-graft measures could have negative side effects (Besley and McLaren, 1993; Mookherjee and Png, 1995). In our context, if the ruler does not have access to accurate information on his agents' actions, a vigorous campaign against corruption could appear arbitrary, for it penalizes not only the corrupt

[44] The effective tax rate that the peasants face is now $\tau + \omega \cdot \epsilon$.

[45] For example, suppose that unlike the ruler, taxpayers have the ability to distinguish whether a bureaucrat is honest or not and they would lose hope on the regime and seek to overthrow it if they see that honest people are no longer willing to associate themselves with the regime.

[46] Recall that B_t is a normalized measure. At time t, the regime collects taxes from $B_t \cdot N_t$ taxpayers. Hence, each agent is in charge of $\frac{B_t \cdot N_t}{B_t} = N_t$ taxpayers.

agents, but the honest ones as well. The higher is $q(0)$, the more likely individual agents could be punished for crimes that they did not commit, and therefore the more circumspect the ruler has to be in meting out punishment.

4.5 Reversal in capital accumulation

To see how a fiscal crisis could spill over to the real economy, I now introduce investment into the model to endogenize Y^E. This extension yields a simple and straightforward result: long run fiscal and political uncertainties could lead to reversals in capital accumulation by undermining public confidence. A state that taxes too little, like one that taxes too much, could cause economic stagnation and a lack of investment.

Suppose the local elite's income Y^E is determined by the amount of capital stock K that he owns at time t. Let $Y_t^E = Y^E(K_t)$, where $K \geq 0$, $Y^E(0) = 0$, $Y_K^E(.) > 0$ and $Y_{KK}^E(.) < 0$.

In each time period, the investor loses a fixed fraction δ of his productive assets due to depreciation, but he can also make a non-negative investment to increase his capital stock. At time t, if he invests I_t, his capital stock at time $t+1$ will be:

$$K_{t+1} = (1-\delta) \cdot K_t + I_t \tag{4.17}$$

An important determinant of the investor's decision is his discount factor β. This in turn depends on how confident the investor feels about property rights protection in the future. Given that the collapse of a regime is likely to result in insecure property rights due to war and anarchy, if the investor regards a regime collapse in the next time period as a high probability event, he will discount the future more, and invest less today.

To reflect variations in the investor's confidence towards future property rights protection, suppose that the ruler receives a public goods expenditure shock W at the end of every time period. The shocks are randomly drawn from a distribution function. Mathematically, let $W_t = |X_t|$, which has a cumulative distribution function $F(.)$ with mean 0 and variance σ^2.

At time t, after W_t has been realized, if it turns out to be bigger than the period payoff of the ruler v_t^R, the regime goes into fiscal crisis and collapses. When this happens, the game ends and the capital stock ceases to reap future rewards for investors who owned them at time t.

If investors discount the future by the probability of the game not surviving into the next period, their discount factor will be given by:

$$\beta_{t+1} = F(v_t^R) - F(-v_t^R) \tag{4.18}$$

As the above condition suggests, β_{t+1} moves in the same direction as v_t^R. The higher is

v_t^R, the more stable the regime is and the more forward looking an investor will be.[47]

At time t, the local elite makes his investment decisions after taxes are collected and before the realization of W_t. Otherwise the timing of events is exactly the same as before:

1. The ruler sets tax rate τ_t and size of tax agency B_t to tax the local elite and N_t peasants;
2. Each tax agent chooses his optimal rate of extortion ϵ_t and proceeds to collect taxes;
3. Tax collection ends. The ruler evaluates all tax agents and punishes those associated with positive signals;
4. Peasants make private decisions on how many children to produce. These decisions collectively determines N_{t+1}. The local elite determines I_t;
5. The public goods expenditure shock W_t is realized;
6. If $W_t > v_t^R$, games ends. Otherwise, t ends and $t+1$ begins.

The ruler, the tax agents and the peasants solve the same respective problems as before.[48] The local elite's allocation problem at time t is given by:

$$\max_{C_{t+j}\geq 0,\ I_{t+j}\geq 0} V_t^E = \sum_{j=0}^{\infty}[\prod_{k=0}^{j}\beta_{t+k}\cdot U(C_{t+j}^E)] \tag{4.19}$$

$$s.t. \qquad C_{t+j} + I_{t+j} \leq (1-\tau_{t+j}^E)\cdot Y^E(K_{t+j}) \tag{4.20}$$

where $\beta_t = 1$ at time t, $U_c^E(.) > 0$, $U_{cc}^E(.) < 0$.

His Euler equation is therefore given by:

$$\frac{U_c^E(C_t)}{U_c^E(C_{t+1})} = \beta_{t+1}\cdot[1-\delta+(1-\tau_{t+1})\cdot Y_K^E(K_{t+1})] \tag{4.21}$$

[47] A local elite can influence the discount factor through his investment decisions, but for this to happen, he must coordinate his action with other members of his class. It is possible that setting up a legislative assembly or introducing democracy may facilitate the coordination process. As this model does not consider the possibility of institutional innovation, he is assumed to take the value of β_{t+1} as given here.

[48] Again this presupposes that these players will not or cannot influence β_{t+1}. One may suspect that under certain circumstances, it is in the ruler's interest to commit at time t that he will set τ_{t+1} below the level that binds the no-revolt constraint (4.4) to stimulate investment. However, such a commitment is unlikely to be credible as the ruler also has the incentive to renege on his promise at time $t+1$ and increase τ_{t+1} to the level that binds (4.4). In any case, as long as the principal-agent problem is sufficiently severe, the equilibrium value of ϵ will be high enough so that (4.4) binds. As for the tax agents and the peasants, their ability to influence β_{t+1} is severely restricted by coordination difficulties. See also footnotes 37 and 47.

This setup is almost identical to that of the standard neoclassical growth model. The only difference is that instead of assuming the discount factor β to be a constant that is unchanging over time, here it is allowed to vary from period to period to reflect variations in investor confidence over future property rights protection.

From equation (4.21), if β is assumed to be exogenous, it is natural to conclude that a weak state is always good for the economy, for a low τ_{t+1} encourages investment for the future.[49]

However, once β is linked to political stability, the picture becomes more ambiguous. Now a weak state (typified by a low β), like a strong one (typified by a high τ), could hurt investment, since a fall in β affects investment in the same direction as an increase in τ in equation (4.21).

Combining the Euler equation (4.21) with Result 7 gives us:

Result 8. *Sustained population growth could lead to a depressed economic environment.*

The scenario only emerges when the principal-agent problem is severe. If this condition is present, sustained demographic and economic expansion will generate rational expectations among investors when a fiscal crisis is imminent. As the economy moves closer to the twilight of the dynasty, a vicious cycle whereby political uncertainties and sluggish economic performance reinforce each other is likely to appear.

The setup here only allows the local elite to invest. This is admittedly arbitrary as there is no reason why others (the peasants) cannot do so. It is done nonetheless to deliver the point that political stability is no less important than low state exaction in encouraging investment. The local elite here do not suffer from local state oppression. In fact he enjoys a low tax rate thanks to the presence of local state oppression. Yet even someone as privileged as he is may not invest as long as there exist huge uncertainties to the security of his property rights.

