HOW POLITIES CHANGE:
A Strategic Perspective on
China-Japan Historical Comparison

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I. Introduction

In the impressively broad account of economic history, *Why Nations Fail*, Acemoglu and Robinson (2012) attempted to substantiate the proposition that the quality of polity matters for economic performance. The "inclusive" political regime, not the "extractive" regime, should be a critical prerequisite for sustainable economic growth. They illustrate the argument, for example, by the case of North Korea versus South Korea. The contrast of economic performance between them is obvious. However, the origin of the divide in polity in this case was due to a somewhat arbitrary drawing of the national border in international power politics after the Second World War. In a broader and longer-run perspective, does the proposition generally hold? If so, what determines the quality of polity? How can an inclusive polity be created? A reading of their book does not necessarily seem to provide a clear answer of generic relevance to these issues, however.[1] We may ask therefore more generally: *Is the polity prior to the economy*?

The present article proposes an alternative view: the polity and the economic organizations (and thus economic performance) co-evolve through a long historical process rather than the former is prior to the latter as shorter-run observations might often appear to suggest. Theoretically, the view is derived from a game-perspective in which institutions both in the polity and the economy are regarded as emerging, sustaining themselves and changing endogenously through strategic behaviors of agents. Specifically, the *political state* is identified with a deep *stable state* of the political game. Then, political institution and economic organizations/institutions are linked together through complementary and/or substitute relations within, and across individual agents' strategic choices. Thus, it may sometimes

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[1] For a similar assessment, see the critical review of the book by McLeod (2013). To be fair, it may be noted that they discuss 'virtuous cycles" and "vicious cycles' between political institutions and economic institutions. Also in a recent article, they state that "the extant political equilibrium may not be independent of the market failure: indeed it may critically rest upon it" (Acemoglu and Robinson 2013: 174). However, their advice still rests on the position that, to avoid the pitfall of reinforcing rent-seeking behavior, economic *policy* need to be carefully designed by taking into its future political equilibrium (italics is by the present author). Below a distinction is drawn between the polity as an institution and the policy as emanating from it.

appear that changes in the polity are prior to changes in other institutions, but at deeper level they can only co-evolve. Otherwise, they would not be stable and sustainable.

More specifically, an exploration into the endogenous view of polity in this article is motivated and illustrated by comparative, historical cases of China and Japan. It is a well-accepted stylized fact in economics that paths to the modern economic growth regime out of the pre-modern (Malthusian) stage are quantifiably characterized with the reduction in agricultural shares in GDP and employment (e.g., Lewis 1953, Kuznets 1957, Hansen and Prescott 2002, Galor 2011). However, in Japan and China, and for this matter in Korea as well, this process started later, proceeded slower at first and then accelerated in much compressed periods of time than in the West, although there are variations even among the East Asian economies in these terms (Aoki 2013). What can account for this East-Asian specific pattern of development, as well as the variations within? Is it only the polity that matters? Do we need an East Asian-specific logic?

In an excellent quantitative study along the unified approach to growth, Ngai (2004) showed that Japan's relatively earlier catching up can be accounted for by 'policy changes' through the Meiji Restoration, while Hayashi and Prescott (2008) blamed the authoritarian civic law stipulated by the Meiji Government as deterring the reduction of agricultural employment in the pre-War period. The Xinhai Revolution in China (1911) marked an obvious watershed for the polity in China. Why did it not immediately discharge a breakthrough in terms of economic transition? Are ugly imperial aggressions and quarrels among warlords solely responsible for this as conventional thought may quickly point out? By going further back than the Meiji Restoration and the Xinhai Revolution and then tracing the political-economy processes leading to these political events, this article attempts to seek and illustrate a logic by which the polity and the economy are mutually constrained and co-evolve through strategic interactions of agents in these domains

The most advanced regions of the Chinese and Japanese economies in the eighteenth century had rather similar characteristics. The basic management units of productive activities were conjugal peasant families engaged in wet farming on small plots, owned or leased, while allocating a part of their working time to handicrafts of textile and other goods for domestic uses and markets (e.g., Perkins 1969, Zelin 1992, Li Bozhong 1998 for China; Smith 1959, 1988; Hayami, Saito and Toby 2004 for Japan). Manufacturing did not develop in cities as in the West (Rosenthal and Wong 2011), while wealth accumulated by merchants were largely invested in landholdings and taxed as such (this is less so in Japan). The major source of fiscal revenues of the rulers was from farmland tax. Thus, for the sake of referential convenience, these economies may be referred to as the *peasant-based economy* (Aoki 2012,

2013).[2] On this somewhat similar economic basis, different 'formal' rules of political governance appeared in China and Japan then. In order to understand the institutional nature of their polities, however, we need to look into how these rules were in practice applied, substantiated, modified to sustain equilibria and finally abandoned, all through interactions between the rulers and other agents, while exogenous shocks and elements of serendipity may trigger inflections of the process at particular points of time.

The article is organized as follows. After this introductory section, Section II sets a framework for strategic approach to institutions (Aoki 2001, 2011). It identifies institutions with the recursive states of play of societal games and their public representations in linguistic form. On this basic premise, it succinctly states why and how institutional resilience and changes in the polity and the economy need to be understood co-jointly. Section III turns to a comparative narrative of institutional processes in the Qing China and the Tokugawa Japan. First it looks at political governance of the peasant-base economy through lens focused on farmland property rights and land tax (IIIA). In describing and interpreting mutual fits and tensions between the polity and the economy, strategic interactions among three types of agents are attended to: the rulers (the Manchu imperial court and the Tokugawa Shogunate), the peasants, and various intermediate organizations between the two. By this way canonical forms of institutional arrangements of both countries are abstracted from their stylized practices in their heydays (say, in the eighteenth century). The form suggests a nature of the polity for each country somewhat different from prevailing or conventional models/views such as: opposing models of repressive despotism versus elite-led-public-sphere about the Qing China,[3] and the feudalistic-domain-state view about the Tokugawa Japan (IIIB). Finally, the Section notes crucial strategic forces and critical events that emerged in response to nineteenth-century crises, and discusses how their relations shaped paths toward the demise of the dynastic rules in the Xinhai Revolution and the Meiji Restoration.

Section IV turns to a (super-modular) analysis of a simple game model. This model is somewhat related to recent two-player models of the political economy of violence (e.g., Besley and Parsson 2012) or institutional coevolution (Huang 2012). It abstracts observations in the previous sections into a game of three-persons: the ruler and two intermediate organizations. Strategic relations among these three players may shift between complement and substitute, depending on accumulated consequence of repeated plays from the past and various parametric changes. Then three types of possible outcomes are identified: status quo in the canonical form as a subgame perfect equilibrium; and stochastic

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[2] Of course, this characterization is based on a highly stylized abstraction. See Zelin (1991) for a more nuanced survey of the "family-firm"-based economy of the Qing China. Also for qualifications of the stylized characterization in the text and regional differentiations, see Aoki (2013).

[3] Wakeman (1991) discusses four model of historical change of the Chinese state and society. In addition to the two mentioned in the text, he discusses Confucian restorations and the growing intrusion of the state into the society. I will refer to them as well below

equilibrium triggered by the revolt of one organization against the ruler, ending either in collusion between the rule and the other organization in punishing the deviants; or transition to a new state with the fall of the incumbent ruler. The section V applies insights from this analysis of institutional resilience versus destabilization for reinforcing and amplifying the narrative in Section III. It further pinpoints subtle aspects of the Xinhai Revolution and the Meiji Restoration that might have been critical in mediating institutional legacies from the past on subsequent institutional paths in both countries.

## II. A Framework for Strategic Perspective about Institutions

In an excellent survey of the Chinese economy, Brandt, Ma and Rawski apply the term 'equilibrium' to institutional features that were "historically stable, mutually reinforcing and extremely difficult to alter, *short of major shocks imposed from outside*."(2013: 33. Italics by the present author). What do they mean by 'equilibrium'? Strategic interpretations were implicit in their argument, but making it more explicit may provide a further insight into institutional resilience, institutional inter-dependencies as well as quasi-endogenous nature of institutional change.

Instead of viewing institutions as the rules of the game that can be set and changed by political decrees (e.g., North, 1990), this article proposes to identify institutions with the salient features of ways by which societal games are recursively played by agents and expected to be played by agents (Aoki 2001, 2011). Thus, the peasant-based economy in relatively advanced regions of the Qing China and the Tokugawa Japan as referred to in the introduction is a quintessential example of institutions. Typical peasant families there and then allocated working times of their members between farming and handicraft in partially routine and partially calculating manners; inheriting, leasing, selling/buying farmlands according to prevailing practices even without relevant formal laws; mutually obliging to keep promises, act collectively in sustaining local common goods such as irrigation systems and help each other within a certain specific group; paying taxes if enforced and trying to evade them if not detected; engaged in market transactions with local merchants using localized copper currencies and storing them as means for holding wealth; etc.

In viewing these features as recursive outcomes of societal games, it is not necessary to posit that these households had complete knowledge of the structure of game and exercise fully rational calculation over it to choose actions. Yet their behaviors are still strategic and they altogether constitute a game in that their action choices are based on certain beliefs about others' possible actions and reactions. Even in cases of merely following routines, practices, mutual obligations, market conventions and the like, the agents must have the sense, consciously or unconsciously, that the others also do the same and react in one way or another in case they do not follow those guides.

