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The Five-Phases of Economic Development and Institutional Evolution in China and Japan

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Abstract

Based on the variable rate of gross domestic product per capita growth and its sources, this paper first identifies five phases of economic development that are common to China, Japan, and Korea: M (Malthusian), G (government-led), K (*à la* Kuznets), H (human capital based) and PD (post demographic-transition). But there are also marked differences in the onset, duration, and institutional forms of these phases across these economies. In order to understand these differences, this paper explores the agrarian origins of institutions in Qing China and Tokugawa Japan (and briefly Chosŏn Korea) and their path-dependent transformations over those phases. In doing so, the paper employs game-theoretic reasoning and interpretations of divergent institutional evolution between China and Japan, which also clarifies the simplicity of prevailing arguments that identify East Asian developmental and institutional features with authoritarianism, collectivism, kinship-dominance, Confucianism and the like. Finally, the paper examines the relevance of the foregoing developmental discussions to the institutional agendas faced by the People's Republic of China (PRC) and Japan in their respective emergent phase-transitions. In what way can the PRC avoid the "middle income trap"? What institutional shortcomings become evident from the Fukushima catastrophe and how can they be overcome in an aging Japan?

JEL Classification: J11, N15, N35, N55, O15, O43, O53, P51

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1. INTRODUCTION

In 2010, aggregate real gross domestic product (GDP) in terms of purchasing power parity (PPP) of the Republic of China (PRC); Japan; the Republic of Korea (henceforth Korea); Hong Kong, China; and Taipei, China surpassed that of both North America and the European Union.[1] According to Maddison's frequently-cited estimate, these economies together also constituted the largest economic zone in 1820, producing more than one-third of the world's total GDP.[2] However, their share dropped by more than three quarters toward the middle of the 20th Century, which was then followed by the successive miracles of Japan, the Asian Tigers, and now the PRC. What accounts for such a dramatic fall from historical heights and then the resurgence of the region as a whole? Is there anything unique about the East Asian development pattern? What implications does this experience have for future development?

To account for the basic mechanism of GDP per capita behavior over time and across economies, in the past few decades development economists have been examining the ramifications of endogenous interactions between technology and demography. Core insights from their studies can be summarized briefly as follows. Over a very long run of human history, new ideas developed as population size increased (e.g., Lee 1988, Kremer 1993, Jones 1999). But in predominantly agrarian economies, the fruits of technological progress were channeled into population growth, which did not help per capita GDP growth because of diminishing returns to scale of agricultural technology. This state is referred to as the Malthusian trap or equilibrium (e.g., Hansen and Prescott 2002, Clark 2007). It does not, however, necessarily imply that this state lacked dynamism.

As the state of new ideas passed a threshold point and constant returns to scale technology free from the limits of land supply became profitable, the industrial revolution set in with physical and human resources starting to be re-allocated to urban industries (e.g., Jorgenson 1961, Galor and Weil 2000, Hansen and Prescott 2002). There was also an increase in the working-age population brought about by a decline in infant mortality and a rise in immigration in the case of Western Europe offshoots. The hike in GDP per capita growth occasioned by this demographic shift is referred to as the demographic gift (e.g., Bloom and Williamson 1998) or as the population bonus. However, as continuing technological progress tends to increase the preference for, returns to, and/or costs (to parents) of human capital investment, people are inclined to have fewer children (e.g., Becker, Murphy, and Tamura 1990; Galor and Weil 1996, 2000; Lucas 2002). This demographic transition leads to the modern growth regime in which the increase in GDP per capita is sustained by Lucas-Romer technology, albeit not at a rate comparable to the previous transitional phase. But this may not be the End of History, as I will discuss below.

The transition from the Malthusian state to modern endogenous growth is usually modeled after stylized facts drawn from advanced Western economies. However, the

[1] According to IMF estimates, aggregate GDP (PPP) of East Asia was US$ 17,001 billion in 2010, that of the EU US$ 15,170, and that of North America US$ 15,987 billion.

[2] The aggregate share of the PRC, Japan, and Korea in world production in 1820 was 36.6% compared with Western Europe's 23.8% share. The share of the US at that time was a mere 1.8% (Maddison 2006). East Asia's share had fallen to 7.9% by 1950.

theoretical innovation of the new approach is an understanding of different levels of per capita income as successive stages in the normal process of development rather than as different balanced growth paths conditioned by different parameters (e.g., Galor and Weil 2000, Hansen and Prescott 2002, Galor 2011). From such a unified perspective, then, the miracles of the East Asian economies are not really miracles, but catching-up phenomena (e.g., Bloom and Williamson 1998, Ngai 2004). To better understand the development process in general, however, we may also wish to know why there are differences in the timing, duration, and institutional forms of successive developmental phases across economies, say between the West and the East, or among China, Japan, and Korea within East Asia. Moreover, what implications may be drawn from these differences to unravel future possibilities of development in those economies?

2. IDENTIFYING SOURCES AND PHASES OF ECONOMIC DEVELOPMENT IN EAST ASIA

As a way of introducing this discussion, let me begin by identifying phases of development for China, Japan, and Korea, relying only on the bare numbers of GNP (PPP basis), population, and its distribution over age groups and sectoral employment. For the moment I will set aside institutional forms as defining factors of phase-identification. Following the unified approach, I will start with the Malthusian phase of economic development, or the M-phase in short, in which agricultural employment is high, say more than 80%,[3] and per capita income is low and stationary. According to this simple criterion, there would not be much argument in identifying the developmental stages of China in the late Qing Dynasty, Japan in the late Tokugawa period, and Korea in the late Chosŏn Dynasty as being in the M-phase.

A difficulty of phase identification arises in discerning the onset of the transition to the post-Malthusian phase. For Japan it is conventional to regard the transition as triggered by the Meiji Restoration. Indeed, GDP per capita grew at the compound rate of 1.92% from 1870 to the pre-War peak in 1941, in comparison to 0.19% during the years 1820 to 1870 according to Maddison's estimation in terms of 1990 International dollars. However, the pace of reduction in agricultural employment remained rather slow, keeping the employment level at fourteen million throughout the pre-War period. Thus Hayashi and Prescott (2008) described this as "the transition from Malthus to Solow was inhibited by the barrier to labor mobility" in this phase.

For China and Korea, how to characterize the pre-War period is a thorny question. According to Maddison, China's per capita GDP growth between 1870 and 1936 was merely 0.09 percent%, while the population growth rate was 0.52 percent%, as if typical Malthusian phenomena ensued. The share of agricultural employment remained at 83.5 percent% even in 1952. Korea's GDP per capita almost doubled in the period between 1911 and 1938 under the colonial rule.[4] It sharply dropped, after the end of World War II; and Korea had not regained its 1911 level of per capita income until the end of the

[3] Needless to say, in this stage farmers were also engaged in various non-agricultural activities such as handicraft manufacturing for domestic consumption as well as for markets. The extent of this was greater in Qing China and Tokugawa Japan than in contemporary Europe. Their implications for development processes are discussed below.

[4] For an econometric analysis of the colonial origins of the Republic of Korea's market economy, see Cha (2000).

Korean War in 1953. Japan's GDP per capita also sharply declined after 1941, and did not recover its previous peak until 1956.

Certainly the tolls of imperialist aggression and colonialism, the Great Depression, World War II, the Korean War, and China's civil war in China are factors for these poor performances of per capita income dynamics in this period, to which a mere mechanistic application of the Malthusian criterion may not be so telling. By leaving aside for a while the characterization of the pre-War developmental phase of China and Korea, let us move on to see if data in the second half of the century can suggest a clearer picture of the developmental pattern in East Asia.

Applying macro accounting to official data on the PRC, Japan, and South Korea, we can identify successive development phases by distinct patterns of sources of per capita GDP growth. The sources we focus on are: (1) demographic-economic change in the ratio of total employment to total population, g(E/N); (2) structural transformation, g(S), made possible by the shift of employment share from primary industry, referred to below as the A-sector, to secondary and tertiary industries, referred to below as the I-sector, combined with the relative increase of output per worker in the A-sector vis-à-vis that in the I-sector; and (3) changes in per worker output in the I-sector, $g(Y_I/E_I)$ (this last item may be further decomposed in changes in TFP [Total Factor Productivity] and capital-output ratio)[5] The table summarizes the results, with Maddison's estimate of the growth rates of per capita GDP (in terms of 1990 International Geary-Khamas Dollars) for a comparative reference.[6]

[5] The decomposition is calculated as follows. Let Y = GDP, N = population size, E = total employment, Y_i = output of the i-th sector, i= A (primary), I (secondary and tertiary), E_i = employment in the i-th sector, i = A, I. As $Y = Y_A + Y_I$, $E = E_A + E_I$,

$$y = Y/N = E/N[E_A/E \times Y_A/E_A + E_I/E \times Y_I/E_I] = (E/N) \times [1 - \alpha\Delta] \times (Y_I/E_I)$$

where $\alpha = E_A/E$ and $\Delta = [1- (Y_A/E_A)/(Y_I/E_I)]$.. Let $[1 - \alpha\Delta] = S$, which measures impacts of structural effects. If the employment share of A-sector α goes down and/or productivity differential between the I-sector and the A-sector Δ is narrowed, this measure tends to go up, having positive effect on GDP per capita y. Denoting the rates of growth of the various variables by g(.), it holds that :

$$g(y) = g(E/N) + g(S) + g(Y_I/E_I)$$

If K_I = input of capital service in the I-sector and θ_I = capital share in the I-sector are available, then the growth of labor productivity in the I-sector can be further decomposed as

$$g(Y_I/E_I) = [1/(1-\theta_I)]\, g(TFP_I) + [\theta_I/(1-\theta_I)]g(K_I/Y_I) .$$

[6] Maddison's estimate of the PRC's per capita GDP growth in terms of 1990 International Geary-Khamas Dollars tends to be lower than estimates based on official statistics. Since officials of provincial governments in China are rewarded for superior growth performance (e.g., Li and Zhou 2005), they tend to overstate growth output. Many research efforts have been made to correct this problem and they are neatly surveyed in Cao et al. (2009), together with their own results. See Young (2003) for careful checking and adjustments of PRC official data in general. In the calculation of the PRC's per capita GDP growth rates in the table, the years 1989–1990 are not taken into account, because there was a substantial revision in the official estimate of employment, resulting in a discrepancy as large as 72 million between the old and new series. Likewise, Korean official data of sectoral output are available on a current factor costs basis between 1970 and 1979 and on a current price basis thereafter. Hence, growth rates between 1979 and 1980 are not taken into account.

