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**Sustained Economic
Development**

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1. Sustained Economic Development

The prime objective of national economic policy is to contribute to continuous improvements in the material standards of living of the population. To achieve this objective, national economic policy must promote sustained economic development. The process of economic development depends on innovation -- the development and utilisation of productive resources to generate higher quality, lower cost products than had previously been available. To devise national policies that can promote sustained economic development, policy makers must understand what determines the success or failure of the innovation process.

Underlying the innovation process is, by definition, a learning process; if we already knew how to generate higher quality, lower cost products, then the act of doing so would not require innovation. Learning requires developmental investments in the productive capabilities of both the people doing the learning and the physical resources -- the machines and materials -- with which these people work. These developmental investments determine what types of learning take place, and therefore what types of innovation are possible. These investments are also costly because of the commitments of resources that must be made during the learning process. To engage in innovation and to avoid wasting resources, therefore, developmental investments must be strategic. In particular, innovation requires a **strategy for learning**.¹

The developmental character and the resource requirements of the innovation process render its economic success inherently uncertain. Given macroeconomic conditions, an enterprise that invests in innovation confronts two types of uncertainty: productive uncertainty and competitive uncertainty. Productive uncertainty exists because business enterprises that undertake innovative strategies have to develop the productive capabilities of the resources in which they have invested before these resources can generate returns. The learning process may not be successful. Competitive uncertainty exists because even when a business enterprise is successful in generating a product that is higher quality and/or lower cost than it had previously been capable of producing, it may not gain competitive advantage and generate returns because a competitor, pursuing its own investment strategy, is even more successful at doing so. Even an innovative enterprise can be outcompeted.²

The willingness of businesspeople as strategic decision makers to invest in the productive resources that can generate innovation will depend on how they evaluate their ability to overcome productive and competitive uncertainty. Strategic decision makers of business enterprises that, through past investments, have accumulated productive resources can choose not to innovate, and hence can avoid confronting

¹ Mary O'Sullivan, "Innovation as Strategy and Learning," chapter 2 of *Business Governance and Industrial Development*, Ph.D. thesis, Harvard University, in progress.

² William Lazonick, *Business Organization and the Myth of the Market Economy*, Cambridge University Press, 1991, chs. 3, 6.

uncertainty. Instead of an **innovative strategy**, they can opt for an **adaptive strategy**.³

An adaptive strategy represents an attempt to compete for markets by utilising existing resources whose productive capabilities are already well known as an alternative to developing new resources whose productive capabilities are as yet unknown. Using an adaptive strategy, an enterprise may expand its operations, but only by replicating its existing capabilities. An adaptive enterprise might also seek to compete by using up its existing productive resources; neglecting, for example, to put aside adequate reserves for capital replacement or by cutting developmental expenditures (including downsizing its developmental labour force). An adaptive enterprise may also be able to cut costs by downsizing its nondevelopmental labour force (and by implication increasing workloads for the remaining employees) or by convincing its employees to accept lower wages.

An adaptive strategy may yield short-run competitive advantage (although, depending on the competitive challenges that it faces, a company with substantial accumulated assets may find that an adaptive strategy remains a viable competitive strategy for a substantial length of time). The possibility that competitors will be able to use an adaptive strategy, therefore, increases the competitive uncertainty facing an enterprise that pursues an innovative strategy. Over the long run, however, it is the threat of an innovative strategy that heightens competitive uncertainty because it can generate a product that is both higher quality and lower cost, without either increasing workloads or reducing pay. Faced by this competitive uncertainty an enterprise may choose not to confront the productive uncertainty inherent in an innovative strategy. Rather it may seek to live off the past through adaptation than invest for the future through innovation.

In the current era of intense international competition based on innovation, an economy in which business enterprises seek to compete through adaptation rather than innovation is an economy that cannot experience sustained economic development. What role can government policy play in encouraging business enterprises to choose innovative investment strategies? If the decision to adapt rather than innovate were simply a function of the personalities and proclivities of particular entrepreneurs, then government policy might not have a role to play. But if there are systematic -- that is, social -- forces in the economy that favour adaptive strategies over innovative strategies, then government policy may have a role to play in constraining the forces for adaptation and strengthening the forces for innovation. Based on our theoretical, historical, and comparative analyses of economic development, innovation, and international competition, it is our contention that business governance -- the social process that directs the strategic allocation of resources and returns of business enterprises -- is an area where government policy has such a role to play.

More specifically, the focus on innovation as the essence of economic development means that national policy makers should be concerned with **who makes investment decisions** in the economy, **what types of investments** they make, and **how returns from investments are distributed**. From the perspective of innovation and

³ Ibid..

economic development, the answers to these questions -- who, what, how -- differ fundamentally from the answers that would be given from the perspective of conventional (neoclassical) economics precisely because neoclassical economics lacks a theory of innovation and economic development.

Who makes investment decisions?

In neoclassical theory the individual “owner” of a productive factor who bears title to the returns from his factor is also the decision maker in the allocation of that factor of production. The particular identity of the investment decision maker is irrelevant because all economic actors, and therefore owners, are assumed to have perfect information. Investment is simply a matter of channelling household savings to those *existing* business opportunities that offer the highest rates of return. From this nondevelopmental perspective, there is no place in the economy for strategic vision and business experience that, through investments in learning, *create* new business opportunities that can result in higher returns than would have been possible without this vision and experience. For the neoclassical economist, strategic vision and business experience do not matter because the concept of innovation does not exist.⁴

From our developmental perspective, the identity of strategic decision makers, and in particular their comprehension of the complexities of the learning processes to which they commit resources, matters to the success of innovative strategies. Given the inherent uncertainty of the innovation process, there are no objective rules or guidelines for making strategic decisions about the extent, direction and structure of the learning process nor for resolving disputes about the strategy for learning. To implement an innovative strategy, strategic decision makers require knowledge of particular organisations and technologies so that they can commit productive resources to an innovation process in accordance with their evaluation of the potentialities and problems of alternative learning strategies. Strategic decision makers also require sufficient control over productive resources so that they can keep the requisite resources committed to the innovative strategy until the learning process has generated the higher quality, lower cost products that enable the investment strategy to reap returns. To pursue innovative strategies, the decision makers who control productive resources must be themselves integrated into the learning process that is the essence of an innovative strategy.⁵

What types of investments?

In neoclassical theory, it is assumed that returns to alternative investment opportunities are known, and that businesspeople will allocate resources to those alternative opportunities that offer the highest returns. Such allocations of resources to existing opportunities may occur. But, these allocations must, by definition, be adaptive rather than innovative, because the returns to innovative strategies cannot be known when the allocative decisions are being made. Lacking a theory of the innovative enterprise, for the neoclassical economist the only type of investments available to the strategic decision maker are adaptive investments.

⁴ O’Sullivan, “Strategy, Learning and Business Governance” chapter 5 in Business Governance and Industrial Development.

⁵ O’Sullivan, “Innovation as Strategy and Learning”.

From a theoretical perspective that can comprehend the innovation process, the very activities of the business enterprise that makes the investments in innovation determine the ability of the enterprise to overcome productive and competitive uncertainty, and generate returns. From the perspective of economic development, a superior rate of return may be the result of an innovative investment strategy that generates higher quality, lower cost products. For national policy makers, therefore, what needs to be understood is what types of investment strategies can yield innovative outcomes. Critical is the distinction between innovative strategies that seek to generate higher quality, lower cost products and adaptive strategies that seek merely to replicate or run down existing investments. Without an understanding of the innovation process, national policy may very well encourage business enterprises to pursue adaptive strategies that live off the past rather than innovative strategies that invest for the future. The problem of the adoption of adaptive strategies is particularly acute in an international economy characterised by innovative strategies from abroad that can quickly render a nation's existing productive resources obsolete, however innovative the strategies that developed and utilised the nation's productive resources may have been in the past.

How returns from investment are distributed.

In neoclassical theory, the returns to productive investments in such forms as wages, rent, interest, and profits are determined by the interaction of supply and demand in factor and product markets. Neoclassical economists lack any conception of the investment process, that by developing and utilising productive resources can, if successful yield returns that are not market determined. Hence they have no theory of the distribution of returns from an investment process that is both developmental and uncertain.

From the perspective of the innovation process, the expectations of returns from innovation may be critical incentives to enterprise stakeholders to generate the higher quality, lower cost products that can make these returns possible. For the employees on whom the business enterprise relies to engage in organisational learning and apply this learning to new products and processes, these returns may take the forms of higher earnings, more secure employment, and better career opportunities. Surplus revenues in the form of retained earnings may be, and almost invariably are, critical for providing the committed financial resources that permit a business enterprise to renew the innovation process by building on, as distinct from living off, the organisational capabilities accumulated from its prior investments in productive resources.⁶

The recognition that, for the sake of innovation and sustained economic development, it matters who makes investments decisions, what types of decisions they make, and how returns generated by these investments are distributed, gives national policy makers an interest in the governance of the business enterprises on whom their economies rely to invest in productive resources. We can define **business governance** as the social process that determines **the strategic allocation of resources and returns** in business enterprises. Business governance influences who has control over productive resources and what their incentives are in allocating

⁶ Lazonick, *Business Organization*, ch. 6; O'Sullivan, "Strategy, Learning and Business Governance."

these resources, as well as who appropriates the returns from investments and what their incentives are in allocating these returns.

In this paper, we shall adduce evidence from the comparative development of large advanced economies such as Germany, Japan, and the United States that **who, what, and how** cannot be answered in abstraction from the social organisation of the particular national economy in question and the major business enterprises, or groups of business enterprises, within that economy. National policy makers who view sustained economic development as a goal thus require an intellectual orientation and an analytical framework for asking who, what, and how.

As the previous discussion of who, what, and how suggests, neoclassical economics, by fundamental assumption that the business enterprise can only respond to existing investment opportunities, systematically ignores the innovation process. Yet a recognition of the centrality of the innovation process to economic development makes imperative the analysis of the changing social organisation of the economy over time and in different places. Neoclassical economics performs their feat of omission by positing as the ideal an economy organised by perfect markets, and by then construing all real-life deviations from this “ideal” as market imperfections. Yet, even though it ignores the central issues concerning the wealth of nations, neoclassical economics currently exerts a pervasive influence on national policy formulation.

This paper, and the body of empirical research and theoretical formulation on which it is based, introduces national policy makers to a more rigorous and relevant approach to understanding the operation and performance of the economy. In sharp contrast to neoclassical theory, the theory of innovation and economic development that guides the analysis in this paper rejects the notion of an economy organised by perfect markets as ideal precisely because *such an economy is one in which innovation and economic development would not, and could not, occur*. From our perspective, those real-life phenomena that neoclassical economists depict as market imperfections often reflect the social organisation of innovative enterprises, regions, and nations. The point then is not to rid the economy of these so-called “imperfections” or to optimise taking these “imperfections” as constraints. The point is rather to use this social organisation to generate innovation and economic development.

In what follows, we outline a perspective on economic development for national policy makers who want to design policies that can encourage the nation’s business enterprises to engage in innovation rather than adaptation. We examine the theoretical and empirical weaknesses of the standard analysis of national economic performance that neoclassical economists use in trying to account for economic growth over time and across nations. We argue that what is missing from the neoclassical analysis of growth is a theory of economic development as well as a methodology for analysing the process of economic development in, and changes in economic leadership among, the advanced national economies over the past century.

Our comparative-historical analysis of the social foundations for economic development and leadership in the economies of the United States, Germany, and Japan highlights the importance of the interaction between national institutions

(particularly the educational system, the financial system, and the legal system) and the social organisation of business enterprises in fostering the innovation processes that provide the technological foundations for economic development and leadership. We therefore elaborate a theory of innovative enterprise that can be used to assess the extent to which national economic activity is innovative or adaptive. Finally, we draw on the preceding empirical and theoretical analyses to consider how national policy can influence business governance -- the strategic allocation of enterprise resources and returns -- to promote innovation and economic development.

2. Social Organisation and Economic Development

The wealth of different nations

For national policy to influence the economic development of the nation, policy makers require an understanding of the sources of economic development and why some nations are more successful than others in sustaining the development process. These questions are not, of course, new to economics. By common consensus, the economics profession traces its intellectual foundations to Adam Smith's An Inquiry into the Nature and Causes of the Wealth of Nations, first published in 1776. Adam Smith's acknowledged position as the father of modern economics had as much to do with the time and place in which he was writing as with what he actually said. For Smith wrote The Wealth of Nations just as his nation, Britain, was about to experience the world's first industrial revolution. Over the course of the century following the publication of The Wealth of Nations, the British economy, already the world's leading mercantile power when Smith wrote, developed and utilised its productive resources to become the world's leading industrial nation, an accomplishment for which it earned the title, "the workshop of the world".

Since the late nineteenth century, however, the British economy has been in long-term relative decline in competition with other advanced economies. According to Angus Maddison's data, among 16 advanced nations, the United Kingdom ranked second (only to Australia) in GDP per capita in 1870, whereas it ranked fifteenth (surpassing only Italy) in 1979. Over the same period, Japan increased its real GDP per capita by 17.6 times, Germany by 9.2 times, United States by 7.9 times, and Britain by only 4.1 times.⁷

Compared with the vast majority of the world's nations, Britain still counts as an advanced economy. But, in industry after industry, it has long since ceased to be an international leader. In the early decades of this century, British industry was surpassed by the Germans in the steel industry, the Americans in the machine tool industry, and the Japanese in the cotton textile industry. During the first half of the twentieth century the United States emerged as the world's leading economy. Yet, over the past few decades, an outstanding feature of Japan's success has been its ability to win substantial market shares from the United States in industries such as motor vehicles and electronics -- industries in which U.S. competitive advantage appeared impregnable in the post-World War II decades.

Mainstream economists, relying on neoclassical economics for their understanding of how economies grow and compete, have had little success in explaining the economic development of the advanced economies or changes in economic leadership among them. Among mainstream economists, the standard approach to the evaluation of national economic performance in comparative-historical perspective is neoclassical growth theory. The growth literature uses national employment, production, and income accounts as the sources of its measures of the

⁷ Angus Maddison, Phases of Capitalist Development, Oxford University Press, 1982, p. 8

growth process and its outcomes. Output is a function of the inputs of labour, accumulated capita, and land, as well as of the productivity of these factor inputs. On the basis of these measures, growth theorists have attempted to identify the proximate sources of growth and to use them to explain the economic performance of national economies across time and place. In particular they have sought to measure how much of the growth of output is due to increases in the inputs themselves and how much to increases in their productiveness.

Going back some four decades to the original efforts of Moses Abramovitz and Robert Solow to account for U.S. economic growth,⁸ the common finding of growth accounting studies is that only a small proportion of per capita growth over many decades in the advanced industrial countries can be attributed to total input growth per capita. The difference between the growth rate of output and that of total factor input (the sum of the growth rates of the factor inputs each weighted by the share of its earnings in national income) is a statistical residual that has come to be described as “total factor productivity”. Although some economists conflate total factor productivity with “technological progress”, as a statistical residual it might include not only advances in technological knowledge but also contributions to economic performance from, for example, economies of scale and better resource allocation.⁹ Whatever the actual sources of the “residual”, given its size and ubiquity over time and place, the general message conveyed by the the growth accounting literature is that the development as well as the utilisation of productive resources have been central to the processes of economic growth in all of the advanced economies.

The theoretical underpinnings of the growth accounting literature do not provide a framework for explaining either “total factor productivity” in general or its possible components. The neoclassical theory of technical change is that, to produce a particular product at a particular price, businesspeople alter their choices of technology -- a combination of specific quantities of capital and labour inputs with given combined productivities -- according to changes in the relative prices of these inputs. Such a theory has nothing to say about what determines changes in the individual or combined productivities of these inputs or the extent to which the determination of factor prices might be endogenous to a process through which higher levels of productivity are generated.

An insightful contributor to, and critic of, the growth literature, Abramovitz argues that the neglect of how the various sources of growth interact in a dynamic, reinforcing way is the most serious weakness of growth accounting. He identifies the most important interactions as those between technological progress and the accumulation of tangible capital and between technological progress and the build-up of “human capital” through education and training. But even more fundamental than the neglect of the interaction between technological progress and other proximate sources of growth is the failure until recently to take account of the fact that the

⁸ Robert M. Solow, “A Contribution to the Theory of Economic Growth,” Quarterly Journal of Economics, February 1956: 65-94; Idem., “Technical Change and the Aggregate Production Function,” Review of Economic Statistics, August 1957: 312-320; Moses Abramovitz, “Resource and Output Trends in the United States since 1870,” American Economic Review, Papers and Proceedings, May 1956: 5-23.

⁹ Moses Abramovitz, Thinking About Growth, Cambridge University Press, 1989, 14.

development of technology is itself an economic process, and in particular that it depends on the investments in learning that are made in an economy.

There is now a growing recognition among “old growth theorists” like Abramovitz and among economists who have contributed to the recent emergence of a “new growth” or endogenous growth literature of the need for a theory of technological development to understand the economics of growth.¹⁰ The dominant tendency in the new growth literature, however, is to portray technological advance in a simplistic manner as a process independent of any social context through which new “ideas” are generated as a function of the inputs of labour and accumulated capital. In contrast, following an assertion made in a work on Japan by Kazushi Ohkawa and Henry Rosovsky,¹¹ Abramovitz has opined that something called “social capability” is responsible for the ability of some national economies to so develop their productive resources that they “catch up” and even in some cases “forge ahead” of other national economies that “fall behind”.¹² Yet, whether old or new, the growth theorists’ understanding of the process of technological development is limited by the fact that their training as neoclassical economists has provided them with neither a theory nor a methodology that can analyse what is obviously a dynamic and complex social process.

The deficiencies of growth theory in explaining the social foundations of the process of economic development can be traced to its roots in a theory of the market economy in which the perfection of capital, labour, and product markets is supposed to lead to optimal economic outcomes. For superior economic performance, nothing should inhibit the free flow of economic resources from one use to another, and any impediment to that flow is deemed a market imperfection. But the theory of the market economy takes the productive capability of these resources and the alternative uses to which they can be allocated as given, and makes no attempt to analyse the development of superior products and processes. In the absence of the development of superior products and processes, productivity is increased through the more complete utilisation of resources, but economic development does not occur.

Most economists recognise that in the real world markets are not perfect -- that the unimpeded flow of resources from one use to another does not, even as a general rule, actually prevail. Hence, there is considerable research into the impact of “market failures” and “market imperfections” on economic performance. But these market imperfections are regarded as phenomena without which the economy would be better off. In other words the benchmark for superior economic performance employed in the economics of imperfect markets is the theory of the market economy in which perfect markets allocate scarce resources to their optimal uses.

The comparative and historical evidence on the foundations for economic development in the advanced economies reveals that the “perfect market” benchmark is wrong. More specifically, the commitment of human and physical resources by

¹⁰ Moses Abramovitz, *Thinking About Growth*, p28; Paul Romer, “Increasing Returns and Long Run Growth,” *Journal of Political Economy*, 94, 1986: 1002-1037.

¹¹ Kazushi Ohkawa and Henry Rosovsky, *Japanese Economic Growth*, Stanford University Press, 1973.

¹² Moses Abramovitz, “Catching Up, Forging Ahead, and Falling Behind,” in *Thinking About Growth*

organisations rather than the mobility of resources through markets is the foundation for a sustained process of innovation and development. In contrast to the theory of the market economy, a developmental perspective views resource immobility as a necessary, if not sufficient, condition for learning and productivity growth.

In recent years, the convergence hypothesis has been linked to the ideology of the mobility of resources and the methodology of neoclassical growth accounting in an effort to explain the comparative economic performance of nations.¹³ Recognising the huge and persistent income gap between the rich and poor nations of the world, the proponents of the convergence hypothesis have identified a “convergence club” of 22 nations whose advanced educational systems give them the social capability to be members of the club. Given this capability, it is argued, these nations can easily absorb and reap the returns from new technology, even if it has been developed elsewhere. For reasons that (lacking a theory of economic development and technological innovation) the convergence proponents do not explain, a nation such as Japan may, to use Abramovitz’s language, catch up and even forge ahead. But such changes in technological and economic leadership will only be transitory because a “convergence club” nation such as the United States that is falling behind should be able to borrow back any new technology developed abroad and catch up with those forging ahead. Some proponents of the convergence hypothesis recognise that the case of Britain, a former economic leader that for over a century has been unable to catch up and has persistently fallen behind, creates problems for the hypothesis. Nevertheless they invoke the convergence hypothesis to make optimistic predictions concerning the ability of the productivity growth of the United States to catch up with, and even take the lead from, Germany and Japan in the decades to come.¹⁴

It is only by avoiding any explanation of how, in whatever nation, new technology gets developed that the convergence proponents can make the assumption that new technology transfers easily from one advanced nation to another, thus permitting the technology borrower to catch up with the technology leader. This assumption ignores the social foundations for the development and utilisation of technology in both the developer and borrower nations.¹⁵ The general experience of the British economy during the twentieth century demonstrates the difficulty that even an advanced nation can have in utilising new technology that is developed abroad.¹⁶ In the case of a successful borrower, a growing number of case studies reveal how, from the late nineteenth century, the Japanese relied on social organisation that went well beyond

¹³ William J. Baumol, Sue Anne Batey Blackman and Edward N. Wolff, Productivity and American Leadership: The Long View, MIT Press, 1989. For a range of perspectives on the debate, see William J. Baumol, Richard R. Nelson, and Edward N. Wolff, eds., Convergence of Productivity: Cross-National Studies and Historical Evidence, Oxford University Press, 1994.

¹⁴ Baumol, Blackman, and Wolff, Productivity and American Leadership.

¹⁵ For a recent counter argument see Parimal Patel and Keith Pavitt, “Uneven (and Divergent) Technological Accumulation among Advanced Countries: Evidence and a Framework of Explanation,” Industrial and Corporate Change, 3, 3, 1994: 759-787.

¹⁶ Bernard Elbaum and William Lazonick, eds., The Decline of the British Economy, Oxford University Press, 1986.

the educational system to develop and utilize imported technology.¹⁷ For recent decades there is case study evidence, such as the VCR, of how the Japanese innovated on the basis of technology that was first developed in the United States for which the Americans themselves did not find commercial application.¹⁸ Why the United States has lacked the “social capability” to both develop *and* utilise certain technologies must be explained.

From a developmental perspective, the critical shortcoming of growth accounting is not so much the quality of the individual measures that it produces, considerable although these problems may be, but rather the fact that they are calculated and interpreted in isolation from any social context. The methodology of growth accounting is, as a result, ill-suited as a basis for understanding and evaluating the comparative-historical experience of economic development. In contrast, a theory of development that is capable of analysing the social foundations of the process of innovation and how they change over time can contribute to an understanding of not only changing industrial leadership but also the opportunities and challenges that face different societies in developing and utilising technology.

In attempting to understand the social foundations of economic development, the economist must be prepared to aim at a moving target. Just as economic development results from technological changes that vary over time and place, so too we should observe variation in the characteristic features of social organisation that foster economic development in different eras and different nations. We should not, therefore, expect that the type of social organisation that results in economic development in one time and place will be appropriate for generating equivalent economic development in another time and place. Nevertheless, from the comparative-historical study of the process of economic development, we can derive general principles of the development process that can be used to construct a theory of economic development. As we come to understand the social foundations of the development experiences of these economies, these cases enable us to elaborate and modify the theory of economic development.