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But then, how do the agents form beliefs about how the game is being recursively played by the others? This is exactly the role of such things as routines, norms, laws, organizations, constitutions and even mythologies and folklores. However, they ought not to be understood as purely exogenous guides. In order for them to be regarded by the agents as credible, enforceable, legitimate, informative, reasonable and so on so that they can serve as agents' collective, external cognitive resources for understanding the world, they must be continually endorsed, supported, verified and the like by actual plays of the societal game. That is, they acts as linguistic representations of institutions if and only if they mediate between the recursive states of play of societal games and individual cognitive processes of belief formation (Aoki 2011). This perspective of institutions is thus process-oriented as shown in the Diagram spanned by the action-cognition dimension and the collective-individual dimension. Institutions are not *merely* the representations of fixed cultural preference (as Confucius filial piety so interpreted), biological traits or connectedness (e.g., collectivism so interpreted as in Gorodnichenko and Roland 2012; kinship-based norm as in Greif and Tabellini 2012), geographical features (e.g., by-now discredited view of the Oriental despotism due to Wittfogel (1957/76).

Figure: Viewing institutions as a process of strategic play
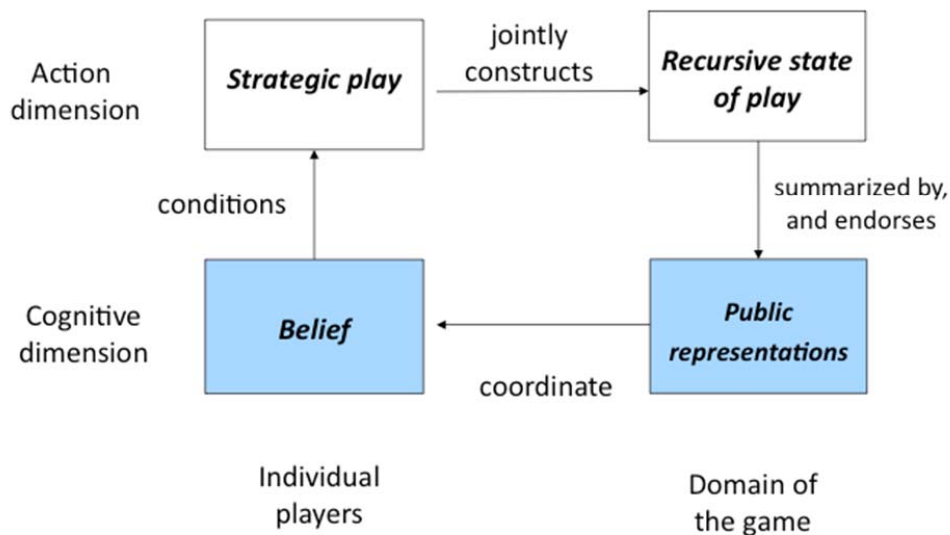
There can be varied types of domain of societal game, depending on kinds of media of strategic interactions. Analogous to the contractual exchange of goods and money in the economic domain, emotion-inducing, action-eliciting linguistic utterance, symbolic behavior and gifts and the like may be exchanged in the social exchange domain to generate and sustain social norms, customs, stigmas, herd behavior and the like.[4] In the political exchange domain on which we focus below, the government provides public goods such as national and local securities, protection of vested property rights in exchange for tax payments so as to maximize its own payoffs like prestige, sustained dominance, wealth-building, monument-building, etc., while individuals and organizations select actions from among yielding, colluding, approving, rejecting, revolting and so on in response to government actions. 'Stable equilibrium state' of this game can generate a 'political state', which is referred to below as the polity.[5]

How do individual agents deal with games on these varied domains: economic, social and political? Individual agents, whoever they may be, are likely to coordinate their own strategic choices across these domains, striking a balance between materialistic, emotional and political payoffs in terms of Edgeworthian complementarity and substitute relations.[6] Further, in game situations agents take into strategic considerations complementary/substitute properties of own actions vis-a-vis prevailing patterns of others' actions. Thus the strategic perspective predicts that over-all institutional arrangements emerging as equilibrium phenomena would entail characteristics of institutional complementarities, embeddedness and demarcations, linking varied domains of societal exchanges.

Thus institutions are resilient. However, they are not robust forever, either. Cumulative consequences of past plays in these domains and exogenous shocks to them may induce agents to adjust and adapt their strategic choices in the hope of improving on their over-all payoffs. These three factors, historical, exogenous and strategic, together may change complementary or substitute relations within individual agent's choice alternatives as well as across agents' choice alternatives. Thus a possibility of institutional change may be triggered. However, let us recall that institutional stability is mediated and sustained through public representations of salient features of recursive states of play that serve as collective cognitive resources to individual agents. Thus, for an institutional change to occur and be sustained, an associated change in viable public representation also ought to occur. While

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[4] Aoki (2001) Chapter 2; (2010) Chapter 3.4.
[5] The English word state derives from the Latin status. Status applies to something that is established, recognized as fixed or permanent in a particular position, as do its derivative English words static and stable. As such the political '"state"' may be thought of as being amenable to '"equilibrium"' analysis, possibly yielding many varieties.
[6] The social brain scientists, Montague and Berns, use the metaphor of "neuro-currency" to describe such cognitive process.(2012)

agents are in search of strategic adjustments in response to endogenous and exogenous changes in economic, social and political domains, therefore, various *public propositions* may compete in the public discourse domain in seeking the position of saliency in suggesting, persuading, advocating, summarizing a direction of strategic adjustments. This may be why policy as an element of the public discourse domain often appears as if it were prior to an institutional change. However, in order for a proposition to attain the position of primacy, it has to be proved in practice consistent with an emergent state of play in economic, political and social domains. Thus, economic organizations, polity and social norms are bound to co-evolve even if there are variations in timing.

Let us now move on to see how this strategic perspective can be helpful for understanding the comparative nature of institutional processes in China and Japan.

III. The Canonical States of Play and Transitions out of Them

This section describes, compares and interprets some stylized 'institutional' features of the political economies of the Qing China and the Tokugawa Japan, as well as those of processes leading to their demises. First, it describes formal governing rules of the polity for each country and interprets it in terms of complementarities between a tax state and the peasant-based economy (IIIA). Then it examines ways how the apparently centralized rules of both were actually modified in practice by interactions of various agents including those between the dynastic rulers and peasants. The stable state of play thus observed for each country is conceptualized as the canonical state of play for the sake of subsequent references. Specifically, for China intermediate organizations of local elites are observed as playing complementary roles to the dynastic rule as well as individual peasants, while the nature of Japan's polity is shown to have an aspect of quasi-fiscal-federalist tax state (IIIB). Finally, it describes and compares how those canonical states in China and Japan became destabilized by strategic behaviors of major players in responses to various situational changes in the nineteenth century, which would culminate in the demises of the dynastic rules in both countries (IIIc). Observed features of both countries may appear apart. But if they were viewed from a strategic perspective, there seems to exist an essential parallel as well, which may be helpful for a generic understanding of the nature and process of institutions.

A. Complementarities between Tax States and Peasant-based Economies

The polity in the Qing China (1644-1912) and that in the Tokugawa Japan (1603-1868) are often contrasted by historian as the centralized local administration (*junxianzhi*) versus a feudalistic domain state. This section however points to one fundamental similarity between them abstracted from stylized practices in their heydays as a kind of tax state. Here, the tax state is conceptualized as a form of the polity comprising of public finance for collective goods, universal taxation on 'privately owned-land' and administrative permanent bureaucracy as its essential elements.[7] Essential in this conceptualization is the separation of the public domain (the polity) and the private domain (the economy), although they were linked as we discuss.

The conquering Manchu court that established the Qing dynasty ran the administrative structure in which the magistrate at the county level reported to the governor at the provincial level, the latter to the imperial court and its cabinet. All bureaucrats in this structure were recruited from those who had passed imperial examinations at four-levels -- county, province, metropolitan and palace according to literary merits. They were not to be assigned to positions in their native regions according to the so-called rule of avoidance. Their positions were not formally inheritable, albeit carrying legal immunity.

In the heydays of Qing China, about three quarters of recorded public revenues were from land taxes (the rest was mainly salt taxes). Theoretically, individual land ownerships were registered on the "fish-scale register" held at the magistrate-office — the so-called, because the figurative record of individual holdings in the village looked like fish scales. This register was originally drawn in the preceding Ming period and was revised only in unsystematic ways under the Qing rule. The ownership of farmland was conventionally inherited equally among sons, which led to the frequent sales of ownership due to the fragmentations of wealth holdings. Wealthy buyers like gentry (lower ranked or retired degree holders) and merchants let impoverished sellers continue to cultivate the same plots, while the latter could sell a portion of leasing rights to still others, or they were entitled to redeem ownership if financial conditions allowed them to do so. Ownerships and lease-holdings were thus sold and bought like stocks without interventions of the government as a major means of wealth transfer and accumulation. These practices resulted in very complex property right arrangements.

