

**Institutional Complementarities, Institutional Changes, and  
Economic Outputs: Japanese Political Economy, 1990-2005**

**by**

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# Chapter 1

## **Introduction: Puzzles and Literature Review**

### **1.1 Analyzing Japanese Political Economy**

This dissertation analyzes the post-bubble Japanese political economy after the 1990s. The first section describes why the Japanese political economy after the 1990s offers an invaluable source of research for social scientists.

#### **1.1.1. Emergence of Variance in Economic Outputs**

Up through the early 1990s, one of the most journalistically debated political economic issues were the reasons for and consequences of the seemingly indomitable Japanese economy, often characterized as the “Japanese miracle.” From the 1950s to the early 1970s, as is clear from Figure 1-1-1 and 1-1-2, Japan experienced unprecedentedly rapid economic growth. Although the growth rate moderated somewhat after the oil crisis of the late 1970s, Japan’s rate of growth still outpaced all other OECD countries. The Japanese polity also displayed uncommon features, such as prolonged single-party domination by the Liberal Democratic Party (LDP) and strong leadership offered by savvy,

powerful bureaucrats.

**Figure 1-1-1.**

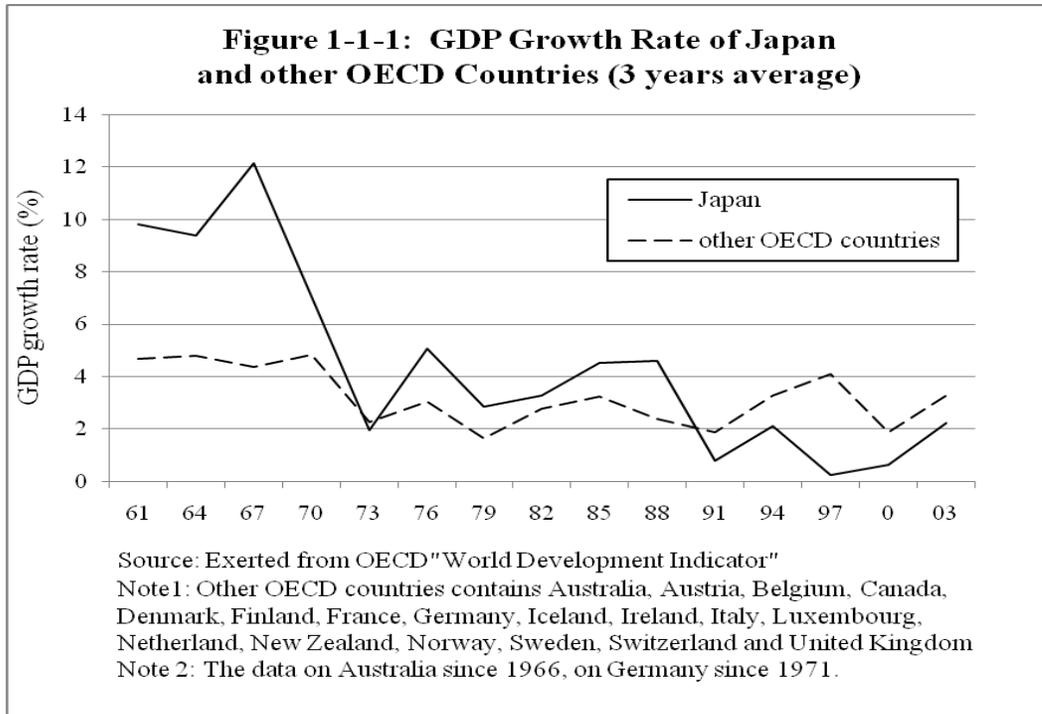
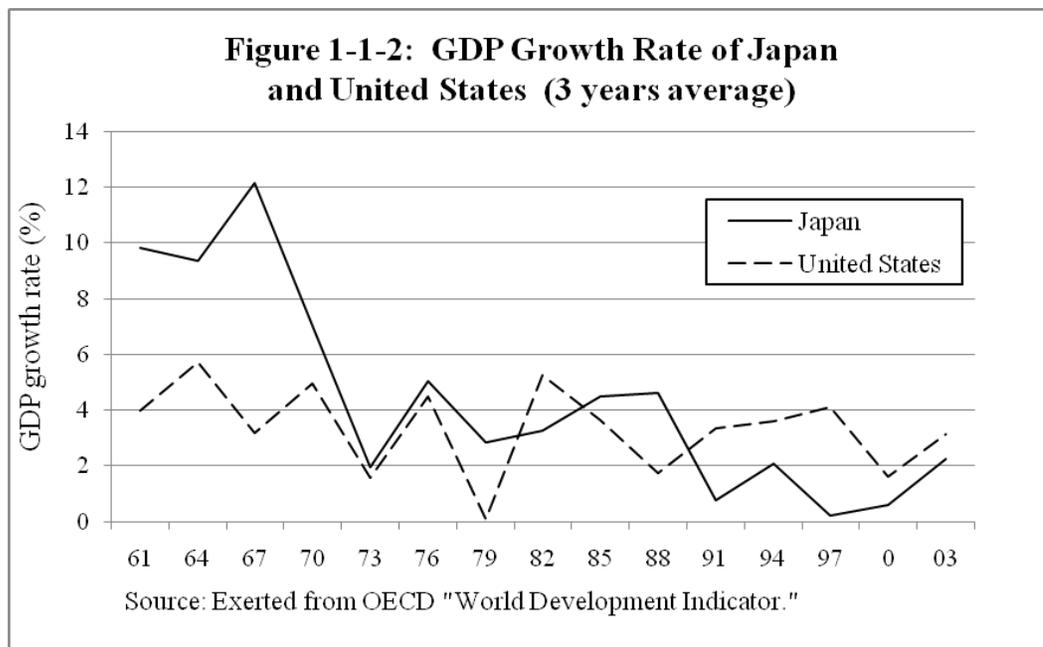


Figure 1-1-2.



Journalists and political practitioners alike attributed the secret of the Japanese miracle to its unique institutions and the distinctive behavior of Japanese firms, laborers, and the government (e.g., Fallows 1989; Preterits 1988; van Wolferen 1989). In contrast, the Japanese miracle did not garner the attention it deserved from academics, partly because it was too *unique*. Because the analytical tools utilized in the social sciences are limited in their ability to empirically test unique phenomena with low variance, unraveling the elements underlying the Japanese miracle posed a serious challenge. The few analyses that dared to tackle the enigma of the Japanese miracle typically identified Japan's unique institutions, such as the Ministry of International Trade and Industry (MITI) and long-term credit banks, as sources of its economic success (e.g., Johnson 1982; Calder 1993). Such explanations were inherently difficult to test empirically. The ironic outcome of the unique growth pattern of the Japan economy, therefore, was for studies of the Japanese political economy to be pushed to a more peculiar position in the field of comparative political economy.

After the 1990s, the growth pattern of the Japanese economy remained unique, but this time, in completely the *opposite* direction (see Figure 1-1-1 and Figure 1-1-2). The average growth rate of Japan in the 1990s was the lowest among OECD countries. Thus, when considered over the past several decades, there was significant variance in the Japanese economic output across time.

Moreover, cross sectional variance was as significant as longitudinal variance. The performance of firms significantly varied across industries both when Japan's economic

output either outpaced or lagged behind other OECD countries.<sup>1</sup> Katz (1998), for instance, characterized the Japanese economy as a “dual economy,” meaning that there co-exist within a single country super-efficient export industries and inefficient domestic industries.

### 1.1.2. The Need for a Time-Series, Cross-Sector Analysis

In contrast to the preceding decades, the difficulties of the Japanese political economy in the 1990s, and the massive institutional changes that these difficulties precipitated, provide social scientists with an invaluable opportunity to analyze the effects of political economic institutions and institutional changes on economies. Departing from previous analyses that emphasized the unique aspects of the Japanese political economy that engendered the “miracle,” we now need a systematic analysis that can explain the Japanese miracle *and* the subsequent economic stagnation, *while simultaneously* accounting for the variance across industries in economic outputs. Such a systematic analysis would inevitably generate valuable inferences that cut across national boundaries and push the study of the Japanese political economy from its current unique status towards a more central place from which contributions can be made to the field of comparative political

---

<sup>1</sup> Osano (2001), for example, points out the existence of the divergence of stock prices between “new Japan” industries, such as the telecommunication and electronics industries, and “old Japan” industries, such as the raw material, construction, and machinery industries. Business economist Michael Porter also emphasizes divergent growth patterns across Japanese industries (Porter et al., 2000). The November 22, 2002, editorial in the *Nihon Keizai Shimbun* provides an interesting account of the contrasting growth patterns of the once-dominant automobile and electronics industries after the collapse of the bubble economy.

economy.

Given such an opportunity, this dissertation is an attempt to explain *both* the miracle and the demise of the post-WWII Japanese political economy. It also aims to explain the existence of significant variance across industries by using panel data. The major explanatory variables this dissertation employs are the once-lauded Japanese political economic institutions and their changes in the 1990s.

### 1.1.3. Institutional Changes in the 1990s

Facing a prolonged economic downturn after the collapse of “bubble economy” in 1990, Japan went through extensive institutional changes during the rest of the decade<sup>2</sup>. As discussed more fully in Chapter 3, the changes began in the political sphere and then spread to administrative and economic spheres as well.

The major explanatory variables of this research are Japanese political economic institutions and their changes in the 1990s. Various scholars have pointed out that the post-WWII Japanese political economy was highlighted by the unique set of institutions under which it operated. Such a set of institutions are named differently by different scholars: the “J-Model” (Aoki 1994: 2001), “the Japanese System” (Katz 1998), “the Japanese Model” (Vogel 2006), and “the high-economic-growth-era model” (Teranishi 2003; Ikee 2006), to name a few. These institutions, which I will call the “Japan model”

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<sup>2</sup> Some advocate insists that Japan’s institutional reforms in the 90s were “too little, too slow.” (e.g., Lincoln 2001). I will argue against such claims in Chapter 3 by showing detailed empirical evidences.

had, as depicted in detail in Chapter 3, distinct features. Key players—firms, banks, economic ministries, and the Liberal Democratic Party (LDP)—were closely knitted together by informal and long-term networks. Institutions complemented each other to constitute a national level of economic governance that lessened coordination problems among key players and allowed them to save transaction costs. It was thus appropriate for the advocates of Varieties of Capitalism (VOC) to classify Japan as Coordinated Market Economies (CMEs) (Hall & Soskice 2001).

In the 1990s, however, policy makers, business executives, the media, and the public came to share the sentiment that the Japan model had become outdated in the era of a globalizing economy. They even believed that the Japan model was one of the major obstacles to an economic recovery in Japan. Extensive institutional changes were thus undertaken. The aim of these reforms was to abandon the *outmoded* Japan model and, in short, “to be more like the US.” (Nakatani 1996, 2008; Dore 2000; Jinnno 2002; Vogel 2006; Ohmori 2007) In VOC terminology, Japanese reformers in the 1990s attempted to shift Japan from CMEs to Liberalized Market Economies (LMEs)<sup>3</sup>.

Globalization and spread of neoliberalism have lead to convergence of economic policies and structures of other economies as well (Vogel 1995; Rodrik 1997). Japan was especially affected by the trend because of the inferior economic performance after the

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<sup>3</sup> After the frantic boom of reforms toward the US model settled, some experts insisted that it is the European model that Japan should follow rather than the US model (Fukushima 2002). Naoto Kan, a leader of The Democratic Party of Japan (DPJ) who became Prime Minister in 2010, once endorsed Tony Blair’s “Third Way.” Nevertheless, inclinations toward the European model have not yet moved out into the mainstream of policy debates.

1990s that contrasted clearly with the performance of other advanced economies, especially LMEs.

In the past few decades, institutions and institutional changes have been one of the most intensely debated areas in the field of political science and economics. The Japanese experience in the 1990s provides an invaluable case to analyze the mechanisms through which institutions and institutional changes affect political and economic outputs. By utilizing time-series, cross-sector variance across industries, this dissertation attempts to explain such mechanisms.

## **1.2 Puzzles and Previous Research**

This dissertation, in a broader sense, seeks to explain why and how political economic institutions and their changes affect economic outputs. The results should also contain strong implications on the overarching question of this dissertation: the stability and changeability of different institutional settings across borders. In order to do so, we need to solve the following three puzzles step by step. In each of the following sections, I will first explain why these phenomena puzzle us, then review the existing research on each puzzle, and finally attempt to show how the puzzles may be solved.

### 1.2.1. **Puzzle 1: Cyclical or Structural? Demand or Supply?**

*What was the chief cause of Japan's prolonged economic stagnation in the 1990s?*

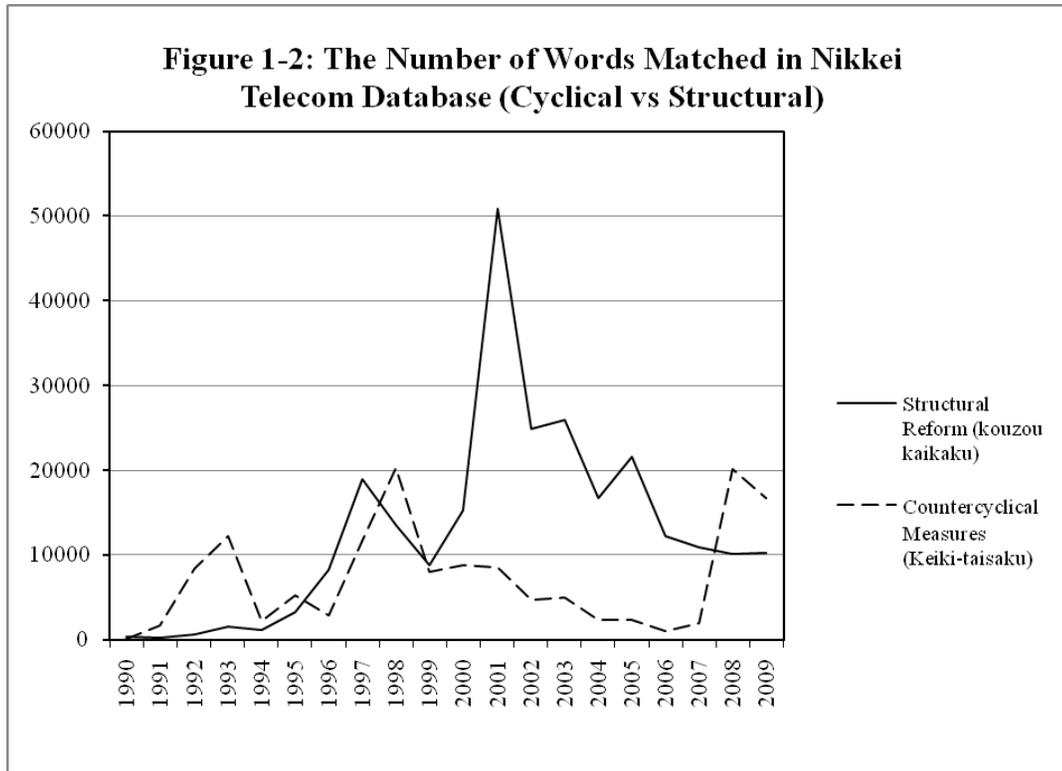
*Was the problem cyclical or structural? Was it demand-sided or supply-sided?*<sup>4</sup>

The prolonged economic stagnation in Japan in the 1990s, often labeled Japan's "Lost Decade," attracted wide attention in a variety of countries interested in investigating the causes of and providing prescriptions for the slumping economy (e.g., Harada 1998; Ono 1998; Posen 1998; Krugman 1999a, 1999b; Yoshikawa 1999; Iwata 2001; Ogawa 2009). Their approaches can roughly be divided into two types, namely, the cyclical (demand-side) approach and the structural (supply-side) approach. Media and public views strayed between the two sides, as depicted in Figure 1-2.

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<sup>4</sup> In the US, the term "supply-side approach" usually refers to the approach that cuts taxes to increase productivity. This dissertation uses the term more broadly to include any approach that aims to increase productivity in the economy (such as deregulation and corporate restructuring).

**Figure 1-2.**



Source: Nikkei Telecom Database

If Japan's economic stagnation in the 1990s was a purely cyclical phenomenon, institutional analyses should be of little importance in explaining economic outputs of industries during the decade. This dissertation, therefore, first examines if the structure of the economy had a significant impact on economic performance of Japanese industries in the 1990s. The aim here is not to deny the cyclical argument or to jump into this overheated, albeit profound, debate. It aims to show that structural factors mattered.

The short and obvious answer to this puzzle is "both." In my earlier research with Keiichiro Kobayashi (Kobayashi & Kato 2001), we theoretically and empirically showed that structural factors are causing shrinkage of demand. We insisted that the bifurcated dispute between demand-siders and supply-siders was misplaced in the first place.

In the following section, I will briefly summarize the major arguments of each approach and point out their theoretical and empirical strengths and weaknesses that relate to the main puzzles addressed in this dissertation. I will then describe how the succeeding chapters tackle this puzzle.

### **Demand-side Explanation**

Standard macroeconomic theory tells us that a sudden drop of economic output can be attributable to either insufficient demand or excess supply. The demand-side approach emphasizes the former as the major cause of Japan's "Lost Decade," while the supply-side approach emphasizes the latter.

Macroeconomists are the major proponents of the demand-side approach (e.g.,

Harada 1998; Ono 1998; Posen 1998; Krugman 1999; Yoshikawa 1999; Iwata 2001). Posen (1998) for example, points out that there was little change, or at least no sharp change, in Japan's economic fundamentals in the 1990s. Therefore, the potential economic growth of the Japanese economy should have remained relatively unchanged during the 1980s and the 1990s. Given Japan's stable economic fundamentals, Posen argues, the drop in economic growth in the 1990s can only be explained from the demand side, that is, insufficient demand.

The proponents of the demand-side approach proposed expansive monetary and/or fiscal policies as potential remedies for Japan's Lost Decade. Many urged the Bank of Japan to place inflation targets so that the Japanese economy can escape from a liquidation trap (Posen 1998; Krugman 1999; Ito 2001; Iwata 2001). Their assertions naturally led to attributing Japan's prolonged stagnation to policy failures of the Bank of Japan (BOJ) and Ministry of Finance (MOF) (Harada 1998; Ono 1998; Posen 1998; Uekusa 1999; Iwata 2001; Grimes 2001). They blamed the policies of the BOJ and the Japanese government as being "too little, too late." They called for more drastic policies, such as inflation targeting, to realize negative interest rates and/or more expansive fiscal policies despite enormous cumulative fiscal deficits. The ineffectiveness of traditional monetary and fiscal policies during the 1990s, however, resulted in microeconomists (including institutional and business economists), journalists, policy analysts, and others turning to the supply-side approach.

## Supply-side Explanation

The proponents of the supply-side approach believed that the key problems of the Japanese economy in the 1990s were not just a temporal drop of aggregate demand, as the demand-siders suggested, but were more *structural* and fundamental. That is precisely why, they claimed, the stagnation lasted for an unusually lengthy period.

The supply-siders blamed components of the once successful Japan model as blocking an economic recovery. The key obstacles they identified included such institutions as the main bank system, *keiretsu* and cross-shareholding, the lifetime employment system, an active bureaucracy, and single political party dominance<sup>5</sup> (e.g., Nakatani 1996; Katz 1998, 2003; Gao 2001; Lincoln 2001). According to the supply-side proponents, the Japan model became outdated because it faced drastic environmental changes, such as a globalizing economy, a rise in the productivity of East Asian economies, and the IT revolution. All of these factors resulted, they claim, in a substantial decrease in the competitiveness of Japanese industries and firms.

Supply-siders' prescription for economic recovery was very simple. The Japan model should be drastically and promptly altered through deregulation, corporate restructuring, and political and administrative reforms. Many of these critics, Nakatani (1996) as a typical example, insisted that Japan should be *more like the US*.<sup>6</sup> In order to explain both

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<sup>5</sup> There is, however, little consensus among scholars regarding the elements and institutions that make up the "Japan Model." In the dissertation, I will rigidly categorize the elements and institutions of the "Japan Model" to sharpen the scope of analysis.

<sup>6</sup> Nakatani (2008), who was one of the foremost advocates of structural change in the 1990s, later admitted that he was wrong in idealizing the US and the free market economy. Nakatani's ideological

Japan's unusual success prior to the 1990s and its miserable performance afterwards, they claimed that the Japan model and the industries and firms under this system were well-suited to catching up to developed countries, such as the US but not to expanding technological frontiers. Meanwhile, other East Asian economies (e.g., Korea, Taiwan, and China) were threatening Japan in its once dominant industries by fully leveraging lower labor costs and moving aggressively on rapid technological change. Governmental intervention in the economy also became less effective, they claimed, when technologies approach the frontiers and when the realities of the globalizing economy means that Japan is not longer able to protect its markets from foreign competition. Many supply-siders concluded that, in order to compete with the US in high-tech industries and to differentiate from other East Asian economies, Japan needed to discard most of the Japan model and import various types of institutions from the US. In other words, whereas the demand-siders regarded the economic stagnation of Japan in the 1990s as a short-term phenomenon (i.e., an ordinary cyclical problem) amplified by policy failures, supply-siders saw it as being rooted in more long-term, structural issues.

Regardless of all the structural changes that took place in the 1990s, as covered extensively in Chapter 3, the supply-siders, in a move interestingly similar to the demand-siders, also insisted that the changes were "too little, too late" (e.g., Lincoln 2001). Demand-siders, on the other hand, pointed out that the structural changes themselves were

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conversion symbolizes the recent mood in Japan, characterized by a backlash against structural reforms.

a partial cause of the prolonged stagnation (Ono 1998; 2001; Takemori 2002).<sup>7</sup>

The arguments of supply-siders are intuitively easy to swallow, and that appears to be the reason why they have been more widely accepted by journalists, business analysts, the public, and the overseas media. As noted at the outset (Figure 1-1-1 and 1-1-2), the growth rate of the Japanese economy was higher than all other advanced industrial economies before the 1990s and lower since then. Institutional arrangements of the Japanese political economy, often characterized as the Japan model have also been shown to possess quite unique characteristics as well. Thus, by associating Japan's unique growth pattern with its unique institutions naturally led supply-siders and their supporters to conclude that the unique institutions that fostered the Japanese miracle suddenly became outdated in the 1990s, resulting in the uniquely inferior growth pattern that followed.

### **Solving Puzzle 1**

As noted earlier, the main purpose here is not to jump into the center of this heated discussion but to simply show that the structures mattered, and mattered a lot. By doing so, we can proceed to the main point of the dissertation, which is to analyze how institutions and institutional changes affect economic outcome.

In Chapter 2, theoretical and empirical arguments are deployed to show that

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<sup>7</sup> Standard macroeconomists believe that structural reform during a recession invites further shrinkage of aggregate demand through the logic of the "fallacy of composition." For example, corporate restructuring usually enhances profitability of individual firms but, due to increase in efficiency through the restructuring, payment to labor decreases. If all the firms pursue corporate restructuring at the same time, the aggregate earning by labor will decrease resulting in further shrinkage of aggregate demand.

structure mattered. For instance, it is theoretically difficult to explain the lengthy stagnation only in cyclical terms. In order to explain the lengthiness, several studies, including my earlier research (Kobayashi & Kato 2001), claim that the Japanese political economy was trapped in a “bad equilibrium” shaped by various institutional settings (e.g., Takemori 2002; Iwai 2003). Chapter 2 briefly introduces existing theories and then empirically tests whether “structure mattered.” For example, I employ several variables that represent the “Japan model” and examine how the embeddedness of each industry to the “Japan model” affected economic performance of industry. Chapter 3 lays detailed historical evidence to show that, by the 1990s, the “Japan model” had become unsustainable. It also shows that classical fiscal and monetary policies of the Japanese government in the 1990s, the remedies recommended by the demand-siders, could not effectively lift the Japanese economy out of stagnation.

### **1.2.2. Puzzle 2: Did Japan Change?**

*If the structure of the Japanese political economy mattered in the prolonged economic stagnation of the 1990s, did the Japanese government and the private sector change the structure in order to escape from the stagnation? Did they abandon the “Japan model?” Or was the structural change “too little, too late?”*

Supply-siders disagree on whether Japan changed sufficiently and/or correctly to

recover from the prolonged stagnation of the 1990s. Lincoln (2001) claims that the major cause of the stagnation in the 1990s was structural (microeconomic) and further argues that Japan could not promptly recover from the recession because structural reforms undertaken by the government were too little, too late. Katz (1998, 2010) takes a similar, though more cautious, view. Lincoln and Katz's views were widely shared by the media and the public frustrated by the seemingly unending stagnation.

Most scholars, however, take the opposite view (e.g., Pempel 2000; Aoki 2001; Hoshi & Kashyap 2001; Toya 2003; Vogel 2006; Jackson & Miyajima 2007; Kato 2009). Laying out actual structural reform plans that were implemented after the 1990s, they at least acknowledge that the government initiated drastic structural reforms. Whereas Aoki (2001), Jackson and Miyajima (2007), and Kato (2009) regard comprehensive institutional changes as still being under transition, Vogel (2006) points out that the drastic reforms initially planned by political leaders were somewhat modified and softened by policy practitioners and business leaders upon implementation.

## **Solving Puzzle 2**

Chapter 3 will cover in detail the structural reforms undertaken in Japan since the 1990s. Statistical data shown in Chapter 2 supplements my claim that Japan indeed changed.

Several citations from governmental publications and remarks of Japanese political leaders in chapter 3 clarify that the intension of Japanese leaders in the 1990s were to

abandon the “outdated” Japan model and adopt the liberal market model. They did carry out waves of structural reforms covering a wide range of areas in politics, the bureaucracy, and the economy. They might have been a bit slow from the standpoint of the radical reformers, but there seems to be enough empirical evidence to show that the changes were indeed extensive and significant. Historical evidences introduced in chapter 3 should verify those points. Moreover, one could point out that informal institutions such as shared beliefs and norms of Japanese have changed in the 90s. As Roland (2004) indicated, informal institutions such as norms and beliefs are in general, slow-moving institutions compared fast-moving formal institutions. If beliefs and norms substantially changed in Japan in the 90s, one can more persuasively claim that Japan did change extensively.

Showing that structures and institutions mattered in the prolonged stagnation of the 1990s (puzzle 1) and that the Japanese government went through extensive structural reforms during the decade (puzzle 2) leads us to another theoretical question. That is, if structure mattered and extensive structural reforms were actually undertaken, why did not Japanese economy recover more promptly? Why were there significant variances across industries in their recoveries? This is our third puzzle and the main research target of this dissertation. I extend theories of institutions and institutional changes to solve this puzzle.

### **1.2.3. Puzzle 3: How Does Institutional Change Affect Economic Output?**

*If the political economic structure, notably the “Japan model,” was one of the major causes of the Japanese economic stagnation in the 1990s, and if the Japanese government implemented drastic structural reforms in the 1990s, why was Japan unable to recover from the stagnation more smoothly? Can the existing research on institutional change (and/or transitional economies) shed light on the Japanese experience? If not, how should we extend or alter existing theories?*

If the outdated political economic structure was one of the major causes of the stagnation and if the Japanese government radically threw away such structures, what was the problem? Why did not Japan recover more promptly? The experience of former communist economies suggests that the problem is not that simple. The post-communist experience indeed stimulated and contributed to studies of institutions and institutional change (Aoki 2001). This dissertation seeks to utilize and extend past research on institutional change and transitional political economies to explain the relationship between Japanese structural reforms after the 1990s and their economic impact.

**Previous Research: Theories of Transitional Economies and Institutional Change**

After the fall of the Berlin Wall in 1989, communist economies attempted to shift their system to that of capitalist economies. Prior to 1989, advanced capitalist economies were consistently outperforming communist economies for more than a decade. Few denied the need for communist countries to promptly and radically change their system. The structural reforms of post communist-economies led by Western economists and policy practitioners thus employed a “Big Bang” approach, arguing for simultaneous and quick introduction of all types of reforms necessary for an effective transition (for typical arguments in favor of “Big Bang” reforms, see, for example, Boycko 1992; Murphy, Shleifer & Vishny 1992; Sachs 1993). The result, however, was disastrous (Kornai 1995; Roland 2000).

Economic output drastically fell after the Big Bang reforms in virtually all post-communist economies (see Figure 3-3). For example, Russia’s GDP fell to less than 40% of the levels registered during the communist era. Other factors, such as corruption and crime, implying a loss of public spirit in society, also considerably worsened after liberalization (Roland 2000). These results were totally unexpected by the reformers and economic advisors who led the reforms, as they believed the transition was being made from an inferior system (communism) to a superior one (capitalism).

The unexpected experience of transitional economies led scholars, notably developmental economists and institutional economists, to investigate whether extensive and speedy institutional changes lead to a decline in output even when the shift is to superior and more efficient institutions. Various hypotheses were raised. As for

micro-type hypotheses, Roland and Verdier (1999), for example, claimed that search friction and investment specificity can explain post-liberalization output fall. Assuming that there are relation-specific investments that take place only after long-term partners are found, they insisted that firms do not invest while searching for new partners under a newly liberalized economy. Blanchard and Kremer (1997) explained output fall as being the result of bargaining inefficiencies between firms. As for macro-type hypotheses, controversies between advocates of the “Big Bang” approach and gradualism were one of the most debated topics in social science in the 1990s (for a summary of the controversies, see Roland 2000). The optimal speed of transition was intensely debated, and advocates of gradualism noted the failure of the East European transitional experience and the success of China.

A group of political scientists later joined the “Big Bang” controversy from a slightly different perspective. VOC advocates (Hall & Soskice 2001) see institutional change as a somewhat discontinuous process triggered by an exogenous shock because they regard institutional change as a move from one equilibrium to another, a similar view to the punctuated equilibrium model (Krasner 1984). Mahoney and Thelen (2010) and Streek and Thelen (2005), on the other hand, see institutional change as a gradual and incremental process that is induced endogenously.

Theories that attempt to explain output fall after institutional changes emphasize the role of institutions in solving coordination problems. Even if the institutional change results in a transformation to clearly more efficient institutions, as was the case of

transitional economies, the temporary loss of intimate relationships, mutual trust, and shared beliefs among key players invite serious coordination problems. Although such coordination problems will eventually be solved under the new institutions, they might invite a temporary increase in transaction costs of firms and thus temporary output fall.

### **Applicability and Shortfalls of Previous Research**

The existing research on transitional economies and institutional change is applicable to the Japanese political economy since the 1990s. Moreover, the Japanese case is a source of invaluable material in advancing genuine theoretical development of these fields.

The Japanese case resembles that of transitional economies in several aspects. Reformers sought to replace the original systems with the Anglo-Saxon model. Under the original systems (i.e., communism and the Japan model), the government played a more important role, the key players were more stable, and relationships were long-termed. Coordination problems were relatively minor under such systems, and there were marked bureaucratic inefficiencies. The key success factor for a transition is, therefore, a reorganization of institutions to minimize coordination problems. The transition strategies that reformers employed were mostly the “Big Bang” approach.

The Japanese case was, under the VOC framework, an attempt to shift the “Japan model” from CMEs to LMEs. In contrast to the case of transitional economies, it was not clear whether the Anglo-Saxon Model was superior to the “Japan model.” The Japanese

economy did outperform virtually all the other advanced industrial economies till the 1980. Nonetheless, Japanese reformers in the 1990s believed that the “Japan model” was outdated and was one of the major causes of the prolonged stagnation<sup>8</sup>.

Existing theories, however, have several shortfalls. First, most of them treat politics as an exogenous factor. Since the breakthrough research by Douglass North (e.g., 1990), institutional economists have tended to treat politics as an exogenous factor. As Masahiko Aoki and I (Aoki & Kato 2007) have pointed out, however, it is not appropriate to regard politics as an exogenous factor.

As was rightly mentioned by past scholars (e.g., Johnson 1982; Samuels 1987; Komiya et al. 1988; Calder 1989; Okimoto 1989; Noguchi 1995; Aoki et al. 1999), the Japanese economy has been characterized by frequent and active interaction between business and government (mainly economic bureaucrats) through historically developed formal and informal networks. Although such interactions have at times invited rent-seeking behavior among political and economic agents, resulting in inefficiencies of certain sectors, they also reduced transaction costs for the economic agents. These institutions and networks also enhanced the speed and scope of information flows and subsidized monitoring and sanction costs to private firms. This was especially true during the post-WWII era when the Japanese market was terribly underdeveloped.<sup>9</sup> Such an

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<sup>8</sup> As we will see in Chapter 3, the most clear cut statement of this point was raised by a report by the Study Group of Economic Reform, commonly known as the Hiraiwa Commission (Hiraiwa linkai), to the Hosokawa Cabinet in 1993.

<sup>9</sup> Here, I believe it is meaningful to make analogies between Oliver Williamson’s argument on micro-institutions (e.g., 1985; 1996) and business-government relationships. If the market of a certain

interpretation of the relationship between Japanese business and government is in line with recent developments in studies of political economy that highlight the notion of transaction costs. Contrary to earlier political economists who emphasized the incentives of firms to seek unproductive rent-seeking behavior when the government intervenes in the economy (e.g., Krueger 1974; Bates 1981; Bhagwati 1982), recent political economists have emphasized the positive role that the government plays in facilitating coordination among private actors (Rodrik 1996, 2007; Stiglitz 1999; Aoki 2001; Hall & Soskice 2001; Okazaki 2002). These scholars suggest that the government and the market do not act as a *substitute* for one another as traditional economists presumed but rather *complement* each other through processes such as reducing the transaction costs of the economy. Thus, they recognize a more active governmental role in the economy than neoclassical economists, who regard governmental intervention as being legitimate only when a market failure occurs (for criticism of such a neoclassical view, see, for example, Stiglitz 2002). Such a view has recently been shared by a wide range of economists (Hoff & Stiglitz 2001). We thus need to take political institutions into account and examine how complementary relations between economic and political institutions and their changes affect industrial outputs. Rosenbluth and Theis (2010), for example, claim that political reforms were the

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economy is underdeveloped, that is, if the transaction costs necessary for economic agents to coordinate with each other in a certain economy is relatively expensive, there should be greater rationale for the government to intervene in the economy and play an active role as a coordinator (sometimes a guarantor) between the agents. In this respect, studies of Khanna and Palepu (1997; 1999; 2000) are especially insightful. They show that the economies of scope of business groups change relative to the degree of deregulation and other liberalization measures within each economy, implying that business groups function as a substitute for a third-party contract-enforcement mechanism. In a similar context, Hoff and Stiglitz (2001) say “Transaction costs are important, particularly in developing countries.”

key determinants of subsequent economic reforms of Japan in the 1990s.

Second, related to the first point, institutional analyses on transitional economies overlook complementary relations among different institutions. In micro-analysis, they often focus on a single institution, whereas in macro-analysis they treat a national economic system as a single entity. Institutional complementarities à la Masahiko Aoki (1994, 2001) have become one of the key notions in comparative political economy. VOC advocates, for example, insist that institutional complementarities among institutions within a state allow divergent patterns of capitalisms to co-exist (Hall and Soskice 2001). National economic systems, the “Japan model” for example, should be viewed not as a single entity but a bundle of institutions that complement each other (Teranishi 2003).

Finally, past studies overlook the fact that the speed of institutional change varies across different types of institutions. Both sides of the “Big Bang” debate seem to naively assume that the speed of institutional change is somewhat controllable by reformers. The speed of institutional change, however, differs depending on institutions and organizations (Kato 2002; Roland 2004). For example, although many *formal institutions* (North 1990) can be developed in a very short time span, information- and knowledge-intensive institutions, such as active capital markets, information intermediaries, legal precedents, and an efficient judiciary, require substantial time to function effectively.

The key factors contributing to the variance of transitional speed across different

institutions include the time-consuming nature of accumulating information and of learning and skills acquisition. Because the accumulation of a “critical mass” of information to reduce the uncertainties of market players requires a substantial amount of time (Besanko et al. 1996), information intermediaries, such as rating and credit agencies that complement and enhance the effectiveness of other institutions in LMEs, need considerable time to evolve and develop. Thus, in Japan in the 1990s, when the bureaucracy and main banks that had previously assumed a major role in intermediating information across firms were suddenly forced to retreat from the market, alternative institutions able to cover this role did not emerge instantaneously. Consequently, institutional complementarities were lost, and uncertainties surrounding firms increased, leading to higher discount rates and underinvestment among firms.

Reformers need to coordinate institutional changes not only *across sectors* but also *across time*. Nonetheless, since a national economic system constitutes of a bundle of various institutions, as I will argue in Chapter 2 and 3, it is virtually impossible to perfectly control the speed of institutional transition.<sup>10</sup>

### **Solving Puzzle 3**

Puzzle 3 is the central puzzle of this dissertation. In Chapter 2, I construct a model that theoretically shows why even an idealistic institutional change that abandons

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<sup>10</sup> The best reformers can theoretically do is to coordinate the starting point of each institutional change. Even that, however, is extremely difficult to realize in a real situation, as we see in Chapter 3.

outdated institutions in favor of superior ones might induce temporary output fall. The two key assumptions in deducing the model are, first, the existence of institutional complementarities and, second, differences in the time necessary for institutional change across various institutions. I formally show that an extensive structural reform that involves a bundle of institutions to change invites a temporary loss of institutional complementarities and results in output fall. I call such temporary output fall the “death valley curve of institutional change.”<sup>11</sup> I then empirically test the model against a dataset consisting of 70 industries in the time span of 1990–2005.<sup>12</sup> The set of institutions I focus on in the empirical analysis is the “Japanese capital circulation system (J-capital circulation system),” which is one of the key subsystems of the “Japan model.”

In Chapter 3, I go through detailed historical analyses. First, by going back to the pre-WWII era, I investigate why and how the initial equilibrium (i.e., the “Japan model” and “Japanese capital circulation system (J-capital circulation system)”) developed and how the combination of institutions functioned to lessen coordination problems. Along with Aoki (1995/2000, 2001), Matsuyama (1996), Teranishi (2003), and more implicitly Hall and Soskice (2001), I regard the “Japan model” as a local maxima among various sets of institutions that cope with coordination problems.

