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Evolution of Economic Systems: The Case of Japan

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Evolution of Economic Systems: the Case of Japan

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In this paper we shall provide a theoretical overview of what are the main so
urces of their evolution and what are the chief
implications of focusing around institutions and economic systems. For the f
ormer, we identify innovation, adaptation for
environmental changes, international interantions and coordination as main so
urces. For the latter, we distinguish two
different mechanisms to enforce cooperation; trust-based and authority-based
mechanisms. We shall then apply this
theoretical framework to evolution of the Japanese economic system starting l
ate nineteenth century. The Japanese economic
system started rapid evolution through integrating Western institutions with
traditional community-based institutions.
Although this hybrid system endogenously evolved toward pure authority-based
system in prewar period, this evolutionary path
came to a turning point in 1940's. Investments made by employees, bank and f
irm, and inter-firm relationships during the
WWII had not only been sunk but also decreased the value of outside options f
or the members who took part in these
relationships. Those investments became a basis for the evolution of quasi c
ommunity-based institutions in the postwar
Japan.

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Evolution of Economic Systems: the Case of Japan*

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1. Introduction

Recent rapid economic developments in East Asia generated an interest in the institutional foundation of economic systems in this area. Many believe that Japanese economic system, characterized by its own human resource management, corporate governance system, inter-firm relationship and government business relationship, is different from its Western counterparts, especially those of US and Great Britain. Similarly, many argue that one of the crucial factors behind recent economic performance behind East Asia is their close family ties of Chinese culture. All of these economies also seem to be characterized by government's tight grip over the private economies. Together with the emergence of new analytical 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 these tools have generated a new direction in analyzing economic history. Combining these tools with traditional approach, economic historians now ask questions such as; why some particular form of

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* We are grateful to Avner Greif for his many critical and yet constructive comments, who acted as a discussant in the symposium. We have also benefited from useful comments by Masahiko Aoki, Yujiro Hayami and other participants of the symposium.

[1] Milgrom and Roberts [1992], Aoki and Patrick [1995], Aoki, Kim and Okuno-Fujiwara

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 arrangements to exist, etc.[2]

In this paper, we shall provide a theoretical overview of what are the chief implications of focusing institutions and economic systems, what are the main sources of their evolution, how are their evolutionary paths affected by various economic factors. 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 an institution and an economic system, and explain some relevant concepts. Section 3 discusses key elements that determine the evolution of an economic system with the help of evolutionary game theory. In sections 4, we discuss two alternative forms of institutional arrangements, enforcement of cooperation by trust and enforcement by authority, and discuss problems in overcoming the discontinuity between the two systems. In sections 5-8 we describe an evolutionary process of institutions focusing on the modern Japanese economic history. An emphasis is made on the role of traditional as well as imported institutions in industrialization, their further change induced by economic development, and the government's role at the turning points of evolutionary paths.

2. Institutions and Economic Systems

2.1 Economic System and Institutions

[1996] and Aoki and Okuno [1996] are the examples.

[2] Historical Institutional Analysis pioneered by Greif is the typical example. See, Greif [1996].

Traditionally, the neoclassical economics has identified only three different types of economic systems; market economy, planned economy and mixed economy. Characterizing an economy to be a triplet of parameters consisting of endowments, technologies and preferences, the neo-classical orthodoxy takes it for granted that the same ultimate resource allocation, characterized as the Walras equilibrium, 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 institutions as a principal source of diversity. Not only traditional parameters characterizing an economy but also forms of and interactions of institutions 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, modes of 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.

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

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 a 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 people when the same behavior is anticipated to be employed by the rest of the group. Put in an abstract term, an institution is defined as a (Nash) equilibrium and, hence, self-enforcing once (the majority of)the group adopts that standard of behavior[4].

For example, a 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 (*i.e.,* 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 of their interests to do so, as they have freedom in choosing their action.

2.2 Multiplicity and Complementarity of Institutions

This example suggests an important implication of an institution, *strategic*

Pareto efficient

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

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, 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 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* between two institutions. Incentives to strictly observe the maximum speed limit may be increased if extra devices to enforce the regulation are installed, such as a radar system to check the speed of individual cars. Such devices are said to (institutionally) complement the maximum speed regulation, because they improve incentives to follow the regulation.

Because stability of an institution is strengthened by other complementary institutions, a set of complementary institutions tends 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.

But then why people choose a particular Nash equilibrium and, hence, a particular economic system when there are multiple possibilities. For an institution

to become an equilibrium, agents in a society must subscribe to a common "rational cultural belief which capture individuals' expectations with respect to actions that will be taken by others in various contingencies possible in a recurrent situation"[5].

These beliefs are not formed over night because human beings are only *boundedly rational.* Simon [1976], for example, emphasized on procedural rationality, rather than substantive rationality, as the characteristics of human decision makings. Such cognitive processes as learning, problem solving, and concept attainment being the major parts of procedural rationality, humans learn other agents' behaviors slowly on trial-and-error basis, and extract rules or generalizations gradually from a sequence of situations[6]. Resulting beliefs spread among the members of the society only sluggishly to become a common belief.

It follows that common rational cultural beliefs, that support an institution as a Nash equilibrium, are formed and adjusted only slowly. This is precisely the reason why history determines a particular economic system to dominate in a particular society, or the phenomenon called *path dependence* plays an important role. In order to fully examine the effect of path dependence on the contemporary Japanese economic system, we must first understand theoretically what factors affect the evolution of economic systems.

3. Evolution of Institutions

3.1 Evolutionary Game Theory:

Having defined an institution to be a self-enforcing social standard of behavior,

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[5] Greif [1993].

[6] See also Gilboa and Schmeidler [1995].

i.e., a Nash equilibrium, we can examine how institutions may evolve. In fact, recent flood of literature on evolutionary game theory provides ample intuition to this problem.[7]

Evolutionary game theory assumes various evolutive dynamics. Although the particular dynamics each paper adopts are different, there is a common thread in them. For example, Kandori, Mailath and Rob [1993] assumes 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 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 a 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 fully 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 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 complete knowledge about their environments and they can benefit a great deal from successful experiments.

Using such dynamics, evolutionary game theory typically analyzes a society with a finite population where all players are randomly matched to form a pair every period to play the same game. One of the common findings in this area is that the society may be trapped in a sub-optimal equilibrium. Once the evolutionary force takes the

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

society to a sub-optimal equilibrium, it is stable in that there is little incentive to move out of this equilibrium. Still there are several possibilities that the society may escape from such a trap and that make evolution of institutions more dynamic.

3.2 Innovation and Adaptations

First, there is a possibility that experimental moves may make a sufficiently many players simultaneously choose the same action towards a Pareto superior equilibrium.[8] For example, Ellison [1993] assumed that the contacts among agents within the society take place randomly but occur non-uniformly. In particular, the matching takes place more often among agents who live close than among those who live apart. With such a non-uniform matching, profitable innovations are likely to be incubated within a neighborhood and to be able to break the inertia of the prevailing equilibrium. Compared with the case of uniform matching where the historical factors are major determinants, experiments tend to become more important in the case of local matching. This seems to support the Schumpeterian hypothesis that *destructive innovation* and its *diffusion through imitation* is the main engine of the capitalistic system.

Second, evolution of institutions may be more dynamic and institutions may evolve hand in hand with induced changes in physical environments surrounding the society. Matsui and Okuno-Fujiwara [1996] discusses why different equilibria may arise in different societies. Key idea is that, there is an inertia in agents' behavior as long as that behavior is an equilibrium. Even if the parameters of the game that the randomly matched players play, representing the background physical environments surrounding the society, change over time, if the same behavioral rule remains as an equilibrium throughout the process, there is no incentive that forces the behavior to

change. Hence, even if two societies currently face the same game that has multiple equilibria, they may end up with different equilibria if the historical paths of the environments for two societies are different. This is the well-known *path dependence* effect.

Two remarks are in order. First, inertia may create a catastrophic shift of equilibrium. Suppose physical environments change in the following way. Originally, there is a unique equilibrium of type A. Then the change creates multiple equilibria so that equilibrium of type A and that of type B coexist. Finally, the process leads to the situation where type A equilibrium disappears and type B equilibrium becomes the only equilibrium. In such a case, inertia makes type A equilibrium to be the prevailing standard until the type A equilibrium disappears. At that point, the society must move to new equilibrium of type B, sometimes catastrophically and sometimes after chaos.