The construction of an historically relevant theory of economic development is not simply an academic exercise. Policy debates on investments in productive resources, restructuring of organisations, and the transformation of institutions are concerned with the economic impact of alternative proposals. Yet, without a theory of how productive resources get developed and utilised, policy makers lack the intellectual foundations for assessing the relevant costs and benefits of different strategies. If conventional economic doctrine systematically ignores the social foundations of the development process, policies that would foster economic development might systematically be ignored as well. Indeed, in an attempt to remove “imperfections”,

¹⁷ William Lazonick and William Mass, “Indigenous Innovation and Industrialization: Foundations of Japanese Development and Advantage,” Association for Japanese Business Studies, Best Papers 1995, Annual Meeting of the AJBS, Ann Arbor, June 2-4, 1995, and references cited therein.

¹⁸ See, for example, Richard S. Rosenbloom and Michael A. Cusumano, “Technological Pioneering and Competitive Advantage,” California Management Review, 29, 1987: 51-76.

policies based on the theory of the market economy may undermine the very organisations and institutions that promote economic development.¹⁹

The empirical foundations for a theory of economic development are found in the historical experiences of the world's most successful economies. Specifically, our own empirical work has focused on social organisation in the comparative development of the economies of Britain, United States, Germany, and Japan from the nineteenth century to the present.²⁰

In what follows, we outline this comparative history to provide the empirical foundations for a theory of economic development, certain aspects of which we shall elaborate later in this paper. We begin with the case of the British economy, the world's industrial leader in the nineteenth century, but an economy that for the past hundred years or so has been in decline relative to the economies of such nations as the United States, Germany, and Japan.²¹ An understanding of how Britain attained industrial dominance in the last half of the nineteenth century, and the reasons for its subsequent relative decline, highlights the importance of social organisation for successful economic development in the twentieth century.

The British industrial revolution

The British mercantilist state played a critical role in fostering the first industrial revolution by using naval power to best the Spanish in the sixteenth century, the Dutch in the seventeenth century, and the French in the eighteenth century in a struggle for world markets. The success of British mercantilism in gaining access to world markets -- the "extent of the market" of which Adam Smith spoke -- created incentives for the British population to engage in industries (particularly textiles) that could service these markets. As a result, even before the industrial revolution, Britain had experienced a substantial accumulation of industrial knowledge, even though the British state was not directly involved in investing in the learning that generated it.²²

Although enterprise management had been important to the success of the pioneering factories in the early stages of the British industrial revolution, as the nineteenth century progressed, firms came to rely more on the organisation of the regional economy than on the internal organisation of the enterprise to develop the productive capabilities that they could then utilise. The most important regionally-developed resource that became available to British manufacturing firms in the nineteenth

¹⁹ The industrial policy and performance experience of the Republic of Ireland is one example of the dangers of ignoring the social foundations of development. See Mary O'Sullivan, "Manufacturing and Global Competition," in John W. O'Hagan, ed., *The Economy of Ireland*, Macmillan, 1996.

²⁰ William Lazonick and Mary O'Sullivan, "Big Business and Skill Formation in the Wealthiest Nations: The Organizational Revolution in the Twentieth Century," in Franco Amatori, Alfred D. Chandler, Jr., and Takashi Hikino, eds., *Big Business and the Wealth of Nations*, Cambridge University Press, 1995, forthcoming; William Lazonick and Mary O'Sullivan, "Organization, Finance, and International Competition," *Industrial and Corporate Change*, 1996, forthcoming; William Lazonick and Mary O'Sullivan, "Financial Commitment and Economic Development," *Financial History Review*, 1996, forthcoming.

²¹ Elbaum and Lazonick, *Decline of the British Economy*..

²² C. H. Wilson, *England's Apprenticeship, 1603-1763*, Longman Group, 1965; Maxine Berg, *The Age of Manufacturers, 1700-1820*, Fontana, 1985.

century was an ample supply of highly skilled and well-disciplined labour. Senior workers -- known collectively as "the aristocracy of labour" -- not only provided their own knowledge and skills to the building and operation of machinery but also recruited junior workers whom they trained and supervised on the shop floor.²³

Employers' reliance on skilled labour to organise work and train new workers had the advantage of low fixed costs for not only individual firms but also the British economy as a whole. The progress of the British industrial revolution did not rely to any significant extent on state-supported or industry-supported education. The reproduction of an abundant and skilled labour force, effected as it was by worker-run, on-the-job training, required little, if any, expense to either employers or the state.²⁴

In the late nineteenth century, moreover, these worker-run apprenticeship systems yielded high levels of labour productivity. Eager to gain entry to the aristocracy of labour, the promise of promotion kept younger workers hard at work. The older workers, generally protected by union bargains that assured them shares of productivity gains, were themselves not averse to long and steady labour. Skilled workers' intimate practical knowledge of production methods meant that, as by-products of shop-floor experience, they were able to keep imperfect machinery running steadily and contribute to minor, but cumulatively significant, technological improvements.

As older workers trained younger workers, supplies of specialised labour expanded in certain localities during the nineteenth century. Given an industrialist's choice of business (itself typically a function of his own specialised training in a particular locality), he would tend to invest where labour with the necessary specialised skills was in relatively abundant supply. As a consequence, particular industries became increasingly concentrated in particular regions of Britain during the nineteenth century. The regional concentration of specific British industries meant that employers had access to not only large supplies of labour with the requisite skills but also communication and distribution networks that supplied a regional industry with its basic inputs, transferred work-in-progress across the industry's vertically specialised productive activities, and marketed the industry's output.

The growth of a regionally concentrated industry facilitated the vertical specialisation of constituent firms in a narrow range of activities, these firms relying on market exchange with other firms to supply them with necessary inputs and to purchase their outputs for resale downstream. The tendency toward vertical specialisation was self-reinforcing because the growing availability of suppliers and buyers for intermediate products made it easier for new firms to set up as specialists. Hence the growth of a regionally concentrated industry was characterised more by

²³ Eric J. Hobsbawm, *Workers: Worlds of Labor*, Pantheon, 1984; Keith Burgess, *The Origins of British Industrial Relations: The Nineteenth Century Experience*, Croom Helm, 1975; Royden Harrison and Jonathan Zeitlin, eds., *Divisions of Labor: Skilled Workers and Technological Change in the Nineteenth Century*, Harvester Press, 1985; William Lazonick, *Competitive Advantage on the Shop Floor*, Harvard University Press, 1990:chs.3-6.

²⁴ For a case study of a leading sector, see William Lazonick, "Industrial Relations and Technical Change: The Case of the Self-Acting Mule," *Cambridge Journal of Economics*, 3, 3, September 1979.

the entry of new firms than by the growth of existing firms. Vertically specialised industries became horizontally fragmented industries.²⁵

The evolution of industry structures characterised by regional concentration, vertical specialisation, and horizontal fragmentation as well as employers' ongoing reliance on skilled labour to organise work on the shop floor diminished the need for business firms to invest in the development of managerial structures. The lack of managerial organisation in turn reinforced the tendency for industrial structures to be fragmented and specialised. Limited in their managerial capabilities, proprietary firms tended to confine themselves to single-plant operations, thus facilitating the entry of new firms into vertical specialties and increasing the extent of horizontal as well as vertical fragmentation of industrial sectors.

That these industrial districts of highly specialised, small-scale firms permitted Britain to attain international economic leadership in the nineteenth century provided the empirical foundation for the belief that the basis of successful industrial development was market coordination rather than organisational coordination of economic activity.²⁶ As we have already stated, during the mercantilist era and beyond, the British state had played a critical role in ensuring British industry privileged access to the extent of global markets. The British state, however, had played little direct role in fostering technological development, either through the building of a modern educational system or national research organisations. With the rise to international prominence of economies such as those of Germany, United States, and Japan from the early twentieth century, however, it became increasingly apparent that, at the levels of both business and government, the structure of social organisation that generated technological and economic leadership had fundamentally changed.

The managerial revolution

From the late nineteenth and early twentieth century, the national economies that were to assume global economic leadership in the twentieth century all experienced similar transformations in the social organisation of their business enterprises. The organisational transformations of business enterprises that generated technological development in countries such as the United States, Germany, and Japan required organisational structures and financial resources on a scale far greater than that which had served as a foundation for British economic leadership in the first industrial revolution. The characteristic features of the organisational transformation in all three countries was the employment by particular enterprises of teams of salaried line and staff personnel to plan and coordinate the production and distribution of goods and services, and the separation of ownership from control of these companies.

The fundamental reasons for this organisational transformation were a combination of the growing complexity of technology and the increasing scale and scope of market opportunities. Technological advances in metalworking, chemistry, and

²⁵ For a case study, see William Lazonick, "Industrial Organization and Technological Change: The Decline of the British Cotton Industry, *Business History Review*, 57, Summer 1983: 195-236.

²⁶ Alfred Marshall, *The Principles of Economics*, 9th (variorum) edition, Macmillan, 1961; Lazonick, *Business Organization*, ch. 5.

electronics created possibilities for further technological advances and new technological uses. To strategically organise the development and utilisation of these new technologies required high fixed-cost investments in human and physical assets to acquire inputs, transform them into competitive (high quality, low cost) products, and distribute these outputs to users. The high fixed costs that resulted from these strategic investments in new technology created pressures to capture new markets to achieve economies of scale and scope.

From this dynamic perspective, it should be apparent that technological advances and market opportunities were not independent of, or exogenous to, the business organisations that were set up to gain privileged access to them. Technological complexity and market opportunities were themselves outcomes of prior organisational change, often generated by the business organisation through investments in research and development facilities and in marketing capabilities.

Successful companies in all of the three countries at the forefront of the second industrial revolution recruited and developed teams of salaried managers that enabled them to develop and utilise productive resources in ways that vastly expanded the scale and scope of the goods and services that an enterprise could produce and sell. Increasingly recruited from institutions of higher education, these personnel received in-house training not only within particular technical specialties germane to the enterprise but also, through rotation or cross-training, across technical specialties to permit the integration of specialist activities. Over the course of their careers, the most able and willing of these technical specialists were promoted to positions of greater responsibility and authority for planning and coordinating the enterprise's specialised division of labour. These enterprises gained dominant shares of the markets in which they competed, and drove the development of the national economies in which they emerged.

There were significant differences across countries in the manner in which business enterprises secured the financial resources that they required to pursue innovative investment strategies, but all of them ultimately relied on a separation of ownership and control in their eras of rapid development. The institutions that brought about and sustained this separation of ownership and control checked the influence of, and indeed transcended, the very traditions of private property on which "free-enterprise capitalism" ostensibly rests. The function of stock markets has never been to finance the innovative investment strategies of industrial firms, either as new ventures or going concerns. The purpose of a stock market is to provide wealthholders with not only access to shares but also the ready prospect of selling those shares -- that is, liquidity.

For a company that has already achieved success, and hence has liquidity in terms of a stream of returns, the function of the stock market is to transfer claims to these returns from direct investors to portfolio investors. The direct investors are the owner-entrepreneurs and venture capitalists who were willing to endure the illiquidity inherent in innovative investments, and who provided the access to committed finance that was a condition of success. The portfolio investors are the stockholders who are willing to hold shares in the enterprise now that it has demonstrated its revenue-generating capability, but who nevertheless demand the

liquidity of their shares should the prospects of returns or their own financial needs change.

A transfer of shares occurs because the direct investors, who have provided the enterprise with financial commitment, want to cash in on their successful investments. The owner-entrepreneur may want to retire from the company and the venture capitalist may want to transfer his financial resources into another new venture. And the very success of the enterprise, as manifested by the returns on its prior investments, brings forth portfolio investors who are willing to hold shares in the company, and who thereby permit the direct investors to monetise their investments.

Despite common features across countries in the organisational transformation that provided the foundation for the technological development of the second industrial revolution, and in particular the managerial learning process and the innovative strategy for learning in the United States, Germany and Japan sustained, national differences are apparent in the social organisation that was the basis for innovation. As the twentieth century unfolded, these differences developed into distinctive national dynamics in the social foundations of economic development and were reflected in variations in technological trajectories and product-market strategies and ultimately in changes in international economic leadership that it is our task to explain.

United States

Like Germany and Japan, the United States experienced a managerial revolution in industry from the last decades of the nineteenth century.²⁷ The emergence of a transcontinental market, linked by a transcontinental communications system and populated by millions of independent farmers and artisans, created vast business opportunities for enterprises that planned and coordinated the processes of production and distribution. To do this planning and coordinating, entrepreneurs had to build teams of committed and skilled managers by strategically investing in collective managerial learning processes.²⁸

Unlike Britain with its concentrations of skilled labour supplies in industrial districts, the interregional and interoccupational mobility of workers in the United States rendered skilled labour scarce throughout the nineteenth century.²⁹ To ensure the development and utilisation of the skill-displacing technologies, U.S. industrialists had to invest in managerial structures. The result was the rise of the American system of manufactures by the middle of the nineteenth century.³⁰

²⁷ Alfred D. Chandler, Jr., *Scale and Scope: The Dynamics of Industrial Capitalism*, Harvard University Press, 1990; Hidemasa Morikawa, *Zaibatsu: The Rise and Fall of Family Enterprise Groups in Japan*, University of Tokyo, 1992.

²⁸ Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business*, Harvard University Press, 1977.

²⁹ Lazonick, *Competitive Advantage*, chs. 6-7.

³⁰ David A. Hounshell, *From the American System to Mass Production, 1800-1932*, Johns Hopkins University Press, 1984; William Lazonick, and Thomas Brush, "The 'Horndal Effect' in Early U.S. Manufacturing," *Explorations in Economic History*, 22, January 1985.

Until the last decade of the nineteenth century, a formal system of higher education was relatively unimportant for the development and utilisation of technology, in part because American industry was only beginning to make the transition from the machine-based first industrial revolution, in which shop-floor experience remained important, to the science-based second industrial revolution, in which systematic formal education was a necessity. From the late nineteenth century, however, the system of higher education became central to supplying technical and managerial personnel to the burgeoning bureaucracies of America's industrial corporations.

A classical college education, modeled on Oxford and Cambridge, had in the mid-nineteenth century held sway in the United States at institutions of higher learning such as Harvard and Yale. From the 1890s, however, the rise of managerial organisation encouraged the transformation of public institutions of higher education -- the land-grant colleges -- as manufacturing enterprises used them as sources of scientists and engineers to work as line and staff specialists within their managerial structures.³¹

The growing importance of the land-grant colleges in American economic life in turn put pressure on the classical colleges to make their scientific and educational activities relevant to the needs of industry. Especially after the turn of the century, when wealth accumulated in industry provided massive funding for education, industrial enterprises could make use of the entire system of U.S. higher education, whether privately or publicly funded. Industrial enterprises recruited managerial personnel from the system of higher education, and then, through in-house training and on-the-job experience, developed the productive capabilities of these employees and promoted the best of them to middle-level and upper-level managerial positions.

That there was room at the top for such career managers had been ensured by the separation of ownership from control of the utilisation of these productive assets and the returns that they generated.³² Until the Great Merger Movement in the late 1890s and the early 1900s, the integration of asset ownership and managerial control characterised U.S. industrial enterprises, and a market for the securities of industrial companies did not exist.³³ Owner-entrepreneurs had to rely on their reputations and connections to raise private capital. They used their own capital as well as that of friends, family and former business associates to launch new ventures, and then relied on retained earnings to transform the enterprises into going concerns. Equity investors had to be prepared to lose their stakes without any possibility of exit via the stock market.

³¹ David Noble, America by Design: Science, Technology, and the Rise of Corporate Capitalism, Oxford University Press, 1977; John W. Servos, "The Industrial Relations of Science: Chemical Engineering at MIT, 1900-1939," ISIS, 71, 1980: 531-549; Louis Ferleger, and William Lazonick, "The Managerial Revolution and Developmental State: The Case of U.S. Agriculture," Business and Economic History, 22, 2, 1993.

³² William Lazonick, "Strategy, Structure, and Management Development in the in the United States and Britain," in Kesaji Kobayashi and Hidemasa Morikawa, eds., Development of Managerial Enterprise, University of Tokyo Press, 1986.

³³ Chandler, Scale and Scope, ch.3; Thomas R. Navin and Marian V. Sears, "The Rise of a Market in Industrial Securities, 1887-1902," Business History Review, 29, 2, June 1955.

The owner-controlled enterprises that had made financial commitments to not only plant and equipment but also the training and retention of key personnel who provided these enterprises with knowledge and skills that went far beyond those of the owner-entrepreneurs.³⁴ It was these types of enterprises with integrated managerial structures that were best positioned to participate in and benefit from the turn-of-the-century merger movement.

With J. P. Morgan taking the lead, Wall Street financed the mergers by selling to the wealthholding public the ownership stakes of capital-intensive, high technology companies with integrated managerial structures. The industrial concentration that resulted from the mergers made the new combinations attractive to the wealthholding public, as did the stringent listing requirements of the New York Stock Exchange, the scrutiny of bond-rating agencies (chiefly Moody's and Standard and Poor's) and government regulation of trading subsequent to the Armstrong investigation of 1905. As a result, stockholding became widespread and fragmented.

The purpose of a public offering of stock was not to fund capital investment in the company but to transfer equity ownership from direct investors to portfolio investors. By transferring equity ownership, public stock issues enabled these owner-entrepreneurs to retire from the industrial scene. With ownership fragmented among hundreds of thousands of shareholders, the new strategic decision-makers were left free to allocate corporate revenues to innovative investments that built on the organisational and technological capabilities that their enterprises already possessed.

In the wake of the Great Marge Movement, critics of the new combinations, many economists among them, viewed the merged companies' enhanced control over product prices as monopolistic practices that, in effect, permitted big business to extract value at the expense of the dependent customer. In fact, what counted for economic performance was what the strategic decision makers did with their enhanced control over market forces. Retained earnings, sometimes leveraged with money raised through long-term bond issues, financed not only state-of-the-art plant and equipment for manufacturing but also the world's most up-to-date research laboratories and far-flung marketing facilities, all of which required investments in organisational capability to plan and coordinate a complex division of labour.

The major holders of corporate bonds were the banks and insurance companies that were the prime repositories for household savings.³⁵ In a regulated financial environment (which persisted until the 1970s), holders of bank deposits and insurance policies got low but stable returns on their savings while the dominant industrial corporations, with their investment grade ratings from Wall Street, could leverage retained earnings with relatively low-cost debt to finance industrial expansion.

Until the rise of the institutional investor from the 1960s, the holders of common stock were primarily individuals and households. In the early 1950s, for example, financial institutions held about 70 percent of the corporate bonds outstanding in the

³⁴ Chandler, *Visible Hand*, Parts III and IV.

³⁵ William Lazonick, "Controlling the Market for Corporate Control: The Historical Significance of Managerial Capitalism," *Industrial and Corporate Change*, 1, 3, 1992.

United States, but less than two per cent of the common stocks outstanding.³⁶ In the era of U.S. industrial dominance, the markets for bonds and stocks were segmented, with the powerful bondholders largely indifferent to stock yields and the fragmented shareholders unable to influence corporate payout policies.

Shareholders did not lose out by their lack of financial control. In the 1920s, as the major manufacturing corporations were paying their workers somewhat higher wages and expanding market share by reducing product prices to customers, they were paying out well over 60 percent of their net income as dividends to shareholders. Yet, during the 1920s large manufacturing corporations still had enough retained earnings to fund virtually all their fixed capital outlays. After several decades of investment in industrial innovation, it was possible for many different stakeholders to gain simultaneously.³⁷

Indeed, this unprecedented prosperity set off the speculative boom in corporate stocks in the late 1920s, with the resultant gross overvaluation of industrial stocks. Many publicly held enterprises seized the opportunity to issue additional shares, not to finance new investment, but to retire outstanding debt or to add to their cash reserves. Despite the depressed demand conditions of the 1930s, these enterprises possessed the financial resources during the Great Depression to keep their managerial organisations intact and to make developmental investments that kept them in the forefront of industrial innovation.³⁸ When prosperous economic conditions returned in the 1940s, these corporations had the organisational and technological capabilities to be world leaders.

The phenomenal productivity growth that U.S. manufacturing had experienced in the 1920s could not have been achieved without managerial success in gaining control over work organisation on the shop floor. At the same time, however, a decades-long managerial offensive against craft control, which was anathema to the development of mass-production methods, combined with the evolution of a highly stratified educational system that effectively separated out future managers from future workers even before they entered the workplace, left a deep social gulf between managers and workers within U.S. industrial enterprises. During the 1920s, even as many dominant industrial enterprises shared their surpluses with workers in the forms of higher wages and more employment security, U. S. managers, ever fearful of a reassertion of craft control, continued with their quest to take, and keep, learning off the shop floor.³⁹

The Great Depression, with its massive layoffs of blue-collar workers even by many of the most progressive employers of the 1920s, served to deepen the social separation of management from the shop-floor labour force. In response, the U. S.

³⁶ Ibid.

³⁷ Lazonick, *Competitive Advantage*.

³⁸ Alfred D. Chandler, Jr., "From Industrial Laboratories to Departments of Research and Development," in K. B. Clark, R. H. Hayes, and C. Lorenz, eds., *The Uneasy Alliance: Managing the Productivity-Technology Dilemma*, Harvard Business School Press, 1985, 353-361; David C. Mowery, "Industrial Research, 1900-1950, in Elbaum and Lazonick, *Decline of the British Economy*, 1986:191-192; Michael Bernstein, *The Great Depression*, Cambridge University Press, 1987, ch.4.

³⁹ Lazonick, *Competitive Advantage*, chs.7-10.

labour movement reorganised, but this time on an industrial rather than a craft basis, and used the crisis of the 1930s to wring from the state a measure of economic security for workers that the business sector had shown itself incapable of providing. When, in the renewed prosperity of the 1940s, dominant mass producers once again sought to gain the cooperation of workers by offering them high wages and prospects of secure employment, they had to deal with powerful mass-production unions.

These unions did not challenge the principle of management's right to plan and coordinate the shop-floor division of labour.⁴⁰ In practice, however, the quid pro quo for union cooperation was that seniority be a prime criterion for promotion along well-defined lines, and within more elaborate job structures, thus giving older workers best access to a hierarchical succession of jobs paying gradually rising hourly wage rates. In return, union leadership sought to ensure orderly collective bargaining, including the suppression of unauthorised work stoppages.

Despite the relative absence of strategically coordinated learning on the shop floor in American industry, the United States emerged as the world's industrial leader in the immediate postwar decades because of its by then unparalleled systems for developing new technologies, especially in the science-based industries. These systems integrated the research of corporate research facilities with those of the government and universities.⁴¹ By the late 1950s the intricate linkages that had developed among the government, major corporations, and institutions of higher education became known as the "military-industrial complex."

Given the continuous innovation in large U.S. managerial enterprises from the 1940s to the mid-1960s, union-management cooperation in the coordination of shop-floor relations permitted high enough levels of productivity to sustain competitive advantage, despite the failure of the dominant mass producers to address the issue of deskilled, monotonous, and hence alienating work. By sharing with blue-collar workers some of the gains that came with international economic dominance, U. S. mass producers exercised a substantial degree of control over the supply of effort on the shop floor.

