

# Varieties of Capitalism and Innovative Enterprise\*

William Lazonick  
University of Massachusetts Lowell  
and  
INSEAD

Published in Comparative Social Research, 24, 2007: 21-69

\* The research contained in this paper has been supported by The Upjohn Institute for Employment Research; World Institute for Development Economics Research (WIDER); and the European Commission's CGEP project (contract no. SOE1-CT98-1114) and ESEMK project (contract no. CIT2-CT-2004-506077). A previous version of this paper was presented at the Conference on Institutions for Economic Development, WIDER, Helsinki, April 18-19, 2005.

## 1. Varieties of capitalism, market forces, and innovative enterprise

In their well-known contribution to the “varieties of capitalism” debate, Peter Hall and David Soskice (2001, ch. 1) highlight the distinction between a “coordinated market economy” as exemplified by Germany and a “liberal market economy” as exemplified by the United States. Under the heading, “Liberal Market Economies: The American Case”, Hall and Soskice (2001, 27), argue:

Liberal market economies can secure levels of overall economic performance as high as those of coordinated market economies, but they do so quite differently. In LMEs, firms rely more heavily on market relations to resolve the coordination problems that firms in CMEs address more often via forms of non-market coordination that entail collaboration and strategic interaction. In each of the major spheres of firm endeavor, competitive markets are more robust and there is less institutional support for non-market forms of coordination.

In effect, Hall and Soskice accept the conventional ideology that, in terms of the coordination of productive activity that results in superior economic performance, the United States – the world’s largest and richest economy – can be understood as a “market economy”. This essay is devoted to the proposition that, in comparative perspective, the organization and performance of the US economy, as well as other advanced capitalist economies, must be understood and differentiated from one another in terms of the *corporate* allocation, not market allocation, of productive resources (see Lazonick 2003).

To view the United States as essentially a “market economy” is to ignore the role of powerful businesses enterprises that engage in innovation in shaping market forces, including the institutions that serve to allocate labor and capital to alternative uses. To view the United States as a “*liberal* market economy” is to ignore the role of the developmental state in allocating resources to infrastructural investments in education, research, and communications that enable innovative enterprises to emerge and survive. The defining characteristic of capitalism is *innovative enterprise*: the interaction of individuals – often numbering in the tens of thousands or hundreds of thousands -- in highly coordinated business organizations that can transform technologies and access markets to generate the higher quality, lower cost products that underpin economic growth. To understand “varieties of capitalism”, one must begin with an analysis of the role of innovative enterprise – the quintessential “capitalist” institution -- in the development of the economy.<sup>1</sup>

From this perspective, the state contributes to the performance of the economy less as a regulator of markets and more as an investor in infrastructures that support the innovation process. But the developmental state requires innovative enterprise. The developmental state does not itself generate higher quality, lower cost products. Without innovative

---

<sup>1</sup> Whitley (1999) delineates “varieties of capitalism” in terms of institutional differences across national business systems, but does not specifically analyze the developmental implications of these different systems or the underlying social conditions of innovative enterprise. See also Whitley (2002) for a very useful edited collection of articles on “competing capitalisms”.

enterprise, state investment in infrastructures would simply result in wasted resources. Fundamental to the analysis of “varieties of capitalism”, I argue, is the analysis of “varieties of innovative enterprise”.

Elsewhere I have elaborated a theory of innovative enterprise that focuses on roles of strategy, organization, and finance in the growth of the firm (see Lazonick 2006c). Taking as its starting point the principles of innovative enterprise that derive from that theory, this essay presents a comparative-historical synthesis of national “business models” that underpin varieties of advanced capitalism. In Section Two, I sketch out the “social conditions of innovative enterprise” framework that unifies the comparative-historical synthesis. In Section Three, I explain the form and content of these social conditions in the US “Old Economy” business model that dominated the US economy into the 1980s. In Section Four, I compare and contrast the social conditions of innovative enterprise that characterized the Japanese challenge to the US Old Economy model. Then, in light of the US-Japanese comparison, Section Four focuses on varieties of innovative enterprise in Western Europe, with sketches of the distinctive British, German and French business models. Section Five then turns to the evolution of the “New Economy” business model in the United States in the last decades of the 20<sup>th</sup> century, and its emergence as the dominant high-tech business model by the beginning of the 21<sup>st</sup> century. In the conclusion I address some of the implications of the comparative-historical analysis of varieties of innovative enterprise for competitive performance, and elaborate on the dynamic interaction of innovative enterprise and the developmental state.

## **2. Social conditions of innovative enterprise**

Empirical research into the characteristics of the innovation process reveals that it is *uncertain, collective, and cumulative* (O’Sullivan 2000b). The outcome of the process cannot be predicted when investments are made, and the transformation of investments into innovation cannot be done by one person alone and cannot be done all at once (Penrose 1959; Best 1990, 125). A strategy to overcome uncertainty requires a collective and cumulative learning process. In the theory of innovative enterprise, the role of strategy is to confront uncertainty, the role of organization is to generate collective learning, and the role of finance is to sustain cumulative learning. Innovation is a social process, supported in certain times and places by what can be called “social conditions of innovative enterprise”.

The theory of innovative enterprise permits us to identify three social conditions that can transform strategy, organization, and finance into innovation, and thus support the process of economic development. The social conditions of innovative enterprise manifest themselves in social relations that are central to the development of the economy. In the remainder of this section of the paper, I will define these social conditions, and in the next sections I will show how they differ across nations characterized by distinctive economic institutions for governing the allocation of resources, employing labor, and financing investment.

The social condition that can transform strategy into innovation is *strategic control*: a set of relations that gives decision-makers the power to allocate the firm's resources to confront the technological, market, and competitive uncertainties that are inherent in the innovation process. For innovation to occur, those who occupy strategic decision-making positions must have both the abilities and incentives to allocate resources to innovative investment strategies. Their abilities to do so will depend on their knowledge of how the current innovative capabilities of the organization over which they exercise allocative control can be enhanced by strategic investments in new, typically complementary, capabilities. Their incentives to do so will depend on the alignment of their personal interests with the interests of the business organization in attaining and sustaining its competitive advantage.

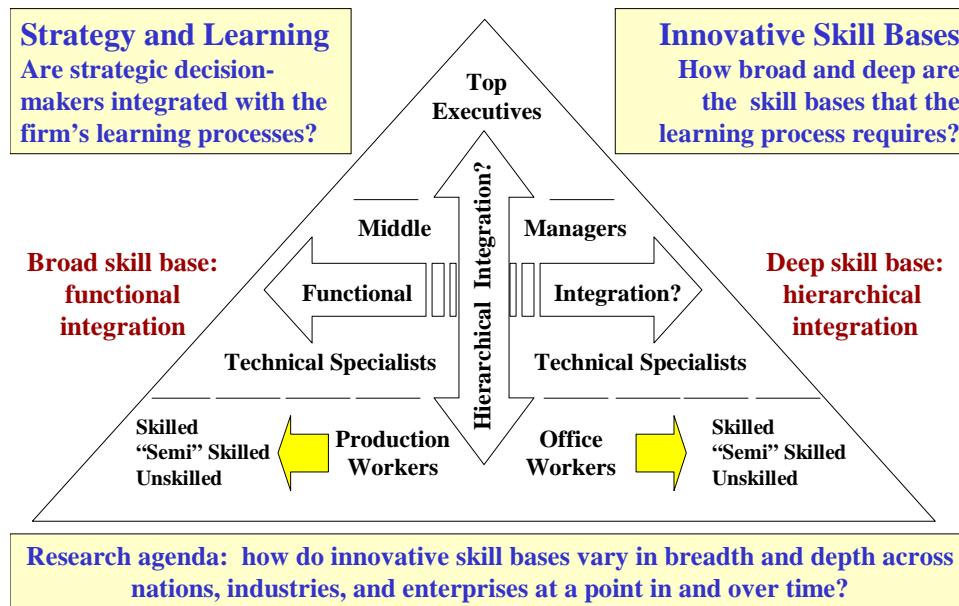
The social condition that can transform organization into innovation is *organizational integration*: a set of relations that creates incentives for people to apply their skills and efforts to organizational objectives. The need for organizational integration derives from the developmental complexity of the innovation process – that is, the need for organizational learning -- combined with the imperative to secure high levels of utilization of innovative investments if the high fixed costs of these developmental investments are to be transformed into low unit costs. Modes of compensation (in the forms of promotion, remuneration, and benefits) are important instruments for integrating individuals into the organization. To generate innovation, a mode of compensation cannot simply manage the labor market by attracting and retaining employees. It must be part of a reward system that manages the learning processes that are the essence of innovation; the compensation system must motivate employees as individuals to engage in collective learning. This collective learning, moreover, cumulates over time, thus necessitating financial commitment to keep the learning organization intact.

The social condition that can transform finance into innovation is *financial commitment*: a set of relations that ensures the allocation of funds to sustain the cumulative innovation process until it generates financial returns. What is often called “patient” capital enables the capabilities that derive from collective learning to cumulate over time, notwithstanding the inherent uncertainty that the innovation process entails. Strategic control over internal revenues is a critical form of financial commitment, but such “inside capital” must often be supplemented by external sources of finance such as stock issues, bond issues, or bank debt that, in different times and places, may be more or less committed to sustaining the innovation process.

The “social conditions of innovative enterprise” perspective asks how and under what conditions the exercise of strategic control ensures that the enterprise seeks to grow using the collective processes and along the cumulative paths that are the foundations of its distinctive competitive success (for applications, see Carpenter et al. 2003; Lazonick and Prencipe 2005; Lazonick 2006a). Of central importance to the accumulation and transformation of capabilities in knowledge-intensive industries is the *skill base* in which the firm invests in pursuing its innovative strategy (see Figure 1). Within the firm, the division of labor consists of different functional specialties and hierarchical responsibilities. At any point in time a firm's functional and hierarchical division of

labor defines its skill base. In the effort to generate collective and cumulative learning, those who exercise strategic control can choose how to structure the skill base, including how employees move around and up the enterprise's functional and hierarchical division of labor over the course of their careers. At the same time, however, the organization of the skill base will be constrained by both the particular learning requirements of the industrial activities in which the firm has chosen to compete and the alternative employment opportunities of the personnel whom the firm wants to employ. The innovative enterprise requires that those who exercise strategic control be able to recognize the competitive strengths and weaknesses of their firm's existing skill base and, hence, the changes in that skill base that will be necessary for an innovative response to competitive challenges. These strategic decision-makers must also be able to mobilize committed finance to sustain investment in the skill base until it can generate higher quality, lower cost products than were previously available

**Figure 1. Strategy, organization, and skill bases in the theory of innovative enterprise**

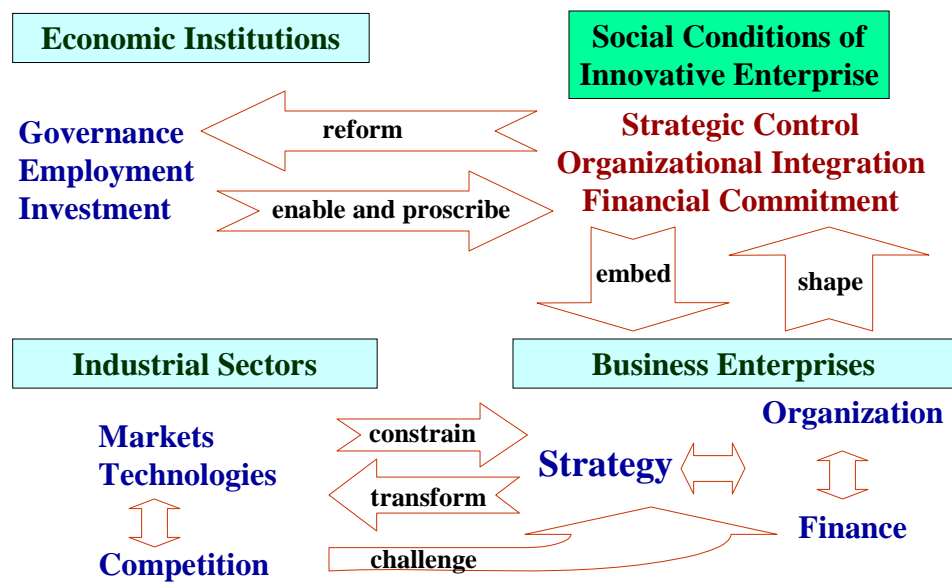


In cross-national comparative perspective, as will be shown in the next sections of this paper, the skill base that enterprises employ to transform technologies and access markets can vary markedly even in the same industrial activity during the same historical era, with different competitive outcomes. Precisely because innovative enterprise depends on social conditions, the development and utilization of skill bases that occur in one institutional environment may not, at a point in time at least, prevail in another institutional environment. Moreover, even within the same industry and same nation,

dynamic capabilities that yielded innovative outcomes in one historical era may become static capabilities that inhibit innovative responses in a subsequent historical era.

If one accepts that business enterprises are social structures that are in turn embedded in larger (typically national) institutional environments, a theory of innovative enterprise must itself be embedded in a model of the relations among *industrial sectors*, *business enterprises*, and *economic institutions* that can support the processes that can transform technologies and access markets to generate products that are higher quality and/or lower cost than those that had previously existed. Figure 2 provides a schematic perspective of the interactions among sectors, enterprises and institutions in shaping the social conditions of innovative enterprise. First, I shall explain the interactions depicted in this diagram, and then I shall turn to a summary of the variation in social conditions of innovative enterprise across the largest developed nations in the last decades of the 20<sup>th</sup> century.

