

The Paradox of Power: Understanding Fiscal Capacity in Imperial China

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Abstract

Tax extraction in Qing China was low relative to Western Europe. It is not obvious why: China was much more absolutist and had stronger rights over property and people. Why did the Chinese not convert their absolute power into revenue? We propose a model, supported by historical evidence, which suggests that i) the center could not ask its tax collecting agents to levy high taxes because it would incentivize agents to overtax the peasantry; ii) the center could not pay agents high wages in return for high taxes because the center had no mechanism to commit to refrain from confiscating the agent's resources in times of crisis. A solution to this problem was to offer agents a low wage and ask for low taxes while allowing the agent to take extra, unmonitored taxes from the peasantry. This solution only worked because of China's weak administrative capacity due its size and poor monitoring technology. This analysis suggests that low investment in administrative capacity can be an optimal *decision* for an absolutist ruler since it substitutes for a credible commitment to refrain from confiscation. Our study carries implications for state capacity beyond Imperial China.

Keywords: administrative capacity, fiscal capacity, state capacity, principal-agent problem, monitoring, credible commitment, absolutism, limited government, taxation, China, Europe, Qing Empire

JEL classifications: N45, N43, H20, P48, P51

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I. Introduction

Tax extraction in Qing China was low relative to the leading Western European powers of the early modern period. This is paradoxical: China was much more absolutist and had stronger rights over property and people than any European power. Why did the Qing not convert their absolute power into revenue? Did the Qing face inherent impediments to enhancing their fiscal capacity, or was their limited fiscal capacity a conscious strategy informed by their history of governing an empire without any form of constitutional constraint (Ma 2011, 2014; Brand, Ma, and Rawski 2014)?

A foremost priority for absolutist rulers is to contain or prevent internal rebellion. Often, absolutist rulers opt for institutional mechanisms that enhance their supreme and unchecked power while deliberately weakening the fiscal capacity of other potential power barons within the regime, including their own administrative agents, who might pose a threat to their rule.¹ This weakening of internal players, while effective in containing rebellion, makes it more difficult for absolutist rulers to confront a second challenge: external threat from enemies beyond the border which often requires swift – sometimes maximal – fiscal extraction and resource mobilization. Here lies a fundamental inherent contradiction in absolutism: the same fiscal and state capacity built up in times of external threat to help rulers defend their rule could also turn to threaten their rule by heightening the risk of internal revolt through over-extraction or arbitrary confiscation in times of peace. An ideal system is therefore one in which resources were only gathered during times of external threat but minimal taxes could be collected in other times to minimize the threat of internal revolt. Given the unpredictability of threats, however, absolutist rulers tend to create mechanisms to smooth governmental revenue between periods of peace and conflict.

In the context of Imperial China, we argue that in the face of no constitutional constraints protecting the rights and property of their administrative agents, a solution to these problems was for the Qing to offer tax-collecting agents a low wage and ask for low taxes while permitting their agents to take extra, unmonitored taxes from the citizenry. Since the actual value of the agents' wealth would be unknown to the center – agents could hide the unmonitored portion – the agents were a less attractive target for confiscation during times of crisis. Meanwhile, unmonitored taxes collected by the agent formed rents which incentivized them to stay loyal to the empire. These

¹ See Ma (2012) and Haiwen Zhou (2012) for the case of Imperial China. Karaman (2009) made a similar argument for the case of the early modern Ottoman Empire, as the sultan employed the judiciary to monitor tax farmers.

rents were only subject to a limited possibility of confiscation from the center and therefore served to align the agents' incentives with the ruler's in the long-run.

Such a solution only works when a ruler can "commit" to it. In the absence of constitutional constraints, a ruler can only commit to refrain from predating on his agents when he has little capacity to find and extract the agent's hidden, unmonitored wealth. In such a case, there is little to gain from predation since the agent has little for the ruler to confiscate. Hence, an absolutist ruler can commit to refraining from predation when administrative capacity is weak and thus monitoring costs are high. This idea is related to Greif (2005, p. 755), who proposed that rulers can commit to protecting rights by creating an ineffective administration, which increases the cost of confiscation and thus makes property more secure.² Our analysis therefore suggests that low investment in administrative capacity can be an optimal *decision* for an absolutist ruler: it allows him to credibly commit to not confiscating agents' wealth while also discouraging the agent from collecting too much taxation from the masses. The downside to this arrangement is that the rulers are stuck in a "low wage-low tax" equilibrium, where they pay their agents low wages in return for low levels of tax collection. They cannot offer high wages since such wages are not secure from confiscation,³ while they cannot request high levels of taxation because they must leave surplus for the agent to collect as an "extra-legal" wage (that is hidden and thus free from confiscation).⁴

Our model sheds light on a number of stylized facts from the pre-modern era. First, it explains why the Qing rarely invested in administrative capacity and total Chinese taxation remained stationary despite population and territorial expansion. Rather than taking Confucian ideology or the Chinese ruling logic of light taxation as explaining the low-taxation outcome (Rosenthal and Wong 2011; Deng 2015), our model suggests that low tax revenues may have been an endogenous outcome of an absolutist regime with no formal constitutional constraint, legitimized and

² González de Lara, Greif, and Jha (2008) and Greif (2008) argue that constraint on executive power arises when administrators are sufficiently powerful to constrain rulers, where their power derives from the fact that rulers rely on them to implement policy.

³ Such confiscation could lead to an escalation of extraction at all levels of the bureaucracy. As extractions throughout the hierarchy would in the end fall on the masses at the bottom, this in turn would heighten the risk of insurrection in the long run. Although our paper is restricted to the ruler-agent relationship, insecurity in property rights due to the absence of credible commitment was a pervasive phenomenon, especially in times of political crisis, for absolutist states like Qing China (Chen 1992, ch. 7; North and Weingast 1989).

⁴ As we previously noted, absolutist rulers may also desire a low level of taxation for a related, but different reason: they fear their administrative agents growing too strong and posing a threat to the center.

reinforced by Confucian ideology.⁵ This outcome contrasts with the constitutionally constrained regimes of Europe, which had incentive to make investments in administrative capacity and were therefore able to collect much higher taxes per capita (Brandt et al. 2014). Second, most absolutist regimes contain an element of informal or extra-legal taxation above the official level.⁶ Our model explains not only why this is the case, but why it is a *necessary* component for the system to work properly. Third, it explains why Chinese empires could be inward-looking while also seeking territorial expansion. The main purpose of such expansion was reducing external threats and exerting monopoly power over large territories, despite the high cost of monitoring territories far away from the capital. Our model reveals that weaker administrative capacity associated with far-flung provinces would have been an outcome even had the level of administrative capacity been a *choice* of the ruler, and therefore the payoff of a weaker external threat was more than worth the cost of weaker administrative capacity.

Our study draws on the Chinese imperial political structure as a prototype, as it developed one of the earliest forms of central bureaucracies in relative continuity and isolation. Yet, our study makes general contributions missing in the existing literature on state capacity.⁷ Olson's (1993) well-known model of roving and stationary banditry has largely taken administrative capacity as given and rulers as simple revenue maximizers. Tilly (1990), Besley and Persson (2009, 2010), Acemoglu (2005) and Hoffman (2015) argue that investments in fiscal capacity – and hence administrative capacity – arise endogenously precisely because of common interests in the provision of protection against external enemies.⁸ Our model indicates that a certain type of

⁵ Sng (2014) suggests that the historically low levels of Chinese tax collection were a result of its size, which made tax collection difficult far from the center. His explanation, focusing on the incentive of agents to extort taxpayers beyond the level desired by the ruler, is consistent with our model, although he does not consider the role of credible commitment in the ruler-agent relationship and treats size as exogenous.

⁶ Tax farming also has features similar to informal or extra-legal taxation in that the ruler has little capacity to monitor the actual amount of taxes collected by the tax-farming agents. See Balla and Johnson (2009).

⁷ For excellent overviews of recent contributions to the literature on state capacity in economics and political science, see Dincecco (2014) and Johnson and Koyama (2016).

⁸ Dincecco (2009) stresses the role representative institutions played in generating fiscal capacity through increased taxation and lower sovereign credit risk. Karaman and Pamuk (2013) argue that the connection between representative institutions, war, and fiscal capacity is dependent on the economic structure of the regime: the interests of representative assemblies align with rulers with respect to war in urban settings but not in rural settings, where local control over coercive power dominates. Gennaioli and Voth (2015) take this argument one step further, arguing that once fiscal and state capacity becomes important for war-making, a divergence arises between internally cohesive states and those without cohesion, with the latter set of states dropping out of existence. Hoffman (2015) argues that medieval Europe's constant warfare encouraged rulers to seek improvements in military technology, which was largely responsible for European states conquering much of the world during the age of exploration.

administrative capacity arose in Europe only in the presence of *both* an external threat *and* an internal institutional arrangement which consisted of some degree of credible commitment or representative institutions. State capacity in these cases was often marked by the development of a fiscal-financial-legal nexus, the maturing of a market for public debt, and the establishment of a transparent taxation system where governments paid civil servants good wages in return for tax revenue. But this solution only worked if governments could credibly commit to not confiscating the agents' wealth in times of crisis. These insights imply that absolutist rulers ultimately faced constraints to developing state capacity and providing public goods in times of need. This paper therefore has implications for the long-run economic divergence between China and northwestern Europe, where the issue of fiscal and state capacity has not been given adequate attention.⁹

The paper proceeds as follows. Section II overviews the nature and structure of absolutist power in Imperial China. It illustrates the unique features of i) low and stationary formal governmental taxation despite population and territorial expansion, ii) an entrenched element of extra-legal taxation above the official level, and iii) the inability of the Qing to commit to refraining from confiscation in time of need. Section III presents a model addressing these features. It suggests that all three are equilibrium outcomes in an absolutist regime with little monitoring power and no constitutional constraint. Section IV extends our model to shed light on the long-run evolution of the Chinese imperial political structure and the comparative fiscal and financial development of other types of regimes that prevailed in early modern Europe. Section V concludes.

II. Historical Background: Qing China

II.1. The bureaucratic and fiscal structure of Qing China

The beginning of Chinese imperial absolutism can be traced to China's first unification under the Qin dynasty in 221 BC. At the time of the unification, the Qin's First Emperor Qin Shi Huang opted against a feudal type of political arrangement and instead implemented an empire-wide prefectural system with household registration. In this model of Chinese absolutism, the emperor

⁹ This is not to imply, of course, that the "Great Divergence" literature spurred by Pomeranz (2000) is devoid of insight into the mechanisms underlying the divergence between China and Western Europe. For instance, Rosenthal and Wong (2011) focus on the interaction between the quality of institutions and relative prices in China and Western Europe, emphasizing the contribution of informal arrangements to supporting long-distance commerce. Greif and Tabellini (2015) compare the kin-based Chinese culture, with its clan-based enforcement institutions, and the "generalized morality" cultures of Europe, which coevolved with corporate, group-independent institutional forms. Also see Ma (2011a, 2011b, 2014) and Brandt et al. (2014).

held ultimate power, commanding property rights over all factors of production including land and labor. At the bottom of the socio-economic hierarchy were the masses (farmers or peasants), who were nominally the tenants and cultivators of land owned by the emperor.¹⁰ The administration of the empire – tax collection, suppression of violence, and some minimal provision of public goods – was governed by direct imperial rules executed by an impersonal bureaucracy. This political arrangement implied the dominance of a single imperial household – along with the eventual disappearance of the hereditary aristocracy and the weakening of autonomous political units.