On the other hand, the formal bureaucratic structure of the Qing government was small in size. It is estimated that there was only one magistrate per 200-3000 thousand peasant families. Obviously there arose various moral hazard problems with the magistrate and their runners in keeping the land

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[7] The word 'tax state' was coined by Schumpeter (1918). However, in his model the tax state is linked to the private ownership-based market economy.

register up-to-date and taxing accordingly.[8] In the next subsection we discuss ways in which these problems were coped with by strategic moves of various agents, generating a specific pattern of institutions as strategic equilibrium. For now, let us accept as the basis of discussion that the major source of public finance was land tax universally imposed on landowners, while land-ownerships and lease-holding were largely dispersed among peasants.[9] Taxes were then spent on court's consumption, compensations of mandarin-officials, the provision of public goods such as armies,[10] public works such as irrigation, provisions of social securities in the form of grain reserves for famines and natural disasters, and fiscal reserves in the coffer. The Qing dynasty never borrowed from private source until the end of the nineteenth century when the Board of Revenue started to make loans from foreigners.[11]

Thus, public finance, universal taxation and the bureaucratic administration were basic features of the Qing's governance in its heydays. The government capacity to sustain itself is fiscally supported by universal taxation on land-holding peasants. The system of scholarly-based mandarin selection and the centralized monopoly of legitimate political violence helped the dynastic ruler restrain the emergence of land-based, violence-backed political powers that could threat their weak governing capacity at the grass roots level. On the other hand, nurturing the self-reliant economic incentives of peasant families and securing their interests in property rights stabilized fiscal revenues of the dynastic court. Disputes between peasants and landowners brought to magistrates were therefore judged in a manner to set a standard of 'fairness' as contributing to sustaining the rural order of the peasant-based economy (Hung 2001; Zelin, Ocko and Gardella 2004). The abuses of power by magistrates and their clerks and runners to extract illegal surcharges on land tax often incited protests by peasants. The Qing court maintained the elaborate intelligence system and selectively intervened and punished the wrongdoing of lower ranked officials.[12] Thus, peasants' property rights and contractual rights in lease-holdings were de facto secured under the Qing government that acted to its own benefits, albeit not through the standpoint of

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[8] For a comprehensive treatment of moral hazard behaviors of the magistrate and their clerks as well as the Emperor Yongzhen's reform attempt to control the problems in the early eighteenth century and its eventual failure, see Zelin (1984). For recent analysis of the agency problem, see Sgn (2013) and for a survey Brandt, Ma and Rawski (2013).

[9] Distribution numbers to be added.

[10] Military power was vested in the regular Eight Banners army of the quasi-nomad Manchu origin and provincial Green Standard armies of Chinese mercenary directed by military mandarins inferior in status to the scholarly mandarin.

[11] The Board of revenue of the Qing government rather lent a surplus stock of silver to merchants-financiers for additional revenue. Kuroda (1994)

[12] The imperial court dispatched the secret members of the Censorate nation-wide, as well as utilized the "secret memorial system" in which selected officials at provincial levels monitored their peers and reported their malfeasance directly to the Emperor (Hung 2001).

the neutral third party. Thus, the Qing tax state and the peasant-based rural economy mutually complemented each other at the basic level.[13] The principle of filial piety from below and paternalistic benevolence from the above was a salient public representation of this complementary order. It is not the case that the Confucius principle produced the order.

As mentioned above, the polity of the Japan in the Tokugawa era (Edo period) appears to be different from that of the Qing China, and many historians, in Japan and the West alike, tend to characterize it as a feudalist state somewhat akin to what the pre-modern West European rural economy was governed. However, in spite of formal differences between the two, from a strategic perspective there was one essential similarity as well in relations between the polity as a tax state and the peasant-based economy. The Tokugawa Japan was divided into some 300 hundred *Han*, each served by the corporate body of samurai holding exclusive rights to armaments as well as to land taxation and legal enforcement within its geographical territory [The Han has been usually translated as the domain, but by a reason stated shortly it is conceptually a misleading one so that I do not adopt it in this article]. The Tokugawa *Bakufu* (Shogunate) was the same as the Han on these accounts although their territory was much larger in size and more resourceful. National defense and the provision of other cross-Han public goods and projects were collective responsibilities of all the Han (or shared by some selected Han) under the assignment of the Bakufu. An important distinction between the *Bakufu* and the *Han* in this *Baku-Han* regime was the assumed power of the Bakufu to abolish a Han or transfer a lord and its samurai body to a less resourceful Han, somewhat remindful of the power of the feudal lord in the West. This action was not supposed to be invoked arbitrarily, however, such as by the reason of personal disloyalty of a lord to the Shogunate, but legitimized only when a Han was negligent on assigned responsibility for sustaining the over-all order, as we will see.

The land ownership register of the Tokugawa Japan originated in the Land Survey conducted by Toyotomi Hideyoshi in the eve of national unification under the Baku-Han regime. His intention was, as that of Chinese dynasties, to remove the seed of challenge by landownership-based political and military powers. This survey examined the size and productivity of all farming plots in detail and attributed de facto property rights and tax obligations to the actual cultivator of each small plot. This survey was enforced against the resistance of large patriarchal families, such as *myoshu* (literally, 'name holders'), who had managed relatively large farming units with quasi-domestic subordinate laborers (*nago*, literally, a 'name-holder's child'). Their family heads were forced to reside in castle towns as members of Han's samurai corporate body. The landownership register was kept at the village office served by

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[13] A game model on this to be provided here.

officials who were by themselves cultivators. They were then revised according as cultivating practices were changed by inheritance, intra village transactions and so on. Possible ownership disputes were resolved within the village by arbitration of the village official. When property rights disputes crossing village boundaries were brought to the magistrate's court, judgments were made, if possible, upon evidences derived from the original registry by Toyotomi (Ishii 1966).

The collection of land tax was contracted out to the village office by the Han government. The Han government did not intervene in affairs of the village, as far as the village contract was observed. This increasing self-governance of the village was at the basis of the Baku-Han regime. Albeit no clear separation of contract law from civil law, the peasants became de facto owners of their cultivating lands and engaged in land transactions within the village and gradually vis-à-vis outside merchants in spite of Bakufu's original prohibition of farmland leasing and sales by independent landholding peasants in their own territory. On the other hand, the Han governments became a bureaucratic corporate body of samurai who derived incomes according to their ranks from land tax revenues. Incompetent or dissolute lords were confined to retirement by an agreement among major retainers, or after fierce factional fights among them (Kasaya 1988). The sustainability of the Han as the corporate body thus became prioritized to personal dignity of disqualified lord.

Thus, the Baku-Han regime as a whole may be considered as constituting a tax state, mutually complementary with the peasant based economy by the same logic as applied to the Qing China. The property rights of peasant households were protected on the condition that they fulfill the obligations under the village contract. The bureaucratic bodies of the Bakufu and the Han were fiscally supported by universal taxation on the household members of the village in their own territories, while they altogether share expenditures for public goods and projects. The enforcement of sharing entailed a unique characteristic of this tax state distinct from the Qing polity, as discussed in the next subsection.

Discussions about complementarities between the tax state and the peasant-based economy are to be qualified in the following three points. First, the complementarities between the two do not imply that the latter was an efficient economic arrangement even with the technological possibility of that time as given. Some economists argue that the small-scale peasant farming is the efficient arrangement that fits the monitoring needs of wet-farming in the monsoon region, such as attentive, continual human cares to plants in response to climatic change, deep plowing by manual labor for making soli more fertile and so on (e.g., Oshima 1987; Hayami and Ohtsuka1993). However, evidences are submitted that plowing by husbandry could be more productive, but it largely disappeared in the transitions from Ming to Qing in China (Li Bozhong), as well as from the Worrier periods to the Edo

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period in Japan (Hayami 2009). Perhaps the small management unit of the conjugal peasant families were prevented them from making use of scale economies of that technology that required costly investment. This appears to indicate an instance that institutionalized strategic complementarities could hurt economic efficiencies. Second, complementarities between the tax state and the peasant-based economy never implies static harmony, either. It is only a stable equilibrium state extracted at the high level of abstraction. It embraces potential tension that may become overtly revealed in occasional disturbances as well as in evolving situations, as seen below. Third, to understand the nature of the institutional resilience and further look into a game-theoretic logic of its endogenous change, we need to have a closer look at relations between the polity and the economy than we have dealt with so far. We do this in the next subsection by introducing the essential roles of intermediate organizations in sustaining the canonical order for China and examining relationships between the Shogunate and the Han for Japan. This discussion will become a prelude for understanding process leading to the demise of the canonical state in each country.

B. A Further Look at the Institutional Nature of the Tax States

(i) Complementarities of Gentry Organizations: The previous subsection alluded to the possibility that the magistrates and their staffs in the Qing China become negligent on keeping the land ownership register up to date and precise, or for worse revised it arbitrarily for the ease of recording, tax collection and malfeasance often in collusion with large landholders.[14] Further, because of relatively weak organizational and fiscal basis of the centralized local administration, the magistrate farmed out tax collections to the local gentry: the collusive practice known as *baolan.* However, through this informal practice the gentry gradually gained relative autonomy from the lower level administration for their own benefits, while small, weak households sought gentry's protections against the illegal surcharges by magistrates. In southeast China where agricultural development was relatively late, tax collections were likewise farmed out to village-based clan organizations (Baker 1979). In the Yangtze Delta where commerce and agriculture were most advanced, resourceful gentry formed formal organizations known as the landlord bursaries (*zhu-zhan*). They collected rents from tens and hundreds of leaseholders, paid taxes out of revenues and kept fees. They were often disguised as clan organizations for political correctness, but in fact they assumed corporate characteristics such as voluntary participation,

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[14] For a comprehensive treatment of moral hazard behaviors of the magistrate and their clerks as well as the Emperor Yongzhen's reform attempt to control the problems and its eventual failure, see Zelin (1984). For recent analysis of the agency problem, see Sgn (2013) and for a survey Brandt, Ma and Rawski (2013).

perpetual life and specialized administrative organizations including coercive force (Muramatsu 1966, 1970; Aoki 2012).[15] Further in the early nineteenth century and on when the security of property rights were increasingly threatened by bandits, secrete societies, revolting religious groups and so on, powerful and resourceful gentry became active in organizing militia training group called *tuan* at the village level. These local groups were then mutually interconnected to wider associations through personal relations of leading gentry (Kuhn 1970).

