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1994

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**Creating and extracting
value: Corporate investment
behavior and American
economic performance**

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Oslo, September 1994

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Redaktør for seriene:
Editor for the series:
Dr. Philos. Finn Ørstavik (1998)

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Time horizons, value creation, and innovation

During the 1980s and early 1990s, a common criticism of America's industrial leaders was that they had "short time horizons" [see Jacobs 1991; Porter 1992]. Managers who value present over future returns to their companies tend to avoid investment strategies that require considerable developmental periods before a flow of earnings can be realized. Yet these developmental -- or innovative -- investments are what enterprises need to sustain their competitive positions on global markets, and for a national economy to maintain and enhance the standards of living of its people.

Pressured by the financial community, it is alleged that industrial managers favor investment strategies that make use of productive resources that have already been developed, and hence can generate earnings immediately without incurring large capital outlays. Meanwhile, America's competitors, and particularly the Japanese, are investing in innovation. By adopting short time horizons, according to this line of argument, American industry has been managing its way to economic decline [Hayes and Abernathy 1980].

Is this charge of short-termism against American industry warranted? If it is true that those who control America's major business corporations have short time horizons and hence avoid innovative investment strategies, then how did the United States become such a powerful industrial nation in the past? Have the time horizons of America's top managers always been short, or is their truncated vision a relatively new phenomenon? Has the financial community -- Wall Street -- always exerted equivalent pressure to generate short-term earnings, or has that pressure increased over time? And, is Wall Street really to blame, or does its proclivity for the short term reflect more fundamental problems in the organization of the American economy? If those who control American industry do indeed have short time horizons, what can policy-makers in business and government do to elongate them? Specifically, what can be done to give strategic decision-makers in the major American corporations the incentives and abilities to invest in innovation?

To answer these questions, we cannot just focus on the incentives and abilities of those who wield decision-making power in America's industrial corporations. They are actors in a larger social drama that over the past few decades has been reshaping the ability of Americans to produce at home and compete abroad. To begin to address the problem of short time horizons, we require an understanding of the social forces in American society that are encouraging, and often compelling, those people who control our economic resources to think about generating returns today rather than higher productivity tomorrow. We also have to ask for whom the returns are being generated, and what effects the distribution of returns are having on the incentive and abilities of Americans, as individuals and as members of organizations, to engage in innovation.

Basic to comprehending the problem of short time horizons is an understanding of the conditions under which industrial corporations pursue innovative investment strategies as well as the conditions under which investments in innovation are

successful. The distinction between long and short time horizons is really a distinction between innovative investment strategies that entail a developmental period before they generate returns and adaptive investment strategies that reap the returns on past investments [see Lazonick 1991:ch.3, and Lazonick 1993a]. To understand corporate investment behavior and economic performance, we must explain what takes place during the innovation process that ultimately yields the returns that make investments in innovation worthwhile. We must also explain why enterprises that engaged in innovative investment strategies in the past turn to adaptive strategies that merely live off their prior successes.

The innovation process expands the ability of an enterprise, industry, or economy to produce high quality, low cost goods and services. That is, it augments our ability to create value -- to produce goods and services that we need at prices that we can afford. The adaptation process, in contrast, makes no attempt to augment the quality and lower the cost of goods and services but, at best, merely seeks to reproduce the value-creating capability of the enterprise, industry, or economy. In a world of innovation, those who simply try to do what worked before will soon find themselves left behind. In its extreme form, the adaptation process can entail disinvestment that, by extracting value today without putting any new value-creating capabilities in its place, reduces our ability to create value tomorrow.

Whether innovative or adaptive, value creation is a social process in which numerous participants contribute to the generation of goods and services with expectations of sharing in the returns. In doing so, these participants are generally both value creators and value extractors. They contribute to the generation of goods and services that society values, but they also extract a portion of this value as a reward for their contributions.

Of critical importance to whether investment strategies are innovative or adaptive is the balance between value creation and value extraction. Innovation enables an enterprise, industry, or economy to create more value than it extracts, whereas adaptive investments may entail the extraction of more value than is created. What matters for economic prosperity is the balance between the forces that determine value creation and value extraction.