In the model, W_t is assumed to be randomly drawn and independent of v_t^R. In reality expenditure shocks are likely to be positively related to the fiscal health of the state—floods become more frequent when the impoverished state cut corners in river control projects, monetary instabilities increase with fiscal difficulties, uprisings erupt readily when there are insufficient resources to maintain the social safety net or to keep the military effective, and foreign powers turn more aggressive when they sense the presence of a weakened prey. The political and economic downswing, once set in motion, could be more pronounced than the model predicts.

[49] The higher is τ_t, the bigger is $U_c^E(C_t)$ relative to $U_c^E(C_{t+1})$, and therefore the more the local elite consumes and the less he invests today given that $U_{cc}^E(.) < 0$.

5 Empirical Evidence

5.1 Distance and Agency Costs

This thesis argues that the severity of the principal-agent problem in a dictatorship increases with geographic size. Specifically, Results 3 and 4 offer two testable hypotheses to ascertain the validity of this claim.

First, if agency costs indeed increases with distance, according to Result 3, stipulated tax rate per capita across regions should differ spatially, with regions far from the capital enjoying lower tax rates to account for higher levels of corruption in these weakly monitored regions.

Second, Result 4 predicts that the presence of civilian administration should be more keenly felt in regions adjacent to the capital than in faraway regions. Given that the county was the lowest level of formal administration, and that it was held responsible for the collection of land taxes in late imperial China, if this hypothesis holds true, the number of counties per square area should be higher in the vicinity of Beijing and lower elsewhere, after controlling for regional differences in population density.

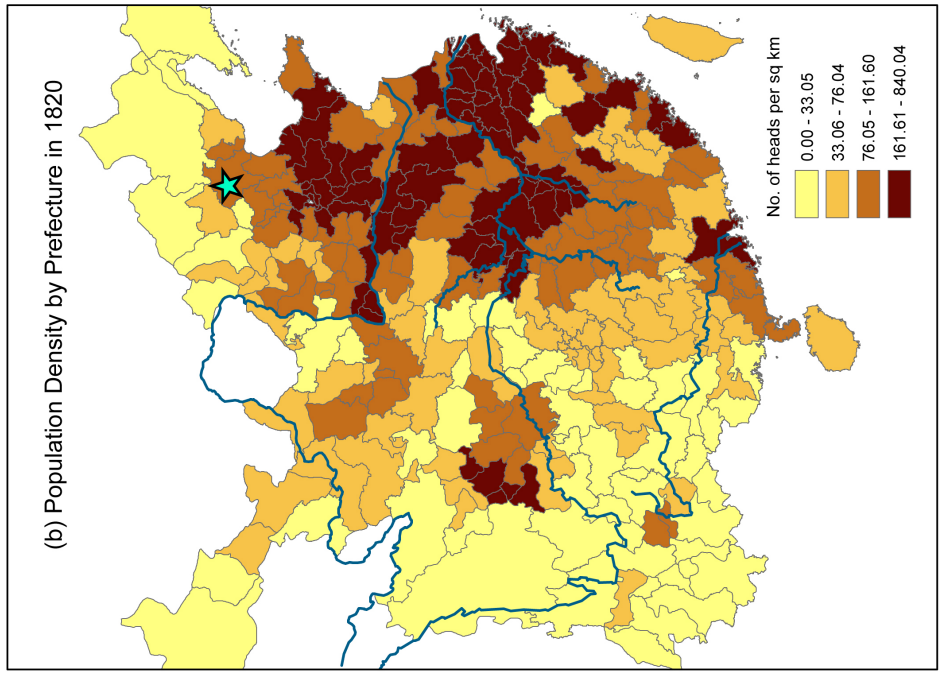
Data. Three sets of information are used here to test the predictions, of which the first two are prefectural-level data sets. The first data set is GIS-based.[50] It provides the demarcation of prefectures in 1820 China, as well as the area and the number of counties administered by every prefecture. The second data set, drawn from the *Grand Gazetteer of the Qing during the Reign of Jiaqing*,[51] gives us the number of inhabitants as well as the stipulated tax quota of every prefecture in 1820. Finally, I have plotted the imperial postal relay routes based on the descriptions in the Yongzheng edition of DQHD (Figure 5(a)). The imperial postal relay system ran errands between the capital and the provincial capitals. The imperial court replied on it to maintain communications with the rest of the country.

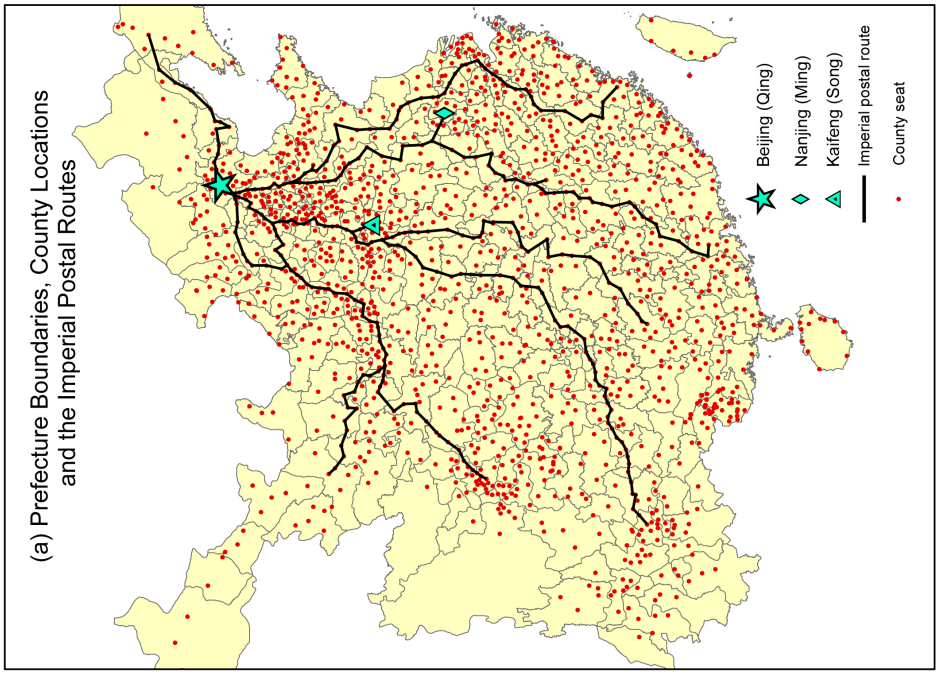
Figure 5 presents the information using maps. Figure 5(a) depicts the imperial postal relay routes (marked by black lines), as well as the location of the county seats (represented by red dots). Figure 5(b) illustrates population density in 1820 China. Put together, the two maps seem to suggest that distance from Beijing matters—more counties were set up in the north than in the south. Furthermore, county density also appears to be positively associated with population density, since both are generally higher in the east than in the west.

Empirical specification and result. OLS and IV regressions are employed here. First, I regress land tax per capita (TAX, in grams of silver) on distance from Beijing (D, in 1,000

[50] CHGIS, Version 4, Cambridge: Harvard Yenching Institute, January 2007.
[51] *Jiaqing Chongxiu Yitong Zhi* as reproduced in Liang (2008) as well as in Cao (2000).