Table: Sources Of Per Capita Real Income Growth: China, Japan, and Korea

		Starting Y/N (Maddison)	g(Y/N) (Maddison)	g(Y/N) (Official)	G(E/N)	G(S)	$G(Y_I/E_I)$	Phase
CHINA	1870–1938	530	0.09					M
	1870–1951	530	-0.24					
	1952–1967	537	1.90	3.53	0.76	-0.58	0.77	G
	1967–1977	712	2.31	4.26	0.28	1.65	0.28	
	1977–1989	895	6.13	8.12	1.44	3.47	3.21	K
	1990–1999	1,858	6.44	9.49	0.03	1.07	8.39	K/H
	1999–2008	3,259	-	9.32	0.30	1.60	7.41	
JAPAN	1880–1944	863	2.03					G
	1880–1955	863	1.57					
	1955–1959	2,771	6.42	6.32	1.43	2.34	2.54	K
	1959–1969	3,554	9.58	8.13	0.91	0.98	6.24	
	1969–1979	8,874	4.02	3.80	-0.41	0.62	3.59	
	1979–1989	13,163	3.15	3.81	0.23	0.40	3.18	H
	1989–1999	17,942	1.41	0.91	0.10	0.28	0.53	
	1999–2008	20,641	-	1.70	-0.34	0.10	1.93	PD?
KOREA	1911–1944	777	1.64					(G?)
	1911–1963	777	0.82					
	1963–1970	1,186	7.39					
	1970–1979	1,954	9.14	7.81	2.22	2.29	3.29	G/K
	1980–1989	4,144	6.91	8.62	1.60	2.27	4.74	
	1989–1999	8,027	5.12	5.47	0.51	0.11	4.86	H
	1999–2008	13,222	-	4.60	1.22	0.11	3.28	

Source: Author

Together with the previous observation as regards prewar Japan, it is suggested that the post-Malthusian stage can be decomposed into two sub-phases: The first phase is one of national industrialization characterized by moderate per capita GDP growth with a moderate degree of structural transformation: 1952–1977 for the PRC and 1880–1956 for Japan. It is followed by a second phase of very high per capita GDP growth under rapid structural transformation combined with the demographic gift: 1977–1989 for the PRC and 1955–1969 for Japan. The first sub-phase corresponds to the era known for conspicuous government involvement in industrial accumulation. So let us refer to it as the G-phase.[7]

[7] For Japan, Teranishi (1982) showed that the role of financial markets in transferring agricultural surplus for industrial capital accumulation was not important in the G-phase as had been conventionally believed, but that of the fiscal mechanism was significant in the form of de facto subsidies to non-agricultural sectors—calculated as industrial differential in the tax burden—before WWI, and in the form of formal subsidies to non-agricultural sectors after 1923. In the PRC, agriculture provided RMB600 billion for industrialization between 1951 and 1978, while state investment in agriculture was RMB176 billion (Wu 2004/2005: p. 117). However, the high contribution of per worker output in the I-sector in the early phase (the early

In the second sub-phase, demographic factors, i.e., an increase in the labor force share of the total population and the shift of the employment share from the A-sector to the I-sector contributed to between one-quarter to one-half of the very high per capita income growth.[8] A classical paper by Simon Kuznets (1957) characterizes the reduction in the agricultural employment-share across economies and over time as "quantitative aspects of the economic growth." In East Asia, this shift was compressed into much shorter periods than in Western Europe,[9] supplemented by the demographic gift due to rising fertility and declining infant mortality in the preceding G-phase.[10] Thus, I refer to this second sub-phase of the post-Malthusian stage as the K-phase, reminiscent of the Kuznets process.

The high per capita income growth of Korea from 1970–1989 is associated with a developmental-state equilibrium (in the sense defined in Aoki 2001: 169–74), but more than a quarter of this growth can be attributed to structural change due to labor migration. Thus, in Korea the K-phase coalesced into the G-phase. This unique characteristic may be thought of as already emergent in the colonial period. In that period, the construction of infrastructure such as public primary schools, public health systems, railways, hydroelectric and irrigation projects was undertaken in the anticipation of the post War G-phase (e.g., Eckert 1990), while the mobility of laborers out of rural areas to seek for gainful job opportunities also became active.[11]

As the K-phase works out its course, the possibility of sustained GDP per capita growth hinges on the ability of the economy to steadily improve on per worker output in the I-sector, particularly in terms of TFP and human capital investment. Let us refer to this phase as the H-phase, reminiscent of human capital-based, endogenous growth. Japan appears to have succeeded in this transition in the period between the 1970s and 1980s,

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1950s) may be largely attributable to an improvement in the management of industrial facilities and human resources inherited from the old regime (e.g., Perkins 1975; Feuerwerker 1995, pp. 100–121).

[8] My accounting method may underestimate the impact of demographic gifts on GDP per capita growth, because it measures only the direct effect of labor inputs. However, the relative increase in the working-age population may contribute to an increase in savings as well, which can increase the capital-labor ratio that enhances industrial output per unit of labor. Higgins and Williamson (1996, 1997) estimate that the 13.6% upward swing in the savings rate in East Asia between 1970 and 1992 can be almost entirely accounted for by the falling dependency rate in East Asia, which raised accumulation rates by 3.4% and augmented the growth in GDP per capita by 1.5%.

[9] According to Kuznets (1957), it took 84 years for France to reduce agricultural employment share from 52% in 1866 to 33% in 1950.

[10] In Japan the crude birth rate stayed at the high level of more than 30% between 1900 and 1947. In China the crude birth rate shot up to more than 40% in 1963 posterior to a decrease in population due to the Great Leap Forward and remained at the level of more than 30% until 1970. In the 1970s the rate steadily declined below 20% even before the official introduction of the one child policy.

[11] Cha & Kim (2006) estimate aggregate output growth from 1911-40 was 3.70% per year, which together with the population growth of 1.33% imply per capita output growth of 2.37% for the three decades, a figure much higher than the Maddison's estimate, which may suggest aspects of transition to the G-phase. These authors attribute major sources of this per capita income growth to economic openness and physical capital investment. They did not find statistical evidence of government direct interference in markets, contrary to a traditional Marxian claim. As an indicator of the magnitude of labor mobility, Kwon (1977) estimated that by the year 1940, 14 percent of ethnic Koreans were in labor markets in Japan and Manchuria. A large proportion of them repatriated after WWII and re-entered domestic labor markets.

but failed to sustain the continued growth of per worker output in the next decade, with a modicum of turnaround in the 2000s. Surely there was an element of the failure of macro economic management involved during the latter period, but I suggest below that the failure of the institutional arrangements to respond to the emergent international environments and demographic change (aging and fertility rate decline) has begun to cast a shadow on per capita income growth. On the other hand, Korea has succeeded in sustaining high per worker output in the I-sector in the last two decades (1989–2008). A conspicuous increase in the labor participation ratio in the 2000s is partially due to the demographic gifts bestowed by the second generation of post-war baby boomers, but also reflects a rapid decline of the dependency ratio due to fertility decline: the typical H-phase phenomenon at an extraordinary acceleration.

For the period from 1990 to the present, the PRC's continuing high growth of GDP per capita is no longer supported by demographic gifts as a result of the one-child policy. The contribution of the structural transformation still accounted for close to one-quarter of per capita GDP growth in the 2000s, however. The figure reported in the Table may even under-represent the contribution of the structural factor, while over-representing the effect of labor productivity improvement in the I-sector, because official data does not count the inputs of migrated laborers with rural registrations into the I-sector (Cai and Wang 2008). Whether or not the contribution of the structural transformation will continue to persist constitutes the crux of economic-demographic debates in the PRC now.[12] For both Japan and Korea, the turning points from the K-phase to the H-phase (around 1970 and 1990, respectively) are marked by a reduction in the share of agricultural employment to below 20%. In the PRC, the share of agricultural employment in 2009 was 26.4% in the coastal provinces and 46.3% in the inland provinces, according to official statistics. If the 20% share is used as a rule of thumb and if there is an underestimation of the magnitude of migration (Cai and Wang, 2006), the transition out of the K-phase may be near in the coastal region.

