

Working Papers No. 152/11

**Rock, Scissors, Paper: the Problem
of Incentives and Information in
Traditional Chinese State and
the Origin of Great Divergence**

Debin Ma

© Debin Ma, LSE

July 2011

Department of Economic History
London School of Economics
Houghton Street
London, WC2A 2AE

Tel: +44 (0) 20 7955 7860
Fax: +44 (0) 20 7955 7730

Rock, Scissors, Paper: the Problem of Incentives and Information in Traditional Chinese State and the Origin of Great Divergence

*Debin Ma**

Abstract

This article posits that the political institution of imperial China – its unitary and centralized ruling structure – is an essential determinant to China’s long-run economic trajectory and its early modern divergence from Western Europe. Drawing on institutional economics, I demonstrate that monopoly rule, a long time-horizon and the large size of the empire could give rise to a path of low-taxation and dynastic stability in imperial China. But fundamental incentive misalignment and information asymmetry problems within its centralized and hierarchical political structure also constrained the development the fiscal and financial capacity of the Chinese state. Based on a reconstruction of two millennia records of incidences of warfare, this paper develops a narrative to show that the establishment and consolidation towards a single unitary monopoly of political power was an endogenous historical process. Using data series on warfare and government revenue for 17-19th century, I illustrate the Qing imperial rule as an epitome of the traditional Chinese political economy.

Why did China, given her economic and technological leadership in the 14th century or even in the 18th century as some have recently claimed, fail to become the first industrial nation? A multitude of hypotheses ranging from cultural and scientific traditions to factor

* I benefitted greatly from discussion with Loren Brandt, Mark Dincecco, Phil Hoffman, Cai Hongbin, Peter Lindert, Liu Guanlin, Paul Davis, Brad DeLong, Long Denggao, Avner Greif, Deirdre McCloskey, Joel Mokyr, Patrick O’Brien, Maarten Prak, Leandro Prados de la Escosura, Kenneth Pomeranz, Paul Rhode, Thomas Rawski, Tirthankar Roy, Shi Zhihong, Tuan-Hwee Sng, Jan Luiten van Zanden, Oliver Volckhart, Gavin Wright, Yan Se, Yuan Weipeng and Zhou Li-an and the seminar participants at University of Utrecht, the Netherlands, LSE, University of Carlos III, Madrid, Fudan University, Tsinghua University, Guanghua School of Business, Beijing University, UC Berkeley, Stanford University, Northwestern University, University of Michigan, IMT (Luca, Italy) and University of Pompeu Fabra (Spain). Research for this paper is supported by Global Price and Income Project funded by NSF under the leadership of Peter Lindert and European Commission’s 7th Framework Programme for Research “*Historical Patterns of Development and Underdevelopment: Origins and Persistence of the Great Divergence*”(HI-POD). I alone remain responsible all the errors.

endowments or natural resources have been proposed.¹ One long-standing thesis to account for China's long-term stagnation, argued from a European comparative perspective, is the absence of dynamic inter-state competition occasioned by the precocious rise of a unitary and centralized state in historical China. This argument found numerous expressions in various academic and popular writings.² As plausible as it may be, this thesis is qualified or challenged at least on two fronts. Firstly, the mechanism of how political fragmentation or inter-state competition (as in the European context) directly impact property rights and contract enforcement – factors viewed as fundamental to long-term economic growth – has yet to be properly identified. Indeed, the recent revisionist China historians claimed that the Imperial rule of benevolence in traditional China provided an institutional framework that taxed the peasantry lightly, protected private property rights and interfered little in the operation of a well-established markets in land and labour (see Pomeranz 2000 and Wong 1997).

Secondly, as pointed out by S.R. Epstein (2000), the inter-state competition thesis even faces challenge on the European front. Political or jurisdictional fragmentation, as he emphasized, may have actually acted to shackle long-term growth in the Medieval and early modern Europe by way of massive coordination failures caused by the absence of undivided sovereignty over the political and economic spheres. This line of logic led him to surmise that England's rise to global eminence in the 18th century had to more to do with a more conducive institutional environment emanated – not from jurisdictional fragmentation – but from its precocious institutional unification and centralization due to its comparative weakness of entrenched “corporate” interest (Epstein, pp. 36-7).

¹ See Ma 2004 for a summary of these hypotheses.

² The latest rehashing of this thesis appears in Niall Ferguson's, *Civilization, the West and the Rest*, see chapter one.

The Chinese imperial political structure, marked by a centralized and unitary state and evolved in relative isolation, offers a fascinating test case on the relationship between political institution and long-economic growth. Surprisingly, political institution has figured little in the debate on the divergence between China and Western Europe. Part of the reason for this cant attention is that the historiography on the role of traditional Chinese state had long been dominated and clouded by the overly simplistic framework oriental despotism or theories of class struggle in the official Communist ideology.³

This article draws on the insights of new institutional economics to delineate the political logic of Chinese empire and dynastic cycles⁴ In the spirit of Olson (1993), this article develops a historical narrative and empirical evidences to show that given ruler' monopoly of power and long time-horizon, an absolutist regime with total power as in imperial China could achieve a relatively stable path of low fiscal extraction co-existing with a relatively free private sector. Going beyond Olson, however, I develop a framework with three major actors: the emperor, the bureaucracy and the people, to incorporate the principal-agent problem with asymmetric information as embedded in a centralized hierarchical political system. I argue that fundamental incentive misalignment and information asymmetry problem among these three actors (or a double principal-agent problem) under a centralized and hierarchical political structure added a new dimension of constraining the power (or the grabbing hands) of the Chinese emperor and/or bureaucracy. Indeed, given steam of revenue associated with the long-term horizon of monopoly rule and the constraints of double principal-agent problems, the objective function of the imperial rulers would shift from short-run revenue

³ For oriental despotism, see Wittfogel (1957). Also see Wang Yanan (1981) for a condemnation of the traditional Chinese state from a Marxist perspective.

⁴ For new institutional economics literature related to state, see North 1981, Olson 1993, North, Wallis and Weingast 2009.

maximization to long-term defence of monopoly rents. Over time, fiscal extraction and tax revenue maximization could become secondary to the survival and extension of rule, which itself hinged on the defusing of internal insurrection and elimination of alternative or contending sources of political power. The historical stability of this particular equilibrium also gave rise to a certain long-term trajectory where political stability and dynastic survival took precedence over other objectives, including economic growth. Hence, dynastic instability or overthrows can be viewed as temporal deviations from the long-term trajectory where the traditional pecking-order of the three actors (emperor-bureaucracy-masses) reversed often violently as in a game of rock-scissors-paper.

This article illustrates the above thesis through a historical narrative and the presentation of systemic time series on warfare and taxation in China. Through a reconstruction of two indices of imperial unification based on two millennia's recorded incidences of warfare, I develop a narrative to show that the establishment and consolidation towards a single unitary monopoly of political power was an evolutionary and endogenous historical process achieved through long gestation of cultural and institutional integration that shaped and reshaped private property rights and factor markets. A detailed examination of public finance and its linkage with warfare and rebellion in 17-19th century reveals that the Qing imperial rule in the 18th century epitomized the virtuous equilibrium of low-extraction and dynastic stability. My quantitative indices, presented in a comparative perspective, show that imperial Chinese performance as measured by dynastic stability, imperial unity and fiscal extraction was unparalleled among major civilizations including Western Europe. But the stability and ultimately, inertia along this long-term Chinese trajectory looked flaccid by the early modern era, pitched against an advancing Europe whose institutional dynamism may have derived from, as I argue,

a unique symbiosis of inter-state competition and representation institution of some sort (within the polity).

I divide the paper into three main sections followed by a conclusion. The first section provides a historical narrative on the model and evolution of traditional Chinese political structure and its theoretical implications. The second section examines the historical record of the traditional Chinese political governance model using two reconstructed indices of imperial unification contrasted against a two and a half millennia data series of warfare. It then focuses on the fiscal regime for Qing China (1644-1911) in a comparative perspective. The third section analyzes the problem of incentives and information and its relevance for understanding China's early modern divergence with English and Western European states.

I. Absolutism with Chinese Characteristics

The Origin of a Model

In the era of disintegration following the collapse of the legendary Zhou dynasty in the Northern Chinese plain around the 7th century BC, thousands of marauding and competing states were slowly absorbed and consolidated under a handful of rulers who excelled in mobilizing for warfare through the adoption of administrative reform (see the Appendix Table for China's dynastic chronology). Du Zhengshen's in-depth study encapsulates the rulers' winning strategies of the Warring State period in the classical Chinese phrase of "Bianhu Qimin" which could be literally translated as "registering the household and homogenizing the people." These measures, that eventually led to China's first unification by the state of Qin in the second century BC, included the replacement of local feudal control with direct administrative rule under the prefectural system, the establishment of military-based meritocracy in place of hereditary

nobility (hence “homogenizing the people”), the allocation and registration of agricultural land and households for direct taxation and military conscription and the promulgation of standardized legal codes under a system of collective punishment. Du traced the origin of the prefectural system (郡县制) at the local level to the organization of military infantry.⁵

From the founding of the Chinese empire in Qin (221 – 206 BC) until the fall of the last Imperial Qing dynasty in 1911, both the concept and practice of centralized rule with a hierarchical bureaucracy had been indisputably its most distinguishing and enduring characteristics. We start with a description of this political model of governance or, to borrow a terminology from Max Weber, its ideal type before we turn to its historical evolution. In this model of absolutist regime, ultimate power was vested in the emperor who commanded property rights over all factors of production including land and labour. At the other or lower end of the spectrum are the people or masses (farmers or peasants in an agrarian regime) who are nominally the tenants and cultivators of land and resources owned by the emperor.⁶ The Imperial household is entitled to rents from agricultural output, the bulk of which went into the supply of external defence and internal security.

In this model, the dominance of a single imperial household over all social or political groups is essential. At the founding of the Qin empire, China’s First Emperor Qin Shi Huang (秦始皇), followed the advice of his Legalist (法家) chancellor, Lishi (李斯) and opted against a feudal (封建) type of political arrangement where the imperial power would co-exist with various regional elites or aristocrats often with hereditary status. Instead,

⁵ See Greel, 1964 for an in-depth description of the origin of the prefectural system (郡县制) in China.

⁶ The imperial ownership of land is 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; see Kishimoto 2011.

they implemented a prefectural system (郡县制) of empire-wide administrative units and household registration “bianhu qimin” (编户齐民). In this new regime, only the status of the imperial throne is hereditary. With the elimination of aristocracy or self-contained political units, the administration of the empire – tax collection, suppression of violence and some provision of minimal public goods – would be governed by direct imperial rules and orders (律令) executed by an impersonal bureaucracy.⁷

We illustrate the logic of the tri-part political model in the words of the great Tang Confucius scholar, Han-Yu (韩愈 786-824): “... rulers are meant to give commands which are carried out by their officials and made known to the people, and the people produce grain, rice, hemp, and silk, make utensils and exchange commodities for the support of the superiors. If the ruler fails to issue commands, then he ceases to be a ruler, while if his subordinates do not carry them out and extend them to the people, and if the people do not produce goods for the support of their superiors, they must be punished.” (Wm. Theodore de Bary et al, 1960 pp. 432-3).

This Chinese concept of the state, as recognized by generations of scholars, is in many ways an extension of the Chinese concept of a patriarchal household. With the elimination of hereditary aristocracy, the transition from feudalism to central rule extended the stand-alone imperial household (家) into the national sovereign (国). Indeed, the unity of individual, family and state is encapsulated in the enduring Confucian adage that one needs first to cultivate himself, then his household, then his own state properly, in order to finally realize virtues for all under the

⁷ The stand-alone nature of Chinese rulers was consistent with countless historical examples of the rulers turning against the landed or commercial elites as well as bureaucrats. For Ming emperors' brutal punishment of landlords and bureaucrats see Huang 1974. For a critique of how this important distinction between Chinese and Western political regime had been blurred by the dogmatic application of Marxist ideology in China, see Feng 2006.

heaven and (修身 齐家 治国 平天下). The literal translation of the Chinese character for nation-state (国家) is really “state-family” or what Max Weber termed as a patrimonial or “familistic state”. Etymology used by Qian Mu reveals what was the equivalent Chinese term of “chancellor” (宰相) for the empire derived from titles that denoted managers of private royal households in the pre-Qin period. Thus, for Qian Mu, the rise of central rule also marks the beginning of a separation between ownership (the Imperial ruler) and management (the bureaucracy).⁸

The Evolution of the Model

Qin’s bloody unification did not mark the end of all violence or political fragmentation in Chinese history. On the contrary, its violent collapse under the weight of rebellion after a mere 15 years in existence taught a lesson on the fragility of political rule by brute force alone. Attempts to re-feudalize in early Han and the subsequent reinstatement of Confucius teaching with its emphasis on an imperial rule of benevolence and the paternal social hierarchy as the new orthodox state ideology – previously persecuted under the Qin – all aimed at correcting the excesses of Qin despotism rooted in the harsh Legalist principles of punishment and discipline.