Figure 5: County Density and Population Density in 1820





kilometers) as well as population density (Y, 100 heads per square kilometer).[52] Following Acemoglu et al. (2002), population density is used as a proxy for agricultural productivity per capita:

$$TAX = \beta_0 + \beta_1 \cdot D + \beta_2 \cdot Y \tag{5.1}$$

Column (a) of Table 1 provides the regression output. Consistent with Result 3, the coefficient estimate of β_1 is negative and statistically significant at 1% level. This result remains intact in column (b), when size of prefecture size as well as elevation above sea level are added as control variables.

One may worry that the imperial postal relay routes might have been designed to pass through regions of high county densities. To correct for this potential problem of endogeneity, I use direct (straight-line) distance between prefectural seat and Beijing as an instrument variable for D. As there is no obvious reason for direct distance to be correlated to TAX other than through D, it appears to be a good instrument. In column (c), the high value of the first-stage F-statistics on excluded instruments shows that direct distance pass the weak instrument test, and the coefficient estimate of D remains negative at 1% significance level.

Table 1: Effect of Distance on Land Tax Burden and Administrative Presence, circa 1820

	(a) OLS	(b) OLS	(c) IV	(d) OLS	(e) OLS	(f) OLS	(g) OLS	(h) OLS	(j) IV
	TAX	*TAX*	*TAX*	*B*	*B*	*B*	*B*	*B*	*B*
	Land tax per capita	Land tax per capita	Land tax per capita	County density	County density	County density	County density	County density	County density
D	-1.05***	-1.14***	-0.83***	-1.22***	-2.36***	-1.22**			-0.96**
Distance from capital	(0.30)	(0.30)	(0.30)	(0.26)	(0.39)	(0.46)			(0.47)
D_Kaifeng							-0.00		
Distance from Kaifeng							(0.00)		
D_Nanjing								0.00*	
Distance from Nanjing								(0.00)	
Y	1.14***	1.20***	1.23***	1.61***	1.82***	1.61***	1.71***	1.96***	1.64***
Population density	(0.33)	(0.36)	(0.35)	(0.18)	(0.19)	(0.18)	(0.16)	(0.13)	(0.17)
No. of observations	269 (all obs)	269 (all obs)	269 (all obs)	269 (all obs)	168 (obs < 2000 km from capital)	269 (all obs)	269 (all obs)	269 (all obs)	269 (all obs)
R-squared	0.26	0.27		0.57	0.62	0.57	0.54	0.54	
Standard errors	Robust	Robust	Robust	Robust	Robust	Clustered	Clustered	Clustered	Clustered
Control variables	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F on excluded instrument			2670.3						483.1

Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%.

[52] D represents the sum of two components: direct distance from prefectural seat to provincial capital, and actual distance by imperial postal relay routes from provincial capital to Beijing

Next, I replace TAX with B, the number of counties per 10,000 square kilometers, as the dependent variable, and regress it on D and Y. In line with the predictions of Result 4, in column (d) we see that the coefficient of D is negative while that of Y positive at 1% significance level.

Subsequently, I conduct a few robustness checks. To ensure that the results are not driven by outliers in peripheral regions where imperial rule was traditionally weak, the regression in column (e) drops the prefectures more than 2000 kilometers away from Beijing, or roughly one-third of the number of observations. In column (f), instead of using robust standard errors, the standard errors are clustered by province. In both instances, the results remain unchanged qualitatively.

One may worry that the geographical distribution of counties that we see in Figure 5(a) could just be a result of historical contingency. The Qing dynasty could have inherited the structure left behind by its predecessors even if that structure was ill-suited to meet its administrative needs. To see if this may be the case, instead of using distance from Beijing as a regressor, I replace it first by distance from Kaifeng in column (g), and then by distance from Nanjing in column (h). These two cities were Beijing's predecessors as the capital of China: Kaifeng (Bianjing) during the Northern Song and Nanjing (Yingtian) during the early Ming. As the output in (g) and (h) shows, the coefficient estimates of distance are economically and/or statistically insignificant.

Finally in column (j), to correct for the potential endogeneity of D, I again use direct distance as an instrument. It passes the weak instrument test. The coefficient of D remains negative, and that of Y positive, at 1% significance level.[53]

5.2 Fiscal decline through the golden age

The remaining of this section presents historical evidence to show that state finances in Qing China deteriorated over the course of the 18th century as corruption rose in the face of population growth, in a manner that is consistent with the predictions of Results 5, 6, and 7.

Falling tax revenues. Using archival as well as published primary records of the Qing dynasty, I have reconstructed the the Qing state's tax revenues between 1650 and 1850 to analyze how it evolved over time. Result 7 predicts that economic expansion could hurt a regime plagued by severe agency problems. This is consistent with the pattern that we see in Figure 6. Although the prosperous age of the High Qing did not end until late in the 18th

[53] I have also carried out the same robustness checks using TAX as the dependent variable. The results are affirmative of what we have discussed so far. To save space, they are not reproduced here.

century, in real terms, the Qing state's tax revenues reached a peak during the early 1700s, and fell steadily from there (Figure 6b).

If we take basic standard of living to represent an annual consumption of $3\frac{1}{3}$ *shi* of grain per capita,[54] the Qing state's tax revenue would be sufficient to feed and clothe 9.6% of the Chinese population in 1685, 7.7% in 1724, 5.4% in 1753, 4.1% in 1791 and 2.3% in 1848. By this measure, state extraction ratio fell by three-quarters in slightly over one-and-a-half century. Compared to Britain, the contrast is illustrative (Figure 7).

The trend in Figure 7 is also consistent with Result 6, which predicts that tax rates would decline over time. In practice, the Qing state did not adjust tax rates regularly. Where the land tax is concerned, the tax liability of a household was expressed as a fixed amount of silver per plot of land. This stipulated nominal sum hardly changed over time. During the early and mid-18th century when inflation was positive, the decline in the real tax rate was automatically achieved through rising price levels (Figure 8). It was only when the long term price trend reversed itself during the late 18th and early 19th century that the Qing court had to grant tax waivers (*juan mian*) or postponements (*huan zheng*) to relieve the tax burden of the peasants.[55]

Classical Chinese historiography blamed a succession of increasingly incompetent rulers for China's woes in the 19th century. However, as the evidence above illustrates, the steady contraction of the Qing state's fiscal capacity began before Jiaqing and Daoguang—the "weak" rulers of the early 19th century—were even born.