**Figure 2. Social conditions of innovative enterprise**



Innovation differs across industrial sectors in terms of the technologies that are developed and the markets that are accessed. In the theory of the optimizing firm, business enterprises take technologies and markets as given: they constrain the “strategy” of the business enterprise to be like that of each and every other firm in the industry (see Lazonick 2006c). In the theory of the innovating firm, in contrast, enterprise strategy transforms technology and markets. In doing so, strategy confronts technological uncertainty – the possibility that an innovative investment strategy will fail to develop higher quality products or processes -- and market uncertainty – the possibility that the strategy will fail to access a large enough extent of the market to transform the high fixed costs of developing these products and processes into low unit costs. But, as indicated in

lower part of Figure 2, the innovating firm must also confront competitive uncertainty – the possibility that even if the firm is successful in transforming technology and accessing markets to develop higher quality, lower cost products than were previously available, competitors will do it better and cheaper.

The rise of new competition poses a challenge to the innovating firm. It can seek to make an innovative response or, alternatively, it can seek to adapt on the basis of the investments that it has already made by, for example, obtaining wage and work concessions from employees, debt relief from creditors, or tax breaks or other subsidies from the state (see Lazonick 1993). An enterprise that chooses the adaptive response in effect shifts from being an innovating to an optimizing firm. How the enterprise responds will depend on not only the abilities and incentives of those who exercise strategic control but also the skills and efforts that can be integrated in its organization and the committed finance that, in the face of competitive challenges, can be mobilized to sustain the innovation process.

If and when innovation is successful in a particular nation over a sustained period of time, the types of strategic control, organizational integration, and financial commitment that characterize the nation's innovating firms will constitute distinctive social conditions of innovative enterprise. Why, one might ask, would the social conditions of innovative enterprise exhibit similar characteristics across firms in a nation, particularly when they are engaged in different industries? Or, to put the question differently, why would not the social conditions of innovative enterprise be the same for all firms in all industries across all nations? The answer to both questions, as depicted in Figure 2, is that historically nations differ in their institutions. At any point in time these institutions both enable and proscribe the activities of firms, while over time distinctive elements of these institutions become embedded in the ways in which firms function. Of particular importance in influencing the social conditions of innovative enterprise are *economic* institutions related to *governance*, *employment*, and *investment*. Through a historical process, the strategic, organizational, and financial activities of a nation's innovative enterprises shape the characteristics of these economic institutions, but these institutions also exist and persist independently of these enterprises as part of the "social fabric" -- the rules and norms of the nation applicable to economic activity that find application in the social relations of that nation's firms.

Governance institutions determine how a society assigns rights and responsibilities to different groups of people over the allocation of its productive resources and how it imposes restrictions on the development and utilization of these resources. Employment institutions determine how a society develops the capabilities of its present and future labor forces as well as the level of employment and the conditions of work and remuneration. Investment institutions determine the ways in which a society ensures that sufficient financial resources will be available on a continuing basis to sustain the development of its productive capabilities. These economic institutions both enable and proscribe the strategic, organizational, and financial activities of business enterprises, thus influencing the conditions of innovative enterprise that characterize social relations within any given firm at any point in time. As these business enterprises succeed at

innovation, they may reshape the conditions of innovative enterprise; for example, their strategic decision-makers, acting collectively, may take steps to reform these institutions to suit the new needs of their enterprises.

This highly schematic perspective, therefore, posits a dynamic historical relation between organizations and institutions in the evolution of the social conditions of innovative enterprise. To go beyond this schema requires the integration of the theory of innovative enterprise with comparative research on the evolution of the conditions of innovative enterprise in different times and places. To study the innovative enterprise in abstraction from the particular social conditions that enable it to generate higher quality, lower costs products is to forego an understanding of why a firm became innovative in the first place and how its innovative capabilities may be rendered obsolete. A comparative-historical analysis enables us to learn from the past and provides working hypotheses for ongoing research (for an explication of this integrative methodology, see Lazonick 2002b; for a comparative-historical synthesis of the innovative firm, see Lazonick 2004c).

For a first example of such a working hypothesis, the comparative-historical experience of innovative enterprise suggests that, contrary to a common belief that has persisted since the late nineteenth century, the form of firm ownership is not the critical issue for understanding the type of strategic control that supports innovative enterprise. Critical are the abilities and incentives of those managers who exercise strategic control. Whether they are majority owners of the firm, state employees, or employees of publicly listed companies, one needs to know where and how these strategic managers gained the experience to allocate resources to the innovation process, and the conditions under which their personal rewards depend on the firm's innovative success.

Secondly, the most fundamental, if by no means the only, source of financial commitment for the innovating firm is to be found in those revenues that are generated by the firm itself. Retentions form the foundation of corporate finance (Myers and Majluf 1984; Corbett and Jenkinson 1997; O'Sullivan 2004). The use of bank finance to leverage internal funds in providing financial commitment requires close relations between financial institutions and innovating firms, as for example in the Japanese model. In certain times and places, the stock market can provide some well-positioned firms with financial commitment. But as an investment institution, the major role of the stock market is to provide liquidity to productive investments that have already been made, not commitment to finance new productive investments. It enables owner-entrepreneurs and venture capitalists to cash out of their investments in startup companies, and it enables households to diversify their savings portfolios so that they can (hopefully) tap into the yields of the stock market, either directly or by entrusting their savings to institutional investors, without having to devote time and effort to understanding and monitoring the innovative capabilities of the companies that have listed their equities on it.

Thirdly, while strategic control and financial commitment are essential to innovative enterprise, it is organizational integration that determines the innovative capability that a firm actually possesses. The types of organizational integration that result in innovation

vary across industries and institutional environments as well as over time. The hierarchical and functional divisions of labor that, when integrated into learning processes, have generated innovation in the past cannot necessarily be expected to do so in the future when faced with changes in technology, markets, and competition – changes that to some extent successful innovation in itself brings about.

In a theory of innovative enterprise, strategy, finance, and organization are interlinked in a dynamic process with learning as an outcome. To fully comprehend innovative enterprise, there is a need to understand the actual learning processes: the relation between tacit knowledge and codified knowledge, between individual capabilities and collective capabilities, and between what is learned at a point in time and how that learning cumulates over time (see Lazonick and O’Sullivan 2000b). The prevailing social conditions of innovative enterprise provide the context for those learning processes, shaping the types of learning that are attempted, the extent to which these processes are sustained, and the ways in which people interact both cognitively and behaviorally in the learning process. The influence of the social context is manifested by the functional and hierarchical integration of skill bases that can vary dramatically across industries and institutional environments as well as over time (Lazonick 2004c).

### **3. The US Old Economy Model<sup>2</sup>**

The US business model was dominant in global competition in the post-World War II decades (see Figure 3). A basic characteristic of this business model was the separation of share ownership and managerial control. The existence of well-developed stock markets, most notably the New York Stock Exchange (NYSE), had during the first decades of the century resulted in the fragmentation of shareholding, leaving career managers in control of the allocation of corporate resources. In principle, boards of directors representing the interests of shareholders monitored the decisions of these managers; in practice, incumbent top executives chose the outside directors and were themselves members of the board. Shareholders could challenge management through proposals to the annual general meeting, but over the course of the twentieth century a body of law evolved that enabled management to exclude stockholder proposals that dealt with normal business matters (for example, acquisitions or downsizings) as distinct from social issues (for example, sex discrimination or corporate pollution).

---

<sup>2</sup> There are extensive literatures on a wide range of topics that inform the characterizations of the various national business models presented below. Except where quoting directly or using specific data, rather than reference each particular argument throughout the text, for each business model I provide the reader with a list of the core references on which I have drawn (including previous papers of mine that in turn contain relevant bibliographic references). For the US Old Economy business model these references include Noble 1977; Mowery and Rosenberg 1989; Chandler 1990; Hughes 1990; Lazonick 1990, chs. 7-10, 2002a, and 2004a; Brody 1993; Rosenberg and Nelson 1994; Hounshell 1996; and O’Sullivan 2000a, chs. 3-6.



the hierarchy, so-called “hourly” workers who, while they often spent their entire working lives with one company, were considered to be interchangeable commodities in whose capabilities the company had no need to invest.<sup>3</sup> Salaried managers entered these corporations with higher education degrees from a well-funded, government-supported system whose curricula had historically been shaped by the needs of business corporations for technical and administrative personnel. Hourly workers entered these corporations with high school diplomas that generally reflected mediocre educations.

Nevertheless, union representation, seniority hiring and firing, overtime pay, the need of corporations for reliable even if low-skilled workers to tend mass production processes, and the success of the US model combined to enable these hourly workers to receive good pay and benefits. As a rule, however, the hourly worker could over the course of his or her working life at best hope to rise to the rank of foreman, a salaried position that (as was the case for all salaried employees) denied these supervisors the right to be represented in collective bargaining but was generally dead-end in terms of any further career mobility up the managerial hierarchy. Meanwhile a central preoccupation of salaried managers in the post-World War II decades was to develop skill-displacing automated technologies so that in “the factory of the future” their companies could dispense with the employment of hourly workers whom they viewed as being undereducated, underskilled, and overpaid.

The US industrial corporation received considerable financial support from government programs for technology development in areas such as aerospace, computers, and life sciences. The development of the productive potential of these government investments relied on corporate research capabilities, but, given the size and duration of the investments involved, even the largest and most successful business corporations would not have been able or willing to finance them on their own. Retained earnings formed the financial foundation for the investments that the corporations did make; in the 1960s and 1970s corporate taxes were about 39 percent of corporate profits (including inventory valuation and capital consumption adjustments), dividends were about 25 percent, and retentions about 36 percent. When corporations needed additional investment financing, they issued corporate bonds at favorable rates that reflected conservative debt-equity ratios. Bank loans were used almost exclusively for working capital. Companies made only limited use of the stock market as a source of investment funds.

As I discuss below, during the 1970s and 1980s, the US model began to falter in the face of Japanese competition that integrated shop-floor workers into the processes of organizational learning. In addition, the internal cohesion of the managerial organizations of US corporations weakened, particularly as corporations grew bigger and diversified into many different lines of business. The conglomerate movement of the 1960s segmented top executives from the rest of the managerial organization. Increasingly, moreover, an integrative hierarchical reward structure ceased to regulate the

---

<sup>3</sup> Non-salaried employees were classified as “hourly” (or “non-exempt”) workers because of the stipulation of the National Labor Relations Act that emerged from the New Deal era that required employees who were paid an hourly wage to receive 150 percent of that wage if they worked longer than the normal working hours. The overtime work of salaried personnel is exempt from this provision.

pay of top executives, who embraced wholeheartedly the ideology of maximizing shareholder value as their boards bestowed on them ever more generous stock option awards. At the same time, in the high-tech industries, younger professional, technical, and administrative personnel became much less dependent on the pursuit of careers within Old Economy corporate hierarchies as the creation of new firms based on a New Economy business model provided them the possibility of using interfirm mobility to pursue alternative career paths.

#### **4. The Japanese Challenge<sup>4</sup>**

In the 1970s and 1980s the Japanese business model directly confronted the US Old Economy model, as depicted in Figure 3. In the post-World War II decades, US managerial corporations dominated in international competition in a wide range of high technology industries. Many of these corporations had been accumulating innovative capabilities from the late nineteenth century. During the depressed years of the 1930s, even those US industrial corporations that cut back production and employment dramatically nevertheless continued to invest in R&D and enhance their innovative capability. Within the new structure of cooperative industrial relations that emerged out the conflicts of the depression years, US industrial corporations were able to take advantage of the post-World War II boom to re-establish themselves as the world's pre-eminent producers of consumer durables such as automobiles and electrical appliances and related capital goods such as steel and machine tools. With the help of US government research support and contracts, US companies also became the leaders in the computer and semiconductor industries.

Then in the 1970s and 1980s Japanese companies challenged the US industrial corporations in the very industrial sectors in which even as late as the 1960s US corporations seemed to have held insurmountable competitive advantage. Building on the development of innovative capabilities in their home market during the 1950s and 1960s, Japanese companies gained competitive advantage over US companies in industries such as steel, memory chips, machine tools, electrical machinery, consumer electronics, and automobiles. Initially, as Japanese exports to the United States increased rapidly in the last half of the 1970s, many observers attributed the challenge to the lower wages and longer working hours that prevailed in Japan. By the early 1980s, however, with real wages in Japan continuing to rise, it became clear that Japanese advantage was based on superior capabilities for generating higher quality, lower cost products.

Three business institutions – stable shareholding, permanent employment, and main bank lending<sup>5</sup> – provided the social conditions for Japan's remarkable success. Stable shareholding ensured that the top managers of Japanese industrial corporations would

---

<sup>4</sup> This section draws on Hadley 1970; Yonekawa 1984; Abegglen and Stalk 1985; Cusumano 1985; Gordon, 1985; Dore 1986, 1987, 1990, and 2000; Clark and Fujimoto 1991; Aoki and Dore, 1994; Okimoto and Nishi 1994; Lazonick 1995, 1998, 1999, and 2005; Sako and Sato 1997; Morikawa 2001; as well as many references cited in these works.