The diffusion of Confucian ideology as the new orthodoxy and the sustained military rivalry of regional powers gave rise to new ruling elites dominated by powerful and enduring lineages during China’s so-called age of aristocracy roughly between the 3rd and 8th century. In this age, powerful lineages monopolized schools of Confucius learning, practiced endogamy, dominated the imperial court and conducted state affairs within closed cabinet meetings. Indeed, many of the aristocrats claimed more illustrious lineage than the emperors. As the post of the emperor

⁸ See Qian, 1966, pp.8-12. Also see H. G Creel 1964 and Du 1990 for arguments on the clan and kingship origin of the Chinese state.

was the property of these aristocratic families and relatives, the emperor could be dethroned or even murdered if the interests of the aristocracy were violated. Dynastic struggles were largely the business of aristocrats or lineages unconnected to the lives of the commoners. In Tang's central government, the wing of bureaucrats that reflected the opinions of aristocracy had the right to challenge or even veto (封驳) imperial edicts drafted by the imperial secretariat. And the chancellor, the head of the ruling bureaucracy, had considerable power and shared final decisions with the emperor.

But from the Song dynasty onwards the balance of power had decisively tilted towards the imperial throne with the emperor taking over all state functions and commanding submission of his bureaucracy like a master to his slaves. The right of challenge or veto disappeared from the Ming dynasty onwards and even the post of chancellorship was abolished by the first Ming emperor. Medieval China's turn towards absolutism marked the pivotal turning-point now more popularly known as the Tang-Song transformation as originally expounded by the Japan's foremost China scholar, Konan Naito. The so-called Naito thesis premised that the ascendancy of Chinese absolutist rule, despite its attendant dire implications, marked the beginning of China's modern era. It freed the commoners from the yoke of the aristocracy and took them in as tenants of the state, ushering in a series of institutional transformations ranging through fiscal and monetary regimes to ultimately the property rights regimes for man and land.⁹

The first transformation came in the recruitment of bureaucrats. Although the civil service examination system started in the Sui and Tang dynasties, it was largely restricted to the graduates of official schools already monopolized by elite lineages. From about the 8th century, the

⁹ For an English language summary of the Naito thesis and its impact, see Miyakawa, 1955.

civil service examination system evolved towards a three-tier (county, province and capital) nationwide system open to the majority of male commoners, well beyond the pupils of the official schools. The opening-up of the examination system and civil service recruitment restructured the traditional social classes based on the hereditary control of the aristocratic lineages over Confucian learning and provided an institutional basis for social mobility among the commoners. The incorporation of Neo-Confucianism – a grand synthesis of Confucian learning expounded by Zhuxi (1130-1200) in the Song dynasty – into the Civil Service Examination solidified the Confucian school of thought as a state-sanctioned ideology.

By granting life-long privileges of tax exemption, and legal impunity of some degree, to varying levels of civil service examination candidates the system generated a class of non-hereditary elites, the so-called gentry.¹⁰ With the appointment of these candidates 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, the empire created a class of career officials having no autonomous territorial or functional power base.¹¹ With the use of a unified hieroglyphic written script that transcended regional dialects and the widespread diffusion of paper and block-printing during the Tang and Song dynasties the examination system became an imperial tool of cultural integration to forge a shared cultural identity

Meanwhile, the fiscal system began a transition from the triple-tax system (租庸调) to the dual tax system (两税制) as proposed by Chancellor Yang Yan about 780. The crux of the tax reform was to

¹⁰ The gentry elites tended to reside locally and served the function of managing local affairs often in collaboration with the magistrates and governors. This layer of elites becomes an important intermediary between the masses and the state (Chang Chung-li).

¹¹ Qian Mu 1966. Hou Ping-ti, 1967, pp.17-19 describes the limited extent of hereditary aristocracy in Ming and Qing China.

consolidate various forms of labour corves and contributions into direct taxation on land. The shift towards a land-based system of taxation enhanced the monetization of the fiscal regime, which then saw the adoption of standard monetary units of account such as copper cash, paper notes in the Song, and silver tael from the middle of the Ming. Monetization in the fiscal regime also made possible a central level budgeting system based on a fixed target of annual taxation (定额主义) and a system of cash reserves or savings as cushion for shocks (Ray Huang 1974, Iwai 2004). These monetary and fiscal infrastructures made possible a new military recruitment system in the Song period based on a paid professional standing army (募兵制) to replace the peasant-soldier military recruitment regime (府兵制) or military commanderies (藩镇) often with an independent fiscal base founded on some form of tax-exempt land grant.

A more profound consequence of fiscal restructuring was on the long-term impact of the Chinese property rights regime over man and land. Traditionally, in order to ensure state revenue, Chinese imperial rulers throughout the dynasties had actively engaged in the allocation of land to peasants who would in turn cultivate and contribute taxes. The well-known equal-field system (均田制) as practiced in the Tang dynasty (618-907 AD) allocated land (授田) to male adults according to their productive capacity, upon which the state levied the so-called triple tax (租庸调). Depending on the category of land title, some of the allocated land could be returned back to the state once the cultivator left or was deceased. But with the adoption of the dual tax system that shifted taxation onto land irrespective of its ownership status, the state began to relinquish control and regulation of property rights over land, leading to the de-facto recognition of private property rights and private land transactions which had only existed informally during earlier dynasties.

Hence, the *de-jure* imperial property rights in land and people began to transform into *de-facto* rights to taxation. Indeed, the Song became China's first dynasty with no explicit state policy on land allocation (Qian 1966, chapter 2).

The land-based dual-taxation system was to become the hall mark of Chinese fiscal regime all the way down to the 20th century, while the policy of fixed revenue targets was to become the cornerstone of the ideology of the rule of benevolence. They allowed the private sector rather than the state to capture or claim all the residuals of economic expansion brought about by rising productivity, growing territory and population under a system of a free-standing, family-based owner-cum-tenant system of agricultural cultivation which itself owed its existence partly to the government's retreat from direct management or regulation of property rights in land. These transformations in fiscal policy and bureaucracy came to form what Wang Yanan claimed as the dual pillars of traditional Chinese polities, and are important in understanding the extensive growth from the Song dynasty onward (Wang 1981 chapter 8, Elvin, 1973, Seo 1999, Qian, chapter 2).

This model of Chinese autocracy is founded on a ruler-centred model, with no formal or external institutional constraint placed against the powers of the Imperial rulers and their agents over the general populace except perhaps the vaguely defined "Mandate of Heaven" (天命).¹² There was a system of checks against bureaucratic abuses of power or dereliction of duty or to redress grievances of the general populace but only strictly within the administrative hierarchy in top-down fashion with

¹² The problem of the absence of formal constraints on the emperor is succinctly summarized by Ray Huang's study of Ming imperial system, the heyday of Chinese imperial despotism: "...Final authority (was) 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." See Ray Huang, 1974, p. 7.

the emperor often being the final arbiter. There is of course the so-called insurrection constraint: if pushed below subsistence by excessive imperial or bureaucratic abuses, masses might resort to violent rebellion to overthrow imperial power. Indeed, rebellions and insurrection had been an enduring feature of Chinese history marked by periodic political fragmentation and dynastic strife. The well-known admonishment to the Tang Chinese emperor that that water can float as well as overturn a boat, just like masses do to their rulers, is an alternative characterization of the insurrection constraint.

We can interpret the logic of traditional Chinese polity using Mancur Olson's benchmark framework based on the analogy of stationary and roving banditry. The crux of his argument is that monopoly political rule given a long time horizon (especially with throne being hereditary across generations as in dynasties) is more likely to lead to a "virtuous" equilibrium of relatively low level of predation or extraction and relatively high level of provision of public goods under a stationary bandit type of ruler. The longer the time horizon, and the more stable the imperial rule, the more likely the ruler's interest could become, in Olsonian terms, "encompassing." Hence, under conditions of monopoly rule, and a long time horizon and low discount rate, rulers' high valuation of the stream of future tax income over one-time or short term extraction constitutes a self-enforcing constraint on the grabbing hands of the autocratic rulers in the absence of any formal constitutional constraint.¹³

The remarkable coincidence between the Naito thesis on the "modern" features of Chinese absolutism and the Olsonian theory of autocracy had in fact been foretold by Chinese intellectuals themselves more than a millennium ago. The most well-known and enduring defence

¹³ See Olson 1993. See Besley and Ghatak forthcoming for a simple reputation-based game-theoretic model that establishes a positive relationship between the ruler's rate of appropriation and his political discount rate, leading to the rise of what they refer to as a case of endogenous property rights (private property rights protected without formal institutional commitment).

of centralized absolutism came from the renowned Tang scholar-bureaucrat Liu Zongyuan (773-819). He argued that while a decentralized feudalism served the “private” interest of the feudal rulers and their relatives, only a prefectural system under a centralized rule created a common public interest even though this creation itself was motivated by the private interest of the autocrat to strengthen his own power and subjugate his officials. According to Liu, the prefectural system contained gems of impartiality by allowing the worthy rather than the hereditary nobles to govern. One could easily replace a bad prefect or magistrate but not a bad feudal lord. Hence for Liu, the founding of the Qin marked the birth of a “public under the heaven” (公天下) in China. Indeed, he went on to point out that the prefectural system out-performed feudalism by what may be termed “the insurrection test”: history shows that rebels against crown had come from the masses, the principalities, or the commanderies but none from the officials and prefectures (Yang 1969, pp. 7-8, Feng 2006, pp.60-63). In the next section, we test how this Chinese model of autocracy fared by way of Liu’s “insurrection test”.

II. The Test of History

Imperial Unity and Dynastic Longevity

As argued by China historian Ge Jianxiong, the two millennia of Chinese history since the founding of the Qin dynasty had actually seen more years of political fragmentation than unification under one ruler. Using the geographic size of unified Ming China as the criteria (shown as the shaded area in the map, sometimes also referred to as China proper, the largely agrarian part of China), Ge’s calculation, as summarized in Appendix Table, reveals that out of the 2135 years since Qin, China was unified for only about 935 years. Meanwhile, warfare is a constant theme

running through the Chinese dynasties, fragmented or unified. Calculated from a detailed recording of incidences of warfare compiled by China's Military History Committee, Appendix Table shows a total of 3752 incidences of warfare in the span of 2686 years, giving an average of 1.4 incidences of warfare per year throughout the period.