This model of Chinese autocracy was ruler-centered, with no formal or external institutional constraints placed on the powers of the Imperial rulers and their agents except perhaps the vaguely defined "Mandate of Heaven".¹¹ There was a system of checks against bureaucratic abuses of power, but only within the administrative hierarchy, with the emperor being the final arbiter. The primary constraint rulers faced was the threat of insurrection: if pushed below subsistence by excessive imperial or bureaucratic abuses, the masses might resort to violent rebellion to overthrow imperial power. Indeed, rebellions and insurrections were an enduring feature of Chinese history, which was marked by periodic political fragmentation and dynastic strife (Ma 2012).

Despite challenges and reversals, both the concept and practice of centralized rule with a hierarchical bureaucracy survived as an enduring characteristics of Chinese political history. This system developed to its greatest maturity under China's last dynasty, the Qing (1644-1911). Under the Qing, a nationwide three-tier (capital-province-county) Civil Service Examination, open to nearly all males, was used to recruit official bureaucrats inculcated in the Confucian ruling ideology. Successful examination candidates were appointed to bureaucratic posts based on a system of 3-5 year empire-wide rotation and the rule of avoidance (which precluded appointees from serving their home county). By granting life-long privileges of tax-exemption and legal

¹⁰ The imperial ownership of land was expressed by the traditional notion of 'Wang-tu wang-min (王土王民, king's land, king's people)', which appeared in The Book of Songs compiled during the age of Warring States (403-221 B.C.) and persisted throughout the imperial period. For more, see Kishimoto (2011).

¹¹ The problem of the absence of formal constraints on the emperor is succinctly summarized by Ray Huang's study of the Ming (1368-1644) imperial system, the heyday of Chinese imperial despotism: "...Final authority rested in the sovereign, bureaucratic action was limited to remonstrance, resignation, attempted impeachment of those who carried out the emperor's orders, and exaggeration of portents as heaven-sent warnings to the wayward emperor. When all these failed, there was no recourse left" (Huang 1974, p. 7).

impunity of some degree to varying levels of civil service examination candidates, the system generated a class of career officials having no autonomous territorial or functional power base.¹²

The Qing fiscal regime reflected the nature of such a highly centralized and hierarchical political system. Underpinning this fiscal regime was an elaborate accounting and reporting system cross-cutting the three layers of governmental administration at the central, provincial, and county level. In principle, the use and allocation of almost every budgetary item had to be reported and matched with detailed imperial rules and regulations. Although taxes were collected at the county level from the highly decentralized producing units across a giant empire, almost all revenues were in principle under the purview of the Board of Finance.¹³ There was no officially recognized local-level finance, although the Qing did distinguish between remitted taxes and retained ones with the latter often recognized as the local cost of tax-collection, which formed part of the de-facto local administrative budget. The remitted taxes were either directly transferred to Beijing or other regions in China facing revenue deficits.

By the 18th century, the Qing had largely consolidated most poll taxes into a fixed-target land tax despite their territorial and population expansion. Overall, the land tax accounted for 70% of total taxation with the remainder coming from commercial taxes. The revenue system was largely monetized with silver supplemented by an in-kind tax in the form of a grain tribute that amounted to a little more than a 20% share of the total fiscal revenue (Wang 1973, p. 80). On the expenditure side, the Qing spent about 50% of revenue on direct payments to soldiers and another 17% on the salaries of officials and bureaucrats. Expenditure on public goods such as maintenance of river transport or famine relief was only slightly above 10% (Shi Zhihong 2008, p. 68; Iwai 2004, p. 32).

Figure 1 reconstructs scattered series of official expenditure under the direct purview of the Qing Imperial Board of Finance. It shows a largely trendless expenditure series with an average of about 36 million silver taels but a standard deviation of only 3.2 for the period between 1662 and 1849. The series only began to rise from the mid-19th century when China was forced to open by Western Imperialism, but even then, it remained almost stationary in real terms. Yet, these

¹² Those gentries with no official posts often resided in their home villages, extending the informal power of imperial rule beneath the official bureaucratic structure. See Chang Chung-li (1955) for the role of gentry.

¹³ See Iwai (2004) and Shi and Xu (2008) for a description of Qing fiscal institutions. The Qing Imperial court had its own source of revenue and expenditure under the office of the so-called Nei-wu-fu (内务府). Overall, the share of Nei-wu-fu budget was small relative to that of the Board of Finance. For a recent in-depth study on Nie-wu-fu economic activities, see Lai (2014).

trendless series belie the fact that *per capita* revenues declined dramatically under the Qing. During their two and half century reign, the population nearly tripled and the territory under control nearly doubled. Despite this growth, Qing administrative units hardly expanded: there were only 1,360 counties under the Qing compared to 1,180 under the Han and 1,230 under the Song (Skinner 1977, p. 19). Similarly, the size of the 18th-century Qing standing army of about 800,000 was lower in absolute number than during the Ming and Song (Iwai 2004, p. 33).

INSERT FIGURE 1 AND TABLE 1 HERE

Panel C of Table 1 shows that Qing official fiscal revenue in per capita terms amounted to only just over two days' earnings of an urban unskilled worker in the early-18th century, and dropped further by the late-18th century, reflecting the combined effect of a fixed revenue target accompanied by explosive population expansion. Table 1 suggests that absolutist regimes in general collected less per capita tax revenue than constrained regimes, although China's level of tax collection was especially low. The Qing collected anywhere from 1/3 to 2/3 of the per capita taxes of the Ottoman Empire from 1650-1800, while Ottoman tax collection efforts paled in comparison to their Western European rivals. Meanwhile, the constrained regimes in England and the Dutch Republic collected many times the per capita taxes of the Chinese. The disparity in fiscal capacity was so great that the total taxes collected by the Qing in the latter half of the 18th century were only about 3.5 times of those collected by the Dutch despite the Chinese population being about 143 times greater.¹⁴

II. 2. Extra-legal taxation

The seemingly low level of taxes collected under the Qing is only part of the story. The largely fixed level of annual revenue at a time of rapid population and territorial expansion, further exacerbated by the absence of any officially designated local finance, eventually led to the rise of the so-called informal, unofficial revenue incurred beyond the official accounting system. In the ordinary revenue system, retained revenues were only about 21.5% of total revenue in 1685. Even

¹⁴ While firm GDP estimates for China in the 18 and 19th centuries are unavailable, guestimates would place the official fiscal revenue of 36 million taels in the range of a mere 1-2% of GNP even in the 1910s (Wang 1973, p. 133). Wang's result also seems broadly consistent with the daily wage conversion in Table 1. This again contrasts with Britain, whose total tax revenue rose 17 fold from 1665 to 1815, with its share in national income surging from 3% to 18% between 1688 and 1810 (O'Brien 1988, p. 3). Unlike the Qing taxation system, the surge in British tax receipts came disproportionately from indirect taxes such as customs and particularly on excise duties, which together accounted for nearly 70% of total revenue towards the end of the 18th century (O'Brien 1988, p. 9-10; Daunton 2012, p. 119).

among this 21.5%, the bulk was spent on local expenses connected with the center, such as provisions for imperial armies and imperial relay stations. As the official tax revenue allocated to local administration fell far short of the requirements of normal administration – often insufficient to cover the salaries of official bureaucrats let alone their expenses and support staffs – various levels of bureaucrats relied on the infamous extralegal surcharges beyond the official level. The sources of these revenues ranged from the levying of various surcharges, manipulation of weights and measures and currency conversion in tax collection, falsifying reports, shifting funds across fiscal seasons, retaining commercial tax revenue, hoarding tax revenue from newly claimed land, and exacting contributions and donations from local farmers or merchants. Provincial level officials and their “unofficial” staffs relied on the extraction of gifts and contributions from the lower level officials and engaged in practices such as skimming funds in purchases and allocations (i.e., buying at a low price but reporting a high price). Reliance on informal local taxation and the employment of unofficial staffs for public administration often led to the privatization of public services.¹⁵

One seminal study by Chang Chung-li on Chinese gentry income put non-official income extracted above the reported level (i.e., excluding income earned through business or other activities) at 19 times of official income. The total unofficial income for officials below the provincial level were, according to Chang, 63 million taels – which was 81% of the total official tax quota around 1884 (Chang 1962, ch. 1). Hence, it was the informal, unregulated, and arbitrary nature of these extractions that help explain the apparent contradiction of a low tax rate and the rapacious image of the Qing.

In this political regime, perhaps the biggest irony is that reform to formalize local informal taxation may have had the unintended effect of exposing previously hidden revenue to possible extraction from the upper level officials, especially in times of distress. The well-known fiscal reforms carried out by the Yongzheng emperor from 1724 increased surcharges to land taxes and essentially legitimized previously “illegal” local extractions. While achieving some degree of success, the policy had to be largely abandoned towards the end of the 18th century as it could not solve the dual problem of the higher administration’s inability to monitor the use of local revenue

¹⁵ See Zelin (1984, p. 46-71). Sometimes staffs kept duplicate set of account books, with the set for local use marked by secret codes impenetrable from the official examination. These special types of account books circulated informally within a wide area (Zelin 1984, p. 240). Official collusion could also backfire in unexpected ways. Often, the extralegal nature of these surcharges forced the parties involved to pay blackmail (Iwai 2004, p. 3-4).

and the tendency for upper level bureaucrats to reallocate revenue designed for local use (Zelin 1984, ch. 7). The irony is that as soon as revenue became “official” or visible, it became less secure. In the end, the extra-legal taxation – being outside the official purview – became the most secure source of local finance. In other words, the central Qing administration could *not commit* to not confiscating their agents’ wages once those wages were known and transparent.

The Qing rulers’ eventual acquiescence and accommodation of local corruption and extra-legal taxation became a rational compromise to reconcile the inherent contradiction between the discretionary power of the state and the ideological commitment to a fixed target of tax revenue as the foundation of Qing legitimacy. The mechanism was complemented with a state-centered legal system that punished – often selectively – what it viewed as excessive bureaucratic abuses that could imperil imperial stability and dynastic survival.¹⁶ Hence the bane of “corrupt bureaucrats and agents” long-decried throughout Chinese history should be viewed as a product tolerated within the system rather than a deviant.

