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Evolution of Economic Systems:
the Case of Japan

by

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(This Draft: September 1996)

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prepared for

IEA Round Table Conference
"The Institutional Foundation of Economic Development in East Asia"

Abstract

In this paper, we shall provide a theoretical overview of what are the chief implications of focusing on institutions and economic systems, what are the main sources of their evolution, what are the factors to overcome evolutionary jump sometimes required in the evolution.   In the latter half, we shall provide a brief historical account of evolution of an actual economic system using Japanese economic history as an example.

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1. Introduction

Recent rapid economic developments in East Asia, first by Japan and then by so-called NIEs of South Korea, Taiwan, Hong Kong and Singapore, and finally those late comers as Mainland China, generated an interest in the institutional foundation of economic systems in this area.   Many believe that Japanese economic system, characterized by its human resource management, corporate governance system, inter-firm relationship and government business relationship, is different from Western counterparts, especially those of US and England.   Similarly, many argue that one of the crucial factors behind recent economic performance behind East Asia is their close family ties of Chinese cultures.   World Bank's now famous *East Asian Miracle* emphasized equality of income and high educational level in this area as well as the macro economic stability as the principal cause of the region's economic performance. All of these economies also seem to be characterized by government's tight grip over the

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private economies. Together with the emergence of new economic tools that are capable of analyzing incentives and informational problems -- game theory, information economics, incentive theory, contract theory --, these experiences naturally intensify our theoretical interests on the role of institutions and economic systems.[1]

On the other hand, same developments in economic tools have generated a new direction in analyzing economic history. Combining these economic tools, economic historians now ask questions such as; why some particular form of transactional and organizational arrangements is dominant in one area while some other form dominates in the other, what physical and cultural background determines the particular form of institutional arrangement to exist, etc.[2]

In this paper, we shall provide a theoretical overview of what are the chief implications of focusing on institutions and economic systems, what are the main sources of their evolution, what are the factors to overcome evolutionary jump sometimes required in the evolution. In the latter half, we shall provide a brief historical account of evolution of an actual economic system using Japanese economic history as an example.

This paper is organized as follows. In section 2, we define institutions and economic systems, and explain some relevant concepts. Section 3 discusses recent developments of evolutionary game theory in order to understand key elements that determine the evolution of an economic system. In sections 4 and 5, we discuss two alternative forms of institutional arrangements, enforcement of cooperation by trust and enforcement by state authority, and discuss problems in overcoming the discontinuity between the two systems. Section 5 also discusses third institutional arrangement where two enforcement systems co-exist, with an interpretation that large Japanese corporations enforce internal transactions by trust while smaller firms use state authority as an enforcing device. In sections 6-9, we describe an evolutionary process of institutions focusing on the modern Japanese economic history. Evolution of institutions adaptive to the economic performance and the government's role of switching the evolutionary path will be stressed.

2. Institutions and Economic Systems

Traditionally, the neoclassical economics has identified only three different types of economic systems; market economy, planned economy and mixed economy.

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[1] Milgrom and Roberts [1992], Aoki and Patrick [1994], Aoki, Kim and Okuno-Fujiwara [1996] and Aoki and Okuno [1996] are the examples.

[2] This new area was cultivated by Greif. See, for example, Greif [1994] and [1996].

Characterizing an economy to be a triplet of parameters consisting of endowments, technologies and preferences, the neo-classical economics takes it granted that the same ultimate resource allocation should result once these parameters and the type of economic systems are fixed[3]. An important and critical implication of this view is that a difference in resulting resource allocation across different societies should be attributed to the difference either in endowments, in technologies, in preferences, or in the degree and the scope of government interventions.

A newly emerging view, however, emphasizes the diversity of market-based economic systems. This new view focuses on institution as a principal source of diversity. Not only endowments and other traditional economic parameters but also institutions and organizations are considered vital to affect ultimate resource allocations. This is so because the resulting resource allocation is heavily influenced by such broad items as a form of corporate organizations, customs over human resource management, forms and types of corporate governance, means and extent of cooperation to manage joint projects, and scopes by which private actions are restricted by the government regulations. Values and cultures are also considered to be often important in determining how easily cooperation may be achieved, how effectively coordination can be effected, etc. Hayami [1996], for example, defines a socio-system to consist of two sub-systems and four factors. The first sub-system is the economic sub-system consisting of endowments and technology, while the second is the cultural/institutional sub-system consisting of culture/values and institutions/rules. He emphasizes these four factors as mutually interdependent and jointly determining the final outcome.

The natural question to pose then is: what is an institution? By the word *institution*, we mean those established laws and conventions that are commonly followed and observed within the society. Examples of institutions range from organizations and legal regulations to customs and conventions. It may be alternatively viewed as a code system that binds a certain group of people (say, members of a society or those of an organization), by formally or informally suggesting an acceptable behavior in each situation, by indicating how to penalize and sanction those who have violated the code, etc. An institution may be then defined as a social standard of behavior that is chosen (as a best response) by the majority of the group when the same standard of behavior is anticipated to be employed by the rest of the

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[3] To be more precise, the neoclassical economics predicts that one of finitely many equilibria should result. However, there is no qualitative difference exists among such equilibria, as they are all Pareto efficient

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group. Put in an abstract term, an institution may be defined as a (Nash) equilibrium and, hence, self-enforcing once majority of the group adopts that standard of behavior[4].

For example, government may enact a law stating that the maximum speed limit on highways must be 55 miles. Nonetheless, unless police enforces this rule and/or drivers obey this speed limit, this law remains only a declaration of government intention. To become an institution (a law that is commonly followed), speed limit must be enforced by the police and followed by drivers. Police enforces and drivers follow the limit only if it is to their interests to do so, as they have freedom in choosing their action.

This example suggests an important implication of an institution, strategic complementarity of behaviors and multiplicity of Nash equilibria. As more drivers drive at speeds more than 55 miles per hour, it will become more costly to enforce the speed limit and drivers find it easier to drive at similar speeds with other drivers, namely with more than 55 miles. Thus, if more people drive at faster speeds, each individual finds it safer and better to drive at the similar faster speeds. In short, the best response is an increasing function of the average speed of the fellow drivers, the property often described as *strategic complementarity*. Strategic complementarity often, but not necessarily always, generates multiple Nash equilibria, say, one with the maximum speed regulation being followed and the other with it being ignored. It may even generate a continuum of equilibria, say with every speed at or above 55 miles per hour. With multiplicity of equilibria as a likely consequence of strategic complementarity, diversity of economic systems may be viewed as a natural feature of human world.

Another characteristic of economic systems that is often emphasized is (*institutional*) *complementarity*[5] between two institutions. Incentives to strictly observe the maximum speed regulation may be increased if extra devices to enforce the regulation are installed, such a radar system to check the speed of individual cars and/or a automatic photographing system to take pictures of those violating. Such devices are said to (institutionally) complement the maximum speed regulation,

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[4] See Greif [1996] for a similar view about institution.

[5] Mathematically, both strategic complementarity and institutional complementarity are defined in the same way. With x being a choice variable and y being the choice of other players, and payoff being written as $u(x,y)$, x and y are said to be complementary if $\frac{\partial^2 u}{\partial x \partial y} > 0$. In our terminology, strategic complementarity exists for x if y is the average choice of the same action by others, while institutional complementarity exists if y is the average choice of a different action.

because they improve incentives to follow the regulation.

Because the stability of an institution is strengthened by other complementary institutions, a set of complementary institutions tend to constitute an economic system. It follows that similarity of institutions tend to be more pronounced within one economic system, as an institution which is either strategically complementary by itself or institutionally complementary with other existing institutions tends to dominate other institutions. On the other hand, institutional heterogeneity tends to appear more often across different economic systems than within an economic system. This is so because institutions are likely to be an outcome of historical path dependence, whether or not they are consciously designed by human beings. In order to examine such path dependence, we need to understand how economic systems would evolve over time.

3. Evolution of Institutions

We have identified institutions to be social standards of behavior which has a self-enforcing property or which is a Nash equilibrium. Having defined institutions this way, we can examine how instutitions may evolve. In fact, recent flood of literature on evolutionary game theory provides ample intuition to this problem[6]. Unfortunately, most of the lietarture is still primitive and necessarily abstract. Consequently, our discussion of evolution of institution (especially in this section) is very much abstract in nature.

One of the most influential paper in evolutionary game theory in economics litarature is probably Kandori, Mailath and Rob [1993]. They assume three characteristics in human decision makings; inertia, myopia and experiments. The premise behind their treatment is that the world surrounding human beings when they make decisions are tremendously complex while human beings are only boundedly rational. Reflecting the possibility of incorrectly understanding the surrounding world, changing of one's action may be costly (*i.e.*, existence of switching costs) and human beings tend to stick to the current action. This creates *inertia*, and only fraction of population will choose new actions. Even when people choose new behaviors, reflecting boundedly rational nature of human decision makings and complex nature of the reality, they are unable to predict future consequences of a change in their actions. Consequently, they will choose actions that look best in the current circumstances or they behave *myopically*. Finally, people choose actions

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[6] For a survey of evolutionary game theory in economics, see Kandori [1996].

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occasionally not because their actions are optimal even from myopic view, but because they want to make *experiments* on trial and error basis. This is required because people do not have a complete knowledge about their environments and they can benefit a great deal from successful experiments.

They analyzed a society with finite population where players are randomly matched every period to play a 2×2 game of common interests, where there are two strict Nash equlibria, one of which Pareto dominates the other. Assuming a adjustment process whose essense is described above, they showed the following. First, the society may be trapped in the sub-optimal equilibrium. Second, even if it is trapped in the sub-optimal equilibrium, eventually it may escape from it, because there is some probability that a sufficiently many players simultaneously make experiments to choose the same action corresponding to Pareto superior equilibrium. This observation seems to indicate two possibilities in an evolution of a Nash equilibrium, or that of an institution. First is the role of innovation, which is represented by experiments in their paper. However, at least in their model, there must be a coordinated move for the same experiment by sufficiently many agents, and it seems to be less relevant for the real life evolution. Second is the possibility of moving from a sub-optimal equilibrium to a Pareto dominating one by coordinated efforts. This seems to suggest a possible effectiveness of *coordination*, where concerted efforts of sufficiently many players to choose the action that corresponds to the Pareto efficient equilibrium brings the equilibrium of the society from sub-optimal one to grand optimal one. In fact, often governments in the name of industrial and/or development policy attempts to enforce such coordination in order to establish a desired industrial structure and/or modern sectors. Japan is no exception and we shall explain some of her coordination experiences after the World War II.

Two important remarks are called for regarding this coordination possibility to escape from a sub-optimal equilibrium. First, as Matsuyama [1966] emphasizes, for a coordination to work, coordinator such as the government must know exactly where the Pareto improving equilibrium lies or how the more efficient institutional arrangements look like. Otherwise, coordination may result in a chaos or in an even less efficient equilibrium. However, the real world is very complicated, and even as powerful a national government is likely not to be able to identify a more efficient equilibrium. It follows that, except for a special cases where an agent who is responsible in coordination happens to know exactly what the more efficient equilibrium looks like, coordination may result in a loss of social welfare.