<sup>5</sup> These institutions are more generally called “cross-shareholding”, “lifetime employment”, and “the main bank system”, respectively. For reasons that will be noted in this discussion, and which are elaborated in Lazonick 2005, these terms are misleading.

possess the strategic control required to make innovative investments in industries in which in the 1950s there was no inherent reason to believe that they would ultimately be successful in international competition. Permanent employment enabled the companies involved to put in place a new model of hierarchical and functional integration that enabled them to engage in collective and cumulative learning in ways that their international competitors could not. Main bank lending supplied these companies with a level of financial commitment that permitted them both to grow rapidly and to sustain the innovation process until they could generate returns first on home and then on foreign product markets. Let us look briefly at how these institutions evolved and became embedded in the functioning of the Japanese industrial enterprise in the post-World War II decades.

In 1948 the Supreme Commander for the Allied Powers – the occupation authority in Japan -- began the dissolution of the *zaibatsu*, the giant holding companies that had dominated the Japanese economy from the Meiji era of the late nineteenth century to World War II. The dissolution process not only dispossessed the families that owned the *zaibatsu* but also removed from office the top management layers of the *zaibatsu* holding companies and major affiliated companies. Taking over control of strategic decision-making in Japan's industrial enterprises were "third-rank executives", primarily engineers who were plucked from the ranks of middle management to take leadership positions of companies that had no alternative but to find new uses for their accumulated capabilities in non-military markets.

The control exercised by these young and ambitious executives was by no means secure. There was a fear that shareholders, almost 70 percent of whom were individuals, might join forces to demand the traditional control rights as owners. To invest in the capabilities of their companies, enterprise managers needed to maintain as much control as possible over the allocation of corporate revenues. But the undeveloped state of the companies subsequent to the dissolution of the *zaibatsu* and the structure of public shareholding left Japanese enterprises vulnerable, if not to takeovers, then to debilitating demands from outside interests for the distribution of their earnings if and when such earnings should appear.

To defend themselves against demands for "shareholder value" by these outside interests, the community of corporate executives engaged in the practice of cross-shareholding. Banks and industrial companies took equities off the market by holding each other's shares. Increasingly, business relations among companies, be they industrial or financial, became cemented by cross-shareholding arrangements, with a company that had closer relations with another company being more likely to hold larger amounts of that company's shares, up to the legal maximum of five percent of shares outstanding (or ten percent in the case of holdings by insurance companies). Over time, as business relations among financial and industrial enterprises changed, the web of cross-shareholding became more intricate so that *mutual* shareholding between two companies ceased to be an important feature of the system; what became important was the dense network of stable shareholding. The institution of stable shareholding is not based on contractual relations but rather has been sustained by the willingness of the entire Japanese business

community to accept that one company does not seek its own advantage by selling its shareholdings of another company to public shareholders.<sup>6</sup>

Japanese companies have routinely given their proxy votes to the managers of the companies whose shares they hold. To reduce the possibility for outside shareholders to press their demands on management, virtually all companies listed on the Tokyo Stock Exchange have held their annual general meetings of shareholders at the same time on the same day -- the last Friday in June at 2:00PM, with the meetings lasting on average, over the course of the 1990s, 28.37 minutes (Hilary and Oshika 2003, 41). Nevertheless, until the government cracked down on the practice in the mid-1990s, *yakusa*, members of Japanese organized crime, routinely extorted bribes from Japanese top managers in return for promises not to ask embarrassing questions at the shareholders' meeting, and, with the bribe having been paid, to intimidate anyone else in attendance who might be thinking of doing so.

By 1955, according to its broadest, and most relevant, definition as stock in the hands of stable shareholders who would not unilaterally sell their shares on the market, stable shareholding represented 25 percent of outstanding stocks listed on the Tokyo Stock Exchange, and by 1960 it had risen to about 40 percent. It declined slightly in the early 1960s, but after the opening up of Japanese capital markets in 1964, when Japan joined OECD, the business community, fearing foreign takeovers, took steps to increase stable shareholding. It surpassed 60 percent in 1975, and remained above that figure until 2000, peaking at 67.4 percent in 1988. During the recessionary years of the 1990s, there was a gradual decline of stable shareholdings to 62 percent in 1998 and then a sharp drop to 57 percent in 2000. Financial institutions, burdened by mountains of non-performing loans and compelled to realize the value of their shares to restore capital-adequacy ratios, accounted for the vast majority of the sell-offs while foreigners accounted for almost all of the increase in the proportions of all outstanding shares held.<sup>7</sup>

From the 1950s corporate managers used the strategic control that stable shareholding protected to build organizations characterized by functional and hierarchical integration (see Figure 3). Critical to this organization-building were the investments in an educated labor force that the Japanese government had made since the last decades of the 19<sup>th</sup> century. In the decades after the Meiji Restoration of 1868, the primary and secondary education of the entire population was raised to a high level. Simultaneously, a transformation of the system of higher education generated a growing supply of university graduates who entered industry. In addition to paying them well, the

---

<sup>6</sup> When in financial distress, a company might raise cash by selling some of its stable shareholdings to other companies at the going market price but with an understanding that the shares would be repurchased, also at the going market price, if and when its financial condition improved.

<sup>7</sup> In March 2000 foreigners held 13.2 percent of outstanding shares, up from 4.2 percent in 1990 and 10.0 percent in 1998. By 2004 that share is said to have increased to about 18 percent, but since 2000, the Tokyo Stock Exchange, which beginning in 1949 had annually updated the series on shareholdings by type of holder, has not reported these figures. In terms of the value (as distinct from the number) of shares held, the proportion held by foreigners increased from six percent in 1992 to over 13 percent in 1998 to almost 24 percent in 2005 (Tokyo Stock Exchange 2006, 60)

companies often incurred the considerable expense of sending these highly educated employees abroad for varying lengths of time to acquire industrial experience.

As a result, in the aftermath of World War II, Japanese companies could draw on a sizable supply of highly educated and experienced engineers and managers. Many Toyota employees, for example, had accumulated relevant technological experience over the previous decades working for the enterprise group when it was Japan's leading producer of textile machinery. In addition, the automobile industry was able to attract many engineers who had gained experience in Japan's aircraft industry before and during the war.

Before the war, moreover, many Japanese companies had integrated foremen into the structure of managerial learning so that they could not only supervise but also train workers on the shop floor. Whereas in the United States, the foreman, as "the man in the middle", served as a buffer between the managerial organization and the shop floor, in Japan the foreman was an integrator of managerial and shop-floor learning. From the late nineteenth century, a prime objective of U.S. managerial learning had been to develop machine technologies that could dispense with the skills of craft workers. In contrast, with an accumulation of such craft skills lacking in Japan, the problem that had confronted technology-oriented managers from the Meiji era had been to develop skills on the shop floor as part of a strategy of organizational learning that integrated the capabilities of managers and workers.

The rise of enterprise unions in the early 1950s both reflected and enhanced the social foundations for the hierarchical integration of shop-floor workers. During the last half of the 1940s, dire economic conditions and democratization initiatives gave rise to a militant labor movement of white-collar (technical and administrative) and blue-collar (operative) employees. The goal of the new industrial unions was to implement "production control": the takeover of idle factories so that workers could put them into operation and earn a living. As an alternative to these militant industrial unions, leading companies created enterprise unions of white-collar and blue-collar employees. In 1950 under economic conditions rendered more severe by the Occupation's anti-inflationary policies, companies such as Toyota, Toshiba, and Hitachi fired militant workers and offered enterprise unionism to the remaining employees. The post-Korean War recession of 1953 created another opportunity for more companies to expel the militants and introduce enterprise unionism.

Foremen and supervisors were members of the union, as were all university-educated personnel for at least the first ten years of employment before they made the official transition into "management". Union officials, who were company employees, held regularly scheduled conferences with management at different levels of the enterprise to resolve issues concerning remuneration, work conditions, work organization, transfers, and production. The continued and rapid expansion of the Japanese economy in the high-growth era ensured that enterprise unionism would become an entrenched Japanese institution.

The most important achievement of enterprise unionism was “lifetime employment”, a system of permanent employment that, while not contractually guaranteed, gave male white-collar and blue-collar workers employment security to the retirement age of, first, 55; from the 1980s, 60; and from the late 1990s at a growing number of companies, 65. This employment security both won the commitment of the workers to the company and gave the company the incentive to develop the productive capabilities of its workers. The system did not differ in principle from the organizational integration of professional, technical, and administrative employees that was at the heart of the US managerial revolution, except in one extremely important respect. Unlike the United States where there was a sharp segmentation between salaried managers and hourly workers, Japanese companies of the post-World War II decades extended permanent employment to both white-collar and blue-collar personnel, thus providing a foundation for the hierarchical integration of shop-floor workers into a company-wide process of organizational learning.

Top managers had ultimate control over strategic investments, and technical specialists designed products and processes, typically on the basis of foreign technology. But, given these managerial capabilities, the unique ability of Japanese companies to transform technology acquired from abroad to generate new standards of quality and cost depended on not only the abilities of their engineers but also the integration of shop-floor workers into organizational learning processes. Through their engagement in processes of cost reduction, Japanese shop-floor workers were continuously involved in a more general process of improvement of products and processes that, by the 1970s, enabled Japanese companies to emerge as world leaders in factory automation – by 1993 in the automobile industry the stock of robots per 10,000 production workers in Japanese factories was 3.8 times the US figure (UN/ECE 2000). Also of great importance was the ability of Japanese manufacturers to eliminate waste in production; by the late 1970s, for example, Japan’s competitive advantage in television sets was not in labor costs or even scale economies but in a savings of materials costs. This productive transformation became particularly important in international competition in the 1980s as Japanese wages approached the levels of the advanced industrial economies of North America and Western Europe and, especially from 1985, as the value of the yen dramatically strengthened. During the 1980s and 1990s, influenced by not only Japan’s export performance but also the impact of Japanese direct investment in North America and Western Europe, many Western companies sought, with varying degrees of success, to implement Japanese high-quality, low-cost mass-production methods.

During the 1980s, most Western analyses of the sources of Japanese competitive advantage focused on the hierarchical integration of the shop-floor worker into the organizational learning process. By the early 1990s the emphasis shifted to the role of “cross-functional management”, “company-wide quality control,” or “concurrent engineering” in generating higher quality, lower cost products. The hierarchical integration of engineers with shop-floor workers fostered functional integration as specialized engineers engaged in teams to solve practical manufacturing problems.

Much of the discussion of functional integration focused on its role in “new product development” in international comparative perspective, with the US managerial corporation based on the Old Economy business model performing quite poorly in competition with the Japanese. The evolution of the semiconductor industry provides a vivid example of the competitive power, but also possibly the limits, of Japanese organizational integration. From the late 1970s the Japanese mounted a formidable competitive challenge to US producers in dynamic random access memory (DRAM) chips, forcing most US companies, including Intel, to withdraw from the market after 1985. Already a powerhouse in semiconductors before the Japanese challenge, Intel re-emerged even stronger in the 1990s as the leader in microprocessors, a product in which it was the pioneer in the early 1970s and for which during the 1980s it secured the franchise for the IBM PC and the subsequent IBM clones.

Organizational integration was critical to the Japanese challenge in DRAMs. In a comparative study of Japanese and U.S. semiconductor manufacturing Daniel Okimoto and Yoshio Nishi (1994, 1993) argued that “[p]erhaps the most striking feature of Japanese R&D in the semiconductor industry is the extraordinary degree of communication and ‘body contact’ that takes place at the various juncture and intersection points in the R&D processes – from basic research to advanced development, from advanced development to new product design, from new product design to new process technology, from new process technology to factory-site manufacturing, from manufacturing to marketing, and from marketing to servicing.” They contrasted the organization of Japanese semiconductor manufacturing with that in the United States, where design engineers had the glamour jobs and manufacturing engineers were viewed as “second-class citizens”.

Value added in microprocessors is in product design that determines the use of the product. Value added in memory chips is in process engineering that reduces defects and increases chip yields. By the 1980s Japanese companies such as Fujitsu, Hitachi, and NEC were able to achieve yields that were 40 percent higher than the best US companies. Central to this advantage was the development of advanced semiconductor manufacturing technology, itself the result of the organizational integration of engineers into manufacturing activities and interactive learning with equipment suppliers. In 1987, fearful that it would become totally dependent on the Japanese for semiconductor manufacturing equipment, the US Semiconductor Industry Association launched the manufacturing technology research consortium, Sematech, with support from the US Department of Defense and exemption from the antitrust laws on the grounds that national security was at risk.

More generally, and contrary to conventional wisdom, in terms of support for technology development, it was the United States government, not the Japanese government, that was the more formidable “developmental state”. Indeed, as I elaborate below, the US New Economy business model, of which a Silicon Valley company such as Intel is an exemplar, would never have emerged without massive government investments in the post-World War II decades in the electronics industry. In contrast, it was in the realm of finance, not technology, that the Japanese state played a developmental role by structuring the banking system as an investment institution to fund the high-speed growth

of industrial enterprises during the postwar decades. While stable shareholding gave corporate managers strategic control over the allocation of corporate revenues in the post-World War II decades, even with low payout ratios corporate retentions were grossly insufficient to finance the capital requirements of Japanese companies in the era of high-speed growth. Using retentions as a foundation, most of the financial commitment of Japanese companies came from bank loans, with the companies' debt-equity ratios often at 3:1 and at times higher. In borrowing these funds, each major industrial company had a "main bank" whose job it was to convince other banks to join it in making loans to the company and to take the lead in restructuring its client company should it fall into financial distress.