Second, a change in institutions may affect the course of physical environments, just modernization of institutions promote industrialization. In fact, this is one of the aspects of evolution of the Japanese economic system we want to emphasize most. Although a particular set of institutions emerge because of path dependence, that may induce the economy to take a particular course of physical environment, which in turn generate a further change of institutions. In this sense, path dependence generates further path dependence and evolution of institutions takes place endogenously, hand in hand with industrialization of the economy and change of the society.

3.3 Importation of Institutions and Coordination/Governmental Intervention

Another possibility of evolution is through *interactions with foreign societies.*

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[8] For the case of uniform matching, see for example Kandori, *et.al.* [1993].

Although humans are boundedly rational and myopic, they are always looking for new ways to adjust their behavior to meet the new environments and new opportunities, such as importation of foreign institutions. A theoretical example is Matsui and Okuno-Fujiwara [1995]. They consider an interaction of two societies, where each agent of a society (say, home country) is randomly matched with another agent to play a game, using a dynamics characterized by inertia and myopia without experiments. The probability of a home agent matched with a foreign agent is determined with two parameters; the relative size of two societies and the degree of interaction of the two societies. They assume that the probability is an increasing function of the relative size of foreign society as well as of the degree of international interaction.

Assuming the degree of international interaction is initially zero (namely, two societies are autarchic), and that different equilibria prevail in two societies, they analyzed what will happen when two societies start to interact. Depending upon how apart two initial equilibria are and depending upon the *ex post* degree of the international interaction, several different outcomes are possible. (1) Both societies may preserve their original equilibria. This happens if the original equilibria are far different and the *ex post* degree of international interaction is relatively small. (2) If one society, say home society, is significantly larger than the other, the equilibrium in the foreign society may disappear by getting absorbed by the home equilibrium. (3) Two equilibria may interact so that a new eclectic equilibrium may emerge.

(3) is important in the following discussion. Interactions with another society often produce a new type of institutions and new form of organizations. Some institutions may be simple adoptions from abroad and some may be made further adaptations, often combined with indigenous institutions. Often times, being exposed with new culture and new economic systems, people are inspired to create new methods of arranging transactions and/or novel practices within corporations, etc. Just as

hybrids of wild genes produce new genes more superb than hybrids made of already improved genes, innovations and imitations described in the previous paragraphs are often not sufficient to identify truly innovative institutions in a short run. In the latter half of this paper, we shall indeed encounter several episodes of new institutions that appeared in modern Japan by integrating Western and traditional domestic institutions.

The last factor that dictates the evolution of institutions is *coordination*, where concerted efforts of sufficiently many players to choose the action towards a Pareto superior equilibrium may change the course of the economy. Alternatively, a similar effect may be realized by a *governmental intervention* where a group of citizens, using a force, impose a new set of institutions by changing payoffs of choosing different actions. However, to make a coordination effective, some conscious effort by the coordinating (or coercing) party is required. In fact, often the 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[9]. The critical turning point for the evolution of contemporary Japanese economic system was during the WWII when the government imposed a wartime control system. In section 8, we shall explain this change coerced by the government.[10]

Human beings may not be as short-sighted as Kandori, *et. al.* assumes. In that case, there is an alternative route in achieving coordination/intervention by directing agents' expectation about the future in the right direction (Krugman [1991], Matsuyama [1991]). In their framework, agents expect the future development fully and rationally, but they are constrained to revise their actions only occasionally due to switching costs. The society may be again trapped in a sub-optimal equilibrium

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[9] Japan used these policies often, especially in the post WWII period. For the detail see, for example, Komiya, Okuno and Suzumura [1987] and Okazaki [1996b].

because, if other players are too pessimistic about the future, optimistic expectation may not be justifiable. Only if a majority of agents change their expectations to more optimistic one, a Pareto superior equilibrium may be attainable.

A remark is in order, however, for the effectiveness of coordination policy. As Matsuyama [1996] 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. However, the real world is very complicated, and even as powerful as the national government is likely not to be able to identify a more efficient equilibrium. Except for a special case where the coordinating agent happens to know what the more efficient equilibrium looks like, coordination may result in a loss of social welfare.

4. Enforcement Mechanisms

When we discuss an evolution of economic systems, we naturally deal with economic development. During the process, usually the principal mechanism to enforce cooperation transforms itself, *i.e.,* from trust in pre-modern society to legal contracts and corporate organizations in modern age.[11] In this section, we turn our attention to typical forms of enforcing cooperation, enforcement by trust and by authority, as well as to their mixture.

In any society, cooperation is an important source of economic power. Take, for example, an economic interaction such as an exchange of products or division of labor. These interactions usually require some enforceable agreements, because they are often associated with advance payments with the promise to deliver the good later (or

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[10] See also Okazaki [1996b].
[11] In the case of Japan, however, the evolutionary path took a different course. See the

advance labor service with the promise to pay the reward later) and players have an incentive to cheat their partners.

4.1 Community System

By *enforcement by trust*, we mean those enforcement mechanisms that are realized in a self-enforcing manner without relying upon any *purposefully designed enforcing mechanism*. During the pre-modern times when the major industry is agriculture, many societies base their economic activities upon trust among community members, especially upon community norms.

A typical example of an enforcement by trust is a community norm such as communal enforcement of commons.[12] Consider a relatively small closed society whose membership remain invariant so that they know each other well. Suppose, in each period, they are randomly matched to form a pair to engage in a cooperative activity. As we explained in the previous paragraphs, there is a short-run incentive not to cooperate, say to cheat the partner.

Suppose this society has the following community norm (an implicit agreement). Members are divided into good members and bad members. Good members are those who have been following the norm while bad members are those who have deviated from it. We assume that information of whether the matched opponent is good or bad is known because the community is small and closed.

Suppose community norm dictates following actions. If two good members are matched, they are to cooperate. If a good and a bad are matched, the former is to punish the latter. If two bad members are matched, both are to cheat each other. Note that if all community members follow this norm, cooperation is achieved in almost

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latter sections, especially Section 8.

[12] The following exposition is based upon Okuno-Fujiwara and Postlewaite [1995] and

all matching as long as there are not too many bad members.

This community norm can be self-enforcing (*i.e.,* a Nash equilibrium) if certain conditions are satisfied. First, once someone deviates the norm (either cheat a good opponent or not punish a bad opponent), he will be punished forever. If this future punishment is stronger than the deviation incentive, *i.e.,* if penalty is large compared with the gain from cheating and if agents are sufficiently impatient, the norm is an equilibrium. Second, a good member, when matched with a bad, must have sufficiently large incentives to punish and bear its cost compared with not punishing and avoiding such a burden. Under this community norm, this cost of punishing deviators is shared by all community members, which is the source of the versatility of such norms.

Versatility of community norms is bought at a price. Community must consist of relatively few invariant members in order to be able to identify those who have deviated. Norm is not an efficient mechanism for modern society where economic interactions take place among strangers with population movements.

Following remarks are important in view of our historical account to be developed below. In the above example of a trust based enforcement, we assume that those who cheated will be punished by other members forever. There are several different punishment mechanisms, one of which is an expulsion from the community. This works well if expelled member anticipates to receive relatively small income outside the community and hence he faces a heavy penalty. Relational investments with the other community members make the value of the investor outside the community (*outside option*) much smaller than the value achievable inside the community (*inside option*). If the members made relational investments whose cost has been sunk (and hence not retrievable), it becomes more likely for a trust-based enforcement to work

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Bendor and Mookherjee [1990] among others. See also Kandori [1992].

well within the group.

However, note that the community norm is one of many (possibly infinite) self-enforcing agreements. For example, an agreement 1) never to cooperate with other members and 2) never punish other members regardless of his status is also an self-enforcing agreement.[13] Relational investments that have been sunk is likely to support a trust-based enforcement once it is established, but other evolutionary force is required to nurture it. On the other hand, an increase in outside option may work to destroy a community norm by making it not self-enforcing.

4.2 State and Corporate System

Majority of economic interactions in modern societies are enforced by state authority and by corporate organizations. A typical method of enforcement by state authority is a *written contract* and that by corporate organizations is a *hierarchical organization* managed by the principle of order and obedience. These methods of enforcement cover the people and the employees as a whole as long as they remain the subject of the nation or the organization, whether or not they know each other previously. They are also the critical vehicles for the market system to function well.