Second, successful coordination may be achieved by coordinating and directing

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agents' expectation about the future in the right direction. This observation was provided by papers by Krugman [1991] and Matsuyama [1991]. In their framework, human decision makings are much more rational then Kandori, Mailath and Rob has assumed. That is, they expect the future development rationally, but they are constrained to revise their actions occasionally. Under such assumptions, the society may be again trapped to the sub-optimal equilibrium as its steady state if players anticipate there is not sufficient incentives to move toward more efficient equilibrium. In a similar but less ideal situation where agents anticipate the future but only imperfectly, coordinating expectations to be more optimistic may change the course of the economy to a more efficient industrial structure with more efficient organizational forms.

Regarding the possible role of experiments, more interesting analytical frameworks are provided by Ellison [1993]. They assumed that the contacts among agents within the society take place uniformly but it occurs asymetrically. In particular, they assume that the matching takes place more often between the agents who are located closely than between those who live at distant places. With such non-uniform matching, profittable innovations are more likely to be incubated within a local neighborhood and to be able to break the inertia of prevailing equilibrium. Consequently, compared with the case of uniform matching where the historical factors are the major determinants of standard of behavior, experiments become more important in local matching. This phenomenon seems to be a version of Schumpeterian hypothesis that *destructive innovation* and its *diffusion through immitation* is the main engine of the capitalistic system.

Third possibility of evolution of an institution is through an *interaction of different societires.* For example, Matsui and Okuno-Fujiwara [1995] considers a model where, in each period, agents of two countries, say home and foreign, are matched randomly to play a game that has an infinite number of equilibria.

	L	R
L	$1-\alpha, 1-\alpha$	0,0
R	0,0	α, α

Figure 1

Specifically, they considered a situation where in both countries, agents are faced with a spectrum of (component) games of common interests of the form in Figure 1, where α is uniformly distributed between 0 and 1. In each matching, a component game is randomly chosen from the uniform distribution.

	H	F
H	$1-\beta(1-n)$	$\beta(1-n)$
F	βn	$1-\beta n$

Figure 2

Because cognition cost is high, agents cannot identify the particular value of α of the

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game they are faced with. Instead, before a particular component game is assigned, they can choose a threshold value $\overline{\alpha}$ between 0 and 1, so that they can identify whether or not the assigned component game (*i.e.*, α of the game) is larger or smaller than $\overline{\alpha}$. Strategy they can choose is of the form that they choose L if $\alpha \leq \overline{\alpha}$ and R otherwise.

Note that if all players choose the same $\overline{\alpha}$, deviating from it only causes mismatch. That is, by choosing $\overline{\alpha}$ as his own threshold value, he can assure either $1-\alpha$ or α depending upon the component game's α falls less than or larger than the threshold value. If, however, he chooses a different $\overline{\alpha}'$ (say, $\overline{\alpha}' < \overline{\alpha}$), then he has to accept no peyoff due to mismatch whenever he faces a component game with its α lying between $\overline{\alpha}$ and $\overline{\alpha}'$. In short, this game has a continuum of equilibria (or a continuum of equilibrium conventions) with any value of $\overline{\alpha}$ between 0 and 1. Nonetheless, it can be easily identified that the Pareto efficient equlibrium is the one where $\overline{\alpha} = 1/2$.

In their model, however, there are two societies and matching is not uniform. Their matching technology is as described in the Figure 1.[7] That is, a home agent is randomly matched with either another home agent with probability $1-\beta(1-n)$ or with foreign agent with probability $\beta(1-n)$. n is the population size of the home society while β represents the degree of international interactions. Finally, the assumed dynamics is what is called the best response dynamics. That is, given the current strategy distribution (*i.e.*, the distribution of $\overline{\alpha}$), the best response for the threshold value is identified. All players adjust their threshold values toward the best response. Note that this dynamics satisfies the myopic adjustment and the inertia property of Kandori, *et.al.* but lacks the experiments property.

Starting with a situation where different equilibria prevailing in two societies, *e.g.*, $\overline{\alpha}_h$ in home society and $\overline{\alpha}_f$ in foreign society with $0 \leq \overline{\alpha}_h < \overline{\alpha}_f \leq 1$, they analyzed what will happen when β increases from 0 to a positive value or inter-society interaction takes place. Depending on the initial values and on the speed of the change in β, there are several different outcomes. (1) It is possible that both societies preserve their original conventions. This happens if the original conventions are far apart and the degree of international interaction is relatively small. (2) If one society, say home society, is significantly larger than the other, the convention in the foreign society may disappear by getting absorbed by the home convention. (3) Two conventions interact so that a new eclectic convention may emerge. This last possibility is important, because in a real world of complex system, an international interaction may create not only an eclectic institution but also a truly novel institution.

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[7] This matching technology was first introduce in a similar framework by Matsuyama, Kiyotaki and Matsui [1991]

In the latter half of this paper, we shall encounter many new conventions and institutions appear in modern Japan, which will be coined as an *adaptation*.

Fourth and the last possibility of evolution of institution is induced by a change in the society's physical environments. This possibility is well-known. For example, in the model of Matsui and Okuno-Fujiwara, component games to play may not be uniformly distributed on the interval [0,1]. In such a case, there are only finitely many eequlibria even if all players choose the same threshold value. For example, if α is distributed degenerately with a point mass at 0, the equilibrium convention is uniquely determined as $\overline{\alpha} = 0$. Similarly, starting with a degenerate distribution with a point mass at 1, the equilibrium convention is $\overline{\alpha} = 1$. Even if the distribution changes over time smoothly to the uniform distribution, these equilibrium conventions remain equilibria because they are also an equilibrium in games with more smooth distribution (and, in particular, with uniform distribution). It follows that two societies with different history of distributions about α will have different equilibrium conventions even if the current distribution of α (and hence all critical physical characteristics) are the same.

In view of these factors behind evolution of institutions, we can roughly think of the following four different mechanisms of evolution of institutions. First, the history of physical environments, such as climate and geography surrounding the society, and/or historical accidents, such as a war and a revolution within the society, may be crucial in determining the form of institutions and its economic system. It is a historical path dependence in a pure form, which is often called cultural and/or historical background. In the case of Japan, many of what are described as the influence of pre-Meiji Japan on the contemporary institutions may be interpreted this way. Although we could not elaborate fully in later sections due to space limitations, there are abundant examples in Japanese economic history in the Meiji period where a new production technology and a novel institutional arrangement had been developed based upon indeginous technologies and institutions of Tokugawa Japan.

Second, decentralized experiments and immitation *a la* Shumpeter is probably the strongest driving force in capitalistic economies. Individual agents as well as individual firms engage in independent experiments simultaneously. Though, most of these experiments are doomed to fail, an innovative form of organization and institution may emerge from this process. Resulting rents attract imitations and the idea will diffuse to the society. Incentives for innovations and immitations are probably strongest when the society is in relative chaos and when there is strong competitive pressure. Chaotic environments allow more drastic experiments and

competitive pressures force people to resort for trial and error. It is not surprising then that the restructuring period immediately following the defeat of WWII in Japan saw so many innovative entreprenuers, such as Konosuke Matsushita of Panasonic, Soichiro Honda of Honda, Masaru Ibuka and Akio Morita of Sony, etc. They not only founded new corporations and managed innovatively, but also created new institutional arrangements such as the well-known multi-divisional corporate structure and the Keiretsu distributor system of Panasonic.

Third, interactions with another society often produce new type of institutions and new form of organizations by adopting the foreign institutions and by making further adaptations. This mechanism is especially important because, as a hybrid of wild genes produce new specie which is drastically more novel than hybrids made of already adapted genes, pure form of innovations and imitations described in the previous paragraph is often not sufficient to identify truly innovative institutions in a short run. Again, this mechanisms of produced many new institutions in Japan, especially in the late 19th century when the country came out of self-proclaimed closure from the rest of the world and in the post war era. Section 6 will give a short account of late 19th century Japan when it successfully adopted various institutions, such as legal system, corporate system and banking and capital market system, from the West. Section 9 provides brief history of the post-war Japan when, for example, the country imported the quality control system from US and, then, successfully modified it to a critical resource for the products' international competitiveness.

Fourth, coordinated experiments and adaptations may be tried intentionally. Government, for example, may try to artificially create a new economic system. This may be considered an experiment coordinating the entire society or its major part. Being such, this type of experiment can be done only once at a time. Unless there is a well-established precedence to follow, it is likely to fail because finding a consistent new system in a complex world is difficult, if not impossible. On the other hand, being coordinated and involving a large population, it can overcome a large payoff discrepancy between the old and the new system, and a big discontinuous change in the economic system is possible by this mechanism. In the case of Japan, the new economic system artificially created for the war effort around 1940 is considered as a typical example of this mechanism. We should also emphasize that, as we shall elaborate in section 8, this government desruption for wartime economy places the Japanese economic system on a different path from what it would have been otherwise.

4. Enforcement by Trust

In the next two sections, we turn our focus to two typical forms of enforcing cooperation, enforcement by trust and by state authority, as well as to another possible form of mixture of the two.[8]

By enforcement by trust, we mean those enforcement mechanisms that are realized in a self-enforcing manner without relying upon an artificial enforcing mechanism. A typical example of such a mechanism is a self-enforcing agreement in a two-person repeated game framework. That is, a game is played between two person, say A and B, repeated infinitely. An agreement, *e.g.*, always playing

R\C	T	N	P
T	2,2	-1,3	-M,0
N	3,-1	0,0	-M,0
P	0,-M	0,-M	-z,-z

Figure 3

a certain action, is enforced because, if one player (player A) deviates from such an action, player B punishes A by choosing an appropriate action in the next few (possibly an infinite number of) periods. If this punishment is sufficiently large to deter A's deviation, the agreement is said to be self-enforcing.[9] This mechanism may be generalized for a broader class of agreement, a typical example is the community norm to be explained below. A necessary condition for this mechanism to work efficiently, as elaborated below, is that the agreement such as a community norm is enforced 1) among relatively few fixed members of a closed group so that any deviation from the norm should be communicated to the members, but 2) group members are sufficiently many so that sanctions are effective and the cost for sanctions can be shared among the members.

On the other hand, enforcement by state authority is those enforcement mechanisms that rely upon an artificial state enforcement system such as law-making, police system to find deviators and court system to implement sanctions. Enforcement by organizational authority is a similar system where an artificial organizational system, such as corporate rules, substitutes for the state system. By the mixture of trust system and state authority system, we mean an economic system where a part of the system is enforced by trust while the rest is enforced by state authority. We now

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[8] Partly because of space limitations, we shall not discuss third typical form of enforcement, i.e., enforcement by organizational authority.

[9] One might want B's punishment to be self-enforcing as well. In that case, an agreement should have the penalty clause for the case when B fails to exercise the punishment by calling for A to penalize B by taking some appropriate action. In fact, an agreement should be an assignment of actions for each contingency, *e.g.*, when A failed to penalize B who failed to penalize A's first deviation, etc. If the assignment of actions for each contingency is self-enforcing, the agreement is said to be Perfect Nash equilibrium and satisfies a stronger concept of self-enforcing property.

explain the system of enforcement by trust with a community norm as an example.