During the 1980s many economists both in Japan and the West who looked to agency theory to understand the Japanese firm, incorrectly identified the "main bank system" as *the* central institution of corporate governance (see Aoki and Patrick 1994). They contended that the main bank system enabled financial interests as principals – in the Japanese case the banks rather than shareholders – to monitor the behavior of managers as agents. In funding the growth of Japanese companies, however, the Japanese banks were relatively passive agents of government development policy, with "overloans" being made by the Bank of Japan to its member banks for providing highly leveraged finance to growing industrial companies. The Japanese banks never had any significant capabilities to monitor these companies, as evidenced by their rush to make speculative loans during the Bubble Economy of the late 1980s and their persistent bad-debt burdens since the bubble burst in 1990. Japanese banks, that is, played a critical role in providing financial commitment, but no significant role in the exercise of strategic control.<sup>8</sup>

What then ensured that the top executives of Japanese companies would exercise strategic control for the benefit of their companies rather than for their own personal gain? It was not the board of directors, which in Japan was almost entirely made up of inside executives, and indeed functioned more as a body for bestowing honorific positions on ageing top managers than for corporate decision-making or oversight. As in the US Old Economy model at its innovative peak, the behavior of Japanese top managers was regulated by the cohesive organizations over which they presided, and in particular by the institution of permanent employment with the responsibility for maintaining the competitiveness of the company that it entailed. Over time, norms of corporate behavior evolved in Japan that no top executive could defy. Even though permanent employment is not a contractual relation at the level of the firm, under the "doctrine of abusive dismissal", courts have demanded that employers demonstrate, subject to strict criteria, "a business need" for layoffs, and in the last half of the 1990s judges ruled that dismissals were unjustified in 80 percent of the cases brought before them (Ouchi 2002). By way of contrast, in the late 1980s, in the wake of a rash of corporate downsizings, the US labor movement had to wage a difficult, but ultimately successful, battle to get the US Congress to pass a law requiring a company to give

---

<sup>8</sup> Hence my use of the more modest term "main bank lending" rather than the more grandiose term "main bank system" to describe this institution.

workers in plants with 100 or more employees 60-days' notice that the facility was going to be closed.

## 5. Varieties of Western European Capitalism

### *a. The British model<sup>9</sup>*

While the power of the US Old Economy business model declined during the last two decades of the 20<sup>th</sup> century, it occupied a position of global dominance in the post-World War II decades. The innovative power of the US Old Economy model was particularly evident when placed in competition with the much more hierarchically and functionally segmented business model that prevailed in Britain. Coming into the twentieth century, Britain had been the world leader in GDP per capita before it was surpassed by the United States. In 1932-1935 and also in 1938, with the US mired in the Great Depression, Britain once again emerged briefly with the world's highest GDP per capita, and then (among the large advanced economies) remained second to the US until the late 1960s when it was overtaken first by France and then, in some years, by Western Germany, Italy, and Japan. From the late 1960s to the present Britain's GDP per capita has been about 70 percent of that of the United States (Maddison 2004).

As an industrial nation that been the “workshop of the world” in an era of proprietary capitalism, Britain was slow to make the transition to managerial capitalism. Although coming into the post-World War II period, Britain had a presence in all of the major consumer and capital goods industries, ranging from steel to cars and from machine tools to electronics, its companies generally failed to remain competitive in global markets. As depicted in Figure 4, a prime reason was the organizational segmentation that characterized the British business model. Top executives of major British companies tended to be segmented from the rest of the organization, and technical specialists tended to be functionally segmented from one another.

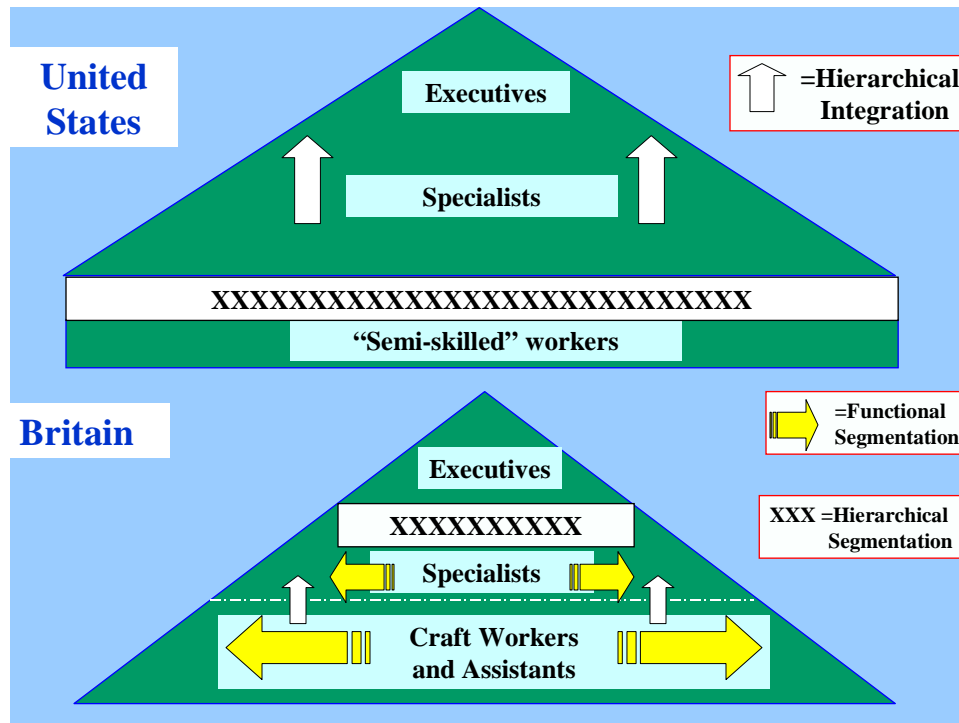
The hierarchical segmentation of top executives hampered their ability to invest in organizational capabilities in response to innovative challenges. The historical origins of this segmentation can be found in the interaction between the control of British industrial enterprises and the structure of British society during the first half of the twentieth century. Families retained control of British firms, and yet, as leading industrialists, they did not constitute an elite social class that could reshape Britain's economic institutions to support the new requirements of innovative enterprise. British industrialists of the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were generally middle class, with their home bases in the industrial districts of the Midlands and the North. Large accumulations of wealth in Britain were in the hands not of these industrialists but of financiers based in the City of London. Using upper-class educational institutions as means of entry and marriages as instruments of merger, wealthy financiers joined with the old landowning elite (many of

---

<sup>9</sup> This section draws on Hannah 1983; Elbaum and Lazonick 1986; Sorge and Warner 1986; Lazonick 1986 and 1990, ch. 6; Daunton 1992; Chandler 1990; Walker 1993; Dore et al. 1999; Owen 1999; Coates 2002, Vol. III, Part II; Cheffins 2004; Franks et al. 2004.

them grown recently wealthy through rising land values) to form a new aristocracy. The wealth of this restructured upper class was not, as was increasingly the case in the United States and Germany, based on the application of science to industry and the resultant profits from technological innovation. Rather, the bases of wealth in financial activities were social connections and acquired reputations. Hence the importance for ultimate economic success of family connections and associations made at elite educational institutions – the ancient universities of Oxford and Cambridge as well as public schools such as Eton and Harrow.

**Figure 4. US Old Economy and British business models compared**



Lacking industrial roots, the aristocracy who controlled these elite institutions during the era of the second industrial revolution had no need for an educational system that developed technologists. They valued the study of science as a branch of sophisticated knowledge but had no interest in its application to industry. Indeed they positively resisted the notion that a concern with technology had any place in an elite education; its function was to set them apart from middle-class industrialists, not to bring them in closer contact with them. By the same token, successful industrialists who accumulated sufficient fortunes to join Britain’s upper class had little interest in challenging the anti-technology bias of Britain’s elite educational system. As individuals, they wanted to elevate their social standing, not transform British social institutions. As Donald Coleman (1973) put it in a well-known essay, successful British industrialists sought to become “gentlemen” rather than “players”.

In seeking to move up the social hierarchy, successful industrialists did not abandon industry for finance; barriers to entry into finance and related pursuits were high precisely because of the centrality of social connections and reputation to the success of the financial enterprise. Rather control over an established industrial enterprise remained the foundation of their material wealth and the most assured means of passing it on to their heirs. Throughout the first half of the 20<sup>th</sup> century, they handed control over their businesses to their sons and sons-in-law, thus perpetuating the relation between ownership and control. In many industries, mergers among family firms led to a decline of the ownership stake of any single family in major British companies. Now, however, an amalgam of family firms, each with its own minority stake, occupied, and in effect divided, positions of strategic control in these companies, as family members continued to dominate the boards, including executive director positions. In an era in which the “managerial revolution” professionalized positions of strategic control in not only in the United States but also Germany and Japan, the managers of major British enterprises remained by almost all accounts amateurs.

The larger owner-controlled firms that had to go beyond family members to recruit higher-level managers gave preference to graduates of Oxbridge. A study of the career mobility of British industrial managers done in the mid-1950s found that the most advantageous educational qualification was an arts degree from Oxford or Cambridge (Acton Society Trust 1956, 8, 128). By the 1960s, the emphasis had turned toward science degrees from the elite universities. But scientists and engineers from provincial universities remained second-class citizens within industrial enterprises, with little if any prospect of rising from the specialist to executive level.<sup>10</sup> Given this hierarchical segmentation, societies of chemical and electrical engineers set their own qualifications for university graduates to enter their professions. In contrast, in the United States corporate involvement with the university system itself set the professional standards for these specialists. The result in Britain was a functional segmentation among technical specialists that impeded organizational learning within enterprises.

The problem of functional segmentation extended to the shop floor where craft workers jealousy guarded their realms of craft control. In machine-based industries there was some hierarchical mobility of craft workers to specialist positions, but this mobility only served to reinforce the hierarchical segmentation of craft control from corporate control and functional segmentation among technical specialists. These shop-floor workers were more highly skilled than their US counterparts, but they used these skills to preserve their craft prerogatives embodied in “custom and practice”. Meanwhile, given the weakness of British managerial organization, those who exercised strategic control over British industrial firms made little attempt to develop shop-floor skills as part of an innovative investment strategy, as was being done for example in Germany and Japan. Recognizing the barriers that craft demarcations posed to raising productivity, during the 1960s many companies sought to reorganize their production processes by granting wage increases to groups of workers in exchange for the elimination of craft rules. Studies of these experiments in “productivity bargaining” found that the result was often a proliferation of

---

<sup>10</sup> For an important exception that proves the rule, see Lazonick and Prencipe 2005.

*new* craft rules created by groups of workers who would then agree to drop these rules in exchange for higher pay.

This segmented structure of business organization remained in place in Britain during the post-World War II decades. In the 1950s and 1960s a hostile takeover movement as well as nationalizations challenged the persistence of family control. As a defense against takeover, incumbent managers often increased dividend payments, while in the aftermath of a successful takeover, new management often did the same. One result was that, notwithstanding the relatively poor performance of British industrial companies, their dividend payout ratios were high relative to those in other developed nations, including the United States. Indeed, in the 1950s and 1960s, relatively high dividend yields induced institutional investors such as pension funds and insurance companies to allocate considerable proportions of their portfolios to corporate equities. Britain's financial community, centered in the City of London, remained much more concerned with reaping the returns from the investments that British business corporations had made in the past than with providing these companies with financial commitment for innovative investment strategies that could generate new sources of returns in the future.

Government monetary policies during the Thatcher era of the 1980s pushed British industry to the wall, and thus helped to resolve its competitive shortcomings by forcing many firms organized along the British model to shut down. Subsequently Japanese and Korean companies revived the British industrial base by setting up plants in Britain to serve as platforms for exports to European markets. Run according to distinctive business models imported from their own countries, these foreign direct investments have enjoyed considerable success, in the process helping to bring modern management methods to Britain.

