

Institutions and Economic Transformation: The Case of Postwar Japanese Capitalism

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ABSTRACT Institutions matter to economic development—particularly to the process of economic transformation. New technologies and new ways of organizing economic activity do not emerge in a vacuum, but bear the imprint of institutional arrangements. Economic transformation thus entails institutional adaptation as well as technological change—the emergence of new ways of organizing production or production systems and new sets of social and economic relationships which provide the institutional context for economic growth and development. Just as importantly, new institutional arrangements do not emerge *tabula rasa*, but reflect the legacy of old social and institutional forms. Given particular social and institutional legacies, different societies adapt differently to economic transformation. This article employs a theoretically-informed comparative examination of postwar Japanese capitalism to explore the critical role played by institutions in the process of economic transformation.

Introduction

UNLIKE THE PREVIOUS ARTICLES IN THIS ISSUE THAT HAVE CONCERNED industrial capital and labor, concern in this paper rests with the institutions of the capitalist economy. Institutions are a fundamental—if often ignored—element of technological change and economic transformation. Institutions featured prominently in the classic work of both Marx and Schumpeter, and the seminal contributions of Alexander Gershenkron (1952) on the process of economic development in capitalist societies. Recent years have seen growing interest

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in the relationship of institutions to economic growth development. Both Lazonick (1990, 1991) and Olsen (1982, 1983) have argued that the principal reason for Britain's economic decline rests in institutional rigidities which did not allow its industry to employ new technologies effectively or generate new organization forms (see also Kurth 1979; Gilpin 1987). A growing number of theories from the so-called flexible specialization school to regulation theory suggest that economic and social institutions inform the processes of economic growth and transformation (Granovetter 1985; Lazonick 1990, 1991; Best 1990). A growing number of scholars argue that the advanced capitalist nations and the broader world economy are currently in a period of restructuring which involves the transformation of many of the hallmarks of postwar socioeconomic organization—mass production industry, pyramidal bureaucracy, vertically-integrated corporations, and functionally specialized work—with the rise of new technologies, new systems of work and production organization and new social arrangements (Kenney and Florida 1988, 1989, 1993; Florida and Kenney 1990; Womack, Jones and Roos 1990; Best 1990; Lazonick 1990, 1991; Drucker 1993). Sayer and Walker (1993) argue that the division of labor is of fundamental importance in advanced capitalist economies (also see Storper and Walker 1988). Still, social and regional scientists have only the most rudimentary understanding of the institutional dimensions of economic transformation and of the ways that actual societies respond to it.

The theme of this article is quite basic: institutions matter to economic development—particularly to the process of economic transformation. New technologies and new ways of organizing economic activity do not emerge in a vacuum, but bear the imprint of institutional arrangements. Economic transformation thus entails social adaptation as well as technological change—the emergence of new social relationships, new ways of organizing production, and new sets of institutions which provide the social context for technological change, industrial reorganization, and the emergence of new production systems. Just as importantly, new institutional arrangements do not emerge *tabula rasa*, but reflect the legacy of old social and institutional forms. Given particular social and institutional legacies, different societies adapt differently to economic transformation. In this sense, restructuring is similar to Schumpeter's (1934, 1942) concept of "creative destruction" and entails the simultaneous creation and transformation of social and economic institutions. Building from this conception, we outline an institutional theory of restructuring which goes beyond current approaches to so-called flexible specialization (Sabel 1982, 1993a, 1993b; Piore and Sabel 1984; Scott 1988; Storper and Scott 1988) or the regulation school (Aglietta 1979; DeVroey 1984; Lipietz 1987; Noel 1987) of political economy.

This article makes both a substantive and a conceptual contribution. It employs a theoretically-informed comparative examination of postwar Japanese capitalism to explore the critical role played by institutions in technological and economic change. The basic contours of the argument can be summarized as follows. Institutions played a fundamental role in the rapid postwar growth of Japanese capitalism. Japan has adapted very differently to economic restructuring than have the U.S. and Western Europe; and the reason for this is to be found in the relationship of its institutions to economic restructuring. Japanese restructuring revolves around unique social and institutional mechanisms which allow organizations, particularly corporate organizations, to harness intellectual labor as a source of value, productivity, improvement, and profit. This production system is in turn a system of work organization which harnesses the intellectual as well as physical capabilities of the workforce (Florida 1991; Nonaka 1991; Kenney and Florida 1993; Drucker 1993). Japan's response to restructuring also entails institutional innovations which enable large corporations to link innovation to production, apply new technologies to traditional manufacturing, and establish semi-autonomous subsidiaries for incubating technological innovations.