Until the pre-modern times, many societies based their economic activities upon trust among community members. Take, for example, an economic interaction such as an exchange of products or a productive cooperation. These interactions often require some kind of enforceable agreement, because players may have an incentive not to keep the promise as agreements often take the form of advance payments with the promise to deliver the good later. In pre-modern communities, community norms are chiefly responsible in providing such incentives. In this section, we shall briefly explain such a community enforcement mechanism from game theoretic viewpoint.[10]

Figure 3 depicts a typical example of economic interactions.[11] If two players trust each other and play T, then both will receive the payoff of 2. If one player (say, the row player R) does not honor the trust and betrays the

| Same Community | $1 - \beta(1-n)$ |
| Other Community | $\beta(1-n)$ |

Figure 4

other (the column player, C) by playing N, then R will receive 3 while C will receive -1. If both players betray each other (or do not cooperate), then they will receive 0 each. So far, the game is a familiar Prisoner's dilemma. The game has one more possible action, *i.e.*, to sanction the opponent (an action P). This action may be interpreted to penalize the opponent within the community, such as ostracism, or to persecute the opponent from the group (or community) forcing the opponent's payoff to be at most $-z$, the payoff level attainable outside the group. In the latter case, $-z$ is called an *outside option*. We assume that $-M \leq -z \leq 0$ so that P is the minimax (maxmin) action. Moreover, when $-z = 0$, the game becomes a prisoner's dilemma with two Nash equilibria, (N,N) and (P,P).

To simplify the exposition, consider a society consisting of a continuum of players of the size 1, which is divided into a finite number of communities of equal size, n. In each period, $t = 0,1,...,$ a player of a each community is randomly matched with another player (either of the same community or of different communities) to play the game of Figure 3. Figure 4 depicts the assumed probability of the matching for a player. Here as in Figure 2, n represents the relative size of an individual community to which the player belongs, while β represents the relative frequency of the contact with other communities.

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[10] The following exposition is based upon Okuno-Fujiwara and Postlewaite [1995] and Bendor and Mookherjee [1990] among others. See also Kandori [1992].

[11] This example is chosen to make the game symmetric, but asymmetric trade opportunities can be analyzed similarly.

We suppose that, within each individual community, a certain community norm exists which can be enforced only if it is self-enforcing. Needless to say, sustaining trust by norm requires not only appropriate sanction to be employed to punish all deviations, but also to identify whether or not the current opponent is a deviant. Because both the entire society and each community consists of many players, identifying deviants may require a large amount of information transmission. For example, punishing a deviant usually calls for an action, say N, that is considered to be the sign of distrust against non-deviants. In that case, if a player A used such an action against an opponent B, we must check whether B is a deviant or not in order to check whether A is following the norm. To do so requires the examining entire history of B as well as the histories of all the past histories of B's previous opponents. Such informational problems are considerably eased by pooling information within a community and assigning a summary statistics, to be called *community status* or *reputation*, to each member of the society.

In order to keep track of and disseminate such information, we assume the community consumes cost $c(n) > 0$ per each community member per period, which is born (as a due) by the community population equally. We assume that $c'(n) > 0$ and $c''(n) > 0$ or information cost is an increasing and convex function of the community size. This assumption reflects the fact that, as a community becomes larger in terms of population (and hence geographically larger), collecting and disseminating information becomes increaslingly more costly per capita. There are many factors behind it, but one of the main reasons is that it becomes more costly to inform a single piece of information throughout the community and errors occur more likely during the information exchange as the community size grows.[12]

We now analyze an equilibrium community norm by introducing summary statistics called a player's community *status* in order to implement a simple penal code *a la* Abreu [1988], which we shall coin a *community norm*. For simplicity, we assume there are only two statuses, G (for good) and B (for bad). A norm consists of two mappings, a social standard of behavior, σ, and a social transition mapping, τ. σ associates an action $\sigma(x_i, x_j)$ that ought to be chosen according to the norm, which depends upon the player's own status, x_i, and the opponent's status, x_j. We assume that a player's new status $\tau(x_i, x_j, a)$ depends upon his original status, x_i, the opponent's status, x_j, and the action he chose at the match, a. At each time, there is a status distribution, p, which describes the proportion of population who has different

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[12] Alternatively, this assumption may be interepreted as the fact that, as the community size grows, the effectiveness of the community norm deteriorates.

statuses. For example, the proportion of G status is denoted by p(G). We shall call a pair (σ, τ) a *norm*, and it is called stationary at p if it generates a constant status distribution, p, if it starts from p. (σ, τ, p) is a *norm equilibrium* if it is stationary at p and σ is a best response against (σ, τ).

In this section, we shall consider two norms depicted in Figures 5 and 6, and in Figures 7 and 8. For example, Figure 5 shows what player i should play when he is matched with another player of the same community according to the first norm. That is, according to this norm, G players should choose an action T against a G status player and play P against a B status player, while B players should choose P against a G status player and play N against another fellow B status players. Figure 6 shows the status of player i in the next period when he is matched with another player of the same community, depending upon his current status, his current action and the

x_j\\x_i	G	B
G	T	P
B	P	N

Figure 5

\ x_i	G	G	G	B	B	B
x_j\\a	T	N	P	T	N	P
G	G	B	B	B	B	B
B	B	G	G	B	B	B

Figure 6

opponent's current status. Figure 6 says that, only when G players play according to the norm, his status will be G in the next period, while his status next period will be B if he deviates from the norm. B players will have B status regardless of the match and his action. This norm represents the familiar trigger strategy.

There are two alternative interpretations for the norm of Figures 5 and 6. One interpretation is a norm familiar in Japan, or Mura-hachibu. This community culture is such that whenever a member of the community acted against the norm, this deviant is allowed to stay within the community but will be treated unfriendly by his fellow community members forever. This will be refered to as the *inside* punishment. Another interpretation of this norm is the well-known ostracism in the Roman period. Any deviant will be expelled from the community by the vote using ostracon, and he will have to remain outside of any community for the rest of his life. This latter interpretaion may be called punishment by *expulsion*.

Suppose the status distribution p^* prevails where $p^*(G) = 1$. It can be easily checked that the norm of Figures 5 and 6 are stationary at p^*. Suppose further that all players within a community observes the norm whenever they are matched with other players of the same community, while they play one-shot Nash equilibrium, i.e., to play N, whenever matched with players of other communities. In such a situation,

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community players anticipate the following (life-time) payoff when discount factor is δ $(0 < \delta < 1)$.

$$v(G) = \tfrac{1}{(1-\delta)}\big[1 - \beta(1 - n)\big]\big(2 - c(n)\big)$$
$$v(B) = \tfrac{1}{(1-\delta)}\big[1 - \beta(1 - n)\big]\big(-c(n)\big)$$

It follows that, if all members of the community are expected to follow the norm with the status distribution p^*, choosing T when a G status player is matched with another G status players is self-enforcing if and only if

$$1 \le \delta\big(v(G) - v(B)\big), \text{ or}$$
$$1 - \delta \le 2\delta\big[1 - \beta(1 - n)\big]. \tag{1}{}^{13}$$

Note, however, this norm is *not* a (sub-game) perfect Nash equilibrium even with the condition (1). This is so because once a positive measure of the community population deviated, following σ may be no longer optimal. Since the status B is an absorbing state, proportion of B status people in the society will never decrease (except when we assume the community population changes by birth and death) and this norm, though an equilibrium, may be *not* evolutionary stable.

There are other norms, however, that are evolutionary stable. Consider, for example, the norm defined by Figures 7 and 8. This norm says that if a player deviates and is labeled as B, then the community player with whom he will be matched next will punish him by playing P. If he accepts it, then he will immedeately restore the G status.

x_j\\x_i	G	B
G	T	P
B	P	N or P

Figure 7

Similarly, a community player who is matched with a B player will be asked to play P. If he obeys the norm he can maintain a G status, but will lose it otherwise. Assume again the status distribution, p^*, *i.e.*, the entire population has G statuses. Then the values for having G and B statuses are respectively;

x_i	G	G	G	B	B	B
x_j \\ a	T	N	P	T	N	P
G	G	B	B	B	B	G
B	B	B	G	B	B	B

Figure 8

$$v(G) = \tfrac{1}{1-\delta}\big[1 - \beta(1 - n)\big]\big(2 - c(n)\big)$$
$$v(B) = \tfrac{1}{1-\delta\beta(1-n)}\big[1 - \beta(1 - n)\big]\big\{-z - c(n) + \delta v(G)\big\} \tag{2}$$

This norm together with the status distribution p^* constitutes a norm equilibrium if

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[13] We need similar constraints for G players matched with B player, for B players matched with G or B players as well. However, the social standard of behavior prescribes the best response for these matchings and their incentive constraints are not binding.

and only if;
$$1 \leq \delta\big(v(G)-v(B)\big) = \tfrac{1}{1-\delta\beta(1-n)}\big(1-\beta(1-n)\big)(2+z) \text{ or}$$

$$n \geq 1 - \frac{1+z}{\beta(2+z-\delta)} \equiv \hat{n}(\beta,\delta,z) \tag{3}$$

If (3) is satisfied with strict inequality, the norm described in Figures 7 and 8 is *evolutionary stable* in a certain sense, as B players will disappear in the next period as long as they act according to the norm. Unless a sizable proportion of (positive masure of, to be precise) population simultaneously deviates the population and becomes B status players, the norm remains to be an equilibrium.[14]

What factors affect the performance of a community norm? In the rest of this section, we examine this problem using the norm of Figures 7 and 8. Suppose $n \geq \dfrac{1+z}{2+z-\delta}$ and (2) is automatically satisfied and suppose the norm described by Figures 7 and 8 prevails. Then members of each community will receive $v(G)$ described in (2) on the equilibrium path, as long as (3) is satisfied.

If $\beta = 0$ and interactions between communities do not exist, $v(G) = \tfrac{1}{1-\delta}\big(2 - c(n)\big)$ and it is monotonically decreasing in n. This reflects the fact that, in order to sustain cooperation within the community, information processing cost must be borne by the members uniformly. Since the gain from cooperation is invariant over the changes in community size, the value must diminish as the community size grows.

When $\beta > 0$ and ineteractions between communities exist, the outcome is more complicated. Figure 9 depicts the graph of $v(G)$ in terms of n when the condition;

$$c'(n) < \frac{\beta(2-c(n))}{1-\beta(1-n)} \tag{4}$$

is satisfied so that the graph is upward sloping at $n = 0$. Typically, $v(G)$ is bell-shaped with its maximum attained at n^* where;

$$c'(n^*) = \frac{\beta(2-c(n^*))}{1-\beta(1-n^*)}.$$

There are two effects acting in the opposite direction. On the one hand, information cost makes $v(G)$ diminish as the community size grows. On the other hand, as the community size grows, there is a higher probability that an agent will be matched with another agent in the same community, enabling him to capture the benefit of trust. (4) says that normally the second effect dominates the first effect if n is sufficiently

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[14] Here we are abusing the notion of the evolutionary stable strategy because the concept is defined only for games without social status. Also, if the society's population is large but finite, a norm that is a Nash equilibrium may not be evolutionary stable even if the best response is unique. See Okuno-Fujiwara and Postlewaite [1996] for the detail.

small, while the first effect dominates the second if n exceeds n^*.

When β increases, as depicted in Figure 9, the value $v(G)$ decreases (if it is positive) because there is higher probability that the community members are matched with outsiders, diminishing the frequency of the possibility of cooperative actions.

A change of z and δ also affects an incentive constraint (3). An increase in z strengthens the norm, because it increases the penalty for deviation. When δ increases, people get more concerned with the future, and community norm becomes more effective.