Second, I depict in detail how the extensive institutional changes of the 1990s

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<sup>11</sup> “The death valley curve” usually refers to negative cash flow that start-ups face after their first round of financing until they establish a steady stream of revenues. I use the term to depict the temporary output fall due to the loss of institutional complementarities during extensive institutional change.

<sup>12</sup> I originally gathered data of 97 industries, but missing data and other factors (discussed in the appendices) confined my empirical analysis to 70 industries.

progressed, that is, how the initial equilibrium dissolved and the search for a new equilibrium started. The changes were not to a single entity, as some researcher naively assumes, but a simultaneous transition of a bundle of institutions. Various political and economic institutions of the “Japan model” that complement each other changed. Sometimes, the starting point of institutional changes differed, and sometimes, the speed of change differed. During the transition, the institutional complementarities among the institutions in the “Japan model” were lost. The coordination mechanism of the “Japan model” and its subsystems weakened because the once-dense and informal relationships among key players in the “Japan model” were dismantled. The temporary loss of institutional complementarities during the transition resulted in the “death valley curve.”

Third, I briefly discuss whether a new equilibrium has emerged or not. Japanese reformers in the 1990s aimed to change the “Japan model” to the Anglo-Saxon model, or in VOC terminology, CMEs to LMEs. My view, however, is that the Japanese political economic system is still under transition (for similar views, see Jackson & Miyajima 2007; Aoki 2010). I introduce the case of judicial reform and show that knowledge-intensive institutions, such as the judicial system, take an especially long time to change. The Japanese judicial system in the 2000s still is, despite extensive judicial reforms undertaken, by far smaller and less effective than those of the US and West European countries. Although Japanese reformers were aware that a strong and active judicial system complements the market-centered Anglo-Saxon model, the speed of change significantly differed between market reforms and judicial reforms. The direction

of the current transition seems to be deviating from a typical Anglo-Saxon model but rather toward a hybrid one that combines the legacy of the “Japan model” and more market-oriented institutions that emerged in the 1990s (for similar views, see Vogel 2006; Jackson & Miyajima 2007; Aoki 2010). There are backlash toward Japan seems to be searching for a set of institutions that reaches new local maxima.

#### **1.2.4. Will the World Converge? Extension of Research**

*Contrary to neoclassical economists’ view of economies, divergent patterns of capitalism co-exist even within advanced industrial economies. Will “varieties of capitalism” remain? Or will the world ultimately converge? What can we learn from the Japanese experience after the 1990s, in which reformers attempted to change the “Japan model” to the Anglo-Saxon model?*

This dissertation seeks to deepen prior understandings of institutional complementarities and the path dependency of national political economies. More simply, it seeks to elucidate why divergent patterns of capitalisms currently co-exist and whether or not patterns will converge.

As Aoki (1995/2000) pointed out, institutions *complement* each other to systematically coordinate the expectations of political and economic agents. Hall and Soskice (2001) showed that such institutional complementarities are the keys in explaining

the “varieties of capitalism” and the stability of divergent institutional settings across borders. Aoki (2001) further argued that institutional complementarities are the major source of the path dependency of national political economies.

These proponents legitimately expressed how institutional complementarities invite divergent, historically dependent, and relatively stable institutional settings across borders. Their analyses, however, are not clear on what they are actually trying to explain. For example, they do not specifically relate different types of institutional settings and/or different degrees of institutional complementarities to economic or political performance. Hall and Soskice (2001) even emphasize that economic performance is *level* among LMEs and CMEs and imply that this balance avoids convergence and thus acts as a source of divergent and *stable* institutional settings across borders.

If their ultimate aim is to explain the stableness and/or the level performance of each institutional setting, however, such an analysis lacks variance in the dependent variable (i.e., stableness *and/or* leveled economic performances across different types of institutional settings). In other words, they do not fully examine the potential consequences of when a certain institutional setting actually starts or attempts to *change* or converge. That was, however, what actually happened in Japan in the 1990s. Without investigating the consequences of institutional changes or cross-national *divergence* in institutional performance, one cannot be certain *how strong* or *how robust* the stability of each institutional setting is.

Hall and Soskice (2001) distinguish between two types of political economy, both

consisting of sets of institutions that complement each other. The first type, LMEs, include countries like the US and the UK, whereas the second type, CMEs, include France, Germany, and Japan. The authors indicate that although the institutional settings of these two types of economies differ greatly, the economic performances of the two are indistinguishable from one another. VOC advocates thus seem to be claiming that the bases of stability of each type of economy are not only institutional complementarities but also leveled economic performances. That is, if the performance differs widely between the two economies, policymakers and the public—who stand to suffer from the inferior performance of their institutional setting—should have a number of incentives to transform their system to that of the other. That is exactly what Japanese reformers and the public in the 1990s thought. Thus, in Hall and Soskice’s assertion, the stability of LMEs and CMEs should depend not only on the degree of tightness of institutional complementarities but also on the difference of economic performances between the two systems. To assess the appropriateness of such relations, we need to incorporate *dynamism* into our analysis of institutional complementarities; that is, we need to combine analyses of institutional changes and institutional complementarities and investigate their relationship with economic performance. If a set of institutions that complement each other – we define such a set as “system” in this dissertation – can be easily changed without negative consequences, such a system should be instable. A country that is suffering from economic downturn would, in such a case, change its system to the one enjoying superior performance. Eventually, different systems of economies around the

world are likely to converge to the systems with superior performance.

Shleifer (2002), on the other hand, sees *divergent* economic performance across countries that have different legal origins. For example, Shleifer and others empirically demonstrated that the development of capital markets and the degree of investor protections are least advanced in countries that imported French laws. Conversely, countries that imported English common law are generally the most advanced in such criteria, while those that imported German and Scandinavian laws come somewhere in between (La Porta et al. 1997, 1998).

Advocates of this legal origins theory (LOT) also fail, however, to explain why countries with inferior legal settings (i.e., in their view, countries that imported continental laws) have not yet attempted to *change* their legal systems to superior ones. Even if one accepts the results of LOT advocates' empirical analyses (for alternative interpretation of their results, see Berkowitz et al. 2002), in order to explain why divergent institutional settings *do* actually exist across borders, one has to examine the possible consequences of institutional changes.

### **Finding Implications**

The theories and empirical results of this dissertation pose strong implications for the debates introduced. Chapter 2 theoretically shows a temporary output fall of an extensive institutional change. I name it the “death valley curve of institutional change.” The theory has strong implications for VOC and LOT debates. In Chapter 3, historical

evidence is shown to deepen our understandings of how difficult system transition is. Such difficulty and the resulting output fall (i.e., death valley curve) likely will strengthen the stability of national political economies. On the contrary, if an extensive institutional change can be executed with little cost, that is, if the “death valley curve” is shallow, a country experiencing economic difficulties will likely change its system more frequently. And as a result, the world is likely to converge.

As one can see from the fact that Andrei Shleifer was RePEc’s most cited economist (RePEc 2010),<sup>13</sup> LOT has become one of the most influential economic theories in recent years. VOC, on the other hand, has been one of the most debated topics in comparative political economy (for a compact summary and leading articles in the VOC debate, see Hancke 2009). A major criticism of VOC and LOT has been that both are deterministic and static (Hancke et al. 2007; Haber & Perotti 2008). This dissertation and the Japanese experience add dynamism to the VOC and LOT debate. As was the case of Japan in the 1990s, states with poor economic performance do sometimes drastically change their systems. In Japan’s case, Japanese reformers sought to change the economy from CMEs to LMEs<sup>14</sup>. Some states might even aim to thoroughly change their legal system to negate the unfavorable effects of their legal origins. This dissertation addresses what might happen if such objectives are carried out.

The Japanese political economy in the 1990s provides invaluable examples of how

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<sup>13</sup> <http://ideas.repec.org/top/top.person.nbcites.html>

<sup>14</sup> As described in detail in Chapter 3, Japan indeed changed from LMEs to CMEs in the pre-WWII period.

institutional changes affect institutional complementarities and economic outputs. A set of tightly woven and unique institutions once characterized as the “Japanese model” underwent extensive changes during the 1990s with the aim of becoming “more like the US.” Institutional complementarities loosened during these changes, and firms that relied on typical components of the “Japan model,” such as the main banks system and an active economic bureaucracy for coordination had to seek alternatives. This dissertation examines why institutional complementarities loosen during institutional transitions and how the loosening of institutional complementarities affects economic outputs through coordination failure among economic agents. I believe that analyzing such dynamism substantially deepens our understanding of why and to what extent divergent institutional settings across borders are stable. In other words, such an analysis not only extends our prior understanding of institutional changes and institutional complementarities but also provides a rigid test for the validity of past works, such as the arguments offered by Aoki (2001), VOC advocates (Hall and Soskice 2001), and LOT advocates (La Porta et al. 2008).

#### **1.2.5. Summary**

For puzzle 1, I claim that political economic structure mattered in Japan’s prolonged stagnation during the 1990s. I give statistical evidence in Chapter 2 and historical and qualitative evidence in Chapter 3 to verify my claim. For puzzle 2, I claim that the Japan model has indeed changed extensively. Historical evidence in Chapter 3 mainly supports

my claim here.

If structure was one of the major causes of Japan's prolonged stagnation and if Japanese reformers actually attempted to change the structure, why was Japan unable to escape the stagnation earlier? This question leads to the main puzzle of this dissertation which is puzzle 3. In Chapter 2, I show that even an ideal institutional change that attempts to change from an outdated set of institutions to superior ones invites a temporary loss of institutional complementarities and output fall. I call such difficulties during institutional change the "death valley curve of institutional change." I test the model against time-series, cross-sectoral data in Chapter 2 and historical evidence in Chapter 3. I also examine the appropriateness of the model by analytically examining historical evidence in Chapter 3 (for a similar approach toward historical case studies, see Bates et al. 1998).

Theories and empirical results of this dissertation have strong implications for the overarching question on convergence of economic systems. An evolutionary view of the world economy might lead one to predict that the world will eventually converge to the system that is the fittest to survive. States with inferior systems will gradually make the transition to superior ones. The theories and empirical evidence shown in Chapter 2 and 3 indicate, however, that such transitions involve considerable pain. Even an idealistic system transition that shifts from an inferior system to a superior one has to endure a temporary economic downturn: i.e., a "death valley curve." The existence of the "death valley curve of institutional transition" adds dynamism and greater rationale to LOT and

VOC arguments. If common law countries are economically outperforming civil law countries, as LOT advocates assert, why are civil law countries not fundamentally altering their legal systems? Similarly, in the VOC context, if CMEs are outperformed by LMEs, or vice versa, why are the two not converging to the superior one? This, at least, is what Japanese reformers in the 1990s sought. The theories of this dissertation partially answer these questions. The serious pain that accompanies system transitions can explain the stability and robustness of divergent capitalist systems. Only countries with untiring perseverance, strong public support, and determination can endure the lengthy and painful process of the “death valley curve.” Japan is still in the valley, searching for a way out.

## **1.3 Methodology**

In this dissertation, I first present hypotheses and construct formal models that represent them (Chapter 2). I then test the hypotheses empirically by statistical analysis (Chapter 2) and historical analysis (Chapter 3). The following is a brief introduction of the essence of the methodology I employ in this dissertation.

### **1.3.1. Unit of Analysis**

The primary unit of analysis of this dissertation is *industry*. Business economists have made strong arguments that even in the US, where the market is well-developed,

industry does matter significantly (e.g., Porter & McGahan 1997)<sup>15</sup>. Michael Porter and his colleague (Porter et al. 2000) further insisted that industry-level strategies are the key determinants of success and failure of Japanese industries and economy. Several major contributions in the field of political economy also use industry as a unit of analysis (e.g., Magee et al. 1989; Grossman, & Helpman 1994)<sup>16</sup>. There is further rationale for choosing industry as the primary unit of analysis for this research when considering the history and structure of the Japanese political economy. As Chapter 3 describes in detail, by inheriting the legacy of the wartime economy, industry played a special role in the post-WWII Japanese political economy. Teranishi (2003) pointed out that in Japan, industry worked as a political platform for interest coordination—a role played by social classes in Western countries. Others similarly indicated that the Japanese political economy was vertically partitioned by industry, and so it functioned as the basic unit of political economic coordination. Whereas Sato and Matsuzaki (1986) and Aoki (1995/2000) called the Japanese version of the iron triangle “*shikirareta tagenshugi*” (bureauplurarism), Murakami (1994) named it “compartmentalized competition.” As they correctly pointed out, the LDP and each ministry’s departments were divided vertically by industrial sectors. As a consequence, political economic institutions and industrial structures varied across industries resulting in the “dual economy” (Katz 1998), high variance of profitability across Japanese industries.

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<sup>15</sup> Porter (1980) points out features of industries that define competitive structure of each industry and firms within the industry.

<sup>16</sup> In these types of research, authors usually assume immobile assets or asset specificity (Alt & Gilligan 1994)..

If this research was an analysis of a purely economic phenomenon, firms would have been a strong candidate for the unit of analysis.<sup>17</sup> Since it aims to analyze the Japanese political economic system, however, choosing industry as the primary unit of analysis was deemed more appropriate.

### 1.3.2. Theories

In Chapter 2, I present hypotheses of this research and then construct formal models that correspond to them. The core model of this dissertation shows why extensive institutional changes inevitably invite temporary output fall during transition. I call this theory the “death valley curve of institutional change.”

In Chapter 3, I go through the history of the Japanese political economy to examine and refine the hypotheses. There, I explore detailed historical evidence to investigate whether the assumptions, mechanisms, and causal relationships of the hypotheses are rightly placed. The approach here utilizes the “analytic narratives” (Bates et al. 1998) proposed by a group of leading social scientists. It emphasizes positive feedbacks between theory and empirical evidence in theory building. Not only do I test hypotheses against historical evidences but also try to refine theories from historical evidence.<sup>18</sup>

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<sup>17</sup> Jackson and Miyajima (2007), for example, made convincing analyses of how Japanese firms changed after the 1990s.

<sup>18</sup> Toya (2001) makes an intriguing analysis of the Japanese financial Big Bang by employing an analytic narrative approach.

### 1.3.3. Empirical Analysis

In the latter half section of Chapter 2, I statistically test the validity of hypotheses proposed in the earlier part of the chapter. I use panel data analyses as the main tool of statistical tests and supplement them with quantitative and qualitative data. Historical analyses in Chapter 3 also attempt to examine the empirical validity of the hypotheses.

The primary dataset for the economic variables is the Japan Industrial Productivity Database 2006 (JIP 2006).<sup>19</sup> This is supplemented with political data and other necessary data for statistical tests.<sup>20</sup> The number of industries examined is 70 and the time span of the dataset is 1990-2005<sup>21</sup>.

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<sup>19</sup> The dataset can be downloaded from <http://www.rieti.go.jp/en/database/d05.html>. The dataset was compiled by the Research Institute of Economy, Trade and Industry (RIETI), a research organization affiliated with the Ministry of Economy, Trade and Industry (METI).

<sup>20</sup> Since different datasets use different industrial categorization, I developed an industrial conversion matrix across different datasets originally constructed by JIP researchers. Details are shown in Appendix A.

<sup>21</sup> JIP 2006 consists of 106 industries. I removed industries that are inappropriate for testing the hypotheses (e.g., the financial industry). Missing data of other datasets consequently reduced the sample size to 70. Details are shown in Appendix B and C.

## Chapter 2

# **How Institutional Change Affects Economic Output: Models and Empirical Tests**

This chapter presents definitions of key terminologies, raises hypotheses, constructs formal models, and then tests them against statistical data. The hypotheses attempt to solve the three puzzles outlined in Chapter 1. They are also refined through an analytic narrative (Bates et al. 1998) of the history of the Japanese political economy in Chapter 3.

### **2.1 Definitions**

We first need to define key terminologies before raising hypotheses. It is not productive, however, to dwell too heavily on definitions (e.g., institution) before actually starting an analysis. As Aoki (2001) correctly states it, the definitions of key terms depend on the purpose of analysis.

#### **2.1.1. Institution**

##### **Definition 2-1: Institution**

Given the exogenously determined rules of the game, *institutions* are the equilibrium of

the game and thus self-enforcing.

In-depth arguments have been made on establishing an appropriate definition for “institution.” Three types of definitions are prevalent among scholars. The first group defines the word as “the rules of the game” (North 1981, 1990; Sened 1997), the second as “the equilibrium of the game” (Schotter 1981; Aoki 1995/2000; Calvert 1995; Greif 1997), and the third as the “self-sustaining system of shared belief” (Aoki 2001). I follow the second definition in this dissertation.

The “institution as rules” approach of economists (e.g., North 1990) often assumes that the rules are determined in the political market; i.e., it leaves politics as an exogenous factor. The approach has an affinity with Williamson’s transaction economics approach (Greif 2006).<sup>22</sup> The “institution as rules” approach cannot, however, fully explain why laws are sometimes followed and sometimes not and why non-governmental, private orders often have been more influential on individual behavior than laws. This approach also has limits in analysis of institutional dynamics. Institutional changes, according to this approach, only occur when the behavioral pattern of political actors who set the rules changes.

The “institution as equilibria” approach, on the other hand, can explain self-enforcing private orders and endogenously generated institutional changes. In regard

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<sup>22</sup> More precisely, Williamson (1996) distinguishes the macro-level institutional environment from micro-level institutions of governance and regards the former as the rules of games.

to politics, the equilibria approach treats it as an endogenous factor in the game. Finally, the “institutions as shared beliefs” approach emphasizes the necessity to explain why a particular equilibrium is observed when there exist multiple equilibria.

Since this dissertation places politics in the center of analysis, the first definition should not be taken. I follow the second definition because this dissertation does not focus on explaining the actual “equilibrium path” (Aoki 2001) that the third definition is concerned with. Also the second definition is simpler and more widely shared than the third. Under “the equilibrium of the game” definition, institutions not only include formal rules, such as laws, regulations, and contracts but also informal rules, such as social norms, conventions, customs, and shared beliefs. Rules are determined prior to the game, and a player cannot singlehandedly change the equilibrium of the game, which is an institution (Aoki & Kato 2007). If several players simultaneously change their behavior, however, the equilibrium might change.

**Definition 2-2: Macro-level and micro-level institution**

*Macro-level* institutions are institutions that function at the national level, uniformly covering the whole range of industries. *Micro-level* institutions are institutions that function at the industry level and vary across different industries.

Typical examples of macro-level institutions are laws, such as antitrust legislation, and more informally, national culture and shared beliefs. Micro-level institutions include

industrial structure and also the norms and business customs of each industry. Note that these definitions slightly differ from Williamson's (1996) use of macro- and micro- level institutions.

**Definition 2-3: Institutional complementarities**

Two institutions are *complementary* if the presence of one institution increases the returns of the other<sup>23</sup>.

**Definition 2-4: System**

*System* is a set of institutions that complement each other.

The term “institution” is generally used to indicate not only a single institution but also a set of mutually complementary institutions. Since a set of institutions do sometimes function as an equilibrium of a game, there is rationale for such usage. To avoid confusion, however, I define *institution* as the minimum unit and *system* as a set of multiple institutions that complement each other.

**2.1.2. Japan Model and J-capital circulation system**

The post-WWII Japanese political economy was highlighted by a distinct set of institutions. The so-called “Japanese system,” characterized by intimate, informal, and

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<sup>23</sup> For a formal definition, see Appendix D.

long-term relationships among key political and economic players, was fully functioning during the high-growth era and lasted at least until the collapse of the bubble economy. As already described in the introductory chapter, different scholars named the “Japanese system” differently. In this dissertation, I use the term “Japan model” to represent a set of complementary institutions in the post-WWII Japanese political economy. The reasons for choosing this term are threefold: First, to distinguish it from the other terms already in use. Second, it clarifies the fact that the system consists of both economic and political institutions. Third, it can be contrasted with the notion, “Anglo-Saxon model.”

I do not, however, attempt to strictly define the “Japan model” because doing so will only generate barren debate before actual analysis begins. In order to start analyzing, one needs to identify a set of institutions—the *system* in the sense of definition 2-4—that complement each other and are likely to represent the Japan model. Such a system does not need to precisely correspond to the Japan model. Nonetheless, analyzing such a system and changes to it enables us to draw inferences about how the extensive institutional changes that took place in Japan in the 1990s impacted the economy.

The Japan model is characterized by intimate, long-term, informal, and cooperative relationships between firms, the government, and banks. The government-firm relationship is often symbolized by an active and powerful bureaucracy.<sup>24</sup> The once renowned main bank system and active public financial institutions are typical

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<sup>24</sup> Careful empirical research shows, however, that the relationship between the bureaucracy and firms was mutual and two-way (e.g., Samuels 1987).

characteristics of the Japanese financial system. *Keiretsu* is the key feature of the post-WWII Japanese inter-firm relationship.<sup>25</sup>

The following sections of this dissertation focus, in particular, on a key subsystem of the Japan model, namely, the Japanese capital flow system (J-capital circulation system) depicted in Figure 2-1.<sup>26</sup> The J-capital circulation system, by its nature, shares many features with the Japan model, particularly the intimate relationships between industry, government, and banks. By focusing on the J-capital circulation system and its changes, moreover, one can more effectively demarcate the range of empirical analyses.

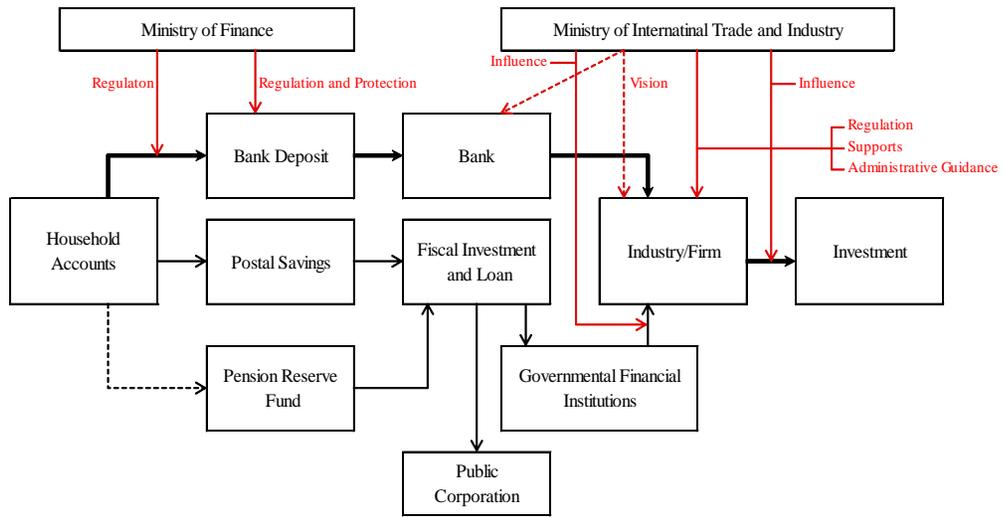
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<sup>25</sup> A *keiretsu* is a grouping or family of affiliated companies that form a tight-knit alliance to work toward each other's success. It usually forms a supply chain of a certain product.

<sup>26</sup> For a detailed explanation of the J-capital circulation system, refer to Chapter 3.

**Figure 2- 1**

Figure2-1: Japanese Capital Flow System (J-Capital System) until 1990's



The J-capital circulation system and its historical evolution will be described in detail in Chapter 3. Under this system, mainly owing to the regulatory power of the Ministry of Finance (MOF), the capital market was underdeveloped, and the flow of capital from households to firms was extremely confined. Since each household had little choice other than depositing their savings in banks, and since firms had little choice other than borrowing from banks to finance their investments, banks played a decisive role in the J-capital circulation system. The bureaucracy, notably the Ministry of International Trade and Industry (MITI), acted as *coordinator* and *information intermediary*, positioned in the middle of business-government networks. Inheriting the legacy of the wartime economy, industry functioned as a basic platform for political economic coordination and adjustment (Teranishi 2003). Thus the institutional characteristics of the J-capital circulation system, similar to those of the Japan model, are long-term industry-bank and industry-government relationships. Industry acted as a platform for political economic adjustments. Capital market and financial coordination mechanism through the market were underdeveloped, especially in the early era.

## **2.2 Hypotheses**

Hypotheses are formulated in accordance to the puzzles raised in the introductory chapter. As for the main puzzle of this dissertation, which is puzzle 3, I construct a simple model to theoretically show how the hypothesis is derived.

*Hypothesis 1: Industries that were more firmly embedded in the “Japan model” were more likely to suffer output fall after the collapse of bubble economy and extensive system reforms in the 1990s.*

There has been long and heated discussion on what caused Japan’s prolonged stagnation, centered on whether the stagnation was caused by demand-side or supply-side factors. As noted in the introductory chapter, this dissertation does not aim to join this debate.<sup>27</sup> Rather, it aims to show that structure *mattered* during the stagnation of the 1990s.

The basic logic behind hypothesis 1 is as follows. The extensive institutional changes in the 1990s that loosened the institutional complementarities of the Japan model impacted the industries that relied more on the Japan model to solve their coordination problems to a greater degree than the industries that were less embedded. As past political scientists and economists, such as Johnson (1982), Komiya et al. (1988), Okimoto (1989), and Hoshi and Kashap (2001) have demonstrated, business-government and business-bank relationships in Japan developed over a long period of time through the creation of various formal and informal institutions, organizations, and contract schemes in order to reduce transaction costs. The J-capital circulation system was at the center of such a Japan model. As Noguchi (1995), Hoshi and Kashap (2001), and others have

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<sup>27</sup> In my earlier research with Keiichiro Kobayashi (Kobayashi & Kato 2001), we showed that both the demand-side and supply-side mattered. Our argument was that bad debts that had accumulated in the supply-side were causing shrinkage of demand.

pointed out, the wartime political economic structure continued to affect the post-WWII business-government and bank-firm relationships in key industries.

Industries that relied heavily on banks and the bureaucracy faced a steep rise in transaction costs during 1990s, when the Japan model and its subsystems, including the J-capital circulation system, started to dissolve. Such a rise in transaction cost should lead to a decline of capital investment. In other words, the more embedded the industry was to the original institutional arrangement (i.e., the J-capital circulation system), the more it sustained a negative effect during the period of institutional transition in the 1990s.

***Hypothesis 2: Major components of the “Japan model” and its subsystem, the J-capital circulation system, changed extensively during the 1990s. The Japan model and J-capital circulation system no longer function as before.***

Strictly speaking, hypothesis 2 should not be labeled a “hypothesis” because it is not about causal relations but is a confirmation of what actually happened in Japan in the 1990s. Nevertheless, substantial debate has been conducted on this issue, and many journalists recognize that Japanese reforms in 1990s were “too little, too late.” Lincoln (2001) strongly endorses such a view. The majority of academics, however, take the opposite view (e.g., Pempel 2000; Aoki 2001; Hoshi & Kashyap 2001; Toya 2003; Vogel 2006; Jackson & Miyajima 2007; Kato 2009). If the Japanese model and its subsystems did not change significantly, the Japanese case would not be an appropriate empirical test

of the effects of institutional change. Thus we need to first confirm this hypothesis before going forward.

***Hypothesis 3: An extensive system change, under which industries operate, inevitably invites temporary output fall of industries because institutional complementarities will be lost temporally during the change.***

In hypothesis 1, I hypothesize that the structure of the Japanese political economy, notably the once renowned Japan model, had a negative impact on industrial outputs during the prolonged stagnation in the 1990. In hypothesis 2, I hypothesize that the Japan model actually changed significantly since the 1990s. If these two hypotheses stand, it seems that the Japanese economy should recover from the stagnation promptly. In hypothesis 3, however, I hypothesize that an extensive institutional change—a “system change” (definition 2-4 in this dissertation)—inevitably invites output fall even if the system is changing from an inferior to a superior one<sup>28</sup>. I call the inevitable output fall of system change the “death valley curve of institutional change.”

### **Model of the “Death Valley Curve of Institutional Change”**

The theory of the “death valley curve of institutional change” relies on the following

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<sup>28</sup> Although there still is no definitive answer to whether or not the Japan model was inferior to the Anglo-Saxon model, capitalism seemed to be clearly superior to communism in 1990. The transition from communism to capitalism, however, invited disastrous economic results (Roland 2001).

two simple assumptions.

**Assumption 2-1:** Existence of institutional complementarities (Definition 2-3)

**Assumption 2-2:** The time necessary for institutions to change varies from one institution to another.

The idea of institutional complementarities has been widely accepted by economists (e.g., Aoki 2001; Hoff and Stiglitz 2001; Teranishi 2003; Roland 2004), political scientists (Hall & Soskice 2001) and sociologists (Kenworthy 2006). Assumption 2-2 is probably less well acknowledged but no less important. Earlier, I (Kato 2003) pointed out that the time necessary for each institution to develop *varies* substantially. Even “formal” institutions (North 1990) that can be created in a day, such as legal frameworks, require a considerable amount of time to operate effectively.<sup>29</sup> Roland (2004) classifies institutions into “slow-moving” and “fast-moving” institutions. Typical examples of the former, according to Roland, are informal institutions, such as beliefs and values; political institutions are examples of the latter.

The key sources contributing to the variance across different institutions include the time-consuming nature of accumulating information and of learning and skills acquisition. Because the accumulating of a “critical mass” of information in order to reduce the uncertainties of market players requires a substantial amount of time (Besanko et al. 1996),

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<sup>29</sup> For instance, ambiguities of key terminologies used in newly established provisions will eventually lessen as transactions and litigations based on the provisions accumulate. However, such a process is time-consuming.

information intermediaries need considerable time to evolve and develop. The learning process also consumes a substantial amount of time. If, for example, very few skilled financial lawyers, judges, and financial specialists are available, an introduction of a new financial law (e.g., bankruptcy law) will only be partially effective. Training such specialists, however, takes a considerable amount of time because of the time-consuming nature of the learning process. This will be discussed in depth in Chapter 3.

### **Model**

First, let assume that the performance ( $y_t$ ) of system  $S_t$  is dependent on the strength of two institutions  $I_t$  and  $i_t$ . Let  $s_t$  and  $r_t$  denote the strength of institutions  $I_t$  and  $i_t$  (e.g., strength of regulation) and let  $s_t \in [0, 1]$ ,  $r_t \in [0, 1]$ . Also from assumption 2-1, suppose  $I_t$  and  $i_t$  complement each other when  $s_t = r_t$ .

The performance of  $S_t$  can be shown in the following simple model<sup>30</sup>;

$$y_t = y_t(s_t, r_t) = \alpha s_t r_t - \beta (s_t - r_t)^2 + \gamma, \quad (2-1)$$

$$\alpha > 0, \beta > 0, \gamma > 0.$$

The second term show strong complementarities between  $I_t$  and  $i_t$ .<sup>31</sup> If  $I_t$  and  $i_t$  deviate from complementary relations (i.e., when  $s_t = r_t$ ), the performance ( $y_t$ ) of system

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<sup>30</sup> For a more formal representation of the model with  $n$  institutions, see Appendix D.

<sup>31</sup> The first term also shows complementarities between  $I_t$  and  $i_t$ .

$S_t$  decreases substantially.

Suppose that the initial system  $S_0$  ( $y_0 = \gamma$ ) was at the point of  $s_0 = r_0 = 0$  and extensive system reforms were undertaken to change toward a superior system  $S_1$  ( $y_1 = \alpha + \gamma > \gamma = y_0$ ) where  $s_1 = r_1 = 1$ . From assumption 2-2, suppose that the speed of institutional change differs between  $I_t$  and  $i_t$ . For simplicity's sake, if we assume that  $i_t$  moves 10 times faster than  $I_t$  and that  $s_t$  and  $r_t$  change at the pace of

$$s_t = t \quad (2-2)$$

$$r_t = 10t \quad (2-3)$$

$r_t$  reaches  $r_t = 1$  at  $t \geq 1/10$ , whereas  $s_t$  reaches  $s_t=1$  at  $t=1$ . The performance ( $y_t$ ) of  $S_t$  during  $0 \leq t \leq 1$  can be thus shown as:

$$y_t = 10\alpha t^2 - 81\beta t^2 + \gamma \quad \text{for } 0 \leq t \leq 1/10 \quad (2-4)$$

$$y_t = \alpha t - \beta(t - 1)^2 + \gamma \quad \text{for } 1/10 \leq t \leq 1 \quad (2-5)$$

$$y_t = y_1 = \alpha + \gamma > \gamma = y_0 \quad \text{for } 1 \leq t \quad (2-6)$$

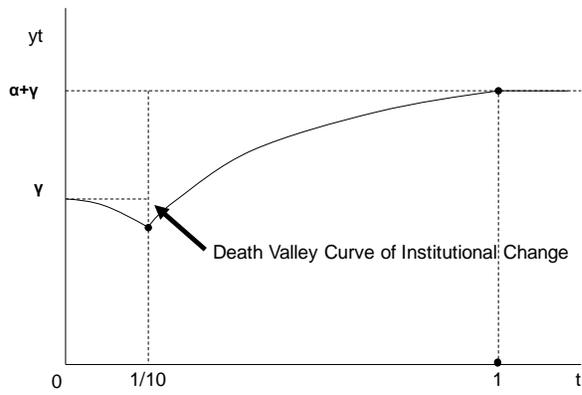
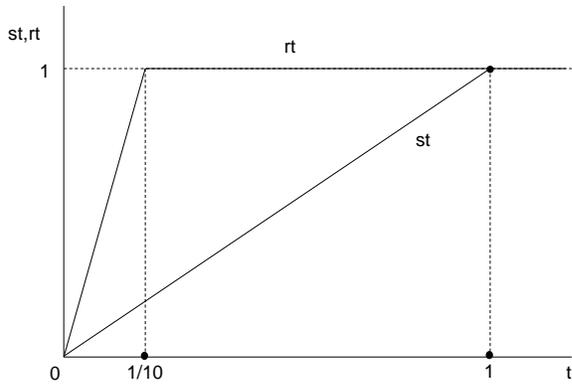
For the sake of simplicity, let  $\alpha=\beta=1$ . Then when  $0 \leq t \leq 1/10$ ,  $y_t = -71t^2 + \gamma < y_0 = \gamma$ . Thus when  $0 \leq t \leq 1/10$ , the performance of system  $S_t$  temporarily drops under the initial system  $S_0$  even though the system change was heading to a more superior system  $S_1$ . This

is what I call the “death valley curve of institutional change.”

If the Japan model was outperformed by the Anglo-Saxon model in the 1990s, one can replace  $S_0$  with the Japan model and  $S_1$  with the Anglo-Saxon model. As for the cases of transitional economies,  $S_0$  can be regarded as communist economies and  $S_1$  as capitalist economies. Even when the system changes from an inferior one to a superior one, this simplified model shows that there is inevitable output fall during the transition. Logics of Equation (2-1) through (2-6) are illustrated in Figure 2-2.

**Figure 2-2.**

Figure 2-2: Death Valley Curve of Institutional Change



From this model, one can see that several factors affect the shallowness of the death valley. First, if the performance of the destined system  $S_1$  is higher, the valley should be shallower. Second, if the speed difference of institutional change is larger between the complementing institutions (i.e.,  $I_t$  and  $i_t$  in this case), the valley should be deeper. Third, if the positive effects of institutional complementarities are higher (i.e., if  $\alpha$  and/or  $\beta$  takes a higher value), the valley should be deeper. All of these have deep implications for the extensive institutional changes in Japan in the 1990s.

### **Death Valley Curve in Japan**

Chapter 3 examines in detail how the “death valley curve” theory is applicable to Japan in the 1990s. Here, I will briefly describe the hypothetical mechanism through which the “death valley curve” worked in Japan in the 1990s.

Two distinct features of the Japan model and its subsystem, the J-capital circulation system, were an active bureaucracy and a bank-centered economy. As we will see in Chapter 3, both complemented each other. The bureaucracy and main banks played a key role in mediating information among market players, thus allowing them to act in coordination with each other. The bureaucracy and banks monitored, judged, and sanctioned firms to realize healthy vertical—and less often horizontal—coordination. The economic bureaucracy often acted as a “guarantor” (Samuels 1987) for firms’ temporary crises, legally ambiguous actions, and accounting practices and inter-firm coordination (Gutman 2000). By so acting, the government subsidized the information gathering and

enforcement costs of the firms.

The economic bureaucracy and main banks did not, however, subsidize those costs without compensation. In exchange for the subsidies, the government and main banks did not allow sufficient information to spread to the market, because maintaining an information monopoly/oligopoly was a key means of gaining bureaucratic leverage over firms, as well as maintaining the competitive advantage of the main banks over other financial institutions.<sup>32</sup> Under these circumstances, market-based information intermediating institutions, such as rating companies, credit agencies, and more fundamentally, an effective capital market, did not develop because the government and the main banks that possessed an informational advantage over the market acted as a *substitute* for such institutions.

When the bureaucracies and main banks retreated from the market in the early 1990s, institutional complementarities of a tightly woven “Japanese system” were lost, and this loss led to increased transaction costs and the underinvestment of firms. To complement the more liberal and visible market system that reformers imported from the US, institutions such as information intermediaries and a competent judiciary had to develop speedily. As we will see in Chapter 3, Japanese reformers were at least partially aware of such complementary relations. However, as stated in assumption 2-1, there is significant

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<sup>32</sup> There has been endless debate over whether the Japanese bureaucracy had/has control over firms. My argument is that the bureaucracy had at least marginal power over firms and that the source of this power came mainly from the bureaucracy’s informational advantage over the market, rather than over the firms. Because of informal but dense network that the bureaucracy had with a wide range of firms, the bureaucracy was able to act as coordinator, especially when the market was underdeveloped. I will describe the logic of and evidence for this in Chapter 3.

variance across institutions in the amount of time it takes to bring about institutional change. As a consequence, Japanese industries, especially those relying heavily on the Japan model, suffered through the transitional period. In other words, they faced a deeper “death valley curve.”