Conceptual Overview

Before proceeding to the specific case of postwar Japanese capitalism, it is useful to briefly review some of the basic concepts associated with our view of social institutions and restructuring. Our view emphasizes the institutional determinants of capitalist development. In doing so, we hope to provide a coherent conceptual framework for explaining how relatively stable arrangements of social-institutional (or political-economic formations) arise; how and why they encounter disequilibrium, rigidities, and dislocations; and how new institutional arrangements emerge to replace them. At bottom then, our approach is a dynamic one—concerned with the ways that mutual adjustment, collective action, and conflict shape social change.

Consider first the organization of the production system itself (see Lazonick 1990, 1991; Florida 1991, 1993). The production system includes the machines, technologies, social relationships, and institutional forms which inform the organization of work both in the factory and the R&D laboratory. The production system is important because it is the place where value is created (Lazonick 1990, 1991). The organization of the production system is embedded within a changing social and organizational context which makes the point of production a source of economic and political contestation (Burawoy 1978, 1979, 1984, 1985). Similarly, technology itself is a product of evolving social relationships which embody a legacy of past political struggles and simultaneous-

ly influence existing social relations (Noble 1977, 1986). In our view, the production system is surrounded and given shape by organizational factors. Following Chandler (1962, 1977) and Williamson (1975, 1981), the rise of functionally-specialized pyramidal and vertically integrated corporations are seen as a response to the difficulties of coordinating industrial mass production (also see Hounshell 1984). Furthermore, these institutions represent a set of technological and administrative mechanisms for orienting and monitoring the work process (see Edwards 1979; Burawoy 1985). This institutional structure also creates the possibilities for bringing productivity growth in line with wages and consumption, creating a self-reinforcing cycle of the sort outlined by the continental regulation school (see Aglietta 1979, DeVroey 1984, 1987). In this sense, social institutions help to organize demand and establish the conditions for self-sustaining economic growth or social reproduction.

The maintenance of such institutional patterns does not, however, occur automatically. Since advanced industrial societies do not have any natural or intrinsic mechanisms to ensure that enterprises do not over-produce and compete too harshly, or that workers adjust their training, attitudes, location, etc. to new forms of production, or that consumers adjust their purchases to growing economic output, institutions matter greatly to the way these tasks are accomplished. In other words, social and economic systems are given their coherence by institutional arrangements. This goes beyond the concept of technological trajectories in economic development which see economic change occurring as a process of mutual adjustment and learning within established social routines. Institutional patterns are not automatically generated, but are products of concrete social forces.

More fundamentally, economic restructuring and economic transformation represent periods of institutional transformation and realignment. Here, it is recognized that advanced industrial economies tend toward dislocation or disequilibrium rather than equilibrium. During stable periods, dislocation is held in check by the prevailing institutional structure. However, once certain critical points are crossed, existing institutional arrangements begin to unravel, disequilibrium sets in, and a cycle of economic dislocation may unfold. Although attempts are made to patch up the institutional framework and remedy weaknesses, it becomes increasingly difficult for the old institutional system to work—to generate productivity improvements required to spur growth and development. The dysfunction of institutions and the production system creates a social prisoner's dilemma of sorts leading to increased chaos and disruption. At these points, the institutional structure of society rigidifies and serves to block the kinds of institutional reform necessary for the production system to generate production and growth. This social and organizational conception of economic

dislocation bears close resemblance to Schumpeter and Marx's conception of the role of social relations and institutions as inhibitions of technological and economic change, and to Olson's more contemporaneous notion (1982, 1983) of the role of "institutional sclerosis" in the rise and decline of nations.

The solution to such dislocation and dysfunction is twofold. The reorganization of the production system and the broader institutional system which surrounds it are needed to create the conditions for a new round of economic expansion (Aglietta 1979; Blackburn et al. 1985; Roobeck 1987)—a point which mirrors the Schumpeterian idea of creative destruction (Schumpeter 1934, 1942; also see Mandel 1975; Mensch 1975; Freeman et al. 1982). But, a new framework must also be created—one which can effectively channel and orient the productivity increases associated with new technologies and new modes of organizing production. At bottom, this institutional system must help to realign work organization and technology to create a production system and a broader and related system of economic, political, and social institutions that create the institutional space required to generate and harness new sources of values and productivity improvement and turn them into great reinforcing economic growth.