Before concluding this chapter, several remarks are in order. First and foremost, even if (3) is satisfied, there are other norms that are also equilibria. For example, suppose the social standard of Figures 5 and 6 is changed so that playing N is suggested regardless of the pair of statuses. This norm with any status distribution is clearly a norm equilibrium, as it will constitute a sequence of one-shot Nash equilibria or a grim strategy equilibrium of the prisoner's dilemma. In general, Folk theorem holds true for norm equilibrium as well, and community norm can generate multiple equilibria. Which of these equilibria is realized depends upon those factors we have discussed in the previous section.

Second, the norms we described in Figures 5 and 6 or in Figures 7 and 8 are not necessarily the best norm in terms of Pareto efficiency. These norms give rise to a life-time payoff described by $v(G)$. But in general, there is a different norm that supports higher equilibrium payoff for those δ when incentive constraints (1) and (3) are not satisfied. In addition, other norms, such as punishing a deviator by P for more than once but for finitely many times may sustain higher value.[15] In the reality, the most efficient norm is likely to be chosen (among relatively simple norms reflecting bounded rationality) by competition among communities. We shall, however, focus on the norm described in Figures 7 and 8 (and a similar norm to be discussed below) because qualitative difference among various norms are not essential in the discussion to follow (except when we shall discuss about the mixture of the two enforcement systems).

Third, there is a question of what factor determines the size of each community, n. Again, there is no obvious mechanism for its determination. In what follows, we simply assume that the size is determined where the payoffs for the community is maximized. That is, community agents may move out of the community if they find it to their self interest. On the other hand, there is an entry barrier to become a

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[15] See Okuno-Fujiwara and Postlewaite [1996] for the detail.

community member, and outsiders may be allowed to become a member only if doing so will increase the average payoff of the existing members.

Fourth, we effectively assumed that, when two players of different communities are matched, they will not trust each other. One should not interpret this as there is no productive economic interactions between communities. An appropriate interpretation is that such interactions are carried out by specialists such as long-distance traders, who would extract any surplus that can be generated with these interactions. Payoffs of community members would then be held at minimum level. Needless to say, this interpretation does not imply that incentive schemes of long-distance traders are uninteresting. In fact, these incentive problems have been the major focus of recent developments in the Historical Institutional Analysis pioneered by Greif.[16]

5. Enforcement by State Authority and the Mixed System

By state authority, we mean a legal system implemented by the state to enforce written contracts. Like speed limit regulations, this method of enforcement requires (a) enacting and announcing a universal (national or regional) rule by the government, (b) monitoring and identifying violators by police and other enforcing authorities, (c) verifying violations through court process, and (d) imposing sanctions by imprisonment and by imposing a penalty, etc. In order to implement this mechanism, usually a large amount of public expenditure is necessary, ranging from direct expenditures such as election and legislative activities, maintaining effective administrative activities (police and other regulatory bodies) and judicial systems, to indirect expenditures such as providing transportation and communication networks, and above all for public education system that elucidate people about legal systems.

There are several merits of such a system; (1) Economic transactions being not restricted within regional communities, benefits from specialization to these activities and from standardization of the rules can be achieved and accrued by people in the sector protected by the state authority, the sector we shall call as the *modern* sector. (2) As the modern sector expands in its size, arbitration across regional value differences as well as industrial value differences can be exhausted within the modern sector, rather than exploited by the long-distance traders and accumulated by them as rents. (3) Scale economies due to Marshallian externalities and other reasons may occur by economic integration.[17] It follows that the payoff accruable by cooperative

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[16] For the detail, see for example Greif [1992] and Greif [1996].
[17] For the last possibility, see for example Okuno-Fujiwara [1988] and Rodriguez-Clare

trading within the modern sector is a increasing function of the size of the modern sector (at least when it is not too large).

In addition, in order to implement this enforcement mechanism, a fixed expenditure of F is necessary in order to create and maintain state authority, as described in the starting paragraph of this section. A part of this expenditure may be financed by uniform taxation on the entire population and/or by governmental borrowing from abroad. A part of this expenditure, $t \in (0,1)$, however, is financed by imposing a tax or user charges born by the modern sector. We shall therefore assume that, if the population of the modern sector is m of the entire society, each member of this sector will be levied a tax amounting to tF/m. Needless to say, (the absolute value of) this tax is a decreasing function of the size of the modern sector, m.

As for the enforcement, we simply assume that all members of the modern society will be completely protected from breach of written contracts by the state authority. Of course, this assumption is made for the sake of expository simplicity, and should no way reflect the reality. In our set up, this assumption should be interpreted as follows. When members of the modern society are matched together, they can write a binding contract that will be perfectly protected by the state, at the cost of levied tax. It follows that they will always write a contract enforcing the action pair, (T,T).

Reflecting the payoff change as well as the tax burden described in the previous paragraphs, we assume the payoffs when two members of the modern sector are matched to be as described in Figure 9. When they both choose the action T, they will be able to realize the net payoff of $b(m)$,

R\C	T	N	P
T	b(m),b(m)	-1,3	-M,0
N	3,-1	0,0	-M,0
P	0,-M	0,-M	-z,-z

Figure 9

with the property $b(m) < tF/m$ for sufficiently small m and $b'(m) > 0$ for all m. That is, they must bear the extra tax burden of tF/m compared with those in other sectors. (We are only interested in relative payoff differences and will ignore other tax burdens.) Moreover, their net payoff is an increasing function of the size of the modern sector, reflecting both its productivity increases and a fall in their relative tax burdens.

Maintaining the matching technology described in Figure 4, probability for a member of the modern sector to be matched with another member is $1 - \beta(1-m)$. Suppose that (one-shot) Nash is the only possible outcome when a member of the modern sector and a member of the traditional sector (a community member) are matched. Then,

(lifetime) payoff of a modern sector agent which is attainable by the state authority enforcement crucially depends upon the size of the modern sector. This payoff is obtained straightforwardly as;

$$v'''(m) = b(m)\big(1 - \beta(1 - m)\big).$$

Figure 10 depicts the payoff relationship between two enforcement mechanisms, which is depicted as an increasing function of m. Clearly, unless m becomes sufficiently large, payoff of the modern sector, $v'''(m)$, is non-positive and the traditional sector will provide a larger payoff. Hence, if the modern sector is small, there would be no incentive for agents in the traditional sector to exit from their communities. It follows that modernization would not take place unless some forces, which have not been considered explicitly, work to change the course of the economy. Below, we consider the possibilities of (1) pure form of coordination and (2) government intervention to provide additional incentives to the modern sector.

If the world is without any friction and some explicit coordination device such as the government's deliberate councils exists, people may move from the traditional sector to the modern sector even in this situation. This is so because if sufficiently many people, say the proportion more than m^*, simultaneously move from the traditional sector to the modern sector, the payoff of the latter jumps to the level which exceeds that of the former. As long as people believe in the deliberate council's conclusion, they may then spontaneously move to the modern sector. Put differently, government may change the course of the economy (and hence future evolution of economic systems) by affecting future expectations of the society.

In the reality, however, human decision makings are characterized by inertia because they are myopic and influenced by decisions made in the past. Moreover, governments will not have knowledge about the correct future course of the society.

If the state government promotes the modern sector by providing subsidies or organizing this sector by itself, this sector may grow and become self-sustainable, at least in the model discussed in this and the previous sections. This property of the model, however, seems to be consistent with recent experiences of the problems that many developing countries face, except for some earliest experiences of Western Europe. In section 5, we shall discuss some of the examples that Meiji Japan used in order to promote the modern sector.

Assuming the agents move between two sectors freely, except for an unstable equilibrium where two sectors have exactly the same payoffs, only one sector can be sustained. That is, there are two stable equilibria, one with the entire society gets transformed into the modern sector and the other with the traditional sector prohibits

any modern sector to emerge in the economy. The first may be interpreted as a successful industrialization while the second as those economies that are still struggling to take off from pre-industrialized state.

There may be another equilibrium, however, if we consider a little bit different dynamics with a different community norm.[18] Suppose communities entertain the norm of the Figures 5 and 6, with punishment provided by the expulsion from the community. Different from the corresponding norm in the previous section, when there is a modern sector, an expulsion implies that those expelled from the community can go to the modern sector and enjoys the payoff of $v'''(m)$. It follows that the payoff of communities are now:

$$v(G) = \frac{1}{1-\delta}\left[1 - \beta(1-n)\right](2 - c(n))$$
$$v(B) = \frac{v'''(m)}{1-\delta}$$

If all members of the community followed the norm, this norm with the status distribution p^* would be a norm equilibrium if and only if

$$1 \leq \delta(v(G) - v(B)), \text{ or}$$
$$v'''(m) + \tfrac{1}{\delta} \leq v(G) \equiv \tfrac{1}{1-\delta}\left[1 - \beta(1-n)\right](2 - c(n)). \tag{5}$$

Equation (5) has the following implications. If the community size n and the parameter of interaction with outside community β is given, this community norm is sustainable only if the size of the market sector m is sufficiently small. This is straightforward because, as m increases and the payoff of the market sector improves, the power of sanction to expel from the community deteriorates. If, however, the community can control the frequency of interaction with outsiders, β, it can make the constraint (5) less binding and achieve cooperation easily.

Would such a mixture of enforcement mechanisms evolutionary (dynamically) stable? It crucially depends upon the possibility of how easily a group in the modern sector can create a new community to enforce the norm in question. Suppose, it takes g per capita to create and enforce the community norm. Then, given β, if and only if:

$$g \leq \delta(v(G) - v(B)) \equiv \delta v(G) - v'''(m), \tag{6}$$

there is an incentive for immigration from the modern sector to the community sector. Let $\hat{m}$ be the level of m such that (6) is satisfied with equality. If, in addition, (5) is satisfied at $\hat{m}$, there is no incentive to move from the community sector to the modern sector. It follows that the modern sector of the size $\hat{m}$ is evolutionary stable.

Readers may find the above hybrid system, where modern and traditional sectors

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[18] A similar equilibrium is analyzed in Okuno-Fujiwara [1989].

co-exist, strange because there is no corresponding system in the reality. However, if we interpret communities in this system as contemporary Japanese large firms, above system seems to roughly approximate the Japanese economic system.

More precisely, many Japanese large firms provide long stable employment relationship for their core workers, or so-called life-time employment. Usually only new university graduates will be newly employed. They will be promoted simultaneously so that the same cohort will have similar ranks until the mandatory retirement age. Salaries are functions of mainly their rank and tenure and there is a large separation payment. Consequently, a large hostage in the form of forced saving provides an incentive to stay within the firm.

It follows that the core workers of the large corporations work with the fixed members of colleagues for their lifetime. Moreover, workers are encouraged to share information within the firm in order to promote cooperation (thereby promoting cooperation in corporate activities). The resulting structure of Japanese large corporations satisfy all the required properties to enforce community norms. In fact, many researchers of Japanese corporations believe that the strengths (and weaknesses) of these corporations, if any, lie in the fact that corporate norm enforces cooperation there.

Moreover, these firms often try to form a group of firms within which a significant part of economic transactions are complete, *i.e.*, the *Keiretsu* system on the one hand, and use the industry associations to create various forms of entry barriers, with the help of governmental regulations on the other. These actions can be interpreted as reducing the probability of interactions with outsiders or β. In addition, the so-called dual structure of the economy, significant difference in pay levels, corporate fringe benefits, etc. between the employees of large corporations and small and medium size corporations have been a pertinent issue in Japanese economic policy.