## 2.3 Empirical Tests

In this section, statistical tests are used as a primary tool to conduct empirical tests of the hypotheses. The next chapter examines the historical evidence in the Japanese political economy to test and analytically verify the hypotheses. Three hypotheses raised earlier in this chapter will be tested. For the sake of convenience, I will examine Hypothesis 2 first because it can be verified mainly by the historical evidence in Chapter 3. Then, Hypotheses 2 and 3 will be tested against a dataset consisting of 70 industries in the time span of 1990–2005. Since Hypotheses 3 is difficult to verify through regression analysis, I will use several different approaches to examine the validity of the hypothesis.

### 2.3.1. Testing Hypothesis 2

*Hypothesis 2: Major components of the “Japan model” and its subsystem, the J-capital circulation system, changed extensively during the 1990s. The Japan model and J-capital circulation system no longer function as before.*

Since Hypothesis 2 is not about causal relations, the historical evidence introduced in Chapter 3 will mainly carry out the task of verification. In this chapter, I will first introduce statistical evidence from the dataset I use in this chapter to show how Japan changed. I then briefly summarize the various reforms undertaken in Japan since the 1990s.

The dataset used in this chapter represents micro-level institutions (Definition 2-2)

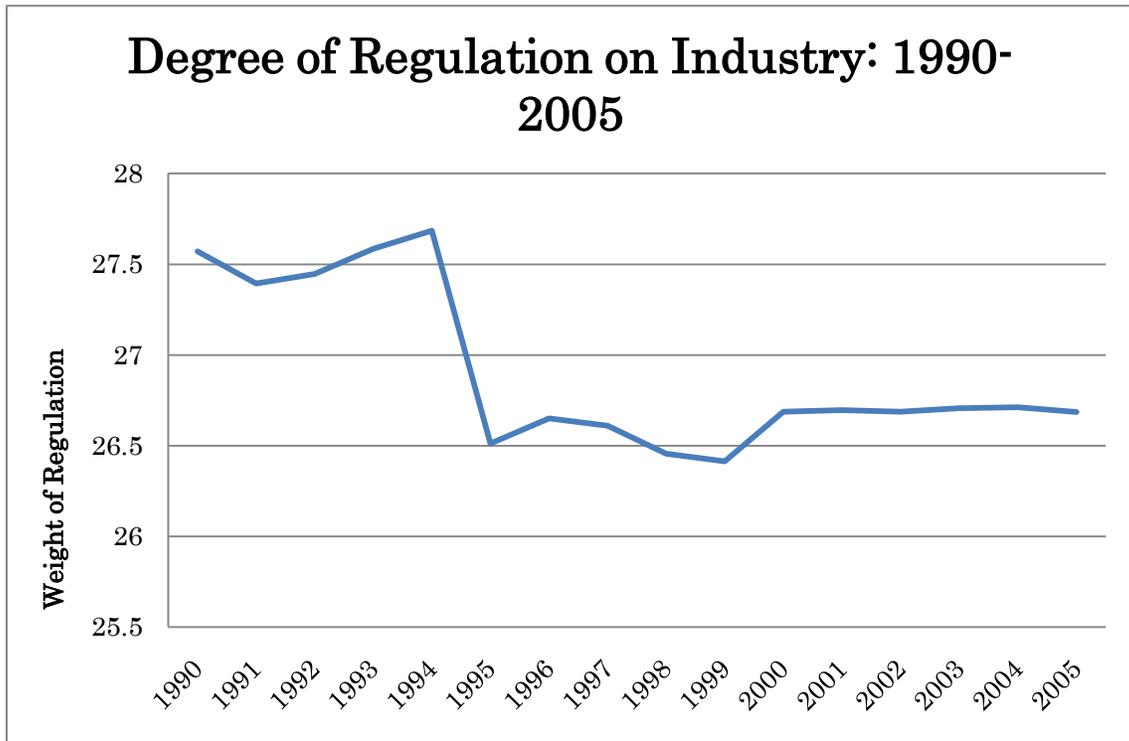
because the unit of analysis of the statistical tests is industry. For example, Figure 2-3 shows how the degree of regulation covering industry changed during 1990–2005.<sup>33</sup> The original data is listed by industry (n=70), but Figure 2-3 shows the average value of degree of regulations (standardized value) across all industries. Although the dataset only contains 1990–2005 data, which makes it impossible to assess how significant the changes were compared to other periods, one can see drastic changes taking place in the mid-1990s. Indeed, historical evidence in Chapter 3 tells us that there was an enthusiastic movement toward deregulation by the public and media in the mid-1990s and the word “*kisei kanwa*” (deregulation in Japanese) was even selected as the “buzzword of the year” (*Ryuko-go Taisho*) in 1993. Other data that represents micro-level institutions also changed significantly. Among the seven variables I used in the statistical analysis, including degree of regulation, the mean value across all the industries changed 27.2 percent on average between 1990 and 2005. Although there is no definite way to determine whether this figure represents a significant change or not, there are several careful empirical studies that point out the anomaly of the pace of change during the 1990s compared to other periods (e.g., Nakanishi & Inui 2008).

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<sup>33</sup> As for the details of the dataset, see Appendix B.

Figure 2-3.

Figure 2-3: Degree of Regulation on Industry 1990-2005



Source: JIP2006

Macro-level institutions (Definition 2-2) also underwent extensive change, as depicted in detail in Chapter 3. Table 2-1 shows the number of revisions to the Commercial Law and the Antimonopoly Law, the two fundamental laws that govern the market, before and after 1990. During 1945–1990, the Commercial Law was revised 22 times, or 0.49 times annually. The Antimonopoly Law was revised 34 times, or 0.76 times per year. After 1990 (to 2009), the Commercial Law was revised 39 times, or 1.95 times annually and the Antimonopoly Law 48 times, 2.4 times annually. Since these two laws provide the basic legal framework for market transactions, these drastic turn of events imply that fundamental institutional change had occurred in Japan since 1990.

**Table 2-1.**

**Table 2-1: Revisions of Commercial Law and Antimonopoly Law**

	Number of Revisions (per year)	
	1945-1989	1990-2009
Corporate Law	22 (0.49)	39 (1.95)
Anti-trust Law	34 (0.76)	48 (2.4)

Source: Author gathered from “*Mohan Roppou 2010*” Tokyo: Sanseido

Although the view that Japan did not change sufficiently is widely shared by journalists, the vast majority of deliberate research concludes the opposite (e.g., Pempel 2000; Aoki 2001; Hoshi & Kashyap 2001; Toya 2003; Vogel 2006; Jackson & Miyajima 2007; Rosenbluth & Theis 2010). In my earlier research (Kobayashi & Kato 2001; Kato 2009), I pointed out that there indeed were drastic institutional changes in Japan since the 1990s. The reformers' aim then was to change the Japanese system to be more like the US system (Nakatani 1996; Vogel 2006; Ohmori 2007). Borrowing a VOC term (Hall & Soskice 2001), Japanese reformers attempted to change Japan from a “coordinated market economy (CME)” to a “liberalized market economy (LME)”<sup>34</sup>. Structural reforms implemented by the government in the 1990s covered a wide range of areas in politics, the bureaucracy, and the economy. The reforms might have been a bit slow from the standpoint of the radical reformers, but there seems to be enough empirical evidence to show that the changes were indeed extensive and significant.

In the economic sphere, several waves of comprehensive deregulation were implemented. Accounting standards and business laws were radically and frequently revised, and banks and firms were forced to disclose significantly more organizational information to the market (Nishimura 2003). The oligopolistic control of information by the government and main banks and their dominant roles as information intermediaries were thus terminated. In the financial sector, two decades of deregulatory efforts were

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<sup>34</sup> For example, the slogan of “Japanese financial Big Bang” was “free, fair and global” (Toya 2001; Ohmori 2007). Declaring that Japan will become more liberalized and open economy.

capped by a radically accelerated reform package named the “Japanese financial Big Bang.” As a result of these measures, main banks lost their power over firms, and the once-dominant *keiretsu* system rapidly started to dissolve (Hoshi & Kashyap 2001). Along with administrative reforms, the close relations between the bureaucracy and the private sector were loosened, and the bureaucracy’s influence over firms also declined.

A drastic change of direction occurred in the political sphere as well. After nearly 40 years of domination, the LDP lost control of the Diet in 1993. Under the non-LDP coalition led by Morihiro Hosokawa, dramatic electoral reforms were introduced in 1993. Although the LDP regained control of the Diet in 1996, the electoral reforms and massive reshuffling of non-LDP parties during the Hosokawa administration substantially altered the once-stable Japanese party system.

Simultaneously, various bureaucratic scandals and the economic mismanagement of several governmental agencies were revealed, prompting both the public and the mass media to fiercely criticize the formerly admired economic bureaucracy (Nihon Keizai Shimbun 2001). Such public outrage ultimately led to several important changes in the administrative setup: the partitioning and weakening of the mighty Ministry of Finance (MOF), the enactment of the Administrative Procedure Act to regulate the practice of administrative guidance (*gyosei shido*) that had been issued behind-the-scenes, massive deregulation, including the “Big Bang” in the financial sector, and the reorganization of government agencies in 2001 (decided by then Prime Minister Ryutaro Hashimoto in 1997) that drastically reduced the number of ministries from 22 to 12 (ibid.).

As a result of these structural reforms, by the end of 1990s, the major elements of the “Japan model”—such as the main bank system, cross-shareholdings, and cooperative government-private relationships—had been terminated or significantly altered. In parallel, shared beliefs among key political and economic players that reinforced the “Japan model”—the myths that the economy would permanently grow (*keizai seicho shinwa*) (Hirakawa 2010), land prices would continue to rise (*tochi shinwa*) (Kanamori et al. 2002), and banks would never fail (*ginko futou shinwa*) (Nikkei 1993)—faded after the 1990s. These shared beliefs themselves were the key institutions in organizing political economic transactions under the “Japan model” and functioned as key institutions to coordinate expectations among agents and reduce transaction costs (Aoki 2001).<sup>35</sup> Roland (2004) categorized the shared beliefs and norms as slow-moving institutions. If slow-moving institutions were altered fundamentally, one would expect fast-moving institutions, such as legal and political systems, to have changed much earlier.

### 2.3.2. Testing Hypothesis 1

*Hypothesis 1: Industries that were more firmly embedded in the “Japan model” were more likely to suffer output fall after the collapse of bubble economy and extensive system reforms in the 1990s.*

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<sup>35</sup> The definition of institution was already discussed in depth in the earlier part of Chapter 2.

## Dataset

To statistically test Hypotheses 1 and 3, I compiled a political economic dataset covering 70 industries during 1990–2005.<sup>36</sup> The detail of the dataset is described in Appendices A through C. Economic data was mainly gathered from the Japan Industry Productivity Database 2006 (JIP 2006). The JIP database was compiled in a collaborative effort between the Research Institute of Economy, Trade and Industry (RIETI), a subsidiary institute of METI, and Hitotsubashi University.<sup>37</sup> Corporate financial data was gathered from the NEEDS Financial QUEST database and converted to industries using MRI categorization. (For the methods of conversion, see Appendix A and B.) Political data was gathered from various governmental sources and converted to JIP categorization through MRI to the JIP conversion matrix I constructed (see also Appendix B).

In order to better specify the estimation model, I focused on the J-capital circulation system and examined how its change affected the economic outputs of industries<sup>38</sup>. The primary dependent variable for statistical tests is nominal added value (valueN)<sup>39</sup>. Independent variables are classified into political, financial, industrial structure, and

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<sup>36</sup> JIP 2006 consisted of 108 industries. By eliminating variables that are irrelevant for testing Hypotheses 1 and 3 (e.g., financial sector) and by eliminating variables with substantial missing values, the number of industries shrunk to 70 industries.

<sup>37</sup> The JIP database and its detailed description are available from the RIETI website (<http://www.rieti.go.jp/jp/database/JIP2006/index.html>).

<sup>38</sup> Since other institutions that comprise the “Japan Model” are mutually complement with J-capital circulation system, institutional changes of the “Japan Model” institutions also indirectly affect industries as macro-institutions. We will later see how macro- and micro- institutions affect industries.

<sup>39</sup> I also occasionally used total factor productivity (TFP) as an alternative dependent variable to test the validity and robustness of results since the effect of institutions and institutional changes are likely to affect TFP portion of the nominal added value..

control variables. Since the J-capital circulation system was characterized by intimate government-industry and bank-industry relationships, as we will further see in chapter 3, the main testing variables are political and financial variables. Nevertheless, one can also draw inferences from the industrial structural variables for both Hypotheses 1 and 3. Since the unit of each variable highly varies, I went through the standard normalization process to standardize each variable before using it in statistical analyses. The list of variables and hypothesized signs are shown in Table 2-2.

**Table 2-2.**

**Table 2-2: Descriptions of Independent Variables**

Category	Abbreviation	Short Description	Expected sign
Political Variable	ExB	Number of ex-bureaucrats ( <i>amakudari</i> )	-
	TAnum	Number of trade association	-
	regA	Degree of regulation	-
	subs	Subsidies and indirect tax	-
Financial Variable	Govloan	Loan from public financial institutions	-
	MBloan	Loan from main banks	-
	Loan	Loan from bank (bank debt)	-
Industry Structure Variable	UnionL	Number of organized labor	?
	keiretu	Number of firms belonging in keiretsu	?
Control Variable	Topix100cp	Market capitalization of TOPIX100 companies (proxy for large companies)	?
Speed Variable	SpeedP1	Degree of change of political variables within a certain period (with subs)	-
	SpeedP2	Degree of change of political variables within a certain period (without subs)	-
	SpeedF	Degree of change of financial variables within a certain period	-
	SpeedI	Degree of change of industry structure variables within a certain period	-
Speed Variance Variable	StdP1	Standard deviation of SpeedP1	-
	StdP2	Standard deviation of SpeedP2	-
	StdF	Standard deviation of SpeedP1	-
	StdI	Standard deviation of SpeedI	-

Independent variables categorized under political variables represent the collaborative government-industry relationship and those under financial variables represent the collaborative financial sector-industry relationship. Both are main features of the “Japan Model” as well as J-capital circulation system (Hoshi and Kashyap 2001; Teranishi 2003). The expected signs of effects are thus all negative. Variable ExB is the number of retired bureaucrats taking executive positions in each industry. Such a custom is called “*amakudari*” and it has long been a symbol of collaborative government-firm relations. As Ramseyer and Rosenbluth (1994) correctly pointed out, retaining executive positions in private firms after retirement (i.e., *amakudari*) had been a top priority of Japanese bureaucrats, thus making this variable a strong proxy of closeness of government-industry relationships. As trade associations functioned as a point of contact between industry and the bureaucracy in the Japan model (Yonekura 1993; Teranishi 2003), the number of trade associations (TAnum) should represent the collaborative government-firm relations as well. Regulations (regA) and subsidies (subs) are political tools for the government to affect industrial behavior.

Loans from public financial institutions (Govloan) come in the middle of the political variables and financial variables. I categorized this variable under financial variable but during statistical tests, I occasionally used it as a political variable to examine robustness. I included both loans from main banks (MBloan) and loans from banks (Loan) because in addition to an intimate relation with main banks, aggressive borrowing from banks in general was thought to be a feature of J-capital circulation

system<sup>40</sup>.

Topix100cp was employed as a control variable to represent the number of large firms (Topix 100) in each industry. Since one of the major political economic cleavages of Japan lies between large companies and small- and medium-sized companies (Teranishi 2002), large companies are in general more embedded in the Japan model. Thus one needs a control for large companies. Finally, speed variables and speed variance variables are used to test Hypothesis 3. The detail of these two variables will be discussed later.

### **Empirical Model and Testing Procedure**

The basic testing model for Hypotheses 1 and 3 takes the form:

$$Y_{i,t+\alpha} - Y_{i,t} = \beta_0 + \sum_{j=1}^4 \beta_{1j} P_{j,i,t} + \sum_{k=1}^3 \beta_{2k} F_{k,i,t} + \sum_{l=1}^2 \beta_{3l} I_{l,i,t} + \beta_4 C_{i,t} + \varepsilon_{i,t} \quad (2-7)$$

Whereas  $P_1=ExB$ ,  $P_2=TAum$ ,  $P_3=regA$ , ( $P_4=subs$ ),  $F_1=Govloan$ ,  $F_2=MBloan$ ,  $F_3=Loan$ ,  $I_1=UnionL$ ,  $I_2=keiretsu$ ,  $C=Topix100cp$ .

I used lagged dependent variable (Y) for two reasons. First of all, it fits better for the purpose of this dissertation, which is to dynamically assess the effect of institutional

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<sup>40</sup> This caused confusions on results of statistical analysis. I will describe my interpretation on the confusions later.

changes on industrial outputs. Second, it lessens the problem of omitted variables. Since it is virtually impossible to specify endogeneity problems, especially for this type of political economic estimation, taking a lagged dependent variable should be a tolerable option.<sup>41</sup>

As described in detail in Chapter 3, the extensive institutional changes in the 1990s was a time-consuming process. It was a transition of not a single entity but a bundle of institutions. Since one cannot pinpoint when the extensive institutional changes occurred or specify how long the changes took, I used different values of  $\alpha$  to assess how the structure, i.e., the structure of J-capital circulation system, affected industrial outputs in different time spans.

As for Hypothesis 1, I first ran a series of simple OLS (2-8) to casually examine how the structure of 1990 affected industrial outputs during and after the institutional changes. I put  $\alpha = 1, 5, 10, 15$  to assess how the effect of 1990 structure shifted through time.

$$Y_{i,1990+\alpha} - Y_{i,1990} = \beta_0 + \sum_{j=1}^4 \beta_{1j} P_{j,i,1990} + \sum_{k=1}^3 \beta_{2k} F_{k,i,1990} + \sum_{l=1}^2 \beta_{3l} I_{l,i,1990} + \beta_4 C_{i,1990} + \varepsilon_{i,1990} \quad (2-8)$$

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<sup>41</sup> However, when I examined autocorrelations among independent variables, there were surprisingly few problems. Reason for that seems to be that many of the independent variables represent institutional conditions. Since institutions are relatively stable across time, these variables, I assume, do not get overly affected by economic/political fluctuations.

The problem with this approach is that the sample size is very small ( $n=65$ ). Nevertheless there are some advantages as well. There have been controversies on when the “Japan model” started to change or collapsed. Some insist that the collapse of the bubble economy in 1991 was the trigger of the changes (e.g., Toya 2001) and others say the real turning point was 1998, when a financial crisis occurred and consumer spending plunged (e.g., Jackson & Miyajima 2008). Since there is no disagreement on the fact that the “Japan model” was quite active in 1990, taking and fixing the 1990 values for independent variables allows us to assess how the embeddedness of the J-capital circulation system affected industrial outputs in the future, which is precisely the empirical test for Hypothesis 1. Table 2-3 shows the results of four waves of OLS.

Table 2-3.

Table 2-3: Results of Regression Analysis (Hypotheses 1)

Dep Lag ( $\alpha$ )	OLS (2-8)							
	1	1	5	5	10	10	15	15
ExB	-0.0295 [-4.59]***	-0.0272 [-4.05]***	-0.1022 [-5.02]***	-0.1046 [-5.42]***	-0.1396 [-5.79]***	-0.1434 [-6.72]***	-0.1533 [-4.87]***	-0.1637 [-5.44]***
TAnum	-0.0041 [-0.65]	-0.0034 [-0.54]	-0.0196 [-1.10]	-0.0171 [-0.95]	-0.0033 [-0.17]	-0.0006 [-0.03]	-0.0106 [-0.46]	-0.0117 [-0.51]
regA	-0.0006 [-0.10]	-0.0014 [-0.23]	0.0044 [0.24]	0.0116 [0.64]	0.0114 [0.59]	0.0191 [0.99]	-0.0207 [-0.87]	-0.024 [-1.04]
subs	-0.0083 [-1.09]		-0.0058 [-0.25]		-0.0094 [-0.34]		-0.0328 [-0.92]	
Govloan	-0.0753 [-3.59]***	-0.0673 [-3.38]***	-0.1385 [-2.17]**	-0.1303 [-2.18]**	-0.1525 [-2.02]**	-0.1394 [-1.96]*	-0.1949 [-1.98]*	-0.1593 [-1.70]*
MBloan	-0.1159 [-2.04]**	-0.1009 [-1.82]*	-0.2884 [-1.73]*	-0.2769 [-1.71]*	-0.3615 [-1.76]*	-0.3445 [-1.74]*	-0.3488 [-1.37]	-0.2793 [-1.02]
Loan	0.206 [2.95]***	0.1828 [2.74]***	0.4267 [2.01]**	0.4104 [2.04]**	0.478 [1.89]*	0.4516 [1.89]*	0.4403 [1.33]	0.3482 [1.11]
UnionL	0.0052 [0.58]	0.0042 [0.47]	-0.0176 [-0.65]	-0.0183 [-0.68]	-0.0329 [-1.02]	-0.034 [-1.07]	-0.0841 [-2.00]*	-0.088 [-2.10]**
keiretu	0.0109 [1.18]	0.0091 [0.99]	0.0289 [1.03]	0.0276 [1.01]	0.0373 [1.11]	0.0351 [1.08]	0.0402 [0.92]	0.0328 [0.77]
Topix100cp	-0.0137 [-1.46]	-0.0117 [-1.27]	-0.0103 [-0.36]	-0.0088 [-0.32]	0.0222 [0.66]	0.0245 [0.75]	0.053 [1.20]	0.061 [1.41]
_cons	0.0028 [0.50]	0.0032 [0.57]	-0.0033 [-0.19]	-0.003 [-0.18]	-0.0127 [-0.63]	-0.0122 [-0.61]	-0.018 [-0.68]	-0.0165 [-0.63]
Observations	65	65	65	65	65	65	65	65
Adjusted R-squared	0.5255	0.5238	0.4237	0.4333	0.4834	0.4915	0.4623	0.4638

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Overall, results confirm Hypothesis 1. The structure matters, and the embeddedness of the Japan model or J-capital circulation system had mostly negative effects on industrial outputs in succeeding years. Among the independent variables, the amount of governmental loans (Govloan) and amount of main bank loans (MBloan) had strong negative effects on industrial outputs, although the latter took significant values only temporarily. The number of *amakudari* bureaucrats (ExB) also had significant negative effects. Only the loan variable (Loan) had both significant and unexpected sign of coefficients. The high bank loan ratio was said to be one of the major characteristics of Japanese firms under the “Japan model.” The results of the regression show that, however, the more companies borrowed from banks in 1990, the higher were their industrial outputs in succeeding years, which is the opposite of what we expected. Nonetheless, this result can be interpreted differently. Under the J-circulation system, Japanese firms and industries were able to borrow aggressively from their main banks, sometimes even reaching “overloan” conditions, and invest aggressively. That was theoretically made possible because main banks were monitoring firms and industries closely for long periods (Okazaki et al. 1993; Sheard 1994; Aoki 1995/2000; Hoshi and Kashyap 2001). Main banks, in turn, were able to lend aggressively to firms not only due to their monitoring ability but also due to the MOF and the Japanese government who acted as a “guarantor” (Samuels 1989) for them. Thus, if the high bank loan ratio was realized because of the main bank’s monitoring mechanism and the MOF’s ability as a guarantor, the loan variable should be strongly affected by the main bank variable and

political variables. In other words, the high bank loan ratio may be the result of the main bank system and collaborative government-industry relationships. If so, controlling for the main bank variable and political variables will extract the pure effect of the amount of bank loans. Close examination of data reveals that those industries that did not rely on main banks or the government but could borrow vast amount from other banks were emerging non-zaibatsu led industries, such as the auto industry. The unexpected statistical results of Table 2-3 on bank loans (Loan) seem to reflect such mechanisms<sup>42</sup>.

To test the robustness of the results in Table 2-3, I also ran a quasi-panel data regressions (2-9) with  $\alpha = 1, 10$ . Such a test shows how the structure of 1990 affected growth of industrial outputs in later years (Asano & Nakamura 2009).

$$Y_{i,t+\alpha} - Y_{i,t} = \beta_0 + \sum_{j=1}^4 \beta_{1j} P_{j,i,1990} + \sum_{k=1}^3 \beta_{2k} F_{k,i,1990} + \sum_{l=1}^2 \beta_{3l} I_{l,i,1990} + \beta_4 C_{i,1990} + \varepsilon_{i,1990} \quad (2-9)$$

The results of (2-9) were quite similar to Table 2-3, with the governmental loan (Govloan) and *amakudari* bureaucrats (ExB) taking significant negative values. Signs of non-significant coefficients were as expected or mixed, except for the loan variable (Loan) that consistently took unexpected plus signs, although sometimes not significant. Taking TFP as a dependent variable weakened virtually all the significance of each

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<sup>42</sup> In this context, the bank loan (Loan) variable might have been better to be categorized as a control variable. By doing so, one can observe pure effect of main bank loan (MBloan) variable,.

variable but generated similar results.

Results of statistical tests using Equations 2-8 and 2-9, as well as historical evidence depicted in Chapter 3 verified that the structure—the “Japan model” and J-capital circulation system—mattered and negatively affected industrial outputs in succeeding years. Tests undertaken for testing Hypothesis 3 by using Equation 2-11 also confirmed Hypothesis 1.

### 2.3.3. Testing Hypothesis 3

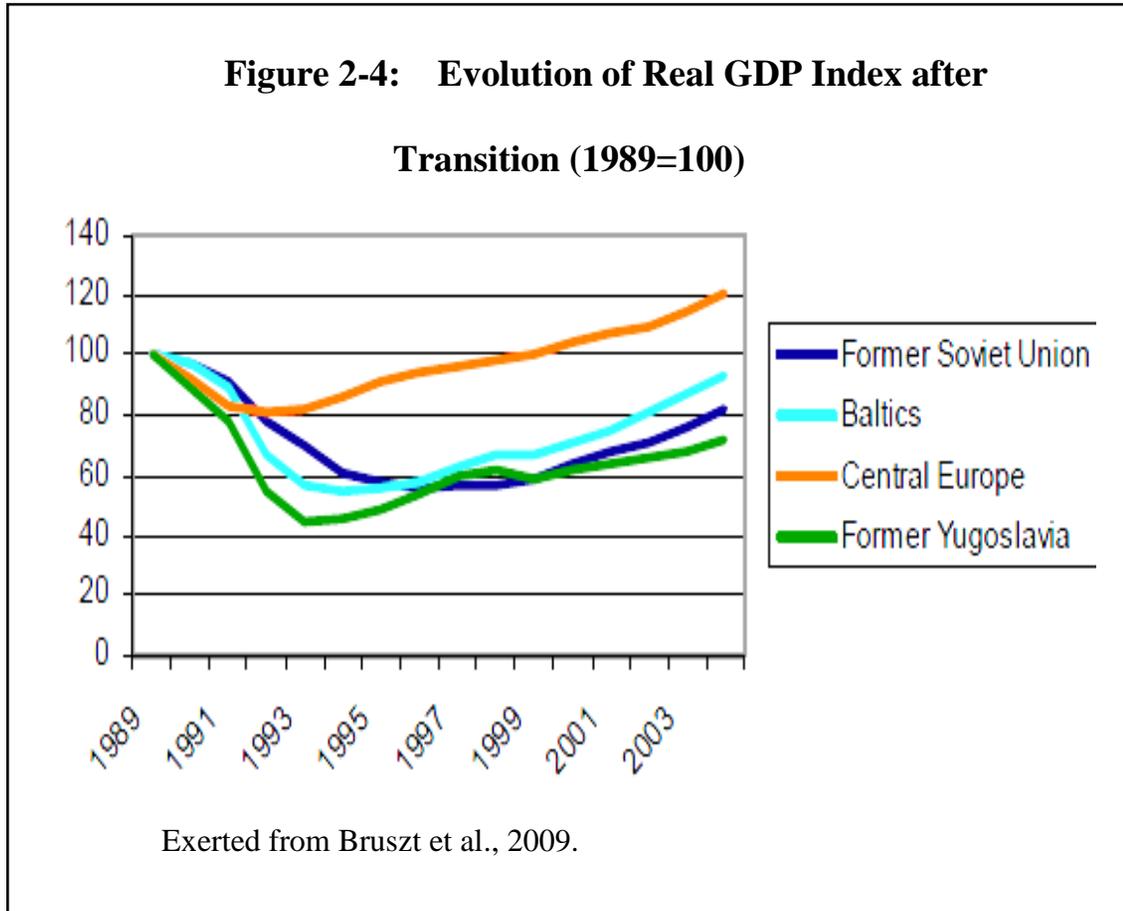
*Hypothesis 3: An extensive system change, under which industries operate, inevitably invites temporary output fall of industries because institutional complementarities will be lost temporally during the change.*

Empirical tests for Hypothesis 1 verified that the institutional factors (structure) of the Japan model or J-capital circulation system are negatively influencing industrial outputs. If so, a clear and easy prescription for the Japanese government and industries seems to be: “get rid of the outdated the Japan model as soon as possible.” Indeed, such was the mainstream argument in journalism and politics and even academics during the 1990s in Japan (see, for a typical argument of the 1990s, Nakatani 1996: Hiraiwa Report 1993). However, as Hypothesis 2 states and as a detailed historical description of Chapter 3 shows, Japan in the 1990s did change significantly and abandoned the J-capital circulation system and most of the institutions comprising the Japan model. If the

outdated Japan model was causing negative effects on industrial outputs, why did the extensive changes in the 1990s not lead to a prompt recovery of industrial outputs?

Hypothesis 3 proposes an alternative theoretical interpretation of these situations. It insists that extensive change itself causes output fall through loss of institutional complementarities during transition. Note that Hypothesis 3 is neutral on the evaluation of the changes that take place, including the changes in Japan in the 1990s. As shown in Equations 2-1 through 2-6 and Figure 2-2, even an extensive change that aims to change a certain system from an inferior one to a superior one will inevitably lead to output fall. I called such inevitable output fall the “death valley curve of institutional change.” For example, very few would have argued against post-communist economies abandoning communism and adapting capitalism in the wake of the collapse of Berlin Wall. However, the drastic transition from “bad equilibrium” to “good equilibrium” invited a disastrous output fall (Figure 2-4). Hypothesis 3 might also be able to partially explain the reasons of the tragic economic disorder after the Big Bang reforms of post-communist economies.

Figure 2-4.



To verify the existence of this “curve” statistically is an extremely difficult task. Being aware that any approach is inadequate, I will carry on the empirical test from the following three aspects. First, I will add to the basic testing model (2-7) a “speed variable” (Speed) that represents the degree of change of testing variables in each industry. As for the speed of political variables (SpeedP), financial variables (SpeedF) and industry structure variable (SpeedI), I simply added the degree of change of each set of variables under each category.

The formula of the speed variable for political variables of industry  $i$  from year  $t$  till year  $t+\alpha$ , for an example, can be shown as follows:

$$S_{i,t+\alpha}^P = \sum_{j=1}^4 P_j \sum_t^{t+\alpha-1} |P_{j,i,t+1} - P_{j,i,t}| \quad (2-10-1)$$

Similarly for speed variable for financial and industrial structure variables can be shown as follows:

$$S_{i,t+\alpha}^F = \sum_{k=1}^3 F_k \sum_t^{t+\alpha-1} |F_{k,i,t+1} - F_{k,i,t}| \quad (2-10-2)$$

$$S_{i,t+\alpha}^I = \sum_{l=1}^2 I_l \sum_t^{t+\alpha-1} |I_{l,i,t+1} - I_{l,i,t}| \quad (2-10-3)$$

The loss of institutional complementarities during system change is the primary mechanism for the inevitable output fall in Hypothesis 3. If so, the speedier transitions of testing variables (i.e., the higher value of speed variables) are likely to invite loss of institutional complementarities at least in the short run. As Roland (2004) correctly points out, there are both slow-moving and fast-moving institutions. Institutions of the testing variables (e.g., main bank system, government regulations) in 2-7 can be categorized under fast-moving institutions.<sup>43</sup> Thus, the loss of institutional complementarities should be lessened if these fast-moving institutions actually move slowly until slow-moving institutions, such as norms and beliefs catch up. In sum, we can expect, the faster the pace of change, the bigger the fall in outputs, until the set of institutions completes transition. Thus, negative values of coefficients are expected for political and financial speed variables, especially for a short run, until the institutional change crosses the “death valley.”

Second, I added speed variance variable (Std), which takes standard deviations of the speed of political variables (StdP), financial variables (StdF), and industry structure variables (StdI). If the variance (standard deviation) of speeds is smaller, the loss of institutional complementarities within each category on institutions should be smaller, and industrial output should increase.

There are serious limits for this speed variance variable. Although testing variables

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<sup>43</sup> Roland actually exemplifies the political system as a typical fast-moving institution.

are only representatives of micro-level institutions (see Definition 2-2), institutional complementarities should be held with macro-level institutions as well. However, there are no effective ways to measure the changing speed of macro-level institutions. Thus even if the speeds are relatively similar among political variables and/or financial variables in this testing model (i.e., speed variance variable taking small values), that does not mean that institutional complementarities are kept with macro-level institutions.

Third, I went through detailed historical analyses in Chapter 3 to examine whether the logic of the “death valley curve” actually worked. Since the logic and mechanism of this hypothesis is clear, detailed historical analyses should be effective for verifying Hypothesis 3.

Equation 2-7 is the basic model to test Hypotheses 3 as well as Hypothesis 1. I added speed variable (2-10) and speed variance variable to construct the following Equation 2-11. In the equation I denote speed variance variable of political variable (StdP)  $SV_{i,t+\alpha}^P$  and financial variable (StdF)  $SV_{i,t+\alpha}^F$  :

$$\begin{aligned}
Y_{i,t+\alpha} - Y_{i,t} = & \beta_0 + \sum_{j=1}^4 \beta_{1j} P_{j,i,t} + \sum_{k=1}^3 \beta_{2k} F_{k,i,t} + \sum_{l=1}^2 \beta_{3l} I_{l,i,t} + \beta_4 C_{i,t} + \\
& \beta_5 S_{i,t+\alpha}^P + \beta_6 S_{i,t+\alpha}^F + \beta_7 S_{i,t+\alpha}^I + \beta_8 SV_{i,t+\alpha}^P + \\
& \beta_9 SV_{i,t+\alpha}^F + \beta_{10} SV_{i,t+\alpha}^I + \varepsilon_{i,t} \quad (2-11)
\end{aligned}$$

I went through a Hausman specification test (Greene 1993; Hayashi 2000) to determine whether to use a fixed effect model or random effect model when running panel data analysis. The results are listed in Table 2-4.

**Table 2-4.**

**Table 2-4: Results of Regression Analysis (Hypotheses 1 and 3)**

Dep Lag ( $\alpha$ )	Random Effect (2-7) +Speed+Std						OLS(2-8)+Speed+Std	
	1	1	5	5	10	10	15	15
ExB	-0.0019 [-0.84]	-0.0021 [-0.90]	-0.0031 [-0.55]	-0.0072 [-1.24]	-0.0285 [-2.91]***	-0.0305 [-3.13]***	-0.0391 [-2.33]**	-0.0399 [-2.47]**
TAnum	0.0003 [0.16]	0.0003 [0.14]	0.0036 [0.40]	0.0057 [0.70]	-0.006 [-0.34]	-0.0076 [-0.45]	-0.0431 [-2.04]**	-0.0465 [-2.18]**
regA	-0.0011 [-0.53]	-0.0007 [-0.34]	0.0126 [1.40]	0.006 [0.73]	0.0139 [0.78]	0.0104 [0.63]	-0.0032 [-0.15]	-0.0026 [-0.11]
sbs	-0.0016 [-0.66]		-0.038 [-3.57]***		-0.0214 [-0.93]		0.0086 [0.27]	
Govloan	-0.0152 [-4.17]***	-0.0137 [-4.11]***	-0.025 [-1.95]*	0.0053 [0.45]	-0.022 [-0.66]	-0.0208 [-0.66]	-0.1446 [-1.78]**	-0.1875 [-2.46]**
MBloan	0.0153 [2.87]***	0.0166 [3.18]***	-0.0033 [-0.11]	-0.0722 [-2.84]***	-0.1082 [-1.48]	-0.1197 [-1.91]*	-0.1758 [-1.07]	-0.112 [-0.72]
Loan	0.0162 [2.21]**	0.0123 [1.89]**	0.1059 [5.12]***	0.1309 [6.75]***	0.0932 [1.69]*	0.0999 [1.95]*	0.1839 [8.81]***	0.3216 [1.55]
UnionL	-0.0057 [-2.30]**	-0.006 [-2.40]**	-0.0302 [-2.91]***	-0.0334 [-3.49]***	-0.0679 [-3.21]***	-0.0631 [-3.13]***	0.0128 [0.42]	0.0358 [1.16]
keiretu	-0.0023 [-0.87]	-0.0025 [-0.92]	0.0024 [0.22]	-0.0023 [-0.22]	-0.0275 [-1.16]	-0.0355 [-1.54]	-0.013 [-0.31]	-0.0084 [-0.20]
Topix100cp	0.0048 [1.99]**	0.0051 [2.13]**	0.0121 [1.73]*	0.0162 [2.33]**	0.1094 [3.61]***	0.112 [3.87]***	0.1216 [2.06]**	0.1036 [1.80]*
SpeedP1	-0.1064 [-1.20]		-0.3045 [-3.94]***		0.0264 [0.26]		0.3717 [3.38]***	
SpeedP2		-0.0421 [-0.58]		-0.2645 [-4.33]***		0.0677 [0.82]		0.2964 [3.34]***
SpeedF	-0.1327 [-3.47]***	-0.1301 [-3.41]***	-0.0737 [-2.03]**	-0.0595 [-1.59]	0.0484 [0.94]	0.0443 [0.87]	-0.332 [-3.53]***	-0.3344 [-3.76]***
SpeedI	-0.1886 [-1.61]*	-0.1885 [-1.61]*	0.0177 [0.22]	0.0377 [0.47]	0.0405 [0.43]	0.0476 [0.52]	-0.1426 [-1.04]	-0.1488 [-1.09]
StdP1	0.0563 [1.26]		0.1347 [3.56]***		-0.0148 [-0.27]		-0.1722 [-2.75]***	
StdP2		0.0261 [0.65]		0.126 [3.83]***		-0.0404 [-0.87]		-0.148 [-2.70]***
StdF	0.0688 [1.81]*	0.0637 [1.68]*	0.0645 [1.73]*	0.0352 [0.93]	-0.0153 [-0.29]	-0.0284 [-0.55]	0.0817 [0.80]	0.1146 [1.22]
StdI	0.1609 [1.73]*	0.1611 [1.73]*	0.0389 [0.63]	0.0261 [0.42]	0.0242 [0.37]	0.0299 [0.46]	0.1372 [1.32]	0.1428 [1.38]
_cons	0.0036 [1.20]	0.003 [1.02]	0.0073 [0.48]	0.0012 [0.08]	-0.075 [-1.74]*	-0.0728 [-1.86]*	0.1553 [2.14]**	0.177 [2.46]**
Observations	994	994	726	726	391	391	65	65
Adjusted R-squared	0.0643	0.0606	0.1576	0.1504	0.235	0.2419	0.5961	0.6008

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Note that SpeedP1 and SpeedP2, or StdP1 and StdP2 variables differ between those that include sbs variables or not.