Functioning of market mechanism is primarily supported by enforcement by state authority, *i.e.,* the state system. It follows that, for the society still in the pre-modern stage to start industrialization and economic development, various institutional infrastructures that consitute a state must be firmly founded. These infrastructures include; (a) Enacting and announcing the set of fundamental rules to establish the property rights system, (b) Establishing a system to improve and enlarge the legal system by creating the democratic legislature and the administrative bureaucracy, (c) Creating those institutions that monitor and penalize the violators,

which encompass the police force and court systems to clearing houses and stock exchanges, and (d) Founding education system in order to make people familiar with market system and to train professionals who are indispensable for its efficient functioning, etc. However, these institutional infrastructures will not arise automatically without conscious efforts. How they evolve and how one can help them evolve in the way they are complementary with each other seems a crucial question in economic development, one of the focus when we come to the historical account of the evolution of the Japanese economic system.

Although the state system is critical in starting and continuing economic development, the main driving force for industrialization is the private sector. Different from agriculture, the significance of manufacturing industry, the key industry for industrialization, is mass production systems that take advantage of extensive specialization and effective coordination of large number of employees. Modern corporate system is the most widely employed vehicle for such production systems. In order to develop a corporate system from scratch is, again, no easy endeavor. It requires such extensive resources as knowledge of corporate organization and its management (modern accounting system is an example), a large amount of funds to start modern manufacturing and distribution networks, a pool of knowledgeable and trained employees, labor practices to take advantage of these employees, knowledge of contemporary technology, and among all a capable entrepreneur who are willing to take risks and new challenges against many obstacles.

We should note, however, that the enforcement mechanisms by authority has a weakness as well. When a controversy occurs among contracted parties or among corporate members, only a third party such as courts can settle the matter. Hence, contracts and corporate rules must specify tasks and remuneration to depend only

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[13] This is a well-known Folk Theorem. See, Okuno-Fujiwara and Postlewaite [1995].

upon verifiable contingencies. Trust system, however, can implement agreement that depend upon mutually observable, yet not necessarily verifiable for third party, information. It follows that two enforcement mechanisms, *i.e.,* that by trust and that by authority, are complementary to each other. Economic interactions such as shop floor production management characterized by contextual skills is likely to be better implemented by trust system, while others such as transaction of standardized commodities may be better carried out by authority system.

Contemporary Japan is known to combine two systems widely, with long-term employment that encourages workers to form contextual skills, with main bank relations that make banks exercise appropriate monitoring, and with the parts supplier system that is indispensable for the quality of automobiles. The birth of such a system critically depended upon the particular historical path along which Japanese economy has moved. We now turn our attention to the history of Japan in the last 150 years in order to understand how this system has evolved.

5. Role of Traditional Institutions and Borrowing of Western Institutions

Japan came out of self-proclaimed closure in mid-19th century. The pressing political agenda at the time was to modernize the society and industrialize the economy so that the country should not be colonized by the Western powers. Top leaders strove to import Western institutions so that those enforcement mechanisms such as state system and corporate system would function. Conflicts with traditional institutions made it necessary to adjust those borrowed institutions.

5.1 Introduction of Western Technology, Legal System and Organizations

5.1.1 Establishment of the Central Government

Since Tokugawa Shogunate (Bakufu) legislated the Closing Country Act (Sakoku Rei) in 1639, interactions with foreign countries, especially with western countries, were substantially restricted. The Japanese economy, which was almost isolated from the Western world for more than 200 years since then, was forced open by the US fleet which came to Japan in 1853.

Japanese leaders were seriously concerned with the possibility that the country may be colonized by the Western powers and this fear urged the political unification of Japan. The political regime in Tokugawa era was called Bakuhan (Shogunite-feudal clans) regime. The Bakuhan regime was relatively centralized as a pre-modern political regime, but the feudal clans (han) were allowed broad autonomy. The new Meiji government, which was established by the several powerful feudal clans replacing Shogunate in 1868, made great efforts to construct a centralized political regime in order to confront with the foreign pressure and secure independence of Japan. 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 to a modern centralized regime. In 1876 the government abolished the feudal allowance in exchange for the government bonds (Chitsurku Shobun), which marked the completion of centralization.

5.1.2 Comprehensive Research on Western Institutions

The new government vigorously studied western technology, legal system and organizations, because their importation was indispensable for industrialization, and harmonization of legal system with the West was a precondition to raise the position of Japan in the international politics. The government's great interests in legal system and organization were reflected in the fact that it set up the Agency of Institution

(Seido Ryo) as early as January 1868.

In 1871 the government dispatched a large delegation including the most powerful persons in the government. One of the main purposes of the delegation was to investigate the Western technology, legal system and organizations. 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 a rapid introduction of Western technology, legal system and organizations. (Shinbo [1995], pp.44-45).

5.1.3. Borrowing Western Technology

Industrialization was accelerated in 1880's, led by silk reeling and cotton spinning at first and, around 1900, heavy industries, i.e. shipbuilding, iron and steel, and electric machinery etc., started to develop. Although these industries had existed in a smaller scale in Japan, their development after 1880's was based on new technology borrowed from the West. Successful technology borrowing, its adaptation and diffusion, was one of the key factors for the rapid take off of the Japanese economy.

Minami [1987] pointed out following five conditions for successful technology borrowing, namely a) development of capital goods industry, b) formation of human capital, c) development of business organization, d) development of information network and e) a role of government. Among these factors, a) and b) were substantially affected by other three factors. Therefore aside from role of government, we shall focus upon organizational and institutional conditions as the primary determinants of successful technology borrowing.

5.1.4 Establishment of the State System

First task of the new government was to establish the state system in order to

enforce state authority. Since the seminal work of North and Thomas [1973], it was widely accepted that the property right is a fundamental institutional condition for market-based economic development. Although *de facto* property rights developed during the Tokugawa era, which provided the basis for early industrialization and agricultural development, it was not until 1870's that the property right was legally protected by the state. Property right for the land was first established. In 1873 - 1879 the government identified owners of the land, issued certificates (Chiken), set land prices as the criteria of taxation, and imposed land tax (3% of the land price) .

General property rights and transaction rules were legally established by the Civil Law and the Commercial Law. In 1879 the government entrusted drafting the Civil Law to a French advisor, and in 1881 the Commercial Law to a German advisor. They made drafts by directly translating French and German laws respectively and both Laws were legislated in 1890. However, they were severely criticized by conservative lawyers, politicians and journalists, who insisted to preserve Japanese conventions. Especially articles on the family system in the Civil Law came to be a target of the criticism. Due to these criticism, the Civil Law, which incorporated a traditional Japanese family system characterized by extended family, right of householder and system of primogeniture, and the Commercial Law were newly legislated in 1900 (Shinbo [1995], pp.46-51). Japan borrowed institutions heavily from the West, but they started to evolve further by integration with traditional counterparts.

5.2 Financial and Corporate System

5.2.1 National Banks and Ordinary Banks

In 1873, the National Bank Act (Kokuritsu Ginko Jorei) was legislated, copying the American banking system. The government intended to establish convertibility of

money by this measure, by defining the National banks as private banks that issue convertible bank notes. However it was not successful, because the convertibility restriction reduced the profitability of national bank notes. Consequently only four national banks were established and a large amount of inconvertible government notes still circulated. In 1876 the National Bank Act was revised and convertibility restriction was removed. Meanwhile, many "private banks" (shiritsu ginko) were established which did not issue bank notes. In 1882, the Bank of Japan was established and started to issue bank notes convertible to silver in 1885, making the issuing function of national banks unnecessary. The Bank Act (Ginko Jorei), which was enacted in 1893 and integrated the categories of national bank and "private bank" into ordinary bank (futsu ginko), became the basic framework for banking. Number of ordinary banks increased from 545 in 1893 to 1867 in 1901 (Bank of Japan[1986a]).