If the hybrid system we described above approximate contemporary Japanese economic system, how then has been evolved? After all, community norm in the traditional agricultural sector and the corporate norm of modern Japanese society are quite different, though similar in its economic function. This seems to be an interesting issue because some economies like Anglo-Saxon economies seem to have developed into the system dominated by the enforcement by state authority. Emergence of such system, therefore, seems to require some sort of abrupt interference in the normal evolutionary process. What historical events has made Japan to choose a different historical path?

We believe that a historical accident during the wartime played an important factor

in creating such a hybrid system, though the system artificially imposed by the government has gone through a complete transconfiguration partly by democratic reform imposed by the US occupation force and partly by various spontaneous adaptations adopted by corporations. In sections 7 and 8 of this paper, we shall try to provide a brief historical account explaining critical historical factors that played a crucial roles in this metamorphosis. To give a clue for the readers at this stage, we believe the following factors contributed to the evolution of the post-war Japanese economic system, which is drastically different from the pre-war economic system that is much closer to the Anglo-Saxon type economic system.

The wartime economic control fixed the employment to each corporation throughout the war, contributing to a fixed membership who found their main economic resources in their firm specific skills accumulated in the corporations. It also created various institutional arrangements that would evolve into post-war inter-corporate relationship, like Main bank system and Keiretsu system in one hand and industry associations on the other. With the help of reform by the occupational force, such as the Zaibatsu dissolution, and the government policy during the reconstruction period, a corporate norm unique in the contemporary Japan has been created that cherishes employees interests far more than stockholders interests.

6. Evolution of Japanese Economic System

(1)Introduction of Western Institutions

Transition to an Open Economy and Establishment of the Centralized Government

Since Tokugawa Shogunite (Bakufu) leigislated the Closing Country Act (Sakoku Rei) in 1639, interaction between Japan and foreign countries especially western countries was substantially limited. The Japanese economy, which was almost isolated more than 200 years since then was transformed to an open economy compulsorily by the fleet of the United States which came to Japan in 1853.

Large pressure form the western countries urged the political unification of Japan. The political regime in Tokugawa era was called Bakuhan (Shogunite-feudal clans) regime. Bakuhan regime was relatively concentrated as a pre-modern political regime, but the feudal clans (han) were allowed broad autonomy. The new Meiji government, which deprived power of the Shogunite in 1868, made great effort to build up a centralized political regime in order to oppose the foreign pressure. Abolishing feudal clans and setting up prefectures as units of administration (Haihan Chiken) in 1871 was an epoch of transformation from a pre-modern decentralized regime to a modern centralized regime. In 1876 the government abolished feudal allowance in

exchange for the government bonds (Chitsurku Shobun), which means completion of the centralization.

Comprehensive Research on the Western Institutions

The new government vigorously researched western institutions as well as technology, because introduction of western institutions was thought to be a precondition of industrialization, and institutional harmonization was necessary to raise the diplomatic position of Japan. The large interest of the government in institutions reflected in the fact that the Agency of Institution (Seido Ryo) was set up as early as January 1868.

In 1871 the government dispatched a large delegation including the most powerful persons in the government, including Tomomi Iwakura and Toshimichi Okubo. One of the main purposes of the delegation was to investigate the western institutions and things. The report of the delegation (*Beiou Kairan Jikki*) was as large as 100 volumes(Tanaka and Takada[1993]). After the delegation came back in 1873, the government started rapid introduction of western institutions, rejecting the outward expansion policy which had been drafted while the delegation was abroad (Shinbo[1995], pp.44-45).

Establishment of Property Right

Since the seminal work of North and Thomas[1973], it was widely accepted by the economic historians that property right is a basic institutional condition of market-based economic development. Although *de facto* property right was in the process of formation during Tokugawa era, it was not until 1870's that property right was legally protected. Property right was established as to the land in the first place. The government identified owners of the land, issued certificates (Chiken), set land prices based on earnings, and imposed land tax (3% of the land price) (Miyamoto[1996], p.8). Property right in general was established by the Civil Law in 1898.

System of Money and Banking

Financial system, which plays the roles of settlement and financial intermediation is also basic infrastructure of a market economy. The government made much of settlement function of the financial system in the first place. In 1873, the National Bank Act (Kokuritsu Ginko Jorei) was legislated referring to American System, which aimed to establish a convertible money system. Each national bank issued bank notes convertible to precious metals. But this trial was not successful, and during 1870's a lot of non-convertible notes were issued to cause rapid inflation.

In early 1880's Minister of Finance, Masayoshi Matsukata achieved balance of fiscal budget thorough radical curtail of expenses and increase of taxes, which brought

about deflation and balance of international payments. Based on this condition, the Bank of Japan was set up as the central bank, which started to issue bank notes convertible to silver in 1885. The silver standard regime played the role of stopping rapid inflation and promoting export under the condition that value of silver was continuously fell relative to gold. On the other hand, it caused mild inflation and was a impediment to import capital from the western counties which had established gold standard. To cope with this problem, gold standard was introduced in 1897 based on large amount of Shino-Japanese War reparations (Miyamoto[1996], pp.24-25). Consequently, non-convertible notes of the national banks and the government were prohibited to be used in 1899, and the Japanese currency was unified to Notes of Bank of Japan (BOJ[1986], p.494).

Capital Market

The capital market also began to be formed in 1870's. In 1878 Stock Exchange Act (Kabushiki Torihikijo Jorei) was legislated, and according to it the stock exchanges were established in Tokyo and Osaka. However, in spite of the names, main objects to be traded were the government bonds at first. In 1880'the stocks of railway companies came to be traded actively at the stock exchanges. Railways were constructed by the government in the first place, but the success of the public railways stimulated private railway companies. In 1881 Nihon Railway Co. was established as the first private railway company. In order to raise large amount of funds necessary for railway construction, they chose joint stock company system as a form of Nihon Railway Co.. After that, many private railway joint stock companies were established and contributed to complete a network of the trunk lines (Miyamoto[1996], p.21). This railway boom stimulated evolution of the capital market as a stock market, and conversely existence of capital market based on the government bonds supported development of railway companies. Following the stocks of railway companies the stocks of shipping companies, textile companies etc. were listed on the Stock Exchanges.

An institution supporting development of the capital market was bank loans on the securities of stocks. Before WWII, 20-40% of the bank loans were on the securities of stocks. This means that substantial amount of funds was supplied from the banks to investors by these loans. For the banks, development of the capital market played the role of providing securities with liquidity. Furthermore, the Bank of Japan began to discount bills with securities of stocks, which supported both the capital market and the banking system.

Corporate System

The government started to make effort to introduce the modern western corporate system in early 1870's. The National Bank Act of 1873, mentioned above played the role of introducing the modern corporate system, which prescribed a limited responsibility system, stockholders' general meeting, board of directors, as necessary conditions to establish a national bank. Nevertheless, in 1870's the modern joint-stock companies were not so diffused. Many of the companies settled this period had the articles declaring their continuation periods of 3-5 years, and restricted transferring stocks. This means they regarded the companies as temporary human connections (Miyamoto[1996], pp.363-364). In 1880's a lot of large modern joint-stock companies were established in the industries of railways, shipping, textiles etc., and by the end of this decade joint-stock companies had the majorities of companies (Abe[1995], pp.94-95).

Legal framework of the corporate system was consolidated following the development of companies. The Commercial Law, the draft of which was written by a German legal advisor, was promulgated in 1890, and some parts of it including the Corporate Law, Bill Law and Bankruptcy Law were enacted in 1894. In 1899 the new Commercial Law was enacted, which abolished license system of establishing companies and made clear the freedom of transferability of stocks (Miyamoto[1990], p.373).

The core of shareholders of the early large companies were ex-peers, ex-samurais, and large merchants since Tokugawa Era. In many cases they became presidents and directors of the companies of which they were large shareholders. Apparently it suggests that ownership and management was well integrated. However, many large companies had posts of manager (shihainin) and chief engineer (gishicho), which were occupied by salaried experts (Yui[1977]). It is probable that the role of the presidents and directors was monitoring, not management, and that ownership and control of the large companies were fairly separated even at the early stage. Many large companies introduced the post of managing director, which was occupied by salaried experts at the beginning of 20th century(Yui[1977]). This made separation of ownership and management clearer.

Employment System

As Gershenkron stressed, at the early stage of industrialization laborers who could work together under a discipline, were scarce resources (Shinbo[1995], p.141). The cotton spinning industry, which was a leading industry in prewar Japan and major part of whose workers were young females, introduced a dormitory system in 1890's. The dormitory system played the role of accustoming undisciplined female workers to a

discipline as well as the role of the condition for recruiting workers from distant regions. It means that private companies trained laborers to make capability to work under discipline, which had universality. In those days, most of the employment contracts contained an article to restrict turnover for the employee's reason for 3-5 years, and the trade association of the cotton spinning industry agreed self-control of pulling out workers of other companies. These measure can be interpreted as those for the private companies to make universal training which had externality.

On the other hand, male workers in heavy industries were managed by the inside contract system. Although the employment contracts were made between the company and the workers, recruiting, training, management of ordinary life and workshop management were entrusted to the foremen (oyakata) (Abe[1995], pp.121-122). This inside contract system was interpreted as a system incorporating a traditional work organization of the craftsmen to the modern companies. It played the role of exempting the companies from the task of disciplining and training workers.

(2)Economic Development and Adaptive Evolution of the Institutions
Financial Crisis and Enactment of the Bank Law

Those institutions introduced in late 19th century provided the base for industrialization of the Japanese economy. Manufacturing industries grew steadily since 1880's, and among them heavy industries began to grow around 1900. Development of the heavy industries was accelerated during WWI, when international prices of the products of the heavy industries rose rapidly. Development of the heavy industries brought about large demand for long-term funds. A part of the companies in the heavy industries raised long-term funds form banks not from the capital market, which was an ordinary practice before that. Many of these bank-oriented companies depended heavily on certain small number of banks, and a part of the banks in turn concentrated large part of their loans to certain small number of companies. This relationship between bank and company is called "organ bank"(kikan ginko) relationship. "Organ bank" relationship increased risk for the banks and companies to bankrupt simultaneously (Teranishi[1989], p.193). Worse still, low profitability of the tradable goods industries due to the overvaluation of the yen and destruction of real assets due to the large earthquake in 1923 propagated instability of the financial system.

Instability of the financial system revealed as a financial crisis in 1927. Because of serious bank run, many banks could not help suspending business, the deposit of which amounted to 8.7% of the total deposit in Japan. The financial crisis was so

serious that the government should enact 21 days moratorium.

Moral hazard because of "organ bank" relationship was a basic reason of the financial crisis. Although the Bank Act (Ginko Jorei) legislated in 19th century prescribed license system of banks and monitoring be Ministry of Finance (MOF), either of entry regulation and prudential regulation was not rigid. This was reflected in the large number of small banks. There were 1283 banks at the end of 1927. The fact that moral hazard caused the financial crisis means that the banking system introduced in 19th century came not to fit the extended scale of economy and development of heavy industries, which themselves were accomplished based on the institutions of 19th century. This situation brought about an evolution of institutions adaptive to the economic environment. Enactment of the Bank Law (Ginko Ho) in 1927 was one of the important examples.