Figure 1 plots two reconstructed indices of Chinese unification against the incidences of warfare within each century between 7th century BC and 19th century AD. For each century, the two indices of unification are the sum of the product of two items denoted as N_i and T_i , written as

$$\sum_{T=0}^{100} N_i T_i$$

with the subscript i denoting the i th century between 4th BC and

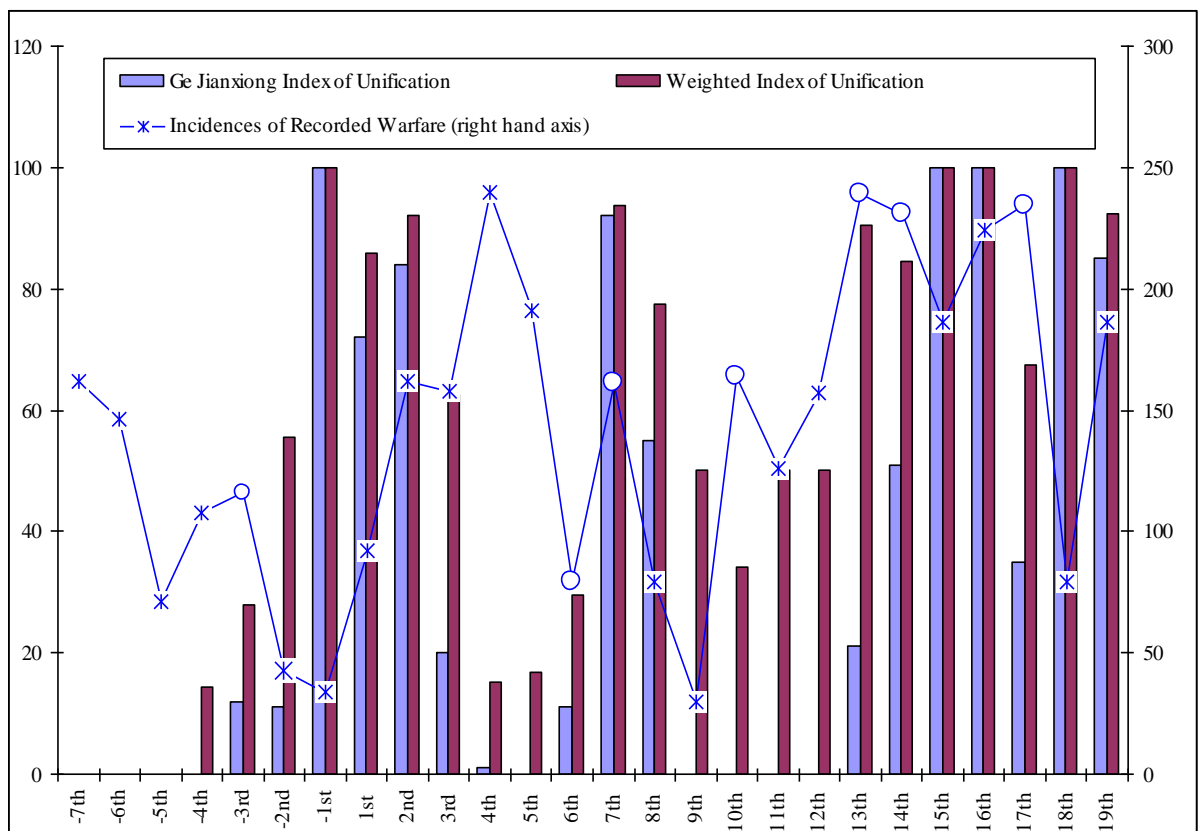
19th century. In our first index, the Ge Jianxiong index (indicated by the light-shaded column figure 1), N_i takes a value of 1 if China (again defined by the Ming territory) was under one ruler and zero if not, while T_i is set equal to the number of years when the value of N_i is equal to one for that i th century. So this index is a graphic reproduction of Ge's historical narrative of Chinese unification and fragmentation by centuries shown in Appendix Table. For the second, or weighted index of unification (plotted in dark shade column in figure 1), N_i is now set equal to the inverse of the number of polities ruling over the Chinese territory while T_i is equal to the number of years those polities were ruling over China within that i th century. As distinguished from the Ge index where N_i is simply a binary variable of one (one ruler only) or zero (more than one ruler), the weighted index captures the degree of Chinese unification by taking into account the number of polities ruling over China and hence tells a richer story of Chinese empire formation

Chinese territory under Ming and Qing



Notes: The area in shade roughly corresponds to territories under Qin and Ming or the so-called China Proper. I want to thank Ma Fengyan, Yan Xun and Helena Ivins for assistance with this map.

Figure 1. Number of Recorded Warfare and Number of Years China was Unified per each Century



Sources: for the Ge Jianxiang index, see explanation in Appendix Table and text. For the weighted index, the number of political entities are calculated as follows: Number of entities are set equal to 7 in the Warring states period (-4th century), 3 in the Three Kingdoms Period (220-265), 2 in the Western Jin period, 7 in the Eastern Jin, 6 in the Southern and Northern dynasties, 5 in the Five dynasties and ten kingdoms, 2 in the Northern and Southern Song period. For periods of dynastic breakdown but a unitary dynastic rule continued to exist in name, I assign the number of entities all equal to 2. For the number of territories and dynastic governments, we consulted the China Historical Atlas (8 vols.) edited by Tan Qixiang and Annals of East Asia by Fujishima and Nogami.

Both indices in the figure show that the drive for unification proceeded in roughly three phases, beginning with the rise of the Qin and Han dynasties between 3rd BC and 3rd AD, then the surge of Sui and Tang dynasties between 6th and 8th century and the final consolidation towards a single unitary empire under the Yuan, Ming and Qing dynasties starting with the 13th century. Fragmentation was most prolonged

between the 3rd and 6th centuries – what Naito referred to as China’s age of aristocracy - when competing polities or dynasties, often with shifting territories and transient tenures, jostled for geo-political power.

Fragmentation re-emerged following the collapse of the Tang in 907. But with the founding of the Northern Song in 960 up until the Mongol conquest in 1280 political fragmentation in China proper took the form of sustained rivalry usually between two large political entities pitting Northern and Southern Song against the non-Han rulers of Liao, Jin and later Mongol consecutively. Hence, our second index, more than the Ge Jiangxiong index, reflects a trend of progressive consolidation of Chinese states towards a single unitary rule from the tenth century (or Song) onward with periods of disintegration becoming shorter and the number of competing states smaller but their sizes larger.

Figure 1 also links the unification indices with data on the incidences of warfare. While warfare persisted throughout the history, the centuries of important dynastic change (marked with circles in figure 1) in 3rd BC, 6th, 7th, 10th, 13th, 14th and 17th AD (corresponding to the Qin and Han, Sui, Tang, Song, Yuan, Ming and Qing respectively) generally corresponded to a upsurge of incidences of warfare, usually followed by a moderation of warfare in the following century as the new dynasties managed to consolidate their hold on power.¹⁴

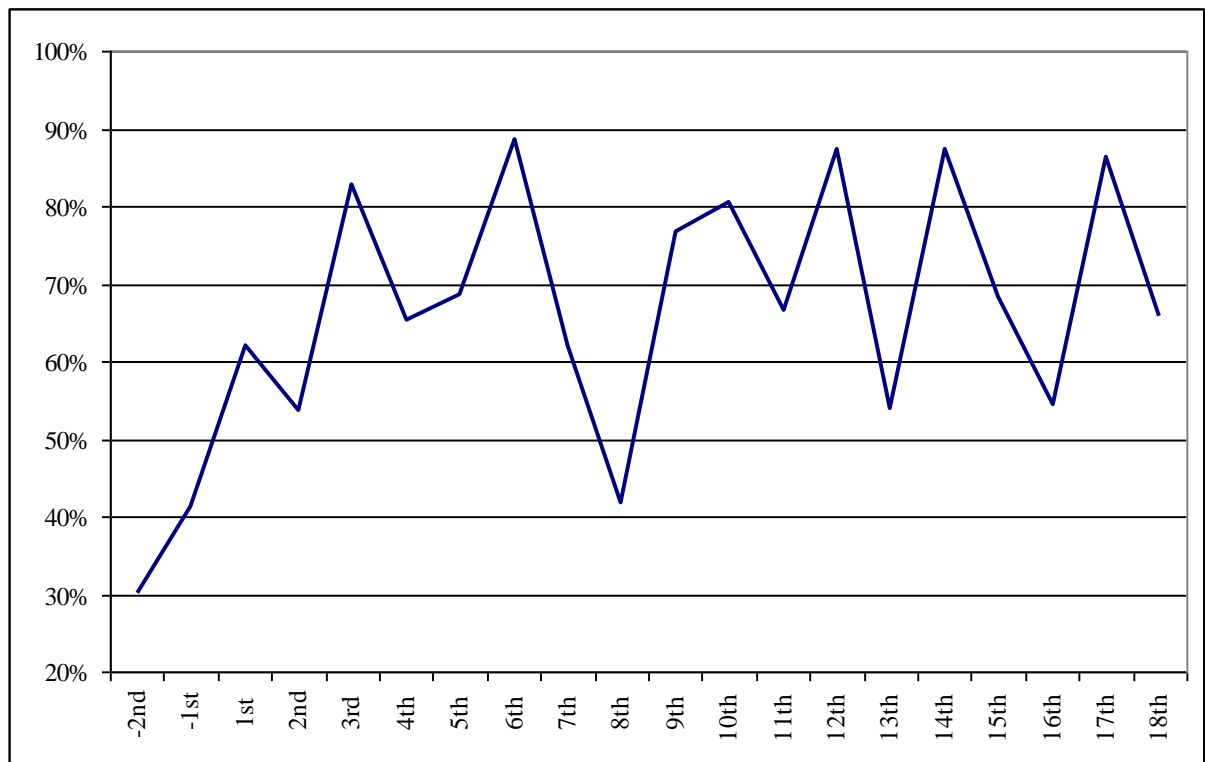
A major sustained threat to Chinese unification came from the repeated nomadic incursions originating in the northern frontier outside

¹⁴ Clearly, one needs to exercise caution on the interpretation of the warfare data culled from the two volume work compiled by China’s Military History Committee. According to the brief introductory notes, the two volume works are largely based on the laborious team project that compiled incidences of warfare mostly from the twenty four historical annals with some additional sources. Although brief narrative was provided for each incidence of warfare recorded, the records do not capture the scale, duration or intensity of each incidence of warfare. Nonetheless, we believe it is very useful information to give broad quantitative indication of the historical narrative or at least the official or prevailing perceptions of the magnitude of warfare in Chinese history. Bai and Kung’s paper did a convincing cross-check the validity of this data source an independent work by Peter Perdue for the Qing dynasty (1644-1911).

China's Great Wall where the Chinese system of governance based on sedentary agriculture halted before the steppes and dry-lands.¹⁵ Figure 2 reveals the relative importance of the nomadic conflicts with Han Chinese as a share of total warfare incidents throughout Chinese history. Indeed, except for the earlier period of Chinese empire in the 2nd and 1st century BC, the number of conflicts between nomads and sedentary Chinese always exceeded the internal rebellions within China, marked by a sharp surge from the 9th century onward. The importance of Han-nomadic conflict has been long noted (Lattimore 1989, Turchin 2009, Bai and Kung forthcoming). Despite being fewer in number, the nomadic population derived a comparative advantage in violence from mobility of settlements and the availability of horses. Peter Turchin noted that all but one of the fifteen unifications that occurred in Chinese history – the establishment of the Ming c. 1368 – originated in the North and almost all the Chinese capitals were located in the north even after the economic centre shifted south to the Yangzi valley after the first millennium (p. 192). Indeed, China's northern frontier demarcated by the Great Wall witnessed a progressive escalation in the scale of warfare and the size of political units mobilized for warfare between the Han-Chinese and nomadic Chinese. The massive construction of the Grand Canal in the 7th century, for example, provided the logistic capacity to escalate the military build-up along China's northern frontier by feeding on grain shipped from the economically ever-important South, but this was successively matched by the scaling-up of imperial confederations of semi-nomadic tribes such as Xiongnu, Turks and Mongols (See Quan Hanshen 1976 for the role of Grand Canal).

¹⁵ For the classification of non-Han Chinese regions in Manchuria, Mongolia, Xinjiang and Tibet, see Owen Lattimore 1940.

Figure 2. Incidences of Warfare fought between Nomads and Han Chinese per Century as a share of Total Warfare (in percent)



Source and notes: same as Figure 1. Number of warfare between Han Chinese and nomads are calculated by Bai and Kung, forthcoming. I express my special thanks to Bai and Kung for sharing their datasets on nomadic-Chinese Warfare.

Charles Tilly’s pithy account of “how war made states, and vice versa” for Medieval and early modern Europe turns out to be an equally apt depiction of the rise of Chinese empire. The striking degree of synchrony and feedback loops between the rise of the steppe’s imperial confederations and the Chinese empire in driving up the size of both wars and those states engaged in it produces a Chinese prequel to Tilly’s tale of war and state formation in Europe, but on a scale much larger and a time frame much earlier. Tracing the number of political entities in the Latin West and the Muslim World on a century-by-century basis for a millennium, Bosker, Buringh and van Zanden (2008) show that they proliferated to as many as several hundred and 20 respectively during the 14th century, and both only started to consolidate from the 15th century

onward – almost five centuries later than the Chinese empire (see figure 3 in Bosker et al). Indeed, measured by the standard of imperial unity and dynastic longevity – not to mention the scale – the performance of the Chinese model of political absolutism remained unparalleled among major world civilizations. Liu Zongyuan’s insight on the merits of centralized absolutism turned out to be remarkably prescient even on a global scale.