II.3. Exogenous shocks and expenditure smoothing under the Qing

The combination of a largely fixed level of official revenue alongside extralegal taxation beneath the official level was far from sufficient to counteract recurrent episodes of political instability and exogenous shocks. To capture how various exogenous shocks impacted government revenue and expenditure, we would need a relatively continuous data series that reveals data on both ordinary and extraordinary expenditure in times of relative peace and instability. In the absence of such data, we can make use of an alternative data series constructed by Shi Zhihong (2008) on the annual warehouse (银库) receipts from the Board of Finance, which recorded the actual inflows (usually consisting of tax remittances from the provinces) and outflows (governmental payments for various expenditures from the warehouse). In the absence of organized public debt, the cumulative stock of silver reserves at the Board of Finance warehouse is equivalent to the cumulative stock of governmental savings. Figure 2 plots the annual stock of silver reserves against

¹⁶ Under this so-called disciplinary mode of justice where the objective of political stability often took precedence over that of justice, the severity of punishments were meted out not only on the nature of offense but also with the disciplinary needs of the time. See He Ping (1998, p. 293-5) for the periodic and selective capital punishment on the so-called “economic crime meted out to high level government officials.” Huang (1974, p. 13-14) counted in detail the sorry fate of all the 89 most ministers of Revenue under the Ming from 1380. For the nature and problem of the so-called “disciplinary mode of justice” in traditional China, see Ma (2011a) and Stephens (1992).

episodes of warfare. This conveys a fuller and more telling portrayal of the relationship between Qing fiscal policy and political stability.

INSERT FIGURE 2 HERE

In its early years of military conquest in the 1660s, Qing silver reserves were minimal. As a non-Han minority ruler of China, the early Qing's reliance on Chinese generals and military force to suppress the former Ming loyalists led to the build-up of relatively autonomous power bases and political structures in Southern China. This ended in 1683 when Emperor Kangxi (1661-1722) quashed the rebellion of the so-called "three feudatories" and annexed their territories into the Qing centralized administration. Two years later, Kangxi broke the resistance of the rebellious naval kingdom of Zheng Chenggong and officially integrated the island of Taiwan into the Qing administration. The Qing gradually built up their reserves during the 18th century, which was a period of political stability and infrequent warfare. In the final decades of the 17th century, the Qing contained the threat from an expansionary Russia by signing the Treaty of Nerchinsk in 1689 and conquered China's North-western territory in 1696. In 1720, the Qing attained control of Tibet with the installation of a new Dalai Lama. By the early 18th century, the Qing were clearly successful in consolidating power and establishing monopoly rule over China's largest ever territory.¹⁷

As seen in Figure 2, the Qing entered into a prolonged phase of silver reserve accumulation during the 18th century. Reserves peaked at over 70 million by the 1790s, roughly equivalent to two years of total tax revenue. The suppression of the White Lotus rebellion around the turn of the eighteenth century, towards the end of the Qianlong rule, led to a sharp drop in silver reserves. This heralded a turning point where the value of silver persistently increased as Chinese silver outflows regularly outpaced inflows. The Qing enacted desperate measures to replenish their dwindling silver stocks: the sale of governmental offices and titles increased sharply in 1804, 1827 and 1834, reaching over 10 million taels – nearly one-third to one-half of the annual central governmental revenue (Ma 2014). The 1840s Opium War, followed by the devastating Taiping Rebellion, almost completely drained the Board's coffers of its silver reserves and left the Qing largely bankrupt by the mid-19th century.

¹⁷ See Jonathan Spence (1990) for the standard narrative.

The silver reserves data reported in Figure 2 can be partially corroborated by Chen Feng's (1992, p. 275) meticulous yet incomplete calculation of the extraordinary expenses the Qing incurred in the face of various shocks. It shows a highly uneven inter-temporal pattern, ranging from several tens of thousands of taels in the mid-18th century to a peak of nearly 150 million taels for suppressing the White Lotus Rebellion of 1796-1804. Given that the Qing Board of Finance, even at its peak, had 70 million taels in its coffers – equivalent to no more than 3 or 5% of GDP¹⁸ – the Qing had little room to maneuver within the normal fiscal framework to weather these shocks. As a result, the Qing resorted to numerous sources of extraordinary revenue raised to cover military expenditure, including on-site confiscation and predation, advanced collection of land taxes, temporary but arbitrary surcharges on existing categories of taxation, an increased share of remitted revenue at the expense of retained revenue for the local government, forced contributions from wealth holders, and the sale of governmental offices and titles (Chen 1992, ch. 7). In the devastating mid-19th century Taiping Rebellion, the desperate Qing eventually succumbed to monetary debasement (Chen 2008, ch. 11). Qing fiscal history therefore suggests that in a political regime marked by the absence of sound fiscal capacity or a well-functioning market for public debt, the deterioration of public finance could become a direct threat to private property rights.

In this section, we described three key features of Qing's China's fiscal history: low and fixed official revenue, high levels of off-book revenue taken by tax administrators, and the central government's encroachment on property rights in times of unpredictable crisis. Are these features inter-related? Are they all necessary components of an equilibrium in which an absolutist ruler wishes to collect taxes but cannot commit to refraining from predateding its agents? To answer these questions, we turn to a model which captures these historical features and generates predictions allowing for comparisons across and within societies over time.

III. The Model

In this section, we model the relationship between a ruler and a tax-collecting agent. The model addresses the puzzles highlighted in the previous section. We are interested in how administrative capacity affects the ruler-agent relationship as well as how a ruler's capacity to commit to refrain from confiscation affects this relationship. The primary outcomes of interest are the level of tax

¹⁸ These figures are from Wang Yeh-chien's (1973) calculation.

receipts sent to the ruler, the degree to which the ruler permits extra-legal (informal) taxation, the level of administrative capacity invested in by the ruler, and the size of the ruler's empire.

III.1. Setup

Consider an economy in which a ruler (R) and a tax-collecting agent (A) interact for infinite periods. The agent's primary job is to collect taxes, $T_\tau \in \mathbb{R}^+$, from the (unmodeled) population.¹⁹ The agent is also tasked with and evaluated by his ability to maintain local order and suppress local insurrection.²⁰ The taxable surplus produced by the population, $S \in \mathbb{R}^+$, is exogenous and common knowledge. The agent has the authority to collect any tax level he chooses. However, if T_τ exceeds a certain threshold,²¹ the population successfully revolts with probability $p \in [0,1]$.²² p is positive only if the untaxed surplus, $S_\tau^U = S - T_\tau$, is less than the threshold level $\underline{S} \in \mathbb{R}^+$, and it is increasing in the amount by which \underline{S} exceeds the untaxed surplus. Hence, the revolt probability is written as $p(\underline{S} - S_\tau^U)$, where $p(x) = 0$ if $x \leq 0$, $p' \geq 0$, and $p'' \geq 0$. If the population succeeds in revolting, the agent loses his job and receives reservation utility $\underline{u} > 0$ for the remainder of his life, while the ruler is overthrown.

The agent's goal is to maximize the present value of all future income streams from wages and rents, which in turn depends on retaining his job within the bureaucratic hierarchy. The ruler aims to maximize dynastic tenure.²³ As we will show later, only when unexpected shocks occur which

¹⁹ Subscripts denote the period in question.

²⁰ A more realistic model would include the agent incurring administrative cost $c^A \in \mathbb{R}^+$ to collect taxes and run the local government. Adding such a cost does not change the model's insights, so we have omitted it for the sake of parsimony.

²¹ We can interpret this threshold as the subsistence threshold, although the interpretation does not need to be so strict. The threshold is better interpreted as the level at which some of the population feels that revolt is better than their opportunity cost. As the total taxes collected increases, more of the population will feel this way, and the probability the revolt succeeds increases.

²² Starvation and famine could also result from high tax extraction. Since either could lead to the loss of population from the ruler's domain and a subsequent loss of tax revenue, it yields a similar outcome to the population revolting. We therefore do not model starvation and revolt separately.

²³ Our starting point is a "roving bandit", in the spirit of Olson (1993), whose objective function is maximal fiscal extraction in the present. However, even an absolutist with unconstrained and unlimited power will – as soon as he secures his power – switch from a roving bandit objective function to that of a stationary bandit. This objective function involves maximizing dynasty tenure with an infinite time horizon of future revenue streams. This makes sense in the Chinese case where, given that in principle everything under the heaven belonged to the emperor (as the Chinese saying goes), maximizing tax revenue was less attractive than retaining power and dynasty. This may be less true of a limited ruler whose power over property rights is somewhat constrained. A limited ruler is also more likely composed of a coalition of elites ruling over what North, Wallis, and Weingast (2009) termed a natural state rather than a standalone imperial household.

drastically reduce the ruler’s time horizon will an absolutist ruler consider switching from a stationary banditry equilibrium to that of roving banditry. Even in this case, however, the ruler still aims to maximize dynastic tenure; such shocks threaten the ruler’s capacity to stay in power in both the short and long-runs. Our model considers rulers who face two threats to their power: internal revolt from over-taxation (described above) and exogenous, temporary threats such as external invasion or natural disaster. The latter threats, $X_\tau \in \{0,1\}$, last one period and occur in each period with probability $\theta \in [0,1]$. We assume, for reasons that will become apparent later, that such an external threat does not occur in two consecutive periods.

Each period consists of three stages. Prior to the first stage, the outside threat is realized with probability θ . In the first stage, the ruler sets a statutory tax $t_\tau \geq 0$ for the agent to collect. The ruler also chooses a fraction of the statutory tax for the agent to remit, $\alpha_\tau > 0$, while the agent keeps fraction $1 - \alpha_\tau$.²⁴ It is possible for α_τ to exceed 1. We interpret this as the ruler borrowing from the agent, since it entails that the agent remits more than it is tasked to collect. The total amount remitted to the center, $\alpha_\tau t_\tau$, must be at least large enough to cover the central government’s administrative expenses, which we normalize to zero. Assume that the agent loses his job at the end of the period if he remits less than $\alpha_\tau t_\tau$ to the ruler. Remitted or retained, the crucial feature of statutory taxes is that they are “on-the-book” and can be tracked within the official accounting system.

In the second stage, the agent collects taxes T_τ from the population. T_τ has two components: statutory taxes, t_τ , which are visible to the ruler, and the residual, $t_\tau^O = T_\tau - t_\tau$, or off-book taxes.²⁵ Importantly, t_τ^O is vaguely defined and informal. It is not visible to the ruler unless the ruler invests in building a monitoring infrastructure and incurs a monitoring cost. The agent’s income in period τ is therefore $(1 - \alpha_\tau)t_\tau + t_\tau^O$ (i.e., the total taxes not remitted to the ruler). The agent’s income defined as such serves three purposes simultaneously: it forms the personal income of the agent, covers the administrative cost of tax collection, and covers local administrative expenses as well as some provision of local public goods. It is precisely the nature of the multiple objectives of the agents’ income, some of which are perfectly legitimate and necessary, that make

²⁴ The fraction retained by the agent includes taxes earmarked for distribution to other locations or some local expenditure as well as the agent’s wage. Historical evidence from China indicates that about two-thirds of taxes were remitted to the ruler (i.e., $\alpha_\tau = 2/3$) and one-third retained locally.