From the 1960s the basic economic conditions that influenced the investment strategies of U.S. industrial corporations began to change. Powerful foreign competitors, especially the Japanese, arose to challenge many American companies in the very markets -- for example, consumer electronics, mass-produced automobiles, steel -- in which they had been world leaders. The structures of cooperative labour-management relations that prevailed in the U.S. era of economic dominance proved problematic when, especially emanating from Japan, more powerful modes of developing and utilising technology came on the scene. For U.S. corporations to make innovative responses to these competitive challenges, access to committed financial resources became all the more important. Yet, also from the 1960s, the transfer of shareholding from individual investors to institutional investors began to weaken such funds.

⁴⁰ Ibid., ch. 9.

⁴¹ Don Kash, *Perpetual Innovation*, Basic Books, 1989.

Compared with institutional investors, individual investors have much less incentive and ability to rearrange their portfolios of securities in search of higher yields. Individuals possess vastly less information about factors affecting stock prices and much higher transaction costs per traded share than institutions. Leading the search for higher yields were the mutual funds that from the 1950s sought to capitalize on the prolonged boom in stock prices. During the 1950s common stocks accounted for 85 percent of the assets of mutual funds, as compared with about 30 percent of the assets of pension funds and only 3 to 4 percent of the assets of life insurance companies.⁴²

Through rapid trading of large blocks of stock and the locking in of capital gains in advance of expected stock declines, mutual fund managers sought to generate higher returns than could be secured from more stable portfolios. The success of the mutual funds in generating higher yields, combined with permissive government deregulation, led pension fund managers to increase their holdings of common stock. In 1955 pension funds owned two percent, and households 91 percent of all equities outstanding in the United States; by 1990 the pension fund share had risen to 28 percent and the household share had fallen to 47 percent.⁴³ Insurance companies also gradually increased their holdings of common stocks.

As a result, shareholding ceased to be fragmented in the United States, as households in effect turned to the power of concentrated portfolio management to maximise the returns on their wealth. Mutual funds competed for household savings by showing high returns on a regular basis, and churned their portfolios in an effort to do so. Pension funds and insurance companies could generally take a longer-run perspective on returns than the mutual funds. Nevertheless, even the portfolio managers of the future-oriented financial institutions were loathe to pass up the assured higher returns that, in a speculative financial era, could be made by taking quick capital gains.

From the 1960s, Wall Street became increasingly devoted to trading in securities, whether stocks or bonds, in preference to its traditional investment-banking function of initial public offerings and long-term corporate bond issues. Indeed, the trading activities of Wall Street combined with institutional investors' quest for higher yields resulted in the integration of the stock and bond markets. High yields achieved through trading in stocks created pressure for bond trading to return similar (risk-adjusted) yields, and higher yields in these secondary securities markets put upward pressure on the rates of new bond issues. The rise of the junk-bond market from the mid-1970s in turn put pressure on the stock market to generate higher short-term returns, which in turn placed demands on companies to increase dividends. The high yields secured by portfolio investors then made it impossible for commercial banks, mutual banks, and savings and loan companies to attract deposits on the basis of the old rules of the financial game. Financial deregulation in the late 1970s enabled these banks to join the search for higher short-term yields. By the early 1980s, all of these changes in the structure of U.S. financial markets created opportune conditions for the junk-bond financed corporate raider. The market for corporate control had been unleashed.

⁴² Lazonick, "Controlling the Market,"

⁴³ *Ibid.*; Jonathan Charkham, *Keeping Good Company*, Oxford University Press, 1994, 204.

Changes in the relation between ownership and management during the 1950s, 1960s, and 1970s increased the incentive and the ability of the top managers of major U.S. industrial corporations to ally with the forces that sought extract returns from rather than commit financial resources to business enterprises. From the early 1950s, through the use of stock-options, the total remuneration of top managers became increasingly dependent on stock-based rewards. In the late 1940s, a sample consisting of the top five executives of fifty Fortune 500 companies derived less than three percent of their after-tax compensation from stock-based awards; a decade later this figure was over 30 percent.⁴⁴

This access of top managers to substantial amounts of ownership income weakened their incentives to choose innovative investment strategies. Like shareholders in general, these new owners-managers benefited handsomely from financial institutions and instruments that sought to generate revenues on the basis of past accumulation while neglecting investment for the future. By boosting short-term profits, top managers saw the market value of their shares rise, which in turn justified increasing dividends to maintain yields. which in turn reduced retained earnings.

The owner-managers of a going concern that is publicly traded can also cash in by selling some of their stock if they foresee a decline in the fortunes of the enterprise. In the 1980s, many top managers of industrial corporations went much further in devising new ways to profit by exiting their companies. In creating “golden parachutes” for themselves in the case of takeover, and in accepting bribes to facilitate changes in management, incumbent executives in effect assumed the right to sell not only ownership of shares in their companies but also positions of managerial control.

Through the integration of ownership and control at the top of the corporate hierarchy, top managers in effect set themselves apart from the rest of the organisational structure. This separation became amply manifest during the 1980s in an explosion of top management pay. While the real average after-tax earnings of American wage and salary earners fell by 13 percent during the 1970s and 1980s, the real average after-tax compensation of CEOs of major American corporations increased by 400 percent. In 1981 the average compensation of the 25 highest paid executives of U.S. non-financial enterprises was \$2.46 million; by 1988 this figure was almost five times higher at \$12.22 million.⁴⁵

The value-extracting capabilities of American top executives became particularly evident when their compensation was compared with that of their counterparts abroad. In 1990 the salary and bonus compensation of CEOs of the thirty largest U.S. corporations was on average \$3.1 million. For British CEOs (who had also increased their power to extract value from earlier decades), the comparable figure was \$1.1 million; for French and German CEOs, \$0.8 million; and for Japanese

⁴⁴ W. G. Lewellen, Executive Compensation in Large Industrial Corporations, National Bureau of Economic Research, 1968, 172-173; W. G. Lewellen, The Ownership Income of Management, National Bureau of Economic Research, 1971, 50.

⁴⁵ Kevin Phillips, The Politics of Rich and Poor, Random House, 1990.,179.

CEOs \$0.5 million.⁴⁶ The availability of stock options to American top managers, but not to Japanese top managers, made the international gap in CEO compensation all the more striking -- especially when, as was increasingly the case, the enterprises that Japanese managers directed were outcompeting the enterprises over which the American managers presided.

In the 1990s, many American corporations are striving to compete by downsizing, often under the euphemism of "reengineering". These corporations are often in dire need of organisational and technological change. By terminating thousands of employees, an established company can restore profitability and boost its stock price, but without necessarily making the new investments in products, processes, and people that are essential for sustained competitive success. Indeed, the higher profits and stock prices provide a justification for higher dividends that maintain stock yields, while the commitment of financial resources to innovate investment strategies erodes..

Germany

In contrast to most U.S. industrial enterprises, German companies have in the postwar period made learning on the shop floor integral to the innovative strategy of the enterprise as a whole. Moreover, in recent decades the access of large German companies to committed financial resources to support their innovative investment strategies has proven to be more enduring than has been the case in the United States. The characteristic features of German organisation and finance have deep roots in the nation's history.

During the nineteenth century Germany put in place the world's most sophisticated system of higher education that ultimately would make the nation a leader in the science-based chemical and electrical industries. State-building ambitions, particularly those of Prussia in the wake of its ignominious defeat by Napoleon, provided the initial incentive for the promotion of technical education. The establishment of the Technical Institute in Berlin in 1821 laid the basis for the marriage between science and technology in a number of other technical institutes (originally Polytechnische Schulen, renamed as technische Hochschulen) and a network of trade schools in the provinces.⁴⁷

These technical schools became important in supplying German industry with skilled managers from the middle of the nineteenth century. Complaints abounded in the latter half of the century, however, that an overemphasis on theoretical knowledge in the education of engineers was undermining German industrial performance, particularly in industries such as light machinery in which Americans held the advantage through mass production based on interchangeable parts.⁴⁸ In the 1890s the German government introduced a new type of engineering education -- a network of Ingenieurschulen designed to supplement the existing system of higher technical

⁴⁶ New York Times 01/20/92.

⁴⁷ Kees Gispén, *New Profession, Old Order: Engineers and German Society, 1815-1914*, Cambridge University Press, 1989; Wolfgang König, "Technical Education and Industrial Performance in Germany: A Triumph of Heterogeneity," in Robert Fox and Anna Guagnini, eds., *Education, Technology and Industrial Performance in Europe, 1850-1939*, Cambridge University Press, 1993, 68.

⁴⁸ Gispén 1989.

institutes -- that was consciously modeled on the practical skills and shop training of American engineers (even as “shop culture” was making way for “school culture” in the United States).⁴⁹

Around the turn of the century the conflict for professional status between an academic group of engineers and a more practice-oriented faction ultimately led to the concentration of power in the engineering profession in the hands of a third group -- the managerial and entrepreneurial engineers -- who had an interest in integrating theory and practice and who had the ability to cement the links between German industry and technical education.⁵⁰ In laying the foundation for the nation's competitive advantage in chemicals, metals, electrical machinery, and heavy machinery, the resultant relations between industry and institutes of higher education were critical for the nation's industrial development. In the first few years of this century, the balance of German exports shifted from textiles and consumer goods to these technically-based industries.⁵¹

A small group of large joint-stock credit banks -- the Kreditbanken -- played a critical role in providing the committed finance required for these innovative investment strategies. Especially in the decades after German unification in 1871, the Kreditbanken functioned as venture capitalists by financing new ventures in the form of loans. When these new ventures became going concerns, the banks floated shares to the public to enable these companies to pay back their bank loans.⁵² The banks maintained a continuing relationship with these companies, but, after the flotations, serviced them in the capacity of financial intermediaries rather than as venture capitalists.

The “Great Banks”, or Grossbanken, including the Deutsche Bank, the Dresdner, and the Commerzbank, that came to dominate German finance in the 1880s and 1890s were those that played this venture capital role for the mining, metallurgical, and electrical engineering companies that formed the foundation of German industrialisation. In servicing the demands of industry, the banks advanced capital through a current account arrangement that operated like a combined deposit account and line of credit.⁵³ In 1883 the credit advanced by these banks through current accounts comprised 51 percent of credit extended by the Grossbanken; in 1913 73

⁴⁹ Kees Gispens, “Engineers in Wilhelmian Germany: Professionalization, Deprofessionalization, and the Development of Nonacademic Technical Education,” in Geoffrey Cocks and Konrad H. Jarausch, eds., German Professions, 1800-1950, Oxford University Press, 1990; Monte Calvert, The Mechanical Engineer in America, 1830-1910, Johns Hopkins University Press, 1967.

⁵⁰ Gispens, New Profession.

⁵¹ Chandler, Scale and Scope, 410.

⁵² Riesser, Jacob, The Great German Banks and their Concentration in Connection with the Economic Development of Germany, translation of 3rd edition, U.S. Government Printing Office for the National Monetary Commission, 1911; Barrett Whale, Philip, Joint Stock Banking in Germany, Macmillan, 1930; Schumpeter, Joseph A., Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process, vol. 1, McGraw-Hill, 1939, 349; see also Gerschenkron, Alexander, Economic Backwardness in Historical Perspective: A Book of Essays, Cambridge University Press, 1962; Neuberger, Hugh M., and Houston H. Stokes, “German Banking and Japanese Banking: A Comparative Analysis,” Journal of Economic History, 35, March 1975; Fremdling, Rainer and Richard Tilly, “German Banks, German Growth and Econometric History,” Journal of Economic History, 36, June 1976.

⁵³ Riesser, Great German Banks, 266.

percent.⁵⁴ It was the current account connection that was the basis for the banks' ability to perform their venture-capital function because it allowed them to assess a client's ongoing creditworthiness. The Grossbanken also set up technical departments that could evaluate the organisational and technological capabilities of specific companies. To remain close to strategic decision making, they secured seats on the Aufsichtsrate (the supervisory boards) of their client companies.⁵⁵

The separation of ownership from control in large German industrial enterprises occurred, therefore, when banks floated shares to monetise the loans that they had made to new ventures that had been transformed into going concerns. To facilitate successful initial public offerings, the Grossbanken developed an interest in ensuring the integrity of the German stock market and their own reputations for issuing high-quality securities.⁵⁶ This reputation, or Emissionkredit, was so valuable to the banks that they were persuaded to buy back shares that they had issued after the speculative crises of 1857 and 1873 had led to a decline in their values.⁵⁷ Having been involved in the building of powerful industrial enterprises, the banks thus maintained a continuing interest in ensuring their long-term growth, and hence in protecting their earnings from the demands of financial markets. As their dominance in the German securities market increased around the turn of the century, the Grossbanken had greater power to provide this protection.⁵⁸

Key to exercising this protection was the proxy voting system, or Depotstimmrecht, that permitted banks to vote the shares owned by bank customers who placed these shares in trustee deposit accounts. Then as now, the predominance of bearer shares gave the banks the right to vote those securities that they held on deposit. Inducing the widespread deposit of shares was an exemption for shares held in trustee accounts from a stamp tax on their exchange imposed by Bismarck, combined with the extensive deposit networks that the banks built in the latter decades of the nineteenth century and the low rates of commission that they charged for exercising the trustee function.⁵⁹ Committed to the development of German industry, the Grossbanken used the proxy voting system to ensure that profits remained available in companies for industrial investment rather than to uphold the rights of shareholders to discipline management or extract dividends.

In a number of major industrial enterprises that made the transition from new venture to going concern without bank financing, families of the original entrepreneurs remained in control well into the twentieth century. Such companies, which relied on retained earnings to finance their growth, included Siemens in electrical equipment, Gutehoffnungshütte, Hoesch, and Thyssen in heavy industry, and H.

⁵⁴ Barrett Whale, Joint Stock Banking.

⁵⁵ Riesser, Great German Banks; Barrett Whale 1930.

⁵⁶ Riesser, Great German Banks; Barrett Whale 1930.

⁵⁷ Hans Pohl, "Forms and Phases of Industry Finance in the Second World War," German Yearbook of Business History, 1984.

⁵⁸ Rudolf Hilferding, Finance Capital: A Study of the Latest Phase of Capitalist Development, Routledge and Kegan Paul, 1981 (1910); Riesser, Great German Banks; Barrett Whale, Joint Stock Banking.

⁵⁹ Riesser, Great German Banks, 324.

Borsig, Henschel and Sohn, M. A. Maffei, and R. Sachs in mechanical engineering.⁶⁰ But, even for companies that had relied on bank finance in their new-venture stages and that maintained current-account links with the banks, retained earnings became the foundation of their continued growth as going concerns.⁶¹ By the close of the nineteenth century, in many of the larger companies, the practice of maintaining an exclusive financial relation with one bank, or Hausbank, had lost ground to multi-bank links. Some of these multiple financial linkages developed through mergers; others reflected the deliberate attempts of financially strong companies to limit the influence of any one bank.⁶²

Reliance of industrial enterprises on retained earnings as well as the growth of multi-bank financing diminished the direct contribution of the Grossbanken to industrial development after the turn of the century. As the organisational and technological capabilities required for continuous innovation in enterprises became more complex, industrial managers -- the likes of Rathenau at AEG and Kirdorf at Gelsenkirchener Bergwerks AG -- became the key strategic decision makers in German industry.⁶³ Hence, in 1910, when Rudolf Hilferding wrote his famous Finance Capital, his view of bank-dominated industry was years out of date. The managerial revolution had occurred in German industry, just as it had occurred in American and Japanese industry. The independent financial position of the large industrial companies was strengthened further during World War I, when government orders generated high profits and credits for switching plants to wartime production.⁶⁴ After the war, the financial independence shifted still further in favor of industrial companies because

⁶⁰ Jurgen Kocka, "Family and Bureaucracy in German Industrial Management, 1850-1914: Siemens in Comparative Perspective," Business History Review, 45, 1971; Jurgen Kocka, "Entrepreneurs and Managers in German Industrialisation," in Peter Mathias and M. M. Postan, eds., Cambridge Economic History of Europe, 7, Part 1, Cambridge University Press, 1973; Jurgen Kocka, "The Entrepreneur, the Family and Capitalism: Some Examples from the Early Phase of Industrialisation in Germany," German Yearbook of Business History, 1981; Jurgen Brockstedt, "Family Enterprise and the Rise of Large-Scale Enterprise in Germany, 1871-1914 - Ownership and Management," in Akio Okochi and Shigeaki Yasuoka, eds., Family Business in the Era of Industrial Growth: Its Ownership and Management, University of Tokyo Press, 1984; Wilfried Feldenkirchen, "The Banks and the Steel Industry in the Ruhr: Developments in Relations from 1817-1914," German Yearbook of Business History, German Society for Business History, 1981; Barrett Whale, Joint Stock Banking; Wilfried Feldenkirchen, "Capital Raised and Its Use by Mechanical Engineering Firms in the Nineteenth and Early Twentieth Centuries," German Yearbook of Business History, German Society for Business History, 1983; Wilfried Feldenkirchen, "Banking and Economic Growth: Banks and Industry in Germany in the Nineteenth Century and their Changing Relationship During Industrialisation," in W. R. Lee, ed., German Industry and German Industrialisation, Routledge, 1991.

⁶¹ W. G. Hoffmann, Franz Grumbach, and Helmut Hesse, Das Wachstum der deutschen Wirtschaft seit der Mitte des 19 Jahrhunderts, Springer-Verlag, 1965, 273; Hans Pohl, "Forms and Phases of Industry Finance up to the Second World War," German Yearbook of Business History, 1984; Feldenkirchen, Banks and the Steel Industry"; Feldenkirchen, "Capital Raised"; Feldenkirchen, "Banking and Economic Growth".

⁶² Barrett Whale, Joint Stock Banking; Jurgen Kocka, "The Rise of the Modern Industrial Enterprise in Germany," in Alfred D. Chandler, Jr. and Herman Daems, eds., Managerial Hierarchies: Comparative Perspectives on the Rise of the Modern Industrial Enterprise, Harvard University Press, 1980; Pohl 1984; Feldenkirchen 1991.

⁶³ Barrett Whale, Joint Stock Banking, 64.

⁶⁴ Hans Pohl, "Forms and Phases".

they were more successful than the banks in protecting the value of their net assets from the ravages of inflation.⁶⁵

Cooperation among industrial companies increased through cartellisation and concentration movements that took place from the late nineteenth century. Until World War I, intercompany relations generally took the form of cartels and communities of interest in which otherwise independent firms operated by agreement.⁶⁶ Intercompany linkages became much tighter in the consolidation of the German economy after World War I. Expansion for war production, the subsequent military defeat, the loss of international markets, and the victors' demands for reparations payments had a crippling effect on the German economy. Massive investment was required to finance the modernisation of existing facilities and to underwrite the development of new products and markets.⁶⁷ To carry out these tasks, German industrialists formed massive concerns (Konzerne) -- organisations in which a parent company took long-term shareholdings in a number of other firms for the purpose of coordinating their financial and investment strategies.⁶⁸ Concern-building was often facilitated by the issue of shares to transfer ownership of going concerns to diffuse shareholders.⁶⁹ The process of building these structures created a dense web of interlocking shareholdings and directorates among German companies that placed control of these companies in the hands of managers rather than shareholders or financial institutions.⁷⁰

German companies gained competitive advantage from the late nineteenth century primarily by developing and integrating skills within the managerial structure rather than on the shop floor. The German apprenticeship system in Handwerk, that had its roots in the guild system of craft apprenticeship in the Middle Ages, supplied many workers to the burgeoning industrial sector but was not specifically designed to serve the needs of industry.⁷¹ Many of the large employers invested in their own facilities that modified and supplemented the traditional training structures at the level of the individual enterprise. German employers thereby controlled the workplace, and dominated the process of shop-floor skill formation.⁷²

Concerned that this type of vocational training would tie workers to individual companies and reduce the power of the mass labour movement, the response of the unions was to push for training systems that were standardised and regulated at the

⁶⁵ Theo Balderston, "German Banking Between the Wars: The Crisis of the Credit Banks," Business History Review, 65, Autumn, 1991.

⁶⁶ Robert Liefmann, Cartels, Concerns and Trusts, E. P. Dutton, 1932; Wilfried Feldenkirchen, "Concentration in German Industry, 1870-1939," in Hans Pohl, ed., The Concentration Process in the Entrepreneurial Economy Since the Late Nineteenth Century, Franz Steiner, 1988.

⁶⁷ Theo Balderston, "German Banking" ..

⁶⁸ Liefmann, Cartels, Concerns and Trusts.

⁶⁹ Feldenkirchen, "Banking and Economic Growth".

⁷⁰ Hans Pohl, "On the History of Organisation and Management in Large German Enterprises Since the Nineteenth Century," German Yearbook of Business History, 1982.

⁷¹ Arndt Sorge and Malcolm Warner, Comparative Factory Organization: An Anglo-German Comparison of Management and Manpower in Manufacturing, Gower Publishing, 185.

⁷² Walter Kendall, The Labor Movement in Europe, Penguin Books, 1975, 98.

national or industrial level.⁷³ In 1925 the unions introduced occupational training profiles and training plans for a variety of apprenticeships. The training structures in handicraft, industry, and services, however, remained independent.⁷⁴

During the last half of the 1930s and the early 1940s, the Nazis mobilised and reorganised the productive capabilities of the German economy for war. The authoritarian hand of the state intervened to shape the skill-formation process in a critical way by integrating the Handwerk sector into German industry. The training system was standardised and regulated, thus laying the foundation for the modern German system of apprenticeship.⁷⁵

With Germany's defeat, the declared intention of the Allied Occupation forces was to break up the concentration of economic power in German industry and banking. The beginning of the Cold War, however, led to a decline in the Allied commitment to this policy as they became interested in building a strong German economy that might serve as a bulwark against the rising power of the Soviets. In addition, despite the dissolution of industrial trusts such as the I. G. Farben chemical combine, the constituent companies, such as Bayer, Agfa, and Chemsiche Werke Huls, often reemerged as dominant autonomous enterprises, and established financial links with one another. The Allies divided the three big commercial banks -- Deutsche, Dresdner, and Commerzbank -- into 30 regional banks that were forbidden to coordinate their activities. Informal links were nevertheless maintained among the separated parts of the original banks, and, after the easing of restrictions in the early 1950s the big three banks reconsolidated.⁷⁶

For the major German industrial enterprises, retained earnings once again became the predominant sources of long-term financing soon after the war, and have remained the foundation for financing industrial investment to the present.⁷⁷ The new legal framework of the Federal Republic of Germany preserved the main features of company law and the proxy voting system that had previously ensured the subservience of the shareholder to the business organisation.⁷⁸ What distinguished the new system of corporate governance was codetermination (Mitbestimmung) which included workers in business governance.

The Codetermination Act of 1951 mandated worker representatives to be appointed to half of the seats on the supervisory boards of all companies in the iron, steel, and coal industries. In other industries, equal representation was denied the workers; however, enterprises with more than 500 employees were obligated by the Works Councils Act of 1952 to reserve one-third of the supervisory board seats for

⁷³ Sorge and Warner, Comparative Factory Organization, 185.

⁷⁴ Ibid.

⁷⁵ Fred McKittrick, "The Stabilization of the Mittelstand: Artisans in Germany from National Socialism to the Federal Republic, 1939-1953," unpublished doctoral dissertation, Columbia University, 1994.

⁷⁶ Andrew Shonfield, Modern Capitalism: The Changing Balance of Public and Private Power, Oxford University Press, 1965.