GDP per capita (PPP basis) of the coastal provinces in 2009 is US$ 10,616, which happens to be almost equal to the World Bank estimate of the world average, while that of the inland provinces is 55% smaller (US$ 4,755).[13] Thus Coastal PRC has undoubtedly reached the stage of the middle-income state. Can the PRC then make a smooth transition to the H-phase in order not to be held back by the so-called "middle income trap"? The PRC appears to continue to enjoy robust improvements in output per

[12] The debate is often phrased as whether or not the PRC economy is facing the Lewisian turning point. But this way of formulating the issue may be somewhat misleading, because the Lewisian model mechanically combines two distinct models: the classical model of unlimited labor supply during the transition and the neoclassical model of the competitive labor market after it. This is not the same as the unified approach of recent vintage as briefly described at beginning of this paper, because it ignores aspects of rational choice by farmers under unique institutional constraints in the K-phase.

[13] Using official PRC data, the division between the coastal provinces (Beijing, Tianjin, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong) and inland provinces (Hebei, Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan, Xizang, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang) is made endogenously on the basis of a cluster analysis of correlates between gross provincial product per capita and the share of agricultural employment across provinces. This analysis detects only one conspicuous outlier in Inner Mongolia where the agricultural employment share is relatively high (48.8%), but per capita gross product is comparable to those of coastal provinces because of high mining output. This province is excluded from both regions in the calculation. The conversion of per capita outputs to US$ is based on the PPP conversion ratio of the World Bank. The World Bank estimate of the world average is US$ 10,691.

worker in the I-sector for now. How much of this is due to TFP/human-capital investment cannot be known for sure, however, without reliable capital stock data that are still unavailable in official statistics. Various scholarly researches have sought to estimate TFP, which are neatly surveyed by Cao et al. (2009). According to their own industry-based study, for the 1982–2000 period TFP growth in the I-sector was 1.8 % (2.1 % in secondary industry and -0.3 % in tertiary industry) and the major source of per worker output growth was capital accumulation rather than TFP.

As the consequence of lower fertility characteristic of the H-phase, combined with the extension of life expectancy due to improved healthcare and life comforts made available in the same phase, the three East Asian economies are facing, or will face, a significant degree of shrinkage in the economically active segments of the population (age 15–65). In Japan, this has already started to have a negative impact on GDP per capita in the 2000s, a phenomenon some refer to as the demographic bonus. The share of the working age cohort in Japan is projected to decline to as low as a half of the population by mid-century, should there be no significant reversal in the decline of the fertility rate. The share in the PRC already reached its peak in 2010, and even the absolute size of the potential labor force is projected to start shrinking in ten years. In Korea the share will not reach its peak until 2015, but the pace of aging will become even faster than in Japan thereafter.[14]

In spite of these demographic changes per capita income may still continue to grow in these economies, provided that there will be a steady increase in TFP, as well as an increase in the rate of labor participation and a reversal of the decline in fertility.[15] But if such a development of a technological, socio-economic, and demographic nature calls for substantially new ways of playing societal games, it would be apt to consider the possibility of a new phase in economic development: the phase of post-demographic transition, or the PD-phase in short. It is arguable to what extent the tendency toward population aging and low fertility is universal. However, as indicated by the fact that the sustainability of the social entitlement system and, accordingly, that of public finance, is becoming a common political-economy issue across all the developed economies, East Asian countries may be considered as just getting ahead in a “new demographic transition” (Eggleston and Fuchs 2011). Specifically for PRC, this passage is compounded with a transition to the H-phase: the phenomenon that Cai and Wong (2006) described as the aging of population “before China becomes affluent.”

[14] The Korean share of the age group between 15 and 65 is expected to reach 73% in 2015. It will then start to decline to about 55% over the next 35 years, as opposed to the 50 years needed for Japan to experience the same magnitude of shrinkage.

[15] In spite of the shrinkage in the share of the working age cohort starting in the mid-1990s, the actual labor participation rate did not decline in Japan until the 2000s (see Table), because the labor supply of males aged 55–59 increased in the 1990s due to changes in retirement policy and practice. See Clark, Mason, and Ogawa (2007): Chapter 2. Also, using new cross-sectional and longitudinal analyses of the total fertility rate and the human development index (HDI) of the United Nations Development Program, Myrskylä, Kohler, and Billari (2009) find the new emergent phenomena: while development continues to promote fertility decline at low and medium HDI levels, further development reverses the declining trend in fertility, with the only exceptions observed being Japan, Korea, and Canada. It is noteworthy, however, that the decline in the total fertility rate has been recently slightly reversed in Japan. It rose to 1.39 in 2010 after it hit 1.26 in 2005.

3. INSTITUTIONS MATTER, BUT IN WHAT SENSE?

I have thus far identified five successive phases of the development process, M, G, K, H, plus PD, which suggest a common development pattern across the East Asian economies as well as being largely consistent with the unified approach to development. However, in spite of general commonality as regards the quantitative nature of developmental phases, there are also differences in timing and duration of each phase across the East Asian economies and beyond. Why? And what implications are there for future development? These questions evidently call for an explicit consideration of institutions that I have abstracted so far. Yet, the notion of institutions has not been easily agreed upon among economists and others. One of the recent approaches popular among economists is to measure the quality of institutions of each economy by their distance from presumably ideal institutional arrangements composed of, say, the rule of law, generalized trust, protection of minority shareholders in corporate governance, and the like, and regress economic performance on these indices. But what does such a distance imply? Can, and ought, such distances be narrowed simply by enlightened government policy and innovative entrepreneurial behavior so that all the economies converge on the "modern growth regime" supported by those ideal institutional arrangements? Although such diagnoses and prescriptions appear to be clear, they may not be very helpful in understanding the nature of the paths that the East Asian economies have been taking and in making predictions for their future trajectories and prescribing policy for them.

Instead of an exogenous view of institutions, I adopt the following conceptual framework for understanding institutions and their dynamics, as elaborated on in my recent work (Aoki 2001, 2010, 2011). Institutions are commonly cognized, salient patterns by which societal games are recurrently played and expected to be played. Such patterns are summarily and publicly represented by laws, norms, organizations, social rules, and other external artifacts, which may be referred to as substantive forms of institutions. The essential function of these public representations is to mediate between the recurrent state of play and agents' individual beliefs in a recursive manner. Individual beliefs in conjunction with individuals' preferences generate states of play, while the salient features of the recursive states of play provide reasons to believe what those public representations imply.[16] Through such a stable mediation of institutions between people's cognition (subjective beliefs) and actual play of societal games, a specific pattern of per capita income and demographic behavior is generated in society. As such, institutions could be subjected to game-theoretic equilibrium analysis as endogenous outcomes.

But institutions also change. Then, the basic aspects of the institutional trajectory over the development process may be characterized as punctuated equilibria as a first approximation, i.e., as a sequence of successive equilibria. However, these successive equilibria are not simply disjointed from each other, but may be linked in a path-dependent manner. In each phase the state of play is not in a precisely stationary position. It is in constant motion induced by changes in the per capita income level, demographic factors such as the age composition of the population determined by previous generations, and so on. These emergent changes generate experimental and

[16] Thus, institutions may be thought of as corresponding to what philosopher John Searle describes as "an epistemically objective set of statements about a reality which is ontologically subjective."(Searle 2011: p. 18)

new ways of play in response, which anticipate and constrain transitions to the next phase of the state of play. Then, salient patterns of the new state of play will be summarized and made public in the new substantive form of institutions. Thus, institutions should be viewed as co-evolving with economic-demographic dynamics rather than determining economic and demographic performance in a uni-directional way. Therefore, in order to discern the role of institutions conditioning phase-transition of economic-demographic variables, we need to identify historical sources of institutional dynamics originating in the M-phase.[17]

The historian Landes (2006) observes, like other noted historians, that Chinese technology stopped progressing before it could initiate its own Industrial Revolution because of its lack of "a free market and institutionalized property rights" combined with "totalitarian control over all the activities of social life." It is intriguing, however, that he added "agriculture being the chief exception" (p. 6). Indeed, the (late) M-phases of the East Asian countries were unique in being dominated by agrarian economies where individual peasant families cultivated small plots of not more than a few acres, which they owned or leased through contracts. As discussed forcefully by Oshima (1987), Hayami, and Otsuka (1993), and others, self-management by peasant families without hierarchical monitoring better fits the conditions of monsoon agriculture that required attentive human care to vegetation in response to the changing climatic conditions.[18] On this ecological-agricultural basis, however, diverse institutional forms evolved even within East Asia with regard to the enforcement of property rights in farmland and lease contracts, trust relations and inheritance practices among peasant families, as well as tax relationships involving peasants, landlords, and governments as an essential element of the political state. In my view, these institutionalized arrangements cannot be simply summarized for the East Asian economies as a whole only in terms of such

[17] This logic may be thought of as being somewhat related to the instrumental variable (IV) method used to quantitatively measure the impact of institutions on economic performance in the presence of an endogeneity problem (e.g., Hall and Jones 1999; Acemoglu, Johnson, and Robinson 2001), although my concern is rather to understand qualitatively the mechanism of co-evolution of demographic-economic performance with institutions.