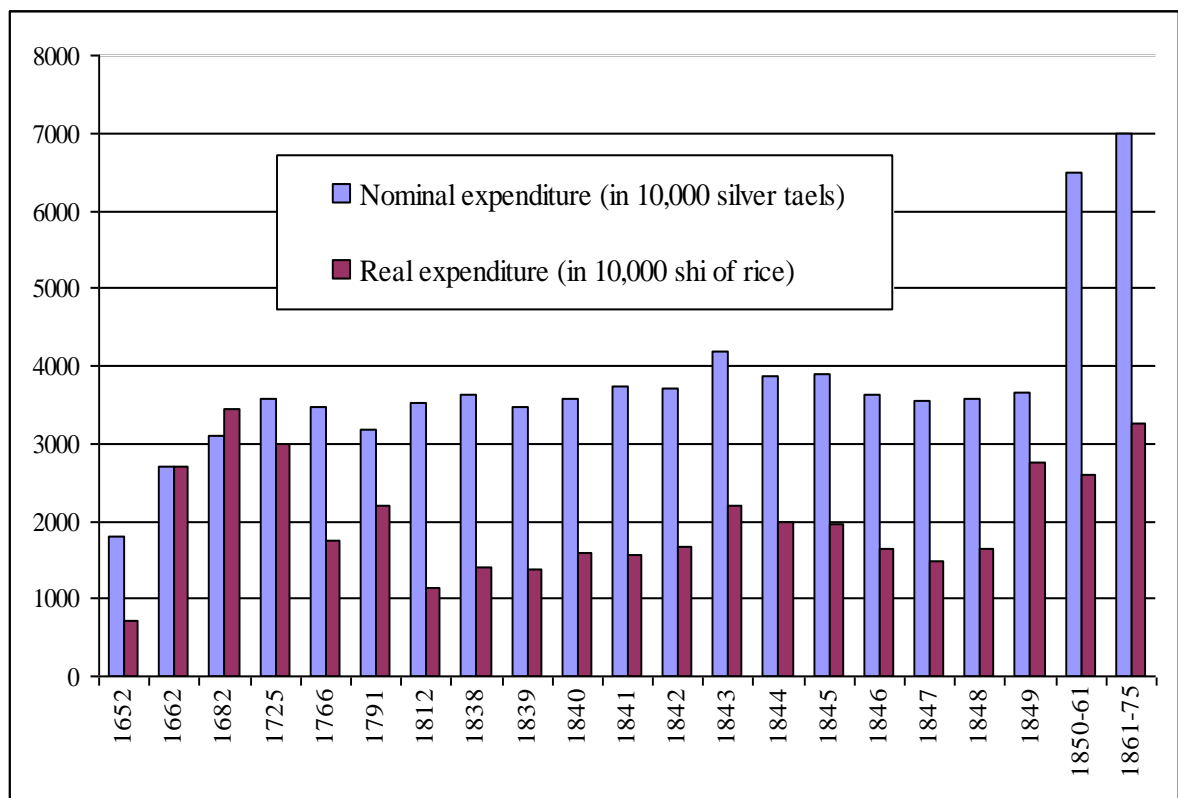
The Case of Qing: 1644-1911

China’s last dynasty – the Qing – epitomizes a condensed history of empire-building from rebellion, warfare to taxation and political and administrative centralization. The Qing Imperial monarchy was Manchu, a non-Han Chinese minority from China’s Northeast frontier that became a great defender of orthodox Confucius ideology and a centralized political system. The more than two and half centuries under the Qing saw roughly a tripling of the population and a doubling of territory, ushering in China’s prosperous 18th century, the so-called “Glorious World of Kangxi and Qianlong” (康乾盛世).

The road to the heyday of the 18th century prosperity started in 1644, the year of the Qing’s official inauguration. As a non-Han minority ruler of China, Qing’s earlier reliance on Chinese generals and military force to suppress the former Ming loyalists led to the build-up relatively autonomous power bases and political structures in Southern China and hence the created real institutional possibilities for feudalization or decentralization. This, however, was to end by 1683 when Emperor Kangxi (1661-1722) quashed the rebellion of these so-called “three feudatories” and annexed their territories into Qing’s 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 administrative unit of China. 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. From 1720, the Qing attained the control of Tibet with the installation of a new Dalai Lama. Clearly, by the early 18th century, the Qing had succeeded in the consolidation of power and establishment of monopoly rule over historically China's largest ever territory, with further extension of suzerainty across much of East and Southeast Asia through the so-called tributary order.¹⁶

Figure 3. Government Expenditure (Revenue) in Qing China



Source Notes: Fiscal data from Iwai, Table 2, p.37. Hamashita p. 73. Lower Yangzi grain price from Wang Yeh-chien 1991 is used to deflate the nominal series.

To establish the relationship between imperial fiscal revenue and political stability, we start with Qing's official figure, which understandably

¹⁶ See Jonathan Spence 1990 for a standard narrative.

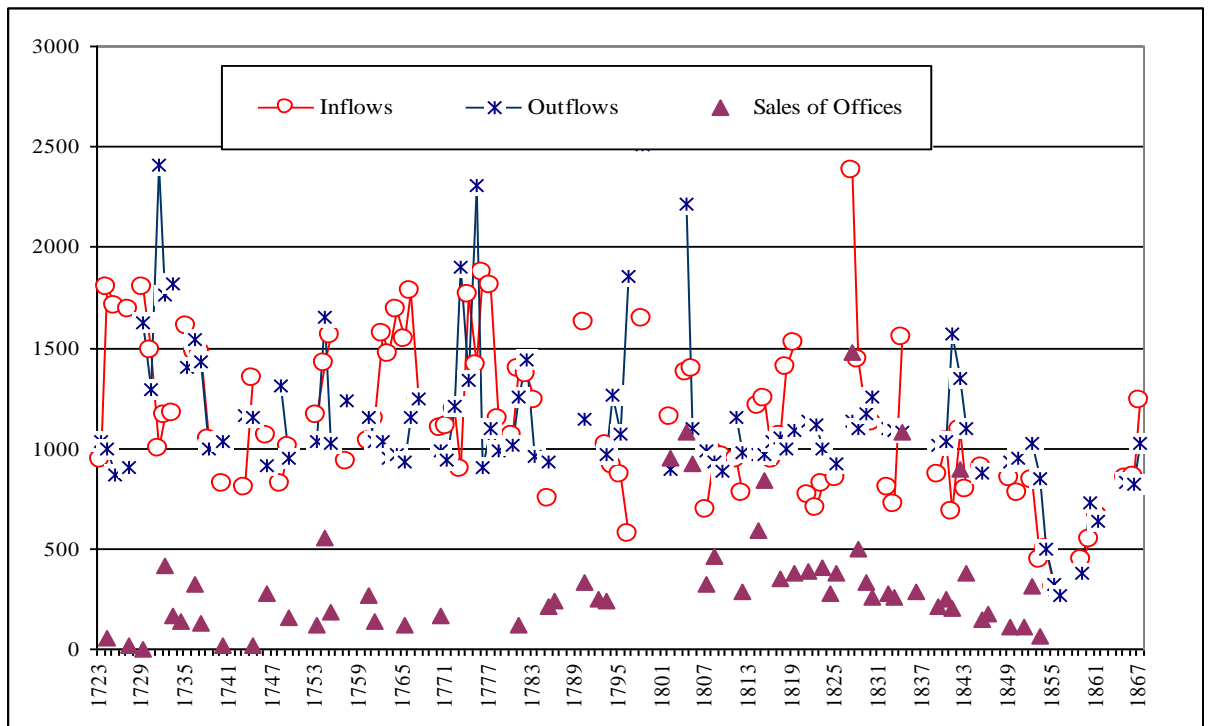
could not reflect the full extent of governmental taxation on the whole economy. Figure 3 plots series of expenditure (revenue) under the direct control of the Board of Finance. It clearly shows the working of a fixed target for revenue for the period between 1662 and 1849: the series remained largely trendless with an average of about 36 million silver taels but a standard deviation of only 3.2. The series began to rise from the mid-19th century but in real terms still remained mostly stationary once deflated by the price of rice. Indeed fiscal revenue in real terms actually declined between the late-17th century and the mid-19th century.

It is important to note that only a portion – usually a third - of this revenue arrived at the coffers of the Board of Revenue, as much of it was expended as direct transfers between provinces or expenses incurred outside Beijing. A better gauge of Imperial Qing's fiscal position is better reflected in the annual inflows and outflows of silver and the changes in stocks of silver reserves stored at the coffers of the Board of Finance, whose accounts, fortunately, have largely survived. Figure 4 shows the available series of annual inflows and outflows of silver at the coffers of the Board of Finance, which, at an average rate of about 11 million taels amounted to less than a third of the total annual tax revenue. Although trendless, there are great fluctuations, with sharp rises in outflows often associated with major warfare expenditure. As the balance of inflows and outflows determines the existing stock of silver reserves at the treasury coffers, the occasional jump in the annual revenue after the turn of the nineteenth century (in particular the years 1804, 1827 and 1834) reveals sometimes desperate measures (such as the sale of government offices) to replenish the Qing's silver stocks in order to remedy its deteriorating fiscal position.

Figure 5 plots silver reserves against incidences of warfare, and conveys a fuller and more telling portrayal of the Qing's fiscal position in its two and half centuries of rule. In its early years of military conquest in

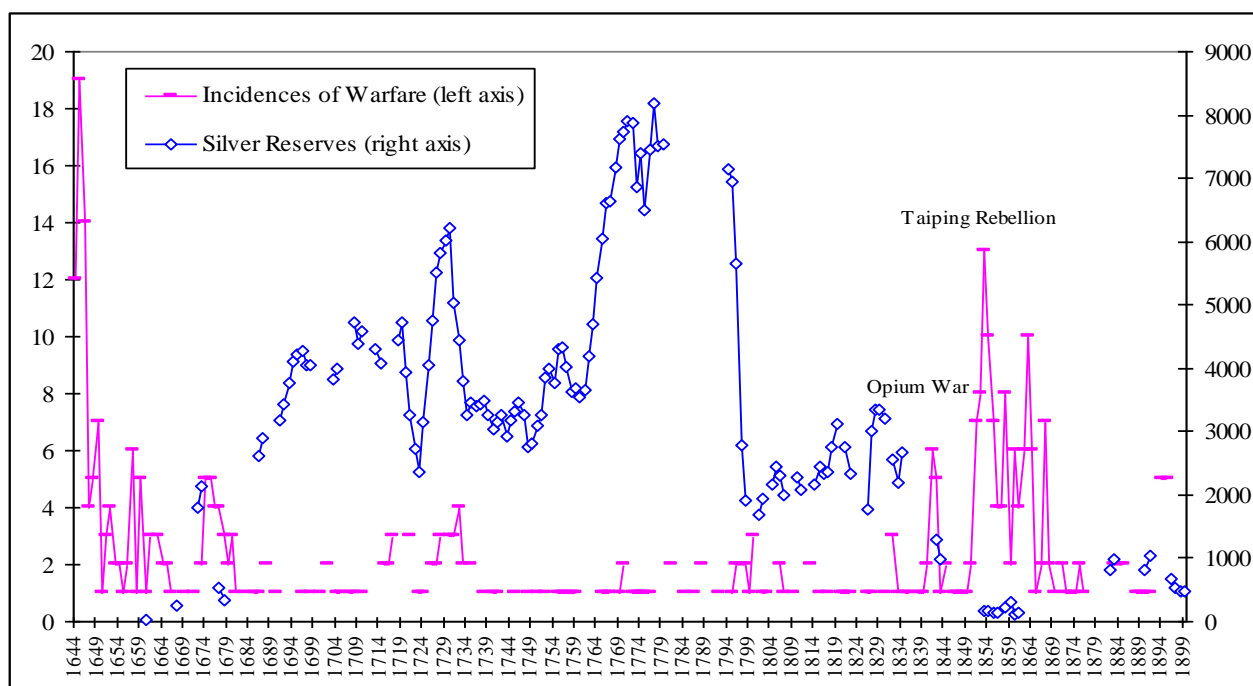
the 1660s the Qing's silver reserves started out as minimal but then gradually built up during the 18th century, particularly when the number of war incidences sharply reduced and political stability set in. Indeed, at the time of the famous declaration by K'ang-xi emperor in 1712 that there will be no additional taxes on newly added taxable population (续生人丁, 永不加赋) and Yongzhen's follow-up fiscal reform further consolidating head tax into land tax (摊丁入地) in 1722, Qing entered into a prolonged phase of accumulation in silver reserves peaking at over 70 million by the 1790s, roughly equivalent to two years of total tax revenue. It was also during these glorious decades of K'ang-xi and Qianlong that numerous tax exemptions were granted in times of bad harvest as further hallmarks of the Imperial rule of benevolence (Zhang Zhidong, pp. 19-21). The suppression of the White Lotus rebellion around the turn of the eighteenth century at the end of the Qianlong rule led to a sharp drop in silver reserves from which the Qing never fully recovered. 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.