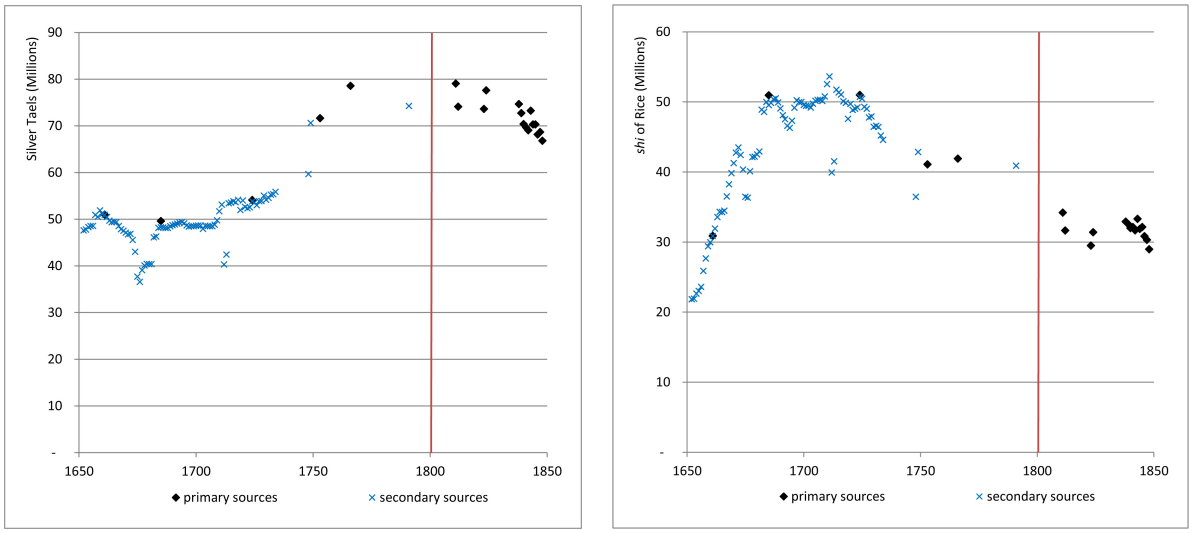
On the other hand, some scholars attribute China's contrasting fortunes before and after 1800 to contingency and exogenous factors. Li (2007) suggests that climatic change in the 1820s led to an extended period of depressed farm productivity in the Yangzi delta, China's richest region, which in turn helped to usher in the socioeconomic crisis of the mid-19th century. According to Rosenthal and Wong (2011), China's path to industrialization would have been far more straightforward if not for the political and military problems which the West and Japan were at least partly responsible for.

Figure 6(b) indicates that external shocks did contribute to China's plight in the 19th century, but state finances in Qing China began to worsen long before the negative events of the late 18th and early 19th centuries took place. In this regard, China's developmental problems cannot be entirely attributed to exogenous events. It was the sustained enfeeblement of the Chinese state which began in the 18th century that denied China the collective ability to deal with these shocks effectively when they arrived in the 19th century.

[54] This would cover expenditure on clothing, food, and food supplements such as oil and salt (Huang, 2003, p. 158).

[55] In 1812, 1824, and 1848 respectively, 14.1%, 6.2%, 14.2% of the land tax were waived or exempted nationally according to my calculation.

Figure 6: Estimates of the Late Imperial Chinese State's Tax Revenue

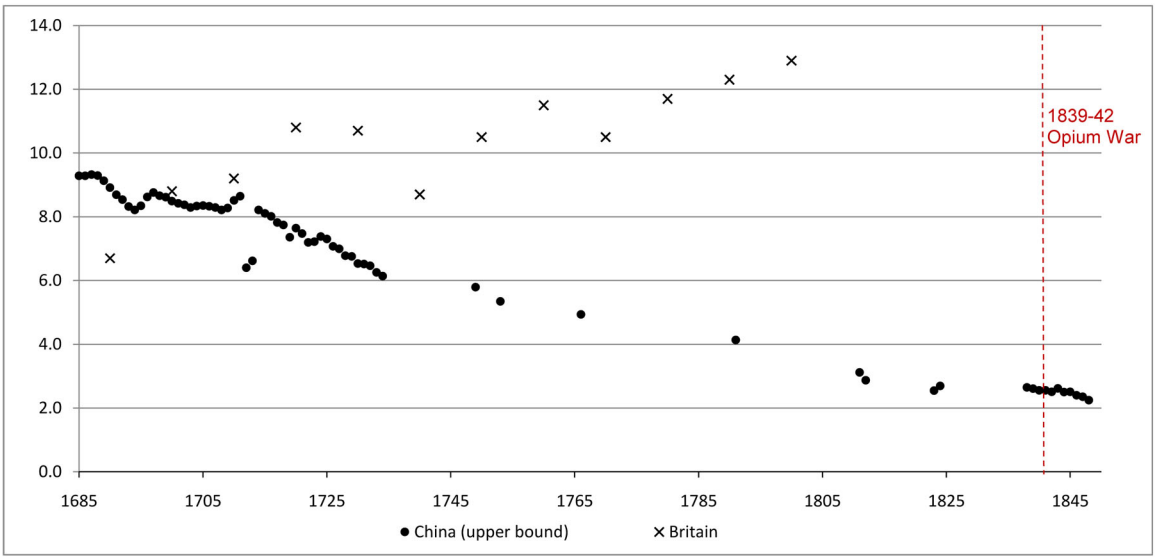


(a) Nominal

(b) Real

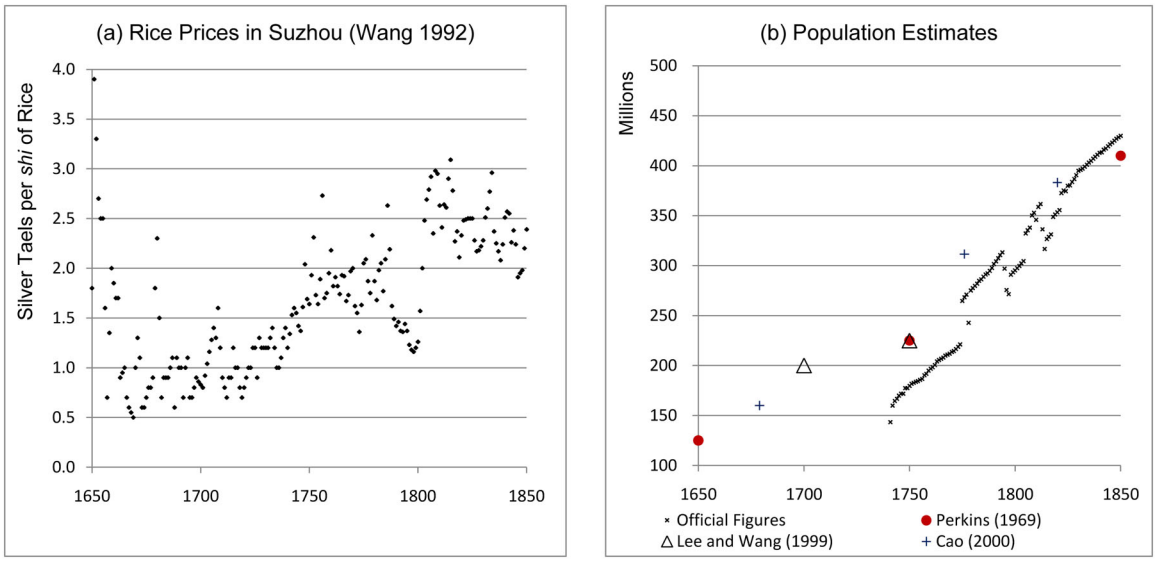
1. Includes *diding* (land and head taxes), the salt tax, customs duties, miscellaneous taxes, and the grain tax. The grain tax was a tax-in-kind. All other taxes were denominated in silver.
2. Includes actual amount of taxes reported plus estimated costs of collection. Illegitimate and excessive "squeeze" by tax middlemen are not included. I assume that for every unit of silver collected, a tax collector could legitimately charge 25% extra on the taxpayer to write off the administrative costs. Since grain was more costly to transport and store, the cost of grain tax collection is set at a higher rate of 37.5%.
3. Silver-to-grain conversion is based on the rice price series in Wang (1992, column 5, Table 1.1). Since a significant portion of the grain tax was denominated in cheaper grains such as beans, this actually overestimates the value of the grain tax and hence aggregate tax revenue.
4. For data points from "primary sources", disaggregated provincial-level information on some monetary taxes is available. The base numbers for 1661, 1685, 1724, and 1753 came from DQHD, 1766 from QCWXTK, 1811-12 from SLXK (1930), 1823-24 from DGCRQD, 1838-48 from DGJMZC.
5. Data points from "secondary sources" are mostly drawn from the *Veritable Records of the Qing dynasty* (QSL). This is a collection of records compiled after the death of every Qing emperor, which documented in chronological order the important monarchic decrees and court activities during each emperor's reign. Though these records are official documents, the quality of the fiscal information that they contained is slightly doubtful because: (a) their compliers, usually drawn from the National Academy (Hanlin Yuan), were not fiscal specialists; (b) they were usually compiled long after the year-in-question; (c) they provide very limited disaggregated information for cross-checking. Three data points in this secondary series do not come from QSL: The aggregate annual silver tax revenues for 1748 and 1749 were cited in a Board of Revenue President's memorial to the throne (ZYCZ, vol. 1); the base numbers for 1791 are drawn from QSG (1927, juan 125), the quasi-official historical account of the Qing dynasty compiled in the early 20th century by former officials after its collapse.
6. As there is no information on receipts from customs stations in the *Veritable Records*, I assume that the amount of customs duties collected in 1652 was 1.2 million silver taels and it grew linearly to 1,219,782 silver taels in 1685 as recorded in the Kangxi edition of DQHD. Justification for doing so comes from QSG, juan 125, which stated that "Peace began to return by the 9th year of the Shunzhi reign (1652)...customs duties exceeded more than a million silver taels".
7. Information on the grain tribute (*caoliang*) which made up slightly over 50% of the grain tax in 1753 is well documented (Li and Jiang, 2008, pp. 38-39). However, there is scant information on the remaining portion of the grain tax from the second half of the 18th century onwards. This missing portion, known as *bingmi* (literally "rice-for-soldiers"), was consumed within the province of origin by imperial garrisons stationed there. Since the size of the Qing army remained fairly stable throughout this period, here it is assumed that the actual amount of *bingmi* collected after 1753 remained at the 1753 level (Alternatively, we can assume that the ratio of *caoliang* to *bingmi* stayed at the 1753 level after 1753. Since the *caoliang* figures were falling during this latter period, this assumption would cause a steeper decline in state revenue after 1766.