⁷⁷ Henry Wallich, Mainsprings of the German Revival, Yale University Press, 1955, 166.

⁷⁸ Thomas Raiser, "The Theory of Enterprise Law in the Federal Republic of Germany," American Journal of Comparative Law, 36, 1988.

employee representatives. Codetermination also applied at the level of the plant where works councils were designed to give workers a say in the management of the shop floor. At the national and regional levels, unions were accorded roles in collective wage bargaining.⁷⁹

This dual system of representation also applied to worker training. After World War II the government of the Federal Republic of Germany retained training structures in much the same way that the Nazis had shaped them. The regulation and administration of apprenticeship training changed, however, to reflect changes in the social order. Trade unions were included on the vocational training committees of chambers, and became involved with government ministries and employers' associations in the joint regulation that takes place by the top decision-making bodies of the overall training system. At the level of the enterprise, the works councils have the right to negotiate with the individual employer about the structure of the in-firm training program and are involved in its implementation in the workplace.

Despite recent criticisms of the training system, central to the postbellum success of West German industry has been the integration of the blue-collar skills that the training system has developed with the technical skills of managers.⁸⁰ The establishment of the German system of apprenticeship, with its inclusion of the unions and the government as strategic decision makers in the worker-training process, reduced the autonomy that employers had in setting a strategy for learning to suit the needs of their particular enterprises. The apprenticeship system, however, allowed employers to reap the benefits of organisational learning processes that are explicitly designed to accommodate the technological demands of a variety of industries.

Shop-floor learning has played a pivotal role in the competitive strategies of those large West German companies that compete on the basis of high quality in product and process, and have allowed them a competitive advantage in markets such as luxury automobiles, precision machine tools, and electrical machinery -- industries that until recently qualified as stable technology. Although some successful German companies have emerged in innovative and high-technology sectors such as computers, semiconductors, and telecommunications, Germany has not secured national competitive advantage in these industries.⁸¹

The same training system has also provided the foundation for the competitive advantage of many of the medium-sized enterprises that constitute the German Mittelstand. Many of these enterprises have developed strong positions in high-quality niche markets such as precision tools and laser optics through the excellence

⁷⁹ Herbert Wiedemann, "Codetermination by Workers in German Enterprises," *American Journal of Comparative Law*, 28, 1980.

⁸⁰ J. Munch, *Vocational Training in the Federal Republic of Germany*, European Centre for the Development of Vocational Training (CEDEFOP), 1982; *Financial Times*, June 3, 1991.

⁸¹ Peter J. Katzenstein, "Industry in a Changing West Germany," in Katzenstein, ed., *Industry and Politics in West Germany: Toward the Third Republic*, Cornell University Press, 1989, 25..

in product design and production flexibility made possible by the organisational integration of the technical skills of both managers and workers.⁸²

Permitting investments in these innovative capabilities in Germany has been a powerful system for providing committed finance to industry. In 1988 nonfinancial enterprises held 39.1 percent of the total nominal value of German share corporations (Aktiengesellschaften or AGs) and banks held 11.6 percent (including their investment funds).⁸³ Many of the companies that have held long-term participations - - the largest industrial AGs and the big banks -- are themselves diffusely held.⁸⁴ As we have indicated, a network of institutions that survived, or were reinstated, after the war, that includes intercompany holdings but also the proxy voting system, company law, stock exchange regulation, and the system of taxation, ensured that industrial enterprises could maintain control over the allocation of their revenues. The banks also continued to play a central role in ensuring committed finance, although rarely as direct financiers, and the codetermination laws represented a new direction in the postwar system of corporate governance.

Large German companies continued to rely on internal funds to finance their investments after the occupation. Even after the reopening of capital markets in 1956, to the extent that large German companies have sought access to outside financing, bank loans have been the preferred source rather than the issue of equity or bonds.⁸⁵ This segment of the market, however, was the domain of the savings and cooperative banks rather than the commercial banks, who accounted for only 5.7 percent of medium- and long-term loans in 1970.⁸⁶

Although the stock exchange has not been an important source of finance for German companies, and has generally facilitated the transfer of ownership of existing assets rather than the formation of new ones, to the extent that new issues have been conducted they have been undertaken by syndicates of banks which until the 1970s were led by the bank with which the company had the longest association, usually one of the big banks.⁸⁷ Since these syndicates bore the full risk for the placement of the shares and generally sold these shares to their own depositors, they had a clear incentive to ensure the financial viability of the companies whose shares they placed.⁸⁸

⁸² Gary B. Herrigel, "Industrial Order and the Politics of Industrial Change: Mechanical Engineering" in Katzenstein, Industry and Politics in West Germany, 191; W. R. Smyser, The Economy of United Germany: Colossus at the Crossroads, St. Martin's, 1992.

⁸³ Deutsche Bundesbank, "The significance of shares as financing instruments," Monthly Report of the Deutsche Bundesbank, October 1991; Jeremy Edwards and Klaus Fischer, Banks, Finance, and Investment in Germany, Cambridge University Press, 1994, 180, 271.

⁸⁴ Edwards and Fischer, Banks, Finance, and Investment, 188.

⁸⁵ Horst Albach, "The Development of the Capital Structure of German Companies," Journal of Business and Accounting, 2, 1975; Colin Mayer and Ian Alexander, "Banks and Securities Markets: Corporate Financing in Germany and the United Kingdom," Journal of the Japanese and International Economies, 4, 1990; Edwards and Fischer, Banks, Finance, and Investment.

⁸⁶ Deutsche Bundesbank, various.

⁸⁷ Rolf Breuer, "Frankfurt: Equity Markets," in Abraham M. George and Ian H. Giddy, eds., International Finance Handbook, 2, Wiley & Sons, 1983, 24.

⁸⁸ Breuer, "Frankfurt: Equity Markets".

But the commercial banks' Emissionkredit was valuable for reasons other than the issue of equity. In 1977 in Germany the par value of outstanding bonds and investment funds was DM418 billion and DM918 billion respectively.⁸⁹ As with the issue of equity, the large commercial banks largely controlled the issue of bonds until the 1970s. They were reliant on the bond business not only for issue commissions but also to balance their own asset and liability structures.⁹⁰ They owned most of the investment funds, which were primarily bond-based, and sold many of these financial instruments through their deposit network. They thus had a clear interest in maintaining a reputation as a reliable issuer of securities.

With the deregulation of interest rates in 1967, and the removal of restrictions on bank advertising, the competitive environment in the German banking industry changed considerably. A number of new competitors emerged for the commercial banks. A series of mergers took place in the savings bank sector that led to the formation of a few large Landesbanken (state banks). These banks expanded aggressively in the commercial market, and began to move beyond their exclusive reliance on servicing Mittelstand companies to financing larger companies and holding their stocks. The DG Kasse, the central bank of the cooperative banks, also emerged as a new competitor for the commercial banks when restrictions on its activities were removed in 1976. The big commercial banks' share of industrial loans fell from 28.2 percent to 18.2 percent in 1982 whereas the savings and cooperative banks increased their combined shares from 37.4 percent to 50.7 percent.⁹¹ Competition heated up in the issue market too. Although Deutsche Bank had dominated the market as the syndicate leader for new issues in the postwar period, from the early 1980s more banks won access to the stock exchange as dealers and competed successfully for such a role.⁹²

Many regard this increase in competition as a favourable development, and indeed it was in the expectation that the growth in competition would lead to lower interest rates on loans that deregulation was initiated in the first place.⁹³ These changes in the German banking industry over the past two decades appear, however, to have reduced the incentive and ability for financial institutions to ensure that industrial enterprises have access to the committed finance needed for developmental investments, and thus may weaken rather than strengthen the German economy. It is not clear that the large savings and cooperative banks that have been gaining share in the securities market and industrial lending possess the capabilities to take over the role traditionally played by the commercial banks. In the early 1970s a series of large loan defaults brought scandals to three of the largest Landesbanken; it emerged that many of these loans had been made to troubled firms without due consideration to sound banking practice.⁹⁴

⁸⁹ B. T. Bayliss, and A. A. S. Butt Philips, Capital Markets and Industrial Investment in Germany and France, Saxon House, 1980.

⁹⁰ Deutsche Bundesbank, various.

⁹¹ Richard E. Deeg, Banks and the State in Germany: The Critical Role of Subnational Institutions in Economic Governance, unpublished doctoral dissertation, Massachusetts Institute of Technology, 1991, 188.

⁹² Deeg, Banks and the State in Germany, 201.

⁹³ *Ibid.*, 131.

⁹⁴ *Ibid.*, 147

Bank-industry linkages have weakened over the last two decades. A recent survey of the finance directors at the top 500 German companies attributed this phenomenon to increasing competition in the banking industry.⁹⁵ The private banking sector as a whole has reduced its seats on the Aufsichtsrate of the 100 largest AGs from 162 in 1974 to 104 in 1989.⁹⁶ They have also reduced their direct shareholdings; the number of companies in which banks held at least ten per cent of the shares (directly or indirectly) fell from 129 in 1976 to 86 in 1986 and the number on which they controlled a blocking minority of more than 25 percent fell from 86 to 45.⁹⁷

A number of new opportunities have presented themselves in the commercial banks' environment, which, if the banks choose to exploit them, would erode the access of industrial enterprises to committed finance. In particular, the rise of the Eurodollar and other international capital markets has been important as a source of revenue for the commercial banks with their strong international connections, in light of the increasingly competitive conditions on the domestic market.⁹⁸ Deutsche Bank acquired Morgan Grenfell, a British investment bank in 1989, and in 1994 announced that it had decided to establish the headquarters of its investment banking division in London.⁹⁹ The large commercial banks have also been at the forefront of the introduction of new savings instruments; Commerzbank recently launched a high-profile marketing campaign for money-market funds (MMFs).¹⁰⁰ With only 8.1 percent of German savings deposits in 1988, the big banks have much less to lose than the savings and cooperative banks (with a combined total of 80 percent) through the disintermediation that would result from the widespread introduction of money market funds and other market-based savings instruments.¹⁰¹

The arguments, emanating largely from Britain and the United States, for giving financial markets control over industrial finance have been given a hearing in German political circles, and a number of tax laws and institutional regulations that bolstered the postwar system of financial commitment to German industry have already been dismantled. The trend toward liberalization of the equity markets has been given added impetus by the size of the German government's financing needs in the wake of reunification; the partial privatization of Deutsche Telekom, the state telephone company, is expected to raise about DM15 billion in early 1996 through the issue of the first tranche of shares.¹⁰² In fact, the expected privatisation of State-

⁹⁵ Ibid., 138.

⁹⁶ Monopolkommission, Hauptgutachten II: Fortschreitende Konzentration bei Grossunternehmen, Nomos Verlag, 1978; Josef Esser, "Bank Power in West Germany Revisited," West European Politics, 13 1988, 26.

⁹⁷ Deeg, Banks and the State in Germany, 201.

⁹⁸ Deutsche Bundesbank, "Longer-term trends in the banks' investments in securities," Monthly Report of the Deutsche Bundesbank, May 1987; Deutsche Bundesbank, "Longer-term trends in the banking sector and market position of the individual categories of banks," Monthly Report of the Deutsche Bundesbank, April 1989; Deutsche Bundesbank, "The profitability of German banks in 1990," Monthly Report of the Deutsche Bundesbank, August 1991,

⁹⁹ Economist 12/02/1989; Financial Times 11/24/94.

¹⁰⁰ Economist 08/27/94.

¹⁰¹ Deutsche Bundesbank 1991.

¹⁰² Financial Times, 11/21/94.

owned enterprises all over Europe is perceived by many in the large German banks as a future lucrative source of business, particularly as the countries of the European Union are required to eliminate all barriers to a common market in financial services by 1996. The Grossbanken regard a liquid German securities market as a key element in building a platform for the expansion of their European market share, an interest which is also in accord with a more broad-based commitment in Germany to position Frankfurt as the EU's financial center (Finanzplatz). All of these pressures add up to a formidable pressure to further deregulate the German securities markets.¹⁰³

That the changes in the banks' business environment will lead to a decline in the commitment of finance to innovative investments is by no means assured. The banks do not exist in a vacuum; other changes have taken place during the last two decades which may prove decisive in determining the future balance between innovation and adaptation in the German economy. During the 1980s German companies, particularly the larger ones, structured their financial relations in ways that gave them considerable control over resources that they would need to implement innovative investment strategies.

During the boom in German equity markets from the middle of the 1980s, a number of large companies that were already listed raised finance through the issue of new shares, mostly to acquire participations in other companies rather than to finance the formation of new productive assets. Large companies have also been using their financial reserves to lend funds to smaller companies with which they have business connections, thus strengthening intercompany linkages, often taking away loan business from the banks.

Company pension funds available as internal financial resources also increased during the 1980s.¹⁰⁴ In Germany 60 percent of the funds earmarked for the payment of company pensions remain in the company as an unfunded long-term investment and have been labeled "social capital" by some economists;¹⁰⁵ most of these pension provisions are made by the larger German companies. Moreover, an amendment to the codetermination law in 1974 required companies with more than 2,000 employees to increase employee representation on their supervisory boards from one-third of all seats to one-half.

Notwithstanding these changes, that German industrial employers will remain committed to keeping resources within their companies cannot be taken for granted. The large pension reserves reflect the attractive compensation packages offered by industrial companies to their workers to keep them with the company when labor markets became tight from the mid 1950s. In more recent periods of relatively high unemployment, some German companies have reduced these benefits. Changes in

¹⁰³ Institutional Investor 05/92.

¹⁰⁴ Esser, "Bank Power in West Germany, 23; Deutsche Bundesbank, "Longer-term trends in the financing patterns of West German enterprises," Monthly Report of the Deutsche Bundesbank, October 1992; Edwards and Fischer, Banks, Finance, and Investment.

¹⁰⁵ Ellen Schneider-Lenne, "The Role of the German Capital Markets and the Universal Banks, Supervisory Boards, and Interlocking Directorships," in Nicholas Dimsdale and Martha Prevezer, eds., Capital Markets and Corporate Governance, Clarendon Press, 1994, 295.

German pension law in 1976 that allowed workers to transfer their pensions from one company to another have reduced the effectiveness of this device as a means of retaining workers. In general, German employers reacted negatively to the amendment to the codetermination law, and submitted it the Federal Constitutional Court to test whether it violated private property rights.¹⁰⁶ Although their case was overturned, some companies are reported to have attempted to control the influence of employees by limiting the powers of the whole Aufsichtsrat.¹⁰⁷

Finally, that financial resources, even if retained within organisations, will fund successful innovation is not obvious. In recent years German companies have been increasingly confronted by Japanese competitors, even in high-quality niche markets such as machine tools and luxury automobiles in which they have traditionally been unchallenged. For example, between 1991 and 1993 the value of German machine tool production plunged from DM17 billion to DM12 billion, and despite a recovery of orders in 1994, Japanese machine tool makers maintained a 10-15 percent cost advantage over their German competitors.¹⁰⁸ For German industry to respond effectively to these severe competitive challenges will require a strengthening of financial commitment for the sake of investing in organisational capabilities that can generate products that are not only higher quality but also lower cost than German industry has previously produced.

Japan

Among the advanced economies, the commitment of financial resources to economic development is most secure in Japan. One manifestation of Japanese financial commitment is the exceptionally low level of dividends on corporate shares. During the 1980s, the payout ratio of Japanese corporations averaged less than 30 percent compared with 50 percent for U.S. corporations. The Japanese ratio would have been much lower, moreover, had the Japanese corporations placed as much stress as American corporations on showing high levels of profits. Rather, in Japan enterprise control over revenues provides, among other things, incentives for employees to enhance company performance as Japanese companies systematically use higher earnings to reward employees who get substantial proportions of their earnings through collective bonuses.

During the late 1980s, Japanese companies maintained low dividends despite the boom in the Tokyo stock market that generated astronomical price-earnings ratios, often on the order of 100 or more. Driving portfolio investors was the speculative expectation of ever higher stock prices, an expectation that was rudely put to rest in the early 1990s. Meanwhile, just as American companies had done in the speculative stock market boom of the late 1920s, Japanese corporations strategically issued stock to the public at overinflated prices in order to pay off debt or augment their corporate treasuries.¹⁰⁹ And like the American corporations in the depression of the early

¹⁰⁶ Raiser, "Theory of Enterprise Law".

¹⁰⁷ Deeg, Banks and the State in Germany, 99; Interviews with Deutsche Bank by Mary O'Sullivan, January 1995.

¹⁰⁸ *Economist* 10/16/91 and 07/16/94.

¹⁰⁹ Young S. Park, "Nonprice Competition Among Japanese Brokerage Companies," in Ingo Walter and Takato Hiraki, eds., *Restructuring Japan's Financial Markets*, Irwin, 1993, 354.

1930s, the enhanced financial liquidity of Japanese corporations has helped them to weather the recession of the early 1990s.

Why is the commitment of financial resources to industrial development so strong in Japan? The answer is rooted in financial institutions and organisational structures that the Japanese erected in the last decades of the nineteenth century. After the Meiji Restoration of 1868, Japan did not possess institutions that could provide the financial commitment required for sustained industrial development. Yet, the Restoration had put in power a political elite who were determined to industrialize the economy. In the early 1870s, as an alternative to borrowing on foreign capital markets, the Japanese elaborated the postal savings system to mobilize household savings in the hands of the government.¹¹⁰ The Japanese state then made this money available to private banks engaged in the finance of industry.

Some of these banks were created by the zaibatsu -- the family-owned holding companies that had their origins in privileged access to the resources (including, in some cases, mineral rights) of the Meiji state. The most successful zaibatsu such as Mitsui, Mitsubishi, and Sumitomo were those that persistently reinvested earnings in sectors such as iron and steel, shipbuilding, and trading. To ensure that these investments would yield returns, the zaibatsu houses employed, and delegated substantial decision-making power to, professional managers to run their various businesses.¹¹¹

Some sectors, particularly railways and cotton textiles, developed largely outside the zaibatsu structure on a joint-stock basis, with wealthy merchants playing leading roles. Attempts to secure funds for spinning mills from large numbers of shareholders required guarantees of "dividends" on the order of 10 percent, even in the absence of earnings. Such financial arrangements ensured that these new ventures would be financially fragile, with bankruptcy often the ultimate fate.¹¹² Those enterprises with greater access to committed finance took the lead in not only expanding their own operations but also acquiring weaker companies, with high levels of industrial concentration as one result.

Critical to the success of these companies was the employment of university-educated engineers who modified imported technology to maintain product quality while reducing costs.¹¹³ The companies that made these innovative investments in human and physical capital obtained access to trade credit extended by the major zaibatsu trading companies for the purchase of cotton and the sale of yarn. Once the new industrial ventures had been transformed into going concerns, retained earnings became the prime source of financial commitment for long-term growth.¹¹⁴

¹¹⁰ Raymond W. Goldsmith, *The Financial Development of Japan, 1868-1977*, Yale University Press, 1983, 51-54; D. Eleanor Westney, *Imitation and Innovation: The Transfer of Western Organizational Patterns to Meiji Japan*, Harvard University Press, 1987, 134-137.

¹¹¹ Morikawa, *Zaibatsu*.

¹¹² J. Hirschmeier, and T. Yui, *The Development of Japanese Business*, second edition, George Allen & Unwin, 1981, 113.

¹¹³ Lazonick and Mass, "Indigenous Innovation and Industrialization".

¹¹⁴ Shin'ichi Yonekawa, "The Growth of Cotton Spinning Firms: A Comparative Study," in Akio Okochi and Shin'ichi Yonekawa, eds., *The Textile Industry and Its Business Climate*, University of Tokyo Press, 1982.

Prior to World War II, a stock market in industrial securities was virtually non-existent in Japan. The zaibatsu functioned as permanent venture capitalists who used some of the returns from investment in existing industries to fund investments in newer industries. Liquidity in the system as a whole was dependent on the ability of managerial organisations to develop and utilise technology. Liquidity was not an end in itself but a basis for using going concerns to fund new ventures.

Committed finance in the form of equity found its complement in committed finance in the form of debt. The national savings system mobilised household savings for funding long-term investment. The central bank allocated these funds to private-sector banks that would assure that these funds would be used by industrial enterprises for long-term investment. The zaibatsu banks were particularly well-positioned to perform this function. Banks retained the right to call in loans to industry, but understood and intended that a portion of these loans would be used for long-term investment. Given this relationship with banks, industrial enterprises were willing to take on, and could sustain, very high debt-equity ratios, which, when combined with high rates of earnings retention, provided the committed financial resources that industrial development required.¹¹⁵

This structure of industrial finance remained intact after World War II, with one significant change. The Allied occupation dissolved the zaibatsu by distributing shares in the holding companies to the generally public, thus transferring ownership from the zaibatsu families.¹¹⁶ In the process, for the first time, trading in industrial securities on the Tokyo Stock Exchange became significant. The zaibatsu conglomerate structure and the constituent zaibatsu businesses persisted, however, with (as had been the case before the war) professional managers responsible for long-term investment planning and implementation in the enterprise groups, now called keiretsu.

In the 1950s, after the Allies departed, the Japanese business community, led by the top managers of the major industrial companies and banks, initiated a cross-shareholding movement to ensure that outside shareholders did not disrupt the accumulation of capabilities in industries such as consumer electronics and automobiles. Japanese businesses bought blocks of each other's shares with the intent of remaining stable shareholders who, for the sake of ensuring organisational control, would neither sell the shares on the open market nor demand high dividends. The concomitant rise and strengthening of enterprise unionism reinforced the forces in Japanese industry and society that supported organisational control of financial resources by making the delivery of permanent employment and higher earnings to employees major goals of the enterprise. After Japan joined the OECD in 1964, the Japanese business community increased the level of cross-shareholding to ensure that

¹¹⁵ Shoichi Asajima, "Financing of a Japanese Zaibatsu -- Sumitomo as a Case Study," in Akio Okochi and Shigeaki Yasuoka, eds., Family Business in the Era of Industrial Growth: Its Ownership and Management, University of Tokyo Press, 1984; Yoshio Suzuki, Money and Banking in Contemporary Japan, Yale University Press, 1980.

¹¹⁶ Michael L. Gerlach, Alliance Capitalism: The Social Organization of Japanese Business, University of California Press, 1992; Hideaki Miyajima, "The Transformation of Zaibatsu to Postwar Corporate Groups -- From Hierarchically Integrated Groups to Horizontally Integrated Groups," Journal of the Japanese and International Economies, 8, 1994.

foreigners did not use the market for corporate control to take over the increasingly successful Japanese companies.

By the late 1980s, cross-shareholding accounted for over 70 percent of all shares outstanding in Japan.¹¹⁷ Even life insurance companies, which in 1989 owned 13 percent of shares of listed companies outstanding, are stable shareholders who do not sell these shares that they have bought.¹¹⁸ Through the cross-shareholding movement, the Japanese business community in effect made a collective commitment to suspend the rights of traditional property ownership for the sake of ensuring the long-run growth of the Japanese economy.

What binds the Japanese business community together in cross-shareholding is not the yields that they can receive on each other's shares, or even the ownership rights that these shares entail, but the business relations they have with each other, and their consequent common interest in the sustained growth of the Japanese economy. Into the mid-1990s, the cross-shareholding movement has remained intact, despite the financial mania of the late 1980s that created strong short-term incentives for any individual cross-shareholding company to market the shares of other companies on the vastly inflated Tokyo stock market.