²⁵ In a traditional society, we might consider t_τ^O to include political, social, and legal privileges (which allows one to accumulate wealth much more securely). Here we include them in one term.

off-book taxes difficult to observe. After the second stage, the population successfully revolts with probability $p(\underline{S} - S_\tau^U)$.

If the revolt does not succeed, the game proceeds to a third stage. In this stage, the ruler decides whether to monitor, $M_\tau \in \{0,1\}$, and/or punish the agent, $P_\tau \in \{0,1\}$. The ruler can always observe t_τ but can only observe t_τ^O if it chooses to monitor, which incurs a cost $m \in \mathbb{R}^+$. Punishment ($P_\tau = 1$) simply entails that the ruler confiscates the agent's observable income from the current and previous period.²⁶ The total amount confiscated equals $(1 - \alpha_\tau)t_\tau + (1 - \alpha_{\tau-1})t_{\tau-1} + M_\tau t_\tau^O + M_{\tau-1} t_{\tau-1}^O$. Figure 3 summarizes the progression of game play within each period, and Table 2 summarizes the model's variables and parameters.

INSERT FIGURE 3 AND TABLE 2 HERE

We interpret m to reflect the administrative capacity of the ruler. For example, $m = 0$ entails that the ruler has the administrative capacity to costlessly monitor the agent, while $m \rightarrow \infty$ indicates that it is impossible (i.e., too costly) for the ruler to monitor, and monitoring is therefore useless. When $m = 0$, the ruler can perfectly monitor t_τ^O , and the so-called off-book taxes simply form part of the statutory taxes. This is close to the ideal of a modern democratic governance institution where a professional and impartial bureaucracy collects and remits taxes. In such a system, net tax revenues include the costs and expenditures of collecting these revenues, and tax revenues and expenditures are revealed to the ruler (or the public in a democracy) through a transparent accounting system.

We solve the model by considering two different types of rulers: one who can *credibly commit* to not confiscating the agent's on-book income and one where he cannot. We denote the former a *limited ruler* and the latter type an *absolutist ruler*. On-book taxes include the publicly declared wages associated with the agent's task, $(1 - \alpha_\tau)t_\tau$, which the ruler may want to confiscate when the exogenous shock is realized. A critical and distinctive feature of our model is that we capture the scenario in which an absolutist ruler can renege on the contract opportunistically. On the other hand, a limited ruler can credibly commit to refrain from confiscation, thereby keeping future rents

²⁶ For simplicity we ignore the possibility of the agent accumulating wealth over time. Adding wealth accumulation to the model would introduce a different type of strategic behavior – rulers waiting until agents are old before confiscating – without altering the model's primary insights. We permit the ruler to confiscate two periods worth of observed income in order to introduce inter-period considerations in the most parsimonious manner possible.

high for the agent.²⁷ Importantly, we assume that tax revenue can be raised ex-post in the event $X_\tau = 1$ in both absolutist and limited regimes. But the difference is that while absolutist rulers arbitrarily raise tax revenue, limited rulers must raise revenue through a legitimate, constitutional procedure or in the form of formalized borrowing from the agent. Both of these methods of increasing taxes in a limited regime do not breach the assumption of credible commitment.²⁸

When there is an external threat, the ruler can use resources to combat the threat (i.e., provide famine relief, defense against invasion). The probability that the ruler is removed from power due to the external threat is therefore decreasing in the level of net revenue available to the ruler, R_τ . For simplicity and consistency, we assume that the net revenue available to the ruler is the statutory taxes remitted in the present and previous period plus any revenue confiscated from the agent minus monitoring expenses.²⁹ That is, in order to increase R_τ the ruler may resort to raising t_τ , α_τ , or confiscating the agent's income. These short term measures may help combat external threats, but they also decrease the attractiveness of staying in the system for the agent. R_τ is defined by the following equation:

$$(1) \quad R_\tau = \sum_{j=\tau-1}^{\tau} (\alpha_j t_j + P_\tau [(1 - \alpha_j) t_j + M_j t_j^o] - M_j m)$$

Denote the probability that the ruler successfully combats the outside threat by $q(R_\tau) \in [0,1]$, where $q' > 0$, $q'' < 0$, $q(0) = 0$, and $\lim_{x \rightarrow \infty} q(x) = 1$. Denote the utility the ruler derives from staying in power in any one period by u ,³⁰ and denote by $\pi_\tau^R \in \{0,1\}$ whether the ruler is still in power by period τ . Assuming that the ruler and the agent have the same discount factor, $\delta \in (0,1)$, the period τ expected utility of the ruler is written:

$$(2) \quad E[U_\tau^R] = \sum_{j=\tau}^{\infty} \delta^{j-\tau} E[\pi_j^R (1-p)(X_j q(R_j) + 1 - X_j)u].$$

²⁷ It is well-known that rule of law and constraints on the ruler existed well before the rise of modern parliamentary democracy. For instance, the Magna Carta, the rise of independent legal profession in medieval Europe, and the rise of common law in England all placed constraints on rulers. This allowed rulers to credibly signal their intent to upholding the rule of law, at least for elites (North, Wallis and Weingast 2009). We are interested in equilibrium outcomes under different regimes, so we do not endogenously model credible commitment. Instead, we simply assume that credible commitment exists or it does not (perhaps due to a constitution (North and Weingast 1989) or public declarations of legitimacy (Greif and Rubin 2015)), and solve the model therein.

²⁸ Credible commitment is critical to explaining the reputation of public debt and financial markets in a limited regime. In our model, we do not make such a distinction.

²⁹ As noted before, permitting the ruler to accumulate resources over longer periods does not change the model's primary insights but does make the model considerably harder to solve.

³⁰ We assume that the ruler derives no additional utility from resources.

Meanwhile, the agent's period τ expected utility is its discounted expected income should it keep its job. Denoting by $\pi_\tau^A \in \{0,1\}$ whether the agent has been fired ($\pi_\tau^A = 1$) by period τ , the period τ expected utility of the agent is written:

$$(3) \quad E[U_\tau^A] = \sum_{j=\tau}^{\infty} \delta^{j-\tau} E[(1 - \pi_j^A)([1 - P_j][1 - \alpha_j]t_j + [1 - P_j M_j]t_j^O) + \pi_j^A \underline{u}].$$

III. 2. *Equilibrium outcomes and comparative statics*

In the following sections, we provide intuition for comparative statics relating the level of on-book and off-book taxes to changes in administrative capacity (i.e., monitoring costs, m). We then examine how these comparative statics results differ in absolutist and limited regimes.

We focus on equilibrium decision rules for the ruler and the agent conditional on whether an external attack occurs or not (i.e., $X_\tau = 0$ or $X_\tau = 1$). In each period, the ruler makes four choices – t_τ , α_τ , P_τ , and M_τ – while the agent makes one choice, t_τ^O . We focus on a specific class of equilibria: the ruler plays a mixed strategy where he monitors the agent with probability $\eta \in [0,1]$, and punishes the agent if and only if the total level of observable taxes exceeds \bar{t} (i.e., if $(1 - \alpha_j)t_j + M_j t_j^O > \bar{t}$), where the choices of both η and \bar{t} are conditional on X_τ . We only consider equilibria in which the ruler can commit to η and \bar{t} ex post.

We focus on these equilibria for both theoretical and historical reasons. First, permitting the ruler to play a mixed strategy η imposes the least possible restrictions on the action set, since it encompasses the possibility of the ruler playing a pure strategy where he never monitors ($\eta = 0$) or where he always monitors ($\eta = 1$). This formulation also allows us to capture the historical reality that the Qing selectively punished corrupt agents in order to pacify popular discontent. Such punishments were periodic and harsh, and they were therefore reflective of a ruler playing a ‘mixed punishment strategy’. Of course, a limited ruler may also find it useful to employ such a strategy, and as such we do not assume that this strategy is specific to one type of ruler. We employ punishment rule \bar{t} merely for expositional simplicity. Since the ruler must be able to commit to \bar{t} ex post, this is tantamount to focusing on a subgame perfect Nash equilibrium where the ruler's optimal strategy is to punish the agent if and only if the agent's observed income, $(1 - \alpha_j)t_j + M_j t_j^O$, exceeds \bar{t} . Equilibrium choices are denoted by $*$ and an equilibrium set is one in which the agent's optimal choice of total off-book tax collected is t^{O*} and the ruler's equilibrium decision set is $\{t^*, \alpha^*, \eta^*, \bar{t}^*\}$.

III. 2. A. Administrative capacity in absolutist regimes

In this section, we analyze how administrative capacity affects the level of off-book taxes taken by the agent, t^{O*} and the taxes collected by the ruler, α^*t^* in absolutist regimes. We first state propositions and proceed to provide intuition. All proofs are in the Appendix.

Proposition 1 (off-book taxes and administrative capacity): In an absolutist regime, t^{O*} is weakly increasing in m when $X_\tau = 0$, ceteris paribus.

When $X_\tau = 0$, an absolutist ruler has incentive to collect as little tax as possible, leaving as much as possible for the agent. The logic is that the ruler wants to maximize the desirability of “staying in the system” so that the agent is willing and able to remit as much tax as possible when there is an external shock. An absolutist ruler increases the benefit of remaining in the system by allowing all of the agent’s income to be off-book so that it is not a target for confiscation unless the ruler monitors. That is, the absolutist chooses $\alpha^* = t^* = 0$, allowing the agent to keep tax revenue up to $t^{O*} = \bar{t}^*$.³¹

The agent’s off-book revenue serves as an incentive to stay in the system only if the ruler will not confiscate it in the following period should an external shock occur ($X_{\tau+1} = 1$). Unlike a limited ruler, the absolutist ruler can only credibly commit to refrain from confiscating off-book revenue when it does not engage in monitoring. Therefore, as monitoring becomes more expensive and the absolutist’s commitment becomes more credible (i.e., η^* is low), an absolutist can permit the agent to take higher levels of taxes ($\bar{t}^* = t^{O*}$) while credibly refraining from confiscating them. This increases the value to the agent of staying in the system and therefore permits the ruler to extract more statutory taxes, α^*t^* , should an external shock occur in the following period. This logic indicates that t^{O*} is weakly increasing in m .

Next, consider how administrative capacity affects the ruler’s ability to collect statutory taxes when the external threat is realized ($X_\tau = 1$):

³¹ A limited ruler chooses to collect zero taxes by setting $\alpha^* = 0$, but it sets on-book taxes anywhere between $t^* = 0$ and the maximum allowed, $t^* = \bar{t}^*$. If there are constitutional constraints or some social distaste for off-book taxes, a limited ruler can simply set $t^* = \bar{t}^*$ and the agent will collect all taxes “on the book.”