Compared with the Bank Act of 19th century, the Bank Law had some new articles; A bank should be a joint-stock company whose capital was over one million yen, and directors and managers of a bank was prohibited to have other occupation without approval of Minster of Finance (Bank of Japan [1986], p.275). In other words the Bank Law intended to stabilize bank management through enlargement of the scale and to dissolve "organ bank" relationship directly by prohibition of interlocking. Among above 1283 banks, 617 did not clear the minimum capital regulation of the Bank Law. Most of these banks were merged or liquidated in 5 years (ibid. pp.281-282).

Meanwhile, monitoring system by MOF and BOJ was reinforced. MOF instructed banks to hand detailed business reports of a certain form according to the Bank Law. MOF also set up the Section of Inspection (Kensa Ka) in the Bank Bureau, and inquired BOJ about its plan of inspection. Responding to this inquiry BOJ set up the Department of Inspection (Kosa Bu). The Department of BOJ monitored assets and business of its customer banks though reports and on-the-spot inspection (ibid pp.289-291).

Transformation of Zaibatsu and Development of the Capital Market

Growth of the firm scale, development of the heavy industries, and their instability in 1920's substantially influenced on the corporate system. The basic problem was limit of monitoring capability of shareholders. Monitoring capability means that (a)capability to watch and assess investment projects and performance of companies and (b)capability to discipline and control company managers. The monitoring capability which was short in 1920's Japan was (a). In other words, the essence of the problem was that shareholders who had not sufficient (a), continued to

exert (b), which was the point that Takahashi[1930] criticized as a defect of the joint-stock company (Morikawa[1981]; Okazaki[1991]).

This problem came out in two forms. First, some companies continued rapid business expansion and high dividend rate rigging their accounts, and finally failed in the late 1920's and early 1930's. Failures of Kawasaki Dockyard Co., one of the largest shipbuilders and Suzuki Co., one of the largest trading companies, were the typical cases. Second, because of the shareholders' miopia, many companies in infant heavy industries could not sufficient funds for investment to cut down production costs. Not only they could not raise sufficient funds from the capital market, but also they should pay large part of their profits as dividends instead of reserving it for investment.

Zaibatsu can be interpreted as an institution of corporate governance and capital market, which played the role of resolving these problems. Mitsui, Mitsubishi and Sumitomo, which were called Big Three Zaibatsu, constructed hierarchical organization with the holding companies as headquarters around 1910's. The fact to be noted was that these organization had system to monitor the affiliated companies. The holding companies, which had sections for monitoring the affiliated companies, dispatched directors to them,, approved the bills of their board of directors ex ante, and decided their major personal issues (Okazaki[1994]). Besides the Big Three, corporate groups called "new zaibatsu" such as Nihon Sangyo (Nissan), Nihon Chisso and Riken grew rapidly since 1920's.

The history of Nissan support the view that zaibatsu played the role of resolving the problems caused by shortage of shareholders' monitoring capability. The predecessor of Nissan was a corporate group clustering around Kuhara Mining Co.. Kuhara Mining Co. lacking effective monitoring device, could not prevent an affiliated company Kuhara Co. from failing due to the large speculation (Udagawa[1987], p.226, pp.250-251). Because the failure of Kuhara Co. gave serious damage to the Kuhara Mining, Fusanosuke Kuhara ,the president of Kuhara Mining handed over the management of Kuhara Mining to Gisuke Ayukawa, his brother in law.

Ayukawa, who became president of Kuhara Mining in 1928, stressed two strategies for restructuring Kuhara group, that is (a)raising funds from the general public and (b)reinforcing monitoring devices (Udagawa[1987], pp.43-45). He reorganized Kuhara Mining to a holding company, changed the name to Nihon Sangyo. Nissan set up 5 new departments in 1934. One of these was the Monitoring Department (Kanri Bu), which monitored performance of the affiliated companies (ibid, pp.52-55).

By these monitoring mechanism the Big Three zaibatsu could continue

investment in the heavy industries in 1920's whose profitability was low, and Nissan could successfully restructure Kuhara group. It is notable that monitoring function of zaibatsu had externality in the capital market. This externality is obvious as to "new zaibatsu," which made clear a strategy to raise funds from the capital market like Nissan. Ayukawa sold the stocks of Nissan to the public. The system that the public investors invested to the stocks of Nissan, and Nissan in turn invested to its affiliated companies, was similar to an investment trust. In fact, Ayukawa called Nissan as a "people's investment trust." The Big Three zaibatsu, which had been negative to raise funds from the capital market, began to sell the stocks of their closely affiliated companies in 1930's. The fact that these stocks newly opened to the public were highly evaluated in the capital market (Shimura [1969], pp.256-257) means that the capital market appreciated the monitoring capability of zaibatsu holding companies.

Furthermore, zaibatsu had 'external monitoring function' to the companies not affiliated to them as well as internal one to the affiliated companies. Ayukawa stressed that Nissan contributed to the investors' interests thorough acquiring stocks of the ineffective companies, taking part in their management and restructuring them. Mitsui also acquired stocks of the financially distressed companies, such as Nihon Flour Mill, Dainihon Coal Mining, Fuji Paper Manufacturing, etc., and restructured them in 1920's (Takahashi[1930], p.91).

In short, zaibatsu were not only internal capital market with effective monitoring devices, but they also carried out monitoring function in the "external" capital market after WWI period. And by these function, it played the role of supporting the capital market as a whole, which had come to be ineffective under the condition that heavy industries developed. Takeda[1995](p.86) stressed that large shareholders of major companies came to be corporations in 1930's based on Shimura[1969]. This fact can be interpreted to reflect above mentioned institutional development of the capital market.

Movement toward Long-term Employment and Its Limit

Development of heavy industries also influenced on the employment system. Change of production process caused by introduction of new technology decreased role of the traditional skills. Therefore the internal contract system came to be ineffective to manage production and to form skills. Around 1910 many large companies in the heavy industries abolished the internal contract system, and introduced direct labor management system. To cope with the new system, these companies set up sections of labor management(Hyodo[1971],pp.252-253).

In many cases the companies trained workers by the trainee worker system

(yoseiko seido). The companies employed young people who had just graduated from elementary schools as trainee workers, and trained them thorough in-house training program and entrusting them to public vocational schools. In-house training was made much of because firm-specificity of the skills increased, which in turn was because division of labor came to be more firm-specific (Hyodo[1971], pp.406-410).

The companies took measures to retain the workers to whom they carried out human capital investment. Around 1910 in-house welfare measures such as cooperative societies diffused to the large companies. In 1920's many large companies came to increase wages of the workers every year, although regularity was not established (Hyodo[1971], pp.282-285, pp.444-446).

However, there was a substantial limit in the long-term employment. It is true that turnover rate of workers decreased in 1920's, but it was still by far higher than that in postwar Japan and almost the same as that in postwar US (Okazaki and Okuno-Fujiwara[1993]). Employment adjustment coefficient of manufacturing industry in 1921-1936 was as high as 0.98(Okazaki[1991], pp.372-373).

High turnover rate and fast employment adjustment were mainly due to discharge in depression and voluntary turnover in prosperity. Even those companies affiliated to zaibatsu, which relatively made much of long-term employment, discharged large number of workers in 1920's and early 1930's(Okazaki[1995b], pp.123-124). On the other hand in the middle of 1930's, when the Japanese economy was prosperous, workers frequently moved voluntarily (Gordon[1988], pp.156-160).

Large discharge in depression and voluntary turnover in prosperity were mutually related. If possibility to be discharged in depression was high, workers had not sufficient incentives to invest in firm-specific skills. On the other hand, if possibility for workers to quit in prosperity was high, companies had not sufficient incentives to invest in firm-specific skills. Consequently, firm-specific skills were not accumulated sufficiently, which in turn stimulated discharge and turnover. Furthermore, this relationship itself was institutionally complementary with the above discussed corporate governance structure. It is true that the labor management policies of the companies affiliated to zaibatsu were characterized by relatively long time-horizon (Okazaki[1991], p.373). However, the zaibatsu holding companies, whose main source of revenue was return from the stocks, were thought to aim at profit maximization of the affiliated companies. It is natural that employment adjustment speed was faster in the prewar companies than the postwar companies which have growth oriented governance structure.

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(3)System-wide Institutional Reforms Switching the Evolutionary Path

Transition from a Market Economy to a Planned Economy

The above discussed incremental evolutionary path of the institutions was switched by the system-wide institutional reforms during the WWII, carried out in order to manage the wartime planned economy. The war made it inevitable for the government to mobilize huge amount of resources for the munitions. Under the condition that the real GNP stagnated due to the blockade by the Allied Nations, the government expenditure and the capital formation grew rapidly suppressing personal consumption. The large deficit and surplus of the government and households in I-S balance (about 30% of GNP respectively)symbolize the scale of the mobilization (Okazaki[1995a], p.108).

It was thought that such thorough mobilization would have caused serious social instability, if it had been carried out in the market economy. Therefore the government decided to introduce the planning and control mechanism substituting the market mechanism. In 1937 a new government agency, the planning board (kikakuin) was set up, which drew up annual economic plans. During the war the Japanese economy was managed according to those plans. As will be discussed below, transition to a planned economy caused serious friction with the institution which had supported the market economy, and wide-ranging institutional reforms were carried out by the government whose power was backed by the military authorities (Okazaki and Okuno-Fujiwara[1993]).

Restricting Shareholders' Sovereignty

First, friction between management of the planned economy and existing institutions was revealed as to corporate governance. In early stage of Shino-Japanese war, the production plans drawn by the government were fairly well achieved by the private companies. However, after the latter half of 1939, when WWII broke out in Europe, the achievement ratios fell substantially, because strengthened price control decreased profit rates of the companies to reduce production incentives (Okazaki[1987]). To cope with this problem, the government drew up a wide-ranging plan of reforming the economic system called "new economic system."

One of the cores of the "new economic system" was a reform of corporate governance. The government aimed at changing corporate goal itself lest decline of profit should check production increase. For this purpose the government intended to reduce shareholders' power in corporate governance, because it recognized that it was shareholders that forced the corporate managers to maximize profits.

"Outline of Establishment of a New Economic System" (Keizai Shintaisei

Kakuritsu Yoko) determined by the Cabinet in December 1940, posed a new corporate concept that regard the company as a organic body composed of capital, management and labor, which was quite different from the classic capitalistic concept embodied in the Commercial Law. In accordance with this new corporate concept, dividend was regulated. In October 1940 dividend regulation which had been enforced since 1939 was strengthened by the Corporate Accounting Control Act (Kaisha Keiri Tosei Rei), which prohibited companies to pay dividend over 8% to capital without approval of the Minister of Finance (Shibata[1992]). Consequently, dividend propensity fell, and dividend rates came to be insensitive to the profit rates (Okazaki[1991], pp.376-377). The Corporate Accounting Control Act also regulated the rewards of the managers. By this regulation, managers' rewards decreased relative to the profits and came to be insensitive to the profits. This means that shareholders lost a device to make managers to maximize profits.