Throughout the second half of the twentieth century, the foundation of Japanese corporate finance has continued to be retained earnings. As was the case before World War II, these retained earnings have often been highly leveraged by loans from banks, with the main bank of the company's keiretsu taking the lead. Also, as before the war, the main banks could commit finance to industrial development because of their access to funds from the central bank that mobilized household savings through the postal savings system and that allocated these funds to those main banks that would help carry out the government's industrial development agenda.¹¹⁹

Through their ongoing contacts with the leadership of the borrowing companies -- for example, the presidents of all the companies within a keiretsu meet once a month -- these banks have acquired the knowledge of people and projects that successful financial commitment requires. Main banks not only leverage retained earnings to provide for the long-term financial requirements of going concerns but also, along with the going concerns themselves, provide the committed finance for new ventures.

The commitment of finance to innovation remains strong in Japan, therefore, because the business community has cooperated in ensuring that shareholders cannot extract high returns from industrial enterprises, while the government, through the regulation of the financial system, has ensured that debt financing for industrial development is both inexpensive and secure. Committed finance has in turn permitted the Japanese to build organisational capabilities that, unlike the American system and more like the German system, extend beyond the managerial structure to include skill

¹¹⁷ Robert J. Ballon and Iwao Tomita, The Financial Behavior of Japanese Corporations, Kodansha International, 1988: ch.3; Robert Zielinski and Nigel Holloway, Unequal Equities: Power and Risk in Japan's Stock Market, Kodansha International, 1991, ch.2.

¹¹⁸ Zielinski and Holloway Unequal Equities, 23, 46-50.

¹¹⁹ Ballon and Tomita, Financial Behavior of Japanese Corporations, Part II.

formation on the shop floor and long-term relations with, as well as investments in, vertically-related enterprises.

The top managers of Japanese corporate enterprises are integral members as well as leaders of their organisations. The remuneration of top managers of Japanese industrial corporations remains far below that of their counterparts in the United States and Britain, even when -- as is often the case -- their companies outperform their U.S. and U.K. counterparts.¹²⁰ Indeed, the outstanding performance of Japanese companies over the past few decades derives in part from the recognition that top managers are members of an organisation and that the capabilities that permit superior economic performance are not individual but organisational. The foundations of these organisational capabilities are not only within the managerial structure but also on the shop floor and in vertically related enterprises.¹²¹ Japan's economic success reflects a powerful mode of "collective capitalism" in which the business community, acting in concert, have suspended the traditional rights of private shareholding for the sake of sustained economic growth.¹²²

Like committed finance, key features of Japanese organisational structure can be traced back to the Meiji era. The lack of prior industrial development even in the later Tokugawa period, compared with Britain, United States, and Germany in mid-nineteenth century, meant that, after the Meiji Restoration in 1868, the Japanese state had no choice but to promote the education and enterprise that would generate a broad-based system of skill formation. Although, in the late nineteenth century, the Japanese government consciously pursued a national economic development strategy, it relied on business enterprises to formulate the investment strategies and implement the organisational structures that would permit the development and utilisation of technology. The state did, however, make critical investments in the educational system, so that within two decades after the Meiji Restoration, the Japanese system of public education was virtually universal and the system of higher education was turning out a steady supply of engineers who then acquired specialist skills working for private-sector companies, including the zaibatsu, that were building formidable managerial structures.¹²³

Since World War II, former zaibatsu such as Mitsubishi, Mitsui and Sumitomo, shorn of family control, have remained powerful corporate actors in the Japanese economy, along with a few other large groups built up either by powerful banks or by industrial enterprises that have emerged as dominant in their industries. In the automobile and electronics industries, for example, Toyota and Sony have spawned vertical keiretsu through which they plan and coordinate group activities, including the creation or acquisition of vertically related enterprises as new opportunities for the development and utilisation of technology arise.

¹²⁰ New York Times 01/20/92.

¹²¹ W. Mark Fruin, The Japanese Enterprise System: Competitive Strategies and Cooperative Structures, Clarendon Press, 1992.

¹²² Ronald Dore, "Financial Structures, Motivation, and Efficiency," photocopy, MIT, 1994.

¹²³ Hiroyuki Odagiri and Akira Goto, "The Japanese System of Innovation: Past, Present, and Future," in Richard R. Nelson, ed., National Innovation Systems: A Comparative Analysis, Oxford University Press, 1993.

Enterprise groups permit the core companies to enjoy the advantages that the vertical integration of production and distribution creates for the borrowing of technology and the implementation of process and product innovation, without enduring the disadvantages of unmanageable bureaucracies that stifle technological and organisational change. By circumventing the intrafirm organisational structure through subcontracting arrangements with satellite firms, the core company can pursue new investment strategies that require entrepreneurial initiative and leaps in technological ability.

The growth of enterprise groups provides core companies with the opportunity for strategically locating more labour-intensive activities in smaller firms in which the technical specialists have direct proprietary interests in enterprise performance, and in which control of the terms of employment and work conditions need not be shared with the enterprise unions that have become central to labour-management relations in the dominant companies. Although, as subcontractors for the core enterprises, the satellite firms can in principle act independently, in practice the very success of the innovative strategies of the dominant enterprises and their commitment to maintaining long-term relations with their subcontractors lead the smaller firms to view themselves as members of an integrated organisational structure.¹²⁴

Over time, some of these "satellites", if sufficiently innovative, have taken on lives of their own, as in the case of Fanuc, the company set up by Fujitsu to develop numerical control units for machine tools.¹²⁵ Even then, the very fact that one strong vertically related enterprise has emerged out of the development of another creates a continuing basis for cooperative investment policies while each builds its own internal organisation. The organisational capability developed through intercompany cooperation within groups enhances the ability of firms from different groups to engage in cooperative research and development projects, as has been the case in the emergence of an internationally competitive Japanese computer industry.¹²⁶

The ability to organise cooperative investment strategies across enterprises is enhanced by the structure of managerial decision-making within enterprises. Consensus decision-making -- the ringi system -- emphasizes the two-way flow of ideas and information up and down the corporate hierarchy. Consensus decision-making grew out of the need of the rapidly growing zaibatsu of the early twentieth century to lure college graduates -- products of a concerted effort by the state to create an educated elite -- away from prestigious government posts. Considerable

¹²⁴ Ronald Dore, Flexible Rigidities: Industrial Policy and Structural Adjustment in the Japanese Economy, 1970-1980, Stanford University Press, 1986; Michael Best, The New Competition: Institutions of Industrial Restructuring, Harvard University Press, 1990; ch.5; Michael Smitka, Invisible Handshakes: Subcontracting in the Japanese Automobile Industry, Cambridge University Press, 1992.

¹²⁵ David Collis, "The Machine Tool Industry and Industrial Policy, 1955-82," in A. Michael Spence and Heather A. Hazard, eds., International Competitiveness, Ballinger, 1988; Seiichiro Yonekura and Hans-Jürgen Clahsen, "Innovation by Externalization: A New Organizational Strategy for the High-Tech Industries -- Fuji Denki, Fujitsu, and Fanuc," in Takeshi Yuzawa, ed., Japanese Business Success: The Evolution of Strategy, Routledge, 1994.

¹²⁶ Marie Anchoordoguy, Computers Inc: Japan's Challenge to IBM, Harvard University Press, 1989; Martin Fransman, The Market and Beyond: Cooperation and Competition in Information Technology Development in the Japanese System, Cambridge University Press, 1990.

technical information was required from, and considerable authority had to be delegated to, these professional managers.

The institutional basis for the devolution of decision-making power from top executives to a wider group that extends further down the formal hierarchy is permanent, or lifetime, employment. Japanese managers typically rise out of the ranks of "white-collar workers" who enter the firm after graduating from college. Like consensus decision making, the policy of permanent employment was extended to professional managerial personnel in the early twentieth century in order to attract them away from government service and to create the long-term attachments that would make it worthwhile for the business enterprises to invest further in the training of the recruits.¹²⁷

Over time, however, the offer of permanent employment has been extended further down the organisational hierarchy. Before World War I permanent employment was used as a strategy to transform "key" skilled workers (oyakata) who, as highly mobile labour contractors, had recruited, trained, and supervised shop-floor labour, into permanently employed foremen who now performed the same functions, but with a long-term commitment to one particular company.¹²⁸ In the early 1950s, a strategy of substituting cooperative enterprise unions for the militant industrial unions that had arisen after World War II resulted in the extension of permanent employment status to all male blue-collar workers in the larger enterprises.¹²⁹

The recent success of Japanese mass producers in introducing flexible manufacturing systems owes much to the fact that, for decades before the introduction of the new automated technologies, blue-collar workers were granted considerable discretion to monitor and adjust the flow and quality of work on the shop floor.¹³⁰ Moreover, the ability of Japanese managers to develop the skills of blue-collar workers owes much to the existence for over a century of a national system of mass education designed specifically to ensure that the workforces of the future will possess the general cognitive competences that advanced production technology requires.¹³¹

Japanese practice is in marked contrast to the U.S. managerial concern with using technology to take learning and initiative off the shop floor, a practice that goes back to the late nineteenth century when the success of U.S. mass production was dependent on breaking the power of craft workers and transferring to management the sole right to plan and coordinate the development and utilisation of technology. Despite the existence of militant unions in Japan at various points in the first half of the twentieth century, there was never any attempt by Japanese workers or their

¹²⁷ E. Daito, "Recruitment and Training of Middle Managers in Japan, 1900-1930," in Kesaji Kobayashi and Hidemasa Morikawa, eds., *Development of Managerial Enterprise*, University of Tokyo Press, 1986.

¹²⁸ Reiko Okayama, "Japanese Employer Policy: The Heavy Engineering Industry, 1900-1930," in Howard Gospel and Craig Littler, eds., *Managerial Strategies and Industrial Relations*, Heinemann, 1983; Andrew Gordon, *The Evolution of Labor Relations in Japan: Heavy Industry, 1853-1955*, Harvard University Press, 1985.

¹²⁹ Michael Cusumano, *The Japanese Automobile Industry*, Harvard University Press, 1985, ch.3.

¹³⁰ Cusumano, *Japanese Automobile Industry*, ch.5-6.

¹³¹ Odagiri and Goto, "Japanese System of Innovation"; Ronald P. Dore and Mari Sako, *How the Japanese Learn to Work*, Routledge, 1989.

organisations to establish craft control on the shop floor.¹³² As a result, Japanese employers never had to confront established craft positions of workers as was the case with U.S. manufacturers around the turn of the century, nor did they have to resign themselves to simply leaving skills on the shop floor in the hands of autonomous craftsmen without integrating them into the enterprise strategy as was the case in Britain.

Historically, the problem facing Japanese employers was not to rid themselves of skilled workers who could establish craft autonomy on the shop floor. Rather employers' problem coming into the twentieth century was the absence of a self-generating supply of workers with industrial skills. To overcome this constraint, industrial employers had to make the investments that would transform unskilled workers into skilled workers and then retain them by integrating them into the organisation. To be sure, these same employers generally only accepted the institutionalization of permanent employment, enforced by enterprise unions, when compelled to do so by the threat of militant unionism after World War II. In practice, however, out of the exigencies of developing and utilising workers with industrial skills, the social foundations for the current permanent employment system were laid in Japan, decades before the long-term commitment of the enterprise to the blue-collar worker became an institutional feature of Japanese industry.

Innovative capability and international competition

In terms of the integration of the skills and learning of management and labour as well as the commitment of finance to the innovative enterprise, the social organisation of the Japanese system is most similar to that of Germany. In both nations, skill formation on the shop floor is integral to the strategy and structure of the enterprise as a whole. In Germany, however, the internal organisation of the enterprise derives from an industry-wide strategy to set high-quality product standards, whereas in Japan the organisational structure derives from an enterprise strategy to engage in continuous problem-solving to cut costs. In Germany, shop-floor workers are trained to perform to precise occupational standards, whereas, in Japan, shop-floor workers are trained to perform many tasks that will enable them to recognize and confront production problems as they arise. In historical perspective, the innovative capability of German enterprises reflects a tradition of producing for markets that demand high quality, whereas the innovative capability of Japanese enterprises reflects a tradition of producing for markets that demand low cost.

The German and Japanese systems also differ in the ways in which they are shaped by and diffuse to large and small manufacturing companies. In Japan, large and small companies tend to be vertically linked through enterprise groups, with the innovative strategy and integrated organisational structure issuing from the dominant enterprise but extending to smaller subcontracting firms. In Germany, the industry-wide, and even nation-wide, character of the system of skill formation means that common education and training is available to, and utilised by, both large and small companies, whether they are vertically linked or not.

¹³² Gordon, *Evolution of Labor Relations*, Part 1.

Although shaped by different product-market orientations, by making skill formation on the shop floor central to their investment strategies, the German and Japanese systems of integrating the skills and efforts of managers and workers both differ markedly from the American system. In the American case, the shop-floor investment strategy has been to substitute machines and materials for the knowledge and skills of workers. What all three systems -- the German, the Japanese, and the American -- have in common, however, is investment in managerial learning and the organisational structures that are its basis as the historical precondition for the shop-floor investment strategy, whether it be skill-creating as in Germany and Japan or skill-displacing as in the United States. And all three systems differ from the British case in having a strategy and structure of learning at the managerial level.¹³³

What are the implications of these differences in business organisation for changes in international competitive advantage among these nations? In the post-World War II decades, Japanese enterprises gained competitive advantage over American enterprises in those industries such as steel, consumer electronics, and automobiles in which an integrated system of skill formation within the managerial structure was critical for product innovation, but in which the evolution of process technology also made an integrated system of skill formation that included shop-floor workers and suppliers critically important for process innovation. In industries in which, from the 1960s, a strategy for learning that relied on the managerial structure alone continued to suffice in global competition -- industries such as pharmaceuticals and chemicals -- the Americans continued to be leading innovators, and Japanese companies were unable to mount an effective competitive challenge.¹³⁴

Indeed, in industries such as pharmaceutical and chemicals, the organisational structure that generates organisational learning and innovation includes tight research and development linkages with universities, a set of relationships that has long prevailed in Germany and United States, but not in Japan. In Germany, these industry-university linkages are part of a national system of innovation designed to generate high-quality products without the achievement of low unit costs being a primary concern. In machine-based industries, however, where process innovation has been important in driving down costs, the Japanese have been able to use their highly integrated systems of skill formation to generate the organisational learning that has permitted them over time to move into high-quality market segments at lower unit costs than their high-quality competitors. Some two decades ago, the Japanese used their process innovations to displace Germans in the high-quality camera and binocular markets. Today, Japanese companies are mounting effective competitive challenges to Germany in the machine tool and luxury automobile markets.

In both Britain and the United States, the dominant response to the Japanese challenge has been to seek to remain competitive by restraining wage increases and increasing labour effort (in large part as a concomitant to downsizing), with a neglect

¹³³ Lazonick, "Strategy, Structure, and Management Development"; Lazonick, Competitive Advantage.

¹³⁴ For an elaboration of this argument, see William Lazonick and Jonathan West, "Organizational Integration and Competitive Advantage: Explaining Strategy and Performance in American Industry," Industrial and Corporate Change, 4, 1, 1995: 229-270.

of investments in skills that are essential for raising living standards and improving employment conditions over the long term. As the Japanese challenge has begun to make itself felt in Germany (as well as in other economies of continental Europe), similar adverse pressures on wages, effort, and investments in learning are becoming manifest.

The British and American experiences have shown that, in response to the pressures of global competition, strategic decision makers have a tendency to turn from making value-creating investments in human assets that can generate higher quality, lower cost products in the future to implementing value-extracting strategies that permit those who control resources to live off the value-creating investments made in the past.¹³⁵ Financial interests exert considerable pressure on British and American strategic decision makers in industry to treat skill formation not as a productive investment that can generate returns in the future but as an operating expense that depresses returns in the present.

The power of financial interests to stress short-term profits as the goal of the corporation has confronted the power of organisational interests to invest in, and restructure, skill-formation systems when the systems that previously generated sustained competitive advantage have ceased to do so. An understanding of the social foundations of economic development and international competitive advantage raises critical questions about the valuation of human-capital investments in advanced economies, who has an interest in making these investments, and in whom these investments are made. Especially when, as is the case in Britain and United States, and increasingly in Germany, existing systems of skill formation are under intense competitive pressure, policies for industrial restructuring must consider the modes of business governance -- an in particular modes of corporate governance -- as well as the underlying changes in political alignments that are required to put new, more innovative, organisations and institutions in place.

¹³⁵ William Lazonick, "Creating and Extracting Value: Corporate Investment Behavior and American Economic Performance," in Michael A. Bernstein and David E. Adler, eds., Understanding American Economic Decline, Cambridge University Press, 1994; Lazonick and O'Sullivan, "Big Business and Skill Formation";

3. The Theory of Innovative Enterprise

Social foundations of innovation

The preceding comparative-historical analysis of economic development and international competition in the large advanced economies suggests two fundamental conditions that characterize the social organisation of innovation. One fundamental characteristic, which we call **organizational integration**, is that the people involved in the process of organisational learning be willing able to provide their skills and efforts to the pursuit of organisational goals. The other fundamental condition, which we call **financial commitment**, is that the business enterprise have sufficient access to financial resources to sustain both the innovation process until it can generate returns and the business organisation so that it can engage in continuous innovation.¹³⁶

Organisational integration is a set of ongoing relationships that provides participants in a complex division of labour with the abilities and incentives to apply their skills and efforts to the innovation process. They must have the ability to contribute to the cumulative and collective learning process, which invariably demands that the organisation invests in their skills. They must have the incentive to commit these skills to the pursuit of the goals of the investing organisation rather than sell their “human capital” on the open market. To some extent, the collective and cumulative character of the learning process constrains individuals to commit their skills to the investing organisation. In addition, however, the prospects of sharing in the gains of successful innovation by the investing organisation can lead even mobile participants to forego the lure of the market and remain committed to the pursuit of organisational goals.

Financial commitment describes the social relations that are the basis for the ongoing access of a business enterprise to the financial resources required to sustain the development of productive resources. It is required until such time that these resources can be utilised sufficiently to generate returns that provide the financial liquidity that allows the enterprise to survive. To keep money committed to the innovative investment strategy, the enterprise’s decision makers who control financial resources must have intimate knowledge of the problems and possibilities of the investment strategy, or must entrust their money to managers who have such knowledge through their integration into the innovative learning process.

Financial commitment and the strategic allocation of resources to organisational learning that it supports is the basis on which product market returns can be appropriated by the innovative enterprise. How these revenues are allocated, and in particular the extent to which the returns from successful innovative investments are strategically channelled into future innovative activities, is critical for the sustenance of a strategy of continuous innovation. Only through continued investment can the

¹³⁶ Lazonick., Business Organization, ch.3; Lazonick, “Controlling the Market”; Lazonick and O’Sullivan, “Organization, Finance, and International Competition”

depreciation or obsolescence of existing productive resources -- skills and knowledge and the physical assets in which they are embedded -- be counterbalanced by the development of new skills, knowledge and physical resources in order to sustain the competitive advantage of the learning collectivity.

Taken together, financial commitment and organisational integration determine the innovative capability of a business enterprise. In terms of inputs into the production process of the enterprise, financial commitment supplies money and organisational integration supplies labour. But, in contributing to the innovation process, these inputs are not commodities. Rather they reflect the social relations to the business organisation of people who control money and labour. Financial commitment means that those who control money rely on the specific enterprise to which they commit this money to generate returns. Should the same money -- for example the earnings of the enterprise -- come under the control of people who demand financial liquidity rather than financial commitment, then the ability to initiate and sustain innovative investment strategies will disappear. Similarly, organisational integration leads employees to view the returns to the supply of their labour as bound up with the success of the particular enterprise (or group of enterprises) in which they participate. The foundations of this expectation are the willingness of the enterprise to invest in the capabilities of particular employees, the company's practice of providing long-term employment and shares in the gains from innovation to employees in whom it makes such investments, and the ongoing interactions of such employees with other participants in the organisation in a cumulative and collective learning process.

Organisational integration and financial commitment represent social conditions that, as the preceding comparative-historical analysis has demonstrated, vary across nations. Reflected in the operation of a nation's educational, financial, and legal institutions, these social conditions constitute norms according to which a nation's business enterprises seek to make strategic decisions concerning the allocation of resources to the productive transformation in their enterprises and the allocation of returns from it. Depending on the organisational and financial requirements of innovative investment strategies, which, because of changing technology, will vary across industries as well as over time, these social conditions may either promote or constrain innovative business enterprise. Within a particular nation and a particular industry at any point in time, some business enterprises may be able to confront and transform social conditions that constrain innovation, while other enterprises might succumb to them. To understand national economic development, we require a theory of how, through its own social organisation, a business enterprise responds to -- make use of or transforms -- the social conditions in which it operates to generate innovation. We require a theory of innovative enterprise.

The enterprise as a social organisation

A social organisation is a group of individuals who interact with one another for the purpose of achieving common goals. Depending on the nature of the common goals, an organisation may be political, cultural, or economic. A business enterprise is a social organisation, the purpose of which is primarily economic. For members of the business enterprise, its economic purpose is to generate sufficient revenues so that it can provide them with the means of earning a living over a sustained period of time. A business organisation attains its economic goals -- it generates revenues and earns

returns -- by transforming purchased inputs into sold outputs. Our understanding of the role of social organisation in the operation and performance of the business enterprise depends on our underlying theory of how the business enterprise accomplishes this productive transformation.

In neoclassical economics, the business strategy of the enterprise is to produce the amount of output that maximizes the profits of the enterprise subject to technological and market constraints that are known to, and imposed on, all firms in the industry. The technological constraints are combinations of qualitatively distinct productive resources (factors of production), the productivity of which cannot be influenced by the enterprise. The market constraints are the market-determined factor prices (wages, interest rates, rents) that the enterprise must pay for these productive resources and the market-determined product prices that it can receive for the products that result from the transformation of these factors of production.

By assuming that, in making its production decisions, the business enterprise takes technology and prices as given, neoclassical theory leaves no role for social organisation in the operation and performance of the enterprise. In our terms, the business strategy of such an enterprise is adaptive -- the enterprise seeks to maximize profits subject to given technological and market constraints. In such an enterprise, the claims to revenues of all participants (productive factors) in the enterprise are strictly determined by technological and market forces that are external to the operation of the enterprise itself. Any residual returns to the enterprise are deemed to be transitory, and in the absence of "market imperfections", will be competed away by the entry of new firms into the industry that the enterprise is in.

It is only in a theory of the innovative enterprise (a theory that, in ignoring economic development, neoclassical economics lacks) that the organisation of the enterprise and the goals of participants in the enterprise become relevant. In the theory of the innovative enterprise, the business enterprise does not take technology (the combinations and productivities of resources) as given. Rather, in pursuing an innovative strategy, it seeks to generate new technology by learning. The collective and cumulative character of the learning process that generates new technology is what creates a developmental role for social organisation in the operation and performance of the enterprise.