### ***b) The German model***<sup>11</sup>

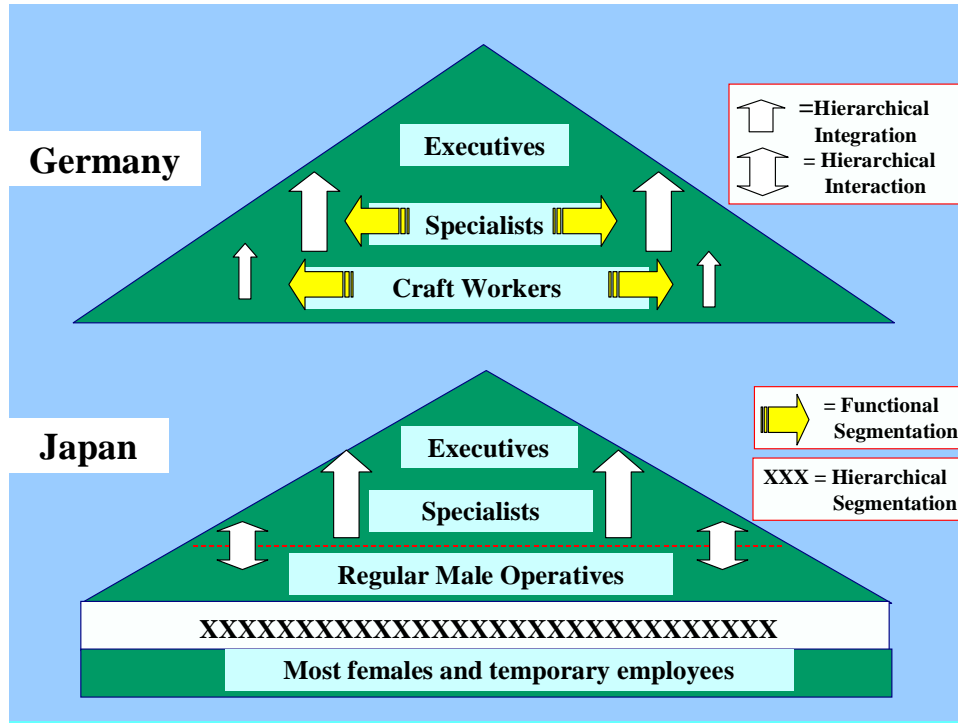
As depicted in Figure 5, the German model that evolved in the decades after World War II was characterized by a high degree of hierarchical integration, but considerable functional segmentation. The top executives of high-tech German firms are generally scientists or engineers who acquired their positions through careers within the company. They develop and implement their enterprise strategies through managing boards (*Vorstand*) made up of inside executives, while these strategies must gain the approval of supervisory boards (*Aufsichtsräte*). Since the early 1950s, German companies have been governed by a system of codetermination (*Mitbestimmung*) that includes employee representation on the supervisory board as well as the right to elect work councils (*Betriebsräte*) to engage management at the enterprise and plant levels. In companies with more than 2000 employees, the seats on the supervisory board are shared equally between shareholder and worker representatives, with the chairman of the board being a shareholder representative who can exercise a tie-breaking vote. Employees exert more

---

<sup>11</sup> This section draws on Maurice et al. 1986; Sorge and Warner 1986; Jürgens et al. 1993; Herrigel 1996; Streeck 1997; Cooke and Morgan 1998, ch. 4; Casper et al. 1999; O'Sullivan 2000a, chs. 7-8, and 2003; Coates 2002, Vol. II, Part III; Jürgens et al. 2002; Franck and Opitz 2003; as well as many references cited in these works.

direct, and arguably greater, influence over a company’s investment activities through works councils, which participate in decisions related to issues of remuneration, work conditions, and labor allocation, and have the right to receive information concerning the firm’s investment strategy and financial condition.

**Figure 5. German and Japanese business models compared**



In German companies, both shop-floor and managerial employees are well-educated and trained, with entry into the world of employment typically being via a three-year “dual apprenticeship system” through which workers receive a combination of formal education and on-the-job training in a particular specialization. This skill-formation system is controlled at the regional level through the collaboration of employer and employee associations as well as relevant government ministries. Larger employers contribute disproportionately to funding the apprenticeships, thus in effect subsidizing the training of employees for regional small and medium sized firms.

A great strength of German industry in the post-World War decades was the regional accumulation of skilled labor that supported symbiotic production in enterprises of different sizes, so that the ability to produce high-quality goods resided in both large managerial corporations and the smaller *Mittelstand* within the regional economy. A prime example of such a region was Baden-Württemberg, home to companies such as Robert Bosch, the Mercedes division of Daimler-Benz, and Porsche, and with a *Mittelstand* sector that focuses on engineering and metalworking, especially for the automobile industry. The leading firms in the regions played an important role in structuring the innovative contributions of medium-sized suppliers, while collective

support for regional innovation came from financial and technology institutions organized by regional and municipal governments, non-profit organizations, and business associations.

As a result of its governance and employment institutions, German production workers have possessed high levels of skill. In developing and utilizing these skills over the course of their careers, even shop-floor employees often have had the opportunity of moving up the company hierarchy through their area of specialization into the managerial ranks. Thus one has found in German companies a high degree of hierarchical integration of employees within an area of specialization, a mode in integration that is conducive to the production of high quality, even if high cost, products. During the post-World War II decades, this mode of organizational integration, which differed markedly from the US system of hierarchical segmentation between managers and workers, provided the foundation for Germany's global leadership in high-quality manufacturing.

By relying on career-long functional specialization as a mode of hierarchical integration, however, the German business model fostered functional segmentation that left its mechanical and electrical engineering companies vulnerable to competitive challenges from more organizationally integrated rivals. In the first half of the 1990s, the Japanese were able to build on their advances in process innovation in the automobile and machine tool industries to move from the lower ends of the markets, in which they had already confronted US hegemony in mass production, into higher quality luxury car and precision machine tool markets where they matched the Germans in quality and beat them in cost (see Figure 5). The result was, in 1993-94, a crisis in these sectors in Germany, with dramatic reductions in employment and attempts, with some success, to learn from the Japanese. At the same time, however, Germany was burdened by the need to integrate East Germany, whose industry possessed far less productivity, into the unified nation.

In both developing its productive capabilities and responding to these challenges, West German firms had secure control over their internal revenues, which formed the foundation of their financial commitment. The institutional foundations for that financial commitment went back to the late 19<sup>th</sup> century when the "Great Banks" had functioned as venture capitalists to German industry. The banks lent money to promising industrial firms and then, if and when these firms were well-established, floated "bearer" shares in the firms among wealthy bank customers in order to enable the firms to pay back the bank loans. These bank customers in turn deposited the shares with the banks that then became the "bearers" of these shares with the right to exercise the votes attached to them. In this way, the banks continued both to fund the growth of German firms and to protect them from outsiders who might try to lay claim to corporate revenues. The banks have exercised this protective role and kept themselves informed on the investment strategies of the companies concerned by having members on their supervisory boards. Nevertheless, compared with the high debt-equity ratios that characterized Japanese industrial enterprises in their era of high-speed growth, German firms have been able and willing to grow with much more conservative debt burdens, making them much less dependent on bank borrowing than their Japanese competitors.



Polytechniciens and Enarques spend the first portion of their careers in the civil service before entering, through a process known as “*pantouflage*”, business enterprises as high-level executives. In 1990 45 percent of the *PDGs* (*Président-directeur généraux*) of 200 largest French corporations had come through this system.

The existence of this power elite was critical in aligning business-government relations in the massive restructuring of high-tech industry that was undertaken by the French state in the 1980s and early 1990s. The Mitterrand nationalization program in 1982-83 led to massive amounts of public funds being invested in the modernization of a number of capital-intensive, high-technology companies, including, among others, Compagnie Générale d'Electricité in electrical equipment, Rhône-Poulenc in chemicals, Saint-Gobain-Pont à Mousson in glass, paper, and metals, and the combination of Sacilor and Usinor in steel. With the government typically assuming 100 percent ownership and with members of the *grand corps* in key executive positions, the state exercised strategic control and provided financial commitment to restructure these nationalized companies to compete globally.

Subsequently, beginning in 1986, a number of the nationalized companies were privatized. To ensure that strategic decision-making in the privatized firms would remain under the control of the French elite, French companies agreed to enter into a system of cross-shareholding that created a *noyau dur* (hard core) of stable shareholders. Although in the late 1990s, as discussed below, there was considerable unraveling of this cross-shareholding, the system of recruiting top executives of major French companies remains intact. That system also means, however, that, as depicted in Figure 6, there is a segmentation in terms of organizational learning between these top executives and the rest of the business organization. As Patrick Fridenson (1997, 219-220) has put it: “Most French top managers have no direct experience of shared work with either other managers or workers”. Given their elite positions, however, these top executives tend to be mission-oriented, giving employees a clear understanding of the objectives of the enterprise and an assurance that the resources will be mobilized to carry out those goals. It is for this reason that French companies have been particularly innovative in carrying out large-scale complex projects in areas such as transportation and communication.

Given the way in which top managers of French industrial enterprises have been recruited, the middle managers, or *cadres*, who design a company's products and oversee its operations, have little if any possibility of rising to the top of the companies in which they pursue their careers. In the high-tech sector, these middle managers tend to have engineering degrees with a theoretical orientation toward solving problems within well-defined systems. Below the *cadres* in the enterprise hierarchy are *techniciens*, whose education (a two-year technician diploma) and experience enable them to solve practical industrial problems, and who have traditionally had little opportunity for upward mobility to the cadre ranks (although channels for movement up the hierarchy opened somewhat in the 1990s).

Segmented from the *techniciens* are semi-skilled and unskilled production workers, or *ouvriers*. France entered the post-World War II decades with a domestic population that

was still rural and with a large colonial presence. As French industry expanded in the postwar decades, it drew upon this unskilled labor force for shop-floor work. These workers had a low level of unionization, but were often very militant. One mode of stemming this militancy was the granting of wage concessions. In his study of the evolution of the car manufacturer, Renault, during the post-World War II decades, Michel Freyssenet (1998, 374) shows how, in response to shop-floor conflict, between about 1980 and 1990, “unskilled” workers disappeared from Renault plants as they were reclassified as “skilled” workers, even without any change in the content of their work, so that they could qualify for higher wages. In the corporate restructuring of the 1980s and 1990s, early retirement schemes, funded by the government, eased a large proportion of these workers out of the labor force. More recently, the numbers of shop-floor workers has been further reduced in the major corporations through outsourcing. At the same time, these companies have been upgrading the skills of younger workers, supported by a concerted state effort to increase the proportion of the school-age population who receive the *baccalauréat*, the certificate that permits high-school graduates to continue in higher education.

As for financial commitment, among the advanced economies France has perhaps the most explicitly state-backed system of bank finance of industrial enterprises. As already mentioned, in the 1980s the state took critical enterprises that needed restructuring under its direct ownership and control, and then financed that restructuring as a prelude to reprivatizing these companies on a more globally competitive basis. The fact that the unraveling of the cross-shareholdings of these privatized corporations in the last half of the 1990s resulted in foreign institutional investors buying up significant amounts of shares of French companies led some observers to argue that French companies have become dependent on foreign capital, with a consequent loss of strategic control (see Goyer 2001; Hancké 2001, 330). But, as research by O’Sullivan (2006) has shown, the influx of foreign investors was in response to an ebullient stock market, in part fostered by the willingness of the French corporate elite to permit a more widespread distribution of their companies’ shares. French corporations took advantage of the rising stock market to use their stock as a currency to acquire foreign companies as part of strategy of global expansion. In some cases, the stock was used directly as the acquisition currency; for example, in the United States where many of the acquisitions were done using American Depositary Receipts (ADRs) that permitted the acquired companies to be paid in a stock-based currency denominated in US dollars, while in other cases, the rising stock market facilitated the floating of convertible bonds for acquisition purposes. As O’Sullivan points out, the unraveling of cross-shareholdings left French companies more vulnerable to outside challenges to strategic control. These corporate strategies were not, however, dictated by a dependence on global capital markets for finance. Rather French companies pursued these strategies to increase their presence in the global economy by making use of capital markets, both in France and abroad, toward that end.

## 5. The Rise of the US New Economy Business Model<sup>13</sup>

During the 1970s and 1980s while Japanese enterprises were challenging established US managerial corporations in many industries in which they had been dominant, there was a resurgence of the US information and communications technology (ICT) industries, providing the foundation for what by the last half of the 1990s became known as the “New Economy”. Historically, underlying the emergence of the New Economy were massive post-World War II investments by the US government, in collaboration with research universities and industrial corporations, in developing computer and communications technologies.

By the end of the 1950s, this combined business-government investment effort had resulted in not only the first generation of computers, with IBM as the leading firm, but also the capability of imbedding integrated electronic circuits in a silicon chip, with Fairchild Semiconductor and Texas Instruments in the forefront of creating the technology that would become the standard of the semiconductor industry. Through the early 1960s the US government provided virtually all of the demand for integrated circuits. From the second half of the 1960s, however, a growing array of commercial opportunities for electronic chips induced the creation of semiconductor startups. A new breed of venture capitalist, many with prior managerial or technical experience in the semiconductor industry, backed so many semiconductor startups clustered in the region around Stanford University that by the early 1970s the district was dubbed “Silicon Valley”. Innovation in semiconductors, and especially the development of the microprocessor -- in effect a computer on a chip -- created the basis for the emergence of the microcomputer industry from the late 1970s, which in turn resulted in the enormous growth of an installed base of powerful “hosts” in homes and offices that made possible the Internet revolution of the 1990s.

Intense, and often informal, learning networks that transcended the boundaries of firms contributed to the success of Silicon Valley. Like the British industrial districts that Alfred Marshall (1920, Book IV, Ch. X) had described a century earlier, there is no doubt that, in Silicon Valley, “the mysteries of the trade...were in the air”. But in its strategy, organization, and finance, the New Economy business model (see Figure 7) that emerged in Silicon Valley differed significantly from the Marshallian industrial district. Those who have exercised strategic control have been professional managers, typically with engineering backgrounds. Organizational learning occurred across firms, as AnnaLee Saxenian (1994) has stressed, but it also, and I would argue more fundamentally, occurred within firms that integrated skill bases of highly educated personnel, enabling some particularly innovative enterprises such as Hewlett-Packard, Intel, Sun Microsystems, Oracle, and Cisco Systems that grew to employ tens of thousands of employees to drive the development of the region.