[18] Environmental conditions more closely matched the wet farming in the Yangzi River region and the south-east region of China and the Japanese islands, but not necessarily everywhere in East Asia. In northern China climate conditions are less favorable for wet farming and water transportation, while natural disasters leading to famine were more severe. As dry farming produced fewer surpluses in northern China, tenancy rates were lower. Instead, managerial farming, in which the principal cultivators worked together with a few laborers, was more frequently observable, side by side with family farming (Perkins 1969; Huang 1985). Situations in Chosŏn Korea appeared to be more complex in the well-known decomposition of rural population into three classes: *yangban* as mandarin-like gentry, *nobi* (constituting about one-third of population in the seventeenth century) as objects for inheritance and sale by *yangban*, and commoners (*yang'in*), which led to a somewhat controversial characterization of Chosŏn Korea by Palais (1996) as a "slave society." However, there were variations in the status of *nobi* and from the 18th century onwards agricultural *nobi* were morphed to tenancy farmers with long-term sharecropping contracts in adaptation to new technology of wet farming (Rhee and Young 2010). In the 18th century, the economy became relatively stable and the population grew, which gave rise to massive exploitation of forests as land was cleared for cultivation and tree were cut for timber and firewood to satisfy rising demand (Lee 2011). This lead to serious ecological damage in the 19th century and a dramatic fall in agricultural productivity (e.g., Rhee 2004; Jun, Lewis, and Kang 2008). With the eclipse of the dual power of the dynasty and the y*angban*, clusters of peasant families emerged outside traditional *yangban* villages, almost doubling the number of villages (Rhee 2004). Thus Chosŏn Korea is not an exception in terms of the East Asian tendencies towards the peasant economy in the M-phase.

generic notions as Confucianism (as opposed to Protestantism in the West), totalitarianism (as opposed to democratically controlled governments), landlord exploitation (as emphasized by orthodox Marxism), kinship ties (as opposed to the rule of law and generalized morality), collectivism (as opposed to individualism), and so on. And those differences in the M-phase, some more obvious and others subtler, appear to be non-negligible sources for bifurcation of institutional trajectories of the East Asian economies and beyond, and thus for their economic performance. Let me illustrate this point as regards a couple of contrasting institutional forms between China and Japan.

4. QING VS. TOKUGAWA OVER THE STATE AND AGRARIAN SOURCE OF NORM

Though founded on similar family-based peasant economies in the M-phase, the inheritance practices were different between China and Japan. In China there was the longstanding tradition of equal, partible inheritance among sons. It may be that this practice was sustained because of its consistency with the interests of the successive dynasties to restrain the emergence of counter-powers based on large landownership.[19] In any case, this practice tended to limit the size of farmland ownership by farming families. Some families were then forced to part with the ownership of even small plots when they had bad loans. However, even if they were forced to do so, they often continued to cultivate the plots under lease contracts from the buyers, particularly in the East and the Southeast.[20] Land became the object of investment by gentries, merchants,

[19] This practice can be traced back to Shang Yan, a legalist advisor to an ancestor of the founder of the Qin Dynasty, who first formulated a rule that male adults should not live together under a single roof. A tension existed between this legalist idea and Confucian moralizing about an "ideal family" consisting of generations living together as an ideological means of political control. Thus, for social scientific analysis distinguishing the three concepts related to kinship appears to be useful: the basic family consisting of members living together as a basic unit of farming; the lineage organization composed of kin-related families settling in the same locale and owning a common lineage trust in the form of land ownership; and the clan as an organization of unrelated families, usually organized by well-to-do gentries/merchants in urban areas, to which a kinship fiction was applied (e.g., Freedman 1958, 1970: 13–14; Baker 1979). Ruskola applies the concept of corporation to the clan. He argues: "clan corporations' vehement insistence on kinship as their organizing principle did not mean that they were "just" family affairs. Rather, kinship was often a finely wrought legal fiction that legitimized the existence of private enterprises by profit-seeking individuals in a state in which Confucianism was the official orthodoxy"(2000: 1617–1618). He provides evidence that even the ownership interests in the ancestral fund were transferable.

My focus at this point is on the basic family as a farming unit. Wealthier lineages could afford to have relatively larger patriarchal family structures closer to the Confucian ideal, while avoiding equal division among sons by setting up lineage trusts. However, this type of family structure was not necessarily permanently stable, as problems in the succession of the family head and disputes over the control of trusts could easily result in the division of property. J. L. Buck (1937) estimated that 70% of families in the early 1930s were small, or conjugal, families, averaging 5.21 persons (for similar estimates see Freedman 1958: p. 311; Taeuber 1970).

[20] Perkins estimated the rate of tenancy, as a percentage of total farm families, to have been 28 % on average in 1912, with regional variations of high 31–52% in East and Southeastern provinces and low 13–20% in North and Northwestern provinces (Perkins 1975). Buck's estimates in the 1930s are higher, but exhibit the same geographical pattern (Buck 1937). See footnote 18 for a possible reason for the lower rate of tenancy in Northern China.

and better-off farmers. Thus, intricate networks of leasing contracts evolved within and across villages and these contracts were "sold and bought like stocks", sometimes even without the knowledge of the peasants cultivating the transacted plots. However, tax obligations were placed on the owners, some small and some large. How, then, were rental contracts and tax obligations enforced?

In this regard, organizations called the landlord bursaries (*zuzhang*) active in the late Qing and early Republican periods in the advanced Jiangnan (lower *Yanze* River) region are illustrative. The workings of these organizations were documented and analyzed in a book of some 700 pages by Muramatsu (1970) who examined numerous private land-lease contracts and their enforcement records housed at the Harvard-Yenching Institute, Japan's National Diet Library, Toyo Bunko Library, and so on. As his study appears to be relatively unknown to non-Japanese readers, I take it up here as illustrative of a prevailing feature of the contract-enforcement mechanism in China's M-phase.[21] These organizations acted as agents for multiple landlords who owned large numbers of small plots of land widely scattered and mutually intermeshed. They collected rent from hundreds, in some case from thousands, of peasant tenants, paid taxes to magistrates, and received fees for these services.[22] They were normally created by gentry families, but also entrusted by other landowners even of different lineages. Thus, although family metaphors and ancestral rites were often invoked to perpetuate their activities beyond a single generation and to be politically correct, they may be considered to be a quintessential example of corporations *à la* Chinese style. Namely, landlord participation in them was voluntary rather than natural kin-groups based; members drew the benefits of a steady stream of rents from their activities that otherwise would be costly to secure; they were perpetual beyond the lifespan of any natural person; and they internalized administrative structures independent of particular persons. They were even equipped with a small army of the physically strong to literally enforce rent payments, while relying on the legal/physical assistance of the magistrates whenever there was a need to punish rent arrears and settle contract disputes on their behalf.

There were thus strategic complementarities between the dynastic administration and the landlord bursaries. For the Qing dynasty of nomad origin that had only a weak power basis in the rural areas, endorsing or assisting the (coercive) enforcement of private contracts by the latter was a way to secure tax collection.[23] On the other hand, the large landholders were able to legitimize the forceful collection of rents by acting as quasi-public agents to collect taxes for the dynasty.

In the Southeastern provinces of China, a group of males all descended from one common ancestor tended to live together in one settlement, owning some property in common in the form of land ownership and subjected to the leadership of the most senior man (Freedman 1958; Baker 1979; Zheng and Szonyi 2001). The member

[21] A brief English summary of his research is in Muramatsu (1966). The institutional interpretation of his work in the text is by myself.

[22] According to Muramatsu (1970), about 20–30% of rent revenues were paid as taxes, 10% to the bursary as a fee, and the remaining 60–70% were to landlords in the late nineteenth century. However, the share to landlords started to decline dramatically after 1920, while tax shares went up (pp. 31–43). For this trend, see also Perkins (1975).

[23] According to Hsiao (1960), there was only one district magistrate per 250,000 people. See Sng (2010) for a principal-agent approach to political and economic implications of China's size, especially as one reason for China's economic decline in the 19th century.

families of such lineage organizations rotated farming on the common property and shared the surplus among themselves. These organizations often invested in irrigation and education out of common trusts and defended themselves over strife with neighboring lineage organizations. However, one important function of these lineage organizations was to "act as tax lords for the government, making the collection of taxes easier and shifting responsibility onto the small number of lineage heads...."(Baker 1979: 160). Thus, the government and the lineage organization were institutional complements as well. To pursue this line of argument below, let me use somewhat liberally the term corporate body in reference to any organization in perpetuity to seek private interests either in political or economic domains.[24] Then, we may characterize the interpenetration of the state and intermediate corporate bodies of property owners as one important element of M-phase institutional arrangement in Qing China. However, such quasi-public arrangement did not stand alone. There were also extensive contractual relationships among small peasant families in land-leasing, money-lending and so on. Then, how were private contracts among those enforced? Did kinship or lineage take care of this need? An answer to this question may be more sharply highlighted in a comparative perspective. With this in mind, let me turn to the contemporaneous scene of Tokugawa Japan.