As for Hypothesis 1, results were similar to that listed in Table 2-3. Industries that were embedded to the Japan model in its heyday had to endure prolonged output fall. Coefficients of both political and financial variables had mostly expected signs, which is negative. Main testing variables, such as the number of *amakudari* bureaucrats (ExB) and main bank loan (MBloan) had mostly significant effects. Only the bank loan variable (Loan) had an unexpected and partly significant effect, but the same interpretation for the previous OLS test (2-8) should apply here. Thus, along with Table 2-3 and historical analyses in Chapter 3, Hypothesis 1 can be verified for the most part.

The results of the speed variables and speed variance variables are mixed but nevertheless partially verify Hypothesis 3. Moreover, they pose interesting ideas for deepening our understandings of institutional change.

As for speed variables, both testing variables (SpeedP and SpeedF) showed mostly negative signs confirming Hypothesis 3. Since slow-moving institutions (e.g., norms and shared beliefs) are unlikely to be able to change at the pace of first-moving institutions (e.g., financial and political variables) (Roland 2004), the loss of institutional complementarities should be more serious in the shorter span. The results for short-term speed variables are especially supportive for this hypothesis. As for  $\alpha = 1$  and 5, that is, one-year and five-year lagged effects, all the effects of political and financial speed variables (SpeedP and SpeedF) are negative. Moreover, as for the five-year lagged model, political speed variables (SpeedP) are highly significant, and the financial speed variable

(SpeedF) is significant in one of the models.<sup>44</sup> As for the one-year lagged model, the financial speed variable is highly significant.

The results for longer-term speed variables ( $\alpha=10$  and 15) are mixed. The financial speed variable is highly significant and negative for the 15-year lagged model. However, political speed variables for the 15-year lagged model are highly significant and positive, which was the opposite of our expectations. A possible interpretation for this unexpected result is that, in 15 years, many of political institutions that complement each other finally complete their transition, and the political institutions regain their institutional complementarities. For example, slow-moving institutions might complete their transitions within 15 years. In other words, it might take less than 15 years to cross the “death valley.”

As we will discuss in detail in chapter 3, institutions that the government can take initiative in changing—political and administrative institutions for example—do change quite quickly once government decides to change. Economic institutions and private orders, on the other hand, change gradually (see Figure 3-6). Such a difference might be one of the reasons why, in the 15-year lagged model, financial speed institutions took highly significant negative values, and political speed institutions took highly significant positive values.

These results of speed variables should be both surprising and perplexing for those

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<sup>44</sup> I am using the term “highly significant” for 1 percent level confidence and “significant” for 5 percent level confidence.

who sided with the mainstream reformist arguments—that the Japan model was outdated—in the 1990s. Although industries that were deeply embedded in the Japan model suffered from low industrial outputs as the reformists expected, those industries that quickly rejected the Japan model, following the reformists’ proposed prescription, suffered as well. These results, however, should have been no surprise to Western economists who in the 1990s guided the Big Band transition of post-communist economies. Their attempts invited devastating outcomes. These results imply more complex and counterintuitive relations between institutional changes and economic outputs. They at least partially confirm Hypothesis 3 and the theory of the “death valley curve of institutional changes.”

Regarding speed variance variables (StdP and StdF), results are less convincing. As for short-term speed variance variables ( $\alpha = 1$  and 5), the coefficients of testing variables all took unexpected signs (plus), some even taking significant values. These results might be due to the serious limitations of this variable, as already noted, to estimate institutional complementarities. Since there is no way to estimate the speed of institutional changes of macro-level institutions, including informal institutions, these speed variance variables cannot assess how political and financial variables kept pace with the institutional changes of macro-level institutions. One interpretation might be, in the short run, since macro-level institutions include various slow-moving institutions, the speed variance of macro-level institutions are also very high. If so, a high speed variance of micro-level institutions should be less damaging for institutional complementarities. We need more

detailed analyses, especially those taking macro-institutional changes into account.

In the longer run ( $\alpha = 10$  and  $15$ ), speed variance variables mostly took expected signs (minus). The interesting result is that, for the 15-year lagged model, while political speed variables (SpeedP) took unexpected signs and were highly significant, political speed variance variable (StdP) took an expected and highly significant sign (minus). These two results altogether reinforce the above-mentioned interpretation that political institutions basically complete institutional transitions in 15 years. If so, industries that complete the change (i.e., higher speed variable) and regain institutional integrity (institutional complementarities) promptly (i.e., higher speed variance variable) should enjoy higher performance.

To earn clearer pictures on how institutions and institutional changes affected industrial outputs during 1990-2005, in the final section of this chapter, I will briefly display what happened to different types of industries during the era. First, I classified each industry into J-type, U-type, and H-type in 1990. J-type represents the industries that are highly embedded in the “Japan Model.” Since it is impossible to precisely define the criteria for J-type industry, I simply averaged the “embeddedness” value of political and financial variables of each industry and picked the top one-third of the industries and categorized them as J-type industry<sup>45</sup>. For the middle one-third, I categorized them as H-type industry (H denoting “hybrid”) and the lower one-third, U-type (U denoting the

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<sup>45</sup> This simple procedure can be legitimized because each variable has been standardized and thus values are comparable across different variables.

US). The most of the industries lessened average values during 1990-2005 meaning they became less embedded to the “Japan Model.”

In Figure 2-5, J-U industries are industries chosen by the following criteria. First, I picked industries that started as J-type in 1990 and became non-J-type in 2005. Among such industries, I simply took the top one-third of industries that lessened average values (i.e., embeddedness to the Japan model) of financial and political variables during the period. I named them J-U industries. Similarly, J-J industries represent industries that remained embedded to the “Japan Model<sup>46</sup>.” U-U industries are those that started as the least embedded to the “Japan Model” and became even less embedded during the period.<sup>47</sup> The lists of industries of each J-U, J-J, and U-U group are shown in Table 2-5.

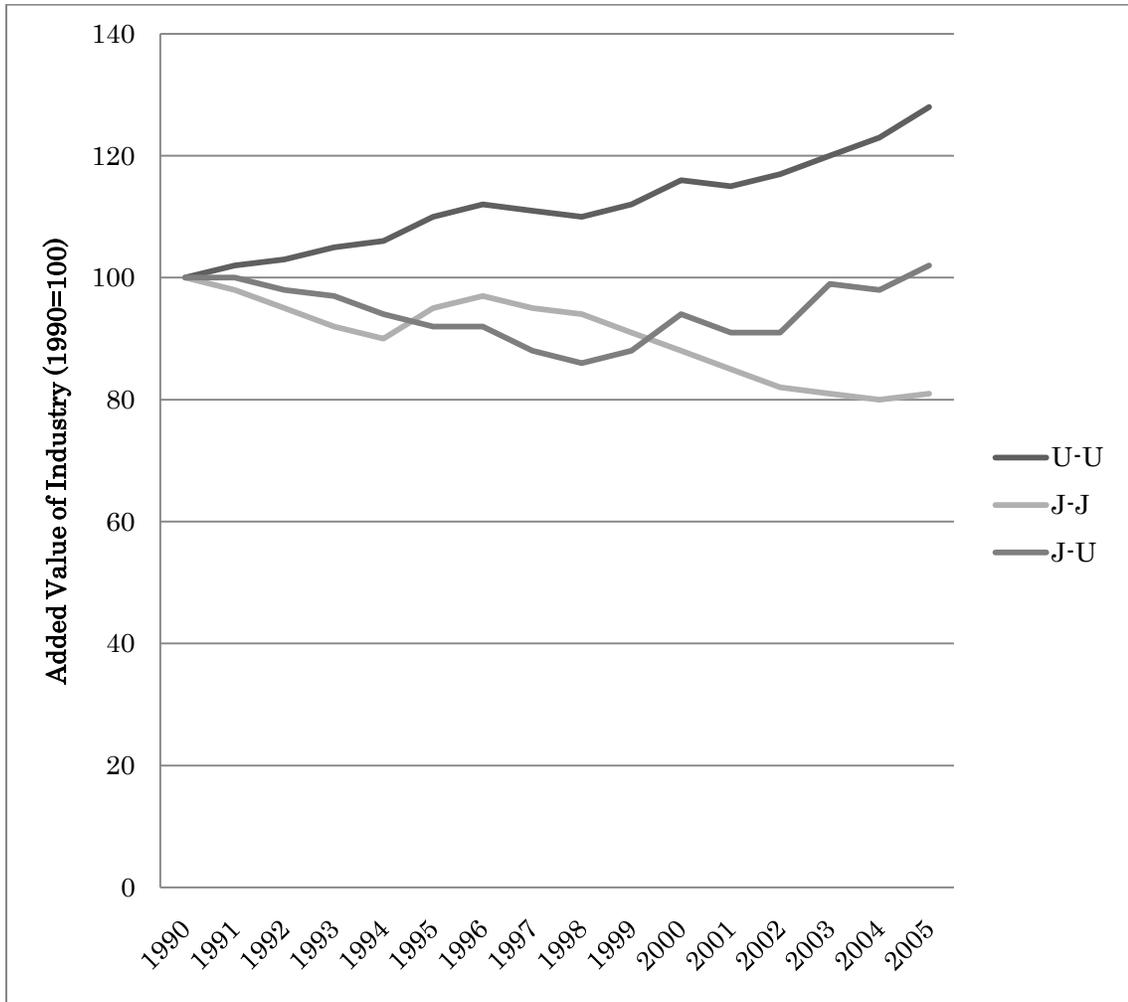
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<sup>46</sup> I also chose industries with the top one-third of industries that increased/maintained the embeddedness to the Japan model.

<sup>47</sup> Although one can also think of U-J industries, since most of the U-type industries in 1990 lessened average values of the embeddedness to the “Japan Model” during 1990-2005, there is little rationale for categorizing and analyzing U-J industries.

Figure 2-5.

Figure 2-5: Performance of Each Group of Industries (1990-2005)



**Table 2-5.**

**Table 2-5: Groups of Industries and Change of Embeddedness (1990-2005)**

<b>J-U Industries</b>				
JIP #	Name of Industry	1990	2005	2005-1990
32	Pig iron and crude steel	0.120	-0.207	<b>-0.327</b>
42	Household electric appliances	0.160	-0.160	<b>-0.320</b>
47	Electronic parts	0.141	-0.115	<b>-0.257</b>
68	Broadcast	0.201	-0.047	<b>-0.248</b>
3	Livestock and sericulture farming	0.138	-0.037	<b>-0.175</b>
44	Communication equipment	0.112	-0.004	<b>-0.116</b>
5	Forestry	0.091	-0.011	<b>-0.102</b>
<b>J-J Industries</b>				
JIP #	Name of Industry	1990	2005	2005-1990
62	Railway	0.616	3.106	<b>2.490</b>
63	Road transportation	1.436	2.158	<b>0.721</b>
64	Water transportation	0.775	1.400	<b>0.624</b>
51	Other transportation equipment	0.137	0.315	<b>0.179</b>
55	Civil engineering	0.785	0.908	<b>0.124</b>
66	Other transportation and packing	0.118	0.227	<b>0.110</b>
57	Gas, heat supply	0.046	0.061	<b>0.015</b>
10	Miscellaneous foods and related products	0.086	0.091	<b>0.005</b>
<b>U-U Industries</b>				
JIP #	Name of Industry	1990	2005	2005-1990
45	Electronic equipment and electric measuring instruments	-0.020	-0.242	<b>-0.221</b>
43	Electronic data processing machines, digital and analog computer equipment and accessories	-0.155	-0.354	<b>-0.199</b>
49	Motor vehicles	-0.081	-0.236	<b>-0.155</b>
12	Textile products	-0.139	-0.275	<b>-0.137</b>
27	Petroleum products	-0.184	-0.308	<b>-0.124</b>
38	General industry machinery	-0.221	-0.336	<b>-0.115</b>
2	Miscellaneous crop farming	-0.324	-0.431	<b>-0.108</b>
48	Miscellaneous electrical machinery equipment	-0.369	-0.471	<b>-0.101</b>

\*The higher values show the higher embeddedness to the "Japan Model."

Typical examples of J-J industries are quasi-public industries such as railroad industry. They also include industries such as civil engineering and transportation industries which had been highly dependent on the government and main banks in 1990 and still cannot find alternative business models<sup>48</sup>. Motor vehicle and consumer electronics industries are included in U-U industries. These industries had already started to finance from foreign capital markets in 1980s. Due to their strong competitiveness in international market, they have always been less dependent on the government and domestic financial institutions. Motor vehicle industry, for example, started from an industry that placed on the border of J-type and H-type in 1990 and drastically lessened its embeddedness to the Japan model.

The most interesting of these are the J-U industries in which steel industry earned the highest value. Most of the J-U industries were not as competitive in international market as U-U industries in 1990. Facing shrinking domestic market since the 1990s, however, steel industry for example, realized it needs to aggressively invest abroad. The industry was also facing threat from newly emerging rivals in East Asian. In order to regain competitiveness, steel industry changed its industrial structures and lessened its dependence on the “Japan Model<sup>49</sup>.” Successive merger and acquisitions among major companies and their subsidiaries were undertaken in parallel to extensive corporate

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<sup>48</sup> A striking feature of J-J industries is that, among eight industries, only gas industry is under MITI's jurisdiction. Since 51 out of 65 industries (78.5 percent) are under MITI's jurisdiction in the sample set we use, this extreme result implies that bureaupluralism is still active in Japan.

<sup>49</sup> On the other hand, as Abegglen (2004) emphasizes, steel companies maintained life-long employment system.

restructuring (Abegglen 2004). The newly consolidated companies began to aggressively finance and invest in foreign markets. By the mid-2000s, major steel companies attained so-called V-shaped turnarounds.

Let us casually examine the hypothesis 3 through the data shown in Figure 2-5. If the hypothesis 3 holds, J-U industries should suffer temporal loss of output during transition due to loss of institutional complementarities and then, after completing transition, should recover. J-J industries, on the other hand, should gradually decrease output because macro-institutions shifted toward the US type during the era and institutional complementarities between macro- and micro- institutions should be gradually lost. On the contrary, U-U industries should gradually increase output. Figure 2-5 seems to partially verify our expectations on both J-J and U-U industries and less so for J-U industries. There is, however, endogeneity problem as usual. For example, industries that did not perform well might had to stick to the Japan Model, not vice versa. Regression and historical analyses are necessary to address such endogeneity problem. In addition, since many of the industries that are performing well are the hybrids,<sup>50</sup> we further need to analyze a hybrid path of industrial evolution as well.

#### **2.3.4. Summary of Empirical Tests**

The results of the regression analysis shown in Table 2-3 and 2-4 were in large

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<sup>50</sup> In their firm-base analysis of corporate governance, Jackson and Miyajima (2008) claim that the performance of firms that adapted the hybrid type of corporate governance are performing better than those that adapted US model.

supportive of Hypothesis 1. Most of the testing variables took expected signs and some were significant. An unexpected result (loan variable) can be interpreted differently. The historical evidence shown in Chapter 3 also confirms Hypothesis 1. Industries that were embedded in the J-capital circulation system suffered in succeeding years. In short, structure mattered.

Despite heated ideological and theoretical discussions on the cause of the prolonged stagnation in Japan in the 1990s, few empirical analyses examined micro-level causal relations between structural change and economic performance. Virtually none of the statistical research in the past took politics or bureaucracy into account, although the Japan model was characterized by a collaborative government-industry relationship. Political institutions underwent arrays of substantial reforms since the 1990s. Such reforms fundamentally altered government-business relationships in Japan. It is difficult to imagine these political and administrative reforms did not substantially affect economic outputs. This empirical research should be a starting point for such studies on the Japanese political economy after the 1990s.

As for Hypothesis 2, the historical analyses of Chapter 3 bear the main responsibility for verification. Nevertheless, several statistical tests and a brief introduction of Japanese reforms since the 1990s described in this chapter should be convincing to a certain extent. The vast majority of detailed studies by other academics also support Hypothesis 2.

Results of empirical tests on Hypothesis 3 are mixed. In the first place, it is difficult

to empirically examine the existence of a “curve” through statistical tests. The historical analyses of Chapter 3 are thus important not only for testing Hypotheses 3 against historical evidence but to examine the mechanisms through which institutional changes affect economic outputs.

Nonetheless, statistical tests shown in Table 2-4, I believe, at least partially confirm Hypothesis 3. They show that, although the embeddedness to the J-capital circulation system had a negative effect on industrial output, industries that actually changed promptly suffered a loss of industrial output. Such results deny the reformists’ simplified view of Japanese stagnation in the 1990s. Although the reformists denounced the Japanese government and firms for changing “too little, too late,” the results show that changes might have been “too fast, too much.” Although past structures (i.e., Japan model) negatively affect industrial outputs, getting rid of those structures too quickly causes output fall. This is what Hypothesis 3 and Figure 2-2 (or Equations 2-1 through 2-6) infer. Counterintuitive and complex results of Hypothesis 3 and Equation 2-1 through 2-6 do not contradict the results in Table 2-4. In short, the results of statistical tests seem to at least partially verify Hypothesis 3 and are consistent with Hypothesis 3.

The historical evidence and its analysis also support Hypothesis 3. Needless to say, however, further empirical studies are necessary, especially those incorporating the macro-institutional changes within the testing model.

## Chapter 3

### **Japanese Political Economy under Transition 1940-2006**

In this chapter, after briefly looking at how the so-called Japan model was generated (Teranishi 2003; Vogel 2006), we examine how it has transformed through the collapse of the bubble economy and prolonged economic stagnation, based on historical facts and statements made by key players in Japan's political economy. In doing so, I adapt the "analytic narratives" approach proposed by a group of social scientists (Bates et al. 1998). The approach emphasizes positive feedback between theory and empirical evidence in theory building.

This study analyzes the "Japan model" with a particular focus on the capital circulation system (i.e., J-capital circulation system, see Figure 2-1). The J-capital circulation system is essentially a system under which household funds are invested in industries through banks and the capital market. Economic growth theories in the past have not given much importance to the role the financial system has played for economic growth (Cameron and Patrick 1976). In recent discussions of the theory of economic growth, however, many advocate that the way the financial system functions is a key determining factor for economic growth (Rajan and Zingales 1998). They argue that differences in the financial system or political dynamics defining the financial system can

explain a large part of the varied economic growth rates in developing countries.

The mainstream approach in studies of Japanese political economy followed industrial policy as a key contributing factor for Japan's high economic growth (e.g., Johnson 1982; Okimoto 1989). However, as discussed later, Japan's industrial policy was tightly linked with the financial system, especially the J-capital circulation system. Thus, it would not be appropriate to consider the financial system and industrial policy as entirely separate elements in an analysis of the postwar Japanese political economy.

In this chapter, we historically examine how the J-capital circulation system, a core subsystem of the Japan model, has evolved and changed in a mutually complementary manner with other institutions and subsystems of the Japan model. For example, while the Japanese economy had experienced persistent shortages of capital until the 1980s (Ikeo 2006), Japan's export industries nonetheless were able to make active capital investment by raising funds at relatively low interest rates. This was made possible because various formal and informal institutions had supported the flow of capital from households to these industries in a mutually complementary manner. More specifically, these systems include the inter-industry adjustment system, called "bureaupluralism" (Aoki 1988) in the political sphere, industrial policy by MITI and financial regulations by MOF in the administrative sphere, and the main bank system and cross-shareholdings commonly practiced in the private sphere. The J-capital circulation system has been established as a bundle of these various institutions.

This dissertation captures the Japan model as a bundle of various formal and

informal institutions and analytically interprets the Japan model through the lens of institutional complementarities among institutions. This may look similar to the “Varieties of Capitalism (VOCs)” approach in Hall and Soskice (2001), but this chapter, unlike VOCs, studies the Japan model dynamically by following its post WWII history. This study reveals that the Japan model is not necessarily stable. In fact, as discussed in this chapter in detail, while prewar Japan had an economic system similar to what is now characterized as the Anglo-Saxon model, Japan made a dramatic shift to the Japan model during the war that lasted 15 years.<sup>51</sup> Then, following the collapse of the bubble economy and the ensuing political disarray in the 1990s, Japan tried to reconvert to the Anglo-Saxon type.

It is not accurate to look at these developments from the macroscopic perspective alone. It is necessary to comprehend them as the process in which the bundle of institutions with institutional complementarities (called *system* (Definition 2-4) in this dissertation) that constituted the Japan model changed into a new bundle of institutions with redefined institutional complementarities. And by analyzing the process and mechanism of institutional change, it will become clear when the system change occurs and when the system becomes robust and stable.

### **Structure of This Chapter**

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<sup>51</sup> The 15 years not only include WW2 but also the war with China (Sino-Japanese War) that preceded WW2.

This chapter covers the following three historical stages. The first stage is the period of economic growth until the collapse of the bubble economy. During this period, the unique political and economic institutions, the so-called Japan model, is believed to have been functioning. This stage shows the “initial equilibrium” in this dissertation. In terms of the VOC classification, the Japan model at this point should be classified as a coordinated market economy (CME). The capital circulation system in Japan during this period is characterized by heavy reliance on bank finance, particularly on the main banks (Hoshi and Kashyap 2001; Aoki 2001; Calder 1993).

Various names were given for a unique set of institutions that existed from the period of high economic growth to the collapse of the bubble. They include the “J-Model” (Aoki 2001), “Japanese Economic Model” (Okazaki and Okuno 1993), “The Japan model” (Teranishi 2001) and “Developmental State Model” (Johnson 1983). In this dissertation, as discussed in detail in Chapter 2, the term the “Japan model” is used to represent this set of unique institutions. The capital circulation system under the Japan model is called the “J-capital circulation system.”

The second historical stage is the period of extensive institutional changes, i.e. the period of equilibrium shift. Institutional change originated in the economic globalization from the 1980s, and progressed rapidly with the bursting of the bubble in the early 1990s (Aoki 2001; Ikee 2006; Ogawa 2009). Extensive institutional changes were attempted on both the political and economic fronts, and various institutional changes also occurred in the private sector. Shared beliefs and common knowledge among Japanese people also

changed and were an important part of the institutional changes (see, Definition 2-1). During this period, policymakers and business executives intended to convert the Japan model into the US-type system or LMEs in terms of the VOC classification. They were particularly keen on turning Japan into being “more like the US.”

Extensive institutional changes started after the collapse of the bubble in the early 1990s. Japan went through the electoral reform in 1994<sup>52</sup>, the financial Big Bang and six major reforms under the Hashimoto Cabinet, with the Koizumi reforms in 2003 completing the major changes. The J-capital circulation system was shifted from indirect financing dominated by banks to direct financing through the capital market (Ohmori 2007).

The third stage is after the extensive institutional changes. Various institutional reforms were introduced in a bid to move toward the US-type system. However, as discussed later, Japan has yet to reach a new equilibrium (For a similar view, see Vogel 2006). For example, the J-capital circulation system has not necessarily followed its path to one that revolves around the capital market. Furthermore, in the wake of the subprime loan shock, the orientation toward the US-type system is wavering. Amid the economic doldrums, some movements are merging to revert to the old Japan model.

The fourth part of this chapter is an analytic narrative of these experiences Japan has gone through. Historical experiences described in this chapter, particularly the extensive institutional changes since the 1990s, are interpreted on the basis of the theoretical

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<sup>52</sup> The first election under the new election system took place in 1996.

framework set out in Chapter 2. In particular, the mechanism of the “Death valley curve of institutional change,” an inevitable economic downturn during extensive institutional change, is analyzed along historical experiences.

We will look into the institutional complementarities of various institutions from the spheres of politics, finance and industry for each of the three historical stages cited above. Our primary focus will be on how the J-capital circulation system emerged and evolved over time.

### **3.1 The Japanese Capital Circulation System -- Initial Equilibrium**

#### **3.1.1 Overview**

The Japan model was created through the government’s powerful intervention in the economy during the time of the wartime economy. In relation to the theoretical description in Chapter 2, this section depicts the emergence of the initial equilibrium.

Yukio Noguchi, an economist and former MOF bureaucrat, named the so-called Japan model the “1940 system” in that it had its origin in the wartime economic structure in 1940 (Noguchi 2008; Noguchi 1995). Noguchi (2008) boldly states as follows:

What was inherited into the postwar period was not the classic system going back to the Meiji era but the new economic system introduced as the wartime structure. Therefore, I would like to name this structure the “1940 system.”

The 1940 system played a quintessential role in realizing the high economic growth in postwar Japan. The high growth was brought about not by the economic democratization reform (by the Occupation Forces) in the postwar period, as was generally believed, but by the continuation of the wartime structure. (Noguchi

2008)

This is not a view held by Noguchi alone. A group of leading Japanese economists presented the following arguments before Noguchi advocated the “1940 system” (Okazaki and Okuno 1993):

It should not be forgotten that the economic system in modern Japan has been defined by the system—the system that realizes economic plans designed by bureaucrats —created during wartime.

Chalmers Johnson (1983) also pointed to the “amazing” continuity during the war and the postwar period regarding MITI bureaucrats, stating that the bureaucrats who guided the planned economy during the war led industrial policy in the postwar period. Many economists, in varying degrees, endorse Noguchi’s “1940 system” and Okuno’s view (Ikeo 2006; Teranishi 2003). Furthermore, many of them view that the J-capital circulation system, the core subsystem that underpinned the Japan model, also had its origin in the wartime planned economy (Hoshi and Kashyap 2001; Ikeo 2006).

The Japan model derived from various institutions and organizations that drove the planned economy during the wartime. For example, take government economic ministries such as MITI and MOF:<sup>53</sup> Control associations (*tosei-kai*) that were formed as the interface between government economic agencies and the industrial sector, later developed into post-WW2 trade associations (Yonekura 1993), The indirect finance system through bank lending had grown rapidly to meet military demand, The National

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<sup>53</sup> MITI, as the Ministry of Munitions, played a pivotal role in the planned economy during wartime. The knowhow and the regulatory power of the planned economy during the war are said to have been utilized in postwar industrial policy by MITI.

Financial Control Association (*kinyu tosei kai*) that presided over all controls concerning wartime finance also developed under MOF and the Bank of Japan during wartime (Ueda 1993; Hoshi and Kashyap). These institutions and organizations and their administrative power were inherited directly into the Japan model in the postwar period and supported its high economic growth.

The defeat in war in 1945 and the promulgation of the new constitution marked a major turning point in Japan's history, but as Noguchi (2008) points out, the economic system underwent only a superficial change (for an opposing view, see, for example, Calder 1993). The Occupation Forces dismantled the powerful Ministry of the Interior, but preserved the two major economic ministries, MOF and MITI, as well as the Bank of Japan. The dissolution of *zaibatsu* (industrial conglomerates) also turned out to be a half-baked endeavor. Instead, as the markets worked very limitedly and there were consistent shortages of funds in the chaotic period immediately after the war, the control power of the government built in wartime was utilized to the fullest extent (Ikeo 2006).

In the political sphere, meanwhile, the consolidation of the conservative parties in 1955 paved the way for the predominant-party system for the Liberal Democratic Party (LDP) for nearly 40 years. Political scientists call this the 1955 regime (e.g., Muramatsu 1981). The 1955 regime in the political sphere and the 1940 system for government-business partnership in the economic sphere then became organically intertwined

As the predominant-party system continued for a long span under the 1955 regime,

the government and the ruling LDP became integrated over time. Divisions within the LDP dealt one-on-one with vertically-segmented bureaus and departments of government ministries, and bureaus and departments of government ministries were linked to relevant industries through trade associations. Political economic adjustments within and among industries were made within bureaus and departments of economic ministries and corresponding LDP divisions. This was how the Japanese-style iron triangle, called “bureaupluralism” (Sato & Matsuzaki 1985; Aoki 1988), had developed.

The J-capital circulation system was also affected by inter-industry adjustments by bureaupluralism in the allocation of funds to industries. In particular, as market lending rates were artificially kept low during and after the war (Ogawa 2008; Ueda 1993), the government possessed influence on allocation of capital to priority industries. In doing so, the vertically segmented line by industry through the LDP and economic ministries served as the basic platform for adjustments. Such inter-industry adjustments, on one hand, made prioritized investment in strategic industries possible, and at the same time, performed the role of redistribution of profits among industries (Teranishi 2003). Consequently, Japan has developed the “dual economy,” in the words of Richard Katz (1998), where industries with the world’s highest-level competitiveness and uncompetitive industries heavily protected by the government exist concomitantly.

Labor unions also developed in a fashion consistent with the Japan model. Labor unions in Japan were commonly described as enterprise unions in contrast to industrial unions seen in Europe and the United States. However, elaborate empirical studies by a

leading labor economist Kazuo Koike (2005) have shown that there were industrial unions in Japan that performed functions almost identical to those of industrial unions in the United States in wage negotiations. This means that labor unions, too, were a key player in inter-industry adjustments under bureaupluralism.

In the rest of this section, I would make brief comments on arguments on the “peculiarity of Japanese culture” that were prevalent in the 1980s. The 1940 system is nothing like the conventional system based on Japanese culture. At the zenith of the Japanese economy in the 1980s, there was no shortage of vulgar views that the Japan model derives from Japanese culture and demonstrates Japan’s uniqueness. However, the economic system in prewar Japan was very similar to the present US system, characterized by powerful shareholders, high labor mobility and direct financing. Thus, the argument that the Japan model originates in Japanese culture is not warranted (Reed 1993).

In response to the fundamental change in environment, i.e. the war that lasted for 15 years, the Japanese political economic system that used to resemble the Anglo-Saxon type was substantially transformed, resulting in the establishment of the wartime economic system. This evolved into the Japan model in the postwar period and drove its high economic growth. This clearly indicates that the Japan model could change in any way corresponding to a change in environment. And such an attempt was indeed made in the 1990s, seeking the reconversion from the Japan model to the Anglo-Saxon Model.

### 3.1.2 The J-capital circulation system

The J-capital circulation system can be depicted as Figure 2-1, and its foundation was formed during wartime. In this section, we first briefly look at how the prototype of the J-capital circulation system was formed during wartime, and then examine the specific flows of capital and the roles of players in the government and private sectors along the lines of Figure 2-1.

#### Formation of the Foundation during Wartime

Japanese firms before the war relied on equity finance in the stock market for much of their fund-raising. As a consequence, shareholders had a strong say over management, and “reformist bureaucrats (*kakushin kanryo*)” in wartime fretted about how to mitigate the influence of shareholders over corporate management (Teranishi 2003). This forms a drastic contrast with the heated discussions among politicians, bureaucrats and other policymakers half a century later, over how to enhance the influence of shareholders<sup>54</sup>. In terms of debt, for Japanese firms before the war, issuance of corporate bonds had a far larger significance in corporate fund-raising than bank lending (Hoshi and Kashyap 2001). Thus, as Hoshi and Kashyap (2001) pointed out, when compared with the postwar

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<sup>54</sup> Starting with the strengthening of the shareholder lawsuit system under the Commercial Code for, among others, enhancing shareholders’ surveillance over business management in 1993, policymakers, business managers and media have come to equivocally advocate corporate governance by shareholders. Subsequently, however, as hostile takeovers by investment funds increased, arguments calling for corporate management to enhance not only shareholder value but also value for stakeholders came to the fore at such forums as the Corporate Value Study Group of the Ministry of Economy, Trade and Industry (METI) (Dore 2006, etc.).

US system and the postwar Japan model, Japan's pre-WWII capital circulation system had much more in common with the former than the latter.

The dependence of Japanese firms on indirect finance, a major feature of the Japan model, had grown rapidly during the war. Financial controls were enforced by “reformist bureaucrats” by amassing market funds into banks and postal savings for the purposes of 1) using them to purchase government bonds, and 2) allocating them to the military industry. First, strict controls were introduced for deposit interest rates, while nationwide campaigns were launched to encourage people to increase savings. Consequently, banks acquired the means of procuring massive amounts of funds at low cost through consumer deposits<sup>55</sup>. On the other hand, as the stock market was placed under strict government control, the ratio of securities holdings to all household financial assets plummeted from 42% in 1937 to only 10% in 1945 (Hoshi and Kashyap 2001)<sup>56</sup>. Consequently, the bulk of funds absorbed by banks flowed to purchase government bonds as government bond interest rates were set at levels higher than deposit interest rates.

For allocations of funds to the military industry, the government intensively used the Industrial Bank of Japan (IBJ) and other selected financial institutions. The Minister of Finance was able to order the IBJ to provide funds to particular industries (order-based lending); this authority was later extended to cover lending by banks other than the IBJ.

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<sup>55</sup> The dramatic substitution between consumption and savings occurred between 1937 and 1944, with real consumption plunging as much as 40% in the same period (Okazaki and Okuno-Fujiwara 1999).

<sup>56</sup> In the post-WW2 era, the ratio of securities holdings subsequently recovered to close to 20%, but never returned to the prewar level. In this sense, it can be argued that the form of financial asset holdings by households had undergone a permanent change during wartime.

While risks involved in military financing were concentrated on the IBJ and banks that bought bank debentures issued by the IBJ (IBJ bonds), the government guaranteed these IBJ bonds. Public financial institutions funded by postal savings, etc. also financially supported the IBJ.

In the meantime, the capital market diminished considerably through government controls. The stock market, which functioned as the principal place of fund-raising by firms before the war, shrank substantially as shareholder powers were scaled back and dividends on shares were regulated. The corporate bond market was also strictly controlled by MOF. As a result of these developments, banks had come to provide almost all of the funds for firms on the eve of the end of the war.

While actual production plans were led by “reformist bureaucrats” of the Planning Board (*kikaku-in*) and the Ministry of Commerce and Industry (Teranishi 2003)<sup>57</sup>, MOF and the Bank of Japan wielded considerable influence over the allocation of funds. “Control associations (*tosei-kai*)” established by industry in 1941 served as the mediators for information and instructions between the government and industry. In 1943, the Planning Board and the Ministry of Commerce and Industry were reorganized into the Ministry of Munitions which later became the Ministry of International Trade and Industry (MITI) after the war. In 1944, a designated financial institution was assigned to

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<sup>57</sup> While the Planning Board and the Ministry of Commerce and Industry were later integrated to become the basis for MITI after the war, there was said to be a strong rivalry initially between the two ministries. The Planning Board, on one hand, aimed to strengthen the government’s economic controls and tried to curb the influence of shareholders. The Ministry of Commerce and Industry, on the other hand, played the role of a spokesman for the business community (Teranishi 2003).

each munitions company (the Munitions Company Designated Financial Institution System (*guju kaisya shitei kinnuyu-kan seido*)), laying the basis for the main bank system<sup>58</sup>.

The basic structure of the J-capital circulation system was thus completed during wartime. People deposited large amounts of money with banks and in postal savings at low interest rates. Banks and public financial institutions, effectively guaranteed by the government, made loans in massive amounts and at low interest rates to targeted industries.<sup>59</sup> The variety of institutions in the private sector that formed the core of the J-capital circulation system, such as the main bank system, cross-shareholdings and trade associations, were also established during this period. As a result, the Japanese financial system made a drastic change from the market-centered (direct finance) system before the war to the bank-centered (indirect finance) system during and after the war.

### **From Households to Banks and Postal Savings**

We now look at how funds actually flowed under the J-capital circulation system along the fund flows shown in Figure 2-1. First, households continued to be encouraged to save as they were in wartime. The national savings association system, instituted in March 1941 for the purpose of promoting savings during the war, was inherited into the

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<sup>58</sup> The fact that designated financial institutions during wartime exerted a significant influence on the formation of main banks and *keiretsu* was empirically verified (Hoshi 1995).

<sup>59</sup> However, according to Hoshi and Kasyap (2001), there also was a major difference between the financial system in wartime and the financial system after the war in that the function of monitoring by banks was put into place in the postwar period.

postwar period, with tax breaks on savings maintained. Fund routes other than bank deposits and postal savings were strictly regulated by MOF. With bond issuance by firms subjected to stringent regulations, the bond market failed to grow. Stock issuance was also restricted with the government's intervention. In addition, as infrastructure to support stock investment had not been adequately developed, investment in the stock market remained subdued, except for a brief period of bubbly expansion during the 1960s. Finally, it was virtually impossible for the general public to invest overseas.

As a result, Japanese households in the high growth era developed the distinct features of 1) maintaining very high household saving ratio relative to other industrial nations, and 2) holding much of their savings in cash, bank deposits and postal savings. Although deposit interest rates offered by banks and other financial institutions were kept low under MOF regulations, household budgets poured into deposit accounts, because the public had very few alternatives available. Let us review the situation with data. First, according to the Organization for Economic Cooperation and Development (OECD), Japan's saving ratio was the highest among the Group of Five (G5) industrial nations until the 1980s, and stayed constantly higher than 20% throughout the 1970s (OECD Economic Outlook). Second, the ratio of cash and deposits to household financial assets has remained in the very high range of 65-75% (National Economic Accounting). Most of the funds saved as cash and deposits by households were absorbed by commercial banks, particularly major banks called "city banks (*toshi ginko*)". In the high growth period, 35-45% of personal deposits were put into deposits at city and regional banks

combined, but this ratio has followed a downward trend since then. Postal savings accounted for around 15% of personal deposits since the early years of the high growth period, and the ratio increased even higher to top 25% in the 1980s (Ogawa 2008).