Proposition 2 (tax collection and administrative capacity): In an absolutist regime, $\alpha^* t^*$ is weakly increasing in m when $X_\tau = 1$, ceteris paribus.

When $X_\tau = 1$, the ruler desires the maximum level of taxes the agent is willing and able to collect up to the point that the marginal benefit from additional taxes – used to repel the outside threat – equals the marginal cost of a higher chance of internal revolt.³² The key insight is that the agent is only willing to collect taxes if it is worth it for him to stay in the system. That is, he must be better off from his income in the present period and discounted expected future earnings than he is from his outside option.

In an absolutist regime, Proposition 1 implies that the agent’s benefit of staying in the system is increasing in m . The agent’s primary benefit from staying in the system is its per-period expected income in periods where no shock occurs, or $(1 - \theta)(1 - \eta^*)t^{0*}$. As m increases, the agent’s expected income increases because the ruler monitors less (η^* decreases) and the ruler permits more off-book income (t^{0*} increases). Therefore, when $X_\tau = 1$ the agent is more willing to collect and remit statutory taxes at higher levels of m because it has more incentive to keep its job and receive a higher expected income in the future.

III. 2. B. Absolutist vs. limited regimes

Proposition 2 may at first appear counter-intuitive. It indicates that absolutist regimes with weaker administrative capacity can collect *more* taxes to combat an outside attack. The logic of the model makes this result clear, however. In an absolutist regime, a high m increases the ruler’s capacity to credibly commit to refrain from confiscating the agent’s income, in turn permitting the agent to take more off-book wages in equilibrium and thus increasing his benefit of staying in the system. On the other hand, when m is sufficiently small, the ruler is not able to generate much tax revenue when $X_\tau = 1$, since there is less benefit for the agent of staying in the system. Hence, the absolutist ruler is better off when m is *higher*, since this permits the ruler to collect more taxes when facing an external revolt. We will return to this insight in subsection III.2.C.

On the other hand, in a limited regime, a low m strengthens the ruler’s capacity to make a tradeoff between minimizing the probability of losing an internal revolt and minimizing the

³² Note that in a limited regime this may include the ruler borrowing from the agent (i.e., $\alpha^* > 1$).

probability of losing an external revolt. In the extreme case, when $m = 0$, the ruler can make this trade-off optimally by setting \bar{t}^* to the point that perfectly balances the benefit of incentivizing the agent to stay in the system with the cost of increased probability of internal revolt. As m increases, the ruler has to permit the agent to take more in periods where $X_\tau = 0$ because it cannot credibly monitor him with high probability. This increases the probability of internal revolt beyond the ruler's optima, though it does come with the benefit of increasing the attractiveness to the agent of staying in the system, thereby allowing the agent to extract more taxes when $X_\tau = 1$. Revealed preference indicates, however, that the limited ruler is worse off as m increases; it could have set \bar{t}^* higher when $m = 0$ in order to extract more taxes when $X_\tau = 1$, but it did not.

This logic indicates that when m is small, the agent's benefit from staying in the system is greater in a limited regime than in an absolute regime. As m increases, the absolutist's commitment problem is partially mitigated, narrowing the gap between the two regime types. Only at the limit, as $m \rightarrow \infty$, does the absolutist no longer face a commitment problem and can thus permit the agent to take as much in taxes as a limited ruler. This entails that, for any m , limited rulers can generate more tax revenue when $X_\tau = 1$ than absolutist rulers, since they provide better incentives for staying in the system to their agents. Indeed, under some sets of parameters, the benefits to staying in the system for agents in a limited regime are so large that they *lend* to the ruler (i.e., $\alpha^* > 1$) when $X_\tau = 1$. Proposition 3 summarizes this intuition.

Proposition 3 (tax collection in absolutist vs. limited regimes): $\alpha^* t^*$ is weakly larger in a limited regime than in an absolutist regime when $X_\tau = 1$, ceteris paribus.

III. 3. *Endogenous administrative capacity*

The analysis in the previous section indicated that absolutist rulers are better off when administrative capacity is weak (i.e., m is large), since it gives them a mechanism through which they can commit to not confiscating their agents' income. This indicates that an absolutist ruler may decline to invest in improved administrative capacity *even if* it is inexpensive. In this section, we briefly extend the model to capture this insight.

Suppose the ruler plays the same game with the agent as described above, except that monitoring cost m is a choice variable. Specifically, assume that prior to each period the ruler can choose an investment in administrative capacity which allows it to monitor at cost $m \geq 0$. The

investment in administrative capacity costs the ruler $c(m)$, where $c' < 0, c'' > 0$, and $\lim_{x \rightarrow \infty} c(x) = 0$. The intuition of Proposition 3 suggests that limited rulers will invest in more monitoring capacity than absolutists. By investing in administrative capacity, limited rulers gain the ability to reduce taxes collected by the agent and thus reduce the probability of internal revolt. This comes at a cost of reducing the benefit for the agent to stay in the system. The limited ruler therefore weighs the benefit of lower internal revolt with the costs of reduced tax revenue during periods of external threat and the cost of investing in monitoring capacity to choose an optimal level of investment.

The absolutist ruler faces a different set of incentives from the limited ruler. Because the absolutist cannot commit to refraining from confiscation, especially when m is low, the agent's equilibrium income is increasing in m : at higher m , the ruler can credibly commit to not confiscating the agent's income because it is too expensive for him to do so. Therefore, investing in lower m only minimally reduces the probability of internal revolt for an absolutist, while it greatly reduces the ruler's capacity to collect taxes during periods of external revolt. Hence, relative to a limited ruler, the absolutist ruler has a lower marginal benefit and a greater marginal cost of improving administrative capacity. Proposition 4 summarizes this intuition.

Proposition 4 (administrative capacity in absolutist vs. limited regimes): An absolutist ruler invests in less administrative capacity than a limited ruler.

Combined, Propositions 3 and 4 indicate that a low level of taxation and low investment in administrative capacity – the “Qing equilibrium” described in Section 2 – may be a rational outcome for a ruler who cannot credibly commit to constraining himself in time of need. Such constraint is especially important when unexpected shocks reduce the ruler's time horizon, making maximal fiscal extraction in the present desirable. Without such constraint, an absolutist would act like Olson's (1993) “roving bandit”, undermining future revenue streams in order to maximize present revenue in time of need. Our analysis suggests, however, that an absolutist interested in maximizing dynastic tenure can commit himself to acting like a “stationary bandit” by refraining from investing in administrative capacity and asking its agent to remit low statutory taxes.

III. 4. Endogenous size of empire

In this section, we extend the model to account for the size of empire. The model is conducive to such an analysis because one of the key difficulties of extending empire is administrating the newly-conquered territory. The further the new territory is from the ruler, the more costly it is to monitor. However, there are numerous reasons why a ruler may want to conquer a new territory: personal glory, co-opting a potential rival, or increased tax revenue or resources (Alesina and Spolaore 2005; Ko, Koyama, and Sng 2015; Zhou 2012). Indeed, the model suggests that limited and absolutist rulers may have different motivations for conquering new territory. A limited ruler can build a monitoring infrastructure which permits it to extract resources from the new territory. Meanwhile, an absolutist will has a difficult time extracting revenue from its current territory, and it thus has incentive to co-opt a potential rival, who poses a costly threat should they attack. Indeed, for an absolutist ruler, the size of the territory may be inversely related to the risk of external threat. Hence, an absolutist ruler's incentive to conquer new territories lies more in internalizing a potential external threat than revenue extraction, even though this comes at the expense of higher monitoring costs.³³ Which one of these factors dominates depends on the exogenous monitoring costs each ruler faces, as we spell out below.

Suppose the ruler plays the same game with an agent in the territory he currently rules as laid out in Section III.1. In addition, suppose the ruler is considering conquering a new territory. For simplicity, assume that the ruler will conquer the territory with certainty if he spends resources r , and the cost of monitoring an agent in this new territory is \hat{m} , which is greater than m because the new territory is further from the center and thus more costly to monitor. Assume that the new territory has some surplus, \hat{S} , which the ruler can extract via a new agent, subject to the same constraints as in the previous game. Finally, the ruler faces outside threat $q(R_\tau)$ with probability $\hat{\theta}$ if he conquers the territory. We assume that $\hat{\theta} < \theta$, since the ruler is co-opting a potential "outside threat". Therefore, the benefit of conquering new territory is greater access to revenue, which can be used to defeat an external threat, as well as a lower probability of facing an external threat. The primary cost to the ruler is the resources expended to conquer, r .

³³ Given the unconstrained nature of absolutist rule, which gives the ruler comprehensive legal, administrative, and ideological power over the wider society, an absolutist ruler may have comparative advantage in controlling internal rebellion compared with a limited ruler, whose power is constrained by the rule of law (at least among the elites).

A limited ruler will be able to extract more from the new territory than the absolutist ruler for the reason laid out in Proposition 3. However, an absolutist ruler extracts less overall revenue (Proposition 3) and thus faces a higher probability $q(R_\tau)$ of succumbing to an outside threat should he face one. Hence, it is more attractive for an absolutist to lower the outside revolt probability to $\hat{\theta}$ by co-opting part of the threat.³⁴

This intuition indicates that when \hat{m} is small, say $\hat{m} \leq m^*$, a limited ruler has more incentive to conquer the new territory than an absolutist. At small \hat{m} , the limited ruler extracts much more revenue from the new territory than the absolutist. Although the marginal benefit of additional resources is smaller for the limited ruler, the absolute difference in extractable revenue entails that the benefit from conquering is greater for the limited ruler. However, when monitoring costs in the new territory are sufficiently large, $\hat{m} > m^*$, an absolutist ruler has more incentive to conquer the new territory than a limited ruler. In this case, there is a minimal difference in revenue extraction from the new territory between the absolutist and the limited ruler, but the marginal benefit of reducing the probability of an outside threat is sufficiently greater for the absolutist so that the benefits of conquering are also greater.³⁵ Proposition 5 summarizes this intuition.

Proposition 5 (conquering territory in absolutist vs. limited regimes): $\exists m^*$ such that an absolutist ruler is more likely than a limited ruler to conquer new territory if and only if $\hat{m} > m^*$, ceteris paribus.

In conclusion, the model generates numerous predictions which help explain the stylized facts of the “Qing equilibrium”. We summarize the primary predictions below and proceed, in Section IV, to re-visit the relevant histories in light of these predictions:³⁶

³⁴ Moreover, the difference in the amount the limited and absolutist rulers extract from the new territory is decreasing in \hat{m} . At high levels of \hat{m} , the absolutist is better able to commit to not confiscating the agent’s income, thus partially mitigating the commitment problems underlying the reason that absolutists have lower capacity to collect taxes.