Thus, the formally centralized polity of the Qing China actually entailed increasing assertions of gentry's property-right interests backed up by quasi-official armed force. However, during the heydays of the Qing rule, informal and formal tax farming by elite gentry helped the magistrate who had only weak fiscal, social and personnel resources. Merchants likewise contributed to public revenues through tax payments on farmland ownerships that they invested in, if not directly on commercial profits. On the other hand, gentry's abilities to punish peasants' rent arrears were aided by local police function under the control of the magistrate, while merchants' abilities to be engaged in local and long distance trade was safeguarded by relative domestic peace provided by the government force. In these regards, governments at lower levels on one hand and the gentry and merchants as local groups on the other strategically complemented each other, interpenetrating each other's domain.[16]

However, this order became increasingly subjected to disturbances in the nineteenth century. The dramatic upheaval of the Taiping Rebellion (1850-64), led by a self-claimed Christ's brother, Hong Xiuquan, started in one of the poorest provinces, Guangxi, and at one point they occupied the most productive agricultural region of China, the lower Yangtze delta, and established an elaborate palace in Nanjing a la dynasty. The official army of the Qing court had weakened by then to cope with their military strength and it was only after ten years of battles fought by the region-based Xiang, Huai and other armies that the Taiping Heavenly Kingdom was finally wiped out. These armies were organized by elite mandarins like Zeng Guofan who took a leave from official duties to the court. They evolved as nested associations of the village-based, self-defense training group, *tuan*, as mentioned above (Kuhn 1970, Hatano 1973**)**.

The emergence of quasi-official organizations of political violence distinct from the official army troops was epoch-making, which raised an interesting issue of whether they would remain as strategically complement to court's political control or convert to substitute for it. Certainly, as against

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[15] For corporate characters of organizations disguised as clan organizations, lineage trust, *hui* and so on, see Sangren (1984) and Ruskola (2000).

[16] A similar historical view, although not explicitly in game-theoretic terms, is advanced in a brilliant China-Europe historical comparison by Wong (1997: 108-13).

the Taiping Rebellion, the gentry-led regional military power was helpful for the court's effort to prevent their weakened centralized control from further declining, while extraordinary self-reliant efforts of local gentry and peasants recruited as soldiers to protect their own property rights were aided by the network of semi-official status of the mandarin leaders. As far as this much is concerned, the gentry's autonomous organizations of armed peasants and the court's political rule were mutually complementary. However, at the same time the mandarin leaders financed enormous costs of running their armies through the regional control of salt, commerce and land taxes. This was a major departure from the principle of avoidance for the dynastic rule to repress the emergence of land-based regional power. Once the major revolt was quelled, independent assertion of power by the elite-gentry could become potential threats to the dynastic rule. Indeed, some factions of Xiang Army became rebellious later. However, Zeng, Li Hongzheng and other major leaders chose to return as officials of dynasty's administration and contribute to reform the unstable canonical order through the Self-Strengthening Movement in the areas such as diplomacy, arsenal, 'bureaucracy-supervised-merchant-managed' enterprises, education, and so on. Some of these reforms were prior or parallel to the industrial policy of the Meiji government of Japan. However, implicit tension remained between the court and those elite gentry.[17]

(ii) The Coalitional Nature of the Baku-Han regime: From comparative perspective, it is important to re-examine the nature of relations between the Bakufu and the Han in Japan. It was already mentioned that the Bakufu was entitled to punish a Han for possible negligence of sharing collective responsibilities. In one case, the lord of the Matsumae Han in Hokkaido was transferred because of alleged negligence of preparation of defense against possible Russian intrusion. When severe political repression and heavy taxation by Shimabara Han incited peasants' bloody rebellion led by Catholic militants and crushed only after military interventions of Bakufu and neighboring Han, the Han was abolished and its lord was executed. Thus, the power of Bakufu was understood to be exercised only if legitimized by common interests of the Han in punishing a deviant who threatened the order of Baku-Han regime built on the peasant-based economy. Conversely, as subsequent folding of events touched on in the next subsection revealed, the hegemony of the Shogunate could not be taken for granted but become problematic, when its policy orientation started to be questioned by the Han. All these characteristics indicate that

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[17] There were fifteen officers of the Xian Army who later became Viceroy of provincial governments. Among them, the leader of Wai army, Li Hongzhang, was dismissed (or retired) a few times from government high positions but had to be recalled to official duties when his irreplaceable competence in public services were needed such as at the times of diplomatic negotiations over the end of Sino-Japanese War and indemnity to damages done by the Boxer's Rebellion.

the institutional nature of the Baku-Han regime was actually that of an all-inclusive coalition of the Han with Bakufu as a leading player. This characterization may be upheld by a game-theoretic analysis in the next section. The coalitional nature of the Baku-Han regime then attributed an aspect of quasi-fiscal federalism to its tax state, in which each Han enjoyed the complete autonomy in taxation and public expenditure except for the sharing of collective responsibilities for national defense and the like. However, it is 'quasi-' in that the state is administered by the body of hereditary samurai-bureaucrats not accountable to all the tax paying members of the state.

However, note that there was increasing tendency toward the autonomy of the village from the Han government under the village contract system. There were initially variations in tax rate determination across Han and over time. In some places, tax rates tended fixed in practice from the early eighteenth to the mid-nineteenth centuries (Smith, 1988: chapter 2). In other places, the magistrate office examined prospective crops of the village each year and adjusted tax rates accordingly, which was criticized as prone to briberies of officials as well as bureaucratic disturbances in the timing of harvest. Then, in 1722 the Bakufu adopted the fixed-rate method for its own territory subject to periodical revision and with an exception clause for the case of extraordinary poor harvest (Oishi 1961: chapter 4). Under the fixed rate scheme, peasants in the village became residual claimants. The member households of the village then became collectively interested in mutually controlling free riding on local public goods projects, such as the construction and maintenance of an irrigation system essential for wet farming. Thus the norm of mutual compliance and cooperation among member households of the village evolved with the threat of ostracism of deviant household, known as *mura hachibu*, except for instances of fire and death that may hurt the security and safety of the community. This norm may be referred to as the membership-based norm in that it was binding to all the members and only to the members of the village.[18]

Thus the complementarities between the tax state and the peasant based economies was institutionalized as nested all-inclusive coalitional structure.

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[18] It is interesting to note in this regard that in China the Kanxi emperor also attempted to freeze nominal taxes in perpetuity in 1712 (Ma 2011). However, this attempt was in effect nullified at the level of county due to varied surcharges imposed by the magistrate. Also at places where transactions of farmland across the boundaries of villages were frequent, cooperative norm such as bound the member households of the village altogether was relatively harder to evolve, unless the security of their private property rights and lives were threatened alike by external aggressions. In China, the formation, observance and sustenance of cooperative norm appear to be limited to within a network of selected members: social practices known as *guanxi*. Aoki (2012, 2013), Herrmann-Pillath (2010).

C. Strategic Causes of, and Responses to, Institutional Instability and their Consequences

In the first half of the nineteenth century, various situations and events that would destabilize the respective canonical states of play occurred in both countries: among others, public finance difficulties that resulted from the declining taxing capacities of the rulers and their responses with austerity policies that created vicious cycles; occasional famines; the forced opening of treaty ports to the West that put pressure on the traditional commercial order; increasing requirements of conflict-related expenditures for coping with internal disorders and external threats; and specifically for China, the stagnation of per capita income and widening income disparity as a result of population explosion in the previous century combined with diminishing marginal returns to reclamations; declining work morale due to wide-spread consumption of imported and domestic opium. Lists may continue. Varied agents contributed and/or reacted to these situations by strategically deviating from the canonical state of play. The Taiping Rebellion and its aftermath referred to above were conspicuous cases. This subsection focuses on subsequent states of play that lead to the final demises of the Qing dynasty and the Baku-Han regime. How are China and Japan compared in these matters? We begin with Japan, the first in transition out of the dynastic rule through the Meiji Restoration (1867).

(i) Toward the Meiji Restoration: In facing threats of foreign powers, albeit later and milder than in China, the Bakufu ordered the building up of defense measures to all the Han facing sea, while engaged in negotiations with foreign powers over the opening of ports for trade to circumscribe their open hostility. The Bakufu regarded the opening inevitable after observing unfortunate experiences of China. However, unanimity among the Han on this issue soon became problematic, and accordingly so did the stability of the coalitional structure itself. Dynamics of the polity eventually leading to the Meiji Restoration was thus initiated by strategic moves of some resourceful Han to challenge the authority of the Bakufu in the coalitional structure of the Baku-Han-regime. They were Satsuma, Chōshū, Tosa and Hizen, each of them was unique in terms of characteristics of their resources, human and material, as well as policy orientation.

The Satsuma Han, one of the largest Han but meager in farmland quality, had been engaged in trade with China via the Ryukyu Kingdom throughout the Tokugawa era, in spite of official monopoly of foreign trade by the Bakufu, by taking its geographical advantage of being in the southern tip of Japan archipelago. In 1862, the samurai troop of Satsuma Han killed a horse-riding English man who allegedly behaved disorderly against the procession of their lord nearby Edo. The Satsuma first refused to indemnify the damage demanded by England, against which England retaliated with the bombing of the Satsuma castle from her Navy battleships. This incident made the lord of Satsuma and his samurai staff

convinced of the need to build strong military power, while avoiding futile open conflict with the Western power. They started making deals with an English trading company to import weapons. Chōshū was one of the most advanced in terms of the market development of its peasant-based economy.[19] Hizen nearby open Nagasaki port promoted exports of indigenous rural products through its own trading house, while allocating 20 per cent of agricultural tax revenues to import military equipments and other industrial products. By this way they quickly learnt know-how of producing weaponry and other manufactured goods. Tosa in Shikoku Island was not particularly distinct in economic performance, but its rather unstable internal politics produced political and economic entrepreneurs from among lower-ranked samurai with rural roots, including the later founder of Mitsubishi Zaibatsu, Iwasaki Yataro. Thus the capacities of all these four Han to get active in the reform movement were based on the development of the peasant-based rural economy in respective territories in one way or other.