### **From Banks to Firms (Industries)**

The financial system under the Japan model can be categorized as an indirect finance system, or in terms of the Varieties of Capital (VOC) classification, a CME. Funds concentrated in the banking sector through the high household saving ratio became a key source of funds for investment by industries. Funds in postal savings, on the other hand, flowed to government-affiliated financial institutions, such as the Japan Development Bank (JDB) through the Fiscal Investment and Loan Program (FILP). Under FILP, all postal savings and public pension reserves were deposited with the Trust Fund Bureau of MOF for lending to the JDB, Export-Import Bank of Japan (Ex-IM Bank) and other government-affiliated financial institutions at low interest rates. The JDB, Ex-IM Bank and other financial institutions made long-term, strategic investments in priority industries. Lending of long-term funds by the JDB, the central player of government-affiliated financial institutions, did reflect the intentions of MOF, MITI and the Ministry of Transportation as governing ministries. On the other hand, much research has revealed that the JDB's independence from the government and the confidence private financial institutions have placed in the JDB's credit screening ability have led JDB loans to have the effect of inducing an inflow of private-sector funds (Calder 1994;

Horiuchi and Zui 1994; Nihon Seisaku Ginko 2002)<sup>60</sup>.

Banks in the private sector were legally classified into several types, each of which was subjected to a different set of regulations. From the perspective of industrial finance, the IBJ and other long-term credit banks and commercial banks, in particular major city banks, were of importance. The long-term credit banks were established under the Long-Term Credit Bank Act enacted in 1952. The IBJ, the largest of them, is the bank that provided funds to the military industry, with guarantees from the government, functioning as the core of military financing during wartime. The government accorded privileged treatment to the long-term credit banks in procuring funds at low interest rates, allowing them to issue bank debentures, which it denied to commercial banks. By providing rents to the long-term credit banks, the government was able to have an influence in their lending (Okazaki et al. 2004). The long-term credit banks, the IBJ in particular, had the role of providing long-term funds, which tended to be in short supply after the war, for capital investment by priority industries. In other words, the IBJ in the postwar period inherited many of the functions it had performed during wartime<sup>61</sup>.

Commercial banks came to take in the bulk of household savings. With deposit interest rates kept at low levels under strict regulations, commercial banks were able to

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<sup>60</sup> While Calder (1994) emphasized the independence of the JDB and Ex-Im Bank that were actually engaged in long-term lending operations, the significant influence MITI and others wielded cannot be denied given that lending decisions under FILP were made as requests from MITI and other governing agencies to MOF in a process parallel to the government's budget requests.

<sup>61</sup> According to Hoshi and Kashyap (2001), while the IBJ decided on loan recipients as dictated by the government during wartime, the IBJ in the postwar period acquired monitoring and screening functions of its own.

procure funds at low interest rates. In addition, as MOF, under the “convoy system,” imposed a variety of regulations to allow even banks with the weakest management base to operate profitably, city banks that benefited from the economies of scale were able to enjoy particularly large profits. This can be construed as the government’s extension of rents to banks, as well as the government’s assumption of risks involved in bank management. In return for the extension of rents to banks, the government, or MOF in particular, was able to maintain a strong influence over banks<sup>62</sup>. Under the convoy system, for example, city banks were able to increase their profits as they increased the number of new branches established, but MOF had the authority to give permission to the establishment of branches.

While the government regulated deposit interest rates at low levels, it also kept banks’ lending rates to industries at levels lower than the equilibrium rates of interest in the market. This is called the “artificial low interest rate policy” (Hoshi and Kashyap 2001; Ikeno 2006). This “artificial low interest rate policy” made it possible for the government to strategically allocate low interest-rate funds to priority industries.

Let us confirm this mechanism by Figure 3-1. The vertical axis shows banks’ rates of lending to firms and the horizontal axis shows amounts of loan demand and supply. Demand from firms for bank lending is indicated by D and the supply of bank loans by S. At the point of intersection E of the demand curve D and the supply curve S,

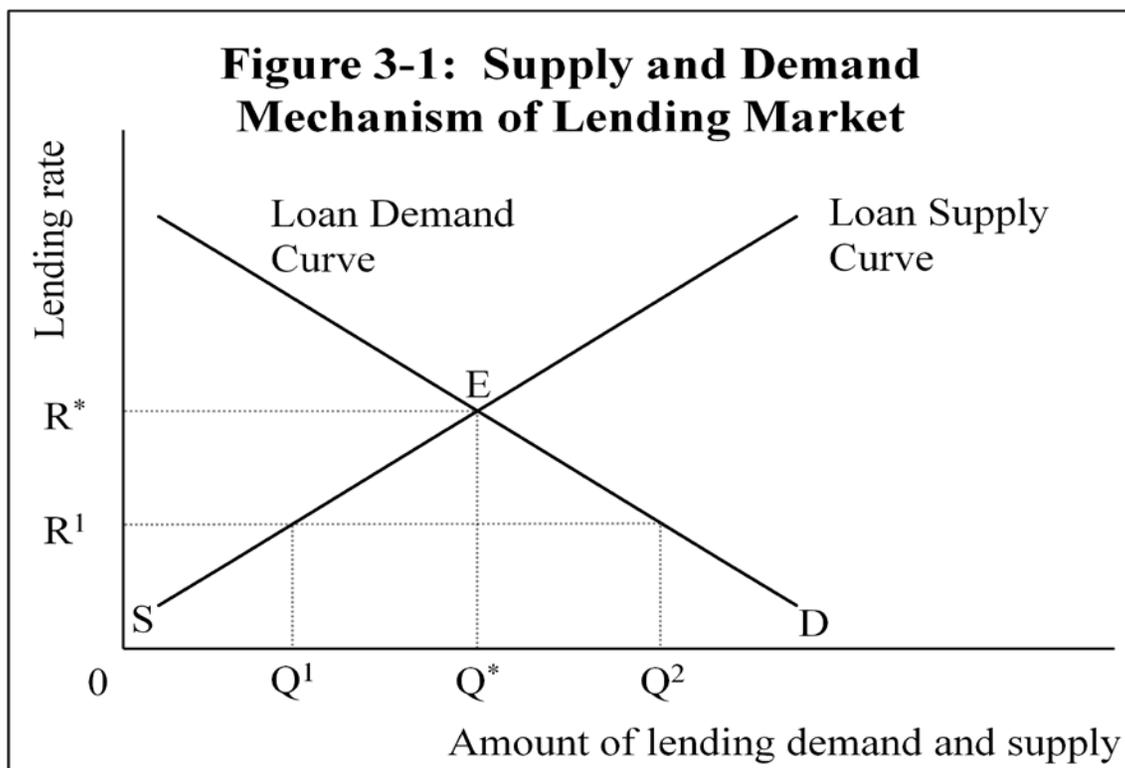
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<sup>62</sup> This is evident from the fact that at major banks, officials put in the role of negotiating with MOF (“MOF-tan”) were regarded as prime candidates for presidency in the future.

demand matches supply to produce the interest rate  $R^*$ . In this case, market principles come into play and there are no guarantees that funds are allocated intensively to priority industries. In contrast, if interest rates are set, for instance, at  $R^1$  under the government's "artificial low interest rate policy," demand for loans exceeds the supply of loans (the state of excess demand). The size of excess demand is  $Q^2 - Q^1$ .

When the government's "artificial low interest rate policy" generates excess demand for loans, room is created for the government to get involved in the allocation of funds from banks to priority industries, because any industry would want funds allocated to it on a preferential basis. In fact, throughout the postwar period in Japan, there was constant excess demand for loans due to the "artificial low interest rate policy" and high economic growth (Noguchi 2005; Ikee 2006; Ogawa 2009).

Figure 3-1.



Exerted and revised by the author from Ogawa (2009).

The government assumed the role of steering low interest-rate loans from banks to priority industries. But its power to do so was not necessarily dominant. As discussed later, particularly because MITI, which supervised industries, and MOF, which had jurisdiction over banks, were two different government agencies, banks were able to exercise their independent credit screening capabilities in between the two economic ministries. This performed the important role of avoiding moral hazards at banks and firms (Okazaki et al. 2004; Mabuchi 1994). Ikeo (2006) and Calder (2004) argue that banks, and the IBJ in particular, rather than the government, played the major role in inducing funds to priority industries.

The main bank system that had its origin in wartime was established as the private-order (i.e., institution) during this time, playing a decisively important role in the provision of funds from banks to firms and also for corporate governance. As discussed earlier, the main bank system originated in the wartime Munitions Company Designated Financial Institution System. The government's suppression of alternative funding routes other than indirect financing by banks inevitably led to even closer relationships between banks and firms, and hence, further development of the main bank system.

Various theories and empirical studies have clarified that the main bank system in Japan had a certain economic rationality. In particular, during the postwar chaotic period and the succeeding high growth period, when Japan's capital market was still quite incomplete, the main bank system had played an important role in supplementing that incompleteness and solving the coordination problem. The main bank system made it

easier to solve problems brought about by the incompleteness of information, such as adverse selection and moral hazards (Hoshi and Kashyap 2001). There was common practice whereby main banks, while conducting the monitoring of firms receiving loans, arrange syndicated loans with the participation of other banks. Consequently, risks were dispersed and at the same time the overlapping of monitoring costs was avoided. As a result of the reduction of the monitoring cost, the efficiency of the economy as a whole improved (Sheard 1994). Benefits gained there were used to lower borrowing costs of firms or to increase profits for banks.

The main bank system is shown to have had a positive impact on research and development (R&D) investment that is of critical significance for the growth of the high-technology industry (Odagiri 1992). Such R&D investment is believed to have had a positive impact on the overall economy as well. The main bank system also allowed firms to maintain higher levels of debt and make more aggressive capital investment than firms in other countries. This was of particularly crucial significance for Japan in the high growth era because firms were facing constant shortages of funds.

The J-capital circulation system made it possible to supply low-cost funds to priority industries through the “artificial low interest rate policy” and the main bank system. Business economist Michael Porter (Porter and Takeuchi 2001) and others point out that Japanese firms were able to capture a big chunk of market shares in the world market largely because they had easy access to massive amounts of low-cost funds by curbing

interest rates of general depositors<sup>63</sup>.

However, the process of infusing funds in industries was quite different from the image of “Japan Inc.” where the government, acting as the command central, induces funds into strategic industries. While the government had influence over the infusion of funds into priority industries, even government-affiliated financial institutions over which the government was supposed to have the strongest influence, conducted credit screening on their own. It was not that there was the sole command center within the government, with supervisory powers divided between MITI in charge of industries and MOF in charge of financial institutions; the separation of supervisory powers and varied viewpoints of screening prevented rent seeking activities and made it possible to introduce market principles into the J-capital circulation system.

An array of players, including the government, financial institutions and firms, built the dense network and facilitated the dissemination of information, thereby making it possible to reduce transaction costs predominant in an economy at the development stage. On the other hand, in order to maintain this system, the government reined in the development of the capital market and financial liberalization. In addition, the long-term relationship caused information to be shared only among players incorporated in the dense network, making the system highly closed. The historical development and

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<sup>63</sup> Porter and others note that capital productivity of Japanese firms was low relative to U.S. peers. On the other hand, capital productivity of German firms was on par with Japanese firms (McKinsey Global Institute 1996). This may be regarded as an advantage of relationship-based financing centering on fund-raising through borrowings from main banks over the Anglo-Saxon-type arm’s-length financing based on fund-raising from the capital market.

characteristics of the capital circulation system (J-capital circulation system) had a major impact on the subsequent institutional transformation starting in the 1990s.

### **The Role of the Government in the J-Capital Circulation System**

Above, we looked at the J-capital circulation system under the Japan model along Figure 2-1. Private-sector players like households, banks and firms were featured in the description of the flows of funds so far, but players such as politics and economic ministries have played significant roles in the maintenance and development of the J-capital circulation system as well.

#### **Ministry of Finance (MOF)**

MOF has played a major role in the development and maintenance of the unilinear capital circulation from households to banks and then to firms in postwar Japan. In doing so, MOF exercised strong regulatory powers over financial institutions acquired during wartime. It suppressed the development of the capital market that could have been an alternative route of funding to industries, and also controlled inflow and outflow of funds from overseas.

MOF led the maintenance of this unilinear capital circulation to realize the “artificial low interest rate policy,” providing one of the sources of Japan’s industrial competitiveness. With the postwar Japanese economy in constant shortages of funds and saddled with imperfect markets, it also played an important role in the smooth supply of

funds to priority industries. Furthermore, MOF assumed the risks of banks, which acted as the nerve center of the J-capital circulation system, by administering the convoy system, which enabled main banks to provide firms with massive, low-cost funds.

The miraculous development of the Japanese economy under government-private sector collaboration is described often in association with MITI (See, for example, Johnson 1984; Okimoto 1989), and few studies focused on MOF. There are several possible reasons for this trend. Theories of economic growth led by economists have recognized the importance of the financial system for growth only in the past 15 years or so (See, for example, Rajan and Zingales 1998). That is somewhat out of line with the period when the enigma of Japan's economic growth was actively analyzed. In addition, while MOF was strongly involved in the maintenance of the unilinear flow of the capital circulation system, it seldom intervened in the allocation of funds to priority industries, as industries were under the supervision of MITI. Moreover, MOF, which gave top priority to upholding fiscal discipline, could not itself carry the torch of industrial development requiring fiscal spending.

### **Ministry of International Trade and Industry (MITI)**

During the war, the Ministry of International Trade and Industry (MITI) was at the center of the wartime planned economy under the name of the Ministry of Munitions. Chalmers Johnson's path breaking dissertation, "MITI and the Japanese Miracle" (1984), described in detail how "reformist bureaucrats," including Nobusuke Kishi, who later

became prime minister, had driven the planned economy in Japan by applying their experiences with governing Manchukuo. After the war, the Ministry of Munitions reverted to the Ministry of Commerce and Industry, and subsequently became MITI by adding the trade division, touted as the general headquarters of “Japan Inc.” MITI wielded its influence over firms based on various control powers acquired during wartime as well as its authority over foreign exchange allocation.

Several characteristics can be noted about the relationship between MITI and industry. Firstly, its interaction with industry was not unilateral or authoritarian, but interactive in many cases. Next, MITI’s powers over firms were often limited (As for persuasive arguments on this point, see, for example, Samuels 1987). Even when firms, on the surface, seemed to comply with instructions from MITI, their actions actually were often voluntary (Gutman 2000). When compared with other ministries, MITI did not necessarily have mighty powers in terms of its budget and the number of staff. Thirdly, MITI did not have any strong influence over the financial sector, except for its clout over the JDB and other government-affiliated financial institutions. The bill for the Act for Temporary Measures for the Promotion of Specified Industries, submitted to the Diet in 1963 by MITI in a bid to secure an influence over the financial sector, was scrapped due to opposition from the financial industry and MOF, among others<sup>64</sup>. MITI’s influence over financial institutions was limited to the modest form of coordinating

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<sup>64</sup> The bill was adopted in a cabinet decision with the consent of MOF on the surface, but former MOF bureaucrat and economist Yukio Noguchi (2008) described circumstances surrounding the bill as the “war between MOF and MITI.”

expectations on industries and financial institutions through its “vision” of industrial policy prepared and announced periodically.

In the area of research on Japanese politics, there was a time when active arguments took place on whether politicians or bureaucrats, or whether bureaucrats or firms, were more powerful, viewing Japan’s political economy as power politics. However, evidence discussed above and detailed case studies by political scientists in the past have shown that MITI’s relationship with industries were not unilateral or authoritarian but voluntary and interactive. These characteristics were particularly noticeable in Japan’s high-technology industry, among others, which was the driving force of the Japanese Miracle (Okimoto 1989). In other words, MITI functioned as a coordinator between the government and firms, and sometimes between industries and firms, taking advantage of its special status as a government agency and the broad range of areas under its jurisdiction, often referred to as the “department store of administration”<sup>65</sup>.

During the war and the postwar chaotic period, transaction costs in underdeveloped markets of Japan were enormous. Information was imperfect, and funds were in short supply. In such periods, the vertical coordination mechanism under government-private sector collaboration is believed by some to have an edge over the horizontal coordination mechanism through markets. The vertical mechanism developed in the form of Japan’s well-known system of government-private sector collaboration during the high economic

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<sup>65</sup> MITI was called the “department store of administration” as it supervised almost all major industries and also had jurisdiction over a very wide range of administrative areas, including part of financial services, patents and trade (Kawakita 1991).

growth period.

However, as Matsuyama (1996) points out, the government's intervention from the top to solve the coordination problem may restrict coordination experiments from the bottom. Therefore, in order to solve the coordination problem effectively by the government's intervention, the decentralized and fragmented approach is considered effective. In that respect, MITI indeed is believed to have performed the role of effectively reducing industries' transaction costs by acting as a casual and powerless coordinator standing at the center of the Japan model.

Unlike 20 years ago, the role that MITI had played in the Japanese economy, and its industrial policy in particular, is beginning to be supported theoretically by economists and others (Hoff and Stiglitz 2001; Teranishi 2003; Rodrik 2007). Neoclassical economists who assume perfect market considered the effectiveness of MITI's industrial policy in limited scenes where classical "market failure" occurs. However, when multiple equilibriums exist for economic development, the economy might get trapped in a "bad equilibrium" if the government's coordination function does not work. Keiichiro Kobayashi and I theoretically verified that such coordination failure had occurred in the Japanese economy after the collapse of the bubble (Kobayashi & Kato 2001). A major cause for the coordination failure is that the functions of the government and main banks as coordinators had declined following the extensive institutional changes since the 1990s.

Coase (1937) and Williamson (1975) have done pioneering studies on the rationale

of the coordination mechanism of firms. In recent years, not only firms but also the relationship between the government and industry associations, the main bank system, and *keiretsu* and various other organizations and systems in Japan are known to have played the coordination functions (Okazaki et al. 2002). MITI is presumed to have played exactly the role of coordinator at the core of the networks stretched throughout Japan's political and economic systems (See Figure 2-1).

### **Other Ministries**

MITI, called the “department store of administration,” had jurisdiction over a very broad range of industries, but not all the industries. For example, MOF had jurisdiction over the banking industry, the Ministry of Agriculture, Forestry and Fisheries (MAFF) over agriculture, the Ministry of Construction over the construction industry, and the Ministry of Transportation over the shipbuilding industry<sup>66</sup>. MITI's influence over these industries was very limited.

As discussed later, coordination of political interests seldom took place beyond the lines of ministries. There were LDP lawmakers with vested interests, or “*Zoku-giin* (special interest legislators),” in respective specific fields handled by each ministry to form a bureaupluralism. Since ministries other than MITI had narrow scopes of jurisdiction, they could not adopt MITI-type industrial policy to make focused

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<sup>66</sup> Jurisdiction over these industries was to change under the reorganization of government ministries and agencies enforced in 2001.

investment in strategic industries among industries under their jurisdiction. Instead, these ministries, together with *Zoku-giin*, often acted in favor of interests of the particular industries they supervised.

Under the Japan model, coordination of interests by industry as a primary unit led to strategic investment in priority industries on one hand, but had the aspect of protecting declining industries on the other. As industries under jurisdiction of ministries other than MITI were not able to make cross-industry coordination represented by the former, the aspect of industry protection in the latter became more pronounced. The classic example was agriculture under the jurisdiction of the MAFF, where MAFF bureaucrats and agroforestry *Zoku-giin* within the LDP joined hands to provide solid protection. In contrast, the coal industry, which was supervised by MITI and had strong political power, saw its protection scaled back gradually under MITI's policy and all but disappeared in 2001. This is believed to have been possible because MITI supervised a wide array of industries and could make cross-industry strategic decisions<sup>67</sup>.

### **Liberal Democratic Party (LDP)**

In postwar Japanese politics, the predominant-party system under the LDP lasted for nearly 40 years from 1955 to the birth of the Hosokawa Cabinet in 1993. This is an extremely unusual phenomenon in terms of comparative politics (Sartori 2008).

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<sup>67</sup> MITI's cross-industry coordination perhaps was not necessarily the direct result of MITI bureaucrats' strategic intentions. It is more likely that MITI acted to liberalize internationally uncompetitive industries under its jurisdiction facing pressure from other industries with strong international competitiveness.

The postwar Japanese political system revolving around the predominant-party system under the LDP is called the 1955 regime. The 1955 regime in politics became integrated with the 1940 system, a political economic system of government-private sector collaboration. The completed form of that integration was the Japan model.

The divisions within the LDP were vertically segmented in a way corresponding to bureaus and departments of ministries. This is what Sato and Matsuzaki (1986) and Aoki (1995) call *bureaupluralism* and Murakami (1994) calls the compartmentalized competition by industry. “Pluralism” here means that bureaus of ministries negotiate with relevant industries one on one (Ikeo et al. 2001). Bureaus of ministries had to consult with relevant divisions of the LDP Policy Research Council and obtain their prior approval when they wanted to get bills passed in the Diet. LDP divisions had members specialized in respective fields of ministries and agencies, called “*Zoku-giin*”<sup>68</sup>, and developed long-term close ties with relevant ministries and their bureaucrats<sup>69</sup>.

This vertical “segmentation” extended from the LDP and ministries further to the private sector. More specifically, trade associations corresponding to bureaus of

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<sup>68</sup> *Zoku* in Japanese means “tribe.” Lawmakers specialized in their respective fields are likened to tribes.

<sup>69</sup> At one time, there were strong arguments in studies of Japanese politics over whether politicians or bureaucrats were more powerful in the process of policy development through LDP divisions. However, this dissertation takes the position that through interactions between politicians and bureaucrats, a variety of practices and systems are established as a game theoretic equilibrium. Ramseyer and Rosenbluth (1993), using the principal-agent model, claim that politicians basically controlled bureaucrats, but it is construed that there were a variety of implicit strong assumptions to derive that conclusion. For example, Ramseyer and Rosenbluth believed that LDP politicians controlled bureaucrats by taking advantage of the race for position advancement among bureaucrats, but there is the assumption there that while bureaucrats are competing among one another, LDP politicians maintain monolithic unity. But that assumption is the reverse of the reality that government ministry officials keep strong solidarity as represented by such terms as the “MOF family” and “MITI family,” while LDP politicians were often engaged in fierce factional strife.

ministries were formed during wartime, and developed further in the postwar period, playing the important role as the bases for the flow of information between the government and the private sector (Teranishi 2003). In addition, ministries established councils to reflect opinions of outside experts and interested parties, and these councils set up industry-by-industry sub-committees under them.

As seen above, politics, administration and the private sector were all segmented by industry. Industries, not social classes as in most other advanced democracies, acted as the platform to coordinate various conflicts of interest (Teranishi 2001). As a result, the sub-system connecting the LDP Policy Research Council, bureaus of government ministries and trade associations functioned as the Japanese version of the Iron Triangle. Matsuzaki and Sato (1985) and Aoki (1989) called it bureaupluralism.

Partly due to the absence of social classes as the platform of political economic coordination, the bureaupluralism that had industries as this platform took on the functions of income redistribution and social security (Teranishi 2003). This led to what Katz (1998) calls the “dual economy.” In other words, industries with the world’s leading competitiveness and industries that are barely surviving under the government’s protection existed concomitantly in Japan and income redistribution was carried out through this concomitance. The Japanese government can be classified into “small governments” among advanced democracies in terms of budget size and government payrolls. However, the government’s protection of weak industries through regulations and subsidization assumed part of the income redistribution function (Moss 2002). This

is construed to have resulted from the bureaucpluralism being vertically segmented by industry instead of horizontal social classes as seen in other democracies.

LDP lawmakers had the influence over the allocation of funds by industry within the J-capital circulation system. *Zoku-giin* actively worked on government ministries for policies favorable to the LDP (Inoguchi and Iwai 1987). With the interface between the government and the private sector being industry-based, the influence-peddling in Japan was conducted mainly by industry-based *Zoku-giin* within the LDP. Partly because of political pressures from these *Zoku-giin*, the government could not easily withdraw its support from industries to which funds were initially directed as targeted industries even after the objective of that support (growth) had been achieved. As a result, it has been argued that the government's policy took on a stronger tinge of fund induction to industries in decline from around the last years of the high growth period (Hoshi and Kashyap 2001). This trend was particularly pronounced for ministries other than MITI that could not make cross-industry strategic investment due to the narrow range of industries under their jurisdiction, such as MAFF and agroforestry *Zoku-giin*.

Meanwhile, relevant divisions of the LDP had close relations with both MOF and MITI. Theories and empirical studies by political scientists and economists in recent years have revealed that politics has had a strong impact on the shape of a country's financial system (North and Weingast 1989; Rosenbluth 1989; Rajan and Zingales 2003; Haber et al. 2008). However, the J-capital circulation system under the Japan model had its origin in the wartime economic system, well before the creation of the LDP, and it is

hard to imagine that the LDP had a major influence on the establishment of that system itself. The internal structure of the LDP and its style of influence-peddling had, over time, become fused with the Japanese-type capital circulation system.

Since the vertical coordination mechanism, with industries as the coordination platform, played a central role in the J-capital circulation system, the horizontal coordination mechanism remained relatively weak. Though there did exist a mechanism for overall horizontal coordination by MOF through the process of budget formulation, it was not so effective since the composition ratios of budgets of ministries and agencies became rather fixed (Campbell 1977). MITI was also able to make horizontal coordination to a certain extent because it had a broad range of industries under its jurisdiction, but there were limits on that coordination.

### **3.1.3 Institutional Complementarities**

The J-capital circulation system under the Japan model was driven by various institutions and organizations, which mutually became engaged and formed networks. Strong institutional complementarities existed among those institutions .

As already discussed earlier, policies initiated by the government, including deposit interest rate regulations, constraints on the capital market and the artificial low interest rate policy, all had their origins in the wartime planned economy. The capital circulation system under the Japan model deriving from these policies consisted of mutually complementary formal and informal institutions, including the economic system

of government-private sector collaboration, the main bank system, the bank-centered economy, cross-shareholdings and the convoy system (i.e. guarantees provided by the government to banks). And most of them also had their origins in wartime. Organizations that supported these institutions such as MOF, MITI, trade associations, government-affiliated financial institutions, large commercial banks (called city banks) and postal offices also had their origins in wartime.

This economic system of government-private sector collaboration, or the 1940 system, that had its origin in wartime, eventually became integrated with the 1955 regime of politics, making industries the platform of political economic coordination. Consequently, the bureaupluralism had been developed along the vertical lines of divisions of the LDP Policy Research Council, bureaus of MITI and other ministries and agencies, and trade associations.

Institutions that supported the Japan model were strongly complementing each other. As for institutions that supported the J-capital circulation system, for example, banks were able to take risks such as capital investment by firms almost exclusively at low lending rates only because the government assumed risks in the banking sector through MOF's convoy system. The institutional complementarities are said to have existed between the government's regulations on lending rates and banks' growth-oriented active operations (Hellman et al. 1997; Aoki 1995). Such complementarities arose between the political economic system of government-private sector collaboration and the bureaupluralism in politics and bureaucracy.

Under the bureaupluralism, industries came to perform the political function of income redistribution. The lifetime employment system, another typical element of the Japan model, reduced labor mobility between industries and complemented the bureaupluralism under which labor management, by industry, negotiated with the government (Teranishi 2003).

From the standpoint of regarding an institution as an equilibrium in a game (Definition 2-1), people's shared belief is also regarded as an institution. The Japan model had been supported by a variety of shared beliefs and norms, often called "myths (*shinwa*)."

They included myths that the economy would continue to grow (*migikata agari shinwa*), land prices would continue to rise (*tochi shinwa*), banks would never fail (*ginko futou shinwa*), and the LDP would remain in power (*jiminto itto yuui taisei*). For example, the myth that banks would never fail (*ginko futou shinwa*)," along with MOF's convoy system, made it possible for banks to take on excessive economic risks. And the excessive risks accumulated in banks were absorbed by the government and real estate that was supported by the myth that land prices would continue to rise (*tochi shinwa*).

People's knowledge and skills were also complementary with institutions of the Japan model. For example, with the lifetime employment system developed at Japanese firms, their employees developed their firm-specific contextual skills. In contrast, in the United States with the highly mobile labor market, workers tend to develop functional skills.

High economic growth continued under the Japan model until the oil shock in the 1970s, and even after the oil shock, the Japan model realized a stable equilibrium by

maintaining relatively high growth rates among OECD member countries. Usually, there arise no incentives to change a system that is functioning well. The continuation of the dominance of the LDP for nearly 40 years was linked to this as well. Needless to say, as Mahoney and Thelen (2010) point out, the equilibrium was not completely static but gradually evolved. Many of those who regard a country's political economic system as an equilibrium do not necessarily see it as completely static. Because of institutional complementarities, however, the political economic system is believed to have inertia and changes only gradually.

Not only VOC proponents but also many economists and political scientists concur that in Japanese political economic system from wartime to the 1980s, the key players and organizations remained almost unchanged and mutual complementarities among institutions were maintained (Aoki 2001; Hoshi and Kashyap 2001; Teranishi 2003; Vogel 2006). Thus, it is appropriate to regard the Japan model and J-capital circulation system as an equilibrium, and this dissertation subscribes to that position.

#### **3.1.4 Institutional Substitutions**

When a certain institution develops, the development of another institution that can substitute it gets hampered. We call this institutional substitution. This arose for various sub-systems and institutions that comprised the Japan model. For example, as the bank-centered J-capital circulation system suppressed the development of the capital market, the capital market and various infrastructures necessary to support it did not

develop. Financial information, critically important for the healthy functioning of the capital market, was accumulated in main banks and failed to be distributed on the market. Because of this, information intermediaries such as, credit rating agencies, rating firms and financial news services failed to develop. Investors, on the other hand, failed to develop their knowledge about the capital market or investment knowhow.

Ex ante administrative procedures (*jigen gyosei*) under the system of government-private sector collaboration of the Japan model also played the role of substituting the active legal system. Under ex ante administrative procedures, when questions arose about the interpretation of laws, firms were able to avoid legal uncertainties by obtaining the prior consent of ministries beforehand. As a consequence, legal conflicts involving large corporations were very few during the heyday of the Japan model, and ex ante administrative procedures substituted the market of lawyers for corporate legal affairs, keeping the number of lawyers at a very low level internationally. Ex ante administrative procedures also inhibited judges and lawyers from developing knowledge and skills related to corporate legal affairs.

### **3.1.5 The Rationale for the Japan Model**

The major characteristic of the Japan model is that it tried to solve the coordination problem and lower transaction costs through non-market and non-legal ways. The key to doing so lay in collaboration between the government and the private sector and the long-term relationships and trusts among the fixed players. It was a system built around

coordination based on the long-term relationships of key players. This falls in the category of CME under the VOC classification.

The Japan model, as exemplified by the J-capital circulation system, can be also classified as a “relationship-based economy” that reduces transaction costs by responding to the coordination problems with non-market networks. The Japan model is construed to have had rationality particularly during wartime and the postwar chaotic period. As the markets could not be expected to function adequately during those periods, costs of market-based transactions would be relatively high. For example, in the chronic shortages of funds in the postwar period, if firms had tried to raise sufficient funds through underdeveloped markets, it would have required tremendous transaction costs, rendering it difficult for Japanese industries to foster their competitiveness. In particular, the expansion of “economies of scale” through aggressive investment, a typical strategy of Japanese industry, cannot be realized if fund-raising through the markets required vast amount of transaction costs. Thus, a combination of institutions that reduce transaction costs through non-market solutions, has developed.

On the other hand, relationship-based industrial financing is prone to be faced with the problem of soft budget constraints. In addition, it would be subjected to political rent seeking if a large role of the government is involved. Further, coordination from the top by the government may suppress innovative coordination attempts from the bottom (Matsuyama 1996). Obviously, the Japanese economy under the Japan model had faced these risks. In fact, as discussed later, the prolonged slump of the Japanese economy after

the collapse of the bubble in the 1990s is construed to have been partly caused by the soft budget constraints of relationship-based financing.

However, the following points can be noted as reasons why the Japan model was able, by and large, to avoid these problems. First, with the Japan model being the catch-up type, it was relatively easy to determine which industries should receive priority for fund allocation. Next, the J-capital circulation system under the Japan model involved various players in a decentralized manner. Within the government, MITI supervised industries, but it did not have much influence over financing or strong administrative powers over industries. MOF had mighty authority over the financial industry, but did not meddle in industrial policy under MITI's jurisdiction. While banks were placed under heavy controls of MOF, they made independent decisions on where to invest and lend funds, partly because MOF was not in charge of industrial policy. Thus, many players got involved in a decentralized manner, and various information was consolidated through the process of the J-capital circulation system. While the involvement of many players in a decentralized manner normally pushes up transaction costs, the long-term relationships developed since wartime worked to reduce transaction costs.

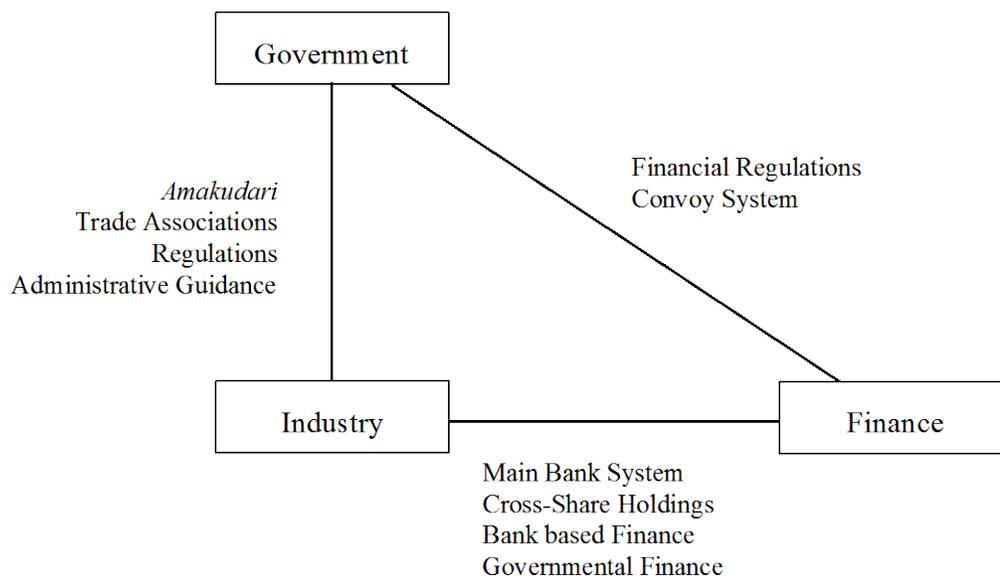
### **Industry-Centered Institutional Complementarities under the Japan Model**

With the unit of analysis in this dissertation being industry, Figure 3-2 summarizes a variety of institutional complementary relationships under the Japan model centering on industries, particularly institutions related to J-capital circulation system. As these

institutions mutually complemented one another to respond to the coordination problem, transaction costs were reduced.

**Figure 3-2.**

**Figure 3-2: Macro Level and Micro Level Institutions under Japan Model**



In this dissertation, institutions that uniformly cover the country as a whole and all industries are termed macro-institutions (Definition 2-2), and those that have different relationships by industry are called micro-institutions (Definition 2-2). Of the former, institutions typical of the Japan model include ex ante administrative procedures and MOF's convoy system (J-macro-institutions), while typical examples of the latter include the main bank system and the system of government-private sector collaboration (J-micro-institutions).

For example, since the degree of dependence on banks and the degree of the closeness of government-industry relations differ across industries, the degree of dependence on J-micro-institutions differ across industries. On the other hand, J-macro-institutions influence *all* industries. But the influence of J-macro-institutions is not uniform on all industries. This is because the influence of J-macro-institutions on a given industry varies according to the extent to which that industry relies on the Japan model.

For the country as a whole, macro- and micro-institutions complement each other and make up the Japan model. Meanwhile, due to the development of institutions from wartime, industries became the platform of political economic adjustment under the Japan model. Because of this, J-micro-institutions developed at different levels by industry and formed mutual relationships with J-macro-institutions. The mutual relationships between J-macro-institutions and each industry thus differ depending on the structure of each industry and its historical development.

For example, an industry that heavily depends on all of J-micro-institutions, including the intimate government-industry relationship, the main bank system, *zaibatsu*, cross shareholdings and the high debt ratio may be considered an industry heavily embedded in the Japan model. This kind of industry should also depend heavily on J-macro-institutions. On the other hand, there are industries that responded swiftly to economic globalization and are not embedded to a great extent in J-micro-institutions.

Of the various institutions and sub-systems shown in Figure 3-2, the relationships between the government and finance (G-F), including MOF's convoy system, are considered to be kinds of J-macro-institutions covering all industries. However, depending on how the relationship between each industry and finance is structured, the influence of J-macro-institutions on each industry differs. An industry deeply embedded in the Japan model at the level of micro-institutions (G-I, F-I) is influenced heavily by J-macro-institutions as well because J-macro-institutions and J-micro-institutions have strong institutional complementarities. For example, a Japanese-type industry with a high debt ratio and high dependence on the main bank system is greatly influenced by the collapse of convoy system at the level of macro-institutions. This is because an industry that maintains a high debt ratio by depending on the main bank system would find it difficult to raise funds as it had before, when the convoy system has been abolished and the provision of credit by banks shrinks.

By contrast, an industry with a high degree of globalization that depends on overseas capital markets for the procurement of funds does not depend on the Japan

model at the level of micro-institutions, and such an industry is unlikely to be significantly affected by movements of J-macro-institutions. For example, highly competitive industries of Japan such as automobile and consumer electronics began to finance from foreign capital markets in the 1980s by issuing corporate bonds when the Japanese capital market was still under strict regulation of MOF.

Institutional complementarities between J-type macro- and micro-institutions enumerated in Figure 2-2 were already explained in this chapter in connection with the J-capital circulation system. Other researchers also point out that a unique sets of institutions in the Japan model enumerated in Figure 3-2 have institutional complementarities (Aoki 2001; Hall and Soskice 2001; Teranishi 2003; Hoshi and Kashyap 2001; Ikee 2006).