5.2.2 Insider Lending

The private banks' ratio of deposits to the total liability was low in 19th century. In fact, until the end of 19th century, the amount of deposits was almost as much as that of equity of banks. Banks in 19th century were not deposit banks in the modern sense, but like credit companies based on equity (Kato [1957]; Teranishi [1982]). It is noteworthy that this characteristics provided banks relatively large capacity for risk bearing. On the other hand, majority of national banks and ordinary banks were set up by merchants and landlords (Asakura [1961]; Teranishi [1982]). For most of these banks, the aim was to supply funds to those companies that the directors or owners of the banks owned or managed, and Kato [1957] called this relationship "organ bank" (kikan ginko) in the sense that the bank functioned as a *de facto* "organ" of the company. Quantitative data are scattered but, for example, Mitsui Bank, the largest ordinary bank, supplied 50% of its total loans to Mitsui affiliated companies at the end of 1900

(Kasuya [1991]).

Teranishi [1982] distinguished the long-term loans based on banks' equity from those based on deposits, and pointed out the harmful effects of "organ banks" in 20th century, when they started loans to relating companies using funds collected in the form of deposits. On the other hand, Lamoreaux[1990] made it clear that in 19th century New England "(m)any banks [are] in fact founded by kinsmen who intended to use the institutions to raise capital for their private ventures..... It was well known that many banks formed for such purposes, and investors could assume that when they bought stock in a bank they were actually investing in the enterprises of its directors," (p.158) and that "insider lending contributed in a positive way to the economic development of the region" (p.52). It seems that 19th century was a period of benign insider lending also in Japan.

5.2.3 Corporate Governance

The government made an effort to introduce the Western corporate system since early 1870's. The National Bank Act of 1873 introduced the modern corporate system, initiating the system of limited liability, stockholders' meeting and board of directors as a prerequisite for national banks. Nevertheless, in 1870's the modern joint-stock companies were not prevalent. Many of the firms had the articles of incorporation that prescribed their continuation periods of 3-5 years and restricted the transfer of stocks. They regarded firms as mere temporary personal ties (Miyamoto [1996]). In 1880's many large modern joint-stock companies were established in railways, shipping, textiles, etc., and by the end of this decade joint-stock companies became the majority of companies (Abe [1995]).

The core shareholders of these early large companies were peers, ex-samurais, and large merchants. In many cases they became presidents and directors with the

help of substantial shares they held. Imuta [1976] posed a hypothetical discussion that in 19th century Japan capital funds were mobilized through social ties of the core shareholders based on kinship, local community and business community. Also, these ties were connected to the "organ bank" relationship.

Ownership and management were apparently integrated. However, many large companies had positions of manager (shihainin) and chief engineer (gishicho) occupied by salaried experts, suggesting that the role of presidents and directors was monitoring, not management, and ownership and control of the large companies were somewhat separated even at this early stage. Many large companies also introduced a position of managing director(senmu torishimari-yaku), which was occupied by salaried experts at the beginning of 20th century (Yui[1977]), making separation of ownership and control clearer.

5.3 Employment System

5.3.1 Indirect Management of Male Workers

In introducing modern heavy industries, public and private companies relied substantially on traditional craftsmen, because otherwise there were few workers with useful skills (Sumiya [1955]). This situation substantially influenced the mode of labor management in these industries. In 19th century heavy industries, a large part of production management as well as that of recruiting, training, and administration of workers' daily life was often entrusted to the foremen (oyakata), the position originated from the traditional craftsmen. This system is called the *indirect management system* or the *inside contract system* (naibu ukeoi sei) (Hyodo [1971]).

For example, in 1882 Yokosuka Naval Shipyard enacted "Shipyard Workers Association Rule" (Zosenjo Shokko Kumiai Kisoku) and organized workers associations, each of which consisted of 7-15 workers. Their purpose was to make workers mutually familiar and correct mistakes with each other. At first, each association was managed by a "corporal" (gocho), a lower engineer, but afterward "corporals" came to be selected from workers. The management authority of the Shipyard had come to accept an autonomy at the shop-floor and entrusted production management to workers' teams headed by foremen. Before 1882, engineers could not appropriately monitor and discipline the workers and their idleness and waste of materials could not be prevented. But through organization of workers association, workers' discipline was established. On the other hand, Mitsubishi Shipyard entrusted shop-floor management to "bosses" (kogashira) of small teams of workers, who were senior workers, from the beginning (Sumiya [1955]; Hyodo [1971]).

Contracts between companies and foremen who headed the team ("corporals", "bosses" etc.) provided work incentive for the teams. Foremen made bids for a group of tasks offered by the company, and the successful foreman contracted with the company

at the price determined by the bidding. Then he arranged tasks to his team members, monitored and distributed the income from the company. This is the reason why the above mode of labor management is called the inside contract system. Foremen also played a large role in skill formation, helping workers form their skills through working under the foremen and exempting companies from engaging in a task of disciplining and training workers. The inside contract system was a hybrid system, incorporating traditional work organizations of craftsmen into modern companies.

Technology borrowed from the West still depended heavily upon manual, but non-specific, skills. Workers frequently moved from a company to a company (from a foreman to a foreman), partly for better skill formation and partly for higher wages. This aspect of labor practice was called the "migration" (watari) and those workers were called "migratory workers" (warati shokko).

5.3.2 Labor Relations with Female Workers

In 1900, workers in the textile industry was amounted to 55% of the total workers employed in factories (including state-owned factories), and at the same time 88% of the workers in the textile industry were female. Reflecting these figures, female workers amounted to 58% of the total factory workers (Takamura [1987]). Most of the female textile workers were young unmarried girls, recruited from distant places and living in company dormitories.

Oishi [1972] analyzed the labor contracts in the silk reeling companies around 1900 to find that companies contract with female workers' father who acted as the householder, not with the worker herself. Female workers were sent to the textile industry not by their own decisions but by family decisions (Tojo [1990]; Kasuga [1994]), another example of integration of indigenous and modern institutions.

Company dormitories played the role of providing disciplines as well as

supporting female workers recruited from distant regions. By this system, private companies provided universal training which could be utilized by other companies. In order to deter workers from moving companies, employment contracts often contained an article to restrict workers transfer for 3-5 years and the trade associations of the industry struck an agreement not to hire away other companies' workers (Inoki[1995]). In this period, both male and female workers mobility was high.

6. Decline and Transformation of Traditional Institutions

Those institutions evolved in late 19th century provided the basis for industrialization. Resulting change in physical environments, in turn, strongly affected the evolutionary course of institutions by bringing about their endogenous change. Through this process, however, institutional arrangements became increasingly market-oriented.

6.1 Financial Crisis and Disappearance of Insider Lending

Industrialization and development of the heavy industries accelerated during WWI, when international prices of their products soared by mobilization of production capacities to munitions production. Growth of industries, especially heavy industries, brought about large demand for long-term funds. Many companies expanded their production capacity based on bank loans, not on new security issues through the capital market. Numerous bank-oriented companies depended heavily on loans from a small number of intimate banks, and a part of these banks in turn concentrated large portion of their lending to a limited number of relating companies. The "organ bank" relationship originated in 19th century continued.

Economic growth increased national savings, changing the banks' liability

structures. In 19th century banks heavily depended upon equity. However, because deposits had increased, their ratio to the total bank liability rose steadily before WWI and sharply during WWI. Several banks adopted new management policy based upon sound banking, accommodating the change in environments. For example, Mitsui Bank's ratio of loans to Mitsui affiliate companies in the total outstanding loans, which was as high as 50% in 1900, fell to around 15% in 1920's (Ishikawa [1981]). However other banks continued the "organ bank" relationship. Taiwan Bank concentrated 38% of its total loans to Suzuki group at the end of 1924 (Bank of Japan [1969]), The Fifteenth Bank concentrated 36% to Matsukata group centering around Kawasaki Shipyard in 1926 (Bank of Japan [1969]). With a rise in deposits and the growth of heavy industries, banks, whose risk bearing capacities decreased, expanded their loans with high risk. The "organ bank" relationship caused a serious financial crisis in 1920's.

In 1920's, severe international competition under overvalued yen gave a serious damage to tradable goods, especially infant heavy, industries. Worse still, the large earthquake, which attacked Tokyo in 1923, destroyed real assets amounting to about 20 % of GNP. These conditions made the banking system extremely unstable, throwing it into a notorious financial crisis in 1927. Serious bank runs forced 44 banks to suspend their business, with their deposits amounting to 8.7% of the total. The government could not help enacting 21 days moratorium.