Figure 7: Hypothetical Tax-to-GDP Ratio: China and Britain (%)



Sources: Figure 6; O'Brien (1988, p. 3).

Figure 8: Inflation and population growth



Finally, some China historians see the Qing state's fiscal weaknesses as a direct consequence of its adherence to the Confucian ideal of benevolent rule.[56] According to this argument, the Qing emperors were keen to distinguish themselves from the last rulers of the preceding Ming dynasty, who were toppled by a peasant uprising in 1644 after they raised the land tax three times in less than thirty years.[57] As such, the Qing emperors were reluctant to raise taxes.[58] In 1713, the Kangxi emperor even announced a permanent freeze on the head tax, as it was found to be excessively regressive in practice.[59]

There is no inherent contradiction between the above interpretation and the hypothesis in this paper, unless one sees the Qing emperors' emphasis on benevolent rule as one of preference rather than one driven by circumstances. A close look at historical evidence suggests that although the Qing emperors' decision to keep taxes low and fair was couched in ideological terms, it was clearly very much motivated by practical needs: Huang (1974) has shown that the average tax burden during the late Ming dynasty was nowhere near exorbitant even after taking into account the three tax hikes.[60] The tax hikes were oppressive only because they were regressive. Given that a seemingly reasonable amount of tax increase could easily translate into an exorbitant jump in the poor's burden, the Qing state had to keep taxes low to ensure that the exploitation of the weak and poor was sustainable.

Rising corruption. Only anecdotal evidence is available to inform us about the trend of corruption in late imperial China, but there is an abundance of it. In line with the hypothesis, it is widely observed that corruption worsened over time in Qing China, and it was the have-nots in the society that bore the brunt of growing maladministration.

Major corruption scandals took place infrequently during the reigns of Shunzhi (1644-61), Kangxi (1662-1722), and Yongzheng (1723-35). By the Qianlong's reign (1736-95), they

[56]For example, see Rowe (2009, p. 66).

[57]Ironically, the tax hikes were imposed to shore up border defenses against the newly founded Later Jin (Qing) empire.

[58]Furthermore, no national land survey was ever conducted during the 268 years of the Qing dynasty. Agency problems played a part in the Qing emperors' unwilling to deal with the problem of unreported acreage. There were many instances of reported abuse when small scale land surveys were conducted during the early years of the Qing dynasty (Wang, 1973, p. 27). It was found out that local officials and their underlings took the opportunity to extort fees from the people. When the Yongzheng emperor made officials compete with one another to report newly reclaimed land, it led to a wave of false reporting and taxpayers were made to shoulder taxes on lands that never existed (Rowe, 2009, pp. 94-5). Consequently, the policy had to be abandoned.

[59]The topic of *junding* (equalizing the head tax) was widely discussed in the *Collected writings on statecraft of the Qing dynasty* (HCJSWB, juan 30), a prominent anthology on statecraft compiled by the Qing scholar He Changling (1785-1848). Kangxi's successor Yongzheng took the additional step of merging the head tax into the land tax to shift the tax burden away from the poor.

[60]The Ming state collected 25-30 million taels of silver from land taxes and service levy before 1600 (about 10% of the agrarian output). The tax increases in the early 1600s amounted to no more than 21 million taels a year. According to Ray Huang, "the tax increases were to a large extent illusory" as prices rose by 40% during this period (Huang, 1974, pp. 175, 183, 308).

became a regular occurrence. Out of the 139 people who served the Qianlong emperor as provincial governors or governors-general, 30 of them, or over 20% of the total, were implicated in corruption scandals (Park, 1997, p. 968). In 1799, Heshen, the grand councillor and the de facto prime minister, was famously impeached and sentenced to death. An imperial censor lamented in 1803 that even county government clerks were dressing so luxuriously that it was no longer possible to tell their status from their appearance (Mann and Kuhn, 1978, p. 112). The scholar Hong Liangji (1746-1809) remarked that when he was young, magistrates usually retired with enough to provide for his family for generations. When he grew older, that surplus had increased tenfold as corruption worsened (Ch'u, 1962, p. 31).

At the local government level, surtaxes unauthorized by the central government proliferated over time. In the province of Shanxi, 12 surtax items were imposed between 1735 and 1795, 7 additional items were imposed between 1796 and 1820, and 15 more between 1821 and 1850 (Wang, 1973, p. 59). In the southern province of Guangdong, where peasants were asked to pay their grain tax in silver, the commutation rate fixed by officials rose from 2 silver taels per *shi* of grain in the second half of the 18th century to more than 7 taels per *shi* by the mid-19th century, an increase that was far more than inflation could justify (Lin, 1997).[61]

One type of "squeeze" that became prevalent was the practice of discounting the value of grain commoners submitted for tax payment (*zhekou*). When a tax payer submitted 1 *shi* (10 *dou*) of grain as tax payment, county agents would count the grain for less than that. In the early years of the Qianlong's reign, the prevailing discount rate was no more than a few percentage points. By the second half of the 18th century, 1 *shi* of grain would only count as 7, 8, or 9 *dou* during tax submission.[62] It fell further to 5, 6 *dou* during the first half of the 19th century (QSG, 1927, juan 121).