What is important here is that not all industries in Japan had been deeply embedded in the Japan model as many researchers had naively assumed. In the case of Japan in particular, the bureaupluralism was established by the industry-based vertical framework of coordination that had developed since wartime, creating various differences among industries. As in what Katz (1998) calls the “dual economy,” productivity gaps among industries are particularly large in comparison with other countries because of the strong impact of this vertical segmentation of industries<sup>70</sup>.

From immediately after the end of the war through the high economic growth period,

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<sup>70</sup> Even in the United States where the political economic vertical segmentation of industries like Japan's does not exist, differences among industries are having a significant impact on corporate profitability (McGahan and Porter 1997).

most industries were dependent on the Japan model. Since the 1980s, however, differences among industries began to widen due in part to the progress in globalization. In fund-raising, for example, industries that raise funds on overseas bond markets began to emerge, aside from industries that still largely depend on banks. Industries of non-Japanese type, particularly those close to the Anglo-Saxon type, came to coexist with Japanese-type industries.

As already seen in Chapter 2 for statistical analysis we historically examine how the extensive institutional changes since the 1990s, particularly the collapse and subsequent realignment of the J-capital circulation system, have influenced the industry-based embeddedness in the J-capital circulation system and the Japan model.

## **3.2 Period of Institutional Change – Shocks and Transition**

### **Institutions as Equilibrium**

The Japan model had developed from wartime through the high economic growth era while building up close institutional complementarities among comprising institutions. As shown in Figure 1-1, the Japanese economy realized a high growth unprecedented in world history through the 1960s and 1970s, continuing to overwhelm the economic performance of all other countries. Following the oil shock, Japan shifted from the high economic growth period to the stable growth period, but the Japanese economy continued to outperform other OECD nations in the 1980s.

In view of these outstanding performances, the perception spread widely that the Japan model, particularly the unique set of institutions that comprised it, may have superior aspects. From the 1970s to early in the 1990s, politicians and business managers of other countries tried to import Japanese institutions and organizations as well as various business practices.

On the other hand, economists were the most skeptical of the superiority of the Japan model. Neoclassical economists were particularly negative toward the Japan model which limits the role of markets (See, for example, Komiya et al. 1988). Since the 1980s, however, as economic analyses in imperfect markets advanced by utilizing analytical tools such as game theory, more and more economists have come to recognize the economic rationale for the Japan model, as already described.

This dissertation regards the Japan model as the sub-optimal local maxima with a certain measure of rationale. Aoki (1988; 2001) similarly recognized the J-Model as a sub-optimal equilibrium (see Matsuyama 1996 for a more generalized view). VOC advocates (Hall & Soskice 2001) who amplified Aoki's arguments for institutional complementarities seem to assume that CMEs, in which Japan is classified, and Anglo-Saxon-type LMEs as well for that matter, are sub-optimal equilibriums.

According to Aoki (1988) and Hall and Soskice (2001), what stabilized the J-Model as an equilibrium was institutional complementarities. The complementarities of various institutions give rise to a multiple equilibrium condition that forms sub-optimal equilibriums. Under such conditions, the equilibrium does not crumble simply because of

the change in a single institution in a country's political economic system. In addition, when CME-type institutions are complementing each other, no incentives come into play to change a single institution into an LME-type institution.

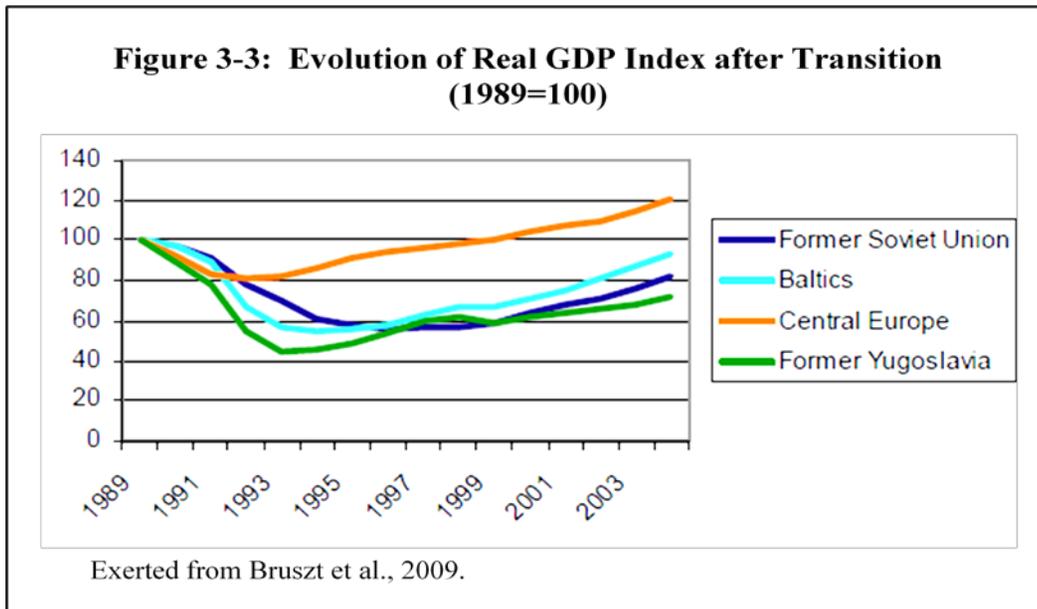
In order for a country's system to change under the condition of institutional complementarities among comprising institutions, various institutions have to be changed simultaneously. This presumably resulted in the robustness and historical path dependency of countries' political economic systems categorized into CMEs and LMEs.

Those who argue that institutional complementarities of a certain country realize the stableness and robustness of a country's political economic system should favor the Big Bang approach adopted in former communist states during their capitalist transitions. Even when a country's various institutions are complementing each other, if those institutions are changed *simultaneously* through a Big Bang, the system change should be smoothly attained. If so, it should be possible to institutionally transform either LMEs or CMEs into the other category by making use of institutional reforms under the Big Bang approach.

However, as Figure 3-3 (extracted from Roland 2001) shows, extensive institutional changes under the Big Bang approach employed by former communist states generally failed to produce effective results. At the time of the collapse of the former communist bloc, there was consensus that the capitalism system surpasses the communist system in economic performance. However, the attempted transition at one burst from the communist to the capitalist system via the Big Bang approach, which should have been

the transition from a “bad equilibrium” to a “good equilibrium,” brought about a steep decline in economic performance.

**Figure 3-3.**



Few attempts were made to convert between LMEs and CMEs. As VOC advocates point out, if the economic performance of LMEs and CMEs is even, incentives for the conversion may not arise. However, as was the case between capitalism and communism, when there was a performance gap between the two over the long-term, it would have been no surprise if one of the LMEs had attempted to convert to a CME or vice versa, through the Big Bang approach. The same can be pointed out about studies on the legal origins theory (LOT) (La Porta et al. 2008). If a country with its legal origin in common law outperforms a country with legal origin in civil law, as LOT advocates argue, why the country with its legal origin in civil law is not making an attempt to fundamentally change its legal system into a common law system?

Reformers in Japan in the 1990s, including politicians, bureaucrats, academics and the media, indeed attempted to fundamentally transform its system – the Japan model – from a CME to an LME via the Big Bang approach. With the recognition that the Japan model is outdated, they aimed for the US-type system with the slogan of “free, fair and global.”

A report released by the Study Group of Economic Reform in 1993<sup>71</sup>, a pioneering report for a series of economic structural reform, dubbed as the Hiraiwa Report, boldly stated as follows at the outset:

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<sup>71</sup> Study Group of Economic Reform (Hiraiwa Commission) was formed by Hosokawa Cabinet. It will be discussed in detail later in this chapter.

The Japanese economic system of the “catch up and overtake” – collaborative in a way, but in other words, collusive – has functioned effectively to date, but now it is time to change. Political reform and administrative reform have already been initiated. We also have to reform the economy with urgency.

The Hiraiwa Report then proposed that all the “economic regulations (*keizaiteki kisei*)” to be deregulated in principle (Nakatani & Ohta 1994). Reformers in Japan in 1993 were aiming at reforming Japan into the LME type by discarding the Japan model, which falls in the category of CME under the VOC classification<sup>72</sup>.

As for administrative reform, the final report of the Administrative Reform Council released in 1998, which called for the reorganization of central government ministries and agencies, stated as follows:

The basic philosophy of this administrative reform is to restructure the postwar administrative system that has become outdated into a 21st century administrative system befitting to form a free and fair society composed of autonomous individuals.

Dissertations and documents of the time indicate, as discussed later, that those reformers were aware of the robustness of the equilibrium (i.e., the Japan model) associated with institutional complementarities. They adopted the Big Bang approach as a procedure of reform partly because they were aware of that point. In fact, a series of reforms of the financial system undertaken in the late 1990s was named “Financial Big

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<sup>72</sup> Iwao Nakatani and Hiroko Ohta, both the core members of the Study Group of Economic Reform (Hiraiwa Commission) that issued the Hiraiwa Report, later published a book that explains the basic philosophy of the Hiraiwa Report (Nakatani & Ohta 1994). The book more boldly stated the necessity for Japan to transform to market-based liberal economy. The authors, however, admit that such basic philosophy was not fully attained in the Hiraiwa Report due to resistance of government officials.

Bang (*kinyu biggu bangu*).”

### **The Process of Institutional Transformation**

As shown in Figure 1-1, the Japanese economy which had outperformed OECD countries until the 1980s came to be outperformed by OECD countries in the 1990s. In particular, the Japanese economy was compared with the US, with which Japan had strong interdependence on both political and economic fronts. Many researchers and policymakers agree that the large-scale institutional changes undertaken in the 1990s were oriented toward the US model (e.g., Nakatani & Ohta 1994; Ohmori 2007; Nakatani 2008). It should be noted, however, that the extensive institutional changes did not occur in a breath in all aspects of politics and the economy but took place sequentially and inconsistently at times.

### **The First Phase of Institutional Transformation – Political Reform**

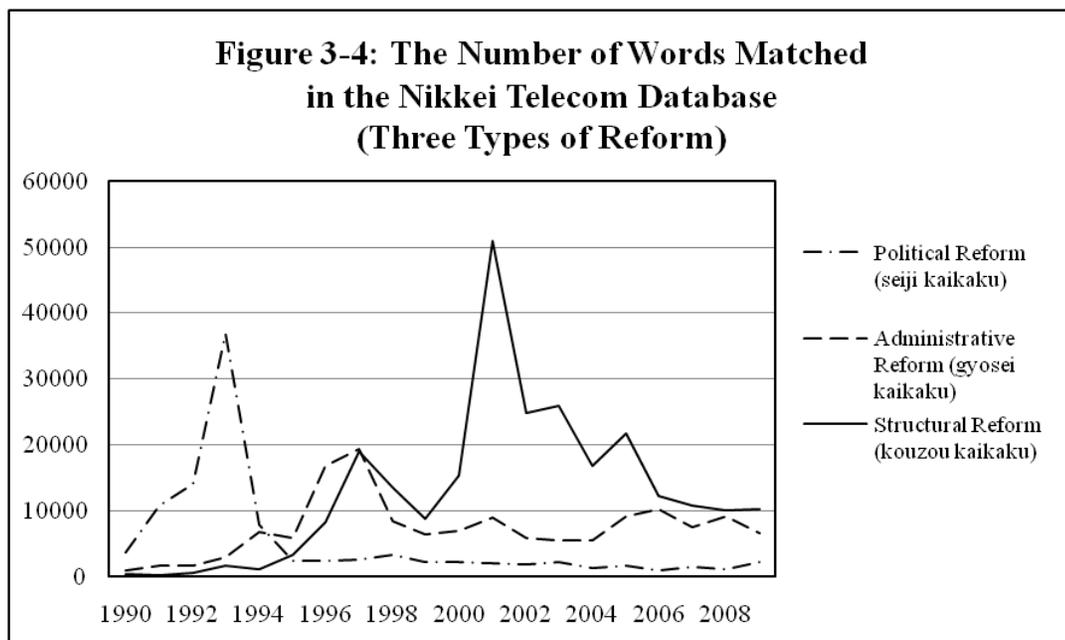
The institutional transformation in the 1990s began with politics. Figure 3-4 shows the number of keyword hits in the Nikkei Telecom database that covers major news and economic magazines in Japan. Figure 3-4 indicates that reforms in Japan in the 1990s gathered momentum in the order of politics, administration and economic structures<sup>73</sup>. In fact, then Prime Minister Morihiro Hosokawa who put an end to the predominant-party

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<sup>73</sup> There was a strong movement toward administrative reform during early 1980s under Suzuki and Nakasone Cabinets led by Toshio Doko.

system under the LDP and led electoral reform have remarked from the outset of reforms that “political reform will lead to economic reform and administrative reform in the next stage” (Tanaka 1994).

**Figure 3-4.**



Source: Nikkei Telecom Database

The necessity for economic structural reform did not draw attention immediately after the collapse of the bubble because the economic stagnation following the bursting of the bubble was considered to be a transient downturn in the business cycle and not a structural one. This should be obvious from Figure 1-2. As the economic downturn was seen as cyclical in the first half of the 1990s, during the era, mainly countercyclical measures came up on the political agenda as economic policies.

The frustration of voters was rising following the collapse of the bubble and the economic downturn. Successive political scandals involving the ruling LDP, the core of the 1955 regime, at such a time gave impetus to calls for political reform in the early 1990s.

Following the Recruit scandal in the late 1980s under the Kiichi Miyazawa Cabinet, the last cabinet of the 1955 regime, the Kyowa scandal and the Sagawa Kyubin scandal were exposed. In the Sagawa Kyubin scandal, LDP Vice President Shin Kanemaru, once called the “shadow prime minister,” was arrested. The Miyazawa Cabinet failed in its bid to submit a political reform bill to the Diet, causing a split of the LDP and a no-confidence motion against the Cabinet was passed in the Diet. In a subsequent general election, the LDP lost the position as the governing party and the 1955 regime drew to a close.

Political reform was at the top of the agenda for the Hosokawa Cabinet, which succeeded the Miyazawa Cabinet in 1993. And the view became prevalent among people within the government that the biggest factor behind political corruption was the

multiple-seat constituency system in place (See, for example, Ozawa 1993). In March 1994, electoral reform was enacted. While the multiple-seat constituency system was replaced by the single-seat constituency system, the proportional representation system was also introduced concomitantly in consideration for small political parties. At the same time, four political reform-related laws were enacted, including the Political Funds Control Act and the Political Party Subsidies Act.

As Liphart (2008) points out, these fundamental electoral reforms are rarely seen in a democratic state in the postwar period. From a journalistic perspective, the prolonged economic stagnation in Japan was criticized as reforms being “too little too late.” However, political, administrative and economic structural reforms enforced in Japan since the 1990s, though it took time to execute, were very large in scale, drastic and comprehensive.

The establishment of the Hosokawa Cabinet and the four political reform laws enacted under the Hosokawa Cabinet put an end to the 1955 regime, the key sub-system of the Japan model, and also triggered a significant modification of the bureaupluralism. These changes resulted in the loss of complementarities with other institutions and significantly transfigured the Japan model and comprising institutions. In particular, the introduction of the single-member constituency system and the collapse of the predominant-party system under the LDP increased the possibility of change of government as well as the influence of the public on the political process providing a major force for change. Rosenbluth and Theis (2010) argue that the introduction of the

single-seat constituency system has increased the influence of the median voter, catalyzing the crumbling of the interests-adjusting system under the LDP, including influence-peddling and protection of weak industries. Toya (2003) attaches importance to the enhanced influence of public opinions under the single-seat constituency system and argues that this led to the financial Big Bang.

Theories and empirical studies in the past have revealed that the electoral system and other political institutions give a major impact on the financial system (e.g., North and Weingast 1989; Bordo and Rousseau 2006). Political reforms in 1993 combined with the collapse of the bubble eventually had a significant impact on a drastic transformation of the Japanese financial system, particularly the elaborately structured J-capital circulation system.

Administration, and the bureaucracy in particular, became the next target of reform following the political reform, and the collapse of the 1955 regime that intimately tied the LDP with bureaucrats also contributed to the succeeding administrative reform.

### **The Second Phase of Institutional Transformation – Administrative Reform**

As evident from Figure 1-2, the interest of the Japanese media and the public shifted to administrative reform and structural reform from the political reform. This shift is connected with the spread of the perception following the prolongation of the post-bubble economic stagnation that the causes of the economic stagnation are not only cyclical but also structural. Comparison with the US system led to the strong support for

arguments that the Japan model of government-private sector collaboration has become outdated.

It was the United States that spearheaded the criticism against the Japanese economic system of government-private sector collaboration since before the collapse of the bubble. Plagued by the decline of competitiveness of US industries and the widening of trade deficits with Japan, the US argued that Japan had erected structural economic barriers and Japanese and US businesses were not competing on a level playing field. The Japan-U.S. Structural Impediments Initiative (SII) was launched in 1989-1990 from the perspective of realizing competition on “equal ground.” Through the SII, the United States pressed Japan for greater transparency in the relationship between the government and the private sector and the shift from the system of government-private sector collaboration to the market-based system. The US was urging Japan to be “more like us.”

Following the collapse of the bubble and amid the protracted economic slump, the search was on in Japan for the scapegoats that caused the bursting of the bubble. In particular, when the infusion of public funds became necessary to dispose of nonperforming loans, MOF officials in charge of supervising financial institutions, together with financial institutions themselves, came under a barrage of criticism. This led to the criticism of the entire bureaucracy and set the tone for administrative reform linked with deregulation and economic structural reform.

The LDP and bureaucracy were integrated under the 1955 regime, but the inauguration of the Hosokawa Cabinet rendered the relationship between the LDP and

the bureaucracy not necessarily monolithic. In addition, as the introduction of the single-seat constituency system increased the influence of public opinion on politics, politicians had no choice but to respond to public criticisms of bureaucrats. Thus, administrative reform was pushed forward at the initiative of politicians, under the encouragement of public opinion.

Major objectives of administrative reform at the time included a small government, transparent administration, the break from cozy ties between the government and the private sector, and realization of political leadership. All of these modeled after the US and UK. Deregulation, which is explained in the next section on structural reform, was carried out also in the context of a series of administrative reform measures. In the Japan model characterized by the economic system of government-private sector collaboration, administrative reform was inevitably related closely with (economic) structural reform.

***Administrative Transparency – The Administrative Procedure Act and the Access to Government Information Act***

In 1993, the Administrative Procedure Act was enacted. The legislation is based on the idea of common law that emphasizes the importance of due process of law and aimed to secure the transparency and fairness of administrative procedures. The idea of the Administrative Procedure Act had been under discussion as far back as 30 years ago, but its enactment in 1993 was strongly influenced by external pressures from the US which argued administrative guidance was a “nontariff barrier” to trade and investment.

The law provided legal grounds to “*gyousei shido* (administrative guidance)” exercised often by MITI and other ministries and agencies. In 1999, the Act on Access to Information Held by Administrative Organs (the Access to Government Information Act) was enacted to make the Administrative Procedure Act more effective.

These laws performed the role of increasing the effectiveness of deregulation (Uga 1999). They also made it possible for the public who had gained stronger influence over politics and administration to monitor administration more easily. On the other hand, they fettered the smooth operation of the Japan model that gave priority to collaboration through informal networks.

### ***Setback of the System of Government-Private Sector Collaboration***

With the injection of public funds into financial institutions, MOF and financial institutions came under intensified criticisms. Criticisms became even more heated as cozy ties between financial institutions and the government were exposed. Until the mid-90s, firms entertained bureaucrats at expensive restaurants, among other places, routinely. But the overabundance of such entertainment became the target of criticism, and “excessively entertained” bureaucrats were arrested or forced to resign from office. The entertainment of public officials by firms disappeared from around 1996, and the practice was also strictly regulated legally with the enactment of the National Public Service Ethics Act in 1999. The law effectively reduced day-to-day exchanges between the government and the private sector and the functioning of the informal networks

between the government and the private sector, which formed the core of the Japan model, significantly declined as well.<sup>74</sup>

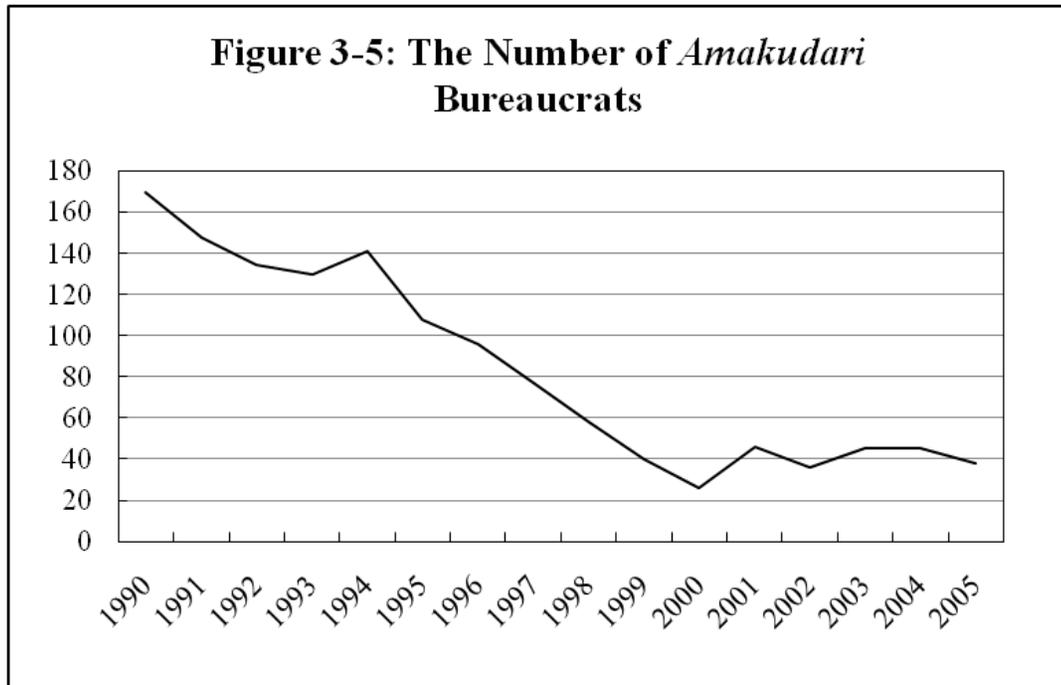
The *amakudari*, practice of high-level government officials taking executive positions in private firms with which they used to do business also came under intense criticism<sup>75</sup>. Figure 3-5 shows the number of *amakudari* officials on an all-industry basis. While restriction on *amakudari* was tightened legally during this period, the principal method adopted was for the governing party or cabinet ministers to informally restrict the *amakudari* practice.

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<sup>74</sup> According to interviews with bureaucrats of economic ministries, before the entertainment was banned, division chiefs had two appointments of entertainment by corporate executives per night on average. They said that following the ban on entertainment, they kept away from even a casual dinner with corporate executives. Information channels between the government and the private sector, particularly at the level of senior officials, became considerably limited.

<sup>75</sup> *Amakudari* means “falls from heaven” in Japanese.

**Figure 3-5.**



Source: Author gathered data from *Jinji-in Hakusyo*

Trade associations that acted as the interface between industries and relevant bureaus and departments of government ministries diminished in size in tandem with the progress in deregulation and the decreasing number of *amakudari* officials. The shrinkages of *amakudari* officials and trade associations also reduced information exchanges between the government and the private sector and further led to the declining function of informal networks.

### ***Establishment of Political Leadership***

Research on Japanese politics had been engaged in heated arguments over whether politicians or bureaucrats are more powerful in Japan. While several political scientists shared the view that politicians are more powerful (e.g., Muramatsu 1981; Ramseyer and Rosenbluth 1993), most Japanese media and public opinion subscribed to the perception of the “bureaucracy-led state.” After the collapse of the bubble, the bureaucracy-led style came to be criticized strongly by the public and media, and arguments underscoring the need to realize political leadership, as seen in the US and UK, became the mainstream.

In 1999, the Act on the Revitalization of Diet Deliberation and the Establishment of a National Policy Decision-Making System under the Leadership of Politicians was enacted, which provides for the appointment of politicians as senior vice ministers (*fukudaijin*) and parliamentary secretaries (*seimukan*), in addition to ministers, at each ministry. Prior to the enactment of this act, politicians held the posts of minister and parliamentary vice minister at each ministry. Under the new law, the post of senior vice

minister is placed higher than administrative vice minister, the top bureaucrat at each ministry.

The enhanced power of politicians over bureaucrats brought about a major change in the Japan model as well. The Japan model was established with the coalescence of the planned economy in wartime with the political system of the 1955 regime in the postwar period. But the trend of strengthening the leadership by politicians has weakened the aspects of the planned economy.

Amid these developments, the J-capital circulation system became no longer tenable due to the weakening of bureaucrats, in particular MOF bureaucrats as well as deregulation, and economic globalization.

### ***Reorganization of Government Ministries***

Of the series of administrative reforms, the reorganization of Cabinet-level ministries, the first such shakeup since the Meiji period, brought the largest impact on the bureaucracy and society at large. Government ministries and agencies were reorganized under the Basic Act on Central Government Reform enacted in 2001. The objectives of the reorganization included “administration under the leadership of politicians,” “transparent administration,” “streamlined and efficient administration” and “elimination of harmful effects of the vertically-segmented administration system”<sup>76</sup>. These objectives

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<sup>76</sup> See the website of “Central Government Reform” (<http://www.kantei.go.jp/jp/cyuo-syocho/>)

are designed for a drastic transformation of the functions of administrative organs under the Japan model, particularly the system of government-private sector collaboration through informal networks, and have the philosophical consistency with other administrative reforms carried out during this period.

As a result of this reform, the structure of one office and 22 ministries was reorganized into that of one office and 12 ministries. In addition, horizontal organizations such as the Council on Economic and Fiscal Policy (CEFP) were set up in the Cabinet Office. They were established to realize political leadership by transcending the “vertical segmentation” of ministries.

On the other hand, MOF, the target of a barrage of criticism over scandals involving financial institutions, ceded the financial regulation division in 1998, which was taken over by the newly established Financial Supervisory Agency. In 2000, Financial Supervisory Agency was reorganized into the Financial Services Agency (FSA). Unlike the previous financial administration by MOF, the FSA is a government agency that focuses more on inspections and supervision of financial institutions. The dismantling of MOF, the most powerful government agency, was symbolic of administrative reforms at the time that revolved around political leadership and market-based principles. This split up the core player of the Japanese-type capital circulation system under the Japan model and the system’s function has undergone profound change.

### **The Third Phase of Institutional Transformation – Economic Structural Reform**

Of the series of reforms in the 1990s, economic reform followed other reforms<sup>77</sup>. But it may be argued that economic reform actually preceded political and administrative reform in that moves toward economic reform had been initiated before the collapse of the bubble.

In 1986, a report by an advisory body chaired by a former Bank of Japan Governor Haruo Maekawa, commonly known as the “Maekawa Report,” was submitted to then Prime Minister Yasuhiro Nakasone, providing guidelines for Japan’s economic policy thereafter. The Maekawa Report cited “policies based on market principles” and “policies based on the global perspective” as the pillars of the basic line of thinking, calling for a drastic restructuring of Japan’s social and economic systems for a shift to an economy with international harmony<sup>78</sup>.

Since the 1980s, the progress in globalization and the increased presence of the Japanese economy gave rise to the need for international integration of a variety of economic rules, and institutions and sub-systems comprising the Japan model were also required to change. The Maekawa Report was the symbol of these developments. In other areas, bank capital adequacy rules of the Bank for International Settlements (BIS) agreed upon in 1988 (the Basel Accord) set out international standards for banks’ capital ratios. The BIS capital rules imposed a major constraint on lending by Japanese banks, which

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<sup>77</sup> In Japan, structural reform usually means economic structural reform.

<sup>78</sup> This policy direction was evident from the official title of the Maekawa Report being the “Report of the Study Group on Economic Structural Adjustment for International Harmony.”

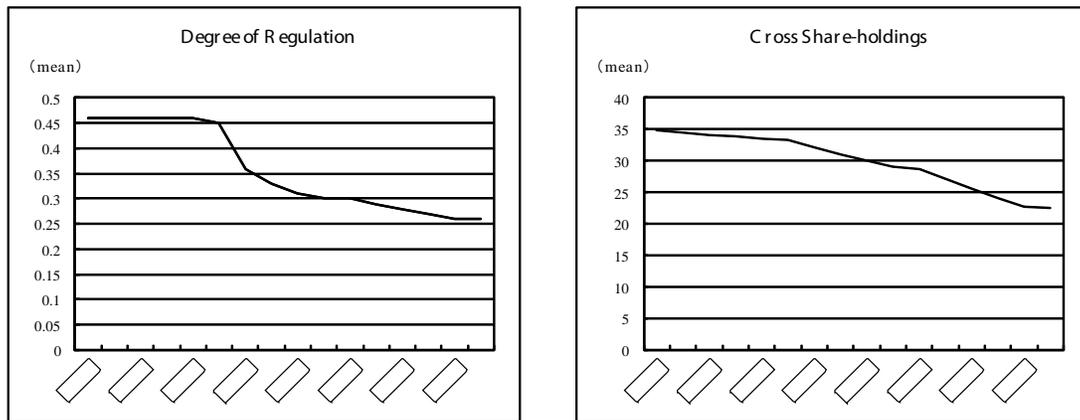
had relatively low capital ratios (and relatively high debt ratios), and also triggered the change in the J-capital circulation system under the Japan model.

The economic structural reform got under way gradually in the 1980s, before political reform and administrative reform got into full swing. But political reform and administrative reform proceeded ahead of economic structural reform in the 1990s.

As noted earlier, a report by the Study Group of Economic Reform released in 1993, a pioneering report for a series of economic structural reforms, admitted that (economic) structural reform lagged behind political and administrative reform. There are two conceivable reasons why structural reform lagged behind political and administrative reform. Firstly, while the government could lead swift reform measures in political and administrative reform, economic reform involves many private stakeholders. Fundamental structural change can be realized only when behaviors of firms and other non-government players as well as the government change simultaneously. For this reason, economic reform measures that can be led by the government follow a different pace of institutional changes compared to private-sector practices. For example, as shown by Figure 3-6 that aggregates data from all industries, deregulation which the government can directly lead can go ahead with a speed faster than reform of the private-sector practice of cross shareholdings, once the government makes up its mind to execute changes.

**Figure 3-6.**

**Figure3-6: Difference of Pace in Institutional Change**



Source: JIP2006 and Nissey Database

Secondly, since economic policy following the collapse of the bubble gave priority to countercyclical measures, discussions about structural reform were put on the back-burner. As the economy failed to recover despite the countercyclical measures however, the view that the real problem was not cyclical but structural spread gradually, sending economic reform in motion. Figure 1-2 depicts the relationship between countercyclical measures and economic reform.

After the Hosokawa Cabinet enforced political reform, and after countercyclical measures were undertaken, economic reform came into the spotlight. At the center of economic reform was the Study Group of Economic Reform, commonly known as the Hiraiwa Commission (*Hiraiwa Iinkai*), established in September 1993 by the Hosokawa Cabinet. The Hiraiwa Commission with the recognition that the Japanese economic system was outdated, proposed large-scale deregulation. It divided regulations into economic regulations and social regulations, and called for the abolition of economic regulations in principle. This core proposal severely undermined the system of government-private sector collaboration under which bureaucracy and industries maintained long-term relationships. But that was exactly what was sought by the Hiraiwa Commission that intended to remove *excessive* collaboration.

The Hiraiwa Commission set out the goal of developing a free and transparent market, which was modeled on the US. Reformist economist Iwao Nakatani, a core member of the Commission, made the following statement about his ideas at the time (Nakatani 2008):

I was so naïve to assume that Japanese people should be able to become as rich and happy as the Americans if Japan turns into a society where we can conduct economic activities free of regulations and the market mechanism comes into play<sup>79</sup>.

As Nakatani admitted later, the “America” the Hiraiwa Commission looked to was not a real America. Nonetheless, the Japanese government went ahead with extensive economic reforms in pursuit of free and transparent market-based principles.

Such economic reform initiatives were greeted with the enthusiastic support of the public frustrated over no signs of economic recovery after the collapse of the bubble. The idea of reducing the government’s involvement in markets was associated with the public’s distrust in politics and administration. As things developed, *kiseikanwa*, meaning deregulation in Japanese, won the grand prize in the buzzwords contest of 1993.

### ***Deregulation***

Since the 1990s, Japan enforced large-scale deregulation covering a variety of industries. As discussed earlier, government ministries and industries were vertically connected, and the important lever of government in exercising influence over industries was regulations. These regulations were functioning at the core of the political economic platform between the government and industries (Teranishi 2003). The economic system of government-private sector collaboration was operated through the exercise of regulatory powers and informal administrative guidance backed up by regulations.

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<sup>79</sup> Nakatani 2008.

Regulations also assumed the role of income redistribution by protecting weak industries.

In the J-capital circulation system, MOF's regulations over the capital market and financial institutions, and MITI's networks with industries played crucial roles in the allocation of funds among industries. MOF and MITI derived their influence over financial institutions and industries from a variety of regulations developed mainly during wartime in the 1940s. For this reason, large scale deregulations pushed forward since the 1990s undermined the very foundation of the J-capital circulation system and government-private sector collaboration.

In 1996, the Deregulation Committee was established under the government's Administrative Reform Promotion Office to assume the role of promoting deregulation. Subsequently, the Deregulation Committee existed under different names until it was abolished by the government led by the Democratic Party of Japan (DPJ) in 2010. The Committee helped to execute deregulation in various areas, ranging from deregulation of labor regulations and other horizontally segmented areas to deregulation of medical services, agriculture and other industries. Figure 3-7 indicates large-scale deregulation was carried out throughout industries in the 1990s. Careful study of Nakanishi and Inui (2008) also indicates that deregulation progressed at an unprecedented pace in Japan after the 1990s

### ***Financial Liberalization and the Financial Big Bang***

Of a series of economic structural reforms since the 1990s, the financial Big Bang

probably had the largest impact. The financial Big Bang, carried out based on the notion of “free, fair and global” markets, was indeed the symbol of economic structural reform in Japan in the 1990s.

Financial liberation was, however, being pushed forward gradually in tandem with the trend of globalization since the 1980s. Various regulations and institutions that comprised the J-capital circulation system began to change significantly before the collapse of the bubble in 1990<sup>80</sup>. The globalization of financial transactions and corresponding deregulation opened the way for large corporations to raise funds on overseas capital markets from the early 1980s, gradually making large corporations less dependent on bank loans. Thus, the unilinear capital circulation under the J-capital circulation system started to dissolve. The number of bank officials sent to large firms as executives decreased, while banks’ abilities to monitor them also declined (Hoshi and Kasyap 2001).

Deposit interest rate regulations were eased gradually, and liberalization of 1993 marked the full liberalization of deposit interest rates. In addition, foreign exchange controls were gradually lifted, making the artificial low interest rate policy, which was at the core of the J-capital circulation system, gradually become unsustainable.

Banks that started losing large corporations as trusted customers began to expand lending to small and medium-sized firms from the 1980s. However, as banks did not

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<sup>80</sup> There are numerous studies that argue that the financial liberalization in the 1980s created the imbalance in the supply and demand of funds through the institutional change of the Japan model, contributing to the generation and bursting of the bubble (see, for example, Gao 2001).

build long-term relationships with small and medium-sized firms as main banks, they lacked the capacity to monitor the loan repayment abilities of small and medium-sized firms. As a result, many of the loans to small and medium-sized firms were secured against real estate, backed by the “land myth (*tochi shinwa*),” the shared expectation of Japanese people during the high economic growth period that land prices would continue to rise, transferring vast risks in the Japanese economy to real estate and the “land myth” that supported it.

The financial Big Bang came as the finishing touch on the series of financial liberalization measures described. The plan for the financial Big Bang was announced as the key element of the six major reforms put forward by the Hashimoto Cabinet when the economy was recovering in 1996, and the plan was to be consummated by 2001 as a grand sum of the series of financial liberalization measures taken until then.

The financial Big Bang, which was in line with the series of financial liberalization measures until then, would abandon the J-capital circulation system. Ohmori (2007), who was at the time a governmental official responsible for the financial Big Bang, notes that the objective of the financial Big Bang was “to change the flow of capital in the financial system from that of bank-centered flow to market-centered flow.” Deregulation substantially broadened the choices for all the key players in the capital circulation system, including general depositors, fund raisers (industries) and financial institutions. With the convoy system falling apart in parallel and MOF divided up, the Financial Supervisory Agency took over the supervision of financial institutions. The unilinear

capital circulation of the past became diversified and globalized, and was to be controlled by markets, not by MOF.

### **Six Major Reforms of the Hashimoto Cabinet**

The “six major reforms” proposed by the Hashimoto Cabinet, inaugurated in 1996 as the first LDP government in three years, was thought to become the aggregate compilation of the series of political, administrative and economic reforms implemented until then. Backed up by high popular support, Prime Minister Ryutaro Hashimoto inherited the stream of structural reforms in the 1990s and attempted to complete it. In other words, Hashimoto aimed for a complete departure from the postwar Japan model, to the market-based Anglo Saxon Model.

The basic idea of the Hashimoto Cabinet’s six major reforms was spelled out in Prime Minister Hashimoto’s following statement in 1997 (Hashimoto 1997):

It is obvious that Japan cannot achieve its vibrant development unless the present mechanism is reviewed fundamentally and reformed. That is why I would like to create an economic and social system that goes ahead of global trends without further delay<sup>81</sup>.

Particularly noteworthy is the following part of Hashimoto’s statement on the necessity of carrying out the six reforms in parallel, which shows that the Hashimoto Cabinet was clearly aware of the institutional complementarities of the Japan model.

It is necessary to carry out the six mutually and closely related reforms in an

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<sup>81</sup> “Message from Prime Minister Hashimoto.” <http://www.kantei.go.jp/jp/kaikaku/message.html>  
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integrated fashion and at a stroke, but it is not easy to change customary practices and mechanisms that have taken deep root in society. We are standing at a major crossroads between being complacent about the current situation relying on fiscal spending and the government's protection to follow the path of degeneration, or embarking on the building of a new mechanism with a view to the future while putting up with temporary pains<sup>82</sup>.