Collective and cumulative learning

Why does collective and cumulative learning create a developmental role for social organisation in the business enterprise? When learning relevant to innovation is an individual act, it can be done external to the enterprise by the individuals themselves. The individual can then sell the improved skills, machines, or materials to business enterprises at the going market price (which may include what economists have long called "quasi-rents" to the individuals for superior productive resources). Under such conditions, learning, and hence economic development, can take place in the economic system as a whole, while the business enterprises that transform purchased inputs into sold outputs conform to the theory of the adaptive enterprise. As distinct from individuals from whom developed productive resources are purchased, business enterprises utilise, but do not develop, productive resources.

Under these conditions, where the business enterprise itself is not engaged in the development of productive resources, the business enterprise cannot influence its competitive (technological and market) environment, and hence (as posited by neoclassical theory) cannot gain competitive advantage over any other enterprise. In such an economy characterised by individual learning, innovation and development can occur without social organisation -- without individuals interacting with one another in social groups to achieve common goals. It is, therefore, the collective character of learning that gives social organisation of the business enterprise a developmental role in the operation and performance of the economy.¹³⁷

The theory of the innovative enterprise posits that such collective learning characterises the innovation process in the advanced economies and that the business enterprise plays a critical role in the economic system in creating social organisations that enable collective learning to occur. What do we mean by collective learning? And whence its strength in the generation of knowledge that has allowed it to serve as the basis for sustained competitive advantage of dominant business enterprises in all of the advanced economies?

Knowledge is rooted in experience, and the learning process thus depends on the way in which the learner's contact with reality changes. The learner's changing contact with reality is in turn influenced by the definition of the problems that he attempts to solve, and therefore the creativity with which these problems are specified. The foundations for learning are thus experience and creativity. The vitality of collective learning is, of course, dependent on the creativity and experience of the individual members of the collectivity who do the learning. What distinguishes collective learning from individual learning are the ways in which the learning by individuals in the collective process is affected by the concomitant learning of one another and integrated as new, collective, knowledge.

On the basis of social relations within the enterprise, the knowledge of individuals can be transmitted from one person to another but can also be transformed through the conveyor's interaction with the creativity and experience of others. Social interaction thus provides the basis not only for the sharing of knowledge among people but also for further learning as the knowledge of one interacts with that of others to generate new knowledge for all of them. Relations among people, forged through common experience of work or social contact of a more general type, can thus open up new possibilities for learning beyond the individual's personal experience of work and creativity. The integration of knowledge at a collective rather than an individual level can render the whole of collective learning and knowledge greater than the sum of its parts.

Knowledge is based on experience and enhances experience. What a person has learned determines the activities that he can perform, and therefore how work can be organised. The organisation of work influences the activities that are performed by the learner, and thus shapes what he learns. Knowledge generation and work organisation thus interact through a dynamic learning process. The process of learning is strategically influenced through decisions that shape the organisation of the enterprise and in particular the specialisation of tasks and the coordination of

¹³⁷ The following draws upon O'Sullivan, "Innovation as Strategy and Learning".

specialised skills and knowledge. By influencing task specialisation, the strategy for learning defines the problem that the learner attempts to solve and as a result the experience of reality that is the foundation of his learning. By specifying how tasks are to be coordinated, the strategy for learning shapes the way in which learners interact with and learn from each other.

A common organisational characteristic of business enterprises is the distinction between managers and workers. The division of labour between them has exerted an important influence on the development of the skills and knowledge of both groups. Of course, all work requires some integration of thinking and doing. Even when the division between the activities of workers and managers is at its sharpest, managers learn to think by doing a variety of tasks as they move up the hierarchy of the organisation, and some integration of thinking and doing on the shop floor is required to develop and utilise technology.¹³⁸ What is important in understanding organisational learning and innovation, and the differences in these processes across enterprises, regions and nations, is the variation in the integration of thinking and doing in the activities of organisational members. The extreme view that managers think and workers do,¹³⁹ although a reasonable approximation of the organisation of work in some places at certain times, obscures the dynamic of learning in many, if not most, business organisations and the variations in that learning process that are the root of differential organisational performance across time and place.

The coordination of work as well as its hierarchical specialisation also affects the generation and integration of knowledge in the organisation because it influences the way people interact with each other in the performance of their work. Although “coordination” is often conflated in economic and management theory with managerial coordination, in fact work must be coordinated in many different parts of the organisation and can be coordinated in a variety of ways. Indeed, where top managers attempt to control work throughout the organisation, they are likely to undermine the process of learning in the organisation as a whole. By reducing the need for other people to coordinate their activities with one another, the social interaction that can serve as a foundation for more generalised learning will have little chance of being initiated.

Striking differences are apparent in comparative-historical perspective in the strategies and structures of learning across enterprises, regions and nations. For example, as we have documented elsewhere for Japan, Germany, the U.S. and Britain, differences across societies in the organisation of work, and in particular in the manner in which work is hierarchically specialised and coordinated, are reflected in variations in the way knowledge is generated and integrated in the organisations that emerge in these national contexts.¹⁴⁰ The hierarchical division of labour and its coordination is, however, only one aspect of the much broader phenomenon of the influence of the structure of work and the strategy that shapes it on the knowledge generated through the experience of performing it.

¹³⁸ Lazonick, *Competitive Advantage*.

¹³⁹ The classic modern statement of this point of view is Harry Braverman, *Labor and Monopoly Capital*, Monthly Review Press, 1974.

¹⁴⁰ Lazonick and O’Sullivan, “Big Business and Skill Formation”.

Functional specialisation that cuts across hierarchical layers also exerts an important influence on learning within enterprises. When there is a strict division of labour between marketing and production for example, it acts as an obstacle to the integration of these functions in the development, production and delivery of products. Similarly, the learning of workers is importantly influenced by the allocation of tasks among workers, for example by the extent to which the maintenance of machines and the control of the quality of their output are undertaken by machine operators.

Strategy shapes the direction and structure of the learning process but strategic possibilities are also influenced by existing knowledge. What a person knows determines what activities he can perform and, therefore, how work can be strategically divided and coordinated within an organisation. Existing knowledge and, therefore, the history of learning influences the possibilities for the division of labour and the coordination of tasks. As a result, organisational learning is cumulative as well as collective.

The integration of strategy and learning

A strategy that shapes the collective and cumulative learning process is an investment strategy. To permit a group of people to engage in collective and cumulative (that is, organisational) learning, and to give them incentives to devote their effort, experience and creativity to the learning process, requires substantial commitments of resources over sustained periods of time. Reflecting its developmental character, during the learning process resources are expended without a return of revenues. To commit resources to innovation means foregoing their exchange whilst this developmental process is underway. What one learns, changes how one conceives of the problem to be addressed, the possibilities for its solution, and therefore the appropriate strategy for continued learning. The withdrawal of some of the learners from the business organisation before the learning process is complete may endanger the success of the entire undertaking. Thus the scale of innovative investment depends on not only the size of the investment in productive resources but also the duration of the investment necessary to sustain that process over the developmental period during which learning occurs.¹⁴¹

The high fixed costs of building these relationships that permit organisational learning will place the enterprise at a competitive disadvantage until such time that the learning process yields returns. At the same time, the need to engage in a learning process renders the returns to these investments highly uncertain. The strategy for learning that will result in the production of higher quality and/ or lower cost products -- that is, in innovation -- cannot be known in advance. Learning is a process of discovery and may not succeed in generating knowledge that can be used as the basis for the delivery of higher quality and/ or lower cost products. A failure to generate returns at any point in time may be a manifestation, moreover, not of a failed innovative strategy but of the need to commit even more resources to an ongoing learning process. Even when the learning process is successful the

¹⁴¹ Lazonick, *Business Organization*, 194..

knowledge that it generates may not be sufficient to meet the challenges of more innovative competitors.¹⁴²

Yet innovation cannot occur unless the business enterprise adopts a strategy that confronts the productive and competitive uncertainties inherent in that process. By strategically shaping the learning process, the business enterprise can develop superior products and processes. To be successful, an innovative organisation should rely on inputs that are readily available on the market (and hence constitute variable costs) where organisational learning is not required, while strategically committing resources to building integrated organisations (and incurring fixed costs) where such learning is required. Unlike the adaptive enterprise of neoclassical theory, through the strategic allocation of resources to organisational learning, the innovative enterprise can alter the technological environment in which it operates.

To generate returns, the business enterprise must also utilise the productive resources that it has developed. Since organisational learning is costly the innovative enterprise must secure a large enough share of its product markets to transform the high fixed costs of innovation into low unit costs of products. It is organisational learning, however, that creates the productive potential for the innovative enterprise to generate higher quality, lower cost products without lowering the standards of living of the participants in the learning process.

To the extent that an enterprise successfully innovates -- generates new knowledge through learning that allows it to deliver products to customers at prices that they are willing to pay -- it can build and sustain a competitive advantage. The knowledge generated and transmitted through a social process is specific to that process. Existing or potential rivals cannot secure the same level of productivity from any particular resource as the advantaged organisation unless they replicate or surpass the organisational capability that the dominant enterprise has created, and no other enterprise can afford to reward these resources to the same extent. The time-consuming need to develop the social foundations for organisational learning serves as a barrier to rapid imitation by competitors. The nature of the organisational learning process thus affords the innovative business enterprise privileged access to the new technology that organisational learning makes possible and allows it to appropriate revenues from that access for a sustained period of time.¹⁴³

To allocate resources strategically to innovative investments to actively shape the work of the learner in an innovative way requires the visualisation of a range of potentialities that were previously hidden and that are now believed to be accessible.¹⁴⁴ Innovative strategy is conceived of by imagining the possibilities for innovation. It is thus a creative response to external conditions because it attempts to overcome them through the generation of new knowledge. Because, as a creative response, there are no objective guidelines for innovative strategy, there are likely to be disagreements about the appropriate strategy for learning. To implement an innovative strategy, therefore, strategists require control of productive resources that

¹⁴² Ibid., ch, 3, 6.

¹⁴³ Lazonick, *Business Organization*, 83.

¹⁴⁴ The following draws upon O'Sullivan, "Innovation as Strategy and Learning".

can be committed to a developmental process in accordance with their evaluation of the problems and possibilities of alternative learning strategies.

But spontaneous imaginative leaps of the type that we associate with creativity are insufficient as a basis for innovative strategy. The strategic decision maker must also know what the learning process is generating if he is to shape the experience and interaction of the learners in an intelligent way. The strategy for learning and the learning process must interact if, in decision making, strategists are to take account of the opportunities for and threats to innovative success that learning reveals. Only through the integration of strategy and learning can a developmental process occur in which strategic decisions shape the learning process and the knowledge generated through that process influences the future strategy of learning. Innovation is therefore an uncertain and developmental process which relies not only on a combination of strategy and learning but also on their integration.

When the learner sets the strategy for learning -- that is when the learner controls the shape of his own work or learning experience -- this integration of strategy and learning is automatic. By learning, he automatically generates the knowledge that he needs to strategically shape the experience from which he learns. Once collective learning is involved, integration is no longer automatic. The work experience of learners must be planned but that planning must also be integrated to the strategy that shapes the way in which learners interact with and learn from each other. As these interactions become more complex, as the learning collectivity is extended and the relations between insiders become deeper, the integration of strategy and learning at the level of the individual becomes increasingly challenging.

Thus as the learning process becomes more complex, the learners and the strategic decision makers are likely to assume different identities to enable them to manage the tasks of learning and strategic decision making. Nevertheless the need to have strategy and learning integrated exists in a collective innovation process as it does in an individual one. Strategic decision makers must know what knowledge the learning process is generating if they are to make informed decisions that shape that process. They must therefore be in touch with the fruits of individual learning as well as the knowledge generated through interaction among individuals.

Since the basis for the generation and transmission of learning is a social process, strategic decision makers must become integrated into the network of relations that underlies it; they must become to some extent insiders to the learning process. To the extent that strategists develop relations with the members of the learning collectivity they can become privy to some of the knowledge that the collectivity generates, and can use it as a basis for planning and coordinating the work that members of the collectivity undertake.

The strategic allocation of resources and returns

Using its own unique social organisation to engage in organisational learning that transforms the productive capabilities of its human and physical resources, the innovative enterprise can gain competitive advantage. It can then use the returns generated by its competitive advantage to lower product prices to its buyers, to increase the earnings of its employees, to lower its cost of capital (by substituting

retained earnings for debt), to increase dividends to its owners, or to invest in the productive resources of the enterprise. Through the **strategic allocation of resources** to organisational learning, the innovative enterprise can alter the technological environment in which it operates. Through the **strategic allocation of returns** from organisational learning, it can also use its competitive advantage to alter its market environment and to renew the innovation process.

We have argued that to strategically allocate resources to the organisational learning process and returns from successful innovation, strategists must be integrated with the social relations that support the organisational learning process. From this perspective, direct intervention by outsiders to the learning process, be they financial shareholders or policy makers, in the strategic decisions that shape the experience of insiders is likely to undermine innovative success. Yet the recognition that, for the sake of innovation and sustained economic development, it matters who makes investment decisions, what types of decisions they make, and how returns generated by these investments are distributed, gives national policy makers an interest in the governance of business enterprises on which their economies rely to invest in productive resources. How and what conditions can national policy encourage strategic decision makers in the nation's business enterprises to engage in innovative investment strategies?

4. National Policy for Corporate Governance

Business governance

We have defined **business governance** as the framework of social institutions that influences **the strategic allocation of resources and returns** in business enterprises. Business governance influences who has control over productive resources and what their incentives are in allocating these resources, as well as who appropriates the returns from investments and what their incentives are in allocating these returns. Through its influence on *who*, *what*, and *how*, business governance policy can influence the organisational integration and financial commitment that are the social foundations of the strategic allocation of resources and returns in business enterprises. By shaping the system of business governance, national citizens and their policy makers can encourage business enterprises within the national economy to pursue innovative as opposed to adaptive business strategies without interfering in the strategic decision making process at the enterprise level.

In dynamic historical perspective, social institutions, defined more broadly than the system of business governance, both influence and reflect not only innovative strategy but also the other vital substance of the social organisation of the business enterprise -- the collective and cumulative learning process. By developing the technological capability of the nation through the operation of the educational system and the support of research and development, policy makers can also influence the social foundations of organisational learning in business enterprises.

Given the narrowness of the contemporary debates about innovation policy and business governance in the advanced economies, the need to analyse the system of business governance from the perspective of a theoretical framework that explains the social foundations of economic development is particularly important. Although the advocates of government support for the development of technological capability -- for the promotion of what has recently been called a “national system of innovation” -- recognise the importance of collective and cumulative learning for innovation and economic development, they have generally ignored the business strategies that shape that process. There is a role for people in the theories that support these arguments, but no role for money.¹⁴⁵

Technological capability must be integrated at the enterprise level and supported by organisational integration and financial commitment if it is to contribute to successful economic development. Whatever the existing technological capability of the nation, lacking sufficient organisational integration and financial commitment, business enterprises will choose to adapt rather than innovate. Indeed, the comparative analysis of economic development in leading economies such as Britain and the United States reveals that in certain historical periods it is precisely the immense technological capabilities that a national economy has already developed that present its business enterprises with the possibility to be adaptive rather than

¹⁴⁵ See, for example, Nelson, National Innovation Systems.

innovative. Past accumulation of technological capabilities makes it possible to live off the past rather than invest for the future.

In the large advanced economies, the debate over business governance concerns the allocation of resources and returns of the publicly held corporation. In terms of employment, value added, and influence on the strategies and structures of other types of business enterprise, the publicly held corporation is the dominant form of business enterprise in these economies. Within the corporate governance debate, the comparative-historical evidence that we have presented and the theoretical arguments that we have made concerning organisational integration and financial commitment support what we call the "organisational control" perspective. Particularly in the United States and Britain, however, where the erosion of organisational integration and financial commitment has gone furthest, governance debates have been dominated by proponents of what we call the "market control" perspective -- financial economists whose analyses focus exclusively on the "optimal" allocation of financial resources while ignoring the social foundations of economic development. There is a role for money in the theories that they invoke to support their perspective, but no role for people.¹⁴⁶

The market control perspective is grounded in the neoclassical theory of the "optimal" allocation of resources in a "market economy". As we have previously outlined, neoclassical theory contains no theory of innovation and no conception of the business enterprise as a social organisation. Enterprises adapt to exogenous changes in technology and markets but do not shape the competitive environment in which they operate through innovative investments. The theory of the market economy takes the returns to alternative opportunities as given, and posits that the free operation of the market mechanism will result in the optimal allocation of resources.

In contrast, the organisational control argument is rooted in a theory of the innovative enterprise in which both people (organisational integration) and money (financial commitment) play central roles.¹⁴⁷ Innovation is a developmental process that requires the organisation of complex divisions of labor over prolonged periods of time. To sustain the innovation process so that it can generate higher quality, lower cost products requires the financial commitment that organisational control provides. The success of the innovation process therefore depends on the immobility of money and people to alternative uses via the market, and thus the social foundations of innovation require the innovative enterprise to control market forces rather than be controlled by them. The immobility of financial resources required for innovation occurs not because of market imperfections but because of the prospects

¹⁴⁶ Michael C. Jensen, "Takeovers: Their Causes and Consequences," *Journal of Economic Perspectives*, 2, 1988; G. A. Jarrell, J. A. Brickley, and J. M. Netter, "The Market for Corporate Control: The Empirical Evidence since 1980," *Journal of Economic Perspectives*, 2, 1988.

¹⁴⁷ Lazonick, *Business Organization*; William Lazonick and William Mass, "Introduction," in Lazonick and Mass eds, *Organizational Capability and Competitive Advantage*, Elgar, 1995; Lazonick and West, "Organizational Integration"; Lazonick and O'Sullivan, "Organization, Finance, and International Competition"; Lazonick and O'Sullivan, "Financial Commitment and Economic Development"; William Lazonick and Mary O'Sullivan, "Big Business and Corporate Control," in Malcolm Warner, ed., *International Encyclopedia of Business and Management*, Routledge, forthcoming.

of the success of particular organisations. The control of market forces in turn provides a basis -- although always an uncertain one -- for the development and utilisation of productive resources.

For the proponents of market control, as for neoclassical economists more generally, the returns to productive resources in such forms as wages, rent, interest and profits are determined by the interaction of supply and demand in factor and product markets. They lack any conception of the investment process that by developing and utilising productive resources can, if successful yield returns that are not market determined. Hence they have no theory of the distribution of returns from an investment process that is both developmental and uncertain.

When factors of production are combined in a business enterprise, neoclassical economists argue that in theory “residual” returns that cannot be attributed to the productivity of any individual factor should be competed away by the entry of new firms into the industry. In practice, these residuals are generated by business enterprises and persist for sustained periods of time. Lacking a theory of the business enterprise as a social organisation that generates the innovations that create these residual returns, neoclassical economists attribute them to “market imperfections”.

Proponents of the market control perspective recognise the persistence of profits in dominant enterprises. Indeed, the persistence of profits is the source of their concern with corporate governance because, left under the control of undisciplined managers, the use of these profits may not be to the benefit of the owners, and hence the “principals”, of the enterprise. They argue that the financial shareholders who own publicly issued stock in the company are the “owners” of the enterprise. Because it is their assets that are supposedly at risk in the enterprise, these public shareholders are regarded as the principals who should control the residual returns.

All other participants such as employees, suppliers, distributors, creditors, and even governments, it is argued, hold contracts that guarantee them a return on their productive contributions whereas the return to shareholders depends on whatever revenues are left over (hence shareholders described as the “residual claimants”). The problem, according to financial economists, is that public shareholders cannot manage the corporate assets that they own, and therefore must hire agents -- managers -- to run the company on their behalf. But, like all other individualistic and opportunistic participants in the economy, managers cannot be trusted to make decisions in the interests of shareholders so they have to be closely monitored by those whose assets are at risk in the enterprise. The monitoring mechanism, exercised through equity markets, is the market for corporate control.

Organizational control

The market control perspective emerged in the 1970s in the United States, a country in which from the beginning of this century a widespread distribution of the shares of industrial corporations reflected the separation of share ownership from managerial control. The proponents of the market-control perspective assert that this separation of ownership from control misallocates resources as unmonitored and undisciplined managers make self-serving expenditures and prevent financial resources that are generated by the company from flowing to their most profitable uses. They call for

the correction of this misallocation of resources by using the market for corporate control to “disgorge the free cash flow” -- that is, distribute to shareholders the cash flow, including earnings and depreciation allowances, that is not tied up by the contractual obligations of the corporation and that, if reinvested by the corporation, cannot be expected to earn a target rate (often called the “hurdle” rate) of return. Through the threat of takeover by owners, the market for corporate control can force managers to issue dividends to shareholders rather than retain the free cash flow under managerial control. The implication is that public shareholders will then reallocate these disgorged resources to their most profitable uses, and the economy will be so much the better off as a result.

The experiences of the most successful economies such as the United States, Germany, and Japan show, however, that enterprises that emerged to become dominant in the product markets and national economies in which they operated did so not because they used the returns from successful innovation to advance the interests of “owners”, but because they retained them within the enterprise and channelled them back to finance the collective and cumulative learning process required for continuous innovation by the enterprise. Once a business generated a steady stream of revenues -- once it had made the transition from new venture to going concern -- the most important source of finance was retained earnings and depreciation allowances. The financing of investment on the basis of retained earnings, a practice that is pervasive in all of the advanced industrial countries, uses a portion of the surplus revenues generated by previous enterprise activities to finance investment in new activities.

Retained earnings have been the basic source of corporate finance during those periods when the corporations, and the national economies in which they are based, have experienced rapid growth. From the perspective of organisational control, retained earnings provide enterprises with the financial commitment that is essential for the successful implementation of innovative investment strategies. Yet financial economists in general ascribe no performance advantage to the use of retained earnings as a source of finance. Indeed, for the proponents of market control, retained earnings create opportunities for managerial abuse.

In neoclassical theory, the mobility of factors of production facilitates the operation of the central coordinating mechanism -- the choices of individuals to reallocate the productive resources that they own to alternative uses in response to market incentives. As a theory that idealizes a market-coordinated economy, neoclassical theory views any immobility of resources as a market imperfection. From this perspective, at any point in time, when market opportunities exist that offer higher rates of returns, the commitment of financial and human resources to particular organisations manifests market imperfections. But, again, this perspective ignores the centrality of the innovation process to the performance of the economy. At any point in time, the returns to innovation cannot be known, but the generation of returns require as necessary conditions organisational integration and financial commitment -- conditions that neoclassical theory would view as market imperfections. To harp on what is by now an old theme, neoclassical theory and the market control perspective to which it gives rise lack a theory of innovation in which productive resources have to be developed before they can be utilised and the returns to the development and utilisation of productive resources are inherently uncertain.

From the organisational control perspective that builds on an historically relevant theory of economic development, control over the distribution of returns from successful innovation in the form of retained earnings allows business enterprises to provide participants in -- or insiders to -- the organisational learning process with the abilities and incentives to apply their skills and efforts to the innovation process on a continuing basis. The ability of insiders to contribute to the organisational learning process is enhanced through investments that the enterprise makes in their knowledge and skills. But insiders also need incentives to commit their abilities to the pursuit of the goals of the investing organisation rather than sell their "human capital" on the open market. The prospects of sharing in the gains of successful innovation by the investing organisation can lead even those insiders who have the potential of remunerative mobility via the market to forego the lure of existing market opportunities, and remain committed to the pursuit of organisational goals.