Initially, these Han were not necessarily in agreement in direction of reform. Lower ranked samurai of Chōshū, who had been influenced by a charismatic nationalistic ideologue, Yoshida Shōin, took the control of Han governance by de facto coup d'éta and openly opposed to the "soft" diplomaticpolicy of the Bakufu. They bombed European ships passing through a strait nearby their territory and ended up with paying large indemnities, however. They then modified their policy stance by focusing on the restoration of the Emperor's rule as means to end the Tokugawa hegemony. More moderate Tosa proposed to establish a two-tier parliament system to make the decision-making process in the coalitional structure more open and participatory: the system constituted of the upper house with the lords of all the Han as its members and the lower house with selected samurai bureaucrats as its members. Hizen remained rather aloof in political scene, concentrating their energy on its own economic development. While a variety of public propositions were still competing for saliency, Chōshū mobilized its military power in Kyoto where the Emperor resided. This premature move, known as the Uprising at the Forbidden Gate (1864) was crushed by the united forces of Satsuma, the Bakufu and their allies. Chōshū were officially declared as an enemy of the royal court. But this did not restore the order of the coalitional structure with the hegemony of the Bakufu.

As the polity continued to be unstable, the pace of open discourses as well as covert meetings among samurai bureaucrats across Han was accelerated, sometimes including activist court nobles and reformist staffs of the Bakufu. In spite of initial divides in political agenda, enormously popular Saigo

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[19] The development of the rural domestic industry in Chōshū is well studied by such authors as Smith (1988: chapter 3) and Nishikawa (1987). Saito estimates that, if nonagricultural earnings are properly taken into account, the average income of the lease-holding peasant household might have exceeded the wage income of laborers in England by ten percent in the late eighteenth century (Saito 2005).

Takamori from Satsuma succeeded in forging a formidable alliance among the resourceful four Han. They agreed on limiting their common agenda to the return of the supreme power to the Emperor as a symbolic public proposition, while making other policy agenda virtually shelved. Their successful take-over of the governing position by force led to the Meiji Restoration in 1967 and the abolition of the Baku-Han regime in 1971.

Thus we can identify two factors playing crucial roles in the initial exploration by the Han to realign the coalitional structure of the Baku-Han regime and its eventual culmination in the Meiji Restoration: the decentralized possession of military forces by all the Han and their fiscal autonomy backed up by the market development of the peasant-based rural economy. These two factors were native to the Baku-Han regime, incorporated within the samurai-cum-bureaucrat body of the Han. These two factors were lacking in the canonical state of the Qing China. The military force organized by regional elite gentry that defeated the Taiping rebellion was subsequently absorbed as a Qing military establishment, and the fiscal capacity of provinces was under the control of the Board of Revenue of the imperial court. But, the decentralized military force and fiscal autonomy at the provincial level became gradually formative toward the end of the nineteenth century, opening up a path to the Xinghai Revolution.

(ii) Toward the Xinhai Revolution. The relative peace sustained by the strategic coalition of the imperial court and elite mandarins was shaken by the defeat of the Li-led Qing army in the Sino-Japan War (1894) fought in the Korean Peninsula. Even the conservative imperial court was then forced to become aware of the backwardness of its own army in training and equipment. It thus decided to create the New Army in 1901 for each province, replacing the traditional Green Standard Army recruited with low morale mercenary and poorly equipped. Taking advantage of this move, the Li's disciple, Yuan Shikai, maneuvered to build the formidable Newly Created Army as quasi-private force in Zhili (the capital district directly ruled by the court). On the other hand, after the abolition of the centuries-long tradition of the Imperial Examination, many aspirant youths joined newly created military academies or were sent to Japan by the government in hundreds, exposed there to anti-Manchu movements as led by Sun Yat-sen. They eventually became appointed as commanders, councilors, officers of provincial new armies. Recruitments of soldiers to new army troops were made from among members of indigenous peasant families with three generational records of residence in a village without no history of crime and opium consumption (Hatano 1973: chapters 2-4). Thus, new armies outside the northern Zhili were solidly rooted in the peasant-based economy.

Each province was made to bear the costs of supporting their new army troops, in addition to shares of rising obligations to foreign loans and various indemnities. Also, some provinces, such as Hubei governed by the former officer of the Xiang Army, Zhang Zhidong, became active in developing arsenals, steel mills, railroads, port facilities and promoting commerce. In order to manage these and other public obligations and projects, provincial governments were in need for new sources of fiscal revenues other than traditional shares in land tax. After hard bargains with the Board of Revenue of the imperial court, provincial governments were allowed to mint copper coins in high yuan denomination and issue bills backed up by them. In the Qing China, there were traditionally two kinds of money: silver (ingots or coins including of foreign mintage) used for means of settlement for long-distance trade as well as tax remittance to the court's coffer, on one hand, and varied copper coins used as means of local exchanges and peasants' store of wealth and means of tax payments. Their exchange rates were traditionally negotiated to meet public finance needs at the various levels of administration. There was a chronicle shortage of copper coins because of the fragmentation of the peasant-based rural economy, which led to the relative appreciation of values of cooper currencies against silver. A substantial amount of seigniorage was thus made possible for provincial governments exploiting difference between the purchasing cost of raw materials from Yunnan province and Japan, on one hand, and high exchange values of copper coins as against silver, on the other (Kuroda 1994). The Qing Court and its Revenue Board had continued to centrally control kinds and rates of taxes that provincial governments could impose. But now a tendency toward a modicum of fiscal federalism emerged, although it was yet limited only to provinces open to cross regional and international trades (e.g., Kimura 1927). Against poorer provinces, the imperial Board of Revenues strengthened its efforts to squeeze embezzlements of tax revenues (*zhongbao*) by local bureaucrats, which in turn led to increasing conflicts between them and landlords, large and small. Thus even there demands for local autonomy started to be pronounced.

As provincial and local governments faced increasing burdens of fiscal obligations, the elite gentry, wealthy merchants who obtained scholar-official status by purchase and the like became involved in public matters such as the construction and maintenance of irrigations and dikes, education, poverty relief and sometimes even local safety. They were made to bear their costs in the forms of tax payments and 'voluntary' contributions to their occupational associations, chambers of commerce (*shehui*), traditional charity organizations and the like. There have been debates among social historians about possible nature of this development. Some saw the emergence of the civil society or public domain a la Habermas in this development and others regard this merely as the penetration of government's control into private interests, while still others proposed the introduction of the China-specific category of the

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'third sphere between the state and society'.[20] However, the development of economic and social infrastructure that would facilitate the expansion of trade, as well as secure commercial and private property rights and monopolistic positions of gentries and merchants, was not certainly against their interests. In returns for rising cost bearing, they demanded their voices heard through provincial consultative assemblies that were created by the central government as means of directly relating itself to local elites. In this way, activities of local elites were subtly shifting from complementing the dynastic rule to substituting for its absence in the public good provisions. From this perspective, the first two views above capture only one aspect of the evolving situation at the neglect of the other, while the third appears to introduce a redundant category.

It is important to note that the prosperity of commerce in such trading centers as Hankou, Guangdong, and Shanghai were made possible largely by the intermediation of trading of agricultural products of 'family firms' (Zeling 1984) in their rural hinterlands connected by water and other transportation means. Through their intermediation, agricultural sectors along the Yangzi and Pearl Rivers were made increasingly connected to markets of other regions and international markets, as quantitative studies by Brandt (1989) and Keller, Li and Shiue (2013) showed. In this sense, the change in the polity described above in the direction of increasing autonomy may be thought of as evolving together with the growing marketization of the peasant-based rural economy.

Thus by the first decade of the twentieth century, the organizational landscape of the Qing China had been substantially modified by the presence of the New Army and the increasing pressure and tendency of the local public finance toward a modicum of fiscal federalism, with the human resource supply and market development of the peasant based economy as basis. Finally in 1911, angered by the attempt of the central government to nationalize province-financed railroad lines connecting Hunan to Sichuan and Guangdong to make them available as collaterals to foreign loans, the New Army and activists in Hunan province uprose and declared independence from the Manchu rule. This action was immediately followed by the New Army and consultative gentry councils of other fourteenth provinces, which lifted the curtain for the Xinhai Revolution and subsequent drama of the Republican age. However, this intra- and inter-provincial alliances were spontaneously formed, even to the surprise of Sun Yat-sen residing abroad then, only with the removal of Manchu court from the ruling position as only common goal. As well known, this was finally accomplished by the move in 1912 that Sun would

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[20] See Rowe (1984, 1989), Rankin (1986) and Esherick and Rankin (1990) for the first view, Wakeman (1992) for the second and Huang (1992) for the third. See also Kishimoto for an excellent survey of contributions by Japanese scholars on this subject.

yield the Republican Presidency to Yuan Shikai, if he would coax the imperial court into 'voluntary' abdication.