To put it plainly, the six major reforms under the Hashimoto Cabinet intended to take the Big Band approach because reformers then were conscious of institutional complementarities involved. Ohmori (2006), one of the proposers of the financial Big Bang, states that the Hashimoto reforms were pushed forward with the idea of "from gradual deregulation to fundamental market reform."

Hashimoto's six major reforms consisted of administrative reform, fiscal structural reform, social security reform, economic structural reform, financial system reform and educational reform. In addition, the Hashimoto Cabinet not only reduced the number of government ministries and agencies through the reorganization but also pursued putting in place a top-down policy management system directed by the Prime Minister's Office. The revision to the Cabinet Act for the strengthening of the function of the Cabinet clearly intended to increase the prime minister's power to direct important policy matters in a top-down manner. It was also the Hashimoto Cabinet that established the Council on Economic and Fiscal Policy (CEFP), which played a central role in the subsequent Koizumi reforms led by the Prime Minister's Office. These attempts by Hashimoto to

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<sup>82</sup> *ibid.*

break down the bureaupluralism also finalized the departure from the Japan model.

As financial institutions failed successively in 1997-1998 and the economy took an abrupt downturn however, the core elements of the six major reforms came under intensive criticisms. As Figure 1-2 indicates, interest in countercyclical measures overtook interest in economic structural reform. Under these critical circumstances, the Hashimoto Cabinet resigned following the LDP's crushing defeat in the House of Councillors election in July 1998, derailing the six major reforms in mid-course.

After major banks successively went bankrupt or were nationalized amid the financial crisis, the myth of banks not going bankrupt (*Ginko Futo Shinwa*) crumbled completely, and MOF's convoy system saw its demise. The J-capital circulation system, under which banks assumed considerable risks in providing excessive loans at low interest rates and the government effectively gave guarantees to those banks, broke down completely.

### **Koizumi Reform**

It was the Koizumi reform by the Koizumi Cabinet inaugurated in 2001 that took on the role of wrapping up the series of reforms starting in the 1990s. Though the six major reforms of the Hashimoto Cabinet were more comprehensive in terms of the scope and innovativeness (Kato 2006), the Koizumi reform was more effectively undertaken. In addition, due in part to the enthusiastic popular support for Prime Minister Junichiro Koizumi, the Koizumi reform became symbolic of the series of reforms implemented

since the 1990s.

However, the enthusiasm for the Koizumi reform invited a backlash, and under subsequent cabinets, criticism that Koizumi's market-based reforms were overdone became dominant. Then, the "unequal society" problem emerged as a major political agenda, and market-based principles became the object of criticism. After Prime Minister Koizumi stepped down, Japan's structural reform, initiated in the 1990s, appears to have run its course.

The Koizumi reform, often overrated, was of significance in the following three areas in terms of its impact on the dismantling of the Japan model. The first area was economic structural reform. Following the financial crisis of 1998, the Japanese economy stabilized temporarily thanks to massive fiscal stimulus, but went into decline again as the fiscal stimulus effects disappeared, accompanied by constant rumors about financial institution failures.<sup>83</sup> A string of large-scale fiscal spending to boost the economy resulted in the bloating of fiscal deficits. Then entered Prime Minister Koizumi, who, immediately after the formation of his cabinet, declared that there would be "no economic recovery without structural reform," expressing his resolve to press ahead with structural reform-centered policies.

The core of his economic structural reform was the disposal of nonperforming loans with the infusion of massive public funds after placing soured loans under the more stringent supervision of financial institutions. This represented the final stage of a series

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<sup>83</sup> This resembled the situation in Europe and the United States after the subprime loan shock.

of financial system reforms that brought market-based principles and greater transparency to the J-capital circulation system.

The second area had to do with top-down policy decision-making and the demolishing of the bureaupluralism. Prime Minister Koizumi, when he ran in the LDP presidential election, declared, “I will destroy the LDP,” and his top-down reform was indeed intended to destroy the bureaupluralism, which was the core policy decision-making mechanism under the Japan model. Through this, he aimed for a top-down strategic reallocation of economic resources instead of adjustment of interests among industries.

The third area was postal reform. Of the flow of the J-capital circulation system in Figure 2-1, the main target of structural reform up to this point was the route from household to private-sector financial institutions and then to industries. The route of funds that started from postal savings and went to public financial institutions and then to key industries was basically maintained. The Koizumi reform attempted to privatize this funding route through privatization of postal services. As post offices were the strong power base of the LDP, the Koizumi reform invited stiff resistance from within the ruling party. Koizumi exercised the prime minister’s right to dissolve the House of Representatives and won an overwhelming victory in the general election. The last remaining public financing route of the J-capital circulation system was thus

fundamentally altered under the Koizumi reform<sup>84</sup>.

The Koizumi reform, as the culmination of the series of reforms since the 1990s, delivered the final blow to the Japan model and J-capital circulation system. Given the backlash against market-based reforms that surfaced after Koizumi resigned as prime minister in 2006<sup>85</sup>, the comprehensive structural reforms in Japan starting in the 1990s is construed to have lasted until the Koizumi reform.

### **Reform of the Judicial System**

We have looked at the series of comprehensive institutional changes in the 1990s, notably political reform, administrative reform and economic structural reform. Institutions of the Japan model had mutual complementarities, and as indicated by the statement of the Hashimoto Cabinet on its proposal for the six major reforms, the Japanese government carried out reforms with the awareness of such institutional complementarities. Institutional reforms of the 1990s extended to cover a variety of areas not addressed yet in this chapter.

Of those areas, reform of the judicial system is of particular significance because of the following reasons. First, reform of the judicial system is closely connected to the institutional transformation of the J-capital circulation system, the central theme of this

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<sup>84</sup> The departure of the Koizumi Cabinet gave rise to a backlash against the reform drive, and moves toward postal privatization began unwinding.

<sup>85</sup> More accurately, momentum for structural reform fizzled out after Heizo Takenaka, Koizumi's right-hand man who ran the economic structural reform show as state minister in charge of economic and fiscal policy, was appointed minister of internal affairs and communications in the Third Koizumi Cabinet launched in 2005.

dissertation. Prior to the 1990s, financial institutions were fettered by heavy regulations, and it was MOF instead of courts, that clarified the interpretation of those regulations. When questions arose about the interpretation of laws and regulations regarding legal compliance of action under consideration, financial institutions were required to consult with MOF and obtain the consent of relevant MOF officials. This process is called “ex ante administrative procedures (*jizen-gyousei*).” If any conflict arose in connection with action taken without consulting MOF for its interpretation, it was theoretically possible to bring the case before the court ex post, but there were very few financial institutions taking the course of action for fear of the immense regulatory power MOF had over financial institutions. The system of government-private sector collaboration, and close relationships between MOF and financial institutions in particular, were the core elements of the J-capital circulation system. In other words, the judicial system based on ex ante administrative procedures was complementing the J-capital circulation system.

However, these ex ante administrative procedures were criticized by other countries as not transparent, and became subject to intense criticisms within Japan as well in the 1990s. Ex ante administrative procedures were posited as a symbol of things that go against the catch phrase of “free, fair and global” for the financial Big Bang. The necessity of “ex post oversight (*jigo gyousei*)” by courts came to be emphasized. The ex post oversight procedure called for the clear presentation of rules prescribed by law. If ambiguity remains in the interpretation of legal provisions, interested parties have to go to the court and ask for the ex post judgment. In addition, the Financial Services Agency

(FSA), created in the wake of the split of MOF, kept financial institutions at arm's length and carried out strict inspections.

Transition to ex post oversight by courts caused financial institutions and others to falter in their actions. Amid a succession of law revisions and new legislation, firms were exposed to legal risks and uncertainties. Judicial precedents and legal theories corresponding to new legislation and law revisions are accumulated on the basis of many rulings in actual lawsuits, but this process takes *time*. In addition, as ex ante administrative procedures were considered the norm in Japan, the number of professionals in the legal profession who would effectively take problems to courts was small relative to other countries, as seen in Figure 3-7-1. Moreover, training legal professionals also requires *time* because of the time-consuming nature of the learning process. Figure 3-7-1 and 3-7-2 indicate that ex ante administrative procedures hampered the development of the legal profession through institutional substitution and prevented the flexible transition from ex ante administrative procedures to ex post oversight by courts, enhancing legal risks for firms. Although the Japanese government attempted to rapidly increase the number of lawyers, as can be seen in Figure 3-7-2, the time-consuming nature of the learning process limited expansion.

**Figure 3-7-1.**

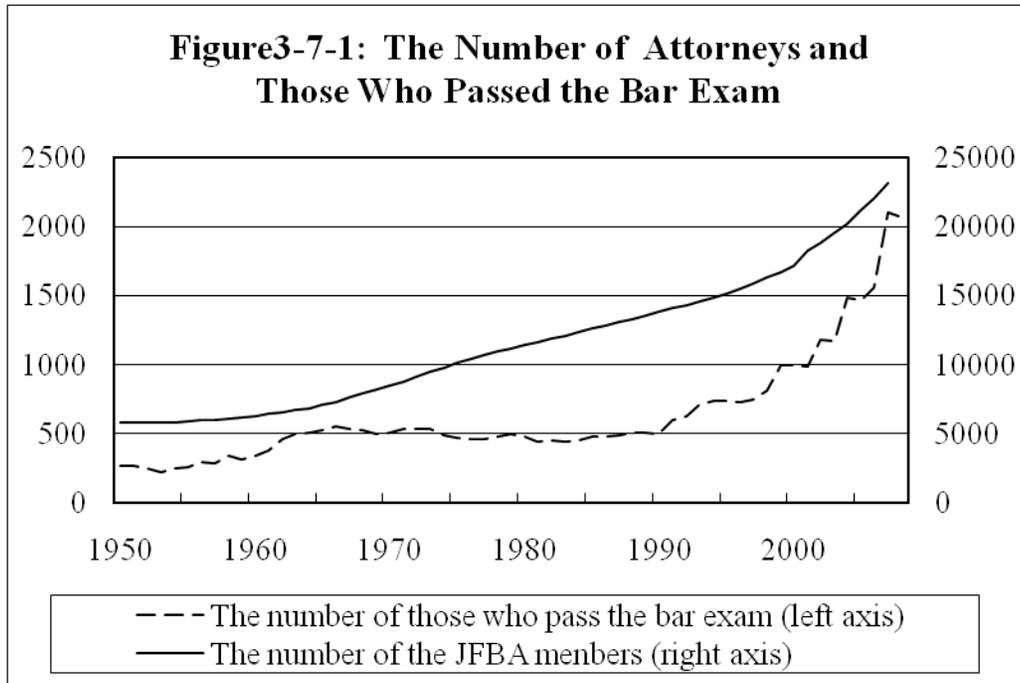
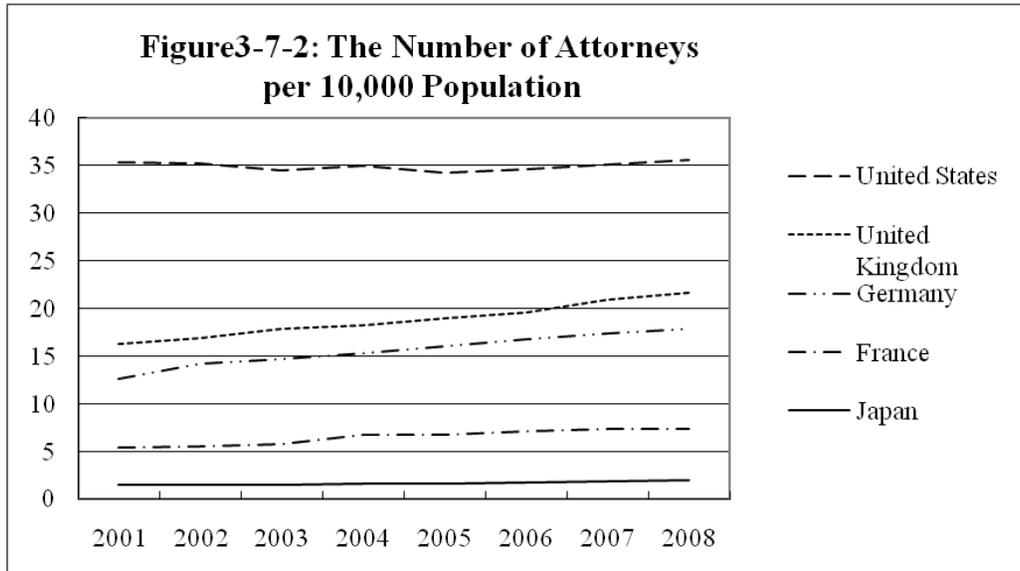


Figure 3-7-2.



Thus, the transition from “ex ante administrative procedures” to “ex post oversights” undermined intimate and informal relationships typical of the Japan model. With existing coordination mechanisms dismantling, wherever the Japan model would transition, fair and efficient markets and a new coordination mechanism under the judicial system became necessary. In other words, the market-based coordination mechanism and the institution of ex post oversight procedures have institutional complementarities.

The second reason why reform of the judicial system is important is that the differences in the speed of institutional changes, one of the key points of this dissertation, stand out between judicial reform and other reforms. Because of the knowledge-intensive nature of the legal profession, the transition of the judicial system is especially time-consuming as is clear from Figure 3-7-1 and 3-7-2. During the transition, institutional complementarities between the judicial system and other systems will likely be lost due to differences in the speed of institutional changes.

Policymakers were aware of the institutional complementarities between the judicial system and other systems. Therefore, reform of the judicial system was conducted in a way that corresponded to the series of other institutional reforms. The Justice System Reform Council (2001), established as the core organ for reform of the judicial system, emphasized the complementarities between the judicial reform and other reforms in its recommendations.

Japan, which is facing difficult conditions, has been working on various reforms, including political reform, administrative reform, promotion of decentralization, and reforms of the economic structure such as deregulation. (abbreviated) This reform of the justice system aims to tie these various reforms together organically

under ‘the rule of law’ that is one of the fundamental concepts on which the Constitution is based. Justice system reform should be positioned as the ‘final linchpin’ of a series of various reforms concerning restructuring of ‘the shape of our country’<sup>86</sup>.

As the recommendations noted, the judicial reform was carried out in the final stage of the series of reforms. However, since the judicial system requires a particularly high level of expertise, the fostering of professionals becomes necessary for the system change. Thus, the judicial system is construed to be an institution with a slow speed of transformation, which requires longer time than political reform, administrative reform or economic reform.

As ex ante administrative procedures were dominant in Japan, the judicial system had only a small part to play in the economy up until now and the number of lawyers and other legal professionals was small in comparison with the United States and other countries (Figure 3-7-2). Therefore, it was necessary to realize a sharp increase in the number of judges, prosecutors and lawyers who supported the judicial system. In fact, the number of people passing the national bar examination each year was raised (Figure 3-7-1), and the law school system modeling on US graduate law schools was founded in 2004 but it is not possible to increase the number of people in the legal professions substantially in a short span. It takes three years to finish law school and after one passes the bar examination, one needs to have one year of training before obtaining

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<sup>86</sup> <http://www.kantei.go.jp/jp/sihouseido/report/ikensyo/iken-1.html>

qualifications. Even after that, long years of hands-on experience are necessary to acquire expertise to handle economic cases at court..

A large number of laws were enacted in response to systemic reforms in the 1990s, while key laws related to the economy (e.g., corporate law, anti-trust law) were revised frequently (Table 2-1). When ambiguities regarding the interpretation of laws arise, in cases of ex post oversight procedures, those ambiguities are to be resolved by courts in actual lawsuits. An accumulation of legal precedents should gradually reduce legal uncertainties for firms. However, this process also requires a long period of time. Thus, firms have to face considerable legal risks after the enactment of new laws or revisions to existing laws. Laws tend to have many uncertain portions immediately after enactment or revisions, exposing firms to legal risks. These uncertainties were previously cleared through ex ante administrative procedures. After the attempted institutional shift to ex post oversight procedures, however, it entailed considerable time and costs to resolve legal uncertainties through lawsuits and the accumulation of legal precedents, due to the lack of experts or expertise.

The slow speed of the transformation of the judicial system relative to other institutions augmented legal uncertainties for firms. Such legal uncertainties in turn caused firms to shrink back in their actions<sup>87</sup>. Costs of the institutional changes grew particularly for industries and firms that were deeply embedded in the Japan model and benefited from cost reductions due to ex ante administrative procedures. In contrast,

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<sup>87</sup> Interview with a TOPIX 100 corporate executive.

up-and-coming venture firms and overseas investment funds who did not rely on the Japan model attempted to take advantage of these legal uncertainties to expand business operations at a gulp. Sizable M&A bids they have launched for prime firms went into litigation, drawing much public attention.

### **3.3 After Institutional Change – New equilibrium?**

From the 1990s to the early 2000s, Japan attempted to execute comprehensive institutional changes. Reformers in the 1990s aimed to change the Japan model into the Anglo-Saxon Model. Many of the institutions were imported from the US. According to VOC terminology, Japan's attempt in the 1990s was for the transformation from a CME to an LME.

However, as Vogel (2006) points out, Japan has yet to convert itself into the US-type liberal market model. Vogel argues that while leaders of the Japanese government and firms generally skipped careful discussions and hurriedly sought drastic reforms to shift to the US type, in the stage of the implementation of actual reforms, firms conducted refined assessment and only necessary reforms were executed. As a result, he argues, the changes are gradual and continuous. Vogel also points out that while the government has pushed ahead toward the US-type liberal market model in several areas more ardently than the private sector, firms and consumers have not altered their practices in accordance with the government's drive. Other careful observers of Japan agree that

Japan has tried to enforce an epoch-making systemic transformation since the 1990s, but has not yet shifted to the Anglo-Saxon Model as sought by reformers in the 1990s (Ikeo 2006; Kato 2009).

Japan is still under transition and in the process of searching for a new equilibrium. But this dissertation, unlike Vogel, argues that the Japan model has been dismantled by the reforms in the 1990s. For example, historical evidence described in this chapter and in Chapter 2 sufficiently demonstrates that the J-capital circulation system, one of the core sub-systems of the Japan model, has crumbled. The important thing to be noted here is that not only formal institutions but also informal and cognitive institutions have changed. The backlash against reforms is prompting moves to return to the “good old days,” but even if formal institutions such as laws were reinstated, informal institutions cannot be brought back to full circle. Efforts to put them back in place would require considerable time. For example, after the consecutive banking crises in the 1990s, can we revive the myth that banks would never fail (*ginko futou shinwa*)? The J-capital circulation system, which allowed industries to have access to massive amounts of low-cost funds in the form of bank lending, cannot be resurrected unless both formal and informal institutions all come back with mutual complementarities. That is, we not only need formal institutions such as legal systems but myths, for example, to complement them. In essence, the Japan model has already crumbled and we can no longer restore it.

That said, Japan has not made the transition to the Anglo-Saxon Model at this point. The Japan model as a tightly knit system collapsed but many of the comprising

institutions still persist. This is partly because some institutions within a bundle of institutions comprising a system have yet to complete the transition. For example, it would take considerable time before enough legal professionals are nurtured to support the new, market-based system. Another reason why the traditional institutions still persist is that a hybrid path of transition is generated in the process of transition. Completion of the systemic transformation has to wait until the transformation of the slowest-moving institution, usually an institution requiring an accumulation of knowledge and skills, is completed. We have shown that in the meantime, institutional complementarities are inevitably lost during the transition, trapped in the “death valley curve of institutional change.” In that “death valley,” players do not just sit there waiting for all slow-moving institutions to complete their transformation. For example, the legal system that has been transformed early under the government’s leadership would try to generate complementarities with a cognitive institution that is lagging behind in the transformation. As a result of this, a hybrid institution is created. Jackson and Miyajima (2008) introduce an interesting analysis on how “hybrid” firms emerged after an extensive institutional change in Japan in the 1990s. According to their firm-based analysis, the hybrid firms are outperforming not only J-type firms (i.e., traditional Japanese firms) but also US-type firms. It seems that we have to wait and see for a while which of them, the Japanese, the Anglo Saxon, or the Hybrid, will reach a new equilibrium.

### 3.4 Institutional Change – Theory and Empirical Results

#### Mechanism of Institutional Change

The extensive institutional changes in Japan in the 1990s, as clearly stated in government publications of the time, sought the departure from the Japan model with the recognition that the Japan model had become outdated.

Hall and Soskice (2001) point out that the different political economic systems of advanced industrial nations exist concomitantly because of institutional complementarities. In order to depart from the Japan model, not only a single institution but also various mutually complementary institutions have to be changed. Policymakers of the 1990s were well aware of this point. Prime Minister Hashimoto's statement on the six major reforms, for example, included the following passage:

It is necessary to carry out the six mutually and closely related reforms in an integrated fashion and at a stroke, but it is not easy to change customary practices and mechanisms that have taken deep root in society<sup>88</sup>.

The fact that the institutional reform of the financial sector was named the “financial Big Bang” also indicates a strong awareness by Japanese reformers of institutional complementarities and Big Bang approach.

Japanese policymakers of the 1990s were thus conscious of the need to change mutually complementary institutions as swiftly and simultaneously as possible. As

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<sup>88</sup>“Message from Prime Minister Hashimoto.” <http://www.kantei.go.jp/jp/kaikaku/message.html>

discussed earlier, however, the actual institutional reform could not synchronize the starting points of all reforms. In addition, even when institutional transformations got under way, the speed of institutional change varies across different institutions.

### **Misalignment of the Timing of Institutional Change**

Despite the Big Bang approach intended by policymakers, Japan's systemic reforms in the 1990s could not completely synchronize their starting point. As seen from Figure 3-4, the Japanese public's interest focused on political reform, administrative reform and (economic) structural reform, in that order. The order of the actual implementation of the institutional reforms was also in that order, with some overlapping allowed.

Prime Minister Hosokawa who carried out political reform that triggered the subsequent series of reforms was aware that the preceding political reform would be followed by administrative reform and structural reform. Rosenbluth and Theis (2010) also theoretically show that politics led the series of reforms.

As the starting points of institutional changes were not synchronized completely, their institutional complementarities were lost temporarily. Loss of institutional complementarities in turn, leads to decline of economic performance of industries. For example, if the capital market were liberalized while MOF's convoy system was maintained, free competition could not be expected to emerge. In such a situation, financial institutions cannot receive the benefits of liberalization but have to shoulder higher transaction costs associated with liberalization.

The temporary breakdown of complementarities due to the misalignment of the starting points of the institutional changes, however, may call in the next round of institutional reforms for realizing new complementarities. As historical evidence in this chapter demonstrates, it was inevitable that political reform was followed by administrative reform and then structural reform one after another in search for new complementarities.

### **Misalignment of Speed of Institutional Change**

The misalignment of the starting points of institutional reforms was not the only reason why extensive institutional changes of the 1990s led to temporary loss of institutional complementarities. As assumed and discussed in Chapter 2 (Assumption 2-2), the speed of institutional change was different between institutions.

Suppose, for example, the legal system that supports the Japan model is transformed into the Anglo-Saxon type. If the government intends to revise laws, it can be done relatively quickly. The government is an organized entity, and so, once a decision is made, it can work on and implement legal revisions very fast. However, it takes longer for firms to change corporate behavior, or private-sector practices, in response to legal revisions, partly because it requires the involvement of a number of entities. Moreover, it takes even more time for legal precedents to pile up and for legal professionals to acquire knowledge and skills to effectively operate under the new legal system.

In this dissertation, the definition of an institution includes not only formal

institutions but also informal institutions such as private-sector practices and shared beliefs (for similar views, see Aoki 2001; Knight 1995). Differences in the speeds of institutional changes are examined using data employed in Chapter 2. Comparison in Figure 3-6 makes the differences evident. Deregulation can be executed in a relatively short period of time. The government as a responsible entity proceeds relatively swiftly if the government so intends. In contrast, cross-shareholdings, deemed to be a typical example of private-sector practices under the Japan model, shows gradual changes. This is because it requires changes in a variety of private-sector entities, unlike an institutional reform led by a unified entity like the government.

Cognitive institutions like shared beliefs and norms also take substantial time to change. Ohmori (2007), who led policy planning activities for the financial Big Bang at MOF and the FSA, states as follows on the financial Big Bang:

It would be fairly naïve to expect the mindset and behavior of market participants to change into the American style by simply setting up an American-like institution. I believe the past five years have proven the obvious fact that even if the market is put in place institutionally during prolonged stagnation, it alone does not revitalize the market. (abbreviated)

If it is naïve to expect people's mindset and behavior to change simply with institutional changes, we should then work on their mindset and behavior, even if results cannot be expected in the short run.

Though Ohmori limits the definition of institutions to legal systems and other formal institutions, in this dissertation, we consider shared beliefs and other things related to the mindset of market participants as institutions. Ohmori believes that formal institutions and cognitive, informal institutions do not change in the same speed and that

after the change of formal institutions, there emerges a gap with informal institutions (i.e., the loss of institutional complementarities).

Regarding institutional change, there are discontinuous changes stemming from exogenous shocks and also gradual changes. The debate has been under way over which of these changes are of more common form (see, for example, Mahoney and Thelen 2010). As far as the experiences of Japan in the 1990s are concerned, that varies depending on types of institutions. Institutional change initiated by the government is often discontinuous. In contrast, institutional changes of private-sector practices are often gradual and take time because it involves a large number of players (see Figure 3-6). Institutional change of cognitive institutions is even more gradual and might take even a longer time because it requires the learning and changes in mindsets of individual players.

Looking at a system as a combination of these institutions, the system change is often led by the government-initiated discontinuous and swift institutional change, but private-sector practices lag behind. Cognitive institutional change lags even further behind. In other words, although the transition of a system as a whole takes time and appears to be gradual and continuous, such transition does contain discontinuous institutional changes led often by the government and/or exogenous shocks. In this regard, political scientists who consider institutional changes as a discontinuous equilibrium transition triggered by exogenous forces (e.g., Hall & Soskice 2001) and those who consider them as an endogenously driven gradual and incremental process

(e.g., Mahoney & Thelen 2010), are both correct in different contexts.

## **Institutional Change, Institutional Complementarities and Economic Performance**

### **–Theory**

As Aoki (2001) and VOC advocates (Hall & Soskice 2001) argue, a country's political economic system is established as a bundle of various complementary institutions. This applies to the Japan model, that supported Japan's high economic growth described as the "Miracle," and to the J-capital circulation system, which was the core sub-system of the Japan model.

If the institutional complementarities among institutions break down temporarily during an extensive institutional change, the performance of economic entities under that system declines. For example, with a bundle of institutions complementing each other, like the Japan model, if only some of those institutions are changed to the Anglo-Saxon type, their institutional complementarities are lost. In that event, transaction costs of industries under the system should increase and economic performance should decline. In fact, Hall and Gingerich (2004) demonstrated that for both CMEs and LMEs, the performance of countries with thorough institutional complementarities is high, while the performance of countries in the middle is low.

In order to avoid a decline in economic performance through the loss of institutional complementarities during institutional change, it is theoretically conceivable to change a bundle of institutions simultaneously. If there is a country that aspires for the transition

from CMEs to LMEs, like Japan in the 1990s, it seems theoretically desirable to carry out a comprehensive institutional change through the Big Bang approach. By doing so, the country seems to be able to avoid a half-baked situation with loss of institutional complementarities and unfavorable economic performance in the middle.

But the Big Bang approach adopted in the transition of former communist states resulted in steep economic downturns and social turmoil (see Figure 3-3). Several attempts were made to theoretically explain these temporary economic downturns (Roland 2001). Japan's historical experiences in the 1990s reviewed in this chapter, however, tell us that even if an idealistic Big Bang approach had been employed, the temporary loss of institutional complementarities was *inevitable*. Broadly speaking, there are two reasons for this; that is, misalignments of timing and speed.

First, as the speed of institutional change differs across institutions, even when the extensive institutional change is carried out simultaneously, the temporary breakdown of institutional complementarities is unavoidable. That is, even if the Big Bang approach succeeds in completely synchronizing the starting point of institutional reforms, some institutions complete the transition instantaneously, but some institutions make the transition slowly, and institutional complementarities break down in the process. Thus, the performance of industries and firms, and the economy as a whole, turns down at least temporarily. In Chapter 2, I called such inevitable economic downturn during institutional change, the "Death valley curve of institutional change."

Second, even when the Big Bang approach is intended by the reformers, as in the

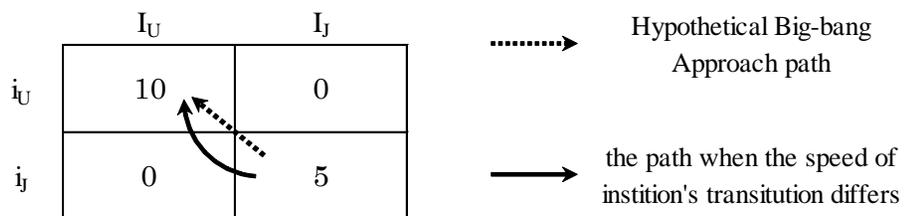
case of Japan in the 1990s, it is extremely difficult to initiate varieties of institutions to change simultaneously. It was perhaps not accidental that in the 1990s, Japan attempted the comprehensive institutional transformation in the order of politics, administration and the economy. In fact, Prime Minister Hosokawa who initiated political reform was conscious that political reform would lead administrative reform and economic reform. Rosenbluth and Theis (2010) theoretically demonstrated that political reform has led to the neo-liberal economic reform.

In some case, only sequential transformation is possible for multiple institutions. For example, prior to the revision of a law, legal precedents for the revised law cannot be developed. When a well-developed main bank system is in place and corporate information is accumulated at main banks, various information services, credit agencies and rating companies for example, do not develop, because of institutional substitution.

Let us look at this graphically with Figure 3-8. Suppose that in Country U, Institution  $I_U$  and Institution  $i_U$  are complementary. Also suppose that in Country J, Institution  $I_J$  and Institution  $i_J$  are complementary. The combination of  $I_U$  and  $i_U$  generates the economic performance of two in Country U, the combination of  $I_J$  and  $i_J$  generates the economic performance of one in Country J, and the combination of institutions without complementarities ( $\{I_U, i_J\}, \{I_J, i_U\}$ ) generates the economic performance of zero.

**Figure 3-8.**

Figure 3-8: Institutional Transition 1 (Curve)



Policymakers and the public in Country J, after seeing that the economic performance of Country U outperforms their country's performance, may seek a systemic transformation to the institutions of Country U. As for the transformation strategy, they would probably want to transform Institution I and Institution i simultaneously because if Institution I and Institution i are transformed separately, they would have a low-performance combination of  $\{I_U, i_J\}$  that results in performance lower than the current performance of Country J. Thus, policymakers of Country J would want to jump to the system of Country U through the Big Bang approach. This is the policy idea of which the Hashimoto Cabinet was definitely aware in its six major reforms, as discussed earlier.

Here, as in concrete examples noted in this chapter, suppose that the speed of transformation for Institution I is faster than the speed of transformation i. In that event, even when policymakers intend to make a linear jump from the system of Country J to the system of Country U, the actual transformation path would *curve* as shown in Figure 3-8-1, and temporarily go through the domains of  $I_U$  and  $i_J$ , resulting in the decline of the economic performance of Country J. This is the intuitive description of the "Death valley curve of institutional change" I formally showed in Chapter 2.

Next, suppose that the simultaneous institutional transformation of Institution I and Institution i is difficult, and Institution i can be transformed only after the transformation of Institution I, which is also a concrete example covered in this chapter. In this case, the institutional transformation path would go through  $\{I_U, i_J\}$  as shown in Figure 3-9, and

then a move toward the system of Country U. So, the economic performance of Country J would temporarily decline to zero.

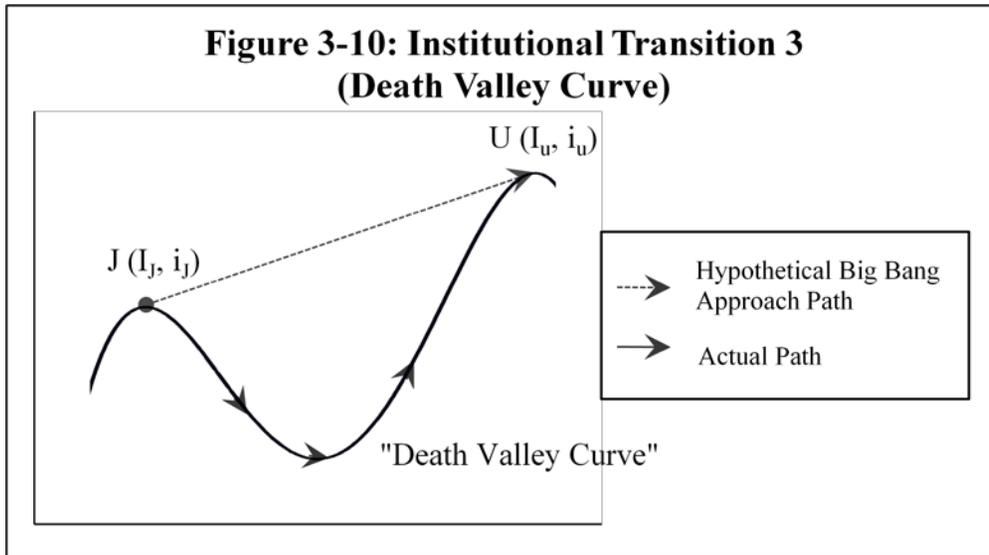
**Figure 3-9.**

Figure 3-9: Institutional Transitions 2 (Sequential)

	$I_U$	$I_J$
$i_U$	10	0
$i_J$	0	5

Figure 3-10 looks at this from a different angle. As Matsuyama (1996) and Aoki (2001) argue and Hall and Soskice (2001) imply, countries' political economic systems are believed to have formed their respective local maxima, as shown in Figure 3-10, as systems to solve the coordination problem.

Figure 3-10.



For example, as in Japan after the collapse of the bubble, when the point of local maxima J declines temporarily, policymakers and the public would want to jump to local maxima U with the better performance through the Big Bang approach. However, what is shown by the theories and historical evidence of this dissertation is that Country J cannot actually make the jump due to the different speed of change between institutions. Thus Country J has to descend the slope once as the transformation path shown in Figure 3-10. That one has to descend the slope during systematic transformation can be seen to be buttressing the robustness of each system.

When there exist institutional complementarities and differences in the speed of transformation between institutions, as seen above, any systemic reform through the Big Bang approach however well controlled, cannot avoid a temporary loss of institutional complementarities and economic downturn. Historical evidence of Japan in the 1990s verifies such inevitable economic downturn during transition. Again, I call this the “Death valley curve of institutional change.”

## **Conclusion**

The Japan model was the system for reducing transaction costs and allocating scarce resources through the informal and close network of long-term players. This system had a certain extent of effectiveness and validity when markets and infrastructure to support markets were underdeveloped and capital was in short supply in wartime and postwar Japan. The capital circulation system under the Japan model (J-capital circulation

system) performed the role of injecting scarce capital into priority industries at low interest rates. The system was sustained by various mutually complementary institutions and organizations.

In the 1990s, when Japanese policymakers and business managers tried to transform the system into the Anglo-Saxon Model, they were aware of the institutional complementarities of the Japan model. They employed the Big Bang approach, albeit in an imperfect form, to transform various mutually complementary institutions comprehensively and simultaneously.

However, while Japan's attempted systemic transformation through the Big Bang approach succeeded in synchronizing the commencing point of transformation for some institutions, it could not continue to maintain the institutional complementarities, because even when institutional transformations started at the same time, the speed of institutional transformation varies depending on institutions. Therefore, the institutional complementarities are lost inevitably during transition and industrial performance declines in mid-course of the transformation process. Thus, the "death valley curve of institutional change" cannot be avoided. In addition, though policymakers attempted the Big Bang approach, the transformation process as a whole proved to be gradual and long-term, as there are institutions that require considerable time for transformation.

## Chapter 4

### **Conclusion: Summary of Arguments and Future Research**

In this concluding chapter, I will summarize the arguments of previous chapters and then briefly discuss how the result of this dissertation can be extended for future research.

#### **4.1 Summary of Arguments**

Arguments are summarized in accordance to the three puzzles and the overarching question raised in the introductory chapter.

##### **4.1.1 Does Structure Matter?**

As stated in the introductory chapter, this dissertation does not aim to fully participate in the heated discussion on the cause of the Japan's prolonged stagnation in the 1990s. Instead, it aims to show that structure *mattered*. Empirical analyses of Chapters 2 and 3 investigated this puzzle. As for Hypothesis 1, the results of statistical tests using the panel data for 70 industries from 1990 to 2005 were highly confirming. Typical institutions under the J-capital system, main bank system, collaborative government-business relations, for examples, had mostly negative and enduring effects on the output levels of industry. Political variables, representing collaborative relations between the government and

industry, particularly had negative effects. Industries that accepted more *amakudari* bureaucrats and had larger-sized trade associations showed decreased industrial outputs. Financial variables that represent a bank-centered economy, another symbolic aspect of the J-capital circulation system, also had mostly negative effects on industrial output. These results basically held when taking TFP (total factor productivity) as a dependent variable instead of industrial outputs.

Despite heated discussions on whether the cause of economic stagnation was cyclical or structural, very few statistical tests have been executed on the relations between structural factors and economic outputs. Particularly, none have taken into account political variables. The results of statistical tests in this dissertation showed, however, that political variables had significant and enduring effects on industrial outputs. As historical analyses in Chapter 3 showed, collaborative government-business relations were one of the key characteristics of the Japan model and that the relations were fundamentally modified in the 1990s. Thus there is no surprise that political institutions and their changes impacted on economic outputs.<sup>89</sup> This dissertation should be a starting point for further political economic analyses of Japan's transition in the 1990s.