In contrast to the vast political scale of the Qing dynasty, the governance structure of Tokugawa Japan was composed of about three hundred, semi-autonomous *Han* governments (domains) with the Tokugawa-*Bakufu* government (*Shogunate*) at the apex of the structure (*Baku-Han* regime). In my view, the nature of this construct may be characterized as an all-inclusive coalition rather than as a rigidly centralized administration. There are two aspects to this. First, the power of the *Shogunate* vis-a-vis the domains was based only on the threat of terminating the jurisdiction of any domain in the case of serious judicial offense to this political order. Such penal actions were actually exercised in only a few minor cases. Second, each domain was provided with exclusive rights to collect a fixed amount of the tax set in terms of quantity of rice from each village under its jurisdiction. Otherwise, the *Shogunate* was not to directly intervene in the internal affairs and rules of the domain. In turn, the domain was not to directly intervene in the internal affairs of villages under its jurisdiction, as long as the village's collective tax obligations (*mura-uke*: village contracts) were met. Landownership by farmers was registered with the self-governing village office, and transactions on farmlands were in principle possible only within the village, and not beyond the border of the village.[25] Property rights disputes within the village were legally appealable to the magistrate's judicial office (*daikansho*), but in practice they were resolved within the village through mediation by influential household heads who served as village officials.[26]

[24] Aoki (2010) provides the following generic definition for corporations: "Corporations are voluntary, permanent associations of natural persons engaged in some purposeful associative activities, having unique identity, and embodied in rule-based, self-governing organizations" (p. 4). They can co-evolve in varied substantive forms with specific social and political institutions. As such, they can include such entities as universities and medieval cities that emerged prior to modern business corporations characterized by market transferability of ownership.

[25] Toward the end of the Tokugawa period, some farmlands were placed as collateral for farmers' loans from urban merchants and in the case of contract default de facto ownership was transferred to the latter in spite of repeated ordinances by the *Shogunate* to prohibit the practice.

[26] For English reference on the relationship between the domain and the village head, see Smith (1959), Chapter 5.

The separation of samurai power from the village and the coalitional governance structure may be considered as a stable geopolitical solution to the century-long Warrior period (1493–1615) in which fierce competition for political hegemony had been waged among rural-based samurai powers in a small (relative to China) geographical arena. With the possibility of military combat effectively constrained, samurai became essentially bureaucrats ranked by shares in the amount of rice taxed by the village contracts.

By being in the position of residual claimants after the fulfillment of the village contract, village members had common interests in building and sustaining farming infrastructure, such as irrigation networks for wet farming and mutual help in farming activities, etc. To control free-riding over collective enterprises, a strict social norm of compliance in cooperative actions was imposed on member households with the threat of social ostracism for deviants.[27] This institutional arrangement was facilitated and effectuated by making the household the basic unit of economic and political life in the village, and primogeniture became the inheritance norm.[28] This practice encouraged the outflow of non-heir sons to neighboring cities, which contributed to the growth of world-class cities in the 18th Century.

The difference between China and Japan in terms of the state-peasant relationship had equally disparate impacts on the mode of trust relations among peasants. The kind of norm that evolved in the context of the village in Tokugawa Japan, as noted above, may be characterized as *categorical*, in that mutual obligations and trust were directed towards all the members in the village and only towards them.[29] Membership in the village defined the necessary and sufficient conditions for the applicability of a norm of cooperation and mutual monitoring. Categorical norms and quasi-centralized governance may then be considered to be institutional complements. The village contracting system promoted the incentives for member farmers as residual claimants on the one hand, while peer monitoring among member farmers within the village secured tax collection for the government on the other hand.

I have already noted that the lineage organization in Southeast region of Qing China had some similar features as that of Tokugawa villages in terms of collective action in public goods and de facto collective responsibility of tax obligations. However, as we move from southeast toward east and northeast provinces, the bond of lineages grew much weaker and individual contractual arrangements prevailed. Kinship was not an assurance of automatic fulfillment of mutual obligations and trust.[30] For example, even

[27] For a game-theoretic analysis of this, see Aoki (2001), Chapter 2.2. The statement in the text is highly stylized. For the dynamics of demographic and market impacts on socio-economic relations in the village throughout the Tokugawa period, see Smith (1959).

[28] The *Shogunate* issued several ordinances restricting the division of small-sized farmlands by individual farmers in the late seventeenth century and thereafter, in contrast to Qing China.

[29] The word “categorical” is used here in the sense of exclusively applicable to a group of people without an exception. Therefore, the categorical norm is not the same as the “categorical imperatives” in Kantian philosophy denoting an unconditional, self-justifiable requirement of action.

[30] A rich body of fieldwork on northern villages between 1935 and 1942 by the Mantetsu research group recorded many telling stories about the declining role of kinship relations in contract enforcement and trust-relations. About forty years later, some of those sites were re-visited by Huang, then a Stanford University researcher, and he confirmed the reliability of the survey in spite of its undeniable intelligence-gathering aspects (Huang 1973).

between a mother and a son, leasing had to be collateralized: if her son did not have money, the mother would rather lease her plot to another, even if he was of different lineage. Such observations indicate that the culture of contracts was strongly solidified.

How then could contracts be enforced among people who did not have access to the state, or a corporate body such as the landlord bursary, as a third party enforcer? Reciprocal relationships accommodating these exchanges had to then be strategically supported by mutual investments in individual social capital among those having potentially common or complementary concerns and stakes. Further, to make such specific reciprocal relationships enforceable and credible, they needed to be monitored by third parties who themselves were part of the linkage of such relationships. The mode of trust relations that embeds private contracting within a specific network of people may then be characterized as *selectively constitutive,* in contrast to categorical. Unlike the norm of categorical trust, it needs to be constructed pro-actively by individuals. From a comparative perspective, I posit that such reasoning can reveal the strategic nature of the so-called *guanxi* (social relations in Chinese).[31] What kinship could do was to provide better information about farmers' interlocutors within which contracts took place; it may also have provided an effective sanctioning mechanism for defectors. So it is not surprising even if contracts existed more often within the context of extended kinship, but it did not guarantee that transactions would occur.

I have described essential ingredients of institutional arrangements in the M-phase of China and Japan in starkly stylized manners in terms of state-peasant relations (mode of taxation on farmlands) and norms regulating peasants' behavioral interactions. In Qing China its vast territory exceeding that of Western Europe was under the uniform governance of the single dynasty, and its inevitably weak political basis at the grassroots level was complemented by the interpenetration of the state and corporate bodies of private interests (e.g., landlord bursary in the Yanze River region, lineage organizations in South China). In Japan, violent competition among rival samurai powers in the preceding period was tamed by the formation of the inclusive coalition of domains, each enforcing tax contracts vis-à-vis villages under its respective jurisdiction. At the private level, in China an absent neutral contract-enforcer was substituted by reciprocal individual investments in social capital—*guanxi*—so that the culture of private contracts was strongly solidified and prevailed widely.[32] In contrast, in Japan a cooperative norm was imposed on all the members of the village. I will argue below that these contrasting

[31] For a similar comparative analysis of guanxi, see Herrmann-Pillath (2010). There is an on-going controversy among anthropological Sinologists as to whether guanxi is emotion-based or strategy-oriented (e.g., Gold et al. 2002). However, these two do not need to be considered as mutually exclusive from a game theoretic perspective. Suppose that agents in a particular domain of the societal game (e.g., a village, a population) exchange social symbols such as words, gestures, gifts, help, etc., in order to impact on others' emotional payoffs (ganqing in Chinese). If one does so with the expectation of reciprocity from others, then such actions may be regarded in the reduced form as investment in one's own individual social capital. As recent neuro-scientific research confirms, there are trade-offs between emotional payoff and material/hedonistic payoff, as if "neuro-currency" (Montague and Berns 2002) is being circulated in the network of neurons within the individual brain (e.g., Fehr and Camerer 2007, Izuma et al. 2008). People may then refrain from free-riding on others' collective efforts or pursuing exclusive self-interests at the expense of others in economic exchanges, if they feel they will depreciate their own social capital in doing so. Thus social norms and trust relationships may evolve as multiple equilibrium outcomes of linked games between the domain of social-exchange and those of economic and other societal exchanges, embedding and regulating actions in the latter (See Aoki 2010: Chapters 3 and 4).

[32] For the limited role of the state apparatus in the enforcement of private contracts in Chinese development, see chapters in Zelin (1986) and Aelin et al. (2004).

contractual structures between Qing China and Tokugawa Japan would respectively constrain or characterize subsequent transitions from the M-phase to the next phases, and have substantive impact on the deep structure of institutional forms in subsequent phases.[33]

5. TRANSITION TO THE G-PHASE: CHINA VS. JAPAN

Granted, arguably, that Europe and East Asia were alike in the Malthusian phase in terms of economic development up to the mid-18th Century, why did the transition to the post-Malthusian phase begin first in Northwest Europe and not in East Asia? This is one of the classical questions of economic history, but it has recently attracted renewed interest among economists, prompted by the China's resurgence as a global economic powerhouse (e.g., Wong 1987; Pomerantz 2000; Landes 2006; Clark 2007; Allen 2009; Greif and Tabellini 2010; Rosenthal and Wong 2011). This section discusses questions subsidiary to this grand debate over the Great Divergence: why and how did Japan and China differ in transitions out of the M-phase: why did they go through a respectively unique G-phase to further transit to the high growth K-phase.