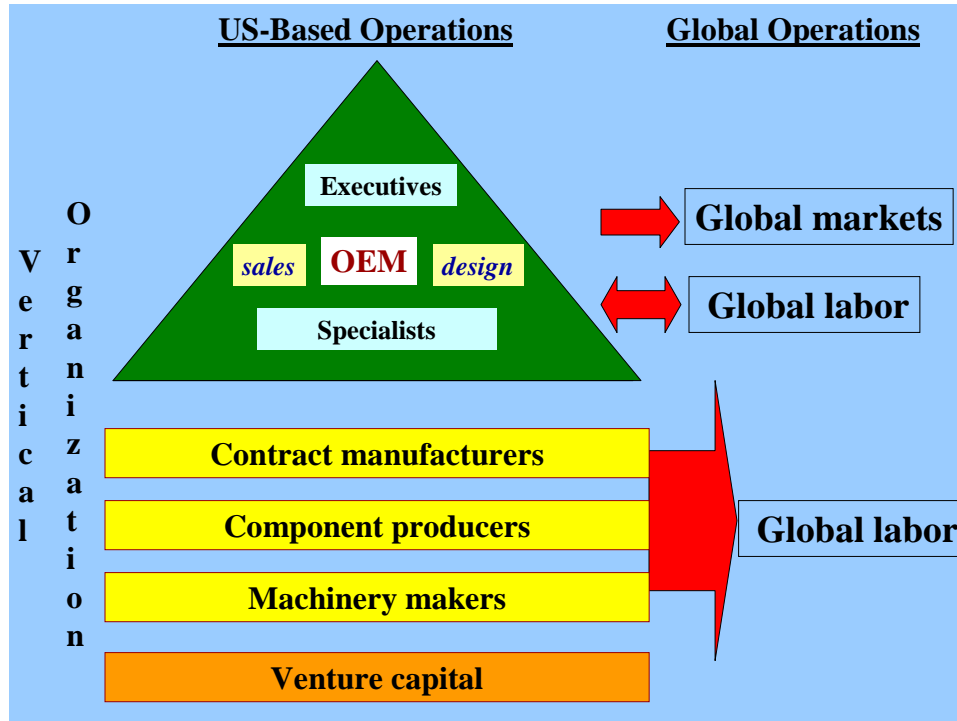
In 2005 the top 500 US-based companies by sales included 20 ICT firms founded no earlier than 1959 that had been neither spun off from nor merged with an Old Economy firm. These 20 companies had revenues ranging from \$55.9 billion for Dell Computer to

---

<sup>13</sup> This section draws upon Lazonick 2006a, 2006b and 2006d, and references contained therein.

\$5.3 billion for Yahoo!, with an average of \$15.3 billion. Their headcounts ranged from 99,900 for Intel to 5,680 for Google, with an average of 36,062. Twelve of these 20 companies were based in Silicon Valley, another three in Southern California, and the others in five different states around the United States.

**Figure 7. The US New Economy business model**



Innovative New Economy companies have tended to grow large by upgrading and expanding their product offerings within their main lines of business, and thus far at least have not engaged in the indiscriminate diversification into unrelated technologies and markets that characterized, and ultimately undermined the performance of, many leading Old Economy companies in the 1960s and 1970s. At the same time, New Economy companies have become less vertically integrated than Old Economy companies because equipment manufacturers such as Cisco, Dell, and Sun Microsystems have focused their investment strategies on activities that require organizational learning in their core competencies, while outsourcing activities that, as is the case with semiconductor fabrication, are too expensive and complex to be done in-house, or, alternatively, as is the case with printed circuit board assembly, have become routine.

Some of the largest ICT companies in the United States are upstream electronics components suppliers, most of which, in terms of the social conditions of innovative enterprise, can be classified as New Economy firms. The world's five largest contract manufacturers – Flextronics, Solectron, Sanmina-SCI, Celestica, and Jabil Circuit -- to whom equipment manufacturers outsource the mass production of printed circuit boards and other components, employed a total of 260,000 people at the end of 2005. A main

competitive advantage of the leading contract manufacturers is their ability to relocate production processes that have become cost-sensitive and routine to lower wage global locations. Indeed, in the 1960s and 1970s, well before the rise of the contract manufacturers as an outsourcing option for OEMs, growing Silicon Valley companies took the lead in offshoring more routine production processes, especially to Asia.

While strategy and learning remained centered in the United States, the New Economy business model was able to tap into a global labor supply. During the 1980s and 1990s growing numbers of foreigners, especially from Asia, obtained graduate degrees in science and technology from US universities, and then entered the US labor force, often obtaining immigrant status as permanent residents. Additionally, during the 1990s large numbers of foreigners gained production experience in US high-technology industries under non-immigrant visa programs. The H-1B program enables a non-immigrant whose skills are purportedly unavailable in the United States and has at least a bachelor's degree to work in the United States for up to six years. Seventy percent of H-1B visa holders have science or technology degrees, and two-fifths to one half in any given year in the 2000s have come from India (the next largest national group is from China, at less than ten percent). The L-1 visa program permits a company with operations in the United States to transfer foreign employees to the United States to acquire work experience for five to seven years. In the 2000s Indians have dominated the L-1 visa category. In 2001 there were an estimated 1.5 million well-educated non-immigrants on H-1B and L-1 visas working in the United States. Many have remained in the United States by obtaining permanent resident status, but most have returned to their native countries with valuable industrial experience that can be used to start new firms and, more typically, to work as technical specialists for indigenous or foreign companies. The availability of this highly educated and experienced global labor supply has facilitated a step increase in the 2000s in offshoring by US ICT companies to Asia, especially to India and China. These offshored activities increasingly require not only routine work but also organizational learning that was previously only carried out in the United States.

Within the United States, however, new firm creation remains important in high-tech industries, with much of it backed by venture capital. Through its success in funding high-tech startups in Silicon Valley from the 1960s, venture capital evolved into an industry in its own right with Silicon Valley remaining the most important location for venture-backed firms. The founders of New Economy startups have typically been engineers who have gained specialized experience in existing firms, although in some cases they have been university faculty members intent on commercializing their academic knowledge. While some of these entrepreneurs have come from existing Old Economy companies, where it was often difficult for their new ideas to get internal backing, New Economy companies themselves became increasingly important as sources of new entrepreneurs who left their current employers to start new firms.

Typically the founding entrepreneurs of a New Economy startup sought committed finance from venture capitalists with whom they shared not only ownership of the company but also strategic control. Besides sitting on the board of directors of the new company, the venture capitalists would generally recruit professional managers, who

would be given company stock along with stock options, to lead the transformation of the firm from a new venture to a going concern. This stock-based compensation gave these managers a powerful financial incentive to develop the innovative capabilities of the company to the point where it could do an IPO or private sale to an established company. But, both before and after making this transition, their tenure with, and value to, the company depended on their managerial capabilities, not their fractional ownership stakes.

Key to making this transition from new venture to going concern is the organizational integration of an expanding body of technical and managerial “talent”. What came to be known as “broad-based” employee stock option plans became an important mode of compensation, usually as a partial substitute for cash salaries, for a startup to attract these highly mobile people and then retain their services so they could contribute to the firm’s learning processes. The underlying stock would become valuable if and when the startup did an IPO or private sale to a publicly listed company, thus enabling the startup’s privately held shares to be transformed into publicly traded shares. Shortening the expected period between the launch of a company and an IPO was the practice of most venture-backed high-tech startups of going public on the NASDAQ electronic exchange (founded in 1971 by the National Association of Securities Dealers to provide automated stock quotations for stocks traded over-the-counter), with its much less stringent listing requirements than the Old Economy New York Stock Exchange. If and when the firm did an IPO or was acquired by another publicly listed company, the venture capitalists could sell their shareholdings on the stock market, thereby exiting from their investments in the firm, while entrepreneurs could also transform some or all of their ownership stakes into cash. With the company’s stock being publicly traded, employees who exercised their stock options could easily turn their shares into cash.

During the 1980s and 1990s the liberal use of stock as a compensation currency, not only for top executives as had been the case in Old Economy companies since the 1950s, but also for a broad base of non-executive personnel became a distinctive feature of New Economy firms. For example, Cisco Systems, which grew from about 200 employees at the time of its IPO in 1990 to 38,000 employees in 2001, as it became the dominant firm in the Internet equipment market, awarded stock options to all of its employees, so that by 2001 stock options outstanding accounted for over 14 percent of the company’s total stock outstanding. Since Cisco outsourced almost all of its manufacturing, the people in the skill base to whom these options were awarded were almost all highly educated employees who were potentially highly mobile on the labor market.

Besides using their own stock as a compensation currency, during the 1990s some New Economy companies grew large by using their stock, instead of cash, to acquire other, smaller and typically younger, New Economy firms in order to gain access to new technologies and markets. Cisco mastered this growth-through-acquisition strategy. From 1993 through 2003 Cisco made 82 acquisitions valued in nominal terms at \$39.2 billion, of which over 98 percent was paid in the company’s stock rather than cash. In 1999 and 2000 alone, Cisco did 41 acquisitions for \$26.7 billion, with over 99 percent paid in stock.

At the same time Cisco conserved cash by paying no dividends, a mode of financial commitment that also distinguished New Economy from Old Economy companies. As a result, Cisco's astonishing growth in the 1990s occurred without the company taking on any long-term debt. Nevertheless, with the bursting of the New Economy bubble from mid-2000, Cisco, like many other successful New Economy companies that use their own stock as a combination and compensation currency, spent billions of dollars repurchasing its own stock to support its sagging stock price. Even during the boom, when stock prices were rising, the extent to which New Economy companies issued stock to make acquisitions and compensate employees meant that some of them spent billions of dollars on stock repurchases. For example, from 1997 through 2000 Intel repurchased \$18.8 billion of its own stock while paying out \$1.2 billion in dividends, and Microsoft repurchased \$13.4 billion while paying out \$800,000 in dividends. By way of comparison, R&D spending over these same four years was \$14.2 billion at Intel and \$11.2 billion at Microsoft. From 2001 through 2005, to support their sagging stock prices and offset dilution from the exercise of stock options, Intel repurchased \$30.2 billion of its own stock; Microsoft, \$31.4 billion; and Cisco, \$27.2 billion (including \$10.2 billion in 2005 alone). Joining these New Economy companies in this repurchase binge, with \$22.7 billion spent in 2001-2005, has been IBM, the pre-eminent Old Economy information technology company that during the 1990s had successfully adopted the New Economy business model.

One can argue, as New Economy executives do, that the repurchase of stock supports the innovation process; by boosting a company's stock price, repurchases give a high-growth company like Cisco a more valuable private "currency" with which both to acquire smaller technology companies, using stock instead of cash, and to reward employees through stock option awards. In recent years, however, many New Economy companies, including Cisco, have used cash rather than stock to make acquisitions. In the 2000s, moreover, the gains from exercising stock options are going even more disproportionately to a company's top executives than to average employees than they were in the 1990s. At Cisco, for example, the five highest paid executives *each* reaped an *annual* average of \$24.1 million in gains from the exercise of stock options in 1996-2000, and \$8.8 million in 2001-2005. Excluding these returns to the five highest paid, Cisco employees each received an average of \$151,000 per year from the exercise of stock option in 1996-2000 and \$37,000 in 2001-2005. It may be that stock repurchases support the innovation process in a company like Cisco, but it is also clear that, for the sake of their own remuneration, top executives have a strong interest in stock repurchases, especially in a period such as the first half of the 2000s in which stock prices were much less supported by market speculation than they were in the last half of the 1990s. More generally, whatever the other possible benefits of a company's stock market performance, the massive gains that top executives reap from the exercise of stock options can easily explain their obsession with their company's stock price, manifested by their willingness to allocate hundreds of millions or even billions of corporate dollars per year to the repurchase of corporate stock.

In their discussion of the United States as a "liberal market economy", Hall and Soskice (2001, 27-29) argue that corporate executives of US companies focus on stock-price

performance because of the fear of hostile takeover via the “market for corporate control”. This phenomenon was a prominent corporate governance issue in the 1980s as part of the restructuring of Old Economy companies, many of which had grown too large or had lost out in competition to foreign competition. Hostile takeovers, and the corporate raiders that perpetrate them, are, however, extremely rare in the New Economy business model. In New Economy firms, the ideology of “maximizing shareholder value” is driven by the interests of incumbent managers whose own pay depends on stock options, and who have also grown accustomed to the use of stock as a combination and compensation currency (Lazonick and O’Sullivan 2000a; Carpenter et al 2003). Note that in general New Economy companies do not depend on the stock market to supply their companies with cash. On the contrary, with their massive stock repurchases, New Economy executives supply cash to the stock market in an effort to support – one could even say manipulate – their company’s stock price.

Along with their argument that in “liberal market economies” equity markets determine corporate investment behavior, Hall and Soskice (2001, 31) also posit that highly fluid labor markets determine the access of firms to innovative capabilities. They contend, for example, that “in large measure, [technology transfer] is secured through the movement of scientists and engineers from one company to another (or from research institutions to the private sector) that fluid labor market facilitate.” Relatedly, they argue that markets in technology set industry-wide technology standards, facilitating the entry of new firms into an industry.