In comparison to the Meiji Restoration promoted by samurai-bureaucrats of the resourceful Han that internalized autonomous fiscal capacity and military force, the transition out of the Qing rule in China thus faced a formidable challenge to connect the forces of newly created regional armies with regional aspirations for fiscal and political autonomy from the centralized control. This difference in transition between the two countries would condition possible post-Revolution institutional paths. To identify crucial factors in this regard, let us abstract the common features between the two countries that destabilized the respective canonical forms into a single unified game model and analyze how it reacts to various parametric changes. Its results would be then fed back to discussions in the concluding Remark for understanding and comparing the nature of subsequent institutional paths of both countries.

IV. A Game of Three Players and Three Types of Equilibrium

As mentioned in the Introduction, recent models of possible regime change in development economics focus on two-person competition, say between the incumbent ruler and the challenger. In contrast, the model below abstract apparently different structural features of China and Japan into a simplified, but unified structure of game played by three persons: the ruler, a possible challenger to the canonical order, and a third agent who strategically chooses its stance between the two, depending on situation. From discussion in the previous section, it may be inferred that these organizations represent a revolting peasant organization, (formal/informal) organizations of the gentry, the Han, the New Army, depending on context of possible application. An analysis of this section proceeds in a rather abstract fashion, however, to derive conditions for the existence of stable equilibria of agents' strategic interactions and their comparative static properties. As a major analytical tool, super modular technique is employed to clarify essential roles of complementarities/substitutes and positive/negative externalities — these characteristics may be related but to be distinguished in analysis — among agents' strategies in determining equilibrium outcome and its possible change.

Let the three players: the ruler and two intermediate/local organizations be denoted as R, L1, and L2, respectively. Imagine the political economy has sustained a stable state of play up to the present, denoted by $<u^R*, u^1*, u^2*>$ in terms of players' payoffs, which is referred to as the canonical state. In the present time referred to as the period 1, L2 decides whether or not to deviate from the canonical state. In case L2 deviates, the payoff profiles will be: $<u_R*- \Delta\gamma, u_1*- \Delta\gamma, u_2*- \Delta\gamma+\tau_2>$, where $\Delta\gamma$= external cost

imposed on public goods provision by L2 and τ_2= the private benefit of L2 from shirking if positive and the revolting cost of L2 if negative.

In period 2, R and L1 react to L2's action, to which L2 counter-react. The outcome of their interactions determines the nature of future state from then on. If L2 revolts in Period 1, R tries to punish L2 in period 2, depending on its magnitude, and a conflict situation arises. L1 decides with whom to align its strategy. Let <κ_R, κ_1, κ_2> represent the strategy profile in this situation, where $0 \leq \kappa_R \leq K^R$ and $0 \leq \kappa_2 \leq K^2$ represent the level of conflict action by R and L2 respectively, involving respective cost $\eta\kappa_R$ and $\mu\kappa_2$; and $0 \leq |\kappa_1| \leq K^1$ represents the level of L2's strategic action involving cost $\mu|\kappa_1|$, with $\kappa_1 < 0$ (alternatively, $\kappa_1 > 0$) implying L1's action against L2 (respectively, L1's action against R).

Strategic profile <κ_R, κ_1, κ_2> yields either of two future states: transition to a new state — denoted by N — putting an end to the R's rule or the Punishment of L2 — denoted by P — with the failure of L2's (and possibly L1's) revolt, with respective probability of $P^N(\kappa_R, \kappa_1, \kappa_2)$ and $P^P(\kappa_R, \kappa_1, \kappa_2) = 1 - P^N(\kappa_R, \kappa_1, \kappa_2)$. The payoff profile of each state is given by

(N) $< u^R* - C^R - \eta\kappa_R, u^1* + \pi^1(\kappa_1, \kappa_2) - \mu|\kappa_1|, u^2* + \pi^2(\kappa_1, \kappa_2) - \mu\kappa_2>$

(P) $<u^R* + \sigma C^2(\Delta\gamma) - \eta\kappa_R, u^1* + (1-\sigma)C^2(\Delta\gamma) - \mu|\kappa_1|, - C^2(\Delta\gamma) - \mu\kappa_2>$

where C^R represents the loss R suffers when it loses the governing position; π^1 and π^2 represent the political-economic gains expected from the transition to the N — simply referred to as the post transition gains — accruing to L1 and L2; $C^2(\Delta\gamma)$ is penalty imposed on L2 depending on the magnitude of damage done on public goods in period 1 when its revolt fails: σ is a parameter representing R's share in the gains from punishment of L2's, with $1 > \sigma > 0$ for $\kappa_1 < 0$ and $\sigma > 1$ for $\kappa_1 > 0$, implying positive reward (respectively, penalty) for L1's cooperation (resp. revolt). Denoting partial derivatives of functions by subscripts of relevant variables, we assume that $\pi^1 < 0$ and $\pi^1 = 0$ if $\kappa_1 \leq 0$ and $\pi^1_1 \geq 0$; $\pi^2 > 0$, $\pi^2_2 \geq 0$. If π^1_2, $\pi^2_1 > 0$ (alt. < 0), they represent externalities in gaining expected post-transition gains (resp. negative externalities). If π^1_{12}, $\pi^2_{12} > 0$ (alt. < 0), we say L1's and L2's strategies are complements (resp. rivalries) in expected post-transition gains.

P^N and P^S summarize possible state-outcomes of players' strategic interactions in terms of their conflict-managing technologies. This function may be regarded as analogous to what Besley and Persson call the conflict technology in their two person game of political violence (2011: Chapter 4) However, in our three-person game context, the outcome of the game may also depend on ways coalition may be formed among players. Therefore, in its interpretations, it need not be regarded as referring only to hard technology involving physical violence but also soft technology as well involving psychological,

informational, diplomatic, persuasive and other such means. We assume P^N_1, $P^N_2 \geq 0$ and thus $P^N_R \leq 0$. We refer to the case of $P^N_{12} > 0$ as that of strategic complements of conflict-managing technologies in transiting to a new state (or simply technological complements) between L1 and L2. As shown later, even if P^N_1, $P^N_2 > 0$, it could happen that $P^N_{12} < 0$. This case is referred to as strategic rivalries in conflictive-managing technology, distinct from the rivalries in expected post transition gains. This distinction is important for assessing the existence and implications of varied equilibria. By the sign convention of κ_1, we say L1's strategy is technological complement (alternatively, rivalry) to R's in reducing (alt. promoting) transition to a new state, if $P^N_{R1} < 0$ (resp. $P^N_{R1} > 0$). We always assume $P^N_{R2} < 0$.

Among others, we are interested in the possibility of subgame-perfect equilibrium of the canonical form. So we solve the model backward, beginning in the second period. Denoting equilibrium values with asterisk, the second period equilibrium requires the Kuhn Tucker condition that $u^R_R* \leq 0$, $\kappa_R * u^R_R* = 0$; $u^1_1* \leq 0$, $(\kappa_1* - K^1)u^1_1* = 0$; and $u^2_2* \leq 0$, $\kappa_2 * u^2_2* = 0$. We need to further specify parameters in varied ways to prove possible existence of equilibrium and its properties. First, consider a simple case for which π^1 and π^2 are constant so that L1's and L2's strategies affect only conflict outcomes in such a way:

$$P^N = (\kappa_1 + \kappa_2)/(\kappa_R + \kappa_1 + \kappa_2 + B) \text{ for } \kappa_1 \geq 0$$

$$P^P = (\kappa_R - \kappa_1)/(\kappa_R - \kappa_1 + \kappa_2) \text{ for } \kappa_1 < 0,$$

where B represents the set-up cost of a new state. Note that $P^N_{21} = -2(\kappa_R + B)/[\kappa_R + \kappa_1 + \kappa_2 + B]^3 < 0$, which implies that L1 and L2 are strategic rivals in possible conflict situation. Consider first the possibility in which $- K^1 \leq \kappa_1 < 0$ to be a strategic choice for L1. Then, $u^1_1 = -P^P_1 \Delta u^1 + \mu = \Delta u^1 \kappa_2/(\kappa_R - \kappa_1 + \kappa_2)^2 + \mu$, where Δu^1 is L1's net payoff gain in the case of transition equal to $\pi^1 + (1-\sigma)C^2(\Delta\gamma)$. As $\Delta u^1 > 0$, $u^1_1 > 0$ so that $\kappa_1 < 0$ cannot be an equilibrium choice for L1. So assume $\kappa_1 \geq 0$. L2's strategic reaction to this ought to be to find $\kappa_2 \geq 0$ for which $u^2_2 = P^N_2 \Delta u^2 - \mu = (\kappa_R + B)\Delta u^2/[\kappa_R + \kappa_1 + \kappa_2 + B]^2 - \mu = 0$, where Δu^2 is L2's net payoff gain from transition equal to $\pi^2 + C^2(\Delta\gamma) - u^2* > 0$. Under what condition is this possible? Let us rewrite the condition as $\kappa_1 + \kappa_2 = (\kappa_R + B)^{1/2}[(\Delta u^2/\mu)^{1/2} - (\kappa_R + B)^{1/2}]$. Thus if $K^R > \Delta u^2/\mu - B$, R can choose κ_R for which there is no strictly positive strategies for κ_1 and κ_2. In this example, therefore, only possible solution is $\kappa_1* = \kappa_2* = 0$, entailing $P^N* = 0$ and $P^S* = 1$ for which $u^2 = -C^2(\Delta\gamma)$ and $u^1 = u^1*$. This is the case where the collective setup cost for the new state B is very high, the level of R's conflict-managing technology is high enough, and/or the net political-economic gain from the transition relative to its cost is too low for L2. Ignoring time preference of L2, if $u_2* - \Delta\gamma + \tau_2 < C(\Delta\gamma)$, it is never worthwhile for L2 to deviate from its canonical state obligation in period 1. Thus, sustaining the canonical state becomes subgame perfect equilibrium.