Figure 4. Annual Inflows and Outflows of Silver Reserves at the Qing Board of Revenue (in ten thousand taels)



Sources: Shi zhihong pp. 272-281. Sales of office revenue data from Luo Yudong, pp. 6-7.

Figure 5. Annual Average of Recorded Incidences of Warfare and Silver Reserves (in ten thousand taels) in Qing (1644-1911)



Source notes: China's Military History Editorial Committee (ed.), *A Chronology of Warfare in Dynastic China (Zhongguo Lidai Zhanzheng Nianbiao)*. Silver Reserves from Shi zhihong pp. 272-281.

A careful study by Wang Yeh-chien on the structure of fiscal revenues based on a couple of benchmark years confirms the predominance of land tax. For 1776, 70% of total revenue was derived from land tax with the remainder coming from some form of commercial taxes. Only about 22% was collected in kind (Wang 1973, p. 80). On the expenditure side, about 50% was expended on direct payment to soldiers and another 17% used to pay for the salaries of officials and bureaucrats. Expenditure on public goods such as maintenance of river transport or famine relief seemed to be only slightly above 10%.¹⁷

Overall, it is possible that Qing tax rates in the 18th century were the lowest across all dynasties in per capita terms. The study by Liu Guanglin

¹⁷ See Shi Zhihong, p. 68. Iwai, p. 32. Although the Imperial court or the so-called Nei-wu-fu (内务府) took in a mere 1% of the total budget, it had its own source of revenue and expenditure outside the official balance sheet of the board of revenue, see Chang te-ch'ang.

seems to indicate that per capita tax burdens around 1776 were the lowest across several benchmarks periods since the Song dynasty. It is likely that the size of the Qing standing army around the 18th century, at about eight hundred thousand, was lower in absolute number than both those in the Ming and Song despite the enormous population increase (Iwai, p. 33). Even K'ang-xi himself gloated that “in our Dynasty, the total sum of military and civil expenses is about the same as that of the Ming period. But speaking of the Court expenses, the aggregate amount spent by the Court is even less than that for one palace of the Imperial Concubines. The accumulated sum of the past 36 years is less than that spent in one year's time during the Ming.” (cited in Chang te-ch'ang, p. 271).

Thanks to recent comparative work, we are now able to place the Qing imperial revenue and fiscal regime in a global context, as shown in Tables 1 and 2. Table 1 shows that the total nominal Chinese governmental revenue in silver terms was higher than any of the European states or Ottoman empire in the latter half of the seventeenth century, and remained one of the largest throughout the eighteenth century. This is largely a reflection of China's enormous population size, roughly ten times that of the Ottoman Empire, Russia or France individually during the 18th century. In per capita terms, Chinese tax revenue as revealed in Table 2 ranked with Ottoman and Russian rates as among the lowest while England and the Dutch stood at the other end, with France and Spain in between. The starkest contrast came in the first half of the nineteenth century roughly at a time China confronted England head-on in the Opium War. Qing's total central revenue amounted to only 24% of that of Britain and in per capita terms, was a striking 1%.

**Table 1. Qing Central Government Revenue in International Comparison
(Tons of Silver)**

	China	Ottoman	Russia	France	Spain	England	Dutch R
1650-99	940	248		851	243	239	
1700-49	1304	294	155	932	312	632	310
1750-99	1229	263	492	1612	618	1370	350
1800-49	1367					6156	
1850-99	2651					10941	

Source: China same as figure 3. Other countries are from Karaman and Pamuk 2010, available at <http://www.ata.boun.edu.tr/sevketpamuk/JEH2010articledatabase>. I want to thank Kivanc Karaman and Sevket Pamuk for sharing their revenue data sets.

Conversion notes: one Chinese silver tael = 37 grams of silver.

Table 2. International Comparison of per capita Tax Revenue

Per Capita Revenue in grams of Silver							
	China	Ottoman	Russia	France	Spain	England	Dutch R
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	161.0
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	
Per Capita Revenue in days of urban unskilled wages							
	China	Ottoman	Russia	France	Spain	England	Dutch R
1650-99		1.7		8.0	7.7	4.2	13.6
1700-49	2.26	2.6	6.4	6.7	4.6	8.9	24.1
1750-99	1.32	2.0	8.3	11.4	10.0	12.6	22.8
1800-49	1.23					17.2	
1850-99	1.99					19.4	

Source: same as Table 1.

For per capita revenue in days of urban unskilled wages, 1650-59, 1700-09 figures are used to represent 1650-99, 1700-49 respectively. Average of 1750-50 and 1780-89 are used to represent 1750-99 for all other countries except China. See <http://www.ata.boun.edu.tr/sevketpamuk/JEH2010articledatabase>. Nominal wages for China and England are for Beijing and London drawn from Allen et al 2011. Nominal wages for Russia are 1 and 2.52 grams of silver for 1700-1725 and 1772-1774 respectively from data supplied by Brois Mironov listed on http://gpih.ucdavis.edu/files/Wages_Moscow_1613-1871.xls. My thanks go to Peter Lindert and Steve Nafziger for the Russian data.

The second panel of Table 2 follows the approach of Karaman and Pamuk to convert per capita tax revenue into daily wages of urban unskilled laborers. Qing's imperial 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 an explosive population expansion. In terms of daily wages, the lower wage level made the Chinese per capita fiscal revenue about 10% of the British level as compared to only about 1% in silver terms for the first half of the nineteenth century.

The contrast is equally striking when it comes to the trends and structure of taxation. While Qing imperial revenue remained largely stagnant (and even declined slightly in real terms), the absolute amount collected rose in Britain by a stunning 17 fold from 1665 to 1815. Total British revenue as a share of national income, before the Glorious Revolution of 1688 only slightly more than 3%, surged to about 18% by 1810 (O'Brien 1988, p. 3). While firm GDP estimates for China in the 18 and 19th centuries are unavailable, some tentative calculations by Wang Yeh-chien show that his more comprehensive version of tax revenues (which includes guess-estimates for the costs of tax collection as well as various extralegal local surcharges) amounted to a mere 2.4% of NNP even in the 1910s.¹⁸ In sum, if the Chinese empire outperformed other political regimes by the measure of imperial unity and dynastic stability, the Qing record in terms of low tax extraction at the Central level was also remarkably impressive in the early modern world. Hence the cause of divergence between early modern China and Europe needs to be sought beyond the measures of dynastic tenure and fiscal extraction.

¹⁸ See Wang 1973, p. 133. Wang's result also seems broadly consistent with the daily wage conversion in Table 3. The surge in British tax receipts came disproportionately from indirect taxes such as customs and excise duties, which accounted for nearly 80% of total revenue towards the end of the 18th century. See O'Brien 1988, pp. 9-10.

III. The Great Divergence

Incentives and Information in the Chinese State

The Olsonian equilibrium of a virtuous autocracy assumed away the principle-agent problem within the regime, an assumption, interestingly, is consistent with the idealized Confucian construct of the state as a paternalistic extension of a patriarchal family where the incentives and interests of family members are confluent by default. Given the expansion of the empire and impersonal nature of imperial bureaucracy, the reality is often far from this ideal: the incentive schemes and information structures of the three actors – the emperor, the bureaucrat/gentry and the masses or peasant farmers – were more likely to diverge, giving rise to potential double principal-agent problems. Indeed, the system of centralized administrative rule whose merits so lauded by Tang scholars such as Han Yu and Liu Zongyuan may have merely replaced the problem of conflict and concession among feudal power magnates by a set of principal-agent problems within a centralized hierarchy, which tended to increase with the rising scale of the empire given the pre-modern monitoring technology.¹⁹ The continuous co-optation of heterogeneous or alien political units into the centralized administrative hierarchy (through force or other means) became a historical trade-off between external threat and internal insurrection.²⁰

The agency problem of the regime became most apparent if we look beyond the imperial capital. The fear of any potential build-up of an alternative autonomous local power base resulted in a highly centralized fiscal system during the Ming and Qing with almost no officially

¹⁹ See Sng Tuanhwee 2010 for a model on informational diseconomies of scale in Chinese empire.

²⁰ In this light, the Tang-Song transformation – the homogenisation of the vast empire through the institution of a standardized bureaucratic recruitment system, the rise of a relatively dispersed but homogeneous small-holding peasantry and the widespread diffusion of Confucian ideology – can be viewed as institutional innovation to alleviate the incentive and agency problem in a growing empire.

recognizable local finance. The centre issued detailed rules and regulations on each item of revenue and expenditure for the county level, where taxes had to be collected from the highly dispersed and decentralized producing or marketing units across a giant empire and remitted. The Qing government distinguished between remitted taxes (起运) and retained ones (存留) with the latter often recognized as the local cost of tax-collection, forming the local administrative budget. But as Madeleine Zelin (p. 28) shows, retained revenues were only about 21.5% of total revenue in 1685. Even among this 21.5%, the bulk of it was expended on local expenses connected with the center, such as the provision for imperial armies and imperial relay stations.

As the official tax revenue allocated to the 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 such as secretaries, clerks, runners and personal servants – various levels of bureaucrats relied on informal or the infamous extralegal surcharges (苛捐杂税) beyond the official level. Zelin's study documents in detail the sources of these revenues ranging from the levying of various surcharges, manipulation of weights and measures and currency conversion in tax collection, falsifying reports, shifting funds across fiscal seasons or years, 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 practises such as skimming funds in purchases and allocations (buying at a low price but reporting a high price).²¹

²¹ See Zelin, pp.46-71. Official collusion could also backfire in unexpected directions. Often, the extralegal nature of these surcharges forced the parties involved to pay off blackmail, see Iwai, p.3-4.

Reliance on informal local taxation and the employment of unofficial staffs for public administration often led to the privatization of public services. Ch'u Tung-tsu's classic book on Qing local government offers a vivid portrayal of county clerks extracting bribes with the threat of delaying legal cases submitted, runners demanding so-called "chain-release money" from the families of the accused criminals who would otherwise have been put under chain and torture, retaining part of the "recovered goods" from theft or robbery, or sometimes resorting to outright extortion of wealthy residents with false accusations. Even the porters guiding the magistrate's office would demand pay for handing in documents or warrants. All in all, clerks, runners and personal servants often collaborated in sharing the spoils of corruption. This nexus of corruption at the local level is a pale reflection of the much larger networks of collusion at higher levels of the state machinery. Although levels of extraction were hierarchical from the provincial level down, deceit and collaboration were mutual across levels, creating layers of cover-ups among the officials and staffs that would frustrate any monitoring attempts.²² One seminal study by Chang Chung-li on Chinese gentry income put non-official income extracted from below (that is excluding income earned through business or other activities) by different levels of officials at a whopping 19 times of official income.²³ The prevalence of these abuses at various levels of the government helps explain the apparent contradiction of the very low rate of tax extraction measured by

²² It is often known that 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 even circulated informally within a fairly wide area. See Zelin p.240.

²³ We can link these unofficial income estimates with total tax revenue. The total unofficial income for officials below the province were, according to Zhang, stood at 63 million taels which were 81% of the total official tax quota around 1884 (Chang 1962, chapter 1). This seems to point to the validity of the estimate by Wang Yeh-chien (1973) that roughly doubled the official tax quota to include the entire tax revenue for 1753 (Wang, p. 72).

the receipts of the Board of Revenue and the rapacious image of Ming and Qing regimes.