Although the Bank Act (Ginko Jorei) of 19th century imposed licenses for banks and monitoring by Ministry of Finance (MOF), neither entry nor prudential regulations was rigidly practiced, allowing a large number of small banks. There were still as many as 1,283 banks at the end of 1927. The main reason for the financial crisis was moral hazard induced by the "organ bank" relationship under the change of environment. The banking system introduced in 19th century became obsolete in

view of the new economic conditions, further evolution of institutions was induced to accommodate the new environment. For one, as the result of natural selection many "organ banks" bankrupted. In fact, most of those 44 banks that suspended business were of this type, including Taiwan Bank with a close tie with Suzuki and Co. and the Fifteenth Bank with Kawasaki Shipyard. For another, the Bank Law (Ginko Ho) was enacted in 1927.

The Bank Law had some articles that lacked in the Bank Act. Banks should be a joint-stock company whose capital exceed one million yen. Directors and managers of a bank should not have other jobs without approval of Minster of Finance (Bank of Japan [1986b]). These articles were included to expand scale of banks and to dissolve "organ bank" relationship by prohibition of interlocking. Among above 1,283 banks, 617 did not clear the minimum capital regulation and Most of them were merged or liquidated within 5 years (ibid.).

Meanwhile, monitoring ability of MOF and BOJ was reinforced. With the new Law in its back, MOF directed banks to regularly hand in detailed business reports of a certain form, set up the Section of Inspection (Kensa Ka) in the Bank Bureau, and suggested BOJ to do its own inspection. In response, BOJ set up the Department of Inspection (Kosa Bu) and started monitoring assets and business conditions of its customer banks by documents and on-spot inspection (ibid.).

6.2 Transformation of Zaibatsu and Development of Capital Market

Expansion of firm scales, development of the heavy industries, and their difficulty in 1920's substantially influenced the corporate system. Growth of firms was accompanied by expansion of shareholders (Takeda [1979]). During WWI number of shareholders increased substantially and shares dispersed beyond kinship and community, bringing about a problem of monitoring. The focus of the problem was the

limited monitoring capability of shareholders. Two monitoring capabilities may be distinguished; (a) capability to watch and assess investment projects and performance of companies, and (b) capability to discipline and control company management. Shareholders in 1920's lacked (a) but continued to exert (b), which was the criticism of Takahashi [1930] as a defect of the joint-stock company (Morikawa [1981]; Okazaki [1993a]).

This problem came out in two forms. First, some companies continued rapid business expansion but high dividend rate rigged their accounts, and finally failed in late 1920's and early 1930's. Failures of Kawasaki Shipyard Co., one of the largest shipbuilders, and Suzuki Co., one of the largest trading companies, were the typical cases. Second, because of the shareholders' myopia, many companies in heavy industries could not find sufficient funds for cost reduction investments. Not only they could not raise sufficient funds from the capital market, but also they had to pay large part of their profits as dividends and were forced to curtail retained profits that would have been used for investment.

Zaibatsu can be interpreted as an organizational device of corporate governance to resolve these problems. Mitsui, Mitsubishi and Sumitomo, the Three Big zaibatsu, separated their businesses as independent joint-stock companies and constructed a hierarchical network of corporations with the holding companies as headquarters around 1910's. For example in 1909, Mitsui set up Mistui Partnership (Misusi Gomei) as a holding company and reorganized Mitsui Bank and Mitsui and Co. (Mitsui Bussan) from partnerships to joint-stock companies, all the share of which were held by Mistui Gomei (Yasuoka [1982]). In 1917, Mitsubishi separated the Department of Shipbuilding (Zosen-bu) and the Temporal Department of Iron Works Construction as Mitsubishi Shipyard (Mitsubishi Zosen) and Mitsubishi Iron Works (Mistubishi Seitetsu) (Nagasawa [1981]).

This reorganization of zaibatsu had two implications. First, coordinating relating firms, the important function in 19th century, became less effective because of increasingly decentralized organizational structure. Second, decentralization made the monitoring role indispensable. Holding companies had sections with permanent stuffs to monitor the affiliated companies, dispatched directors, approved the bills from their board of directors *ex ante*, and decided their major personnel issues (Okazaki [1994b]).

Besides the Three Big zaibatsu, corporate groups called "new zaibatsu" such as Nihon Sangyo (Nissan), Nihon Chisso and Riken grew rapidly since 1920's. The history of Nissan typically supports our view that zaibatsu played the role of resolving the problems caused by the shortage of shareholders' monitoring capability. The predecessor of Nissan was a corporate group clustering around Kuhara Mining Co.. Lacking an effective monitoring device, it could not prevent an affiliated company Kuhara Co. from failing due to a large speculation (Udagawa [1987]). Because the failure of Kuhara Co. gave a serious damage to the Kuhara Mining itself, Fusanosuke Kuhara, the president of Kuhara Mining handed over the management to Gisuke Ayukawa, his brother-in-law.

Ayukawa, who became the president of Kuhara Mining in 1928, emphasized two strategies for restructuring Kuhara group; (a) raising funds from the general public and (b) reinforcing monitoring devices. He reorganized Kuhara Mining to a holding company, changed the name to Nihon Sangyo. Nissan set up 5 new departments in 1934, including the Monitoring Department (Kanri Bu) which monitored performance of the affiliated companies (Udagawa [1987]).

By these monitoring devices, the Three Big zaibatsu continued investment in the heavy industries despite their low profitability during 1920's, and Nissan could successfully restructure Kuhara group. It is notable that the monitoring function of

zaibatsu had externality to the capital market. This externality is clearly recognized by "new zaibatsu", which took strategy to raise funds from the capital market like Nissan. Ayukawa initiated a system that the public investors invested to the stocks of Nissan and Nissan as a holding company, in turn, invested to its affiliated companies. It was a system like an investment trust. In fact, Ayukawa called Nissan as a "people's investment trust."

On the other hand, Three Big zaibatsu, which had depended mainly upon internal cash flows and had been reluctant to raise funds from the capital market, began to sell to the general public a part of the stocks of their closely affiliated companies in early 1930's. These stocks, newly opened to the public, were highly valued in the capital market (Shimura [1969]), proving that the capital market highly appreciated the monitoring capability of zaibatsu. Zaibatsu provided not only internal monitoring to the affiliated companies, but also 'external monitoring function' to unaffiliated companies. Ayukawa emphasized that Nissan contributed to the investors by acquiring stocks of the inefficient 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]).

In short, zaibatsu not only played the role of "internal capital markets" (Williamson [1975]) with effective monitoring devices within themselves, but also carried out a monitoring function in the "external" capital market after WWI period. By these functions, it supported the development of the capital market as a whole after WWI. Based on the data of Shimura [1969], Takeda [1995] emphasized the fact that corporations became large shareholders of major companies in 1930's, reflecting such institutional developments of the capital market.

6.3 Establishment of Direct Labor Management

Development of heavy industries also influenced the employment system. Introduction of advanced technologies decreased the role of manual skills, making inside contract system ineffective for production management and skill formation. Around 1910, many large companies in the heavy industries abolished the inside contract system and introduced direct labor management instead. In order to manage workers and form their skills directly, these companies set up sections of labor management (Hyodo [1971]).

In many cases the companies trained workers by a trainee worker system (yoseiko seido). Companies employed new graduates from elementary schools as trainee workers, and trained them through an in-house training program and entrusting them to public vocational schools. In-house training was heavily employed to accommodate increased firm-specificity of the skills, which in turn was caused by the re-designing division of labor to take advantage of more firm-specific skills (Hyodo [1971]).

Companies took various measures to prevent worker turnovers to whom they carried out human capital investment. Around 1910, in-house welfare measures such as mutual aid cooperatives (kyosai kumiai) diffused among large companies. In 1920's many large companies raised wages periodically, making wage profile like seniority based, although wage raise was not so regular (Hyodo [1971]).

However, there was a substantial limitation to the long-term employment in this period. It is true that worker turnover rate decreased in 1920's, but it was still substantially higher than that in postwar Japan and almost the same as that in postwar US (Okazaki and Okuno-Fujiwara [1993]). In fact, employment adjustment coefficient of manufacturing industry in 1921-1936 was as high as 0.98 (Okazaki [1993a]).

High turnover rate and fast employment adjustment were caused mainly due to discharges in depression and voluntary turnovers in prosperity. Even those zaibatsu affiliated companies, which were responsible for much of long-term employment, discharged a large number of workers in 1920's and early 1930's to overcome depressions (Okazaki [1995b]). On the other hand in the middle of 1930's, when the Japanese economy was prosperous, workers frequently moved voluntarily (Gordon [1988]).