In 1943 the new corporate concept came to be embodied in the Munitions Corporation Law (Gunju Gaisha Ho). This law restricted shareholders' rights prescribed in the Commercial Law. Most of the large companies in the munitions industries were designated as munitions corporations by the government. The presidents of those corporations were appointed as production responsible persons (seisan sekininsha), appointment and discharge of whom should be approved by the government. This functioned as an institution to protect the position of the managers from the shareholders. The Munitions Corporation Law also approved the production responsible person to execute some of the issues which the Commercial Law prescribed as shareholders meeting matters without decision of the shareholders meeting.

Above change in the corporate governance was reflected in the composition of directors. Comparing the composition of the major companies' directors between 1935 and 1942, we find that the ratio of large shareholders fell, and that the ratio of those who were promoted from employees rose substantially especially in the non-zaibatsu companies whose board of directors had had many large shareholders (Okazaki[1993]). This means that the nature of board of directors began to change from monitoring device to a management organization even in the non-zaibatsu companies.

From Direct Finance to Indirect Finance: Formation of Loan Consortia and Commitment of Banks

The corporate reform influenced on the financial market substantially. Since 1940 the capital market stagnated, because of the rigid price control and the corporate reform. It is natural that restricting shareholders' right reduced incentives of the

investors. In other words, decline of the stock prices was interpreted as an expression of investors' negative intention against those policies. Furthermore, banks which were expected to be substitutive source of funds, came to be cautious of loans. Since 1940 growth rate of bank loans decreased. Rise of debt-equity ratio due to the stagnation of the capital market increased risk of bank loans.

To cope with this problem, the Emergency Loan Consortia (Jikyoku Kyodo Yushi Dan) were organized by the guidance of the government in 1941. A core bank assessed a loan item of a company with the Industrial Bank of Japan, and based on that assessment other banks took part in the loan consortium. This was a system of delegated monitoring like postwar main bank system (Teranishi[1993]). Loan Consortia were substantially extended by the mediation of the National Financial Control Association (Zenkoku Kin'yu Tosei Kai) since it was established in 1942. Meanwhile, major private banks set up departments of credit analysis, which were in many cases integrated in loan department, and Bank of Japan extended the Department of Monitoring to the Bureau of Monitoring (Kosa Kyoku) (Okazaki[1995a]). Loan consortia, departments of credit analysis, and BOJ's Bureau of Monitoring were interpreted as institutional bases of indirect finance. Since 1942, growth rate of bank loans increased again.

The financial system was substantially influenced by the Munitions Corporation Designated Financial Institution System introduced in January 1944. The government appointed a bank as a designated financial institution of each munitions corporation referring to loan record, investment relationship etc., and guided it to loan smoothly to the munitions corporation. By this system, most of the loan consortia were dissolved, and the monitoring function of the banks decreased. Nevertheless, it is noteworthy that the problem of reduced monitoring, such as ineffective expenses by the munitions corporations, was soon recognized by the financial authorities, and that in early 1945 some countermeasures were taken by the government. The deposit accounts of each munitions corporation were concentrated to the designated financial institution, and thorough these accounts the bank continuously monitored flow of funds of these corporations to report to the financial authorities (Okazaki[1995a]).

However, the most important effect of the designated financial institution system to the evolution of the economic system was that it made the financial institutions commit to the relationship with the designated corporations. Reflecting on the risk and failure of the "organ banks," the major banks had been cautious of loaning large amount of funds to a certain company. But under the system, if a bank had avoided to be appointed as designated financial institution of many major munitions corporations,

it would have lost direct financial relationship with major companies. Therefore, major banks competed to be designated, and supplied huge loans to the designated munitions corporations (Miyazaki and Ito [1989]). When the war ended, these loans were left as ties between the banks and the corporations.

Locking Employees in the Firm and Accumulation of Firm-specific Skills

Breaking out of the Shino-Japanese War made the shortage of skilled workers more serious. As a countermeasure movement of workers was regulated by the government. By the Employment Restriction Act (Jugyosha Yatoiire Seigen Rei) in 1939 and Employees Movement Restriction Act (Jugyosha Ido Boshi Rei) in 1940, employees were prohibited to move to other companies without approval of the government (Ohara Institute of Social Problems[1964], pp.4-5). Restriction of the labor movement means that the condition which checked formation of firm-specific skills in the prewar period was removed.

Meanwhile, a direct measure to form skills was taken by the government. The Factory Skilled Workers Training Act (Kojo Jigyojo Ginosha Yosei Rei) in 1939 obliged the trainee worker system in 1920's to the middle and large scale factories. Those factories employing more than 200 workers should have certain number of trainees prescribed in the Act, and train them for three years to be a core workers with wide ranging skills. Allocation of training hours was also prescribed in the Act, which made much of the practice (Sumiya et al.[1971], pp.295-296).

Although Sumiya et al.[1971] was generally skeptical to the effect of the wartime training, it include rich information suggesting its effect. For example, although it stressed that training was isolate from the shop floor, at the same time it pointed out that this problem did not exist in the large companies with 500-1000 workers. While it stressed that training period of 3 years was too short for the chemical industry, it pointed out that training performance was fairly good in the machinery industry (pp.301-302). This is extremely significant, because the machinery industry was not only the core of munitions industries in the wartime, but also came to be the most competitive leading industry of postwar Japan. Furthermore while it stressed hollowing of the training at the end of the war, it also pointed out the examples of Hitachi and Toshiba, the largest electric machin, that training of the employees was continued, which came to be bases for the postwar reconstruction and development of the companies (pp.329-333).

The policies to lock employees in the firm and train them in-house were complemented by the policy on labor organization. Since 1938, the Ministry of Welfare guided the companies to set up the industrial patriotic society (sangyo hokoku

kai) at each factory. The industrial patriotic society was an organization of all the employees and managers, which organized meetings on promoting productivity, labor conditions, welfare etc.. Through diffusion of the industrial patriotic societies, many companies came to have institutions for the employees to voice on the labor conditions and production management. Behind that policy, there was the above discussed new corporate concept. In a draft of "Outline of Establishment of a New Labor System," the planning board stressed establishment of workers' status, and expressed that a firm should not be dominated by capital but by the "substantial management body" including managers, engineers, office clerks and workers (Okazaki[1991], pp388-389).

The role of the industrial patriotic societies were reduced by the Munitions Corporation Law, which obliged workers to obey the managers' directions (Saguchi [1986], p.48). However, in terms of distribution, the position of the workers was considerably improved after 1943. A Cabinet resolution ("Outline of the Wage Policy") in March 1943 revealed that the wage control should be operated elastically, and that de facto profit-sharing system should be introduced (Okazaki[1991]).

(4)Occupational Reforms, Transition to a Market Economy, and Adaptive Evolution of the Institutions
Formation of Corporate Labor Unions and Dissolution of Zaibatsu: Role of the Occupational Reforms Fixing the Switched Evolutionary Path

The reforms by the occupation authorities (GHQ), paradoxically, played the role of fixing the new evolutionary path which was generated during the war. First, the reforms of the labor relations provided the legal framework for the workers who committed to the companies the war to protect their firm-specific assets (skills). According to the GHQ's policy to support labor unions, the Japanese government legislated the Labor Union Law (Rodo Kumiai Ho) in December 1945, which protected labor unions for the first time in the Japan. Since then, labor unions were organized rapidly, and the ratio of workers who took part in the unions reached almost 50% at the end of 1947.

It is remarkable that most of the labor unions were organized by firm[19]. As the reason Nimura[1994] and Dore[1973] pointed out the fact that tradition of the craft union was lacking in Japan. This explanation is persuasive as a negative reason, that is the reason why the Japanese unions were not organized by occupation. It is also important that the nature of the workers' skills is stressed as a condition to influence

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19 Exactly speaking, they were organized by factory. In 1960's they ware integrated to be the unions by firm (Nimura[1994], p.71; Takagi[1982]).

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on the organizational forms of the labor unions.   If we take this point into account, it is remarkable that firm-specific skills had been accumulated during the war.   When a legal framework for the labor unions was provided as a part of the occupational reforms, the Japanese workers utilized it as a measure to protect their firm-specific skills.

Second, by the dissolution of zaibatsu, the institutions which had supported the prewar corporate governance characterized by shareholder's sovereignty were completely destroyed.   The stocks which had belonged to the holding companies and the zaibatsu families were transferred to the Holding Companies Liquidation Committee (HCLC) in 1946, and sold to numerous small-sized personal shareholders, who had little capabilities and incentives to monitor the companies, while the holding companies were liquidated.   The directors of the affiliated companies who were appointed by the holding companies also instructed to resign.   Besides the holding companies of the Mitsui, Mitsubishi and Sumitomo, but those of other company groups including "new zaibatsu" and relatively small corporate groups were liquidated (MOF[1982], chap.3).

The influence of these measure was quite substantial, because in the prewar period the holding companies played the role of monitors not only for the internal capital market of the zaibatsu, but also for the capital marker as a whole, as is discussed above.   The Japanese capital market lost its most important institutional basis.   Furthermore, property tax which amounted to 10% of GNP gave serious damage to the wealthy people, who had been investors in the capital market, and the land reform and the freezing of bank deposits under hyper-inflation also had an effect of imposing heavy inflation tax on them (Yoshikawa and Okazaki[1993]).   Thorough these measures fundamental basis of the capital market was seriously damaged.   It should be stressed that the major effect of the zaibatsu dissolution was destruction of the institutional basis of the prewar economic system.

Designing Corporate Governance Structure by the Japanese Government and Collusion of Managers and Employees

In short, by the occupational reforms in the first stage, employees acquired strong power in the company on one hand, and shareholders' capability of corporate governance reduced substantially on the other.   This change in corporate governance was reflected in the composition of directors.   When the directors who were responsible for the war and appointed by zaibatsu were purged by GHQ, their successor were promoted from the employees in many cases. Consequently, most of the major companies' directors came to be those who were promoted from the employees.   It is notable that HCLC, the large shareholder at that time, supported this personal

selection of the directors(Okazaki[1993]).

Standing on this situation, the Japanese government designed a structure of corporate governance for the economic recovery. For the government, the immediate task was to reconstruct the major ex-munitions companies, which had been given serious financial damage by the cancellation of the government's wartime compensation decided in 1946. In 1946 the Ministry of Industry and Commerce (MIC) drew up a plan of restructuring those companies to make them set up new companies which would succeed a part of their assets necessary for civil production.

It is remarkable that in the plan MIC stressed the "new corporate concept." According to MIC, the rights of the shareholders and mortgagees should be restricted, and the system of employees' shareholding should be introduced for their participation in the company management, while new money was expected from loan consortia of the Industrial Bank of Japan and ordinary banks. This "new corporate concept" is quite close to the that proposed during the war. Above corporate governance policy of MIC was reflected several institutions.

First, the Temporary Measure Law of Corporate Accounting (Kaisha Keiri Okyu Sochi Ho) and the Corporate Reconstruction Law (Kigyo Saiken Seibi Ho) in 1946 provided the basic legal framework of corporate governance in the economic recovery process. These laws placed the ex-munitions companies de facto under the control of the banks having largest credits, which dispatched the special supervisors prescribed in the law to the companies (Okazaki[1993]). It should be noted that those largest creditors were in most cases those which had been designated financial institutions during the war. By the wartime commitment via huge loans, they took the role of the monitors in the postwar restructuring process.