³⁵ It is likely that what we call a “limited ruler” is actually a coalition of interest groups, although this is not explicitly modeled here. In the case of England or the Dutch Republic, conquering new territories was largely driven by the motivation for revenue or resource extraction for the sake of commercial interests such as East India Company. For Imperial China, conquering new territories was more likely driven by reducing or eliminating external threats by absorbing external territories. Although this increased the probability of internal rebellion, given the much larger territories, the totalitarian nature of absolute rule allowed the ruler to better control internal rebellion through its control over the legal system, ideology, and information. This explains why Chinese imperial expansion often involved contiguous units which could pose a potential external threat.

³⁶ We do not re-phrase Proposition 2 as a prediction because there are not enough contemporaneous cases to compare absolutist regimes with varying administrative capacity. There is variation over time, but such a comparison would

Prediction 1: An absolutist ruler will permit agents to collect off-book taxation (Proposition 1).

Prediction 2: Limited states will collect more statutory tax revenue than absolutist states (Proposition 3).

Prediction 3: A limited ruler is more likely than an absolutist ruler to invest in administrative capacity (Proposition 4).

Prediction 4: Absolutist rulers are more likely to attempt to conquer neighboring territories than limited rulers (Proposition 5).³⁷

IV. Revisiting the Puzzle: Administrative Capacity and Credible Commitment in Chinese and European History

The Qing fiscal regime, as captured in our model, was an equilibrium that evolved from China's long historical experiments with various absolutist forms of fiscal regimes in the absence of credible commitment. Indeed, there are episodes in Chinese history where the absolutist state amassed massive monitoring infrastructure and state coercive power. Moreover, coercive power allowed absolutist Chinese rulers to economize on monitoring infrastructure while at the same time exerting political control through coercive measures such as control over migration and occupation of the population. These infrastructures, coupled with the unconstrained coercive power of the state, often became menacing tools of political repression, sometimes leading to massive human disasters and political instability.³⁸ Hence, the Qing equilibrium of low fiscal and administrative capacity can be viewed as an institutional mechanism to (at least temporarily) restrain the unconstrained ruler from slipping from a relatively "benevolent" stationary banditry equilibrium to a potentially disastrous roving banditry equilibrium each time they were confronted with a short term crisis.

The Qing's successful territorial expansion, particularly during the 18th century, served to reduce external threats and the potential for inter-state competition. This helps explain the apparent

clearly violate the *ceteris paribus* condition, especially with respect to the technology available to collect and enforce taxation.

³⁷ Prediction 4 is only true if \hat{m} is sufficiently large. This is a reasonable assumption in the pre-modern context where monitoring technology was expensive and inefficient.

³⁸ For a case of absolutist state with massive monitoring capacity and coercive power in the early Ming dynasty during the 14th century, see Guanglin Liu (2005). For another case of a command economy built under Mao Zedong in the 1950s, which partly accounted for the 1959-61 Great Leap Famine, see Chen and Kung (2011).

contradiction of the Qing's vast territorial expansion and increasingly inward looking mindset, while at the same time reinforcing the "Confucian equilibrium" of low tax extraction and low administrative capacity.³⁹ In the end, the dominance of a single and centralized absolutist state may also help answer the question of the absence of a viable market for public debt in traditional China. While absolutist regimes in Europe faced difficulties in the development of a domestic market for public debt given the absence of credible commitment, they could still float public debt abroad or in international markets within a multi-state framework. Such an option was not viable for the Qing given that the entire territory was under the reign of a single centralized state. As Max Weber hinted at one point, the Chinese type of warfare may not seem to have achieved the same type of fiscal and financial capacity as their European counterparts partly due to the combined absence of an internal constitutional constraint and political fragmentation (Weber 1951, p. 103-4). As long as the state could resort to coercive means of extracting resources without facing external competition, it was less inclined to develop state capacity based on market forces such as long-term debt.⁴⁰

Although our paper focuses primarily on the case of Qing China, the case of weak administrative capacity combined with a low fixed revenue target had parallels to other absolutist states such as early modern France, Spain, and the Ottoman Empires. Those regimes relied heavily on quasi-independent tax-farming agents who extracted opaque extra-legal taxation to cover the cost of collection (Balla and Johnson 2009). Indeed, by introducing credible commitment into our model of fiscal and administrative capacity, we are able to capture the historical prototypes of fiscal regimes in Western Europe. With credible commitment, the ruler commits to not arbitrarily raise the statutory tax quota without prior consent from the agent. So, even with very high monitoring costs, the agent may not need to hide the amount of off-book taxes it collects, as it is

³⁹ At the time when the Qing vastly expanded its territories into China's northwestern frontiers, which had historically been the source of military conflicts, it restricted its overseas trade to the port of Canton under a monopoly trading cartel and banned Chinese migration to Southeast Asia, which had traditionally posed no military threat (Brandt, Ma, and Rawski 2014). When visited in 1792 by the British trade mission led by Lord George Macartney, who aimed to show off the best of Western trade and technology, Qianlong emperor was known to have famously replied that "Our Celestial Empire possesses all things in prolific abundance and lacks no product within its borders. There is therefore no need to import the manufactures of outside barbarians in exchange for our own produce." <http://www.history.ucsb.edu/faculty/marcuse/classes/2c/texts/1792QianlongLetterGeorgeIII.htm>, accessed August 15, 2016.

⁴⁰ See Ma (2016) on the rise of public debt in early 20th century China under a differential institutional set-up, which offers some insights as to why public debt and the related secondary markets were hard to come by in early modern China.

secure from extraction from the ruler. We can see the deal between a European ruler and the autonomous, free cities as a case of low monitoring capacity at the center but with credible commitment. In exchange for a fixed sum of tax revenue, medieval and early modern European rulers granted cities a secure charter which guaranteed their rights. As autonomous cities could collect taxes (formal or informal) within their jurisdiction with no fear of extraction from the ruler, the accounting and revenue system of these autonomous cities become increasingly open. Thus, credible commitment allowed the autonomous rulers to develop a viable public debt market to help deflect exogenous crises and smooth expenditure. The public debt market also became more viable because the wealth of the agents could grow without fear of confiscation both in peace and crisis times (Stasavage forthcoming).

The combination of taxation with low monitoring cost and with credible commitment could apply to the case of post-Glorious Revolution England. Here, even though the Crown knew both statutory and off-book taxes given strong monitoring capacity, the ruler's credible commitment not to raise taxes or confiscate arbitrarily allowed the Crown's agents a secure and large present value of future income (all visible). One-time revenue demand in times of crisis could be solved through public debt – a sustainable public debt required credible commitment – or through parliamentary consent. Hence, the value to the agent of staying within the bureaucracy and being honest remained high. This is a model seen in modern civil bureaucracy, where bureaucrats are paid high, transparent wages in order to deter short-term dishonest behavior. Indeed, modern bureaucracy often values long-term tenure over entrepreneurship (Daunton 2012; North and Weingast 1989). In this regard, the credible commitment mechanism reinforced through rule of law offers the reigning political regime a way out of the cycles of roving-stationary banditry equilibria and more importantly, extends the time horizon of political rule beyond the tenure of individual rulers.

In the end, when British imperialism finally confronted the Qing Empire in the infamous First Opium War of 1842, it was indeed a clash of political and fiscal regimes. From that point onward, the Qing's monopoly over the Chinese territory was challenged and China was thrust into a permanent state of inter-state competition (Brandt et al. 2014).

V. Concluding Thoughts

Motivated by the case of the absolutist Qing Empire, our paper seeks to explain the paradox of why fiscal capacity (the ability to collect taxes from the masses) and administrative capacity (the ability to monitor and punish administrators tasked with carrying out the ruler's policies) are frequently weak in absolutist regimes, despite the ruler's absolute power over people and property. We suggest that the absolutist's unconstrained power and inability to refrain from confiscation could turn out to be a weakness in the long-run compared with constitutionally-constrained regimes. The lack of credible commitment means that absolutists are only able to encourage their administrators to collect and remit taxes when administrative capacity is weak and the ruler lacks the ability to inexpensively monitor and punish his agents. Under such circumstances, agents value "staying in the system" because they have a steady stream of income via the collection of extra-legal taxation, which is secure from the ruler because the ruler does not know it exists. This logic entails that an absolutist's failing to build up administrative infrastructure is an equilibrium *outcome* in the situation where the ruler faces few constitutional constraints. Moreover, it entails that extra-legal taxation – so common in the Qing Empire and other absolutist states – is a *necessary* component of an equilibrium where an agent collects and remits taxes to the center.

This paper also brings to the fore the issue of fiscal, financial, and legal capacities in the long-term economic divergence between China and Northwestern Europe. In particular, it suggests that once the rulers of England and the Dutch Republic were subject to sufficient constitutional constraint – following the Dutch Revolt in the Dutch Republic and the Glorious Revolution in England – they were incentivized to build administrative infrastructure, develop public debt markets, and increase the level of taxation (see Table 1). On the other hand, absolutist regimes – both Qing China as well as the absolutist regimes of Europe including France, Spain, and the Ottoman Empire – often sought other means to consolidate their power rather than build such infrastructure and markets based on some form of credible commitment mechanism. It is no surprise, therefore, that the Dutch Republic and England – both of whose territories and population were minuscule compared with China, Russia, or the Ottoman Empire – became the world's two leading economies of the early modern period and constructed the world's most dynamic modern global empires.⁴¹ It was not just simply constitutional constraint that mattered or the government's

⁴¹ For more on the rise of the Dutch in the early modern period, see de Vries and van der Woude (1997). van Zanden, Buringh, and Bosker (2012) recognize the Dutch and English "little divergence" as associated with the divergence in

credible commitment to repay public debt (as in North and Weingast 1989). Instead, limited governance directly contributed to the build-up of fiscal, administrative, and financial institutions, all of which are hallmarks of the modern economy.

parliamentary development between northwestern Europe and southern Europe between 1500 and 1800. Rubin (2016) adds to this insight, arguing that the little divergence in parliamentary development can be explained by the Dutch and English adopting the Reformation, which necessitated that rulers legitimize the rule and capacity to collect taxes via parliaments.