While fluid labor markets for high-tech personnel and industry-wide technology standards are prominent features of the New Economy business model, in historical perspective these markets in labor and technology are outcomes rather than causes of the success of innovative enterprise. Industry-wide technology standards, as distinct from the in-house proprietary standards that prevailed in the Old Economy, have made it both possible and often desirable for a high-tech company to recruit employees with work experience with other companies. Frequent changes in industry standards, moreover, create a bias on the part of companies toward the hiring of younger employees. It has, however, been leading enterprises, not markets, that have created these industry-wide standards. In the US information technology industries, the key firm in effecting this transition from in-house to industry-wide standards was IBM, a company that employed almost 400,000 people, when it moved into the microcomputer industry in the early 1980s. In making this strategic move, IBM gave the microprocessor franchise to Intel (founded in 1968) and the operating system franchise to Microsoft (founded in 1975). By the end of the 1980s these two companies had set the industry standards. Cisco Systems (founded in 1984) played the same role in data-communication equipment, an industry in which it had a 75 percent market share by the late 1990s. In fiscal 2005 Intel had \$38.8 billion in revenues in 2005 and employed 99,900 people; Microsoft had \$39.8 billion and employed 61,000 people; and Cisco had \$24.8 billion in revenues and employed 38,400 people.

Given industry-wide instead of in-house standards, in the 1990s IBM refashioned its R&D system and patenting activity to enhance its position in cross-licensing of

technology with other firms. In the process IBM became by far the leading patenter in the United States. Over the past two decades IBM's competitive strategy has had far more influence on the creation of markets in technology than vice versa. To enhance its ability to gain access to industry-wide knowledge, in the early 1990s IBM deliberately rid itself of its renowned system of "lifelong employment" and successfully remade itself as a New Economy company that favored the recruitment of younger employees with experience with other companies rather than the career-long retention of "organization men". In 2005 IBM had revenues of \$91.1 billion, and employed more than 329,000 people.

It was to lure scientists, engineers, and managers away from secure career employment with Old Economy companies such as IBM, AT&T, General Electric, and Hewlett-Packard that in the 1980s New Economy startups offered broad-based stock option plans. The point of these plans, and of the larger systems of compensation and promotion of which they were a part, was, however, not simply to attract "talent", but also to retain and tap the productive capabilities of these employees. The companies that were most successful in managing the fluid labor market for high-tech personnel were those that, having employed them, were able to integrate them into collective and cumulative learning processes. While an employee cannot hold out the expectation of career employment with an Intel, Microsoft, or Cisco, these high-growth companies nevertheless offer superior career-building opportunities to employees and have low rates of labor turnover. When, moreover, entrepreneurial employees leave these companies to form their own firms, they often do so not as competitors but by developing complementary products. Indeed such people may even be able to secure financial backing from the internal venture capital divisions of the companies that they have decided to leave. In short, an understanding of the dynamics of innovative enterprise is critical for understanding the dynamics of high-tech labor markets.

## **6. Innovative Enterprise and Economic Development**

In 1967 the French journalist, Jean-Jacques Servan-Schreiber's best-selling *Le Défi Américain* [The American Challenge] warned European nations of the need to unify to avert the dominance of their economies by US corporate power. In the same year, on the other side of the Atlantic, the US economist, John Kenneth Galbraith, published his best-selling *The New Industrial State*, in which he assumed that the prevailing US business model had achieved a degree of dominance that was impervious to external threat. Both Servan-Schreiber and Galbraith were acute observers of contemporary reality, whose books on US corporate power in the immediate post-World War decades deserved the wide readership that they achieved. Both books raised important questions about the relation between corporate governance institutions and economic development in the advanced economies. Neither book, however, provided an accurate guide to the future of corporate governance and performance. Their authors did not foresee how the US business model that prevailed in the 1960s would itself be challenged in the decades to come, in part because of its own internal weaknesses and in part because of more powerful business models emanating from abroad. Neither author, for example,

envisioned the impending rise of the Japanese as powerful corporate competitors, but in this oversight in the late 1960s they were hardly alone.

In historical retrospect, as outlined in this paper, we can now see that in the post-World War II decades there were a number of contending business models in the process of evolution in the developed national economies. During this postwar reconstruction period, corporations based in these different nations had, to a greater or lesser extent, privileged access to their growing domestic markets. Increasingly in the 1970s and 1980s, however, these different business models competed head-to-head on global markets, and by no means with equivalent capabilities. The distinctive social conditions of innovative enterprise that characterized these different business models go some way toward explaining national competitive performance in globalized industries such as automobiles, electronics, and machine tools circa 1980. In this competition, on the basis of the organizational capabilities that I have depicted in Figures 3 through 7, Japan emerged as the *high-quality, low-cost* producer; Germany as the *high-quality, high-cost* producer; the United States as the *low-quality, low-cost* producer, and Britain as the *low-quality, high-cost* producer, with France somewhere in the middle of this group in terms of quality and cost (see Lazonick and O’Sullivan 1996 and 1997).

If only because of global competition, the business models that I have described in this paper have all undergone change, and we can expect that they will continue to do so. The deficiencies of the British business model, for example, meant that it did not in any significant way survive to the end of the 20<sup>th</sup> century, although that nation still copes with the governance, employment, and investment institutions that are a legacy of the past prevalence of a hierarchically and functionally segmented mode of internal organization. As I have also argued, the dominant US business model has undergone dramatic change; in 2005 one can argue that the evolution of the New Economy business model has had such a profound impact on US governance, employment, and investment institutions that the Old Economy business model, insofar as it exists, is an anachronism; a statement that for lack of understanding of the evolving New Economy business model and a (related) inability to foresee the future, I would not have made a decade ago notwithstanding the fact that I understood that the innovative capacity of the “Chandlerian” managerial enterprise was in decline (compare Lazonick 1994 and 2006a).

During the Internet boom of the late 1990s, when the notion of the “New Economy” came into vogue, the US business model, including the ideology of maximizing shareholder value, became attractive to policy-makers in the “social market economies” of Europe as well as in Japan (Lazonick 1999; Lazonick and O’Sullivan 2000b). Previously Europeans had associated the US Old Economy model with decline, manifested by relentless downsizing and growing income inequality. In contrast, they saw the New Economy model as a generator of innovation and development. There began to be talk about convergence of business models of the developed economies toward the US “ideal”, by which what was generally meant was a business model governed by the principle of maximizing shareholder value.

Although infatuation with this mantra was short-lived in Japan (see Lazonick 1999; Dore 2000), it had staying power in Europe, even convincing some proponents of European social market institutions that US and British pension and mutual funds would starve European companies of investment capital if they failed to take immediate steps to boost their stock prices. As in the United States, many European executives imbibed the shareholder view of the world because they envied their US counterparts for their freedom of action in corporate restructuring and their rich rewards from stock-based compensation. Ultimately European companies adapted certain elements of the New Economy business model such as (on a more constrained level than in the United States) stock-based compensation, the use of stock to acquire other companies (particularly in the French case), and outsourcing of routine activities (see Carpenter et al. 2003; Glimstedt et al. 2006). In terms of the basic social conditions of innovative enterprise, however, the German, French, and Japanese business models have remained intact (see O'Sullivan 2003 and 2006; Lazonick 2005).

Of critical performance to the ongoing development of all of these nations is the interaction between the innovative enterprise and the developmental state. An innovative enterprise develops productive resources to differentiate itself from its rivals, and utilizes the productive resources that it has developed to generate the higher quality, lower cost products that are the source of its competitive advantage. In doing so, the business enterprise makes economic development possible, but it does not necessarily act alone. Government investments in education and research form indispensable foundations for business investments in innovation. Governments may also serve as sources of demand for innovative products in their early stages of development when unit costs tend to be high. Governments may subsidize innovative enterprises directly when the returns to innovation remain so uncertain that business enterprises would not otherwise make the necessary investments. Governments may protect national markets from foreign competition so that enterprises based in the nation can generate revenues, and stay in business, during the period of time that the cumulative innovation process is taking place. Some governments structure the banking system so that it provides the committed finance to businesses that is needed to sustain the innovation process until it can generate financial returns. In short, state subsidy and support is in virtually all places and at virtually all times integral to the innovation process.<sup>14</sup>

Besides supporting innovative enterprise in these ways, governments may also seek to ensure that the outcome of innovative enterprise is indeed economic development; that is, a process that raises the standards of living for more and more people over time. Left to itself innovative enterprise may generate economic growth, but in an inequitable and unstable manner that undermines its contribution to economic development. A challenge for those concerned with the relation between innovation and economic performance is to analyze how, historically and comparatively, governments have both supported

---

<sup>14</sup> On the historical role of the US government in, to take a prime example, the development of computer industry, see Braun and MacDonald 1982; Flamm 1987 and 1988; Leslie 1993; Mowery and Langlois 1996; Norberg and O'Neill 1996; National Research Council, 1999; and Abbate 2000. For a perspective on the interaction of the innovative enterprise and the developmental state as a source of economic growth in the East Asian economies, see Lu 2000, Lazonick 2004b, 2006b.

innovative enterprise and influenced its outcomes to enhance the contribution of innovative enterprise to stable and equitable economic growth.

A theory of innovative enterprise is essential to the analysis of business-government relations in the development process. Otherwise one cannot explain why under some conditions government investments and subsidies are transformed into innovative outcomes while under other conditions they are not. One needs to embed such an explanation in an analysis of the “social conditions of innovative enterprise” – strategic control, organizational, commitment, and financial commitment – as they exist in different nations, in different industries, in different firms, and at different times.

References:

- Abbate, J. (2000). *Inventing the Internet*. MIT Press.
- Abegglen, J. and Stalk, G. (1985). *Kaisha: The Japanese Corporation*. Basic Books.
- Acton Society Trust. (1956). *Management Succession: The Recruitment, Selection, Training, and Promotion of Managers*. Action Society Trust.
- Aoki, M. and Dore, R. (Eds.), (1994). *The Japanese Firm: Sources of Competitive Strength*. Oxford University Press.
- Aoki, M. and Patrick, H. (Eds.), (1994). *The Japanese Main Bank System: Its Relevance for Developing and Transforming Economies*. Oxford University Press.
- Best, M. (1990). *The New Competition: Institutions of Industrial Restructuring*. Harvard University Press.
- Boyer, R. (1997). French Statism at the Crossroads. In C. Crouch and W. Streeck (Eds.), *Political Economy of Modern Capitalism: Mapping Convergence and Diversity* (pp. 71-101). Sage.
- Braun, E. and MacDonald, S. (1982). *Revolution in Miniature: The History and Impact of Semiconductor Electronics*, 2<sup>nd</sup> edition. Cambridge University Press.
- Brody, D. (1993). *Workers in Industrial America*, 2<sup>nd</sup> edition. Oxford University Press.
- Carpenter, M., Lazonick, W. and O'Sullivan, M. (2003). The Stock Market and Innovative Capability in the New Economy: The Optical Networking Industry. *Industrial and Corporate Change* 12, 5, 963-1034.
- Casper, S., Lehrer, M. and Soskice, D. (1999). Can High-Technology Industries Prosper in Germany?: Institutional Frameworks and the Evolution of the German Software and Biotechnology Industries. *Industry & Innovation* 6, 1, 5-24.
- Chandler, A. (1990). *Scale and Scope: The Dynamics of Industrial Enterprise*. Harvard University Press.
- Cheffins, B. (2004). Are Good Managers Required for the Separation of Ownership and Control? *Industrial and Corporate Change* 13, 4, 591- 618.
- Chesnais, F. (1993). The French National System of Innovation. In R. Nelson (Ed.), *National Innovation Systems* (pp. 192-229). Oxford University Press.
- Clark, K. and Fujimoto, T. (1991). *Product Development Performance*. Harvard Business School Press.
- Coates, D. (Ed.), (2002). *Models of Capitalism: Debating Strengths and Weaknesses*, three volumes. Elgar.
- Coleman, D. (1973). Gentlemen and Players. *Economic History Review* 26, 1, 92-116.
- Cooke, P. and Morgan, K. (1998). *The Associational Economy: Firms, Regions, and Innovation*. Oxford University Press.
- Corbett, J. and Jenkinson, T. (1997). How is Investment Financed? A Study of German, Japan, the United Kingdom, and the United States. *Manchester School, Supplement*, 69-93.
- Cusumano, M. (1985). *The Japanese Automobile Industry: Technology and Management at Nissan and Toyota*. Harvard University Press.
- Daunton, M. (1992). Financial Elites and British Society, 1880-1950. In Y. Cassis (Ed.), *Finance and Financiers in European History, 1880-1960* (pp. 123-146). Cambridge University Press.