The Case of Postwar Japanese Capitalism

The postwar Japanese economic miracle can be best understood through this institutionalist framework. However, this institutional perspective differs in a number of fundamental respects from more conventional accounts of postwar Japanese development which divide rather neatly into two camps. On the one side is the "Statist" version (Johnson 1982) which views Japanese development in terms of the actions of a centralized "Developmental State" (see also Anchoruguy 1989; Fransman 1990). The Statist approach has been criticized by Pempel (1987) who considers the role of the Japanese state to be organizational and directive, not an overly determinant factor in Japan's recent economic development. Calder (1994) has more recently called attention to the central role played by private industry and long-term credit banks in the process of Japanese economic development. A second approach emphasizes the super-exploitation of Japanese workers. As outlined by Dohse and his collaborators (1985), this view poses "Toyotism" as a more advanced and exploitative version of mass production, a "hyper-Fordism" of sorts, based upon the combined power of capital and the state over relatively disorganized labor. Parker (1989) has advanced the concept of "management by stress" to refer to the Japanese production system (see Florida and Kenney 1990). This approach neglects the more fundamental transformation of the production system itself to harness the intellectual as well as physical labor of workers as well as engineers, R&D scientists, and managers. This view is similar to that of Burawoy (1985) who

considers Japan as an advanced case of "hegemonic despotism." A third approach is essentially an extension of flexible specialization to the Japanese case (Friedman 1989). This approach fails to adequately take into account either the role of large corporations as hubs of Japanese production complexes (see Kenney and Florida 1993) or the more fundamental transformation of the production system to harness knowledge and intellectual labor as a source of value (Nonaka 1991; Drucker 1993).

According to our institutional perspective, the key to explaining Japanese postwar economic success is to be found in the way key institutions have been organized—particularly the production system. The rise of a new and more advanced type of production system in Japan was not implemented by managerial fiat or through unbridled state power, but rather was the outcome of a process of organizational evolution punctuated by industrial struggle and management response (Moore 1983; Muto 1984; Gordon 1985). As in other industrial countries, neither capital nor labor was able to impose its will entirely on the other—a relatively stable series of trench lines (Gramsci 1978) being the result. In Japan, these lines of accommodation revolved around guaranteed long-term employment and enterprise unions in the core of the economy (Kenney and Florida 1988, 1989, 1993).

The unique nature of Japan's trench lines are what made it possible for experiments with more flexible forms of manufacturing to occur. Long-term employment eliminated many of the organizational rigidities for workers to resist automation and work redesign encouraging greater flexibility. Hence, there was little need for elaborate job classifications. Given this context, rotation and skill-sharing were used to upgrade skills and increase interaction among workers (Dore 1986; Koike 1988; Aoki 1988; Cole 1989). Lifetime employment also enabled large corporations to make sizable investments in human capital with little regard for employee turnover or exit. These new institutions and organizational forms enabled Japanese corporations and Japanese capitalism more broadly to harness workers' knowledge as a source of value.

Institutional innovations in Japanese manufacturing occurred across several dimensions. Teams of workers with overlapping work roles replaced the functional specialization of the mass production labor process (Shimada 1985; Shimada and MacDuffie 1986; Cole 1989). This allowed workers to cover for each other and experiment with new task allocations and machine setups. Teams were also used to perform routine quality control, saving considerable rework and scrapple (Monden 1983). Dedicated transfer lines and conveyor belts were not extensively used and were supplemented by direct passage of work and communication among teams. Japanese manufacturing came to be characterized by high degrees of knowledge mobilization and learning-by-doing (Dore 1986;

Aoki 1988; Koike 1988; Cole 1989). This not only increased productivity but reduced certain aspects of worker alienation. The end result was a powerful synthesis of intellectual and physical labor.

Given this underlying context, the configuration of the Japanese production system evolved in a very different direction than that of the mass-production assembly line (see Hounshell 1984). Dedicated transfer lines were replaced by linked systems of self-contained, low-volume production processes (Sayer 1986; Sayer and Walker 1992). These were used more flexibly than traditional assembly lines to facilitate rapid shifts between different products such as various models of automobiles or between cars and light trucks. In some industries, U-shaped or modular systems replaced dedicated transfer lines. Workers were able to perform a number of tasks on different machines simultaneously. They thus obtained a broad view of the production process, and were more completely integrated into industrial enterprise (compare Knudsen et al. 1994). Knowledge mobilization at a variety of levels gave the Japanese firm extraordinary problem-solving capabilities (Nonaka 1991; Cole 1989).