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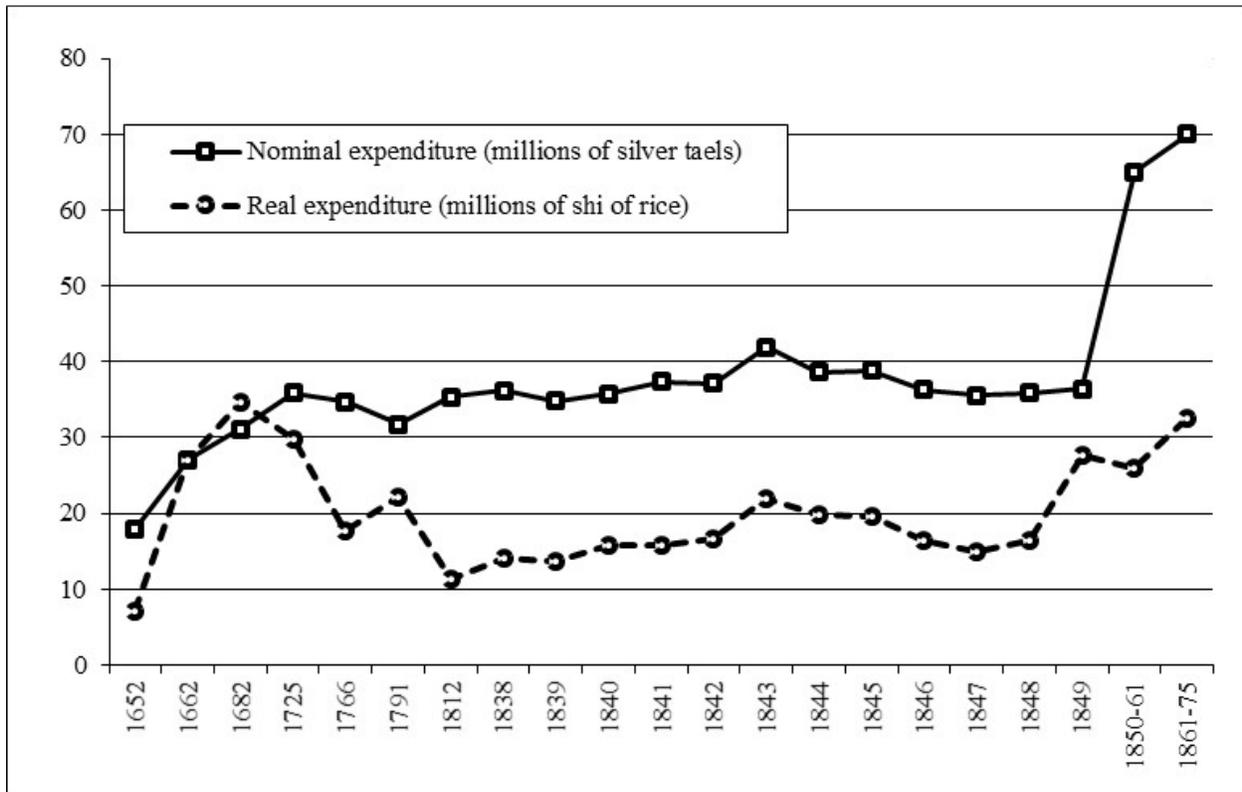
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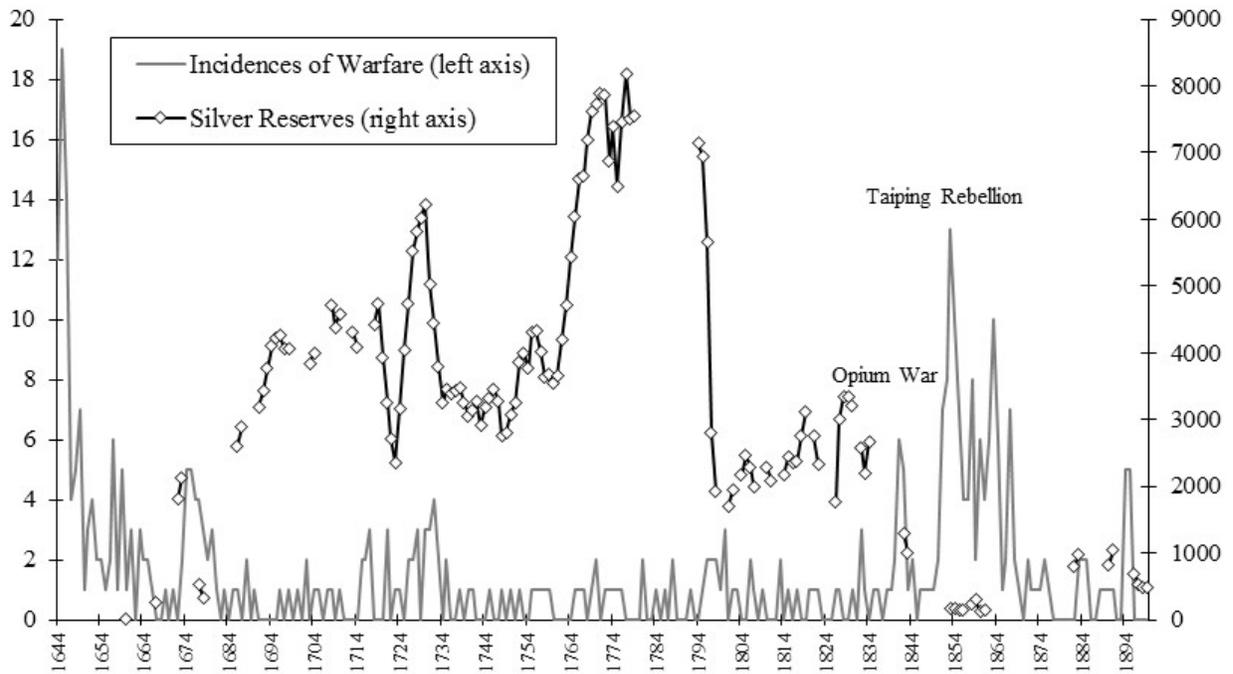
Tables and Figures

Figure 1: Government Expenditure in Qing China



Source Notes: Ma (2014).

Figure 2: Annual Average of Recorded Incidences of Warfare (on the left axis) and Silver Reserves (in ten thousand taels on the right axis) in Qing (1644-1911)



Source notes: Ma (2014).

Figure 3: Game Play within each Period

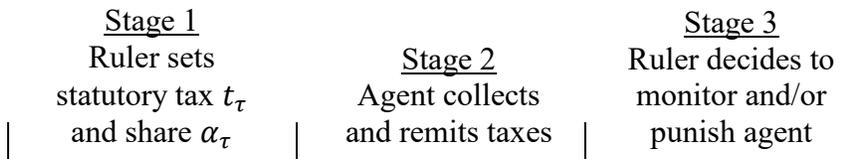


Table 1: Qing Central Government Annual Revenue in International Comparison

Panel A. Aggregate Revenue (tons of silver)

	<u>Absolutist Regimes</u>					<u>Constrained Regimes</u>	
	China	Ottoman	Russia	France	Spain	England	Dutch Rep.
1650-99	940	248		851	243	239	
1700-49	1,304	294	155	932	312	632	310
1750-99	1,229	263	492	1,612	618	1,370	350
1800-49	1,367					6,156	
1850-99	2,651					10,941	

Panel B. International comparison of per capita tax revenue (grams of silver)

	<u>Absolutist Regimes</u>					<u>Constrained Regimes</u>	
	China	Ottoman	Russia	France	Spain	England	Dutch Rep.
1650-99	7.0	11.8		46.0	35.8	45.1	
1700-49	7.2	15.5	6.4	46.6	41.6	93.5	161.1
1750-99	4.2	12.9	21.0	66.4	63.1	158.4	170.7
1800-49	3.4					303.8	
1850-99	7.0					344.1	

Panel C. Per capita revenue expressed in days' wages for unskilled workers

	<u>Absolutist Regimes</u>					<u>Constrained Regimes</u>	
	China	Ottoman	Russia	France	Spain	England	Dutch Rep.
1650-99		1.7		8.0	7.7	4.2	13.6
1700-49	2.3	2.6	6.4	6.7	4.6	8.9	24.1
1750-99	1.3	2.0	8.3	11.4	10.0	12.6	22.8
1800-49	1.2					17.2	
1850-99	2.0					19.4	

Sources: Brandt et al. (2014); Dincecco (2009) for absolutist/constrained distinction

Table 2: Summary of Key Variables and Parameters

<u>Choice Variables</u>		<u>Parameters</u>	
t_τ	Statutory tax set by ruler	S	Taxable surplus
t_τ^O	Off-book taxes ($t_\tau^O = T_\tau - t_\tau$)	\underline{S}	Threshold income for population
α_τ	Share of statutory tax remitted	m	Monitoring cost
P_τ	Ruler's decision to punish (0/1)	p	Probability of successful revolt
M_τ	Ruler's decision to monitor (0/1)	X_τ	External event (0/1) w/ probability θ

Appendix A: Proofs of Propositions

A.1. Proof of Proposition 1

In periods where $X = 0$, an absolutist collects no tax revenue, i.e., $\alpha^*t^* = 0$. The reason for this is straight-forward: there is no external threat for the ruler to repel, while setting $\alpha^*t^* = 0$ maximizes the amount the agent can keep as a wage. This entails the highest possible continuation value for the agent, Π^A , thus allowing the ruler to extract more revenue (by paying the agent less) in periods where $X = 1$. This implies that the agent collects all taxes off-book when $X = 0$. This is optimal from the perspective of the agent since it will not be subject to confiscation should $X = 1$ in the following period (unless the ruler monitors).

Knowing that $\alpha^*t^* = 0$ when $X = 0$, we can write the agent's participation constraint, i.e., the condition under which the agent collects the permitted taxes, \bar{t} :

$$(A.1) \quad (1 - p)(\bar{t}^* + \delta\Pi^A) + p\frac{1}{1-\delta}\underline{u} \geq (1 - \hat{p})(1 - \eta^*)(\hat{t} + \delta\Pi^A) + [1 - (1 - \hat{p})(1 - \eta^*)]\frac{1}{1-\delta}\underline{u},$$

where $\hat{t} > \bar{t}$ is the optimal amount the agent collects if it chooses to collect more taxes than \bar{t} and \hat{p} is the probability of revolt associated with \hat{t} .

Note that, all else equal, \hat{t} does not change as m increases – the agent simply sets \hat{t} to balance the marginal benefit of extra wage with the marginal cost of a higher probability of internal revolt. Therefore, \hat{p} also does not change as m increases. Moreover, η^* must be decreasing in m : as monitoring becomes more expensive, the ruler cannot credibly commit to monitoring as frequently.

To prove Proposition 1, we consider two cases: i) the equilibrium values of η^* and \bar{t}^* are such that (A.1) holds but does not bind; ii) the equilibrium values of η^* and \bar{t}^* are such that (A.1) holds and binds. First, consider case 1. The ruler sets the optimal \bar{t}^* to balance the benefit of slackening the agent's participation constraint in periods when $X = 1$ with the costs of a weakly greater chance of internal revolt. In case 1, the ruler chooses to permit tax collection above what is needed to satisfy (A.1) because the marginal benefit of slackening the agent's participation constraint is greater than the marginal cost of increasing the chance of internal revolt at the \bar{t}^* in

which (A.1) binds. To show that Proposition 1 holds in this case, note that a small increase in m does not affect the marginal probability of internal revolt. It does, however, increase the ruler's marginal benefit of slackening the agent's participation constraint in period when $X = 1$. This is because, as we show in the proof of Proposition 2, the agent's participation constraint always binds when $X = 1$. Therefore, if Π^A is not increasing in m , the amount of taxes the ruler can extract is likewise not increasing in m . Since q is concave, the ruler's marginal benefit of increasing \bar{t}^* (and therefore increasing Π^A in periods where $X = 1$) exceeds the marginal cost, which does not change following an increase in m . It follows that $\bar{t}^* = t^{0*}$ is increasing in m .