I have so far repeatedly referred to the dominance of the rural economy in the East Asian M-phase. By this, not only do I mean that a large proportion of the population lived in rural areas and were engaged in agriculture, but also that a dominant share of manufactured goods and handicraft products for mass consumption (e.g., processed foods, fuels, cotton and silk textiles, tools, household goods, etc.) were also produced in the rural area by peasant families and rural households specialized in craft activities. The political stability under monolithic dynastic control in Qing China and Chosŏn Korea, as well as the coalitional governance structure of Tokugawa Japan, provided peasant families with peaceful work environments under which they could allocate family labor

[33] I refrain from making a speculative and conjectural comparison of Chosŏn Korea with Qing China and Tokugawa Japan because of my inadequate knowledge and understanding of the former. However, in terms of state-peasant relations and norms regulating peasants' behavior, the following features appear to be unique characteristics of the late Chosŏn Korea and their (comparative) implications may be worth pursuing. First, Chosŏn Korea initially incorporated the dual power of the *Yi* dynasty and the *yangban*. For examplem *Nobi* was exempted from military service to the dynasty, while the dynasty directly taxed *yang'in* including military services and provided them with granaries for redistribution and reserves for loans in time of famine. The dynasty was also directly involved in the construction of reservoirs at the foot of mountain valleys that required large-scale labor mobilization. The introduction of the new agricultural technology of wet farming in the 18th century made the self-management of peasants more productive (cf. note 18), however, and the price of *nobi* fell dramatically, indicating the spontaneous disintegration of the *nobi*-system (Jun et al. 2008). In parallel, the dynasty moved to reduce the status and power of the *yangban* by introducing various anti-*nobi* bills (Rhee and Yang 2010). Productivity decline caused by the environmental crisis of the 19th century further weakened the dual power structure. Peasants including ex-*nobi* then moved to form their own cooperative associations or community compacts called village *kye* for various specific purposes, such as pooling capital and lending it to members in rotation, co-owning cultivating cows, helping each other with the changing of roof hatches, etc. Among them, one of the most important was the irrigation association to construct and run small-scale irrigation systems called *pok* (Miyajima 1982). But norms regulating these associations or contracts appeared to be more specific (than *guanxi*) in their objectives and more limited (than the Japanese village norm) in their membership. A relatively late and less-inclusive development of cooperative norm at the village level may have prompted the comparatively early and fast movement of labor out of the A-sector in the colonial period and the G-phase, as mentioned in Section 2.

hours between farming and domestic manufacturing in response to changing seasonal, economic, climatic, and other conditions,[34] whereas extensive merchants' networks coevolved to market peasants' products in exchange for supplies of tools and materials.

Rosenthal and Wong (2011) narrated a contrasting story of Western Europe as a whole. Under frequent warfare and violent political competition among kings, warlords, bandits, and other powers prior to political stability brought about by the births of modern nation states, rural areas were not favorable environments for manufacturing to base. Mobile productive assets and outputs could be easily appropriated by bandits and armies when there was no protection. Thus, a relatively larger proportion of manufacturing activities were concentrated early on inside city walls that protected artisans. However, labor and material costs were comparatively higher in urban areas than in rural areas in terms of accessibility to foods and materials originating in husbandry, vulnerability to infectious diseases, and so on. The authors argue that an unintended consequence of political competition was thus to motivate urban manufacturers to invest in, and develop, labor saving mechanization.[35] In the long run, the cost of capital became lower as well, by making capital markets in cities more efficient. These situations had obvious implications for the European lead in industrialization and drive for technological innovation.

In contrast, when merchants who intermediated cash products and manufactured goods of rural origins became wealthy in China, they invested in human capital to achieve the status and prestige of the scholar-official class, spending on conspicuous and cultural consumption and investing in money-yielding farmland and lending. In Japan, the nature of the quasi-centralized coalitional state that socially segregated samurai-bureaucrats from farmers, artisans, and merchants in that class order prevented anyone from combining talents from the different social-politico ranks to effect industrial innovation.

Thus, when Western technology and products of the factory system became exogenously known as a potential threat to the independence of the state and the integrity of the society in East Asia, transformation in the substantive form of the state was called for in one way or another. The Qing dynasty experimented on infant industrial policy, such as the promotion of "bureaucratic-supervised merchants-managed enterprises" (*guandu shangban*) and establishment of "government-business joint enterprises" (*guanshang heban*) in arsenals, shipyards, and so on, as well as "invitations to merchants" (*zhaoshang*) to engage in the transportation of the products of government monopolies such as salt (Feuerwerker 1958; Eastman 1988; Zelin 2009). Some of these became profitable when managed by able bureaucrats or business persons, but most of them were short-lived. After the collapse of the the Qing dynasty in 1911, there was a brief period when private factories started to spring up in urban areas like Shanghai with Jiangnan as its rural hinterland. However, military groups, political bodies, and imperial powers soon began to compete to exert their political control over the commercial and industrial activities. By 1947 the Nationalist government had come to control more than two-fifths of total industrial production by returning to the tradition of

[34] Such political stability ceased to exist in China after the Taiping rural rebellion from the mid-19th century. The population of China declined from 412 million in 1850 to 358 million in 1870.

[35] Rosenthal and Wong (2011) note that the rise of the putting-out system in England, the Low Countries, and France in the 18th Century was after political stability was established in these regions so that cities' security advantages were lost. The technological innovation of the putting-out system is more in the efficient use of rural labor. Indeed, the putting-out system flourished even in the M-phase of China and Japan, and it cannot be therefore considered as an essential precursor to industrialization. See Tanimoto (1989) for an excellent analysis of the putting-out system in Japan.

guandu shangban.[36] But their control did not extend to rural areas in such a way as to mobilize surplus resources from there for industrial development. The Nationalist government yielded the land tax to the provincial governments from its beginning. The provincial governments then subcontracted land tax collection to county chiefs whose positions were occupied by ex-gentry or new rural elites who had *guanxi* with military elites in the provincial governments. After fulfilling the negotiated contractual obligations to the provincial governments, the county chiefs were able to claim the residual of the collected taxes, which motivated them to squeeze the share of landowners' rents including those for the small landholders by the use of police force.[37] Thus, the basic structure of the interpenetration of weak state power and private interests of intermediate corporate bodies (in this case, county governments) remained in a manner homeomorphic to the M-phase, [38] which was largely responsible for the deterred transition to the G-phase in which the government is to intermediate the transformation of agricultural surplus into industrial capital accumulation. In contrast, a relatively swift transition to the G-phase in Japan may be attributed to the quasi-coalitional nature of its political state.

In the late Tokugawa Japan, government's initial involvement in industry was decentralized. Some domains took the initiative for industrialization on their own by taking advantage of the foreign trade open to them. For example, Saga domain nearby open Nagasaki port promoted exports of indigenous rural products such as tea, pottery, and wax through its own trading house, while allocating 20% of agricultural tax revenues to import military equipment and other industrial products. Fifteen years prior to the Meiji Restoration, they were able to produce modern weapons ahead of other domains. However, the compartmentalized, rural-based industrial policies of individual domains were not sufficient to cope with foreign threats, and a movement toward consolidating efforts of individual domains vis-a-vis the entrenched regime of *Shogunate* started to gather force among samurai-bureaucrats of all ranks, from top to bottom, across various domains. This movement culminated in the forceful removal of the *Shogunate* as the leading player of the coalitional structure in 1868, and subsequently in the abolition of the domains and their replacement by prefectural governments in 1871. The central government formed by active leaders of the movement decreed that the ownership of farmland be registered at 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

[36] Rawsky (1989) estimates that industrial output grew by an average of 8.1% during the years between 1912 and 1936. A previous study by Chang (1969) provides a similar estimate of 8.4% growth in industrial value-added (including Manchuria) between 1912 and 1942. It is to be noted, however, that the share of modern industry in GDP remained small during the four decades of the Republican and nationalist periods, as the initial base of growth was very low, and that the link between modern industry and the rural economy remained rather tangential. According to Perkins's estimate, the share of modern industrial output in GDP remained at 7.5% in 1933, while pre-modern manufacturing's share was 12.4% (Perkins 1975, p. 117).

[37] The *Mantetsu Survey* on land tax collection at the county level is extensively cited in Muramatsu (1949/1975), according to which the expenditure for the police force in a representative county of Shandong province amounted to one-third of land tax revenue in 1941. Huang (1985) also reports that expenditures for police and military guards in one county of Hebei province exceeded 60% of its official budgets.

[38] This statement excludes any consideration of communist-controlled areas of China during the Nationalist period.

contracting system, farmland taxation was fixed in monetary terms and imposed on individual landowners.

The broad participation of reformist samurai bureaucrats from the old regime was a comparatively unique aspect of Japan's transition to the G-phase. The number of samurai who played an active role in the Meiji Restoration is estimated to be about 4,300, amounting to about 1% of the samurai class (Ban-no and Ohno, 2010).[39] Various reform agendas were initially proposed by domains over major issues, including industrial development vs. military build-up, open trade vs. anti-foreign diplomacy, the establishment of representative parliament to control the *Shogunate* vs. return of the commanding power to the emperor, and so on. However, an anti-*Shogunate* coalition quickly took shape among several domains holding powerful economic and military resources and political skill. Its agenda-setting was flexibly adapted and evolved through negotiation, competition for leadership, and learning by doing among the activists across those domains and beyond, even including some court nobles and reform-minded administrators in the *Shogunate*. The relatively bloodless transition in a reasonably short period was thus made possible as a pragmatic realignment of the coalitional structure from the quasi-centralized *Baku-Han* system, which conditioned the elite-led, bureaucratic nature of the Meiji government.