Large discharges in depression and voluntary turnovers in prosperity periods were mutually related. If high discharge rate in depression was anticipated, workers had little incentive to invest in firm-specific skills. High quit rate of workers was anticipated in prosperity, companies had little incentive to invest in firm-specific skills. Consequently, firm-specific skills did not accumulate sufficiently, which in turn stimulated discharges and turnovers.

Furthermore, these labor practices itself was institutionally complementary with the corporate governance discussed above. Labor management policies of the zaibatsu affiliated companies were surely characterized by that of relatively long time-horizon (Okazaki [1993a]), but the zaibatsu holding companies, whose main source of revenue was the returns from stocks, aimed at profit maximization of the affiliated companies.

7. War Economy as a Turning Point of Institutional Evolution

Continuous evolution of institutions halted because of the great shock caused by WWII. The government introduced the nation-wide wartime control system, changing many institutional frameworks including corporate system, capital market and labor relations.

7.1 Restricting Shareholders' Sovereignty

7.1.1 Transition from a Market Economy to a Planned Economy

WWII made it inevitable for the Japanese government to mobilize huge amount of resources for the munitions. Real GNP stagnated due to the blockade by the Allied Nations, the government expenditure and the capital formation grew rapidly, suppressing personal consumption. Large government deficit and household surplus in the I-S balance (about 30% of GNP, respectively) symbolize the scale of the mobilization (Okazaki [1995a]).

Such thorough mobilization would have caused serious social instability in the market economy. Therefore, the government decided to introduce the planning and control system substituting the market. 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 basically managed according to those plans. Transition to a planned economy caused serious friction with the institutions that 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]).

7.1.2 Corporate Reform

Friction with managing the planned economy first became apparent in the aspect of corporate governance. In early stage of Sino-Japanese war which broke out in 1937, the production plans drawn by the government were fairly well achieved by the private companies. However, starting the latter half of 1939 when WWII broke out in Europe, the achievement ratios fell substantially because price freezes decreased profitability and reduced production incentives (Okazaki [1987]). To cope with this problem, the government drew up a wide-ranging plan to institute a "new economic system." (keizai

shin taisei).

One of the cores of the "new economic system" was the corporate governance reform. The government aimed at changing corporate goals themselves so that the profit decline should not check production incentives. For this purpose the government tried to reduce shareholders' power, on the presumption that it was shareholders that forced the corporate managers to maximize profits.

The "Outline to Establish a New Economic System" (Keizai Shintaisei Kakuritsu Yoko), decided by the Cabinet in December 1940, posed a new corporate concept that regarded the company as an organic body composed of capital, management and labor, in stark contrast with the classic capitalistic concept of shareholders' sovereignty embodied in the Commercial Law. In accordance with this new corporate concept, dividend payment was regulated in April 1939. In October 1940 this dividend regulation was strengthened by the Corporate Accounting Control Act (Kaisha Keiri Tosei Rei), which prohibited companies from paying dividend over 8% without an approval of the Minister of Finance (Shibata [1992]). Dividend propensity fell and dividend rates became insensitive to the profit rates (Okazaki [1993a]). This Act also regulated the rewards for the managers, making them insensitive to the profits. Shareholders lost a device to discipline managers maximize profits.

In 1943, the Munitions Corporation Law (Gunju Gaisha Ho) was enacted, legally restricting 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 the person in charge of production (seisan sekininsha), appointment and discharge of whom should be approved by the government. Positions of the managers became protected from the shareholder pressures. This Law also allowed the person in charge of production to execute some of those matters without approvals of the shareholder meeting even if

they are prescribed as such matters by the Commercial Law (Okazaki [1993a]).

These changes in the corporate governance was reflected in the composition of directors. Comparing the composition of the major companies' directors between 1935 and 1942, the ratio of large shareholders fell and the ratio of those who were promoted from employees rose substantially, especially in the non-zaibatsu companies whose board of directors had included many large shareholders (Okazaki [1993b]). The role of the board began to change from monitoring to managing organization.

7.2 Formation of Loan Consortia and Commitment of Banks

The corporate reform affected the capital market significantly, which in turn caused institutional changes in the banking sector. Price freezes and the corporate reform made the capital market stagnant in 1940. It is natural that restrictions on the shareholders power reduced investment incentives. Furthermore banks, which were expected to substitute funds supply, became cautious of making loans because a rise in debt-equity ratio increased their risk.

To cope with these problems, the Emergency Loan Syndicate (Jikyoku Kyodo Yushi Dan) were organized in 1941 by the Industrial Bank of Japan and major private banks under the Ministry of Finance's guidance. A core bank, assisted by the Industrial Bank of Japan, assessed the soundness of each loan that applied to the Syndicate and according to that assessment other banks took part in the loan consortium. This system of delegated monitoring was similar to the postwar main bank system, although delegation was explicit unlike the postwar system (Teranishi [1993]).

Loan Consortia were extended by the mediation of the National Financial Control Association (Zenkoku Kin'yu Tosei Kai) after it's establishment in 1942. Introduction of the loan consortia system, in turn, caused organizational changes of private banks.

Major private banks set up departments of credit analysis, in many cases being integrated into loan department. The Bank of Japan expanded the Department of Monitoring to he Bureau of Monitoring (Kosa Kyoku) (Okazaki [1995a]). Loan consortia, credit analysis departments of private banks, and BOJ's Bureau of Monitoring together formed institutional foundations of indirect finance. Growth rate of bank loans, which decreased in 1940, started to increase in 1942.

Furthermore, the financial system was substantially influenced by the Munitions Corporation Law. By this Law, the Designated Financial Institution System (Shitei Kin'yu Kikan Seido) was introduced in January 1944. For each munitions corporation, the Ministry of Finance appointed a bank as its designated financial institution referring to its loan record, ownership relation, etc., and guided the bank to loan smoothly. Most of the loan consortia were dissolved and the monitoring function of the banks diminished. Nevertheless, it should be noted that the problem of ineffective monitoring, such as inefficient expenditures by the munitions corporations, was soon recognized by the financial authorities, and in early 1945 some counter measures were adopted by the government. For example, the deposit accounts of each munitions corporation were concentrated to the designated financial institution, and through these accounts the bank continuously monitored the flow of funds of these corporations and report to the financial authorities (Okazaki [1995a]).

However, the most important effect of the Designated Financial Institution System on the evolution of the financial system was that it forced financial institutions to commit to the relationship with the designated corporations. Reflecting the failure of the "organ banks" relationship, major banks had been cautious not to concentrate large amount of loans to a single company. But under the system, if a bank avoided to become a designated financial institution, it would lost direct financial relationship with major companies. Major banks competed to be designated and supplied huge

amount of loans (Miyazaki and Ito [1989]). When the war ended, these loans were left as bonds between the banks and the corporations.

7.3 Locking Employees in a Firm and Shop-Floor Oriented Management

7.3.1 Restriction of Turn Over and Skill Formation

Breakout of the Sino-Japanese War in 1937 caused a serious shortage of skilled workers. To counter, inter-firm movement of workers was legally regulated. 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 from moving to other companies without an approval of the public employment agencies (Ohara Institute of Social Problems [1964]). These restrictions on worker mobility removed the condition that would have checked formation of firm-specific skills in the prewar period.

Meanwhile, a direct measure for skill formation was taken by the government. The Factory Skilled Workers Training Act (Kojo Jigyojo Ginosha Yosei Rei) in 1939 made the trainee worker system, which emerged in 1920's, obligatory to all factories employing more than 200 workers, requiring them to have a certain number of trainees and train them for three years with wide rang of skills. (Sumiya, *et al.* [1971]).

Sumiya, *et al.* [1971], though generally skeptical about the effect of the wartime training, includes rich information about its effect. For example, although the training was isolate from the shop floor, such problem is less accute in large companies with 500-1000 workers. While training period of 3 years was too short for the chemical industry, training performance was fairly good in the machinery industry. This is significant, because the machinery industry was not only the core of munitions industries, but also it became a leading industry in the postwar period. Furthermore, while training at the end of the war became less effective, the largest electric

machinery companies such as Hitachi and Toshiba continued to train their employees, fostering a core workforce for the postwar reconstruction and development of the companies.