Historical analyses in Chapter 3 also reinforced the idea that structure mattered and supported Hypothesis 1. Under the Japan model and its subsystem, the J-capital circulation system characterized by informal and long-term relationships among key players, firms

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<sup>89</sup> Rosenbluth and Theis (2010) is another attempt to tackle this issue, although they focus on how political change affects economic policies.

were able to solve coordination problems and save transaction costs. Strategic industries were able to invest aggressively even when capital was scarce during the post-WWII era. Some industries were protected by bureaupluralism, the Japanese version of the iron triangle. Some relied heavily on the government to solve financial coordination problems. The bundle of institutions that formed the Japan model and J-capital circulation system strongly complemented each other.

Thus when Japanese reformers attempted to change the Japan model into the Anglo-Saxon model in the 1990s, firms and industries that were strongly embedded in the Japan model had to find alternative ways to solve coordination problems. More specifically, they had to secure financing from the capital market or abroad, rather than from main banks. Industries that relied on bureaupluralism for protection and coordination had to find different ways to survive. Such transition will incur additional costs to the industries and should invite output fall.

It should be noted here, however, that although this dissertation empirically showed that structure mattered in Japan's prolonged stagnation, this conclusion does not necessarily confirm the journalistically popular view that the Japan model became outdated in the 1990s. The embeddedness to the Japan model had a negative effect on industrial output not because the Japan model was outdated.<sup>90</sup> Rather, it was because, the Japan model was dissolved by reformers in the 1990s. As a consequence, industries that

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<sup>90</sup> Note that the results of this dissertation does not confirm that the Japan model was functioning well, either. This dissertation is neutral on an evaluation of the Japan model. As described in Chapters 2 and 3, the key finding of this dissertation is that extensive institutional change causes output fall regardless of how the original institution was performing.

heavily relied on the Japan model got into trouble when the model radically changed.

Statistical tests verified that embeddedness to the Japan model in the early 1990s had an enduring negative effect on industrial output. However, if the outmoded Japan model was the primary reason for the negative correlation, the Japanese economy should have recovered more promptly when Japanese reformers in the 1990s pursued extensive institutional changes to abandon the Japan model. Those who insist that the model became outdated in the 1990s blame policies that were “too little, too late” in advancing structural reforms. While I agree with their assertion that structure mattered, the results of this dissertation imply the opposite—that the changes made by reformers in the 1990s were sometimes “too much, too fast.” Statistical analyses generally show that industries that changed political and financial factors too quickly suffered a downturn in industrial output.

#### **4.1.2 Did Japan Change?**

Detailed historical evidence provided in Chapter 3 and statistics in Chapter 2 showed that Japanese institutions comprising the Japan model changed extensively after the collapse of the bubble economy. Thus Hypothesis 2 was upheld. As I stated in Chapter 3, the J-capital circulation system was dismantled through successive reforms since the 1990s.

Although the view that Japan did not change sufficiently is widely shared by journalists, the vast majority of academics think the opposite (e.g., Pempel 2000; Aoki

2001; Hoshi & Kashyap 2001; Toya 2003; Vogel 2006; Jackson & Miyajima 2007; Kato 2009; Rosenbluth & Theis 2010). After all, not many countries went through electoral reform, a reorganization of government agencies, a banking crisis, and a financial Big Bang in merely a decade. More fundamentally, the values, shared beliefs, and mindsets of the Japanese people have changed. No one in Japan today believes that banks will never default, bureaucrats are smart and trustworthy, or land prices will eternally rise. But such views were widely shared by the Japanese in 1990 and were themselves the key components of the Japan model.<sup>91</sup> Roland (2004) categorizes institutions into slow-moving and fast-moving ones. In Japan, even slow-moving institutions, such as norms and shared beliefs, fundamentally changed in a decade or so. Needless to say, fast-moving formal institutions changed earlier.

#### 4.1.3 How Institutional Change Affects Economic Output?

Theoretical arguments and empirical evidence in Chapters 2 and 3 showed that structure mattered (Hypothesis 1). They also showed that Japan executed an extensive institutional change in the 1990s (Hypothesis 2). The J-capital circulation system, the core subsystem of the Japan model and the center of our analyses, was virtually dismantled during the decade.

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<sup>91</sup> In 2008, a comedy movie titled “Going Back to the Bubble Economy” (*bubble e go*) was released in Japan. In the movie, the heroine who time-slipped from the present to 1990 kept warning MOF bureaucrats in 1990 that banks will default and land price will crash. No one took her seriously and laughed at her. I was at the theater watching the movie and the audience was laughing at the words of MOF bureaucrats in 1990. The norms and shared beliefs of the Japanese clearly had changed.

Verification of Hypothesis 1 and Hypothesis 2 pose another question. If structure negatively affected economic output and if Japan did change its structure rather drastically, why did not Japan and its industry recover more promptly? There, I raised a counterintuitive Hypothesis 3. Even if reformers aim to change from an inferior system to a superior system, such an extensive system change inevitably invites temporary output fall. A clear example consistent with this hypothesis is the post-communism transitional economies. Very few would have negated in 1990 that a capitalist system is superior to a communism system in economic performance. The extensive system change from a communist system to capitalist one, however, invited disastrous economic results (Roland 2001).

I demonstrated that Hypothesis 3, the existence of the “death valley curve of institutional change,” can be formally deduced with two assumptions (see Figure 2-2 for the illustration of the theory). One is institutional complementarities (Assumption 2-1) and another is that the time necessary for different types of institutions to change varies across institutions (Assumption 2-2). Since the second assumption is less familiar, I gave empirical evidence in Chapters 2 and 3 to legitimize the assumption (see also Roland [2004] for the justification of Assumption 2-2). The time-consuming nature of information accumulation and of learning and skill acquisition are some of the key sources for the variances in speed. I exemplified how the development process of the legal system takes time compared to other institutions due to the time-consuming nature of professional skill acquisition. Although the Japanese government in the 1990s acknowledged that a new

market-based system requires an effective judicial system that complements the system, it took and is still taking a very long time before Japan gains a judicial system of the size of other advanced industrial nations (see Figure 3-7-1 and 3-7-2).

The results of empirical tests (panel data analysis) for Hypothesis 3 shown in Table 2-3 were in part confirming and in part mixed. Industries that were embedded to the Japan model in its heyday had to endure prolonged output fall. Coefficients of both political and financial variables had mostly expected signs.

Variables that represent the speed and speed variance of institutional variables had mixed results. In a relatively short span (1-year and 5-year lagged models), speed variables had a negative effect on economic performance. That is, in the short span, industries that changed their institutions speedily had to face the negative effects of industrial output. In other words, these industries changed “too fast.” These results at least partly confirm Hypothesis 3. Since slow-moving institutions (Roland 2004), such as norms and beliefs, are unlikely or unable to change at the pace of first-moving institutions, the loss of institutional complementarities should be more serious in the short run. In other words, in the short run, industries that change “too fast” will have to go through the “death valley curve of institutional change.”

In the longer span (10-year and 15-year lagged models), the financial speed variable still had a negative effect, but the political speed variable had a positive effect in the 15-year lagged model. Results can be interpreted in several ways. First, as for political institutions, the “death valley curve” of transition might end within 15 years; but for

financial institutions, the curve may continue. Second, as Aoki (2008) and Jackson and Miyajima (2007) pointed out in the firm-level analysis of corporate governance in Japan after the collapse of the bubble, Japanese firms and industries might have been cultivating a “hybrid” path of institutional evolution. In the 1990s, Japanese reformers attempted to abandon the Japan model and transform it to the Anglo-Saxon model. Japan launched the changes of both macro-level and micro-level institutions by importing various institutions and ideas mainly from the US. The change occurred, but not necessarily in the way reformers in the 1990s envisioned, leading to a “hybrid” evolutionary path. This is a similar point of view with Vogel (2006), although Vogel expresses continuity and similarity between the Japan model and the newly emerging structure.

The coefficients of speed variance variables showed mixed results. First, in the short run (1-year and 5-year lagged models), the speed variance variables, taking standard errors of the speeds of political and financial variables, had positive effects on industrial outputs. These results were unexpected because the higher variance of speeds should have implied a loss of institutional complementarities during the transition. However, since the speed of macro-institutional changes, including changes of slow moving institutions (Roland 2004), are unknown, the higher values of speed variance variables do not necessarily mean a heavier loss of institutional complementarities in the economy as a whole, especially in the short run.

In the longer run (10-year and 15-year lagged models), the results were mostly as expected (minus). They further suggested that political institutions basically complete

their transition in 15 years.

The results of empirical tests on Hypothesis 3 are in part confirming and in part mixed. Since statistical tests are not usually well suited to empirically verifying the existence of a “curve,” various approaches need to be applied to examine how the process of institutional change affects economic outputs. Historical analyses are especially important here not only to test hypotheses through organized case studies but also to examine the complex mechanisms through which institutional changes affect economic outcomes.

In the historical analysis, we saw two actual mechanisms through which institutional complementarities get lost during institutional change. One is misalignment in timing and another is misalignment in speed. As for the former, even if the reformers are fully aware of the importance of institutional complementarities, it is difficult for them to synchronize the starting point of institutional changes in different domains. In the Japanese case, public attention moved from political reform to administrative reform and finally (economic) structural reform (see Figure 3-4). The actual reforms were executed in approximately the same sequence. Misalignment in speed, on the other hand, inevitably occurs because the time necessary for an institution varies across different types of institutions (Assumption 2-2).

Chapter 3 went through the history of post-WWII Japanese political economy to show how political, administrative, and economic institutions of the Japan model, particularly its subsystem the J-capital circulation system, developed tightly knit, highly

complementing institutions. The system allowed industries to solve coordination problems and save transaction costs efficiently when the post-WWII Japanese market was underdeveloped. As Matsuyama (1996) pointed out, the Japan model was one of the local maxima among various national systems solving coordination problems. When Japanese reformers in the 1990s discarded the local maxima—the Japan model—and aimed for a new local maxima—the Anglo Saxon model—Japan had to change a set of mutually complementing institutions. The Big Bang approach was intended to minimize the loss of institutional complementarities during the transition. However, as the historical evidence shows, misalignments in timing and speed were inevitable during the change, and institutional complementarities were temporarily lost (see Figure 3-8 and Figure 3-9). In Chapter 3, I showed concrete examples of such misalignments that occurred in Japan in the 1990s. Under such a loss of institutional complementarities during system transition, industries and firms had to find alternative ways to solve coordination problems, causing an increase in transaction costs and output fall. The greater the industry relied on the Japan model, the more the industry suffered from an increase in transaction costs. Historical analysis of Chapter 3 thus supported and deepened our understandings of mechanisms of the “death valley curve of institutional change.”

#### **4.1.4 Will the World Converge?**

When the neoclassical model of economics reigned supreme, the Solow-Swan growth model predicted that the world would eventually converge. Recently, however,

both political scientists and economists are increasingly placing greater emphasis on the role of institutions and politics to explain divergent economic growth patterns across borders (Hof & Stiglitz 2001; Meier 2001). VOC advocates borrowed the idea of institutional complementarities from Aoki (1994/2000, 2001) and insist that institutional complementarities are one of the key sources of “varieties” of capitalisms (Hall & Soskice 2001). LOT advocates insist that the legal origins—common law or civil law—determine different patterns of institutional arrangements of countries, which in turn affect economic outcomes of each country (La Porta et al. 2008). Both VOC and LOT have been among the most influential theories in the field of political science (comparative politics) and economics recently.

One of the major criticisms of VOC is that this approach is static and lacks dynamisms (Hancke et al. 2007). For instance, if LMEs are performing better than CMEs, why do not CMEs attempt to change their system to LMEs or vice versa? Institutional complementarities alone cannot explain the stableness of LMEs and/or CMEs. LOT, on the other hand, has also been criticized for being deterministic. If countries with a common law tradition are performing better than those with a civil law tradition, why do not the latter fundamentally alter their legal system?

The Japanese experience in the 1990s and theories raised in this dissertation, I believe, can add dynamism to VOC and LOT. Being economically outperformed by the US, Japan in the 1990s did attempt to change its system from a CME to an LME. However, the extensive change led to a temporary loss of institutional complementarities and Japanese

industries and firms suffered from increases in transaction costs. For example, after the collapse of the J-capital circulation system, Japanese industries could no longer rely on cheap and abundant capital from their main bank. I theoretically showed that such an output fall during an extensive institutional change was unavoidable and called it the “death valley curve of institutional change.” Such inevitable output fall during an extensive institutional change can explain both the stability and changeability of CMEs and LMEs. Or similarly, the common law legal system and civil law legal system.

Even an extensive system change from an inferior system to a superior system invites temporary output fall, as was the case for transitional economies. Such temporary output fall will prevent fundamental system changes. Only countries that are determined to endure a severe output fall can initiate an extensive change. Even after such change has been undertaken, the “death valley curve” might invite political backlash.

The Japanese experience in the 1990s also provides a new aspect concerning the long-lasting debate between the Big Bang approach and the gradualism. One reason to support the Big Bang approach was that since there are complementarities among various institutions that comprise a country’s political economic system, many institutions have to be transformed simultaneously and at one stretch. Theories and the empirical evidence in this dissertation showed, however, that even when the Big Bang approach is employed, institutional complementarities are lost temporarily, and a resulting output fall is inevitable. Moreover, since the speed of transformation differs among institutions, the Big Bang approach does not necessarily lead to swift system change. Thus, as noted in

Chapter 3, although Japanese reformers in the 1990s intended to adapt the Big Bang approach, Japan is still under transition. A search toward a new set of institutions that complement each other still continues.

Appendix A ■ JIP-MRI-DBJ table

JIP Number	JIP Industry Name	DBJ Number	DBJ (Industry Group)	MRI Number	MRI Industry Name	Industry Number	Industry
1	Rice,wheat production	--	--	--	--	47	Farming, Forestry, Fisheries
						48	Agriculture
						49	Various Agriculture
2	Miscellaneous crop farming	--	--	--	--	47	Farming, Forestry, Fisheries
						48	Agriculture
						49	Various Agriculture
3	Livestock and sericulture farming	--	--	--	--	47	Farming, Forestry, Fisheries
						48	Agriculture
						49	Various agriculture
						51	Sericulture
						52	Livestock
						53	Various livestock industries
4	Agricultural services	--	--	--	--	47	Farming, Forestry, Fisheries
						48	Agriculture
						49	Various agriculture
						50	Farmland
						51	Agriculture
5	Forestry	--	--	--	--	54	Forestry
						55	Lumber
						48	Agriculture
6	Fisheries	--	--	--	--	56	Fisheries and marine products
						57	Various fisheries
						59	Fishery
7	Mining	60	Mining	--	--	1	Mining
						**	Coal mining
						19	Miscellaneous mining
8	Livestock products	1	Meat & daily products	--	--	**	Dairy products
						20	Processed meat
						37	Foods
						40	Dairy products
						41	Other supplementary foods
9	Seafood products	59	Fishery	--	--	42	Processed meat
						54	Fat
						37	Foods
10	Flour and grain mill products	2	Grain Milling & Feeds	37	--	41	Other supplementary foods
						37	Grain mill products
						38	Foods
						39	Other staple diet
11	Miscellaneous foods and related products	4	Seasoning	**	--	37	Foods
						5	Confectionery & Bakery
						38	Manufacture of sugar
						39	Cooking oil
						41	Other staple diet
						41	Other supplementary foods
						42	Seasoning
43	Confectionery						
12	Prepared animal foods and organic fertilizers	2	Grain Milling & Feeds	--	--	43	Miscellaneous foods and related products
						43	Confectionery
						54	Fat
13	Beverages	3	Breweries	36	--	37	Foods
						37	Foods
						44	Beverage
						45	Alcohol
14	Tobacco	6	Other foods	--	--	46	Tea* Tobacco
						37	Foods
						46	Tea* Tobacco
15	Textile products	8	Spinning	**	--	31	Textiles
						9	Other textiles
						44	Cotton and stable fiber
						45	Wool and spinning
						46	Linen, ramie and jute spinning
16	Lumber and wood products	58	Misc.Manufacturing	49	--	34	Sewing
						48	Other textile products
						16	General equipment
						17	Furniture, Wood products
						55	Lumber
						16	General equipment
17	Furniture and fixtures	58	Misc.Manufacturing	49	--	17	Furniture, Wood products
						17	Furniture, Wood products
						18	Commodity
18	Pulp, paper, and coated and glazed paper	10	Paper&pulp	50	Pulp and paper	35	Paper, Pulp
19	Paper products	10	Paper&pulp	50	Pulp and paper	35	Paper, Pulp
20	Printing, plate making for printing and bookbinding	11	Printing	51	Printing	36	Printing
21	Leather,leather products and fur	--	--	62	Leather products		
22	Rubber products	20	Tires	**	--	19	General chemicals
						21	Other Rubber Products
						60	Tires and tube
23	Chemical fertilizers	12	Chemicals-Major	58	--	61	Miscellaneous rubber products
						19	General chemicals
						26	Chemical fertilizer
24	Basic inorganic chemicals	14	Inorganic chemicals	52	--	19	General chemicals
						20	Inorganic chemical industries
						20	Inorganic chemicals
25	Basic organic chemicals	13	Organic chemicals	**	--	19	General chemicals
						21	Organic chemical industries
						22	Petrochemical
							Organic synthetic chemistry

26	Organic chemicals	12	Chemicals-Major	**		19	General chemicals
				53	Organic chemical industries	21	Organic chemicals
				58	Other chemical industries	22	Organic synthetic chemistry
27	Chemical fibers	12	Chemicals-Major	**		19	General chemicals
				47	Chemical fibers		
				58	Other chemical industries		
28	Miscellaneous chemical products	15	Oil, Fats & Cosmetics	56	Paints and inks	19	General chemicals
		16	Paints			23	Oil, paints
		12	Chemicals-Major				
29	Pharmaceutical products	17	Pharmaceuticals	55	Pharmaceutical products	25	Pharmaceuticals
30	Petroleum products	19	Petroleum	59	Oil refinement	5	Power, Fuel
31	Coal products	-	-	-	-	5	Power, Fuel
32	Glass and its products	23	Sheet glass	63	Glass	27	Ceramics
		24	Other Glass & Glassware			28	Glass, Fireproof products
33	Cement and its products					27	Ceramics
		22	Cement	64	Cement	29	Stone, Cement
34	Pottery					27	Ceramics
		25	Ceramic Wares	65	Pottery		
35	Miscellaneous ceramic, stone and clay products	26	Other Stone & Clay Pds.	**		27	Ceramics
				66	Fireproof products	30	Asbestos
				67	Carbon and black lead products		
				68	Miscellaneous stone and clay products		
36	Pig iron and crude steel	27	Iron & Steel-Major	**		6	Ordinary steel
		28	Ordinary Steel	69	Steel industries with blast furnace	8	Iron and steel products
37	Miscellaneous iron and steel	29	Special Steel	70	Miscellaneous iron and steel	7	Special steel, cast iron
		30	Other Steel Products	70	Miscellaneous iron and steel	8	Iron and steel products
38	Smelting and refining of non-ferrous metals	31	Nonferrous Metal Refining	71	Primary refining of non-ferrous metals	9	Metal
		32	NonFerrous Metal Rolling	**		9	Metal
39	Non-ferrous metal products	33	Wire & Cables	72	Rolling and drawing		
		34	Die Castings	73	Wires and cables		
		35	Fabricated Metal Products	1	Metal products	9	Metal
40	Sheet constructional and architectural metal products	35	Fabricated Metal Products	1	Metal products	9	Metal
41	Miscellaneous fabricated metal products	35	Fabricated Metal Products	**		10	General machinery
		36	Machine Tools			10	General machinery
42	General industry machinery	39	Chemical Plants & Tanks	3	Machine tools	11	Tools, parts
				7	Industry electric machinery	12	Industry machinery
		37	Agricultural Machinery	**		10	General machinery
43	Special industry machinery	38	Construction Machinery	3	Machine tools	11	Tools, parts
				7	Industry electric machinery	12	Industry machinery
44	Miscellaneous machinery	41	Other Machinery	**		10	General machinery
		42	Bearings	4	Miscellaneous industry machinery	12	Industry machinery
		43	Other Machinery Parts	6	Miscellaneous machinery parts	14	Electronic equipment
		47	Electric Measuring Instr.	7	Industry electric machinery		
45	Office and service industry machines	40	Office Machines	**		10	General machinery
				5	Office and household equipment	14	Electronic equipment
				8	Communication and household electric appliances		
46	Heavy construction equipment	45	Industrial Electric Eq.				
47	Household electric appliances	49	Household Electric Appl.	8	Communication and household electric appliances	10	General machinery
						14	Electronic equipment
48	Printing machines, digital and analog computer equipment					10	General machinery
		44	Computers & Electric Eq.	8	Communication and household electric appliances	14	Electronic equipment
49	Communication equipment	46	Communication Equipment	8	Communication and household electric appliances	10	General machinery
						14	Electronic equipment
						75	Communications
						76	Telegraph, telephone
						77	Radio wave
50	Electronic equipment and electric measuring instruments	45	Industrial Electric Eq.	**		10	General machinery
				8	Communication and household electric appliances	14	Electronic equipment
				17	Miscellaneous precision machinery	15	Precision machinery

51	Semiconductor devices and integrated circuits	44	Computers & Electric Eq.	**		10	General machinery
				8	Communication and household electric appliances	14	Electronic equipment
				17	Miscellaneous precision machinery	15	Precision machinery
52	Electronic parts	48	Electronic Eq. & Comp.	**		10	General machinery
				8	Communication and household electric appliances	14	Electronic equipment
				17	Miscellaneous precision instruments	15	Precision machinery
53	Miscellaneous electrical machinery equipment	50	Other Electric Equipment	9	Miscellaneous precision instruments	10	General machinery
54	Motor vehicles	51	Automobiles	10	Motor vehicles	10	General machinery
						13	Transportation equipment
						10	General machinery
55	Motor vehicle parts and accessories	52	Auto Parts & Accessories	11	Motor vehicle body and parts	11	Tools, parts
		53	Shipbuilding-Major	**		10	General machinery
		54	Other Transportation Eq.	12	Shipbuilding and repair	13	Transportation equipment
56	Other transportation equipment			13	Railroad cars		
				14	Other transportation equipment		
		55	Optical Instruments	**		10	General machinery
		56	Other Precision Instr.	15	Watches	15	Precision machinery
57	Precision machinery & equipment			16	Cameras		
				17	Miscellaneous precision instruments		
		57	Plastic Products				
58	Plastic Products	58	Misc.Manufacturing	18	Miscellaneous manufacturing industries	10	General machinery
						16	General tools
						19	General chemicals
						27	Ceramics
59	Miscellaneous manufacturing industries					31	Textiles
		61	General Contractors-Major	21	Construction	62	Construction
		62	Dredging			63	Construction equipment-Building material
60	Construction	62	General Contractors	21	Construction	58	Construction
						59	Civil engineering
						60	National land development
		64	Special Trade Contractors			61	Plant construction
61	Civil engineering	79	Electricity Supply	32	Electricity	2	Electricity
						4	Nuclear power
						3	Gas
62	Electricity						
63	Gas, heat supply	80	Gas Supply	33	Gas		
64	Waterworks	--	--	--	--		
65	Water supply for industrial use	--	--	--	--		
66	Waste disposal	--	--	--	--		
67	Wholesale	65	Wholesale Trade-Major	22	Wholesale		
		66	Other Wholesale Trade				
		67	Department Stores	**			
		68	Chain Stores	23	Department stores		
68	Retail	69	Restaurant Operators	24	Other retails		
		70	Other Retail Trade				
		69	Finance	--	--	--	--
70	Insurance	--	--	--	--		
71	Real estate						
71	Real estate	71	Real Estate	25	Real estate	65	Real estate
				--	--	64	Housing
						66	Transportations-Traffic
72	Housing					67	Transportations-Warehousing
		72	Railroads	26	Railway tracks	68	Railroads
		73	Trucking			66	Transportations-Traffic
73	Railway					67	Transportations-Warehousing
						69	Automobiles
						70	Cars
		78	Other Transportation	27	Road transportation	71	Freight transport
		74	Shipping	28	Water transportation	66	Transportations-Traffic
74	Road transportation					67	Transportations-Warehousing
						72	Shipping
		77	Harbor Transportation			73	Vessels
75	Water transportation						

76	Air transportation	75	Airlines	29	Air transportation	66	Transportations*Traffic
						67	Transportations*Warehousing
						74	Airlines
77	Other transportation and packing					66	Transportations*Traffic
		76	Warehousing	30	Warehousing	67	Transportations*Warehousing
78	Telegraph and telephone	81	Communication	--	--		
79	Mail	--	--	--	--		
80	Education (private and non-profit)	87	Other Services	--	--		
81	Research (private)	--	--	--	--		
82	Medical (private)	--	--	--	--		
83	Hygiene (private and non-profit)	--	--	--	--		
84	Other public services	--	--	--	--		
85	Advertising	--	--	--	--		
86	Rental of office equipment and goods	--	--	--	--		
87	Automobile maintenance services	--	--	--	--		
88	Other services for businesses	--	--	--	--		
89	Entertainment	86	Amusement Services	35	Movie and entertainment	78	Sightseeing
90	Broadcast	83	Broadcast	31	Broadcast	75	Communications
91	Information services and internet-based services	82	Computer Services	--	--	75	Communications
92	Newspapers	--	--	--	--		
93	Information, character information products	84	Other Media	--	--		
94	Eating and drinking places	--	--	--	--		
95	Accommodation					78	Sightseeing
		85	Hotels	34	Accommodation and sightseeing	79	Hotels
96	Laundry, beauty and bath services	87	Other services	--	--		
97	Other services for individuals	87	Other services	--	--		

## Appendix B: Data Source and Conversion Rules

### 1. JIP 2006

In grouping companies to industry, “JIP 2006” was used. The Japan Industrial Productivity Database 2009 (JIP 2006) is compiled in a collaborative effort between RIETI and Hitotsubashi University's G-COE Hi-Stat Program. The JIP 2006 database contains annual data on 108 sectors covering the entire Japanese economy from 1970-2006 that can be used for total factor productivity (TFP) analysis.

### 2. Conversion from MRI to JIP2006

In case JIP2006 rule was not available, we followed the categorization of “The Analysis of Business Management” released by Mitsubishi Research Institute (MRI) to sort each company to industry. This handbook is a survey reference which collects and examines the listed leading companies on each industry. The industries are grouped into 74. In order to unify all the industrial categorization with that of JIP 2006, in this dissertation, the classification by MRI was converted to that of JIP 2006 by using the following formula:

To find out the values of each item of a company by industry based on JIP, we used the values on a basis of industry appearing in the MRI reference as follows:

$$JIP_i = \frac{\sum_1^{i1N} MRI_{i1n} + \sum_1^{i2N} MRI_{i2n} + \dots + \sum_1^{ikN} MRI_{ikn}}{\sum_1^K nik}$$

( $JIP_i$ : the value of  $i$  industry based on JIP classification.  $MRI_{ik}$ : the value of  $ik$  industry based on MRI classification.  $nik$ : the number of companies of  $ik$  industry.  $k=\{1, 2, \dots, K\}$ .  $\forall k, MRI_{ik} \in JIP_i$ )

### 3. NEEDS Financial QUEST

In collecting the financial data of the companies, we used NEEDS Financial QUEST. NEEDS Financial QUEST is a database including Corporate Financial and Stock Market and Macroeconomic data. We made use of these data to present Loan (Loan from bank), MBloan (Loan from main bank), Govloan (Loan from governmental institutions).

### 4. The number of industries (sample size)

The number of industries we took as sample was 70. We did not use industries such as government-linked industries and financial industries that were not theoretically adequate to take into account. In addition, industries with substantial missing data were removed.

### 5. Estimated Union Organization Rate on each industry

To calculate the estimated Union Organization Rate on basis of industry, we divided the number of union members by the number of employees, following the calculation

method of Ministry of Health, Labour and Welfare.

The number of union members was extracted from the database ‘The number of Labour unions’ from 1985 to 2005 released by Ministry of Health, Labour and Welfare. To classify these data by industry, we followed the categorization rule of the ‘Japan Standard industrial Classification’.

As for the number of employees by industry, the data of *Ministry of Internal Affairs and Communications Statistics Bureau* was used. Also, to convert Japan Standard industrial Classification to JIP 2006, the same method of calculation was used as that of conversion from MRI to JIP 2006.

## Appendix C: Description of Variables

### **Political variable**

#### 1. regA

Variable “regA” shows an indicator for strength of regulation. This data is taken from JIP. We complemented missing data from 2003 to 2005 by linear regression.

#### 2. subs

Variable “subs” shows amount of subsidies and indirect tax. Data is taken from JIP. We complemented missing data from 2003 to 2005 by using linear regression.

#### 3. TAnum

Variable “TAnum” shows number of trade associations. We used the data appearing in “Directory of Associations of Japan.” By industry we summed up the amounts of budgets of the associations whose budgets were listed, and recorded the number of those associations from 1989 to 2006. As available data was taken in every two years, we used the mean for intermediate years. Also, as the next data available after 2003 was that of 2006, we replaced 2005’s data with 2006’s, and used the mean of 2003 and 2005 for 2004’s data.

#### 4. ExB

Variable “ExB” shows number of ex-bureaucrats taking positions in the industry.

Data are taken from “Annual report on approval *of earning positions in commercial enterprises (jinjiin hakusyo)* ” released by National Personnel Authority.

The report covers all the results of approvals by ministries at the lower ranks and by National Personnel Authority for the higher ranks.

The data were taken from 1990 to 2005. Since the data of 1992 and 1993 was missing, we made it up by using compound growth rate method (CGR).

### **Financial variable**

#### 5. Govloan

Variable “Govloan” shows Loan lent from the government-related organizations.

This data are taken from NEEDS Financial QUEST. We complement the missing value with the CGR and linear regression methods.

#### 6. Loan

Variable “Loan” shows amount of loan from banks. Since the Japan model was characterized by high bank loan to debt ratio, this variable was included. Data are taken from NEEDS Financial QUEST. We complemented missing data by using CGR and linear

regression methods.

#### 7. MBloan

Variable “MBloan ” shows amount of loan lent from Main-bank. This data is taken from NEEDS Financial QUEST.

#### **Industrial variable**

#### 8. UnionL

Variable “UnionL” shows number of labor union members. The data was taken from ‘The number of Labor unions’ released by the Ministry of Health, Labour and Welfare, according to the middle division of industrial classification.

#### 9. *Keiretsu*

Variable “*Keiretsu*” shows number of companies in keiretsu group. According to “Research on the Keiretsu” (Economic Research Cooperative), we classified companies appearing in ‘The Analysis of Business Management’ released by MRI into corporate groups from 1990 to 2005.

#### Control variable

#### 10. Topixcp

Variable “Topixcp” shows market capitalization of TOPIX 100 stock price. This

variable represents the number of “large companies” within each industry. Data are taken from NEEDS Financial QUEST.

**Dependent variable**

11. Nominal added value

Variable “ValueN” shows nominal added value of each industry. Data are taken from JIP.

12. TFP

Variable “TFP” shows the annual growth ratio of total factor productivity. Data are taken from JIP.

## Appendix D: Death Valley Curve for n institutions.

In the following, with  $n$  institutions, I will formally describe why two assumptions (assumption 2-1 and 2-2) lead to inevitable output fall except for a very special case.

### **Assumption 2-1: Institutional Complementarities**

Let's assume that there exists a set of institutions  $\mathbf{I}_n = \{I_1, I_2, \dots, I_N\}$  that complements each other (e.g., "Japanese System"). If let  $I_i \in \mathbf{I}_n$ ,  $\mathbf{I}_n$  can be re-written as  $\mathbf{I}_n = \{I_i, L_i\}$ , whereas  $L_i \in \mathbf{I}_n$  represents a set of all other institutions except  $I_i$ . If let  $\Gamma(\cdot)$  equals the economic output of a certain institutional arrangement while controlling for other relevant variables, and if let an alternative set of institutions  $\mathbf{I}_n' = \{I_1', I_2', \dots, I_N'\}$ ,  $I_j' \neq I_j \forall j$  that corresponds to  $\mathbf{I}_n$  but doesn't complement each other, institutional complementarities between  $I_i$  and  $L_i$  can be formally represented as:

$$\Gamma(I_i, L_i) - \Gamma(I_i', L_i) \geq \Gamma(L_i, L_i') - \Gamma(I_i', L_i')$$

That is, when an institutional change from  $I_i'$  to  $I_i$  disproportionately increases economic output under  $L_i$  rather than a neutral setting  $L_i'$ ,  $I_i$  *complements*  $L_i$ .

### **Stickiness of Equilibrium**

Next, let's assume that there exists another set of institutions  $\mathbf{I}_n^* = \{I_1^*, I_2^*, \dots, I_N^*\}$  that complement each other (e.g., US-type political economic systems), and also that  $L_i$  can be *substituted for*  $I_i^*$ . Under an institutional arrangement of  $\Gamma(I_i, L_i)$ , there exists no rationale

why any of  $I_j^* \in \mathbf{I}_n^*$  would voluntarily emerge and develop. This is true for a variety of reasons such as economies of scale and/or minimum efficient scale. When  $I_i$  is forced to transform to  $I_i^*$  due to an exogenous shock, however, because  $\Gamma(I_i^*, L_i^*)$  might lessen the transaction costs of firms compared to  $\Gamma(I_i^*, L_i)$  or  $\Gamma(I_i, L_i^*)$ ,  $L_i$  may also need to be transformed to  $L_i^*$  in order to avoid increased transaction cost.<sup>92</sup> If the institutional change from  $I_i$  to  $I_i^*$  is reversible, and the effect of the exogenous shock is temporal, going back to the original setting of  $\Gamma(I_i, L_i)$  also produces a gain in the productivity of the institutional arrangement (stickiness of equilibrium).

**Assumption 2-2: The time necessary for institutions to change varies.**

I import time as a factor to the earlier example and let  $\Gamma_t(I_{1t}, I_{2t}, \dots, I_{Nt})$  be the economic output at time  $t$  ( $t = 0, 1, 2, 3, \dots$ ) with a set of institutions  $\mathbf{I}_{nt} = (I_{1t}, I_{2t}, \dots, I_{Nt})$  while controlling for relevant variables. Let us also assume that the initial institutional arrangement  $\mathbf{I}_{n0}$  at  $t = 0$  complements each other and equals  $\mathbf{I}_n$  (i.e.,  $\mathbf{I}_{n0} \equiv \mathbf{I}_n$ ) in the earlier example. In the case of Japan, one could assume  $\mathbf{I}_{n0} \equiv \mathbf{I}_n$  represents the “Japanese System.” Next, suppose that extensive institutional changes begin at  $t > 0$ , seeking an alternative set of institutions that complement each other. Here, we realistically assume that institutional changes take time and also that the time necessary for the changes to be complete differs

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<sup>92</sup> Whether  $L_i$  needs to be transformed to  $L_i^*$  largely depends on how crucial  $I_i$  was in the original setting  $\Gamma(I_i, L_i)$ . If  $I_i$  played only a marginal role,  $L_i$  will not be likely to change, whereas if the change from  $I_i$  to  $I_i^*$  is reversible,  $L_i^*$  should be the one that changes to  $L_i^*$ . If  $I_i$  played a crucial role, then the change from  $I_i$  to  $I_i^*$  is likely to trigger a massive institutional transformation from  $L_i$  to  $L_i^*$ .

across institutions. Let  $\Gamma_{t^*}^*(I_{1t^*}^*, I_{2t^*}^*, \dots, I_{Nt^*}^*)$  be the targeted point of institutional changes with a set of institutions  $\mathbf{I}_{nt^*}^*$  that equals to  $\mathbf{I}_n^*$  in the earlier example. Again, in the case of Japan, one can assume  $\mathbf{I}_{nt^*}^* \equiv \mathbf{I}_n^*$  represents a U.S.-like system which was the focal point of the institutional changes of the reformers and the public. Assume for the sake of simplicity that once a certain institution  $I_{vk} \in \mathbf{I}_{nk}$  completes its changes and reaches  $I_{vt^*}^* = I_v^*$  at  $t = k$ , it stays at  $I_{vk} = I_{vt^*}^* = I_v^*$  during  $t \geq k$ . That is, when a certain institution completes changing, I assume that it remains in that changed state. In addition, I define a vector space  $\mathbf{t}^* = (t_1^*, t_2^*, \dots, t_N^*) \in \mathbf{R}^N$  as the set of minimum ts that completes the change (i.e., attains  $\mathbf{I}_{nt^*}^* = \mathbf{I}_n^*$ ) for each institution. Because the amount of time necessary for institutional change varies across different types of institutions,  $\exists p, q$  such that  $t_p^* \neq t_q^*$ ,  $p \in n, q \in n$ . If let  $T = \max \mathbf{t}^*$ , then  $T$  is the minimum time necessary for  $\mathbf{I}_{n0} = \mathbf{I}_n$  to completely transform to  $\mathbf{I}_{nt^*}^* = \mathbf{I}_n^*$ . That is,

$$\Gamma_t(I_{1t}, I_{2t}, \dots, I_{Nt}) = \Gamma_{t^*}^*(I_{1t^*}^*, I_{2t^*}^*, \dots, I_{Nt^*}^*), \forall t \geq T.$$

### **Death Valley Curve of Institutional Change**

As shown, except for the very special case where  $t_i^* = t_j^*$  ( $i \neq j$ )  $\forall i, j$ , it is theoretically impossible for reformers to perfectly coordinate institutional changes across time. Moreover, because previous institutions (i.e.,  $\mathbf{I}_{n0} = \mathbf{I}_n$ ) act as a *substitute* for the possible development of alternative institutions, complementary institutions start developing only after institutional changes actually occur. Thus, the period between  $t = 1$

and  $t = T$ , that is, the period when institutional complementarities are lost, inevitably gets lengthened. During the period ( $1 \leq t \leq T$ ), the loss of institutional complementarities due to the underdevelopment of key institutions increases a firms' uncertainties which results in underinvestment. Especially at the initial stage of institutional transition, when  $t$  is small, the economic output of firms are likely to drop substantially compared to the previous institutional setting  $\Gamma_0(\mathbf{I}_{n0})$  as well as the targeted institutional setting  $\Gamma_{t^*}^*(\mathbf{I}_{nt^*}^*)$ .

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