In spite of the substantive transformation of land ownership rules, norms regulating socio-economic relations in the village proved to be resilient. Farmers of small landholdings subjected to a fixed rate of land tax suffered from deflationary pressures in the early 1880s, and many of them fell to the position of tenants. The proportion of tenancy lands increased from 20%–30% in the 1880s to more than 40% in the 1890s. However, emergent (absentee) landlords tried to legitimize their rent-earning positions by the paternalistic provisions of village collective goods, such as schools, festivities, and scholarships for able children, while relying on peer monitoring among village households to get their rent payments fulfilled as duties. As already noted, throughout the G-phase between the Meiji Restoration and the beginning of WWII, the number of agricultural employment remained almost constant at around 14 million, reflecting the continued practice of primogeniture and the pressure of the social norm of membership duties on households in the village. Hayashi and Prescott (2008) estimate that the economic effects of the restraints on the free mobility of labor out of agriculture cost 40 % of per worker industrial output during the period, blaming the Confucian-spirited civic law imposed by the Meiji government (actually it emulated French civic law). However, any law could be effectively enforced only if it is consonant with the deep structure of social practices (e.g., Deakin 2011). Only after the individual ownership of farmland was secured for rural families through the post-WWII land reform, did the new generation of farm households start to leave the rural landscape behind and joined corporate organizations after their schooling. As is well known, the mode of the categorical norm of cooperation was transplanted into these new work environments, contributing to relatively high labor productivity during the K-phase and the heyday of the H-phase (e.g., Aoki 1988; Hayami 1998).

In China it was the political unification by the Communist revolution that finally completed the long tradition to the G-phase. Its disputable political connotations aside, the formation of People's Communes in the late 1950s made economic relationships direct between the government and 120 million rural households. Material resources for

[39] This estimate does not count ex-samurai who were simply engaged in military actions to remove the *Shogunate* from its governing position and other mass political actions.

industrial accumulation were extracted from the agricultural sector through direct agricultural taxation and state-monopoly procurements, and then invested in state-owned enterprises in the form of direct subsidies and price controls.[40] At the same time, the exit of farmers from rural residence was restrained by mandatory membership requirements (*hukou*) in the communes. This was in essence the wholesale incorporation of rural households at the expense of the traditional culture of private contracting. Their incomes were basically determined not by their marginal products (competitive market prices) but by their average output (with some differentials) after tax payments to the government and various collective investments. Thus the arrival of children of working age was good news for individual households, which might be one of the underlying reasons for the hike in birth rate in the 1960s as mentioned before, of which an unintended consequence was a demographic gift to the next K-phase. Further, the collectivization of farming made social relations among peers at the level of the production teams (with an average size of between twenty to thirty households) bound to be inclusive rather than selective. This made possible all-inclusive collective actions such as the adoption of new crop varieties and chemical fertilizers, investment in water control, tractor plowing, and public health campaigns, which were not possible during the previous transitional phase. Indeed, between 1970 and 1977, per worker output in the A-sector increased by a compounded annual rate of 2.32%, in comparison to a stagnant 0.21% in the I-sector. The rather large contribution of structural transformation in this period amounting to 1.65% reported in Table reflects this relative increase in per worker output in the A-sector with the minimum exit of labor from the A-sector to the I-sector.

Thus a preparatory stage for the transition to the K-phase was set. The actual onset of the transition was triggered not by political design, but by the spontaneous restoration of private contracting at the village: that is, by contracting out the commune's tax obligations to member households through the subletting of village-owned plots to them (Wu, 2004/2005). An increase in agricultural surplus thus motivated was transformed into industrial capital through the establishment of township and village enterprises (TVE's) in the early 1980s. The local initiatives based on inclusive *gunaxi* within the village and the return to the practice of private contracting complemented each other for the TVE's to emerge, ushering in the K-phase à la Chinese style. This institutional development worked as an effective safeguard against possible predatory behavior by the state in collusion with inefficient state-owned enterprises (Che and Qian, 1998a, 1998b).

6. INSTITUTIONAL AGENDA AND LEGACY IN THE NEW TRANSITION IN THE PRC

In Section 2 I argued that the PRC faces a new transition from the K-phase to the H-phase, soon to be compounded with transition to the PD phase. Having then discussed the aspect of agrarian origins of institutions in the M-phase (Section 4), as well as their subsequent transformations up to the K-phase (Section 5), it is now time to relate these historical discussions to the emergent phase-transition, hoping that it may have bearings on the newly debated issue of whether China can avoid the so-called "middle income trap" and, if so, how. One focal issue of institutional agenda associated with this

[40] See footnote 7.

transition appears to be a recurrent theme of China's development process, that is, the role of regional and local institutions, this time that of provincial and local governments. This theme has newly arisen in the context of historically unprecedented demographic features, while it is closely intertwined with the legacy of the G-phase's huko system.

As said toward the end of the last section, the transfer of employment from the A-sector to the I-sector emerged first as the autonomous springing-up of township and village enterprises in the early 1980s, then followed by a temporary migration of single rural workers to coastal industrializing areas. In the past two decades a new phenomenon started to take shape known as the "floating population", amounting to some 200 million people in 2010 and possibly increasing further in the near future. This subclass of population is composed of families who left the location of their hukou location and are living elsewhere for more than six months.41 According to a 1% sample survey on the floating population in the City of Beijing, the average years of schooling of the floating population was 8.89 in 2005 and higher than the national average of 8.30. It is also increasing faster than the national average (Zhai 2010). Thus they can constitute an important component of resources needed for the human capital-based development phase. It is widely recognized, however, that their employment security, social security, insurance packages, and particularly opportunities for their children to proceed to higher education are not comparable with families with urban hukou, even though there have been notable improvements in recent years. How are they and their new generation to be recruited securely into the ever-upgrading labor force on a level playing field?

The 2007 Property Rights Law stipulates that farmers are entitled to subcontract use-rights to farming plots legally owned by the village community up to 30 years, and that they can lease or sell these rights. Thus, de facto ownership rights may appear to have been endowed to households with rural hukou, which may be considered as considerably reducing opportunity costs for their members to migrate. But, as widely recognized, this may not yet be adequate for the new transition. Opportunities for farmers to fully realize capital gains from their voluntary or obliged land sales may be limited in practice, because markets are under de facto monopsonic control of local governments. More than one-fifth of fiscal revenues of local governments in 2010 are said to be derived in the form of development surplus realized from their acting as local monopsony vis-a-vis farmers, while selling use-rights of land to urban developers through auctions.

There is another side to this, however. Local governments have constitutional obligations to provide social services in the areas of health, education, and the like to families with hukou under their jurisdiction. However, passing through the K-phase, local governments find this obligation magnified by the need to provide social securities and insurance for family members who are left behind in the rural community. Particularly, the baby boomers of the 1960s are facing a stage of life in which urban migration and skill retooling will become increasingly difficult. The traditional insurance by kinship networks cannot be much relied on. According to a demographer's estimate, the size of the typical kinship network has fallen to about 10% of what it was a few decades ago (Tuljapurkar 2010).42 A public insurance scheme in the rural area, which has been

[41] According to a 1% Floating Population Survey in Beijing in 2006, 38.3% of them had lived there more than 5 years. Its average family size was 2.6 in 2009 (Zhai 2010).

[42] The size of a kinship network is proportional to the square of the total fertility rate (Goodman, Keyfitz, and Pullman 1974). As the PRC's TFR has fallen from 5 to around 1.5 from the G-phase to the K-phase, the conclusion follows.

virtually non-existent in the past, needs to be then provided. However, the fiscal base of local governments became rather squeeze after public finance reforms in the 1990s by which the collection of larger shares of value added taxes and income taxes became attributed to the central government. Thus, local governments are increasingly reliant on development surplus under pressure to provide housing and other social expenditures to urban and migrating populations. In that sense, the PRC's real estate boom may be considered as having its origin in fiscal needs rather than as a purely financial-market phenomenon. But this process also creates the widely held public perception that private interests of some corrupt local officials are intermeshed with their execution of public duties.

Thus, the challenges the PRC faces are not disparate ones: they are not just a traditional problem of the interpenetration of the state and private interests at intermediate corporate bodies (local governments, state-owned enterprises), nor are they only the problems of labor and housing shortage and inequality in opportunity for human capital investment associated with the rapid transition from the K-phase to the H-phase, nor are they only a question of how local governments can finance equitable welfare programs to cope with the coming of the PD-phase. Indeed, all these issues are mutually related, for which solutions need to be complementary.43 A crucial requirement of solutions appear to be then how to make relationships between farmers and urban citizens on the one hand, and provincial and county governments on the other, in such ways that they are to become fair, caring, accountable, and transparent, as well as diverse according to local needs and characteristics. The challenges are compound, but resources to cope with them are already there in the impressive improvement in labor productivity so far achieved, while the realization of a successful institutional transition will make further development sustainable in the H-phase and beyond. This ought to be a way, among others, for the PRC to avoid the "middle income trap."