7.3.2 Industrial Patriotic Society and Shop-Floor Oriented Production Management

Policies to lock employees in the firm and provide in-house training were complemented by the labor organization policies. Since 1938, the Ministry of Welfare guided the companies to set up the industrial patriotic society (sangyo hokoku kai) at each factory (tan'i sanpo), based upon the new corporate concept. The industrial patriotic society was an organization of all the employees including white collar, blue collar, and managers, which organized meetings to promote productivity, labor conditions, welfare, etc. Through a diffusion of this society, many companies set up a channel for the employees to voice their complaints about labor conditions and production management.

In a draft of the "Outline of Establishment of a New Labor System," (Kinro Shintaisei Kakuritsu Yoko) the planning board called for strengthening workers' statuses, expressing its desire that a firm should not be dominated by capital but by the "substantial management body" including managers, engineers, office clerks and workers (Okazaki[1993a]). In order to materialize this plan, the Great Japan Industrial Patriotic Society (Dai Nihon Sangyo Hokoku Kai), a national headquarters of all the patriotic societies, guided each organizational unit to transform its hierarchy so that it should correspond to that of firm organization, and that at the bottom of the unit "teams of five persons" (goningmi) should be organized. The "goningumi" was originally an organization of peasants in Tokugawa period, which took joint-responsibility for taxes and played the role of mutual monitoring, a typical enforcement system with trust. The "goningumi" was introduced so that its members should

voluntarily cooperate to improve production process and that the members should daily communicate with each other (Saguchi [1991]).

Saguchi [1991] is skeptical about the actual effects of the "goningumi", pointing out that a large inflow of newly drafted workers made it difficult to maintain intimacy of a team and the foremen tend to be too young to manage the team. On the other hand, Okazaki [1994b] conjectured that importance of firm-specific (or "contextual" *a la* Aoki [1994]) software technology and human capital increased due to a serious shortage of physical capital during the war. Okazaki [1988] and Okazaki [1994a] also pointed out that, at the later stage of the war, centralized management of the war economy became difficult because of increasing uncertainty and on the spot adjustment became more important, calling for more decentralized production management.

Aoki [1997] extended this conjecture by stating that the shortage of materials and labor and frequent emergency forced an *ad hoc* adaptation on the shop-floor, resulting in ambiguous job demarcation and team-oriented approach of work organization. In contrast with an evolution of "decentralized hierarchy" based on clear job demarcation and the "scientific management" in US during the war (Baron *et al.* [1986]), Aoki [1997, 1995] interpreted this change as a step toward "horizontal hierarchy", an organizational form based on shared knowledge and horizontal coordination on the shop-floor.

Recently Wada [1995] gave ground for this Okazaki-Aoki conjecture. In order to produce as many airplanes as possible at the time of labor and material shortage during the war, Japanese engineers made great efforts to introduce the production process based on assembly lines (nagare sagyo). At the last stage of the war, a process called "suishin-ko" method was devised. The shop-floor was reorganized into small teams called "suishin-ko" with inventories of parts and semi-products, and "suishin-ko" was entrusted to manage the production flow of parts and semi-products. This

decentralized system substituted the centralized shop-floor management, which had caused a flood of slips being issued by the factory headquarters whenever frequent modification of specifications occurred (Wada [1995]).

Shop-floor oriented production management during the war also bred an intimate relationship between white-collar engineers and blue-collar workers, which in turn influenced the industrial relationship and production management in the postwar period. In order for the engineers to design new production process under those conditions, close cooperation with the blue-collar workers and detailed information on the shop-floor were indispensable.

8. Occupation Reforms and Transition to a Market Economy

The reforms carried out by the occupation authorities (GHQ) in the postwar period paradoxically played the role of fixing the new evolutionary path that had been imposed during the war.

8.1 Formation of Corporate Labor Unions

The post-war reforms of the labor relations provided the legal framework for the workers and white-collar employees who had committed to the companies by forming contextual skills during the war to protect their assets. 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 Japan. Since then, labor unions were organized rapidly, and the ratio of participating employees reached almost 50% at the end of 1947.

It is remarkable that most of the labor unions were organized for each firm and included both blue-collar and white-collar employees. Nimura [1994] and Dore [1973] argued that the craft union was lacking in Japan as the reason for this organizational

characteristics. They also noted that the nature of the workers' skills have influenced on these organizational characteristics.

Contextual skills, being team-oriented and based on close cooperation of engineers and workers, have been accumulated during the war. When a new legal framework for the labor unions was provided as a part of the occupational reforms, the employees took advantage of it to protect their contextual skills. We cannot fully explain the reason why the labor unions included both blue-collar and white-collar employees without taking into consideration the changes of production management and skills during the war. Furthermore, shortage of materials and desolation of equipment in the occupation period were more serious than during the war. The management authorities of the firms and the government could not help depending upon the team of employees to reconstruct firms and production.

In order to achieve cooperation between employers and employees, the government guided the companies to set up management councils (keiei kyogikai), through which employers had to explain their management policies and employees could express their voice. At the end of 1947, more than half of the labor unions took part in the management councils (Okazaki [1993b]).

8.2 Dissolution of Zaibatsu and Role of Banks

By dissolution of zaibatsu, the conditions that had supported the prewar corporate governance characterized by shareholder's sovereignty were completely removed. The stocks held by the holding companies and the zaibatsu families were transferred to the Holding Companies Liquidation Committee (HCLC) in 1946, and were sold to numerous small personal shareholders, who had little capabilities and incentives to monitor companies. Directors of the affiliated companies appointed by

the holding companies were forced to resign. In addition to the holding companies of Mitsui, Mitsubishi and Sumitomo, those of other company groups including "new zaibatsu" and relatively small corporate groups were liquidated (MOF [1982]).

Effect of these measures was substantial, because holding companies had played the role of monitors not only for affiliated companies but also for the capital marker as a whole in the prewar period. The Japanese capital market lost one of its most important organizational basis. Furthermore, newly introduced property tax which amounted to 10% of GNP and the land reform gave a serious damage to the wealthy people, who had been investors in the capital market, and the freezing bank deposits under hyper-inflation imposed a heavy inflation tax (Yoshikawa and Okazaki [1993]). Through these measures, fundamental basis of the capital market as well as the organizational and fundamental basis of the prewar institutions was destroyed.

Faced with this situation, the Japanese government designed a new corporate governance for the economic recovery. The government's immediate task was to reconstruct the major ex-munitions companies, which were seriously damaged financially by the 1046 cancellation of the government's wartime compensation. In 1946, the Ministry of Industry and Commerce (MIC) drew up a plan to restructure them by setting up new companies that would succeed a part of their assets necessary for civil production.

MIC emphasized the "new corporate concept" in which the rights of shareholders and mortgagees were to be restricted and the system of employees' shareholdings to be introduced for their participation in the company management, while new money to be expected from loan consortia of the Industrial Bank of Japan and ordinary banks. This "concept" is quite close to the one proposed during the war, and was reflected in the following measures.

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 under the *de facto* control of the banks with the largest credits, who would dispatch special supervisors to the company (Okazaki[1993b]). In most cases, these largest creditors were those who had acted as the designated financial institutions during the war. Banks were forced to take over the role of monitors for the corporate restructuring in view of the wartime commitment of huge loans.

Second, bank loans were supported by the loan mediation (yushi assen) policy of the Bank of Japan. 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 became less than private banks' even in 1947. BOJ supported "main banks" (shu torihiki ginko), which were the ex-designated financial institutions, to organize loan consortia. "Main banks" monitored the customer companies *ex ante*, interim and *ex post*, and reported the results to other consortia banks and BOJ (Okazaki [1996a]).

In short, by the occupational reforms, power of employees within the firm was strengthened and shareholders' capability of governance declined. This change was reflected in the composition of directors. When the directors who were responsible for the war and appointed by zaibatsu were purged by the GHQ, their successors were promoted from the employees in many cases. HCLC, the large shareholder at that time, supported this personal selection of the directors (Okazaki [1993b]). In place of a board of directors, main banks took a position of monitor.

This change in corporate governance fitted well with the skill formation in the postwar period. The role of firm-specific or contextual skills had increased since wartime. In order to manage these skills properly, managers had to understand firm-

specific or contextual skills. Furthermore, to assess the value of firms whose strength lies in the levels of contextual skills, investors and financial institutions themselves had to have contextual monitoring capability (Okazaki [1994b]).