Because value creation occurs over time, it is not always evident at any point in time which activities are net value creators and which are net value extractors. For example, an innovative entrepreneur who eats beans while working eighty-hour weeks to create a new product may be on balance a value creator. Whether or not he or she is a net value creator depends on the success of his or her innovative strategy. If, in the end, he or she creates nothing of value, even the consumption of beans may represent a net value extraction. The activities of a portfolio investor who commands the highest possible rate of interest for the use of his or her financial resources may be on balance value extracting. Whether, from a social point of view, the rate of interest received represents net value extraction depends on what the borrower does with the financial resources.

Nevertheless, there is a difference between the goals and activities of the innovative entrepreneur and the portfolio investor that have important implications for the balance between value creation and value extraction in the economy. The innovative

entrepreneur is actively engaged in the attempt to create value while the portfolio investor is actively engaged in the attempt to extract value. There is no guarantee that those who engage in value creation will be successful, but without their attempts to create more than they extract, an increase in a society's value-creating abilities cannot, and will not, take place. It is also clear that the success of those whose prime purpose is to extract value makes the possibilities for the success of innovative strategies all the more difficult. If sustained economic prosperity is what we are after, it is of critical importance that we understand the relation between the value-creating forces and the value-extracting forces at work in our society, and how this relation has evolved over time.

In this essay, I outline the evolution of the forces for value creation and value extraction in the American economy during the twentieth century. I shall argue that during the first half of the century, the value-creating forces were ascendant, and indeed made the United States the most powerful industrial economy in the world. For this reason, and with obvious oversimplification, I call the first half of the century the "era of value creation". During the second half of the century, the value-extracting forces have become increasingly powerful in the American economy, and I call this half of the century the "era of value extraction". If, as appears to be a case, the "American century" is at an end, it is because for decades we have been living too much off the past rather than investing for the future.

The problem that American society faces is not just that, as we extract more value than we create, we are harvesting the fruits of an era when we created more than we extracted. Our problem is also that other nations, especially in Asia, are enjoying their own eras of value creation based on continuous investments in innovation that are destroying even the value of our own innovative investments of the past. If Americans do not take steps to regenerate the forces for value creation, sooner or later the United States will not have much value to extract.

Indeed, for some people "sooner" has already come. The ability to extract value in the American economy is highly unequal. There are already large segments of American society that are over represented by blacks, hispanics, and women who possess neither the power to create value or extract value. A reinvigoration of the forces for value creation in the American economy is essential to respond to the challenge of not only foreign competition but also domestic social decay.

The forces for value creation

To create value, an enterprise, industry, or economy requires six "Ms": money, management, manpower, machines, materials, and markets [the following is adapted from Lazonick and Mass 1993]. An explanation of how each of the six Ms contributes to the value-creation process provides an analytical framework in which to consider the evolution of the forces for value creation in the United States over the course of this century,

Money, or finance, plays a critical role in the value creation process because those who control money get to choose what type of strategy an enterprise, industry, or economy will pursue. An innovative strategy inherently entails fixed costs because expenditures have to be made on "machinery" (that is, plant, equipment, and motive power) and certain types of manpower (including those who inhabit the managerial structure) with a time lag before the receipt of returns. These fixed costs are high because of not only the scale of investments but also the developmental period that (by definition) must occur before the investments that entail fixed costs can generate returns.

Those who control money may or may not make strategic decisions that entail innovation -- they may or may not act as entrepreneurs. Strategic decision-makers can, and often do, decide not to be innovative but produce on the basis of resources that already exist within the company or that can be readily purchased on factor markets. They choose an adaptive strategy [see Lazonick 1991:ch.3]. When they do choose to innovate, strategic decision-makers must keep financial resources committed to the innovation process until productive capabilities are sufficiently developed and utilized to generate returns. A failure to generate returns at any point in time may be a manifestation, not of a failed strategy, but of the need to commit even more financial resources to an ongoing learning process [Lazonick 1993a]. To keep money committed to the innovative investment strategy, those who control money must have intimate knowledge of the problems and possibilities of the investment strategy, or entrust their money to strategic managers who have such knowledge.