Not all taxpayers were affected by these practices in the same way. The rich and powerful households could always rely on their political patronage to protect themselves against local state oppression. Although the imperial court explicitly banned the classification of tax payers into "big households" (*da-hu*) and "small households" (*xiao-hu*), at the local level this practice became increasingly common over time. In northern Jiangsu during the 1840s, it was observed that "small households" were paying 6000 to 16,000 *wen* for every *shi* of rice that they owed in taxes, while "big households" were charged the market rate of 2000 to 3000 *wen* per *shi* of rice (Wang, 1973, p. 38).

As observed by the scholar-official Feng Guifen (1809-1874), although tax liabilities were supposed to be computed at the household level based on the amount and quality of land each household owned, in practice one's effective tax rate was always inversely related to his

[61] *shi* was a volume measure, equivalent to 103.5 liters or 2.94 bushels (Rawski and Li, 1992).

[62] Ch'u (1962, p. 141) citing Wang Huizu, who served as a magistrate during the latter years of the Qianlong's reign.

wealth and influence in local society. There were gentry families who owned huge plots of land but "never had the experience of paying any taxes", while commoner households could end up paying three to four times more taxes than their legal obligations (Feng, 1876, juan 10).

6 Reduction in public goods provision

Result 8 shows that persistent fiscal weaknesses could undermine the economy as the state becomes increasingly unable to pay for essential public goods that protect property rights. This was the fate that China suffered on the eve of the Industrial Revolution. By the late 18th century, the signs were clear that the once proud Qing dynasty no longer had the ability to contain foreign threats and mitigate social tensions in local societies.

Table 2 provides a glimpse at the Qing state's role in the economy of late imperial China. It suggests that the regime contributed to the economy's well-being mostly in an indirect manner—through the protection of property rights. Through its military, the regime provided peace, which was crucial for economic exchanges to take place. This was reinforced by the civilian administration, which administered justice and maintained social order. Together, these two items accounted for more than 80% of the Qing state's budget in 1766.

Table 2: Estimates of the Qing State's Silver Expenditure (1766)

Item	Amount (1000 taels)	Share (%)
Military (Peace time)	24,880	60.6
Civilian administration	9,620	23.4
Yellow River conservancy	3,850	9.4
Imperial post stations	1,950	4.8
Imperial mints	240	0.6
Palace expenses	270	0.7
Miscellaneous	250	0.6
Total	41,060	100.0

Sources: QCWXTK (1787, juan 40), QSG (1927, juan 125).

The result in Table 2 confirms what historians have long observed—that due to its small budget, the Qing state adopted a minimalist and largely hands-off approach in the provision of local public goods and the promotion of economic growth (Perkins, 1967; Myers, 1982; Feuerwerker, 1984). With the notable exception of trade along the Grand Canal, most long distance trade was carried out among regions either well served by natural inland waterways

or along the coast. Land transportation, which would require investment in infrastructure, appears to have been underdeveloped.[63] Traditionally, the Board of Public Works ranked last in the six central government ministries. A popular saying described the Six Boards as the "wealthy" Board of Revenue, the "noble" Board of Civil Appointments, the "prestigious" Board of Punishments, the "mighty" Board of War, the "impoverished" Board of Rites, and the "lowly" Board of Public Works – or *fu*, *gui*, *wei*, *wu*, *pin*, *jian* in that order (Xu, 1917).

Proponents of the "Big Push" theory may argue that industrialization in China was hampered because the Qing state was too weak to coordinate investments across sectors and push the country out of the no-industrialization trap—for example, it did too little to invest in education or basic infrastructure such as roads, harbors, and (later) railways (Rosenstein-Rodan, 1943; Murphy et al., 1989).[64] Even if we reject this strong form view that the state has a direct role to play in promoting economic development, and judge the Qing dynasty entirely on the weaker criteria of a night watchman state, there is ample reason for us to doubt its ability to deliver a consistent performance in the realm of property rights protection. Since military and civilian administrations together accounted for more than 90% of the government's silver expenditure, a sustained fiscal squeeze was bound to hit the two areas hard. Indeed, this was how history unfolded.

Military. The defense of the Qing empire during this period depended on two military systems: the Eight Banners and the Green Standard Army.[65] The Eight Banners garrisoned Beijing as well as the strategic approaches to the capital, while the Green Standard troops were deployed to defend the provinces.

There were about 112,600 banner soldiers in 1634. By the mid-18th century, the number grew to about 200,000 (Feuerwerker, 1976, pp. 54-55). To cut state payroll, measures were taken during the reign of Qianlong, for example, to decommission Han Chinese bannermen (*chu qi wei min*).

On the other hand, the size of the Green Standard Army stood at around 600,000 (Wang, 1890). Table 3 illustrates the size of the Green Standard troops deployed in four provinces in South China.

These provinces are of particular interest because the main battles of the Opium War (1839-42) were fought along the coastal provinces of Guangdong, Fujian, and Zhejiang, while the Taiping Rebellion (1850-64) originated in Guangxi. In each of the four provinces, the size

[63] As a result, overland transport was significantly more expensive relative to water transport in China compared to Western Europe (Shiue and Keller, 2007).

[64] This argument was made, for example, in Li (2003).

[65] The Eight Banners system was set up during the founding years of the Qing (Jin) empire. The Green Standard Army was later formed to absorb Han Chinese soldiers who surrendered to the Qing during its conquest of China proper.

Table 3: Troop Deployment in Four Southern Provinces

Year	Guangdong	Fujian	Zhejiang	Guangxi
1689	73,100	69,726	43,450	20,000
1764	72,565	66,566	41,529	24,166
1785	68,094	63,119	40,037	23,588
1812	69,007	63,324	39,009	23,408
1821	69,181	63,096	36,830	23,101
1849	68,322	61,675	37,565	22,472
Population (1766)	6,938,855	8,094,294	16,523,736	4,706,176
Population (1820)	21,558,239	18,546,446	26,422,380	7,416,287

Source: Wang (1890).

of its military shrunk over time before disaster struck.

The military cuts were implemented not because of complacency. The Qing court was fully aware of its military weaknesses, especially at sea. Much has been made about the Qianlong emperor's snubbing of the Macartney mission in 1793. However, as Waley-Cohen (1993) points out, Qianlong's behavior had more to do with diplomatic posturing than to a lack of awareness towards Western technological superiority. Immediately upon Macartney's departure, the emperor instructed coastal provinces to bolster coastal defence,

> That they (Britain) made such outrageous demands shows that we must make preparations in case they harbor evil intentions. The defence of our coast is most critical. In recent years, our coastal patrol and surveillance have been lax, fighting ability has deteriorated, we must do something about it (QSL, reign of Qianlong, juan 1436).