8.3 Role of Transition to a Market Economy

Economic recovery started since 1946 partly because of 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 a large amount of excessive employment, causing extremely low profitability. Banks were unable to monitor firms who were supported by the governmental control and subsidies, encouraging managers and employees to collude. Situation was made even worse by the large pressures from the corporate unions (Okazaki[1993b]).

A series of economic reforms called the Dodge Plan forced a rapid transition to a market economy. It is at this stage when the difference in monitoring capability between banks and shareholders became clear. The transition made effective financial monitoring necessary but two candidates for a monitor functioned quite differently. First, the banks actively intervened with the management of the inefficient companies. In many cases the loan consortia, organized by main banks and supported by BOJ, cut excessive employees, forced resignation of old and dispatched new managers as a precondition for continued loans. Naturally hard confrontations between managers, supported by banks, and the labor union took place. Through hard labor disputes, excessive employment almost disappeared by 1951. Banks' commitment since the wartime, such as dispatching special supervisors and organizing loan consortia, provided incentives for the effective monitoring function (Okazaki [1994b]).

On the other hand, shareholders and the capital market did not work effectively.

Since early 1949 stock prices fell rapidly and stayed low until 1952. It was interpreted as a shareholders' negative evaluation about those companies who had continued to be dominated by the collusive insiders. However, the fact that shareholders' intervention with the management, such as internal control of a board of directors and/or a takeover through the capital market, did not took place. Monitoring mechanism of shareholders was relatively ineffective compared with that of banks (Okazaki[1993b]). It was a lack of effective takeover raiders who could have concentrated shares or proxies and restructured the companies through intervention with management that was essential The holding companies of zaibatsu had played the role of raiders in the prewar capital market, but the occupational reforms eliminated the indispensable player of the capital market.

It was not until the banks had restructured the firms and their profitability had recovered when institutional investors such as investment trusts and life insurance companies emerged as large shareholders. It implied that the banks were the main monitors of the firms and other institutional investors seemed to have depended on the monitoring function of the banks (Okazaki[1993b]), just like the prewar investors relied upon the monitoring capability of zaibatsu. However, in the postwar period, banks were interested in the growth of firms and their intervention with company management was contingent in the sense that it was limited to the case in which the company fell into financial distress (Teranishi[1993], Aoki et al [1995]).

It should be also noted that those institutional investors' interests were not confined to the returns from their investment, as is exemplified by the organizational design of the investment trust. To cope with the decline of stock prices since 1949, a series of measures were adopted to urge stable shareholding, 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[1993b],pp.134-135). In the legislating process of the

Investment Trust Law, GHQ insisted on investment trusts to be separate from securities companies. However, due to the resistance of the securities companies and MOF, eventually the Law allowed investment trusts managed by the securities companies (MOF[1979], pp.494-500). For the securities companies, it was quite profitable to be the main underwriter (shu kanji shoken) of large growing companies. Life insurance companies also had an incentive to keep relationships with large growing companies to obtain group insurance contracts. The institutional framework was formed in the postwar Japan where even the institutional investors are growth oriented and have close relations with their client companies.

Furthermore, employees also came to be growth-oriented. Through severe and not successful labor disputes from the late 1940's to early 1950's, they learned that their demands were often refused in view of severe competition in the product market and rigid monitoring in the financial market. Employees were forced to adapt to a market disciplines. Employers and banks also learned hard that corporate labor unions would firmly resist against discharges (Koike[1976]) because employees have acquired firm-specific skills. Since 1950's large companies became cautious of discharges, and consequently "life time employment" came to be an ordinary practice.

9. Concluding Remarks

The Japanese economic system started a rapid evolution through interactions with the Western societies in the late nineteenth century. The Western legal framework, organizations and technologies were imported after transformation to match with the traditional Japanese institutions, giving birth to new eclectic institutions such as “organ bank” relationship, capital market based on kinship, inside contract system etc.. An essential characteristics common to those eclectic

institutions was that they were based on relationship among relatively small sized communities with dense information flow. In this sense those institutions were supported by trust-based enforcement mechanism. Interestingly, traditional community relationship made it easier for the Japanese economy to introduce the Western organizations and technologies.

While those eclectic institutions provided a basis of economic development at the early stage, the ensued economic development in turn affected the evolution of institutions themselves. Expansion of communication and a rise of income level increased "outside options" for community members, making trust-based enforcement mechanisms ineffective. Moral hazards by "organ banks" and monitoring problems in the capital market, which took place after the WWI, were examples of such phenomenon. To cope with them, new institutions, namely zaibatsu system as a monitoring device for the internal and external capital market and the Bank Law of 1927 emerged. Meanwhile, technological progresses made the inside contract system based on craftsmanship relatively inefficient. Consequently major enterprises altered their management system from indirect to direct management. Institutions evolved endogenously through a change of incentive structures that had occurred as a consequence of economic development.

As the country developed, this endogenous institutional evolution shifted its emphasis from the trust-based mechanisms towards the authority-based enforcement mechanisms. This evolutionary path came to a turning point in the 1940's. Necessity to manage the total war against the Allied Nations made the Japanese government intervene heavily with the existing economic system. The powers of shareholders that dominated the corporate governance were restricted and, with physical capital and materials being seriously in short and the environments fluctuating continually, transfers of company management to the shop floor were

encouraged. Skilled workers and engineers, who came to be leading actors in operating and managing the shop floor, became discouraged to move across firms by legal regulations and accumulated context specific skills. At the same time, banks came to be a major source of corporate funds, substituting the capital market, because the latter became stagnant by the corporate reform. For each company, a specific bank played a central role, first as a manager of loan consortium, then as a designated financial institution, through which the bank committed to its customer company.

In short, under the government interventions and severe physical environments, large amount of investment was sunk by major players of institutional formation. It brought about, so to speak, a quasi-community relationship, because outside options for the member were low or non-existent. It should be noted, however, that these quasi-community relationship was not identical with traditional communities. The traditional Japanese community based on kinship and locality had been disappearing in the prewar period. The new quasi-community did not base upon kinship or locality, but upon context and relation specific sunk investment.

This relational nature influenced the post-war evolution of institutions when the WWII ended and government control were relaxed. A new economic system had evolved that relied heavily upon trust-based enforcement mechanisms, as exemplified by long-term employment of human resource management and relational banking system. We should emphasize the following four factors that strongly affected the formation of this system.

First, as we empnasized in the previous section, those investments made and sunk during the war lowered the outside option and founded the environments to take advantage of trust-based enforcement mechanisms. Second, payoffs for institutional arrangements that were dominant in prewar Japan fell substantially due to the reforms implemented by the occupational authority. Among them, dissolution of the

zaibatsu holding companies removed essential monitoring devices of the Japanese capital market. In short, the major role of the occupational reforms was to destroy the organizational bases of prewar institutions, not of wartime institutions.

Third, low outside option is a necessary condition for trust-based mechanisms to work, but it is not a sufficient condition. There was a unanimous concern of Japanese at the time of defeat which worked as a driving force for relational institutions to evolve in post war period. With the defeat came the devastating destruction of the country's economic base. Faced with these difficulties, the goal for the entire nation was clear and people worked hard to achieve it; to reconstruct the economy with the advanced industrial technology of the West as its target. This goal worked as a focal point for many successful adaptations that combined war legacies with the newly created democratic society. For example, despite for relatively low expected returns large commercial banks lent large amount of loans to key industries such as coal, steel, shipping, and electricity generation, making the role of banks more important. Eruptions of many serious labor disputes, led by aggressive labor union leaders and encouraged by the GHQ at the beginning, soon ceased with the creation of second unions which were more friendly to management. Workers realized that the loss of job positions was the last thing they want at the time of near starvation. A new relationship emerged between management and workers that emphasized job security.

Fourth, there existed institutional complementarity. As is explained in Okazaki and Okuno [1993], the team oriented production system based on context-specific skills and the main bank system are complementary with each other, as both looking toward growth of the firms by suppressing the intervention of shareholders. As one started to evolve the other evolved further because sunk investments by employees and by main banks enhanced the evolution of each other. Other complementary institutional arrangements, such as cross shareholding, appeared later and solidified the strengths

the post-war Japanese economic system.

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