Similarly, Japanese management evolved in a way that supplanted the extreme hierarchy and specialization of traditional management bureaucracies. Managerial organizations in Japan developed in terms of a flexible hierarchy. Management positions were designed to overlap with one another. While titles reflected seniority, they often had little relation to formal authority or scope of responsibility (Clark 1979). In addition, managers assumed a generalist orientation and were rotated through the plant. This blurred departmental distinctions and narrowed the separation of management and workers (Kagano et al. 1985). Taken in combination with consensus decision making, this established an environment where participation and information sharing were encouraged. The organization of Japanese management thus resulted in flexibility and learning-by-doing similar to that on the shop-floor (Nonaka 1991). This mitigated problems associated with compartmentalized information, narrowly delineated tasks, lack of commitment or outright sabotage.

The Japanese production system also came to be distinguished by a unique set of relationships among large internalizing supply operations through vertical integration. Japanese corporations chose to organize these transactions through external suppliers. Under this just-in-time (JIT) system, coordination was achieved through shared information, continuous interaction, and by having suppliers locate in close proximity to assembly facilities (Nisiguchi 1994). This is particularly striking when compared with the highly decentralized and often global, just-in-case (JIC) production system of mass production (Abernathy et al. 1983; Sayer 1985, 1986). The just-in-time system can be viewed as yet another

mechanism for knowledge mobilization, in this case from outside suppliers (Imai 1991).

In short, the institutional matrix of postwar Japan opened up a series of important pathways outside and beyond those of traditional mass production. Evolving within those pathways, large Japanese corporations were able to overcome many of the blockages or rigidities which characterized mass production.

Institutional Restructuring in Japan

The institutional context of Japanese manufacturing established the institutional space for Japan to develop a unique response to economic restructuring, in particular revising a new set of technology-based industries. This approach involves three levels of social and institutional organization: the integration of innovation and production, the establishment of new organizational environments to incubate new innovations, and the diffusion of technological innovations into manufacturing processes.

The first level of social arrangement entails the way innovation is linked to production. This occurs through a variety of mechanisms. In contrast to the U.S., Japanese R&D facilities are located close to manufacturing sites. Instead of having a single central facility, large corporations often have a series of research units located around clusters of manufacturing plants or JIT complexes (Eto 1985; Freeman 1987; Aoki and Rosenberg 1987; Kodama 1991; Branscomb and Kodama 1993; Florida and Kenney 1993). Multi-disciplinary research teams replace the strict specialization of mass production corporations. Rather than having a strict purpose and fixed membership, teams continually adjust their goals and continuously add or remove members whose skills and expertise are needed to move forward (Imai et al. 1984). Rotation is used both within research centers and between research facilities and operating divisions. At NEC, for example, approximately 50 percent of research personnel are rotated to operating divisions during their first decade of service, increasing to 80 percent after 20 years. This encourages continuous mobilization of knowledge from R&D through actual factory production.

Moreover, R&D is closely linked to production through a process of staged overlap. Instead of moving from one disjointed phase to the next (and from one self-contained group to another), the development process is far more unified. The basic mechanism is the self-organizing team which changes composition as different aspects of the project are completed. Under this system, many of the transition problems that characterize innovation in U.S. corporations are eliminated as the distinctions separating research, development, and manufacturing fade. Systematic overlap between research and manufacturing ensures that

important new innovations are rapidly translated into new products and processes. As a result, large integrated Japanese corporations are able to use research and development to drive a variety of product lines and markets. Again, this ensured the interplay of knowledge and intellectual labor generated at various points in the production system (Nonaka 1991; Kodama 1991). According to Imai et al. (1984), these organizational innovations overcome the information blockages and other rigidities which characterize research under mass production and create powerful learning effects similar to those on the shop-floor. Cross-fertilization of innovation and manufacturing not only results in new hybrid products, but allows Japanese corporations to amortize R&D costs over a variety of markets and product lines.

Further, the institutional configuration of Japanese industry enables new technologies or products to be spun-out as independent subsidiaries, enabling large corporations to keep new innovations within their general orbit. Aoki (1988) has shown how Japanese corporations organize this spinoff process to avoid the diseconomies of scale associated with mass production corporations and develop portfolios of satellite organizations suitable to a variety of types and stages of economic activity. This also allows large corporations to more effectively internalize the benefits of R&D activity by reducing the risk of information leaks through employee circulation or non-affiliated employee startups. Aoki (1988) and Kenney and Florida (1993) further suggest that these quasi-integrated relationships may be a more effective way of organizing technological change than U.S. innovation complexes which are characterized by high rates of employee mobility, new enterprise formation, and disruption of ongoing R&D efforts. In short, institutional restructuring in Japan replaces the strict dichotomy of vertical integration versus market relationships with network relationships.