Incentive misalignment between ruler and his agents explains the historical drift between informal and formal bureaucracy. As observed by many historians, most formal bureaucratic posts started out as personal appointments from within the imperial court in a process of internal staffers being sent as imperial plenipotentiaries to control the outer layers of administration – indeed, the post of provincial governorship started out as imperial plenipotentiary sent to oversee local bureaucrats. Once these posts were absorbed into the bureaucratic structure permanently stationed outside the imperial capital, new layers of inner court personnel were then sent to monitor and control them, leading to a process of what many historians referred as “externalization” of inner staff. (Qian Mu p.44, Liang Qicao, p.28, Wang Yannan pp. 48-49). An extreme version of this problem can be seen the anomalous history of eunuchs as a distinct political class throughout Chinese dynasties. With a low formal status and no heir to pose a potential challenge to the imperial throne but abundant access to the emperor’s inner court, the eunuchs often wielded enormous power in the name of the emperor; and at times took de-facto control of the throne, often in connivance with the courtesans. Despite being warned against throughout history, the threat of the eunuchs to formal imperial rule and governance never went away (Yu, Qinhuia 2006).

In the heyday of Ming and Qing Chinese absolutism, the ire of another generation of Chinese intellectuals had by then turned to the faults of centralized absolutism. Writing in the 17th century, independent scholars such as Huang Zongxi and Gu Yanwu lamented that the emperors and public officials had too often subsumed the public interest to their own private interest. Gu in particular reminisced about the advantages of decentralization under feudalism in China’s antiquity, where the right of veto acted as some form of constraint against imperial

power and the autonomous princes or lords were more caring of their constituents than the rotating bureaucrats (Xiao, pp.404-411).

The faults of Chinese absolutism are best summarized by Liang Qicao, one of modern China's most celebrated intellectuals and reformers. Writing in 1896 at a time of ideological crisis in the face of Western imperial challenge, Liang summed up the weakness of the traditional Chinese system as rooted in distrust. As rulers cannot trust their officials, they set up multiple layers of bureaucracies to check up on each other. In the end, nothing gets accomplished as no one takes responsibility for anything. Moreover, the lower level officials were more interested in pleasing their superiors than serving their people. By taking wealth from the people to bribe their superiors, their posts became more secure even though their constituents were mistreated. In China's age of antiquity, local officials were appointed from the local people. But imperial distrust led to the rotation of officials and by Ming times they were rotated across North and South with appointees incurring debts and travelling thousands of miles to take up their posts. Not understanding local dialects and customs, their posts became a mere facade with real power vested in entrenched clerks and runners. By the time they learned they could accomplish a thing or two, their tenure there was up and they would be on the move again. Separated by multiple layers of bureaucracies and living deep inside the court throng with eunuchs and courtesans, the emperor hardly knew of events outside. Hence, a regime, as Liang concludes, that did everything to guard itself against itself was also self-weakening (pp.27-31).

The Great Divergence: an Institutional Interpretation

From the theoretical perspective of incentive and information, we can reinterpret imperial China's long standing policy of a fixed target for tax revenue, the hall mark of "imperial rule of benevolence", as a rational

strategy to cope with information asymmetry. In the absence of information or monitoring capacity, the principal (equivalent to a landlord in a standard principal agent model in the agrarian setting) would opt for a fixed rent contract with his agent over that of share and wage.²⁴ Indeed, one can observe the practise of fixed revenue quota – akin to some form of tax-farming – being extended to other spheres of taxation such as commercial and urban taxes, or even local governance, throughout imperial China. In fact, the attempts to establish a formal bureaucracy and a transparent taxation system where the state could claim the residuals or at least a share of the total revenue faced fundamental difficulties. Formalizing local informal taxation, as attempted in the well-studied 18th century Yongzheng fiscal reform, exposed previously hidden revenue to possible extraction from the upper level officials or even the imperial throne itself especially in times of distress.²⁵ Often, when pressed by financial exigencies, Ming and Qing rulers displayed few qualms about ad hoc extractions through the administrative hierarchy, the sale of official titles, forced contribution, outright confiscation or – as in the devastating mid-19th century Taiping rebellion – massive monetary debasement.²⁶ The irony here is that informal or extralegal taxation - being outside the official purview - became the most secure source of local finance.

²⁴ See Eugene White for a similar theoretical approach on the French taxation system in the Ancien Regime.

²⁵ 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 problems of the inability of the higher administration to monitor the use of local revenue and the tendency for upper level bureaucracy to engage in extraction and re-allocation of revenue designed for local use, see Zelin, chapter 7.

²⁶ Even China’s highest authority of imperial revenue had difficulty in refusing extraction from the emperors. In a memorial sent by the Board of Revenue to the Emperor in 1872, the minister stated: “A line must be drawn between the *Nei-wu-fu* (the Imperial Household) and the government Treasury which has been established by our early ancestors... The revenue of this Board is fixed, but the borrowing of the *Nei-wu-fu* is indefinite. During these recent years, ...We request your majesty to instruct the *Nei-wu-fu* to observe faithfully the tradition:... so that unnecessary expenses can be curtailed and national revenue can be preserved...”. (Chang, p. 269).

This fundamental contradiction is rooted in the conflict of interest embedded in an institutional framework where the emperor or the upper level officials took on the dual role of both the principal and the contract-enforcer in this principal-agent contract. The discretionary power of the emperor and bureaucracy as derived from this dual role may have served the objective of political and social control so indispensable that the rulers were willing to acquiesce to local corruption and abuses (as long as they were within the threshold of political stability and dynastic survival). Where such abuses became or were beginning to be viewed as excessive, the rulers would clamp down selectively (given their power of discretion) with the severity of punishments often varying not just with the nature of offense but also with the disciplinary needs of the time.²⁷

One can see a stable and predictable rule of law difficult to emerge in a system with high component of discretionary power. With access to these power and its associated rents restricted to the bureaucratic or political-social hierarchy, the incentive structure in the empire heavily favoured political or bureaucratic interest over any independent economic or commercial interest. The often hidden and decentralized nature of these rents in the form of informal or extra-legal taxation (or corruption) at the local level (acquiesced to the extent that they did not directly threaten imperial stability) could also impose disproportionately high cost on relatively capital and scale intensive activities most vulnerable to information exposure. Likewise, information hoarding (of wealth or investment) that tied government's grabbing hand could bind its "helping hand", leading to what Greif referred to as a case of "absent government" (Greif 2005). Indeed, many of Qing's main intervention in the private sector such as tax exemption and famine relief all seemed to target risk

²⁷ For periodic and selective capital punishment on the so-called "economic crime" meted out to high level government officials see He Ping, pp.293-5. Huang counted in detail the sorry fate of all the 89 most ministers of Revenue under the Ming from 1380, pp.13-14. The variation of imperial monitoring and punishment across dynasties and imperial reigns may also partly account the life-cycle of Chinese dynasties.

reduction and social stability. But Qing's role in commercial legislation or state enforcement of contracts was comparative deficient.²⁸ This is not surprising given that the relatively unchanged size of the Qing imperial household (which could thus cap the size of rulers' expenditure needs for luxury consumption) and its overriding concern with dynastic tenure rather than revenue maximization.

Although we see a similar linkage between warfare driven resource mobilization and state-building and consolidation in Western Europe, two institutional features – jurisdictional fragmentation and representation institution of some sort (or “parliament” broadly defined) – stood apart from China.²⁹ In city-states or federations of city-states (such as Northern Italy and Holland) with strong representation of commercial or property interests, warfare mobilization led to the rise of what Charles Tilly referred to as the capital-intensive path as contrasted with the coercion-intensive path followed by larger empires such as the Russian and Ottoman where the interest of the commercial elites were subdued and representative institutions were weak or non-existent. In the capital-intensive path, war mobilization accelerated the development of financial and fiscal institutions marked by the rise of public debt and commercial taxation.³⁰ One could surmise that representative institution could be one mechanism that helped resolve incentives and principal-agent problem by allowing economic and commercial interest direct control of economic rents reaped from the (military or commercial) success of European inter-state competition.³¹

²⁸ See Ma 2010 for lagged development in the Chinese legal sphere in commercial and financial sectors.

²⁹ See Grief 2006 for the “corporate” nature of Western institution and van Zanden, Buringh and Bosker 2010 for the rise of parliament.

³⁰ See North and Weingast (1989) for the case of Glorious Revolution in England and Brewer (pp.66-67) for the rise of modern civil bureaucracy in post-Glorious Revolution England. Also see Karaman and Pamuk 2010, Dincecco 2009.

³¹ See Khan 2000 for an exposition of the so-called Schumpeterian rents in states and government policy. There are large differences in the nature of states within Europe and at different times. Mokyo and Nye (2007) make the point that the peculiarly

Hence, as intimated by Max Weber, marked by the joint absence of political representation and inter-state competition, military warfare in imperial China may not induce direct forward linkage to state capacity in financial and fiscal administration (Weber 1951, pp. 103-4). The absolutist nature of Chinese imperial power, which could and had made numerous state conversions of “private loans” into forced contributions throughout history, may have deterred the rise of a viable market for sustainable public debt. Moreover, China’s imperial monopoly over the entire Chinese territory under a single jurisdiction also precluded the independent existence of any financial market or institution that could wield extraterritorial or multi-jurisdictional power to discipline or punish absolutist rulers in case of sovereign default – an institutional device operated in Europe marked by political fragmented and multiple jurisdictions.³²

Hence, the Chinese case provides another affirmation of the paradoxical pattern long recognized in European fiscal regimes: that constitutionally constrained regimes may be more effective, *certeteris paribus*, in extracting a much higher rate of tax revenue than absolutist regimes. Meanwhile, the differences in levels of fiscal revenue could, with important qualifications, also be reflective of large differentials in developments of fiscal and financial institutions and perhaps gaps in per capita income. Indeed, other studies point to the combination of low shares of fiscal revenue, high interest rates and low levels of financial

national character of the English parliament allowed it to centralize rent-seeking and collectively bargain with the crown. This contrasted with other more decentralized absolutist states such as Spain and France where faction-based or parcelized rent-seeking persisted. In these states, rising fiscal needs increased state dependence on tax-farming, venality, and other short-term measures susceptible to corruption. Also see Acemoglu et al 2005 another variation of this argument.

³² Indeed, the only viable public borrowing started in the late 19th century between the Qing state and Western merchants and bankers who had the backing of Western colonial presence in the case of default. See Zhou Yumin 2000, pp.277-287 also for cases of imperial Qing’s forced borrowing. Also see Epstein 2000, chapter 2, specifically p. 27 for how overseas capital markets or financial intermediaries in Western Europe could bind absolutist rulers to repayment of public debt.

intermediation as symbiotic with low per capita incomes that characterized contemporary underdevelopment (Besley and Ghatak forthcoming, Besley and Persson forthcoming, Acemuglu 2005). Available evidence shows that for the 17th and 18th centuries, private interest rates in traditional China exhibited a wide variation, but even the lower end averaged about 20%, a rate that was possibly four or five times the level of that in England and the Netherlands (see Peng et al., 2006 for China and Epstein 2000 for Europe). And this ratio reversed for real wage rates of unskilled urban workers where the Chinese rates for the 17-19th centuries were probably a third or less of those in those two European countries (Allen et al 2011). This factor price ratio differential at the two ends of Eurasia forms a sharp contrast to the measures of imperial unity and dynastic stability.

Conclusion

Through a narrative model of the Chinese state, this article stresses the importance of institutions as a determinant to both the long-run economic trajectory and the great divergence between China and Western Europe in the early modern era. The very long-run view of two millennia reveals political centralization under a unitary monopoly rule in China as an endogenous historical process propelled by escalation of warfare and warfare mobilization. Geography based explanation of China's centralization (as opposed to the polar case of European fragmentation), as Jared Diamond famously surmised, seems insufficient (see Diamond 1997, chapter 16). Momentous institutional transformation as occurred in China's Tang-Song transition era laid the political foundation for China's superior historical record of imperial unity and dynastic longevity. This historical process is endogenous in the sense monopoly of rule and a long time horizon of rule, once established,

predisposed the imperial rule towards a path of low-extraction co-existing with a relatively free private economy, which itself would then further reinforce political stability. Conversely, large and often exogenous such as external threat could also reverse this process and trigger the dynastic cycles of rock, scissors, paper. The Qing imperial rule presented in this paper is an exemplary demonstration of this political economy model.