An understanding of the social foundations of innovation -- of the need for organisational integration and financial commitment -- to develop the relations between insiders in a process of organisational learning, leads one to question the fundamental premise of the market control perspective. That premise is that shareholders are the "principals" in whose interests enterprises should be run. An understanding of the fact that financial shareholders are outsiders to the social process through which innovation and economic development are achieved is the basis for direct confrontation with the ideology of the market control perspective.

The ideology that shareholders are the "principals" of the enterprise is based on the premise that the owners of traded equity shares financed investments in the enterprise's productive assets. This premise is factually incorrect. The experiences of the most successful corporations and national economies show that the role of equity markets has not been to finance long-term productive investment but to transfer ownership of existing assets from insiders such as owner-entrepreneurs who, in the "new-venture" stage of enterprise growth, have developed the productive capabilities of those assets to outsiders -- public shareholders -- who are willing to stake a claim to the future returns on these existing assets. The role of equity, or stock, markets is to effect this transfer by ensuring the liquidity of the shareholdings that the outsiders take on.

As portfolio investors, the main goal of the new shareholders is financial liquidity rather than financial commitment. Given their quest for liquidity, of all the stakeholders in the modern industrial corporation, shareholders are the ones with the least stake in a particular company as an ongoing entity because, via the stock market, shareholders have the easiest conditions for exit of any stakeholders. They are the last group that one would expect to provide the financial commitment that long-term investments require. The assertion by the advocates of market control that shareholders are the principals reflects an ideological position that is inconsistent with the locus of financial control that has historically generated industrial development.

Contrast the liquid and diversified position of a public shareholder, the outsiders that the proponents of the market control perspective contend should bear title to the residual, with the position of an insider to the organisational learning process. Consider an employee who has worked for the company for a long period of time,

who has skills that are specific to the products and processes of the company, and whose entire personal wealth is often dependent on the continued success of the company. The assets of these employees are far more at risk than the assets of public shareholders. In dynamic growing companies, moreover, these employees are residual claimants on the future earnings of the enterprise, if and when these earnings are available. Their contracts specify a wage or salary now. But in applying their skills and efforts to the development and utilisation of products and processes that may generate returns tomorrow or ten years from now, these employees expect to share in those returns in the forms of employment stability, promotion, higher pay, better work conditions, etc. Indeed, it can be argued that the expectations of these shares, and the existence of governance structures that will distribute them to employees, are central to generating the residual revenues in the first place.

There is no contract that says that they will get these returns. Rather, insofar as “residual” revenues are generated, employees of successful companies gain access to shares of that success. The organisational control perspective confronts not just the ideology that shareholders have title to the residual returns from innovation but the ideology of ownership in general. Whether “rights” to appropriate returns from previous innovation are accorded to insiders or outsiders to the learning process the effect is to hamper the continuous process of innovation by interfering with the dynamic investment process that is the basis for innovative strategy. For the success of the enterprise to be repeated and for the returns to human assets to continually occur, the enterprise must continuously reinvest in ways that generate higher quality, lower cost products. Hence the importance of retained earnings for the continuous growth of the enterprise.

The history of successful economic development confirms that the financial foundation for the strategic allocation of resources to continuous innovation is the allocation of a portion of the enterprise’s returns to retained earnings. Who controls the allocation of returns to previously successful investments, therefore, has a powerful influence on who makes decisions about the allocation of resources to new investments in the enterprise, and hence on the extent to which an economy invests for the future or lives off the past.

Who are the principals?

The central question in determining national policy for corporate governance is in whose interests should the business enterprises in an economy be run. Most immediately, the business governance issue is how the returns that are currently being generated by business enterprises should be allocated among shareholders, employees, and reinvestment in the organisation. But answering the question of for whom the enterprise should be run involves more than a choice between one group of outsiders -- financial shareholders -- and current insiders -- those who are currently integrated into the enterprise’s learning process. National policy for corporate governance should also consider how the interests of other outsiders, some of whom may work for innovative enterprises but whose skills and knowledge are neither integrated with the enterprise’s learning process nor developed by its investment strategy but whose living nevertheless depends on the viability of the innovative enterprise must also be considered.

Indeed, so important are innovative enterprises to the economic development and welfare of a nation, that national policy for corporate governance should consider how, through taxation and other forms of resource transfers, some of the returns to innovative enterprise might support other social interests and activities that could not otherwise be funded. Finally, given the extended length of time -- often decades -- that it takes for an enterprise to build innovative capabilities, to the extent that a society seeks to make provision for its future members to engage in and reap returns from economic development, national policy for corporate governance should ensure that current stakeholders, be they insiders or outsiders, do not extract so much of the returns from the business enterprise that its long-term potential for continuous innovation is effectively undermined.

The proponents of the market control perspective see no role for national policy on issues of corporate governance -- except to deregulate the existing economy -- because for them it is a fundamental belief that public shareholders are the owners of the enterprise whose interests should dominate the strategic allocation of returns. Indeed, they argue, if the interest of shareholders is not paramount in the strategic allocation of resources, the performance of the economy as a whole will suffer.¹⁴⁸

The belief in the shareholder as owner of the business is based on neoclassical theory as well as legal conditions and traditions that prevailed before the rise of the modern publicly-held business corporation a century ago. In neoclassical theory, the individual owner bears title to the returns from his factor and is also the decision maker in the allocation of the factor of production in question, be that factor land, labor, or capital. In other words private rights of property are vested as a unitary bundle in a single economic agent, so that he controls the alienation or use of productive resources and appropriates or foregoes the return from that alienation or use. The institution of private ownership is central to neoclassical theory because it is the basis for the structure of incentives that induces individuals to participate in the market system. Neoclassical economists contend that if the rights of private property are fully defined, fully allocated, and fully enforced, resources will be allocated to their most valued uses, regardless of their initial assignments.¹⁴⁹

The alleged economic efficacy of private ownership promulgated by neoclassical economists is based on their theory that the perfection of capital, labour and product markets leads to optimal economic outcomes. The theory of the market economy is a theory of the optimal utilisation of *existing* productive resources in an economy. In the absence of the development of productive resources, the only way to achieve a superior utilisation of resources is through a process of mutually beneficial exchange. When an opportunity exists for two or more individuals to exchange resources that they currently have for resources that they would prefer, the material welfare of the economy as a whole, conceived of as the sum of the utility of its individual members, can be advanced.

¹⁴⁸ The following section draws upon O'Sullivan, "Strategy, Learning and Business Governance" as well as O'Sullivan, "Business Governance in Economic Theory," chapter 7 in *Business Governance and Industrial Development*.

¹⁴⁹ Ronald Coase, "The Problem of Social Cost", *Journal of Law and Economics*, 3, October 1960: 1-44.

Neoclassical theory is thus concerned with the mechanism that best promotes the exploitation of the possibilities for mutually beneficial exchange and as a result ensures the optimal utilisation of existing productive resources. That mechanism is a market system in which information and competition are perfect. The completeness of information ensures that individuals are aware of all possibilities for mutually beneficial exchange. Perfect competition ensures that the bargaining power exerted by an individual on the demand and the supply side of the market is negligible. As a result, individuals engaged in exchange cannot interfere with the adjustment of prices in response to the market forces of supply and demand that reflect, respectively, the scarcity of existing productive resources and the fixed preferences of consumers.

The perfection of markets is necessary but not sufficient for the optimal utilisation of resources in this theory of the market economy. Individuals must also have an incentive to participate in exchange if the market mechanism is to have a motive force. Neoclassical theorists contend that the problem of individual incentives is solved if there is a strong link between the use or alienation of productive resources that individuals control and the reward or penalty that the market awards them for their actions. Since neoclassical theorists assume that individuals act to advance their economic interests if the link is maintained at the individual level, the market mechanism can then operate to ensure optimal allocative efficiency of existing productive resources for the economy as a whole.¹⁵⁰

The centrality of private ownership in neoclassical theory stems from the importance of exchange as the primary economic activity in the economy. The primacy of exchange in turn reflects the assumption at the heart of the theory of the market economy that the productive capabilities of resources are determined outside the economic system. The weakness of neoclassical theory, and relatedly of the economic importance that it attaches to private ownership, is the fact that that it is a nondevelopmental theory of the economy. It takes the productive capability of productive resources and the alternative uses to which they can be allocated as given, and makes no attempt to analyse the development of superior products or processes as integral to economic activity and the performance of the economy. The theory of the market economy gives private property, conceived of as a unitary bundle of private rights, what one observer has described as “a veneer of necessity” but there are no theoretical grounds for the application of that veneer to a developmental world.¹⁵¹

The theory of the market economy assumes away all of the issues of productive capability that are central to the innovation process, and ignores the social organisation that develops that capability through a collective learning process. From our developmental perspective, the identity of strategic decision makers, and in particular their comprehension of the complexities of the learning processes to which they commit resources, matters to the success of innovative strategies. Given the inherent uncertainty of the innovation process, there are no objective rules or guidelines for making strategic decisions about the extent, direction and structure of

¹⁵⁰ O’Sullivan, “Strategy, Learning and Business Governance”.

¹⁵¹ Roberto Mangabeira Unger, *Politics: A Work in Social Theory: An Introduction*, Cambridge University Press, 1987.

the learning process nor for resolving disputes about the strategy for learning. To implement an innovative strategy, strategic decision makers require knowledge of particular organisations and technologies so that they can commit productive resources to an innovation process in accordance with their evaluation of the potentialities and problems of alternative learning strategies. To pursue innovative strategies, the decision makers who control productive resources must be themselves integrated into the learning process that is the essence of an innovative strategy.

From a developmental perspective, the institution of private rights to control productive resources -- rights that are exclusive to an individual unconditional on that individual's performance of any social function - raises questions about strategist's ability to make informed decisions that shape the learning process. Just as private rights to appropriate returns from previously successful innovation need to be suppressed to facilitate the reinvestment of returns in continuous innovation, so private rights to control productive resources must be restrained if those who are integrated into the organisational learning process are to exercise strategic control over the reinvestment process.

The need for strategists to be integrated with the social process that is the basis for organisational learning leads one to question the neoclassical theory that the institution of private rights of control over resources is central to successful economic performance. The comparative-historical evidence of the process of industrial development that we have already reviewed provides strong support for the ideology of ownership because it shows that during the most vigorous periods of economic development in the advanced economies, innovation in dominant enterprises was facilitated by the restraint rather than the exercise of private rights over the control of productive resources as well as the distribution of returns to innovation.

The significance of the organisational transformation that took place in the late nineteenth and early twentieth centuries and provided the foundation for a period of extensive and sustained development in all of the advanced industrial nations was that it severed the link between private ownership and the innovation process. Through that transformation, control over the allocation of productive resources and the distribution of returns from innovation were vested in the hands of salaried managers who were integrated into the organisational learning process.

The significance of retained earnings as an ongoing source of finance in dominant enterprises in all of the advanced economies was that they were not only generated by the business organisation but also remained under the control of the enterprise's strategic decision makers. Successful innovation -- the integration of strategy and learning as a basis for product-market success -- thus generated the financial resources that could serve as a basis for the strategic extension, direction and structuring of the learning process by those who were integrated into it.

That the appropriation of returns from innovation was controlled by strategists who were integrated into the learning process meant that the competitive advantage of the extant learning collectivity could be sustained through investment in continuous innovation. The increasing independence from outside sources of finance that self-financing afforded successful learning collectivities allowed them to remain in

control of the productive resources that were inputs to the innovation process and thus of the strategies that shaped that process. As the learning activities of insiders became more collective and cumulative, and thus more complex, it became even harder for outsiders to understand the possibilities and problems of alternative strategies and yet remain outsiders. As the organisation made the transition from a new venture to a going concern, insiders, because of their increasing financial self-sufficiency and their growing enterprise-specific knowledge, thus became increasingly powerful relative to outsiders.

Although nominally the owners of enterprises in which they held shares, public shareholders exercised neither authority over the returns from the use of these assets nor private rights over the control of productive resources. As portfolio investors and therefore outsiders to the learning process, they lacked sufficient knowledge of the activities of the learning collectivity to understand the problems and possibilities of alternative learning strategies. They were rarely permitted to participate in strategic decision making.

The separation of share ownership from control of productive resources allowed managers who were insiders to make long-term developmental, or innovative, investments without being bothered by (what became by virtue of their outsider status) the short-term interests of public shareholders. The fact is that public shareholders were only willing to hold stocks because they were highly liquid in the stock market and because the ownership of shares did not obligate them to devote any time, energy, or financial resources to monitoring the strategies and structures of the companies in which they held shares.

To the extent that portfolio investors had rights of ownership, in the sense in which conventional economists mean "ownership", the assets that they owned were not productive assets but financial assets. They were free to use their shares as they pleased, to appropriate returns from the sale of these shares or from dividends that accrued to them, and to change their form and/or substance. But although in theory rights of ownership over financial assets represented equivalent rights over productive assets, in practice they did not. The ideology of private property survived virtually intact because the traditional concept of ownership as a unitary bundle of exclusive property rights -- the rights of control, beneficial interest and alienability -- although suppressed with respect to productive assets, was applicable to the new financial assets that had been created.

To understand the social foundations of economic leadership is to recognise the role of managerial control over resources in contributing to rather than detracting from economic performance in all of the advanced economies. Critics of managerial discretion, and the phenomenon of the separation of share ownership from control that is its basis, maintain their perspective only through ignorance of the development experience of the advanced economies. The market control perspective is inconsistent with the fact that all of the advanced economies experienced sustained development in the period in which share ownership was separated from control.

The theory of the business enterprise informs the perspective that the institution of private ownership is in conflict with the need for innovative strategy that is integrated with organisational learning to sustain a process of continuous innovation

and economic development. Private ownership is regarded as economically efficacious by neoclassical economists only because they cling to a theory of economic performance -- the theory of the market economy -- from which innovation and development are excluded. In fact, the experience of economic development in all of the advanced economies reveals that innovation was facilitated by the restraint of private ownership in productive resources through the systems of corporate governance in these economies even while the ideology of property continued to prevail.¹⁵²

Nevertheless, managerial control over the strategic allocation of resources and returns by no means ensures that they will or that they should commit finance to innovative strategies. A prime problem of an advanced economy is how to keep large corporate organisations innovative. As the proponents of market control argue, self-serving managers do exist, and they certainly do represent a problem for the well-being of their enterprises and the economy. But to identify (as the proponents of market control do) the exercise of managerial “discretion” as the central problem for economic performance that the system of corporate governance should seek to redress is to ignore the social foundations of economic development. The problem of ensuring that strategic decision makers engage in innovation is not resolved by “disgorging the free cash flow” and thereby decimating the organisational and technological capabilities of once-innovative enterprises. Rather, these corporations need to be restructured for innovation -- something that the market for corporate control does not, and cannot, do.

The recognition that, for the success of the modern corporation, public shareholders cannot be the principals and that stock markets are not used to finance long-term investments in productive assets, has profound implications for national policy for corporate governance. Specifically, to recognise these empirical realities is to reject the relevance of the market-control perspective as a guide to the reform of corporate governance for generating sustained economic development.

The issues for national policy

National policy for corporate governance is concerned with influencing the strategic allocation of corporate returns to achieve a number of policy objectives not only within the corporation itself but also within the national economy as a whole. National policy for corporate governance can influence the strategic allocation of corporate returns in ways that preserve and expand the productive capabilities of the enterprise. Drawing on the experiences of the large advanced economies in achieving these objectives, we shall outline how national policy for corporate governance has influenced 1) the preservation and possible expansion of the corporation as a productive enterprise; 2) the extension of organisational integration within the corporation to include new groups in the organisational learning process; and 3) the support of units of strategic control outside the direct control of the corporation. We present what follows not as a policy agenda for any particular nation but as a preliminary account of the role that national policy can play. We shall conclude with some general observations on why, from the perspective on the innovative enterprise

¹⁵² Lazonick and O’Sullivan, “Financial Commitment and Economic Development”; O’Sullivan, “Business Governance in the United States and Germany,” chapter 6 in *Business Governance and Industrial Development*.

that we have presented, national policy for corporate governance should influence not only corporate investment strategies that preserve and expand the corporation's productive capabilities but also the allocation of corporate returns to finance other national economic and social objectives.

Preservation and possible expansion of the corporation

The importance of the corporate enterprise to national employment and output, and the length of time that it takes to build its productive capabilities, makes the maintenance and possibly the expansion of the corporation a compelling policy objective, especially when the removal of resources from the corporation will not result in their productive reinvestment elsewhere in the economy.

A threat to the preservation and expansion of the corporation as a productive enterprise is the extraction of returns from the enterprise by shareholders. In Japan the allocation of returns to shareholders has been limited by the practice of cross-shareholding, which persists only because cross-shareholding companies refuse to sell one another's shares on the open market and do not themselves view these shares as financial assets that, through the payment of dividends must yield a return. National policy does not explicitly enforce this behavior. Rather it is enforced by networks of business relations that would exclude any company that unilaterally broke rank by selling the shares of other companies and by the fact that the remuneration of strategic decision makers within these companies as salaried managers rather than as owners of shares precludes them from gaining personally from breaking rank.

In Germany, the allocation of returns to shareholders has been limited by giving the big banks rights to the proxy votes of shares deposited with them as well as seats on company supervisory boards. The banks could use this power to represent the financial interests of public shareholders. Historically, however, these banks' business interests have been in providing financial services to major business enterprises, and hence in maintaining the viability of these enterprises as going concerns. In the post-war decades, this emphasis on corporate preservation has been substantially reinforced by employee representation on the supervisory boards under the Codetermination Laws. Business opportunities opened up by financial deregulation and internationalisation could, however, lead the major banks to use their influence over corporate governance to represent shareholders' interests in attaining high current yields on their financial assets. If so, German national policy to preserve major corporations as productive enterprises would either have to limit the traditional power of the banks or constrain their pursuit of "value-extracting" business opportunities.

Another threat to the preservation and expansion of the corporation as a productive enterprise is the extraction of returns from the enterprise by employees in the forms of higher wages and benefits that are not warranted by the ability of the corporation to generate returns. Unlike higher returns to public shareholders, which do not create incentives to develop and utilise productive resources within the corporation and which undermine financial commitment, the higher earnings of employees are often critical to achieving the organisational integration that generates the revenues that permit higher earnings to be paid. Once these higher earnings are in place, however,

employees may view these levels of remuneration as their right, and indeed they may increase their consumption expenditures in line with their higher incomes. If a change in the competitive environment reduces the corporate revenues that justified these levels of remuneration, the preservation of the corporation may be threatened unless an adjustment in either employee remuneration or revenue generation takes place.

The organisational integration of employees provides the foundation for employees both to adjust their earnings downwards and engage in the organisational learning required to generate new revenues. Such a strategy requires financial commitment, and will therefore have a greater chance of success when shareholders' ability to extract resources from the company are limited and constrained. Hence the ability of the Japanese corporations to respond to the energy crises of the 1970s and the high exchange rates of the past decade. The main mechanism for wage adjustment has been the semiannual collective bonuses, which are tied to company revenues. Another mechanism for reducing the wage bill has been layoffs of those without permanent employment status, and who are less integral to the organisational learning process, particularly women. At the same time, in the midst of these crises, Japanese corporations have remained committed to product and process innovation. In the 1990s, national policy has had to reregulate the financial sector to avoid the recurrence of, and limit the damage from, the speculative manias in stocks and land in the 1980s. But the social organisation of business enterprise that has been the foundation for Japan's phenomenal economic development since the 1950s has continued to serve as the basis for innovation without any new national policies for corporate governance.

In recent years German companies have been increasingly confronted by Japanese competitors, even in high-quality niche markets such as machine tools and luxury automobiles in which they have traditionally been unchallenged. For German industry to respond effectively to the erosion of its international product market position will require a strengthening of financial commitment for the sake of investing in new structures of organisational integration that can generate products that are not only higher quality but also lower cost than German industry has previously produced.

Yet the social organisation on which Germany's competitive advantage has been based in the postwar period may prove more rigid than its Japanese counterpart as a basis for a response to these competitive challenges. The central role of German industrial unions in the regulation and administration of the apprenticeship training system and in collective wage bargaining at the national and regional levels has given them interests and power that extend beyond any individual enterprise. In the past the unions have wielded this power to ensure that some of the benefits that accrued to German enterprises from the organisational learning that the unions themselves promoted were dispersed to shop-floor workers. The success of union efforts is manifest in the fact that for some time German workers have worked the shortest hours and earned the highest wages of industrial workers anywhere in the world.

The extent to which German workers, or more precisely the unions that represent them, are willing to make a renewed commitment to German industrial organisations

by compromising some of these hard-won conditions is critical to the ability of German enterprises to respond innovatively to global competitive challenges. But the cooperation of labour is not sufficient to ensure such a response. Large German banks continue to wield considerable power in the German system and, as we have already noted, their incentives to encourage a disgorging of cash flow from German enterprises have increased steadily in the last 25 years. Given the divided interests of labour and finance there is the potential that they will both adopt intransigent positions and choose to fight over the gains from previous innovation rather than making the commitment necessary to generate returns from innovation in the future.

The future balance between innovation and adaptation in German enterprises is critically dependent on the role that German managers play in mediating between labour and financial interests. In recent years top German managers have built a position of corporate financial strength that gives them the scope to make an ongoing financial commitment to innovation. As we have already observed, during the 1980s, while market control was becoming dominant in the United States, large German companies were structuring their financial relations in ways that strengthened organizational control.

Whether strategists in German enterprises will wield the financial strength that they have built to pursue innovative rather than adaptive strategies remains to be seen. In the early 1990s German workers watched as, for the first time in the postwar period, top managers in leading German enterprises made significant direct investments in overseas production. In statements reminiscent of American managers' threats of offshore expansion in the 1970s German managers claimed that they had little choice but to seek out cheaper sites for production because of the high cost structure, and in particular the high wage structure, of the German economy. In Germany in the 1990s, however, unlike the U.S. in the 1970s, the social foundations for cooperation between managers and workers, both at the political and the enterprise level, are in place and are the basis on which innovative strategies can potentially be revitalised on new organisational foundations. By restraining the claims of financial interests and ensuring that top managers remain integrated with their organisations national policies for corporate governance have a critical role to play in promoting an innovative response to competitive challenges by German enterprises.

The erosion of organisational integration and financial commitment is the reason for the attention currently being paid to corporate governance policy in the United States. In the post-World War II decades, organizational integration applied to American managerial employees but not to shop-floor workers. Nevertheless, backed by national labor law, powerful national unions of shop-floor workers that accepted the exclusion of their members from the organisational learning process succeeded in sharing in the returns from U.S. postwar industrial dominance in the forms of high wages and benefits. When, from the late 1960s, the rise of more innovative foreign competitors challenged U.S. dominance in key industries such as steel, automobiles, and electronics, these high levels of remuneration could not be sustained unless an innovative response was forthcoming. Such an innovative response would have required the integration of shop-floor workers into the organisational learning process within their places of work and thus substantial investments in their skills as well as an upgrading of mass education for future blue-

collar workers. Such investments in training and education, were not undertaken on a significant scale.

Instead of committing returns to such new investment, from the 1970s, aided by the rise of the institutional investor and the transformation of the primary business focus of Wall Street from investing to trading, those who held financial interests in the major corporations began to look for higher yields. The result over the course of the 1970s and early 1980s was the rise of the market for corporate control. A concomitant of the rise of the market for corporate control was a successful attack on the wages of unionised workers. This attack was carried out by the relocation of plants, legal obstructions to organizing new members permanent layoffs of blue-collar workers (especially during the recession of 1979/1981), and skill-displacing technological change. Wage reductions and downsizing became a prime means for restoring corporate returns, while shareholders vastly increased their power to extract these returns.