Restructuring is not simply limited to the innovation process but involves the integration of new technologies into traditional manufacturing. This too was shaped by institutional flexibility of Japanese industrial organization—a process which is clearly evident in the comparative responses of Japan and the U.S. to automated manufacturing. Research by Jaikumar (1986) indicates that the U.S. has fallen far behind Japan in the adoption of flexible manufacturing systems (FMS) or self-contained cells of machine tools controlled by computers (compare Knudsen et al. 1994; MacPherson 1994). More significantly, the introduction of FMS in the U.S. was thoroughly bound by the institutional rigidities of mass-production industrial organization. In American factories, FMS was used to deskill workers, increase management's power, and produce large batches of relatively standard products. The U.S. is currently trying to move beyond FMS technology to fully automated, computer-integrated manufacturing in order to

achieve workerless production environments. In fact, the use of technology to displace workers is part and parcel of the historical legacy of industrial automation in the U.S. (see Shaiken 1984; Noble 1986; Zuboff 1988; Knudsen et al. 1994; MacPherson 1994).

The Japanese approach was quite different. In Japan, FMS was complemented with social innovations such as significant levels of human intervention and worker reskilling to produce small batches of a wide variety of products. As Jaikumar (1986) has pointed out, multidisciplinary project teams were allowed broad latitude to adapt FMS technology to a wide variety of production environments. Shop-floor operators were allowed to accomplish computer programming. Managers focused their attention on mobilizing workers' technical skills and intellectual capabilities in ways that could create an effective organizational context for FMS technology. The already existing framework of Japanese industrial relations provided the context in which shop-floor workers were transformed into knowledge-workers rather than simply being displaced.

In sharp contrast to the U.S. experience, the implementation of industrial automation in Japan involved the creation of new work environments and the cultivation of worker's intellectual assets as well as technical skills. Japanese corporations have thus far chosen not to implement computer-integrated systems, preferring to have workers and managers rather than computers experiment with ways to integrate sets of flexible manufacturing systems. The shift to automated manufacturing in Japan thus involved organizational innovation and human intervention as an important complement to technological change.

The integration of innovation and production in Japan has played an important role in the broad process of technological change and industrial development. According to Henry Ergas (1987), advanced industrial economies typically develop in terms of two models of industrial change "shifting" or "deepening." The U.S. provided the best example of shifting which involves moving toward new technological frontiers (see Florida and Kenney 1990), while West Germany exemplifies deepening or increasing specialization in mature industrial sectors. In Japan, however the close linkage between research and manufacturing and a more general legacy of institutional flexibility result in the integration of shifting and deepening. As a result, new technologies not only diffuse rapidly and help to rejuvenate mature areas; large enterprises are able to quickly penetrate emerging areas either through invention, successful imitation, or knowledge acquisition. Over time, this pushes the Japan's entire industrial edifice toward new technological frontiers (see Kenney and Florida 1993).

Summary

In short, Japan's response to restructuring was to a great extent determined by the organizational and institutional arrangements that first emerged within the production system. By creating the social space, flexibility, and openness in which social innovation could occur, Japanese industrial organization paved the way for a synthesis of production and innovation and for integrating new technologies into industrial manufacturing. The Japanese approach to restructuring thus represents a qualitative break with mass production and constitutes an alternative set of institutional and social relationships.

The early rise of an alternative institutional system in Japan paved the way for a very different response to restructuring in Japan than in the Western industrial democracies of the U.S. and Europe. Propelled from below, Japanese enterprises were able to avoid certain institutional barriers which result from increasing bureaucratization and develop a portfolio of organizational types which are well suited to various types of economic activity. This unique set of social arrangements combined aspects of flexibility, integration, market transactions, and learning-by-doing. Under this system, work came to be flexibly organized, and innovation integrated to production. New technologies were incubated within large firms, then applied to enterprises. For these reasons of social and institutional structure, Japan appears to be at the center of the current Schumpeterian (1934, 1942) process of creative destruction that is remaking the world economy. Indeed, such a transfer in the center of gravity in the global economy is in keeping with modern industrial history which has seen similar shifts (e.g. from Britain to the U.S.) in the past.

At a broader level, our analysis of postwar Japanese capitalism illustrates the importance of institutions and institutional relationships for economic development. Economic development is not the result of abstract economic forces, but is shaped and motivated by real institutions. Institutions inform the production system where value, wealth, and profit are generated, and also give shape to the economic and social arrangements which create the context or institutional landscape where economic development takes place. The processes of economic transformation and restructuring are at bottom processes of institutional change and adaptation. We are encouraging interest in institutions and institutional issues by geographers, economic development theorists, and other social scientists, and only hope that our work can contribute to this evolving understanding of the role of institutions in advanced industrial societies.

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