- Dore, R. (1986). *Flexible Rigidities: Industrial Policy and Structural Adjustment in the Japanese Economy, 1970-1980*. Stanford University Press.
- Dore, R. (1987). *Taking Japan Seriously: A Confucian Perspective on Leading Economic Issues*. Stanford University Press.
- Dore, R. (1990). *British Factory, Japanese Factory: The Origins of National Diversity in Industrial Relations*, 2<sup>nd</sup> edition. University of California Press.
- Dore, R. (2000). *Stock Market Capitalism, Welfare Capitalism: Japan and Germany versus the Anglo-Saxons*. Oxford University Press.
- Dore, R., Lazonick, W. and O'Sullivan, M. (1999). Varieties of Capitalism in the Twentieth Century. *Oxford Review of Economic Policy* 15, 4, 102-120.
- Elbaum, B. and Lazonick, W. (1986). *The Decline of the British Economy*. Oxford University Press.
- Flamm, K. (1987). *Targeting the Computer: Government Support and International Competition*, Brookings Institution.
- Flamm, K. (1988). *Creating the Computer: Government, Industry, and High-Technology*, Brookings Institution.
- Franck, E. and Opitz, C. (2003). Different Higher Education Patterns of Top Managers in the U.S., France, and Germany. University of Zurich Working Paper No. 22, August.
- Franks, J., Mayer, C. and Rossi, S. (2004). Spending Less Time with the Family: The Decline of Family Ownership in the UK. European Corporate Governance Institute Working Paper 35/2004, January.
- Freyssenet, M. (1998). Renault: From Diversified Mass Production to Innovative Flexible Production. In M. Freyssenet, A. Mair, K. Shimuzu and G. Volpato (Eds.), *One Best Way?: Trajectories and Industrial Models of the World's Automobile Producers* (pp. 365-394). Oxford University Press.
- Fridenson, P. (1997). France: The Relatively Slow Development of Big Business in the Twentieth Century. In A. Chandler, F. Amatori and T. Hikino, (Eds.), *Big Business and the Wealth of Nations* (pp. 207-245). Cambridge University Press.
- Galbraith, J. K. (1967). *The New Industrial State*. Houghton Mifflin.
- Glimstedt, H., Lazonick, W. and Xie, H. (2006). The Evolution and Allocation of Stock Options: Adapting US-Style Compensation to the Swedish Business Model. *European Management Review* 3, 3, 1-21.
- Gordon, A. (1985). *The Evolution of Labor Relations in Japan: Heavy Industry, 1853-1955*. Harvard University Press.
- Goyer, M. (2001). Corporate Governance and the Innovation System in France, 1985-2000. *Industry & Innovation* 8, 2, 135-158.
- Hadley, E. (1970). *Antitrust in Japan*. Princeton University Press
- Hall, P. and Soskice, D. (Eds.), (2001). *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford University Press.
- Hancké, B. (2001). Revisiting the French Model: Coordination and Restructuring in French Industry. In P. Hall and D. Soskice (Eds.), *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (pp. 307-334). Oxford University Press.
- Hannah, L. (1983). *The Rise of the Corporate Economy*, 2<sup>nd</sup> edition, Methuen.
- Herrigel, G. (1996). *Industrial Constructions: The Sources of German Industrial Power*. Cambridge University Press.

- Hilary, G. and Oshika, T. (2003). Shareholder Activism in Japan: Social Pressure, Private Cost, and Organized Crime. Hitotsubashi University Center for Economic Institutions Working Paper Series, No. 2003-20.
- Hounshell, D. (1996). The Evolution of Industrial Research in the United States. In R. Rosenbloom and W. Spencer (Eds.), *Engines of Innovation: US Industrial Research at the End of an Era* (pp. 13-85). Harvard Business School Press.
- Hughes, T. (1990). *American Genesis: A Century of Invention and Technological Enthusiasm, 1870-1970*. Penguin.
- Jürgens, U., Lung, Y., Volpato, G. and Frigant, V. (2002). The Arrival of Shareholder Value in the European Car Industry. *Competition and Change* 6, 1, 61-80.
- Jürgens, U., Malsch, T. and Dohse, K. (1993). *Breaking from Taylorism: Changing Forms of Work in the Automobile Industry*. Cambridge University Press.
- Lazonick, W. (1986). Strategy, Structure and Management Development in the United States and Britain. In K. Kobayashi and H. Morikawa (Eds.), *Development of Managerial Enterprise* (pp. 101-146). University of Tokyo Press.
- Lazonick, W. (1990). *Competitive Advantage of the Shop Floor*. Harvard University Press.
- Lazonick, W. (1993). Learning and the Dynamics of International Competitive Advantage. In R. Thomson (Ed.), *Learning and Technological Change* (pp.172-197). Macmillan.
- Lazonick, W. (1994). Creating and Extracting Value: Corporate Investment Behavior and American Economic Performance. In M. Bernstein and D. Adler (Eds.), *Understanding American Economic Decline* (pp. 79-113). Cambridge University Press.
- Lazonick, W. (1995). Cooperative Employment Relations in Manufacturing and Japanese Economic Growth. In J. Schor and J. You (Eds.), *Capital, the State, and Labour* (pp. 70-110). Elgar.
- Lazonick, W. (1998). Organizational Learning and International Competition. In J. Michie and J. Smith (Eds.), *Globalization, Growth, and Governance: Creating an Innovative Economy* (pp. 204-238). Oxford University Press.
- Lazonick, W. (1999). The Japanese Economy and Corporate Reform: What Path to Sustainable Prosperity? *Industrial and Corporate Change* 8, 4, 607-633.
- Lazonick, W. (Ed.), (2002a). *American Corporate Economy*, four volumes, Routledge.
- Lazonick, W. (2002b). Innovative Enterprise and Historical Transformation. *Enterprise & Society* 3, 1, 35-54.
- Lazonick, W. (2003). The Theory of the Market Economy and the Social Foundations of Innovative Enterprise. *Economic and Industrial Democracy* 24, 1, 9-44.
- Lazonick, W. (2004a). Corporate Restructuring. In S. Ackroyd., R. Batt, P. Thompson. and P. Tolbert (Eds.), *The Oxford Handbook of Work and Organization* (pp. 557-601). Oxford University Press.
- Lazonick, W. (2004b). Indigenous Innovation and Economic Development: Lessons from *China's Leap into the Information Age*. *Industry & Innovation* 11, 4, 273-298.
- Lazonick, W. (2004c). The Innovative Firm. In J. Fagerberg, D. Mowery and R. Nelson (Eds.), *The Oxford Handbook of Innovation* (pp. 29-55). Oxford University Press.
- Lazonick, W. (2005). The Institutional Triad and Japanese Development.[Translated into Japanese] in G. Hook and A. Kudo (Eds.), *The Contemporary Japanese Enterprise* (pp. 55-82). Yukikaku Publishing, Volume 1.

- Lazonick, W. (2006a). Evolution of the New Economy Business Model. E. Brousseau and N. Curien (Eds.), *Internet and Digital Economics* (pp. 59-113). Cambridge University Press.
- Lazonick, W. (2006b). Globalization of the ICT Labour Force. In R. Mansell, C. Avgerou, D. Quah and R. Silverstone (Eds.), *The Oxford Handbook on ICTs* (pp. 75-99). Oxford University Press.
- Lazonick, W. (2006c). Innovative Enterprise and Economic Development. In Y. Cassis. and A. Colli (Eds.), *Business Performance in the Twentieth Century: A Comparative Perspective*. Cambridge University Press, forthcoming.
- Lazonick, W. (2006d). The US Stock Market and the Governance of Innovative Enterprise. Working paper, UMass Lowell Center for Industrial Competitiveness, July.
- Lazonick, W. and O'Sullivan, M. (1996). Organization, Finance, and International Competition. *Industrial and Corporate Change* 5, 1, 1-49.
- Lazonick, W. and O'Sullivan, M. (1997). Big Business and Skill Formation in the Wealthiest Nations: The Organizational Revolution in the Twentieth Century. In A. Chandler, F. Amatori and T. Hikino (Eds.), *Big Business and the Wealth of Nations* (497-521). Cambridge University Press.
- Lazonick, W. and O'Sullivan, M. (2000a). Maximizing Shareholder Value: A New Ideology for Corporate Governance. *Economy and Society* 29, 1, 13-35.
- Lazonick, W. and O'Sullivan, M. (2000b). Perspectives on Corporate Governance, Innovation, and Economic Performance. Report to the European Commission (DGXII) under the TSER Programme.
- Lazonick, W. and Prencipe, A. (2005). Dynamic Capabilities and Sustained Innovation: Strategic Control and Financial Commitment at Rolls-Royce plc. *Industrial and Corporate Change* 14, 3, 1-42.
- Leslie, S. (1993). How the West Was Won: The Military and the Making of Silicon Valley. In W. Aspray (Ed.), *Technological Competitiveness: Contemporary and Historical Perspectives on the Electrical, Electronics, and Computer Industries* (pp. 75-89). IEEE Press.
- Lu, Q. (2000). *China's Leap into the Information Age: Innovation and Organization in the Computer Industry*. Oxford University Press.
- Maddison, A. (2004). When and Why Did the West Get Richer than the Rest? Working paper at <http://www.ggdc.net/conf/paper-maddison.pdf>, accessed September 20, 2006.
- Marshall, A. (1920). *Principles of Economics*, 8<sup>th</sup> edition. Macmillan.
- Maurice, M., Sellier, F. and Silvestre, J.J. (1986). *The Social Foundations of Industrial Power: A Comparison of France and Germany*. MIT Press.
- Morikawa, H. (2001). *A History of Top Management in Japan*. Oxford University Press.
- Mowery, D. and Langlois, R. (1996). Spinning Off and Spinning On(?): The Federal Government Role in the Development of the US Computer Software Industry. *Research Policy* 25, 6, 947-966.
- Mowery, D. and Rosenberg, N. (1989). *Technology and the Pursuit of Economic Growth*, Cambridge University Press.
- Myers, S. and Majluf, N. (1984). Corporate Finance and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics* 13, 2, 187-220.

- National Research Council (1999). *Funding a Revolution: Government Support for Computing Research*. National Academy Press.
- Noble, D. (1977). *America By Design: Science, Technology, and the Rise of Corporate Capitalism*. Knopf.
- Norberg, A. and O'Neill, J. (1996). *Transforming Computer Technology: Information Processing for the Pentagon, 1962-1986*. Johns Hopkins University Press.
- Okimoto, D. and Nishi, Y. (1994). R&D Organization in Japanese and American Semiconductor Firms. In M. Aoki and R. Dore (Eds.), *The Japanese Firm: Sources of Competitive Strength* (pp. 178-208). Oxford University Press.
- O'Sullivan, M. (2000a). *Contests for Corporate Control: Corporate Governance and Economic Performance in the United States and Germany*. Oxford University Press.
- O'Sullivan, M. (2000b). The Innovative Enterprise and Corporate Governance. *Cambridge Journal of Economics* 24, 4, 393-416.
- O'Sullivan, M. (2003). The Political Economy of Comparative Corporate Governance. *Review of International Political Economy* 10, 1, 23-72.
- O'Sullivan, M. (2004). What Drove the US Stock Market in the Last Century? INSEAD working paper, May.
- O'Sullivan, M. (2006). Acting Out Institutional Change: Understanding the Recent Transformation of the French Financial System. Wharton working paper, February.
- Ouchi, S. (2002). Change in Japanese Employment Security: Reflecting on the Legal Points. *Japan Labor Bulletin*, 41, 1, at <http://www.jil.go.jp/bulletin/year/2002/vol41-01.htm>, accessed September 20, 2006.
- Owen, G. (1999). *From Empire to Europe: The Decline and Revival of British Industry Since the Second World War*. HarperCollins.
- Penrose, E. (1959). *The Theory of the Growth of the Firm*. Blackwell.
- Rosenberg, N. and Nelson, R. (1994). American Universities and Technological Advance in Industry. *Research Policy* 23, 3, 323-348.
- Sako, M. and Sato, H. (Eds.), (1997). *Japanese Labour and Management in Transition*, Routledge.
- Saxenian, A. (1994). *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Harvard University Press.
- Schmidt, V. (1996). *From State to Market?: The Transformation of French Business and Government*. Cambridge University Press.
- Servan-Schreiber, J.J. (1967). *Le Défi Américain*. De Noël.
- Sorge, A. and Warner, M. (1986). *Comparative Factory Organization: An Anglo-German Comparison of Manufacturing, Management, and Manpower*. Gower.
- Streeck, W. (1997). German Capitalism: Does It Exist? Can It Survive?. In C. Crouch and W. Streeck (Eds.), *Political Economy of Modern Capitalism: Mapping Convergence and Diversity* (pp. 33-54). Sage.
- Tokyo Stock Exchange (2006). Fact Book 2006. TSE.
- UN/ECE (United Nations Economic Commission for Europe). (2000). The boom in robot investment continues – 900,000 industrial robots by 2003. Press release ECE/STAT/00/10, Geneva, October 17, accessed at <http://www.unece.org/press/pr2000/00stat10e.htm>. September 20, 2006.
- Walker, W. (1993). National Innovations Systems: Britain. In R. Nelson (Ed.), *National Innovation Systems* (pp. 158-191). Oxford University Press.

- Whitley, R. (1999). *Divergent Capitalisms: the Social Structuring and Change of Business Systems*. Oxford University Press.
- Whitley, R. (Ed.), (2002). *Competing Capitalisms: Institutions and Economies*, two volumes. Edward Elgar Publishing.
- Yonekawa, S. (1984). University Graduates in Japanese Enterprises before the Second World War. *Business History* 26, 3, 193-218.