Management is required to plan and coordinate all of the specialized activities -- the specialized division of labor -- that must be integrated for an innovation to emerge. The innovative efforts that count for economic development invariably involve continuous, cumulative, and collective learning [Lazonick 1993a]. Continuous learning results in the improvement of skills. Without continuous learning, acquired capabilities atrophy. Cumulative learning permits the use of acquired technological capabilities as the foundations for acquiring new capabilities. Without cumulative learning, more complex capabilities cannot build on fundamental capabilities already acquired. Collective learning enables a highly specialized division of labor to develop complex technology and generate productivity. Without collective learning, the planned coordination of the specialized division of labor is an economic burden rather than an economic benefit. By planning and coordinating the specialized division of labor, management's role is to ensure the continuity, cumulativeness, and collectivity of the learning process.

Manpower -- or labor power to be gender neutral at the sacrifice of alliteration -- is the input into the innovation process that can potentially learn. But, because of the continuous, cumulative, and collective character of the learning process, individuals cannot just learn as they please. Central to the innovative strategy is investment in the capabilities of those people who comprise the specialized division of labor that management must plan and coordinate. Strategic decision-makers ("money") do not invest in all of the people whom they employ, but only in those people whom they expect to participate in the collective learning process. Strategic decision-makers do not want to invest in people who will exit the enterprise with their human assets. Nor do they want to invest in people who will use their voice within the enterprise to subvert rather than support the process of innovation.

Machines combine with manpower to transform materials into products. Innovation in machinery is both skill-displacing and skill-augmenting. It is skill-displacing because certain productive capabilities that once resided in manpower can now be more effectively performed by machines. It is skill-augmenting because innovation in machinery requires the application of new knowledge to develop machinery and utilize it effectively in the production process. Machines can affect the productivity levels attained in manufacturing a given product and the quality of what is produced. There is generally an intricate relation between innovation in materials and innovation in machines [see, for example, the cases in Lazonick and Mass 1993]. Innovation in machines and materials both in turn depend on the complementary skills of manpower.

Materials are the substances that people as labor power transform into products. As such materials become embodied in work-in-process -- components, parts, and intermediate goods. An understanding of the character of these materials in their raw and semi-processed states is critical for the innovation process to take place. A key innovation may entail the creation of new materials through chemistry or the blend of materials that enter the production process. The quality of materials and semi-processed inventories will affect the ways in which machines and manpower are developed and utilized. As in the case of machinery, materials innovation can affect both the productivity of a given product and the quality of the product produced.

Markets provide the opportunity to generate returns on the investment in innovation. Privileged access to markets is often a critical condition for innovation to take place. As a general rule, the more innovative the strategy, the higher its fixed costs [see Lazonick 1991:ch.3; Lazonick 1993a]. Even with lower wages and interest rates, enterprises and industries that engage in an innovative strategy may be at a competitive disadvantage during the period of time that they are developing their productive resources and increasing the utilization of these resources by expanding their market share.

As has long been recognized by the "infant industry" argument for tariff protection, privileged access to home markets may be required for a period of time to develop and utilize productive resources sufficiently to generate a higher quality product at a lower unit cost than foreign competitors. The protection of markets, that is, creates opportunities for indigenous innovation that otherwise would not be taken up. An import-substitution strategy that entails indigenous innovation eventually creates the

possibility for export expansion if the products of indigenous innovation have access to markets abroad. Integral to the analysis of indigenous innovation is how a nation protects its home markets and gains access to foreign markets.

Given this framework, how can we characterize the forces for value creation that enabled the United States to become world dominant by the middle of the twentieth century? In a process of dynamic expansion, all of the six Ms of enterprise are individually identifiable but inextricably interlinked. Our discussion of the forces for value creation will begin with money and end with markets with the management of manpower, machines, and materials completing what, in current business jargon, is quite appropriately called the "value chain" [see Porter 1985].