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The above example is simple, but interesting in illustrating the potential importance of technological complementarities for transition between R1 and R2. To see this more generally, let us allow the expected post-transition gains, π^1 and π^2, dependent on L1's and L2's choice of κ_1 and κ_1, respectively. We do not assume the concavity of these functions. Then the following super-modular analysis shows that: If there were no technological complementarities, a modicum of externalities in political-economic gains may not be sufficient for transition. On the other hand, even if there were negative externalities, strong technological complementarities may be able to overcome them to realize transition.

First note that straightforward calculations show the following:

$$Eu^R_{R1} = P^P_{R1}[\sigma C^2(\Delta\gamma) + C^R]$$

$$Eu^R_{R2} = P^P_{R2}[\sigma C^2(\Delta\gamma) + C^R]$$

$$Eu^1_{1R} = -P^P_{1R}[\pi^1 - (1-\sigma)C^2(\Delta\gamma)] - P^P_R \pi^1_1 \text{ for } \kappa_1 > 0$$
$$= P^P_{1R}(1-\sigma)C^2(\Delta\gamma) \quad \text{for } \kappa_1 \leq 0$$

$$Eu^1_{12} = P^N_{12}[\pi^1 - (1-\sigma)C^2(\Delta\gamma)] + P^N_1\pi^1_2 + P^N_2\pi^1_1 + P^N\pi^1_{12} \text{ for } \kappa_1 > 0$$
$$= P^P_{12}(1-\sigma)C^2(\Delta\gamma) \text{ for } \kappa_1 \leq 0$$

$$Eu^2_{2R} = -P^P_{2R}[C^2 + \pi^2] - P^P_R\pi^2_2$$

$$Eu^2_{21} = P^N_{21}[C^2 + \pi^2] + P^N_2\pi^2_1 + P^N_1\pi^2_2 + P^N\pi^2_{21}$$

The following set of conditions (a) - (d) imply that Eu^R_{R1}, Eu^R_{R2}, Eu^1_{1R}, $Eu^2_{2R} < 0$, and Eu^1_{12}, $Eu^2_{21} > 0$. They together constitute sufficient conditions for $<Eu^R, Eu^1, Eu^2>$ to be super-modular in $< K^R - \kappa_R, \kappa_1, \kappa_2>$.

(a) $P^P_{R1} < 0$, $P^P_{R2} < 0$ and $P^P_{12} > 0$:   L1 and L2 is technological rival to R in escaping from the canonical state, but complement with each other. .

(b) $P^N_{21}/P^N_2 > -\pi^2_1/[C^2 + \pi^2]$ and $P^N_{12}/P^N_1 > -\pi^1_2/[\pi^1 - (1-\sigma)C^2(\Delta\gamma)]$: Even if L1 and L2 mutually exercise external diseconomies on other's expected post-transition gains, they can be overcome by mutual technological complementarities toward transition that are strong enough in elasticity terms.

(c) $P^N_1/P^N > -\pi^2_{21}/\pi^2_2$ and $P^N_2/P^N > -\pi^1_{12}/\pi^1_1$: Possible rivalry between L1 and L2 in expected post-transition gains can be overcome by their respective marginal technological contributions to transition that are strong enough in elasticity terms. If L1 and L2 complement each other in this respect, the condition trivially holds.

(d) $-P^P_{R1}/P^P_R > \pi_1/[\pi^1 - (1-\sigma)C^2(\Delta\gamma)]$ and $-P^P_{R2}/P^P_R > \pi^2_2/[C^2 + \pi^2]$; L1's and L2's strategies can generate greater technological-rivalry effect on R than own expected marginal post-transition gains in elasticity terms.

The following set of inequalities exhibit the properties on increasing difference with respect to various parameters:

(e) $Eu^R_{R\eta} < 0$, $Eu^1_{1\mu} = -1$ if $k_1 > 0$, $Eu^2_{2\mu} = -1$, $Eu^R_{RC} = -P^N_R > 0$, $Eu^R_{R\Delta\gamma} = P^P_R\sigma C'(\Delta\gamma) > 0$, $Eu^1_{1\Delta\gamma} = P^P_1(1-\sigma)C'(\Delta\gamma) < 0$ and $Eu^R_{R\sigma} = P^P_R C^2(\Delta\gamma) > 0$, $Eu^1_{1\sigma} = P^P_1 C^2(\Delta\gamma) < 0$.

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By applying the super-modular theorem due to Topkis (1979) and Milgrom and Roberts (1990) to the above, the following proposition holds:

Proposition: *Under the set of conditions (a)-(d) there exists at least one equilibrium in the second period. Suppose equilibrium is unique and denoted by $<\kappa_R*, \kappa_1*, \kappa_2*>$. Then (e) implies that the higher η, the lower μ, the lower C^R, the lower σ and the lower $\Delta\gamma$ lead to the higher κ_1* and κ_2* and the lower k_R*, which enhances the probability of transition to a new state. Ignoring the time preference of L2, deviation from the canonical state in the first period is not worthwhile for L2, if $P^N*[\pi^2* + C^2(\Delta\gamma)] - \mu\kappa_2* < u_2* - \Delta\gamma + \tau_2$. Then sustaining the canonical state becomes subgame perfect equilibrium, if there is no other sub-game equilibrium in Period 2. If $P^N*[\pi^2* + C^2(\Delta\gamma)] - \mu\kappa_2* > u_2* - \Delta\gamma + \tau_2$, then L2 deviates from the canonical state in period 1, even if $-\Delta\gamma + \tau_2 < 0$.*

The above set of conditions is sufficient for the existence of an equilibrium and its static properties. It does not exclude the possibility of other equilibria, however. For example, the example discussed prior to the proposition does not satisfy the condition (b), but still entails a possibility of subgame perfect equilibrium. Yet, the set by itself offers a case of interesting situation where L1 has a choice between committing to the canonical order, or cooperating with the revolting L2 in attempt to exit from the canonical state even if there could be negative externalities and rivalries between them -- both should be distinguished from each other -- as regards their expected post-transition political-economic gains. The proposition clarifies that, even if this is the case, L1 and L2 may co-join in the attempt to deny the continuing rule by R (that is, $k_1 > 0$), if conflict management technologies of L1 and L2 are strong enough by themselves (c) and vis-à-vis the incumbent rule (d), as well as strongly complementarities with each other (b). Its outcome is uncertain ex ante. But the proposition also clarifies the comparative static properties such as the higher efficiency of conflict technology of L1 and L2 vis-à-vis that of R. Possible importance of technological complementarities in the determination of equilibrium was highlighted in the example as well by assuming away possible interacting impacts of political economic preferences between the two. One of the reasons why L1 and l2 are not complementary in their conflict-management technology in that example was attributed to the existence of set up cost denoted by B. Thus, if the agents can reduce it through soft coordination, distinct from hard technology as represented by μ, then an equilibrium gets more probable in the direction of transition to a new state, if combined with stronger hard technology as denoted by the lower value of μ.

Also, as intuitively clear, if L1's benefit of staying in coalition with the incumbent by punishing L2 gets lower, as signified by lower values of σ, L1 would be tempted more to enhance its strategic move to seek transition to a new state (that is, $k_1 > 0$). However, such move does not necessarily guarantee a transition to a new state. By unluckiness or miscalculation of L1 and L2, strategic interactions in period 2 may be ended up with the failures of L2 to have revolted and for L1 to support it, entailing the penalty on L1 as well signified by $\sigma > 1$. In sum, for a new state to be achieved, it appears essential for L1 and L2

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to shift their mutual positions from rivalries to compromises and complements in terms of the use of their own conflict-managing strategy, soft and hard. However, if there were not sufficient externalities and complementarities between L1 and L2 — again this distinction is important — on post-transition political-economic policy, there would be another round of conflict situation to emerge after the transition.

V. Concluding Remarks: Institutional Resilience, Transitions and Legacies

A. Sub-Game-Perfect-Equilibrium Interpretations of the Canonical Orders.

In the light of model analysis in the previous section, the stable nature of the canonical sates of the Qing rule and the Baku-Han regime may be interpreted in terms of subgame perfect equilibrium. Theoretically, off-the-path-of-play sub-games in multiple-period model ought not to be actually observable. They are just potential paths which rational players are assumed to avoid treading on. However, in reality various anomaly events and episodes are observed that would illustrate a possible outcome of deviating from a stable state and thus reveal underlying forces to sustain the stable state to both inside players as well as to outside observers like us.

It is generally considered that the early to the late eighteenth century was the golden age of the Qing rule. The governance rules of the centralized local administration appeared to effectively restrain the emergence of landownership-based, violence-equipped regional counter power. In this, some see the despotic nature of the Qing state (e.g., Landes 2006). However, Section III(b) pointed out that the Qing polity as the tax state was sustained as the interpenetration of the centralized local administration and the local organizations of the elite gentry as the outcome of complementary strategic interactions between the two. The Taiping Rebellion and its consequences provide an excellent example that reveals possible outcome of challenging this order in a sub-game perfect interpretation. Such interpretation may be also thought of as providing an alternative perspective to a long-standing debate among social historians as regards which of the two, the centralized despotic rule of the imperial court or the local societies of various kinds, should be dealt with as the primary for an understanding of the institutional nature of the Qing China.