In 1834, five years before the Opium War, his grandson the Daoguang emperor made remarks in the same vein after two British warships intruded into Chinese waters and sailed up the Pearl River with ease (SLXK, 1930, v. 3, p. 231),

> It seems that our cannon platforms are as good as useless. How laughable and deplorable it is that we cannot even repel two barbarian ships. Our military had decayed so much. No wonder the barbarians are looking down on us.

Yet nothing was done as Daoguang placed his priority on restoring his regime's fiscal viability and would not welcome new expenditure commitment. The pressure on state finances was so severe that during the Opium War, Daoguang ordered troops along the coast to began

demobilization as soon as the first round of fighting stopped "to cut costly outlays" (*yi jie mi fei*), before a peace deal had been concluded (CBYWSM, pp. 473, 491, 512).

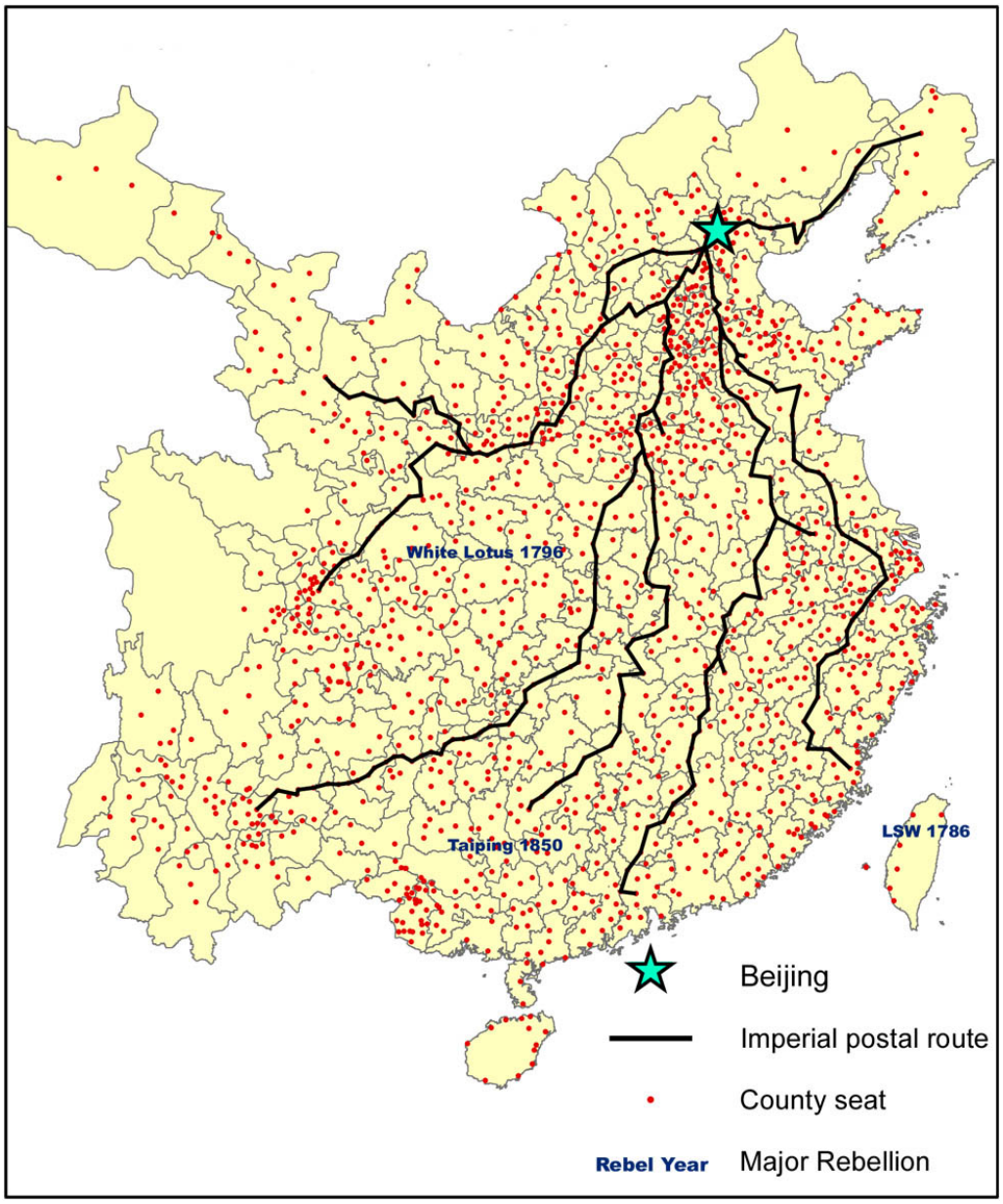
Local Administration. Even at the height of Qing power, the Qing society was "under-governed". In 1724, there were only 1360 counties, or one county for nearly 150,000 Chinese (Ch'u, 1962, p. 2). This was woefully inadequate, as the county was *the* level of administration that dealt directly with ordinary people. The situation only got worse over time, as the Chinese population more than doubled between 1700 and 1850 while the numbers of counties barely increased at all.

Where the judiciary process was concerned, the magistrate was the only imperial officer in the county administration authorized to preside over court proceedings. The weak presence of the state in the Chinese society explains China's traditional reliance on kinship-based organizations to promote law-abiding behaviors (i.e. prevent cheating and free riding), as well as its dependence on the local elite to mediate disputes in local communities. As the economy expanded and geographic mobility increased over the course of the 18th century, there were signs that this system of relying overwhelmingly on informal institutions to sustain cooperative behaviors was put under increasing strain. By the 1760s, vagrancy had become a serious social concern as the society felt increasingly threatened by rootless people unbounded by community ties (Kuhn, 1990). However, the state was unable to take up the slack in maintaining order. Instead, available court resources per person fell further with the drastic decline in the county-to-population ratio. To stem the ever-growing tide of civil cases flowing into local courts, the Qing state even resorted to measures such as outlawing litigation masters or lawyers (Macauley, 1998).[66]

The under-government of volatile frontier societies was a particular threat to social stability. In 18th-century China, demographic pressure and the introduction of new crops from the Americas led to a wave of immigration from plains and valleys to highlands (Naquin and Rawski, 1987, pp. 132-4). Communal violence was relatively common in these frontier societies due to a combination of weak state presence and the absence of an established elite. Some of these societies became highly militarized. The revolt of Lin Shuangwen, the first major commoner rebellion after Qing pacification of China in the 1680s, took place in the fast growing but weakly administered frontier island of Taiwan in 1786 (Figure 9). The revolt of the White Lotus sect (1796-1804), another major uprising, erupted in the highlands of central

[66]Due to data constraint, it is not possible to prove statistically that litigation rates went up over time in late imperial China. According to Macauley (1998, pp. 62, 332), the number of lawsuits in a commercialized county could reach as many as 800 a year by the late 18th- and early 19th-century. Furthermore, only about one-third of these cases were resolved in formal court sessions. The issue of backlogs was a particular concern in the more commercialized regions.