Innovation requires financial commitment so that high fixed-cost investments in physical and human resources ("machines" and "manpower") can be transformed into high quality, low cost products that markets will absorb [the following arguments draw on Lazonick 1992]. For a new venture, this financial commitment comes from the entrepreneurs themselves, from relatives or former business associates who trust the capabilities and integrity of the entrepreneurs, or from venture capitalists who make it their business to acquire an intimate knowledge of the entrepreneurs and the industry in which their capital is being invested. For those who have money to allocate, it is only a profound knowledge of the entrepreneurs and their business plans that can reduce the uncertainty inherent in a new venture. For this reason, new ventures are virtually never financed by impersonal capital markets.

It is only when, through a continuous process of reinvestment and organizational learning, new ventures have been transformed into going concerns that shares in the enterprise are issued to the public. Even in this case, however, the purpose in going public is (contrary to the folklore that emanates from Wall Street) generally not to finance the expansion of the enterprise but to monetize the cumulated investments of the original owner-entrepreneurs and their private partners. The function of the stock market is to permit the transfer of ownership from the original entrepreneurs and their backers to the shareholding public. The vast majority of the new shareholders have played no role in building up the company. Nor, as portfolio investors, do they want to play such a role now that they have acquired ownership rights. But for the ease of disposing of their shares on a highly liquid market, the new shareholders would not have been willing to take ownership stakes in the companies concerned.

It was only when the Great Merger Movement of the turn of the century gave Wall Street the opportunity to create a highly liquid market in industrial securities that this transfer of ownership of successful industrial enterprises from the original entrepreneurs to portfolio investors could occur. Until the late 1890s, a market in industrial (as distinct from railroad and government) securities did not exist. 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 that had transformed themselves from new ventures into going concerns during the rapid expansion of the U.S. economy in the decades after the Civil War. The concentration of market shares 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.

Left in control of investment decision-making in companies such as International Harvester, General Electric, and American Telegraph and Telephone were career managers. The new chief executives were by no means new recruits to these organizations. In industries in which the specialized divisions of labor that had to be planned and coordinated were complex, the owner-entrepreneurs of the late nineteenth century had recruited managerial personnel to build their new ventures into sustainable going concerns. Sustained competitive advantage went to those enterprises that built managerial organizations that could plan and coordinate the innovation process.

When a national market for industrial securities was created at the turn of the century, the existence of these managerial structures permitted dynamic enterprises to continue to flourish when ownership was separated from control. With the original entrepreneurs retiring from the scene, the most able, energetic, and visionary career managers could now rise to strategic decision-making positions. With ownership fragmented among tens or hundreds of thousands, and in some cases millions, of shareholders, the new strategic decision-makers were left free to allocate corporate revenues to innovative investments that built on the organizational and technological capabilities that their enterprises already possessed.

In the wake of the Great Merger 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 consumer. In fact, for most companies, control over the level and volatility of prices enhanced their abilities to pursue innovative investment strategies. When successful, the innovative strategies enabled these companies to lower prices to consumers while increasing the wages and salaries of their workers and the dividends of their shareholders.

The critical issue for the development of the American economy was not product-market concentration and administered prices per se, but what the strategic decision-makers in industry did with their enhanced control over market forces. Retained earnings, leveraged with money raised through long-term bond issues, financed not only the building of 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. To generate new knowledge and make as full use as possible of existing resources, the major industrial corporations also invested heavily in people. As we shall see, these investments were confined largely to those line and staff personnel who were deemed to be part of the management structure. The managerial enterprises that dominated the American economy invested very little in the skills of workers on the shop floor.

Investments in managerial organization did not just occur in the private sector. In the case of U.S. agriculture, similar investments that constituted a veritable managerial revolution were made by the federal and state governments to generate new knowledge of relevance to America's millions of farmers and to diffuse it to them on their farms [Ferleger and Lazonick 1993]. The managerial revolution that, as Alfred

Chandler [1977] has shown, began on the railroads during the second half of the nineteenth century, pervaded the American economy during the first half of the twentieth century.

These investments in managerial organization were supported by complementary private and public investments in the nation's educational system. Entrepreneurial fortunes of the late nineteenth century -- and especially those of Carnegie and Rockefeller -- endowed philanthropic foundations that reshaped the system of education from the primary through the university levels to fit the needs of a modern industrial society. At the same time, the nation's public institutions of higher education -- the land-grant college system -- developed to service the research and personnel needs of agriculture and industry. By the 1920s these massive investments in education formed solid underpinnings for the innovative strategies of the nation's industrial enterprises.