The ideology of unitary rule conditioned on the elimination of inter-state competition may have given rise to a peculiar Chinese form of political legitimacy based on cross-dynastic competition (see Yang Liangsheng 2005, pp. 30-42). History and particularly the lessons of dynastic fall served as mirrors to confront the current and future imperial rulers. Hence, imperial compilation of dynastic annals itself was essential exercise of political legitimization. Hence, this particular ideology of legitimacy developed under a stable unitary imperial rule in China tended towards both inward and backward looking. Indeed, even the most ardent critics of imperial rule like Huang Zhongxi or Gu Yanwu had to comb through China's age of antiquity for better models of governance.

The Chinese model of absolutism contrasts with the Western European political structure where co-existence of inter-state competition and political representation may have helped resolve the fundamental incentive and information problems that beset an unitary and centralized empire like China. The much more unstable political structure in Western Europe may also have provided more dynamism to allow the emergence and evolution of institutions conducive to contract and information intensive sectors and possibly a high-wage, low interest-rate economy by the early modern era. Indeed, if we accept Robert Allen's recent argument on the importance of differential factor prices – a higher ratio of wage prices to those of capital and resource prices in England than in China – in being instrumental in inducing the Industrial Revolution in

England rather than in China; I argue these differential factor prices themselves need to be explained rather than taken as exogenous.

The onslaught of mid-19th century Western imperialism, this time descended from China's coastal fringes in the South rather than its Northern frontier of steppes and deserts, became a permanent challenge to the traditional Chinese rule of legitimacy through the imposition of a new global system of inter-state competition. The need for the Chinese state to respond to the Western imperial challenge eventually translated into a modernization or Westernization movement. Curiously, it was from the fountain of traditional ideology of centralization that sprang the intellectual inspiration of modernization in China or in East Asia in general. Indeed, Meiji Japan's swift and aggressive establishment of a centralized prefectural system over a fragmented Tokugawa feudal order owed its success to this Chinese ideology (see Feng Tianyu, chapter 4). The Nationalist movement in China's Republic era in early 20th century deemed unification and centralization as the cornerstone to counter Western and by then Japanese imperialism. Mao Zhedong, the founding father of Communist China drew as much intellectual inspiration from the first emperor of Qin, and Liu Zongyuan's theory of centralized absolutism as from the Stalinist Soviet (Feng Tianyu p.65). Even in today's era of reform and open-up, institutional features strikingly reminiscent of a centralized and authoritarian administrative system in traditional Chinese political order - the central appointment of officials, rotating system of bureaucratic posts, decentralized fiscal policy and even the coping mechanism of relying on information asymmetry to preserve local autonomy – are remarkably resilient and even hailed as the institutional foundation behind China's economic miracle of the last three decades.³³ Indeed, in this new global world order marked by inter-state competition, China's long tradition of centralized bureaucratic rule turned

³³ See Qian and Weingast 1997 and Xu, Chenggang forthcoming.

out to be a powerful tool for achieving the state objective of economic catch-up with the West, and Japan, or even the East Asian tigers. Whether or not, however, in the continued absence of any concrete political representation, this catch-up would sustain, or China could finally step beyond the long shadows of history cast by the dynastic cycles of rock, scissors, paper, remains to be seen.

Bibliography:

- Acemoglu, Daron, "Politics and Economics in Weak and Strong States"
Journal of Monetary Economics 2005 52, 1199-1226.
- Acemoglu, Daron, Simon Johnson and James Robinson, "The Rise of
Europe: Atlantic Trade, Institutional Change and Growth", *American
Economic Review*, June 2005, volume 95, pp. 546-579.
- Allen., R.C, *The British Industrial Revolution in Global Perspective*.
Cambridge University Press, 2009
- Allen., R.C, Jean-Pascal Bassino, Debin Ma, Christine Moll-Murata and
Jan Luiten van Zanden "Wages, Prices, and Living Standards in
China, Japan, and Europe, 1738-1925" *Economic History Review*
Vol. 64, No. S1 2011, pp.8-38.
- Bai, Y and James Kung "Climate Shocks and Sino-nomadic Conflict"
Forthcoming The Review of Economics and Statistics.
- Besley, T., T. Persson "The Origins of State Capacity: Property Rights,
Taxation and Politics" *American Economic Review*, forthcoming
- Besley T., and Ghatak, M. "Property Rights and Economic Development"
Chapter for Volume V of the *Handbook of Development Economics*
edited by Dani Rodrik and Mark Rosenzweig.
- Bosker, M., E. Buringh and J.L. van Zanden "From Baghdad to London:
the dynamics of urban development in Europe and the Arab world,
800-1800" Unpublished paper 2008.
- Brewer, J., *The sinews of power: war, money and the English state, 1688-
1783*. 1989, London: Unwin Hyman. xxii,289p.
- Chang, C.-I., *The Chinese Gentry. Studies on their role in nineteenth-
century Chinese society*. 1955: University of Washington Press:
Seattle.
- _____ *The Income of the Chinese Gentry: a Sequel to the Chinese
Gentry*. Seattle: University of Washington Press, 1962.

- Chang, T.-c.a., "The Economic Role of the Imperial Household in the Ch'ing Dynasty" *Journal of Asian Studies*, 1972. Feb 1972.
- Creel, "The Beginnings of Bureaucracy in China: The Origin of the Hsien" *The Journal of Asian Studies*, Vol. 23, No. 2 (Feb., 1964), pp. 155-184
- De Bary, W. T., Chan, W.T and Watson, B. *Sources of Chinese Tradition*. New York: Columbia University Press. 1960.
- Diamond, J., *Guns, Germs, and Steel, the Fates of Human Societies*. New York: W.W. Norton & Co., 1997.
- Dincecco, M. "Fiscal Centralization, Limited Government, and Public Revenues in Europe, 1650-1913" *Journal of Economic History*, Vol. 69, No. 1, March 2009, pp. 48-103.
- Elvin, M., *The pattern of the Chinese past*. 1973: Stanford: Stanford University Press.
- Epstein, S.R., *Freedom and growth : the rise of states and markets in Europe, 1300-1750*. Routledge explorations in economic history ; 17. 2000, London: Routledge. xiii, 223 p.
- Ferguson, Niall. *Civilization, the West and the Rest*. London: Allen Lane, 2011.
- Greif, A., "Commitment, Coercion, and Markets: The Nature and Dynamics of Institutions Supporting Exchange." Chapter 28. In the *Handbook for New Institutional Economics*. Edited by Claude Menard and Mary M. Shirley. Norwell MA: Kluwer Academic Publishers. 2005.
- Greif, A., *Institutions and the path to the modern economy : lessons from medieval trade*. Political economy of institutions and decisions. 2006, Cambridge: Cambridge University Press. xix, 503 p.
- Ho, P.-T., *The ladder of success in Imperial China, etc. (Second printing.)*. 1967: New York: Columbia University Press. pp. xviii, 386. 23 cm. bibl. pp. 357-377.

- Huang, R., *1587: a year of no significance : the Ming dynasty in decline*. 1981, New Haven ; London: Yale University Press.
- _____ *Taxation and governmental finance in sixteenth-century Ming China*. (Cambridge studies in Chinese history, literature and institutions.). 1974: London: Cambridge University Press.
- Karaman, Kivanc and Sevket Pamuk “Ottoman state finances in European perspective (1500-1914)” forthcoming *Journal of Economic History*, Vol. 70, No. 3 (September 2010), pp. 1-36.
- Kishimoto, Mio: “Property Rights, Land and Law in Imperial China” chapter 4 in Debin Ma and Jan Luiten van Zanden edited, *Law and Long-term Economic Development, an Eurasian Perspective*. Forthcoming with Stanford University Press.
- Khan, M.H. “Rents, Efficiency and Growth” in *Rents, Rent-seeking and Economic Development*. Edited by M.H. Khan and J. K. Sundaram. Cambridge University Press.
- Lattimore, Owen, *Inner Asian Frontiers of China*. New York: Capitol Publishing Co., Inc. 1940/1951.
- Liu, Guanglin, *Wrestling for Power, The State and the Economy in Later Imperial China, 1000—1770* Phd. Thesis, Harvard University Press, 2005
- Ma, Debin “Growth, Institutions and Knowledge: A Review and Reflection on the Historiography of 18th-20th Century China” Vol. 44, Issue 3, Nov. 2004, *Australian Economic History Review*, (Special Issue on the Economic History of Asia).
- _____ “Law and Economy in Traditional China: a ‘Legal Origin’ Perspective on the Great Divergence” chapter 3 in Debin Ma and Jan Luiten van Zanden edited, *Law and Long-term Economic Development, an Eurasian Perspective*. Stanford University Press 2011.

- Maddison, A., *Chinese economic performance in the long run*. 2nd ed, rev. and updated: 960-2030 A.D. ed. Development Centre studies. 2007, Paris: Development Centre of the Organisation for Economic Co-operation and Development.
- Miyakawa, H. "An Outline of the Naito Hypothesis and its Effects on Japanese Studies of China". *The Far Eastern Quarterly* 14(4), 533-552, 1955.
- Mokyr, J. and Nye, J. "Distributional Coalitions, the Industrial Revolution, and the Origins of Economic Growth in Britain" *Southern Economic Journal*, Vol. 74, No. 1 (July 2007), pp. 50-70.
- North, D.C., *Structure and change in economic history*. 1981, New York ; London: Norton. xi,228p.
- North, D. C., and Weingast, Barry R. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *Journal of Economic History* 49 (Dec. 1989): 803-32.
- North, D.C., John Wallis and Barry Weingast *Violence and Social Orders, a Conceptual Framework for Interpreting Recorded Human History*. Cambridge University Press, 2009.
- O'Brian, P. K. "The Political Economy of British Taxation 1660-1815" *Economic History Review* Vol. XLI (Feb. 1988), pp. 1-32.
- Olson, Mancur "Dictatorship, Democracy, and Development" *American Political Science Review* vol. 87, No. 3 Sept. 1993, pp. 567-576.
- Pomeranz, K., *The great divergence : China, Europe, and the making of the modern world economy*. The Princeton economic history of the Western world. 2000, Princeton, N.J.: Princeton University Press.
- Prak, M. and Jan Luiten van Zanden "Towards an Economic Interpretation of Citizenship: the Dutch Republic between Medieval Communes and Modern Nation-States" *European Review of Economic History*, 10, 111-145. 2006.

- Qian, Y.Y. and B.R. Weingast. "Federalism as a Commitment to Preserving Market Incentives" in *Journal of Economic Perspectives*, vol. 11, No. 4, Fall 997, pp. 83-92.
- Sng, Tuan-hwee. 2010. "Size and Dynastic Decline: the Principal-Agent Problem in Late Imperial China 1700-1850." Department of Economics, Northwestern University: Evanston IL.
- Tilly, Charles *Coercion, Capital, and European States, AD 990-1992*. Cambridge, MA: Blackwell Publishing, 1990.
- Turchin, Peter "A Theory for Formation of Large Empires" *Journal of Global History* (2009) 4, pp.191-217.
- Van Zanden, J.L. E. Buringh and M. Bosker. "The Rise and Decline of European Parliaments, 1188-1789" CEPR discussion papers series No. 7809, 2010.
- Wang, Y.-C., *Land taxation in Imperial China, 1750-1911*. Harvard East Asian series ; 73. 1973, Cambridge, Mass: Harvard University Press.
- Wang, Y.-C., *Secular Trends of Rice Prices in the Yangzi Delta, 1638-1935*, in *Chinese history in economic perspective*, T.G. Rawski and L.M. Li, Editors. 1991, University of California Press: Berkeley.
- Weber, M. *The Religion of China, Confucianism and Taoism*. New York: Free Press, 1951.
- White, Eugene, "France's Slow Transition from Privatized to Government-Administered Tax Collection: Tax Farming in the Eighteenth Century," *Economic History Review* (November 2004).
- Wong, R.B., *China transformed: historical change and the limits of European experience*. 1997, Ithaca ; London: Cornell University Press.
- Wittfogel, K.A., *Oriental despotism : a comparative study of total power*. [S.l.] : Yale University Press, 1957 (1976).