The historical segmentation of managers and workers in American business enterprises encouraged managers, who generally were organisationally integrated, to view shop-floor workers as dispensable commodities when critical decisions had to be made about the allocation of diminished returns. In the upper echelons of corporate management structures, where the strategic decision makers were found, the decision to opt for adaptation rather than innovation was made easier by the structure of their monetary incentives. Since the 1950s, top management remuneration has been highly dependent on the value of stock options and their stock holdings, which in turn depended increasingly on the company dividend policy as well as the large-scale use of corporate returns to repurchase outstanding shares. As these top managers of U.S. corporations aligned themselves with financial interests, even their basic (salary and bonus) remuneration exploded relative to the remuneration of managers (and of course workers) lower down the hierarchy. By the 1990s in many major corporations, stable and remunerative employment had become a thing of the past not only for bluecollar workers but also for many if not most managerial employees. In effect, by laying claim to huge sums of corporate returns as their own personal income even as organisational capabilities of their enterprises eroded, top managers were staking an ownership claim in the enterprise that reflected their alignment with the market for corporate control.

Ironically, key actors in the market for corporate control are the pension funds of workers. These pension funds now hold over half of the common shares outstanding in the United States. Like other institutional investors, pension-fund managers seek higher yields on their portfolios, even if these high yields deter the companies whose shares they hold from making the investments in productive capabilities that will provide stable and remunerative employment to American workers. In effect, under the force of circumstances, the American labour movement has come to exert more control over the allocation of corporate returns through the power of workers' portfolio investments than through the power of workers' direct participation in the productive activities of these corporations. Some have looked to American pension funds to use their influence as big owners to provide "patient capital" to industry. But the experience of so-called "relational investing", through which pension funds take a more active role in the governance of U.S. corporations, is that the interest of pension funds is to improve company performance only to get the stock price up,

which then permits the pension funds to unload their shares or put pressure on the corporation to raise dividends and hence improve yields. For American workers such a strategy is an endgame one because without stable and remunerative jobs their pension funds will eventually disappear.

The alignment of interests in the allocation of corporate returns in the United States helps to explain why, despite the historical success of the managerial revolution in the rise of the United States to international economic leadership, there is little opposition in that country to the ideology that public shareholders are “owners”, not just of financial assets but also of the corporations which issued the shares. The major American corporations will not vanish from the scene overnight. Their accumulated resources are too vast, and, depending on the industry and the company and even the product line, groups of managers still have the incentive and ability to invest in innovation. But the case of U.S. competitive decline, as manifested in a declining standard of living for most of the population, illustrates what happens in the absence of national policies for corporate governance that support organisational integration and financial commitment.

Extension of organisational integration

Since the 1960s, in many industries such as motor vehicles, electronics, and machine tools, American business enterprises have been confronted by a powerful model of organisational learning that integrates the learning and efforts of shop-floor employees with those of managerial employees. Emanating primarily from Japan, the new model of organisational learning demands the development and utilisation of the knowledge and skills of shop-floor personnel and permits the development and utilisation of “flexible mass production” technologies that reduce materials waste, make possible the multiproduct utilisation of machinery, and increase product quality.

Given the historic exclusion of shop-floor workers from organisational learning in the rise of American mass production enterprises to industrial leadership during the first half of the twentieth century, the organisational challenge that has faced these corporations over the last two or three decades has been to extend organisational integration to the shop floor. Even as in the 1970s a reliance on the old structures of organisational learning resulted in the loss of significant market shares, the vast majority of American corporations in the industries under challenge failed to invest in shop-floor skills. Instead strategic decisionmakers in these companies convinced themselves that the loss of market shares reflected unfair competition from a low-wage competitor rather than the development and utilisation of more productive technologies.

By the early 1980s the continued success of the Japanese, despite rapidly rising wage rates, convinced some companies that the organisational integration of the shop floor was a necessity for long-run competitive survival, but other companies continued with the old structure of learning, often on the rationale that the basis for Japanese success was an undervalued exchange rate. When, after 1985, the value of the yen rose dramatically, many of the companies that had refused to invest in organisational change found that their weakened financial situation and their backward organisational structures made adaptation rather than innovation a much more plausible strategy. For these companies, adaptation has meant not only the

failure to invest in shop-floor skills but also an erosion of organisational integration within the managerial structure, with the concomitant reliance on consultants and subcontractors, many of whom are former long-term employees. By avoiding the high costs of organisational integration, such an adaptive strategy often permits these companies to continue to compete against innovative rivals but precludes the possibility that they will themselves generate innovation.

What could U.S. policy for corporate governance have done over the past two or three decades to encourage such companies to be innovative rather than adaptive? It could have made it difficult for companies to terminate long-term employees, be they managerial or shop floor, while providing special incentives for these companies to invest in shop-floor training. Given that by the 1970s a large proportion of shop-floor workers in U.S. manufacturing corporations were black, a national policy to upgrade the jobs of shop-floor workers could have not only contributed to the innovative performance of these companies but also helped to avoid the decline of black incomes and employment opportunities that occurred in the 1980s. Instead, the best that national policy could come up with, over vigorous corporate resistance, was a law that requires that a company give its employees 30-day notice that their place of work will be closed!

Like their American counterparts, German enterprises relied on managerial learning as a basis for their innovative success from the end of the nineteenth century until World War II. However, unlike the American case, in the postwar period the learning of workers in German enterprises has been strategically integrated with that of managers to form the foundation of a competitive advantage in markets that stresses product quality rather than product cost.

In Germany, private sector enterprises play a central role in the system of skill formation but the critical impetus for the extension of the learning process to the shop floor came after the war with a national commitment to the institution of the most comprehensive and complex system of vocational training in the world. Employers and workers, through their respective associations, exert substantial influence on the structure of the training system.

The training structures that support worker learning ensure that German production workers are highly skilled. As insiders to a process of organisational learning they, unlike their American counterparts, have the abilities and incentives to contribute to the innovation process. The managerial recruitment and promotion policies in German companies ensure that worker learning and management learning are integrated. An aspiring manager is required to accumulate formal qualifications but must also develop practical technological knowledge and skills outside and within the enterprise to move up its hierarchy. Their common technical knowledge and experience is the basis for considerable cooperation between managers and workers in German enterprises.

The integration of managers into the organisational learning process ensures that strategic managers have the knowledge that they require to set innovative strategy. An integration of strategy and learning has also been ensured by the extension of strategic decision making to workers because the common commitment of managers and workers to the strategy of producing high quality products permits

decentralisation of decision making. Initially the extension of strategic control was indirect and was exercised through workers' influence on works councils but with codetermination workers were formally integrated into the strategic decision making process through their inclusion on the Aufsichtsrat of large German companies.

The organisational integration of technical learning in the managerial and shop-floor structures has allowed German companies to outcompete many American companies on the basis of quality in product and process. In recent years, however, German companies have been increasingly confronted by Japanese competitors, even in these high-quality niche markets in which they have traditionally been unchallenged. In machine-based industries where process innovation has been important in driving down costs, the Japanese have been able to generate the organisational learning that has allowed them to move into high-quality market segments at lower unit costs than their German competitors.

Although in both nations, organisational integration is prevalent differences in strategies for learning and in the organisational structures that support it are reflected in variations in the innovative capabilities of enterprises. In Germany the internal organisation of the enterprise derives from an industry-wide strategy to set high-quality product standards, whereas in Japan the organisational structure derives from an enterprise strategy to engage in continuous problem-solving to cut costs. In stable technology industries high quality worker skills can compensate for a loss in enterprise flexibility. But many of the industries in which the Germans were competitively strong and that have historically been considered stable technology have been transformed by the Japanese who have leveraged their flexibility at the enterprise level as a basis for continuous innovation.

To respond innovatively to the erosion of their competitive position, German enterprises must reorganise the learning process through the retraining of managers and workers to focus more on process cost reductions. A number of initiatives have been launched by management and unions to restructure national training structures to this end. There is a risk, however, that German enterprises will adapt to competitive challenges by relying to an increasing extent on cheap labour to get costs down.

German companies have always depended on "guest workers" who were not organizationally integrated for low-cost labour to respond to fluctuations in product-market demand, and they may extend this policy in the future. In recent years, moreover, a number of leading German companies have moved some production offshore to take advantage of lower wages in other countries. It is also possible that large German enterprises will use young apprentices as a source of low-cost labour to get costs down in the short-term rather than integrating them into an expensive organisational learning process to remain competitive in the long term. Whether German enterprises contribute to a complete reorganisation of the learning process or to the further development of a two-tiered labour system of insider skilled workers and outsider unskilled workers will determine the future development of the German economy. In the past the German government has facilitated the cooperation of management and labor to put in place a powerful system of skill formation. There is a precedent, therefore, for national policies that can influence business strategies to

transform the current system of skill formation into one that can successfully confront innovative challenges from abroad.

While providing the social foundation for the competitive challenges to U.S. and German industry, Japanese organisational integration by no means includes all participants in the paid labour force. In Japan, women have been used as a non-integrated labour force, segmented from the organisational learning processes of the companies in which they work. Many of these women are “part-time” workers, with part-time being defined as less than the number of hours per week -- 37.5 -- for which full-time or regular employee benefits have to be paid. Even regular female employees, however, are not normally integrated into the organisational learning process because they are expected to leave the labour force when they get married. During the 1980s, in the face of a severe shortage of highly educated workers and under the Equal Employment Opportunity Law that went into effect in 1986, permanent employment status was extended to some university-educated women who were employed mainly in research (that is, staff) roles rather than administrative (that is, line) roles, and became integrated into the organisational learning process. During the recession of the 1990s, however, women have borne the brunt of layoffs in Japanese companies and permanent employment status for university-educated women has become much less common. If over the long run, Japan wishes to have available a highly educated female labor force that is integrated with the innovation process, there is a role for national policy to enforce the extension of permanent employment to women.

Support of external units of strategic control

As a going concern, the corporate enterprise can allocate corporate resources to productive investments under not only its own strategic control but also under the strategic control of other companies -- that is, external units of strategic control. These external units of strategic control may be existing companies or new ventures. They may be a source of materials supply or a mode of product distribution to which the investing corporation has privileged access. Or the corporation may invest in other companies to transfer relevant organisational and technological capabilities that it possesses to a new line of business that requires a distinctive strategy and structure of organisational learning. Finally, a corporation may make a direct investment in another company simply because it has excess liquid assets on which it seeks to generate a return.

For these cross-company investments to yield innovative outcomes, there needs to be a high degree of integration of strategy and learning in the receiving company. Indeed, it is the need for the integration of strategy and learning to generate innovation that may make investment in an external unit of control superior to the retention of strategic control by the investing company. As in the case of the prewar Japanese zaibatsu or the current Korean jaebul, there may be financial and marketing as well as political advantages to including within one company a number of different business units that develop and utilise distinctive productive resources. But these advantages will contribute to an innovation process only if the “head office” delegates strategic control over the allocation of resources and revenues to decision makers at the business unit level. A common problem of overgrown corporate enterprises is that those who control the allocation of resources are not integrated

with the learning processes that are required for innovation by the corporation's various business units. Such corporate strategists may possess ample financial resources to commit to innovative strategies, but their lack of organisational integration deprives them of the knowledge to make strategic decisions that generate appropriate learning processes or to evaluate the progress of those processes.

How then does a corporate enterprise that seeks to make innovative investments in new lines of business ensure the integration of strategy and learning that is critical to economic success? The American solution, devised in the 1920s and 1930s, was the multidivisional structure. When this structure worked to generate innovation, it was because the career opportunities of those who controlled the allocation of returns from the head office had evolved with the success of the company, and hence they knew the company's organisational and technological capabilities, and were committed to its goals. The top managers were willing to delegate strategic control of resources to divisional managers of the business units, many of whom they had themselves trained and promoted. The performance of these divisional managers was evaluated not by their divisions' short-term contributions to company profits but by the ability of their divisions to build on the capabilities of the company to generate higher quality, lower cost products.

Given the separation of the allocation of corporate returns from the allocation of corporate resources inherent in the multidivisional structure, it was to be expected that, with its expansion into too many different lines of business in too many parts of the world, top managers would cease to be willing or able to delegate strategic control over the allocation of resources to divisional managers. In the 1950s and 1960s, many companies evolved into unwieldy conglomerates in which innovation was difficult to sustain. The conglomerate movement of the 1960s, which was at the time justified by the notion that a good general manager could manage any type of business, was by the 1970s a massive failure because divisional managers were deprived of any real strategic control. During the 1970s and 1980s, this problem was resolved by management buyouts, an effective although very expensive means of placing business units under the strategic control of managers who understood the units' capabilities.

Because of their centralization of strategic control, American industrial corporations are generally poor at launching new ventures. A phenomenon that is most well-developed, if not unique, to the United States is the venture capitalist, a person or small group of people with command over large sums of private money who have intimate knowledge of the people and processes related to a new, unproven, technology. From the 1950s through the 1970s, a small number of venture capitalist had great success in launching a small number of highly successful new ventures in electronics and biotechnology. Since then a large number of venture capital funds have formed, largely with money from institutional investors in search of high yields, to try to replicate the successes of the old-style venture capitalists. Although these funds have had some successes, their general problem is that those venture capitalists who control the allocation of resources in the new ventures lack the knowledge of technology and people to make decisions that spawn innovation.

Like large U.S. corporations, even the venture capital funds are prone to be driven by market control rather than organisational control, with deleterious effects on

innovation. In the United States, the resolution of these problems of innovation in both new ventures and going concerns will require national policies that take financial power out of the hands of money managers (by they managers of corporations, venture capital funds, or pension funds) and put it in the hands of managers with strategic vision and technological expertise who are integrated with the organisations that they manage.

In contrast to the United States, where banks have never been important to financing new industrial ventures, banks have a long history of such financing in Germany. In the early stages of Germany's industrial development in the late nineteenth century, the Grossbanken -- or Kreditbanken as they were then called -- played the role of venture capitalists. They advanced money to new ventures through current accounts, and through the employment of specialised personnel established close relations with the venture to keep abreast of the problems and possibilities of alternative innovative learning strategies. Given their understanding of the innovation process, bankers could exercise some strategic control over the resources that they advanced without undermining the success of the venture through their ignorance. The Kreditbanken's growing control of German securities markets toward the end of the nineteenth century and their access to wealthholders through their extensive deposit networks gave the banks confidence that they would be able to liquidate their stakes in these ventures if they could contribute to their successful establishment as going concerns.

Since the early decades of the twentieth century, the large banks have not played the role of venture capitalist in the German economy to any appreciable degree. Even after World War II, when the large banks lent some long-term funds to industry to finance the reconstruction effort, they did so using resources that were ultimately funded from the Marshall Counterpart Fund. Moreover they channelled these funds not to new ventures but to enterprises that were attempting to rebuild previously developed productive capabilities.

To the extent that funds have been made available to finance new ventures in Germany they have come from the other major sectors of the German banking industry -- the cooperative banks and the savings banks. These banks' willingness to advance finance to start up companies, some of which successfully grew to become members of Germany's Mittelstand, was to some extent a reflection of constraints imposed on the use of their funds by the German system of financial regulation that was in place until 1967. Their ability to act as venture capitalists was enhanced by the localised nature of their operations that enabled them to maintain close contact with, and considerable understanding of, the innovative strategies undertaken by the companies that they financed. As a means of venture financing, this arrangement was, however, less than ideal because the banks were unwilling to advance financial resources unless considerable collateral was provided. In other words, the extent of financial commitment to innovation provided through these sources was extremely limited.

There has been growing concern in Germany over the last twenty-five years about what many regard as a finance gap for new ventures in the German financial system. The large banks have been particularly criticised for their alleged risk aversion in advancing funds to innovative enterprises, and have recently been persuaded by the government to set up venture capital funds, albeit on a small scale. Similarly, it was

hoped that the Grossbanken could be induced to play the role of venture financiers to support the massive programme of investment needed to develop the productive capabilities that East German industry needs to compete on international product markets. In neither case have these hopes been fulfilled.

Indeed, an understanding of the competitive position and business incentives of large German banks and their competitors reveals that to begin with these hopes were relatively unfounded. For most of the twentieth century the big banks' control over lucrative financial business with large enterprises -- short-term lending, export financing, and corporate financial services -- as well as the government and bank bond issue business in Germany meant that they had limited incentives to act as venture capitalists for industrial start ups in the modern era. As the margins on their core business have declined, the Grossbanken have moved into new areas, including Mittelstand finance, but they have not committed finance to new ventures. Deregulation of the German financial system has not led to major injections of finance to startups as some hoped it would. On the contrary, the cooperative and savings banks, freed from the constraints of regulation, have been investing their funds in other activities, most notably in the development of their securities' businesses. Through mergers and acquisitions, many of them have moved away from their local bases, and have as a consequence reduced their ability to successfully engage in venture financing.

One approach to business governance policy is to put more pressure on the German banking sector to make funds available to new ventures. Such an approach ignores the fact that the developments in the German financial system that deregulation prompted have led German banks farther from the business base that they would require to develop the appropriate skills and knowledge to evaluate the innovative potential of new ventures. Another possibility, and one that may justify the enormous political dangers associated with it, is to reregulate the financial system.

The primary locus of industrial knowledge in the German economy is, however, the existing industrial structure, and there are a variety of ways in which that knowledge could be leveraged to promote new ventures. To date the most important resource commitment to new ventures has come indirectly from established enterprises through the training that they provide for German workers. The large enterprises take on and train more apprentices than they eventually integrate into their own organisational learning processes. Smaller companies, often related to the dominant enterprise as suppliers, can gain access to the learning of these workers by hiring them when their apprenticeship is complete.

Large German enterprises have proven reticent in providing more direct financial commitment to new ventures. In the 1980s they seemed to be drawing on their financial reserves to advance funds to their suppliers and some of the banks expressed concerns at what they saw as growing disintermediation. Yet in their establishment of external units of strategic control, large German enterprises are more like their American than their Japanese counterparts. The ideology of private property remains strong in Germany, as is evident from the referral of the 1974 Codetermination Law to the Federal Constitutional Court on the grounds that it violated private rights of property. That outdated ideology is reflected in an unwillingness of dominant enterprises to spin off new companies to exploit pockets

of organisational learning and to devolve to them the strategic control that they would need to remain innovative. Instead enterprises such as Daimler Benz have been accused of growing inflexible and unfocussed through diversification. In the process, they have maintained strategic control in the hands of a small group of top managers who have no chance of understanding the process of organisational learning in the company's diverse lines of business.

Compared with the U.S. and German cases, the integration of strategy and control over new ventures is more easily accomplished in Japan when the entry into new line of business fits the industrial strategy of the enterprise group. During the era of the zaibatsu up to World War II as well as in the post-World War II decades when the keiretsu emerged, the industrial strategy that these enterprises implemented reflected a national development agenda that was highly regulated by government control over the flow of finance to industry. Given this mandate for economic development, under the prewar zaibatsu and the postwar keiretsu, top managers were willing and able to decentralize strategic control over specific enterprises to knowledgeable managers who were deeply integrated with the processes of organisational learning.

With the growing financial power of the old horizontal keiretsu and the emergence of new vertical keiretsu, Japan's top corporate managers have more freedom from government directives to plot the industrial strategies of their companies, but, to enter new businesses that require significant organisational learning, they continue to set up new units of strategic control within the enterprise group. When the new business will compete for sales of its products in the open market, venture capital comes from the main bank of the horizontal keiretsu in the form of low-interest loans. When the new business will sell all or most of its products within the vertical keiretsu, venture capital will come from the core enterprise of that keiretsu. In both cases, the strategic decision makers in the new businesses are former managers from enterprises in the group who have appropriate organisational and technological knowledge and a willingness to risk their salaryman status with an established business unit in the keiretsu for the sake of the entrepreneurial challenge as well as entrepreneurial rewards that are regulated by the keiretsu relationship.

Once in business, the enterprise group will rarely let a business unit fail. Rather ongoing relations among enterprise group managers as well as between business unit managers and the companies with which they do business result in the provision of finance and expertise to troubled units to permit them to get back on track. In most cases, the social organisation of Japanese industry business governs itself in ways that promote innovation investment strategies and the role of national policy for corporate governance is to ensure that government policy in general does not interfere with this process. In the cases of industry-wide failures such as the decline of the shipbuilding industry in the mid-1980s and the overexposure of the main banks to the collapse of the speculative land and stock markets in the 1990s, however, the Japanese government exercises a heavy hand in the restructuring process.

Corporate goals and social goals

The allocation of corporate resources and returns to preserve the corporation, to extend organisational integration within it, or to support external units of strategic control, all have economic purposes, and will succeed over the long-run when investments in organisational learning generate successful innovation. By allocating resources to innovation, corporations generate stable, remunerative, and potentially creative employment opportunities. A national economy where the availability of such employment is threatened by inappropriate organisational integration and insufficient financial commitment is one that needs an active national policy for corporate governance.

But even when the economy's major business enterprises are committing the finance and integrating the organisations to engage in continuous innovation, national policy for corporate governance has a role to play in ensuring the excess revenues of the corporation are used for purposes, both economic and social, that are not directly related to the strategy and structure of the enterprise. Such purposes include regional development, opportunities for disadvantaged groups, environmental enhancement, and non-economic cultural activities. Such reallocation of corporate revenues occurs, of course, as a result of government fiscal policy. But government policy can, and should, be more systematic. The recognition that no one owns the surplus revenues of the publicly held corporation makes allocation of corporate revenues to broader economic and social goals more compelling, as does the recognition that the organisational foundations for learning that generate these revenues draw heavily on public organisations and financial resources.

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STEP-gruppen ble etablert i 1991 for å forsyne beslutningstakere med forskning knyttet til alle sider ved innovasjon og teknologisk endring, med særlig vekt på forholdet mellom innovasjon, økonomisk vekst og de samfunnsmessige omgivelser. Basis for gruppens arbeid er erkjennelsen av at utviklingen innen vitenskap og teknologi er fundamental for økonomisk vekst. Det gjenstår likevel mange uløste problemer omkring hvordan prosessen med vitenskapelig og teknologisk endring forløper, og hvordan denne prosessen får samfunnsmessige og økonomiske konsekvenser. Forståelse av denne prosessen er av stor betydning for utformingen og iverksettelsen av forsknings-, teknologi- og innovasjonspolitikken. Forskningen i STEP-gruppen er derfor sentrert omkring historiske, økonomiske, sosiologiske og organisatoriske spørsmål som er relevante for de brede feltene innovasjonspolitik og økonomisk vekst.

The STEP-group was established in 1991 to support policy-makers with research on all aspects of innovation and technological change, with particular emphasis on the relationships between innovation, economic growth and the social context. The basis of the group's work is the recognition that science, technology and innovation are fundamental to economic growth; yet there remain many unresolved problems about how the processes of scientific and technological change actually occur, and about how they have social and economic impacts. Resolving such problems is central to the formation and implementation of science, technology and innovation policy. The research of the STEP group centres on historical, economic, social and organisational issues relevant for broad fields of innovation policy and economic growth.