Within the industrial corporations, the building of managerial structures continued during the first half of the twentieth century to ensure the transformation of innovative investments in "manpower" and "machines" into high-quality, low-cost products. The management structure consisted of staff personnel who supplied the enterprise with knowledge and line personnel who ensured that their subordinates put that knowledge into action.

To plan and coordinate these line and staff activities to achieve the corporation's goals, it was not enough to train the relevant "manpower" to do particular tasks. The training of thousands of individuals had to be planned and coordinated so the particular tasks added up to a coherent whole. The problem was not a purely technocratic exercise. These thousands of individuals had to be motivated to utilize their skills to achieve common goals. Central to the managerial revolution in American business was the creation of incentive systems and accounting systems that sought to transform individualistic Americans into "organization men".

The inhabitants of the managerial structure were in fact (until the 1960s) almost exclusively men. More than that, they tended to be white, anglo-saxon, protestant men who, within the corporate structure, were "members of the club". Their salaried status signified their long-term attachment to the enterprise; they were, in effect, what the Japanese have called "permanent employees." With their education, training, and cultural cohesion, these managerial personnel constituted a formidable collective productive force.

Left out of the "club" were women, who were often required to give up their employment upon marriage, and shop-floor workers, who increasingly came from a variety of non-"wasp" backgrounds. These were the "hourly" workers who, in theory at least, could be hired and fired at will. In practice, those blue-collar workers who tended expensive machinery that had to be operated continuously and at high speeds to generate returns had to be motivated to maintain the pace of work. Despite a general lack of skill on the shop floor, managers still relied heavily on the complementary labor of operatives to achieve high throughput and low unit costs [see Lazonick 1990:ch.7].

To elicit the desired responses from blue-collar workers, management used various methods such as piece-rate incentives, close supervision, extreme specialization of labor, and employee welfare plans. What worked best, however, was the ability of the company to offer workers long-term employment security as well as wages and work conditions that were above the prevailing norms for manual labor. The companies that were best able to offer such employment were those that, through investments in management, machines, and manpower, had gained distinct and sustained competitive advantages in their particular industries. By gaining the cooperation of labor on the shop floor, these companies were able to build their organizational capabilities, increase the value created by their investments, and extend their competitive advantages.

Once management had generated competitive advantage in one product market in one geographic area, it could try to use its organizational capabilities to capture market shares in new industries and in new locales. In the United States, dominant enterprises implemented what has become known as the multidivisional structure [Chandler 1962] to accomplish this task. With their highly integrated organizations already in place, dominant enterprises could engage in continuous innovation by building on their existing knowledge and facilities. Such enterprises were able to expand nationally and then internationally, while also channeling their financial resources into new product development that built on the unique capabilities that these companies already possessed.

From the outset of American industrialization in the early nineteenth century, entrepreneurs had had a problem recruiting and attracting skilled labor [the following arguments draw on Lazonick 1990:chs.7-9]. The existence of abundant land and an expanding economy meant that skilled labor had ample alternative opportunities, and could therefore command high wages without necessarily contributing high productivity. It was to avoid being dependent on the skills of a highly mobile, highly paid workforce that American strategic decision-makers sought to embody the strength and skill requirements of work in machines and materials rather than in manpower. To pursue this strategy, which in its time was innovative, those with money had to employ staff personnel who could develop the machines and materials and line personnel who could ensure high rates of utilization of the machines and materials. The business enterprise also had to recruit large numbers of unskilled workers to tend the machinery and transfer the materials from one machine to another on the shop floor.

Toward the end of the nineteenth century, the rapid expansion of the American industrial economy attracted massive numbers of unskilled labor from eastern and southern Europe who became the primary source of blue-collar labor in the mass-production industries. The very real threat that these workers posed to existing craft labor (mostly of northern and western European origins) in the United States led to the growth of craft unionism under the umbrella of the American Federation of Labor. The attempt by these craft workers to maintain the traditional boundaries and prerogatives of their trade increased the resolve of management to run non-union shops and to take the need for the exercise of skill off the shop floor by embodying it in machines and materials. In cases where new machine technologies did not yet exist, the short-run response of management to craft labor was to make key skilled workers members of the managerial structure.