Section III(b) conjectured the nature of Baku-Han polity as an all-inclusive stable coalition. Observations were provided to show that actions of Han that deviated from the order were indeed punished by the Bakufu and other Han in their own interests. These observations may also illustrate possible outcomes of the off-the-play path in the political game in the Baku-Han regime.

B. Complementarities in Transition Strategies and in Post-Transition Policy Agenda?

In the light of the Proposition, a unique aspect of the Meiji Restoration distinct from the Xinhai Revolution was that major reform-seeking players, that is, revolting Han bureaucrats, had similar backgrounds and attributes in the unified possessions of military force and economic and human capital resources that may be relevant to a transition. Across Han boundaries they even shared the culture of mutual communications, essential for soft conflict-coping technology, which had been nurtured as an unintended consequence of the alternate residence in Edo imposed by the Bakufu as a measure of preventing possible rebellion of the Han. Thus, the punishment phase of the post-Forbidden-Uprising was relatively short, as the initial difference in policy against foreign power between Satsuma and Chosu was fairly quickly laid to rest through behind-the-scene negotiations and persuasion. Their military and human resources were then placed in coordinated strategy for removing the Tokugawa rule by force in the Boshin War (1868-9).

In contrast, Chinese situations were much more complex. Armed force was dispersed among new army troops under commanders and councilors of different political orientation, such as Yuan Xikai, Li Yuanhung, Cai E and so forth,[21] as well as by radical underground organizations as organized by Huang Xing. On the other hand, alternatives to the centralized local administration were sought by provincial governments and various civic and civil organizations in which the gentry and merchants were active. Although the prosperity of federalist-orientation provinces were based on their market linkages to the developing peasant-based economy in their hinterlands, there was no clear political program among transition-seekers for explicitly linking or mediating the rural and urban interests. The so-called 'egalitarian land property rights (*pingjun dequan*)' advanced as one of four elements of Sun's revolutionary program was not more than a vague, idealistic idea, of which implementation was far from realistic in terms of administrative burdens and inconsistent with peasants' and landlords' incentives for economic development.[22] Thus the Xinghai Revolution may be regarded as a quintessential example of the case that the proposition in the last section focused on: for a transition out of the canonical state to be realized, strategic complementarities in the mobilization of

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[21] Li was the Viceroy of Hunan Province appointed by the Qing Government, whom the revolting new army soldiers persuaded to represent the independent government after his hesitation. Cai was Japanese-trained officer of the Yunnan new army who played a critical role in initiating military action against the attempt of Yuan to become the Emperor.

[22] According to 'Concrete explanations of the egalitarian land property rights' (Sun, 1912), parliaments were to determine farm land prices and the government then charge tax in a fixed proportion, say one percent, to the value, while the government was to acquire a portion of ownership proportional to a portion of subsequent value appreciations.

transition-promoting technologies among transition-seeking players may play more decisive roles than complementarities and externalities in their post-transition political-economy agenda.

As easily expected, the ways by which strategic complementarities were effectuated were bound to have significant implications for post-transition institutional paths. An analysis of this topic is beyond the scope of this article. However, a few points may be suggested below that may be of relevance for understanding the causes of substantial resilience of the peasant-based economies in subsequent economic and institutional developments of both countries. Was the resilience caused simply by a misplaced policy of the new governments, foreign aggressions or some other exogenous reasons? Or, were legacies of strategic interactions prior to, and in the middle of the transition, also projected on it in path-dependent manners?

C. The Legacies of Transition Modes

(i) Toward a bureaucratic nationl state: In Japan, one of the first actions of the four Han that took over the governing position was to hand over their own armies as the imperial guards, which was in effect the initial formation of the national army as a requisite of the modern nation state. They then abolished all the Han and transformed the Baku-Han regime into a centralized administrative structure composed of prefectures governed by their appointees a la traditional Chinese governance rule ((*junxianzhi*). The Meiji government decreed that the registry of ownership of farmland be accordingly transferred to the national registry, and any dispute over property rights and breaches of contracts be settled by the courts according to law. In lieu of the village contracting system, farmland taxation was fixed in monetary terms and imposed on individual landowners. Thus individual property rights of farmland appeared to have been made secured under the law, but in conjunction with the evolving nature of the nation state and resilience of the village-membership based norms, the rural economy kept retaining some aspects of the peasant-based economy-based economy.

Ten years after the Restoration, ex-samurai and unemployed former soldiers who became impoverished and disgraced revolted in southern-west of Japan, led by the ex-hero of the Restoration, Saigo. He tried to absorb and release their disgruntlements with aggressive outward policy directed toward Taiwan and then Korea. The official government army crushed the revolt, but with the consequence of severe inflation caused by military expenditure almost amounting to annual tax revenue. The aggressive foreign policy orientation gradually became an influential stream within the government. As for constitutional design of a new polity, those who advocated the introduction of a constitutional monarchy controlled by a democratically elected parliament in the tradition of Tosa's proposition lost a battle against the champions of exclusive bureaucratic governance under the guise of Emperor's

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quasi-religious authority. Industrial policy of the government was short-lived and made yielded to an austerity policy to control the inflation, which resulted in the strengthening of bureaucratic control over budgeting. Thus, the quasi-fiscal federalism under the Baku-Han regime was transformed into a centralized bureaucratic state dominated by authoritarian Chōshū clan, anticipating the eventual hegemony of the military bureaucracy within it (Kitaoka 1993).

Peasants of small landholdings subject to a fixed rate of land tax suffered from deflationary pressures in the early 1880s. Differential in tax burden between agriculture and industry functioned as de facto transfer of agricultural surplus into industrialization (Teranichi 1982). However, the membership-based norm in the village remained resilient and the exit of households from the village did not occur to a noticeable extent. The proportion of tenancy lands thus increased from 20–30 per cent in the 1880s to more than 40 per cent in the 1890s. The practice of primogeniture by peasant families generated redundant labor forces that industrial and urban developments were slow to absorb. In the 1930s when the hegemony of the military bureaucracy was solidified, those redundant labor forces were mobilized as soldiers of the Imperial Army as well as the vanguard of immigrants to the frontier of Manchuria, resulting from misguided complementarities between the military-led bureaucratic state and the outlived peasant economy that Leslie Young dubbed as *Japan's Total Empire* (1999).

(ii) Urban and Rural, Centralism versus Federalism: When the futile attempt by the most powerful New Army general, Yuan Shikai, to restore an Imperial system of his own was put to an end, the Republic faced largely disjoint legacies from the incomplete Revolution: *ex* new army troops now lacking the centralized command chains; civil and civic organizations in urban centers that had sought the federalist tendency but without effective political, if not economic, links, to the rural hinterlands; and the peasant-based rural economy progressing in market development but without effective political protection. It turned out that the integration of these factors in sate-building was a formidable task. Sun Yat-sen, who had incorporated the federalist idea (the creation of the united government) into the program of the clandestine Revive China Society in 1984 turned to become an avowed centralist, as he faced challenges of generals and officers of ex-new armies who gained hegemony in respective regional politics. These army leaders became ambitious to expand its militaristic influence to national scale without necessarily having a clear political objective other than dominance. They taxed peasants under their control and recruited soldiers from among them, the unemployed and bandits, indiscriminately. The official histories of both Nationalist and Communist Parties now treat them as wicked, treacherous

warlords.[23] Among those so named, however, there seemed to be some who advocated to promote the tendency of local autonomy further in the form of federalism, like Cheng Jiongming in Guandong who were supported by local commercial and educational communities.[24] Even Mao Zedong prior to his joining the formation of the Communist Party openly expressed a federalist view as the leader of a reform movement organization in Hunan province.[25] The federalist movement in Guangdong was however crushed in 1925 by the Nationalist Army led by Chiang Kai-Shek (Jiang Jieshi) following the Sun's centralist strategy. When he established the Nationalist Government in 1927, Chiang yielded agricultural tax entirely to provincial powers, limiting its own sources of fiscal revenues to salt taxes, custom duties and foreign and domestic loans and grants. Meanwhile his police control penetrated into urban political and economic domains in unprecedented scale, suffocating once-alive civil organizations (Wakeman 1991). This fragile mixture of 'urban-oriented' centralization and warlord-based degenerate federalism then faced competition from the Communist army who adopted a coherent, peasant-based approach to political mobilization against the aggression of Japan.

The institutional paths of China and Japan described above came across each other when the aggression of Japan deep into China was met by the resistance of Chinese people in rural and urban alike. It was an injudicious encounter imposed on the China, but China's long-due liberation from foreign aggressions and the collapse of Japan's Total Empire also signified another transition to a new phase of state building and economic, social development for each country.[26]

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[23] For a through academic treatise on the so-called warlords based on primary historical sources, see Hatano (1973).

[24] For recent works on Chen's federalist movement based on detailed documentary evidences, see Cheng (1999), Duan and Ni (2009). Bertrand Russell who was a visiting professor at Peking University around 1920 had a high opinion about Chen. So did James Dewey who intimately observed educational scenes in China at that time. See Russell (1922: 67, 268-9). Hatano (1973:chapter 6) characterized Cheng's opposition to Sun's Northern Expedition as political convenience, although he recognizes Cheng's popularity in Guangdong was due to his "allied self-determination" platform.

[25] The young Mao stated: "From our observation there is no hope for fully establishing people's rule in China within the next twenty years. During this period Hunan had best protect its own boundaries and implement its own self-rule, making Hunan a heaven of peace without bothering about the other provinces or the central government. Thus it can place itself in a position similar to that of one of the states on the North American continent a hundred years ago, We should run our own education, promote our own industry, and construct our own railways and motor roads." (Mao, 1920/[1992]: 526)

[26] Aoki (2012)

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