7. INSTITUTIONAL AGENDA AND LEGACY IN A NEW TRANSITION OF JAPAN

Finally, let us turn to Japan once more. In Chapter 2 it was shown that Japan's per capita output performance has conspicuously slowed in the last two decades. It may be suggested that some parts of its causes could be attributed to the increasing aging of the population, as well as the increasing exposure of the economy to global competition specifically from other East Asian economies, that are making the traditional institutional arrangements, such as the life-time employment, somewhat obsolete as it is. In this

[43] One of solutions could be to allow the migrating households to enjoy the full benefits of urban citizenship in exchange for the sale of subcontracting rights to farmlands, if they so choose. A portion of capital gains from sales of subcontracting rights may be taxed to partially finance the fiscal obligations of local governments. As the zoning of farmland is desirable to secure food supplies and to prevent disorderly private development, the role of local governments in regulating real estate transactions will remain essential in one way or another. Cf. Cai and Wang (2006, 2008), Tao and Shi (2010) for related proposals. Also, the design of a transparent fiscal transfer rules from the central government to local governments would be necessary to make the latter fiscally viable and accommodating to diverse local situations.

section I suggest a specific institutional reason for it: institutional arrangements based on the traditional categorical norm that worked well in the early H-phase have become less adaptable to the increasing complexity and uncertainty of the contemporary economy. It is not hard to find the symptoms of this in various spheres and levels of the economy. But elements of human errors in the recent nuclear catastrophe and their consequences can illustrate the point in a striking way. It was not simply a freak accident brought about by "unforeseeable" forces of nature.[44]

On March 11, 2011, following a magnitude 9.0 earthquake, the second largest in scientific historical records, nuclear reactors owned by Tokyo Electric Power Company (TEPCO) began their systematic shutdowns. In shutdown mode, cooling water should have reduced the reactors' remaining decay heat. However, it soon became clear not only that electric power from the transmission grid was unavailable because of earthquake damage, but also that the plant's back-up generators had failed in the tsunami. Between various stakeholders, including the Prime Minister at the time, Naoto Kan, and his advisors, the nuclear power regulator, TEPCO headquarters, and the manager of the Fukushima plants, there were continuous verbal exchanges, continuous mutual guessing of each others' intentions, and continuous hesitations to take initiatives for actions: a situation Mr. Kan described as a "language game" (probably in a Wittgensteinian sense) after his resignation as prime minister. During this period of indecision, fuel melted inside multiple reactors and hydrogen explosions occurred at the plant.

TEPCO is a regional monopoly of enormous size that integrates power generation plants of various types, transmission grids, and distribution systems. There was "seamless" horizontal coordination among these functions to meet electric power demand forthcoming under fixed regulated pricing in the normal state of affairs. As a consequence, TEPCO was boastful of its "quality of power supply," i.e., the extremely low probability of power outage in response to seasonally fluctuating demands. However, ambiguity in the decision-making locus in the crisis situation, as well as the factor of continuous negotiation for actions and haggling among stakeholders, failed to contain the impacts of natural disaster to a more reasonable level.

The generic nature of the coordination mechanism that operates in the normal state of affairs in Japanese industrial organization may be described as horizontal coordination—it is the coordination mechanism in which information about evolving environments is shared among constituent units engaged in complementary activities and decisions on respective outputs are continually negotiated among them and thus arrived at through consensus. It performs better than the centralized coordination characterized by the vertical chain of command-report relations, if the environment changes continually, but not drastically. However, if environments are extremely volatile or uncertain, horizontal adaptation may yield highly unstable results (Aoki 1986). However, actions of members of corporate organizations are normally taken on the basis of their shared beliefs about others' expectations and actions in the normal state of affairs (see Aoki 2010, Chapter 2, on "corporate culture" as a common frame for intra-corporate games). Such a matrix of expectations is not malleable in response to a sudden shock. As chaotic exchanges among the stakeholders after the March 11 disaster, as mentioned above, exhibited, stakeholders tended to behave as they had been in the normal course of events.

[44] See Aoki and Rothwell (2011) for a more detailed discussion of the following.

There is another hazard of the horizontal coordination. If the position of a constituent unit is highly entrenched in the network because of its indispensable expertise, monopolistic power, its coherence or else, this unit can exercise highly powerful bargaining power in negotiation that may generate serious pitfall for system performance. Indeed, the failure of preparedness for "just in case" revealed in the Fukushima catastrophe was a stark example of this. Warnings of a possible disaster of that magnitude had been expressed by the public and in academic research during the preceding decades. Yet, the entrenched group of nuclear specialists within TEPCO and their academic allies had not effectively responded to these warnings, while regulators as well as top management of TEPCO, lacking expertise in nuclear engineering, did not dare intervene. They became in effect an autonomous entity free from effective safety regulations and monitoring. It is telling that the entrenched group of nuclear specialists was nicknamed the "nuclear power village."

In Japan, this mode of horizontal coordination prevails deeply within corporations, within industries, as well as between industry and the government (the regulator). It may be said that the legacy of the inclusive coalitional structure as discussed in Section 4 may cast its shadow over the evolutionary process of organizational experiences. As noted, the horizontal coordination works better for a system composed of constituent units mutually complementary in their functions. However, as the complexity of system increases, complementary relations among particular agents may become less, as varied substitutes for them may become available in modular forms. In such a situation, negotiated action-decisions based on information sharing among incumbent units become less efficient information-wise as well as allocation-wise. It becomes more economical to flexibly combine, decouple, substitute, and merge various entities according to a set of well designed, open interface rules to form a system. This is the modular design. As long as it follows the rules, each modular agent can "encapsulate" its own function without intervention by other entities. This mode excels not only in coordination in the complex system where varied substitutes are (potentially) available (Cremer 1990, Aoki 2001), but also in the ability of self-organizing innovation (Baldwin and Clark 2000, Aoki 2001), as well as in preparing for large shock.[45]

The Fukushima catastrophe was certainly an event triggered by extraordinary natural shock, yet suggestive of common problems that Japanese industrial organization faces. As such, debate over how the electric power industry ought to be restructured in the aftermath of the catastrophe may also become a catalyst for search of a possible direction toward which it may re-orient. In any case, for Japan to regain its productivity growth, elements of modular design in terms of open rule-based coordination are to be incorporated into the industry and ways for it to be synthesized with the comparative advantage of the traditional mode of horizontal coordination needs to be explored. This direction will require the active mobility of agents across various entities (say, corporate entities). Then the traditional bound of categorical norm shared only within a particular organizational entity also need to be broadened and generalized. If Japanese industry fails to move in that direction, its stagnation would be likely to persist.

The March 11 disaster may indicate a certain degree of hope as well, however. The Japanese people were not caught up in panic, behaved in an orderly, compassionate way, and were helpful to others when facing the catastrophe. Thus, norms of cooperation and reciprocity proved to be extendable beyond traditional categories. And

[45] On the engineering level, defense in depth for big shock can be provided by the installment of multiple, modular, safety devices that can be triggered by one after another contingent on the evolving risk situation.

this is what is needed to adapt institutional arrangements not only to the emergent complexity of the economy but to the post-demographic transition as well. The system of social entitlements designed under the stable demographic perspective in the early H-phase is not fiscally sustainable any more. Postponing a political solution to increasing public debts only magnify the burden on future generations. Further, as European and American responses to the demographic transition suggest, the prospect of aging of the population may not be an inevitable burden to society. Senior and gender development to broaden the labor participation rate of the population, reversal of fertility decline combined with the development of a care economy, inflow as well as outflow of foreign direct investment (FDI), immigration, and so on can not only mitigate the problem, but may make the coming mature society livelier and richer in diversity, although moderation in per capita income growth may be inevitable. However, in order to make these options viable, various interests differentiated by the broad categories of gender, generation, ethnicity, nationality, and so on must be accommodated and reconciled in the political process. This requires a fundamental transformation of the political institutions shaped in the heyday of the H-phase and firmly embedded in the categorical norms of vested interests. In my view, the fact that Japan has not yet found a practical solution to this is a fundamental reason that the society appears to have lost vigor in the last two decades.

8. CONCLUDING REMARKS

I have argued, on the one hand, that there is commonality of development processes across economies, in line with the unified approach to development, so that we can mutually better understand issues involved in the development of our economies. On the other hand, there are also differences in the onset, duration, and institutional forms of developmental phases. To understand this, a comparative analysis of the co-evolution of economy, demography, and institutions is essential. One cannot solve the developmental problems of each economy merely by emulating legal provisions of advanced economies without ensuring it is consistent with its path-dependent institutional evolution. I have tried to illustrate this argument in reference to the China-Japan comparison. Finally, I have set out a path-dependent institutional agenda for each the PRC and Japan, to transit to a new phase. There can be one more point to be added, although I cannot elaborate on it here. That is, precisely because of differences in and varieties of developmental processes, there can be potential complementarities among developmental strategies of varied economies, which are not possible in a homogenous, flat world. Thus, gains from trade may not be limited to the domain of physical trade, but should also be seen in terms of mutual flows of human beings, organizations, information, and ideas, including scholarly exchanges among us economists.

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