In case 2, an increase in m tightens the agent's participation constraint (A.1). To see this, note that η^* is decreasing in m , so the RHS of (A.1) is increasing in m , holding Π^A constant. Of course, Π^A is not constant in m – but it is straight-forward to show that Π^A must be increasing in m . This can be proven by contradiction. Π^A is decreasing in m if and only if \bar{t}^* is decreasing in m , since the agent's equilibrium payout will be lower in the future. However, if \bar{t}^* and Π^A decrease while η^* is also decreasing, then the LHS of (A.1) decreases by a greater amount than the RHS, meaning that the agent's participation constraint does not hold. Hence, in any equilibrium where the agent's participation constraint holds and is binding (i.e., in case 2), $\bar{t}^* = t^{0*}$ must be increasing in m . Combined with the result from case 1, it follows that t^{0*} is weakly increasing in m when $X = 0$, ceteris paribus.

Finally, note that there is no equilibrium where the agent remits a positive tax level $\alpha^* t^*$ when m is sufficiently small, say $m < \underline{m}$. In this case, the ruler cannot commit to refrain from confiscating anything but a very low level of income for the agent. If the agent's income is low enough, it prefers its reservation utility over collecting taxes. Hence, $t^{0*} = 0$ when $m < \underline{m}$.

A.2. Proof of Proposition 2

To prove the proposition, consider an equilibrium with monitoring cost $\tilde{m} \geq \underline{m}$ (no tax is collected when $m < \underline{m}$). Next, consider an economy with a marginally higher monitoring cost, $\tilde{m} + \varepsilon$ (where $\varepsilon \rightarrow 0^+$). The agent's continuation value Π^A is marginally higher than it is when the monitoring cost is \tilde{m} (by Proposition 1), while it is also more expensive for the ruler to monitor the agent.

The ruler must therefore balance the agent's willingness to take a lower wage (knowing it will receive more in the future if it stays in the system) with its inability to commit to monitoring the agent the same fraction of the time (because it is more expensive). Since η^* is set such that the ruler can commit to not confiscating the agent's income unless the ruler observes the agent collecting taxes greater than \bar{t}^* , we can write the agent's participation constraint as:

$$(A.2) \quad q \left[(1-p)(\bar{t}^* - \alpha^* t^* + \delta \Pi^A) + p \frac{1}{1-\delta} \underline{u} \right] + (1-q) \frac{1}{1-\delta} \underline{u} \geq q \left[(1-\hat{p})(1-\eta^*)(\hat{t} - \alpha^* t^* + \delta \Pi^A) + [1 - (1-\hat{p})(1-\eta^*)] \frac{1}{1-\delta} \underline{u} \right] + (1-q) \frac{1}{1-\delta} \underline{u},$$

where, as in the proof of Proposition 1, $\hat{t} > \bar{t}$ is the optimal amount the agent collects if it chooses to collect more taxes than \bar{t} and \hat{p} is the probability of revolt associated with \hat{t} .

We simplify (A.2) by assuming that q is the same regardless of whether or not the agent collects the permitted taxes. This is not exactly true – if the agent collects taxes exceeding \bar{t} and is caught, the ruler receives extra funds by punishing the agent. Yet, we assume that this is not part of the agent's decision-making calculus – that is, he does not collect extra taxes in the “hope” of being caught so that these extra taxes can be used to fight against the external threat.⁴² Under this assumption, we can re-write (A.2) as:

$$(A.3) \quad (1-p)(\bar{t}^* - \alpha^* t^* + \delta \Pi^A) + p \frac{1}{1-\delta} \underline{u} \geq (1-\hat{p})(1-\eta^*)(\hat{t} - \alpha^* t^* + \delta \Pi^A) + [1 - (1-\hat{p})(1-\eta^*)] \frac{1}{1-\delta} \underline{u}.$$

As in the proof of Proposition 1, note that, all else equal, \hat{t} (and therefore \hat{p}) does not change as m increases – the agent simply sets \hat{t} to balance the marginal benefit of extra wage with the marginal cost of a higher probability of internal revolt. Meanwhile, Π^A is increasing in m (from Proposition 1) while η^* is decreasing in m . Therefore, holding \bar{t}^* and $\alpha^* t^*$ constant, it must be true that the LHS of (A.3) increases more than the RHS when monitoring costs increase from \tilde{m} to $\tilde{m} + \varepsilon$. This means that as m increases, the agent's participation constraint slackens.

⁴² This is a reasonable assumption if the agent is one of many, each of whose tax receipts are small relative to the overall amount.

Since the agent's participation constraint slackens with an increase in m , the ruler can ask for an increase in remitted taxes, α^*t^* , while the participation constraint still holds. The ruler must therefore ask for greater α^*t^* in equilibrium – otherwise the probability it succumbs to the outside attack is higher (and, if the ruler desires, the probability of internal revolt is *also* lower).⁴³ Therefore, α^*t^* is increasing in m .

A.3. Proof of Proposition 3

In the proof of Proposition 2, we show that the agent's participation constraint (A.3) must bind in equilibrium. This insight is true in both limited and absolutist regimes, although the agent's participation constraint is different for each. They both take the form of (A.3), but the values of η^* and Π^A are different in the two regimes, for any given set $\{\bar{t}^*, \alpha^*, t^*\}$.

It is straight-forward to show that Π^A is larger in a limited regime than in an absolutist regime. The logic is simple: in periods where $X = 0$, a limited ruler can credibly commit to not confiscating the agent's observed income in the following period should a shock occur (i.e., $X = 1$). Hence, a limited ruler can permit a higher \bar{t}^* than an absolutist ruler in periods where $X = 0$; if an absolutist ruler permits \bar{t}^* at the level the limited ruler chooses, it cannot credibly commit to refrain from confiscation in the following period if it monitored the agent and $X = 1$.

It is also straight-forward to show that η^* is larger in a limited regime than in an absolutist regime. Both types of rulers benefit from higher values of η^* because it slackens the agent's participation constraint (A.3). But, conditional on m , the limited ruler can implement a higher η^* while also not confiscating the agent's income (this promise is credible by assumption). Meanwhile, if the absolutist were to choose η^* as large as the limited ruler, it could not credibly commit to refrain from confiscating the agent's income. Therefore, in any equilibrium where η^* is set such that the ruler does not confiscate the agent's income (unless the agent takes taxes greater than \bar{t}^*), the limited ruler sets η^* greater than the absolutist.

⁴³ The probability of internal revolt is lower if the ruler decreases \bar{t} while also increasing α^*t^* . This option is available to the ruler, but it may not always be optimal. Whether the ruler chooses this option depends on the parameters of the model. It is also straight-forward to see that the ruler never chooses \bar{t}^* and α^*t^* such that (A.3) is not binding. Otherwise, it could lower the probability of either an internal or external revolt (or both) without giving up anything.

To prove Proposition 3, consider the levels of \bar{t}^* and α^*t^* the absolutist sets in equilibrium (in which (A.3) binds). Since the absolutist makes choices such that Π^A and η^* are lower than they are for a limited ruler, it must be true that the limited ruler could choose a lower value of \bar{t}^* (corresponding to a lower probability of internal revolt) or a higher value of α^*t^* while the agent's participation constraint still holds. In equilibrium, the limited ruler must therefore choose either a lower value of \bar{t}^* or a higher value of α^*t^* than the absolutist ruler – or both – up to the point that the agent's participation constraint binds.

A.4. Proof of Proposition 4

Consider the overall marginal net benefits (i.e., $MNB = MB - MC$) that limited and absolutist rulers derive from a decrease in m , absent the cost $c(\cdot)$. First, note that they must set $\eta^* = 0$ at $m \rightarrow \infty$, meaning that they never monitor and thus agents extract up to the point where their MB of additional tax income equals the MC of higher internal revolt probability. As m decreases, the agent's continuation value, Π^A , decreases by more in an absolutist regime (see the proofs of Propositions 1 and 3 for more detail). Hence, as m decreases, it follows from the proof of Proposition 2 that limited rulers are able to extract more on the margin in times of need (i.e., $X = 1$) since their agent's participation constraint slackens to a greater degree. Thus, the MNB of a decrease in m is greater for limited rulers than absolutist rulers. Since the marginal cost, c' , of decreasing m is the same for both types of rulers at all values of m , the limited ruler chooses to decrease m by a greater amount than the absolutist.

A.5. Proof of Proposition 5

A ruler will conquer the new territory only if the marginal benefits from doing so are sufficiently large. We focus on the ruler's expected utility in periods where there is an external attack, since conquering the new territory does not affect its utility in periods where there is no attack. Ignoring the internal revolt, we therefore simplify the intra-period expected net marginal benefits for ruler $i \in \{A, L\}$, where A is absolutist and L is limited, of conquering the new territory as:

$$(A.4) \quad [\hat{\theta}q(\hat{R}^i) - \theta q(R^i)]u,$$

where $\hat{R}^i (> R^i)$ is the revenue the ruler is able to collect if it conquers the territory. Hence, the absolutist ruler will be more likely to conquer the new territory – that is, there is a larger set of values of r in which it conquers – if and only if:

$$(A.5) \quad \hat{\theta}q(\hat{R}^A) - \theta q(R^A) > \hat{\theta}q(\hat{R}^L) - \theta q(R^L).$$

This can be rewritten:

$$(A.6) \quad \theta[q(R^L) - q(R^A)] > \hat{\theta}[q(\hat{R}^L) - q(\hat{R}^A)].$$

Note that while $\hat{R}^L - \hat{R}^A > R^L - R^A$, since the limited ruler can take more on the margin from the newly conquered territory, it is not necessarily true that $q(\hat{R}^L) - q(\hat{R}^A) > q(R^L) - q(R^A)$, since q is concave.

From Proposition 3, we know that $\hat{R}^L > \hat{R}^A$ and $R^L > R^A$ for any value of m . It is also clear from the proof of Proposition 3 that as m increases, $R^L - R^A$ decreases (and thus so does $\hat{R}^L - \hat{R}^A$). Moreover, as m increases, it must be true that $\hat{R}^L - \hat{R}^A$ decreases faster than $R^L - R^A$. To see this note that $\hat{R}^L - \hat{R}^A$ is greater than $R^L - R^A$ at $m = 0$ but both $\hat{R}^L - \hat{R}^A = 0$ and $R^L - R^A = 0$ at $m \rightarrow \infty$. This entails that $[q(\hat{R}^L) - q(\hat{R}^A)] - [q(R^L) - q(R^A)]$ is decreasing in m . There must therefore exist some sufficiently large value of m , which we denote m^* , such that whenever $m \geq m^*$, $[q(\hat{R}^L) - q(\hat{R}^A)] - [q(R^L) - q(R^A)]$ is sufficiently negative that inequality (A.6) holds.