Xu, Chenggang, "The Fundamental Institutions of China's Reforms and Development," forthcoming in *The Journal of Economic Literature*.

Yang, L.S. "Ming Local Administration" in *Chinese Government in Ming Times*. Edited by C.O. Hucker. Cambridge University Press, 1969.

Zelin, M., *The magistrate's tael : rationalizing fiscal reform in eighteenth-century Ch'ing China*. 1985, Berkeley, Calif.: University of California Press.

Chinese:

China's Military History Editorial Committee (ed.), *Zhongguo Lidai Zhanzheng Nianbiao* (A Chronology of Warfare in Dynastic China) (second edition) Beijing: Jiefangjun Chubanshe, 2006).

Du, Zhengshen 编户齐民：传统政治社会结构之形成 (Bianhu Qimin: the Formation of Traditional Political and Social Structure)。 Taipei: 联经出版事业公司 1990.

Feng, Tianyu. 封建考论 (Feudalism: a Review and Survey). Wuhan University Press, 2006.

Ge, Jianxiong 统一与分裂 (Unification and Fragmentation: Lessons from Chinese History) Beijing: Zhonghua Shuju, 2008.

Hamashita, Takeshi (浜下武志) 中国近代经济史研究 (Research on Modern Chinese Economic History, Maritime Customs Finance in late Qing and Market Networks of Treaty ports). Nanjing: Jiangsu People's Press 2006 (translated from Japanese originally published in 1989).

He, Ping, 清代赋税政策研究 (Research on Qing Taxation Policy). Beijing: Chinese Academy of Social Science Press, 1998.

Liang, Qicao 梁启超选集 (Selected Works of Liang Qicao) edited by Li, H.X and Wu, J.X. Shanghai: Shanghai People's Press, 1984, pp. 27-32.

- Luo, Yudong *中国厘金史* (History of Chinese Lijin Tax) Shanghai: Commercial Press. 1936/2010.
- Peng, K.X, with Chen, Z.W., Yuan, W.P. and Cao, H.N. “水浅而舟重：近代中国农村借贷中的市场机制” (Shallow Water and Heavy Boat: Market Mechanism in Modern Chinese Rural Credit) chapter in *中国工商业与金融史的传统与变迁* (The Evolution of Chinese Industry, Commerce and Finance, an International Symposium) edited by Liu QiuGeng Liu and Debin Ma, Shijiazhuang, China: Hebei University Press, 2009.
- Qian Mu (钱穆) *中国历代政治得失* (The Gains and Losses of Chinese Dynastic Politics) 香港：大中国印刷厂 1966。
- Quan, Hanshen (全汉升) *中国经济史研究* (Research on Chinese Economic History), vol. 1. 香港: 新亚研究所, 1976.
- Shi, Zhihong (史志宏) *清代户部银库收支和库存统计* (Statistics on the Stocks, Receipts and Expenditures of the Vaults of the Qing Board of Revenue) 福建人民出版社 2008。
- Shi, Zhihong and Xu, Yi *晚清财政: 1851-1894* (Public Finance in Late Qing: 1851-1894). Shanghai: Shanghai University of Finance and Economics Publisher. 2008
- Tan Qixiang *中國歷史地圖集* (China Historical Atlas). 8 vols. Beijing: Atlas publisher 1982-1988.
- Wang, Yanan (王亚南) *中国官僚政治研究* (The Politics of Chinese Bureaucracy). 中国社会科学出版社 1981 / 2005.
- Wu, Zhongguo (吴宗国) 主编 *中国古代官僚政治制度研究* (A Study on Traditional Chinese Bureaucratic Institution) Beijing University Press, 2004.
- Xiao Gongquan. *中国政治思想史* (A History of Chinese Political Thought) Beijing: New Star Press, 2010/1940.

- Yang, Liansheng, *国史探微* (Reflections on Chinese History). Beijing: New Star Publishers, 2005.
- Yu, Huaqin. *中国宦官制度史* (A Institutional History of Chinese Eunuchs). Shanghai: Shanghai People's Press. 2006.
- Zhang Zhidong (张之洞) *劝学篇* 北京: 华夏出版社 2002。
- Zhou Yumin. *晚清财政与社会变迁* (Late Qing Public Finance and Social Change) Shanghai: Shanghai People's Press, 2000.
- Japanese:
- Fujishima, T. and Nogami, S. *东方年表* (Annals of East Asia) Kyoto: 平楽寺書店 1996.
- Iwai, S. 岩井茂樹 *中国近世財政史の研究* (A Study on Early Modern Fiscal History of China). Kyoto University Press, 2004.
- Seo, Tatsuhiko 妹尾達彦 *中華の分裂と再生* (The Fragmentation and Rebirth of China) chapter one in *中華の分裂と再生* pp.3-82. Tokyo: Iwanami Shouten, 1999.

Appendix Table. Chinese Dynasties, Years of Unification and Incidences of Warfare

Chinese Dynasties	Years	Number of Years per dynasty	Years China was Unified	Number of years Unified	Number of recorded warfare	Average number of warfare per year
Spring and Autumn Period 春秋	770 BC — 476 BC	294			395	1.34
Warring States Period 戰國	475 BC — 221 BC	254			230	0.91
Qin 秦	221 BC — 206 BC	15	221BC - 209 BC	15	10	0.67
Western Han 西漢	206 BC — AD 24	229	111BC - AD 22	132	124	0.54
Eastern Han 東漢	25 — 220	195	50 - 184	134	277	1.42
Three Kingdoms 三國	220 — 265	45			71	1.58
Western Jin 西晉	265 — 317	52	280-301	21	84	1.62
Eastern Jin 東晉	317 — 420	103			272	2.64
Southern and Northern Dynasties 南北朝	420 — 589	169			178	1.05
Sui 隋	581 - 618	37	589-616	27	88	2.38
Tang 唐	618 — 907	289	624-755	131	193	0.67
Five Dynasties and Ten Kingdoms 五代十國	907 — 960	53			73	1.38
Northern Song 北宋	960 — 1127	167			255	1.53
Southern Song 南宋	1127 — 1279	152			294	1.93
Yuan 元	1280 — 1368	88	1279-1351	72	204	2.32
Ming 明	1368 — 1644	276	1382-1618	236	578	2.09
Qing 清	1644 — 1911	268	1683-1850	167	426	1.59
Total		2686		935	3752	1.40

Source: Number of Years China was unified one rule was calculated from Ge Jianxiang, 2008 pp. 218-224; Number of warfare calculated from China's Military History Editorial Committee (ed.), *A Chronology of Warfare in Dynastic China (Zhongguo Lidai Zhanzheng Nianbiao)*.

LONDON SCHOOL OF ECONOMICS
ECONOMIC HISTORY DEPARTMENT WORKING PAPERS
(from 2008 onwards) For a full list of titles visit our webpage at
<http://www.lse.ac.uk/>

2009

- WP114 War and Wealth: Economic Opportunity Before and After the Civil War, 1850-1870
Taylor Jaworski
- WP115 Business Cycles and Economic Policy, 1914-1945: A Survey
Albrecht Ritschl and Tobias Straumann
- WP116 The Impact of School Provision on Pupil Attendance: Evidence From the Early 20th Century
Mary MacKinnon and Chris Minns
- WP117 Why Easter Island Collapsed: An Answer for an Enduring Question
Barzin Pakandam
- WP118 Rules and Reality: Quantifying the Practice of Apprenticeship in Early Modern Europe
Chris Minns and Patrick Wallis
- WP119 Time and Productivity Growth in Services: How Motion Pictures Industrialized Entertainment
Gerben Bakker
- WP120 The Pattern of Trade in Seventeenth-Century Mughal India: Towards An Economic Explanation
Jagjeet Lally
- WP121 Bairoch Revisited. Tariff Structure and Growth in the Late 19th Century
Antonio Tena-Junguito
- WP122 Evolution of Living Standards and Human Capital in China in 18-20th Centuries: Evidences from Real Wage and Anthropometrics
Joerg Baten, Debin Ma, Stephen Morgan and Qing Wang

- WP123 Wages, Prices, and Living Standards in China, 1738-1925: in Comparison with Europe, Japan, and India
Robert C. Allen, Jean-Pascal Bassino, Debin Ma, Christine Moll-Murata, Jan Luiten van Zanden
- WP124 Law and Economic Change in Traditional China: A Comparative Perspective
Debin Ma
- WP125 Leaving Home and Entering Service: The Age of Apprenticeship in Early Modern London
Patrick Wallis, Cliff Webb and Chris Minns
- WP126 After the Great Debasement, 1544-51: Did Gresham's Law Apply?
Ling-Fan Li
- WP127 Did Globalization Aid Industrial Development in Colonial India? A Study of Knowledge Transfer in the Iron Industry
Tirthankar Roy
- WP128 The Education and Training of Gentry Sons in Early-Modern England
Patrick Wallis and Cliff Webb
- WP129 Does Trade Explain Europe's Rise? Geography, Market Size and Economic Development
Roman Studer
- WP130 Depression Econometrics: A FAVAR Model of Monetary Policy During the Great Depression
Pooyan Amir Ahmadi and Albrecht Ritschl
- WP131 The Economic Legacies of the 'Thin White Line': Indirect Rule and the Comparative Development of Sub-Saharan Africa
Peter Richens
- WP132 Money, States and Empire: Financial Integration Cycles and Institutional Change in Central Europe, 1400-1520
David Chilosì and Oliver Volckart
- WP133 Regional Market Integration in Italy During the Unification (1832-1882)
Anna Missiaia

2010

- WP134 Total Factor Productivity for the Royal Navy from Victory at Texal (1653) to Triumph at Trafalgar (1805)
Patrick Karl O'Brien FBA and Xavier Duran
- WP135 From Sickness to Death: The Financial Viability of the English Friendly Societies and Coming of the Old Age Pensions Act, 1875-1908
Nicholas Broten
- WP136 Pirates, Politics and Companies: Global Politics on the Konkan Littoral, c. 1690-1756
Derek L. Elliott
- WP137 Were British Railway Companies Well-Managed in the Early Twentieth Century?
Nicholas Crafts, Timothy Leunig and Abay Mulatu
- WP138 Merchant Networks, the Baltic and the Expansion of European Long-Distance Trade: Re-evaluating the Role of Voluntary Organisations
Esther Sahle
- WP139 The Amazing Synchronicity of the Global Development (the 1300s-1450s). An Institutional Approach to the Globalization of the Late Middle Ages
Lucy Badalian and Victor Krivorotov
- WP140 Good or Bad Money? Debasement, Society and the State in the Late Middle Ages
David Chilosì and Oliver Volckart
- WP141 Becoming a London Goldsmith in the Seventeenth Century: Social Capital and Mobility of Apprentices and Masters of the Guild
Raphaëlle Schwarzberg
- WP142 Rethinking the Origins of British India: State Formation and Military-Fiscal Undertakings in an Eighteenth Century World Region
Tirthankar Roy

- WP143 Exotic Drugs and English Medicine: England's Drug Trade, c.1550-c.1800
Patrick Wallis
- WP144 Books or Bullion? Printing, Mining and Financial Integration in Central Europe from the 1460s
David Chilosì and Oliver Volckart
- WP145 'Deep' Integration of 19th Century Grain Markets: Coordination and Standardisation in a Global Value Chain
Aashish Velkar
- WP146 The Utility of a Common Coinage: Currency Unions and the Integration of Money Markets in Late Medieval Central Europe
Lars Boerner and Oliver Volckart
- WP147 The Cost of Living in London, 1740-1837
Ralph Turvey
- WP148 Labour Market Dynamics in Canada, 1891-1911: A First Look From New Census Samples
Kris Inwood, Mary MacKinnon and Chris Minns
- WP149 Economic Effects of Vertical Disintegration: The American Motion Picture Industry, 1945 to 1955
Gregory Mead Silver

2011

- WP150 The Contributions of Warfare with Revolutionary and Napoleonic France to the Consolidation and Progress of the British Industrial Revolution
Patrick Karl O'Brien
- WP151 From a "Normal Recession" to the "Great Depression": Finding the Turning Point in Chicago Bank Portfolios, 1923-1933
Natacha Postel-Vinay
- WP152 Rock, Scissors, Paper: the Problem of Incentives and Information in Traditional Chinese State and the Origin of Great Divergence
Debin Ma