Figure 9: Locational origin of the mid-Qing uprisings

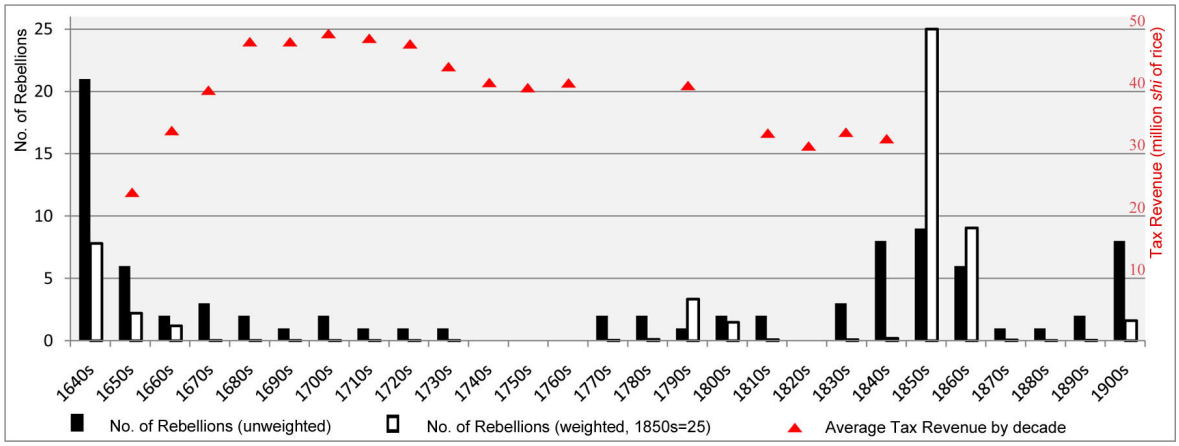


Note: The imperial postal relay routes are plotted according to the description in the *Collected Statutes of the Qing Dynasty*, Yongzheng reign (DQHD). All other information are drawn from CHGIS, Version 4, Cambridge: Harvard Yenching Institute, January 2007.

China. There, a steady influx of population took place over the course of the 18th century but strong political institutions were never established.[67] In a strikingly similar fashion, the Taiping Heavenly Kingdom movement (1850-64), which almost overthrown the Qing dynasty, originated in the highlands surrounding the Pearl River Basin in South China.

As Figure 10 illustrates, social order was gradually restored in China during the second half of the 17th century with the establishment of Qing rule over China. However, commoner rebellions reappeared in the 1770s and the frequency of occurrence picked up over time, culminating in the Taiping movement of the mid-19th century. In line with what we have seen so far, it was fiscal decline that predated the uptick in social and political instability, not the other way round.

Figure 10: Frequency of uprisings in the Qing dynasty (1644-1911)



Source: ZGLDZZNB (2003).
Notes:
(a) The figures above do not include minority rebellions.
(b) Weights are assigned according to the formula: "Raw weight" = "length of the rebellion" $*$ "number of provinces affected". Raw weights are then normalized with the highest raw weight (that of the 1850s) being assigned a value of 25.

[67] In her dissertation, McCaffrey (2003) describes the region as being plagued by increasingly fragile ecological conditions, as population growth led to excessive land reclamation which narrowed the water channels and increased the risk of flooding. The Qing state understood the risk, but was unable to enforce its own decision to ban further reclamation activities. Neither was it able to coordinate dike maintenance activities among upstream and downstream communities, nor to mitigate rivalries between left-bank and right-bank communities along the Yangzi and its tributaries effectively.

7 Conclusion

The late imperial Chinese state is a puzzle at first glance. It was absolutist, yet weak. It taxed lightly, yet the effective tax burden on the peasant was relatively heavy. It seemed inefficient, yet it was able to survive for more than two centuries. It was able to support rapid Smithian growth, without which the more than doubling of the Chinese population during the 18th century would not have been possible, yet it imploded when the opportunities and challenges of industrialization knocked on its door. This paper argues that these contradictions can be understood if we fully appreciate how size had shaped China's fiscal and organizational possibilities.

One may suspect that establishing a parliament could be a way to mitigate the principal-agent problem. As Banks and Weingast (1992) have pointed out, well organized constituents could assist their political representatives in limiting agency exploitation by acting as sources of information for the politicians. A parliament could act as the platform to foster this process. It allows direct and repeated interaction between the state and its constituents, and by granting provincial elites access to the center, enables the center to incorporate provincial and local inputs into its decisions (Mokyr, 2009). Furthermore, constitutionalism could serve as a means to facilitate cooperation among the political elites (Greif, 2008).[68]

Nonetheless, the effectiveness of representative institutions may decline as the size of the polity in question increases, since smaller groups are likely to be better than larger ones in organizing themselves to solve collective action problems (Olson, 1965). Stasavage (2010) shows that this was the case in medieval and early modern Europe due to the high communication and travel costs in the pre-modern age.[69] Representative institutions have never taken root in China, and geographic size may explain why this is so.

Another institutional change which could lower agency costs is decentralization. This was the path that China took after 1850, when the Taiping Rebellion swept the southern half of the empire and forced the Qing court to devolve decision making power to the provincial governors and governors-general. Fiscally, devolution meant that the provincial government replaced the imperial court as the residual claimant of the tax revenue collected within the province. In return, the central government in Beijing would receive a fixed amount of silver annually from each province to finance its expenditure in the capital region. In the language of contract theory, the emperor sold the "firm" to the agent. Where the model is concerned, the provincial governor becomes the "ruler", the size of the polity shrinks, the degree of the

[68] As shown in the model, there are mutual benefits to be exploited if the ruler, his agents, and the local elite could coordinate their actions. For one, the catastrophe of dynastic collapse could be avoided.

[69] To be sure, in Stasavage's analysis, the main role of the parliament is to serve as a check on monarchic or executive power, not as a vehicle for the central government to lower agency costs.

principal-agent problem is lessened, and state finances should improve.

Indeed, decentralization allowed the Qing state to mount a more effective response to the social and military crises of the mid-19th century. Following the suppression of the Taiping Rebellion by provincial militias, a successful campaign led by provincial governors and governors-general of the affected provinces was launched to reduce the effective tax burden of the peasants without decreasing the income of the state (Rowe, 1983). Research by Stephen Halsey (2007) also shows that as provincial leaders took over from the central government in initiating major reform efforts, the Qing state's extractive capacity expanded significantly after 1850. Without this, the Qing dynasty would not have survived into the 20th century.

Yet decentralization also created coordination problems in the provision of public goods at the national level. When the Sino-Japanese war broke out in 1894, it was observed that only Manchuria and the province of Zhili were mobilized.[70] In 1911, the imperial court's announcement of a new railway nationalization initiative intensified the political tension between central and provincial authorities so that when a revolt took place in central China that year, most provinces took the opportunity to declare their independence of the Qing regime. Put simply, it was not just revolution, but also decentralization, that brought down the Qing dynasty.

From then on, China oscillated between defragmentation (in the 1910s and 1920s) and unification (1925-1940), centralization (1945-1979) and decentralization (1979-) in its search for the right balance between having the center maintain vertical control, and allowing some degree of local state building without the local state becoming too oppressive. The details of the causes and legacies of these historical developments are beyond the scope of this paper. However, the role that size plays in shaping China's institutions and hence the path of its recent history should be self-evident.

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[70]The inaction of other provincial leaders during the war was criticized by contemporaries such as the philosopher and reformist Liang Qichao.

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