Second, the role of these banks was supported by the loan mediation (yushi assen) policy by the Bank of Japan. It is true that in the early stage of the economic recovery the Reconstruction Finance Bank (Fukko Kin'yu Kinko, RFB) largely contributed to fund supply, but its share in the industrial fund supply was less than private banks even in 1947. BOJ supported the "main banks" (shu torihiki ginko), which were the ex-designated financial institutions, to organize loan consortia. The "main banks" monitored the customer companies ex ante, interim and ex post, and reported on the results to the other member banks of the consortia and BOJ (Okazaki[1993], [1996]).

Third, employees' participation in the corporate management was institutionalized by the management councils (keiei kyogikai). In order to achieve cooperation between employers and employees, the government guided the companies to set up them, in which employers explained their management policies and

employees voiced on them. At the end of 1947, more than half of the labor unions took part in the management councils(Okazaki [1993]).

The corporate governance structure with above characteristics was fitted to the conditions of skills and capabilities. Destruction and shortage of physical capital raise the importance of intangible assets embodied in the employees, that is firm-specific skills which had been accumulated since wartime. Aoki[1994] called this type of skill as "contextual skill." In order to manage this type of assets properly, the capability and skills necessary for the managers were also thought to be firm-specific. Furthermore, to assess the value of the firm which was essentially a team of employees and managers with such contextual skills, investors or financial institutions supplying funds should have long-term relationship with the firm (Okazaki[1994]).

This is a basic institutional condition of the economic recovery since 1946 besides the industrial policies such as priority production system (keisha seisan hoshiki). However, at the same time, most of the large companies in those days were seriously inefficient. They hoarded large amount of excessive employment, which caused their extremely low profitability. The basic reason was that the banks did not have enough incentive to monitor the companies, because the companies were ultimately supported by the governmental control and subsidies, which made it possible for the managers and employees to collude. Situation was made still worse by the large pressure of the corporate unions(Okazaki[1993]).

Transition to a Market Economy and Recovery of the Financial Control in Corporate Governance

A series of economic policies called the Dodge Plan forced the Japanese Economy rapid transition to a market economy. The transition substantially increased significance of financial monitoring. It is remarkable that two candidates of the monitoring mechanism functioned quite differently at this stage. First, the banks actively intervened with the management of the inefficient companies. In many cases the loan consortia organized by main banks supported by BOJ's mediation claimed to cut excessive employees as a condition to continue loans, and if necessary turnover or dispatch of the managers or directors. Naturally hard conflict between the managers backed up by the banks and labor union took place, but thorough rather hard labor disputes excessive employment almost disappeared by 1951. Banks' commitment since the wartime, the position of dispatching special supervisors, and organization of loan consortia provided capabilities and incentives of this effective monitoring function of the banks (Okazaki[1994]).

On the other hand, the other candidate of the monitor that is shareholders or the

capital market did not work effectively. Since early 1949 stock prices fell rapidly, and stayed at low level until 1952. It is interpreted as an expression of shareholders' negative evaluation of the companies which had continued to be inefficient dominated by the collusive insiders. However, the fact that intervention to the management by shareholders such as internal control thorough a board of directors or a takeover thorough the capital market did not took place, while as mentioned above banks restructured the companies, means monitoring mechanism of shareholders was relatively ineffective than that of banks (Okazaki[1993], [1994]). As a reason of weakness of shareholders' monitoring mechanism, lack of effective take over raiders which could concentrate shares or proxies and restructure the companies thorough intervention with management, was essential As discussed in the previous section, the holding companies of zaibatsu had played the role of raiders in the prewar capital market. The occupational reforms extinguished the indispensable player of the capital market[20].

It is not until the banks had restructured the companies and their profitability had recovered that institutional investors such as investment trusts and life insurance companies emerged as large shareholders. This fact means that the banks were the main monitors of the companies, and that the investment behaviors of those institutional investors *de facto* depended on the monitoring function of the banks(Okazaki[1993], [1994]).

It is also notable that those institutional investors were interested not only in the return on their investment. On this point, the organization of the investment trust was essential. To cope with the decline of stock prices since 1949, a series of measures to urge stable shareholding were taken, such as the revision of the Anti Monopoly Law in 1949, and legislation of the Investment Trust Law (Shoken Toshi Shintaku Ho) in 1951 (Okazaki[1993],pp.134-135). In the legislating process of the Investment Trust Law, GHQ insisted on separating investment trusts from securities companies. However, due to the resistance of the securities companies and MOF, eventually the

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[20] Many of the essential points on the corporate governance of Miyajima[1995] are extremely similar to those of Okazaki[1993] and Okazaki[1994], and surprisingly enough, it does not cite Okazaki[1993] and Okazaki[1994] on those essential points. Furthermore, his discussion has several serious flaws. For example, if results reported in table 2-8 are correct apart from technical problems, it is probable that the significant negative coefficients on dividends, unlike his interpretation that it shows large pressure from the capital market, reflect the relation that the main banks intervened with the management policy of low performance companies to reduce dividends. This alternative interpretation is consistent with the role of main banks in disciplining inefficient companies controlled by managers and employees, which was also originally stressed by Okazaki [1993] and Okazaki[1994] and was stated by Miyajima [1995] without citation.

Law allowed investment trusts managed by the securities companies (MOF[1979], pp.494-500). For the securities companies, it was quite profitable to be manager underwriters (shu kanji shoken) of large growing companies. Life insurance companies also had incentive to keep relationships with large growing companies to get group insurance contracts. Therefore, even the institutional investors were relational with the companies and growing company oriented in postwar Japan. It is well-known that the banks were growing company oriented because of the rent assured by the financial regulation (Teranishi[1993]; Okazaki[1995]).

Furthermore, employees also came to be growth-oriented. Through the severe and not successful labor dispute from the late 1940's to early 1950's, they learned that extreme claims could not be achieved under the market economy, in which competition with other companies and financial monitoring were effective. In other words, those labor disputes can be interpreted as transitional friction in the process that employees learned the meaning of a market economy. On the other hand, employers and banks[21] also learned hard resistance of the corporate labor unions against discharge (Koike[1976]), whose ground was thought to be employees' firm-specific skills. Since 1950's large companies became quite cautious of discharge, and consequently "life time employment" came to be an established practice.

Sources of Path Dependence

It is notable that the wartime experiences switched evolutionary path of the institutions. We can put in order the sources of the path dependence as follows. First, the wartime reforms and economic controls made various economic agents pay sunk costs. Employees locked in each company accumulated firm-specific skills, managers promoted from employees accumulated firm-specific management capabilities, and the banks which substituted the capital market learned system of delegated monitoring and committed to the designated companies. Furthermore, although not discussed in this paper, parts suppliers might accumulate relation-specific technology and skills, and bureaucrats and companies gained experiences of coordination through industrial association (control association) (Okazaki[1996]). Second, those phenomena took place in economy-wide scales through enforcement by the government, which reinforced sustainability of the changes by the mechanism of strategic complementarity. Third, the wartime reforms were institutionally complementary one another. Restricting shareholders' power was complementary with the establishment of the employees' position in the firm, and it was also

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21 In the labor disputes in those days, it was not rare that the labor unions thronged to the banks.

complementary with growth of indirect financing system. Furthermore, relational banking was complementary with accumulation of firm-specific skills of the employees, because long-term relationship was necessary for the banks to evaluate properly efficiency of the teams of employees with firm-specific skills. Fourth the postwar reforms destroyed the fundamental and institutional bases of the prewar economic system. This increased the cost to return to the prewar system, or in other words, decreased payoff of the strategies to take prewar mode of practices in the game of forming institutions.

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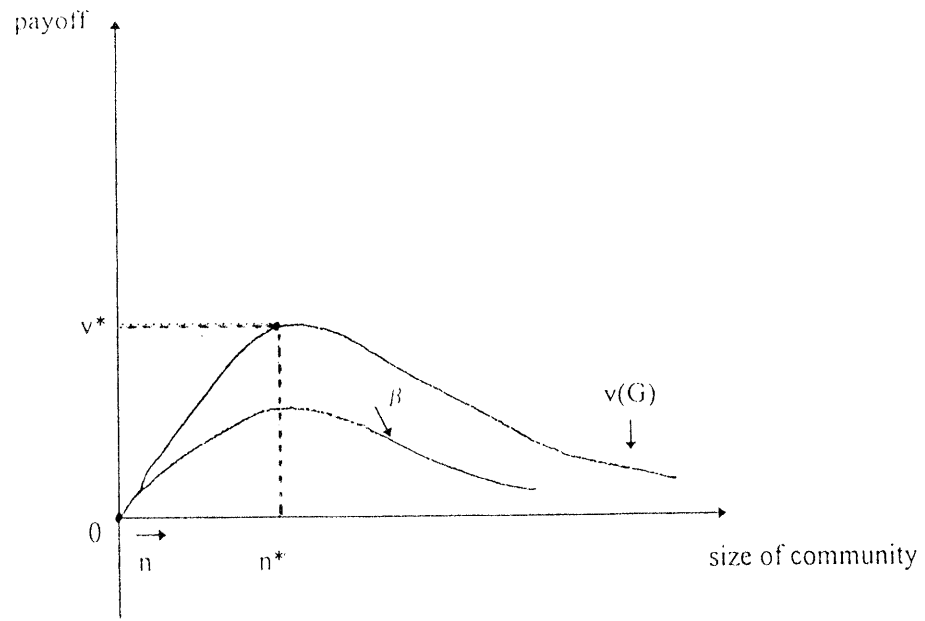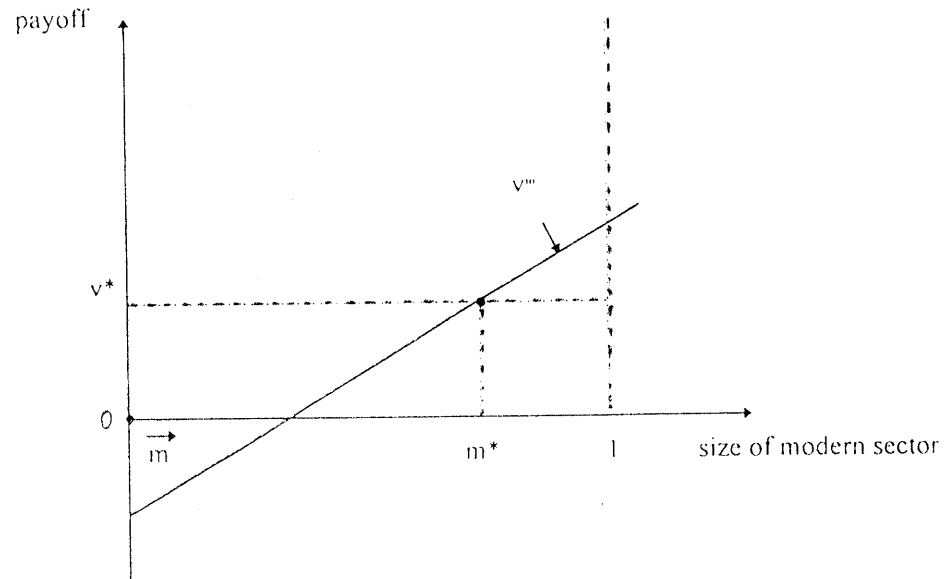
payoff

v*

v(G)

β

0

n   n*   size of community

Figure 9

payoff

v*

v'''

0

m   m*   1   size of modern sector

Figure 10