Increasingly, however, the technical specialists and professionals who became salaried managers were recruited from the nation's colleges and universities -- institutions that during the first two decades of the century went through a massive transformation to provide pre-employment foundations for careers within the burgeoning managerial organizations. Within the managerial structure, management development programs provided these employees with extensive training that moved them around and up the managerial hierarchy, in the process gradually transforming them from specialists to generalists. This career-long process of development and promotion entailed a long-term commitment of the enterprise to the managerial employee and elicited a profound identification of the employee with the goals of the enterprise.

Such skill development systems did not prevail on the shop floor because a prime role of the managerial organization as it evolved in most American enterprises was to develop and utilize machines and materials in ways that would make it unnecessary for blue-collar workers to be in the possession of substantial skills. Increasingly, blue-collar workers were recruited from the vocational tracks of high schools in which the restricted conceptual and analytical content of their education conformed to the limited skill requirements of the jobs in which they would eventually find employment. These jobs did, however, require workers who would cooperate in supplying continuous effort to high-speed production processes for sustained periods of time. The structure and content of the routinized schooling that they received for some thirteen years before entering the workplace provided value-creating socialization for the subsequent routinized jobs.

During the 1920s, as American manufacturing boomed, the most successful corporations began to share the gains of innovation with shop-floor workers in the forms of somewhat higher wages and considerably more employment security than had previously been available in industry or were currently available elsewhere in the economy. These employment conditions reinforced the willingness of shop-floor workers to cooperate in the value-creation process and to forego union organization. Even after restrictions were put on immigration in the 1920s, the offers of remunerative and stable employment for unskilled workers drew hundreds of thousands of men off the American farms and into the factories.

This dynamic of growth collapsed in the 1930s. It collapsed, not because American industry did not have enough value creating capability but because it had too much. As I shall discuss later, even with workers in the mass-production industries earning somewhat higher wages, there was too much value creation and not enough value extraction to sustain demand. In part this imbalance between supply and demand was because of a saturation of existing markets for consumer durables. In part it was because millions of families in farming, mining, and less capital-intensive manufacturing industries (textiles foremost among them) found themselves squeezed between cutthroat competition in their product markets and highly mobile labor in their labor markets, and hence extracted little from the boom of the 1920s.

As the depression deepened in the early 1930s, corporations that had dominant shares began to lay off their blue-collar workers, thus driving the depression deeper. These same corporations did not in general lay off their managerial employees. Strong

balance sheets, the legacy of the 1920s, enabled these companies not only to keep their managerial organizations intact but actually to expand them. During the 1930s, for example, there was a significant increase in the numbers of research personnel employed by the major industrial corporations. These industrial corporations were, therefore, well prepared to cooperate with the government in stepping up production for the war effort of the early 1940s. Before World War II, the government's main involvement in the generation and utilization of technology was in the agricultural sector. Now the government became deeply involved in chemical and electronic research for military purposes. After World War II, the Cold War sustained this government involvement. In addition, as a legacy of the New Deal and building on biotechnology advances in state-supported agricultural research, the federal government took responsibility for showing the way in medical research. Research laboratories in major corporations, universities, and the federal government gave the United States the most formidable capability for developing new knowledge in the world.

Also present in the American economy were formidable organizational capabilities for embodying this knowledge in new products and processes that took the American system of mass production to new productivity heights. As had been the case earlier in the century, American industry excelled at producing special-purpose, mass-production technologies that obviated the need for the exercise of skill on the shop floor. Further aiding the achievement of high-throughput production with deskilled production workers was the easy access of American mass-production enterprises to abundant supplies of high-quality natural resources. These resources were secured partly from within the boundaries of the United States and partly from the worldwide exploitation of resources by U.S. multinational corporations.

As always in the twentieth century, the main job of shop-floor workers in American corporations was to feed materials into machines. What distinguished the 1940s and 1950s from the 1920 and 1930s was that now these workers had industrial unions to bargain with the corporations. The industrial unions did not, however, challenge the right of management to control the development of technology, including the right to continue to neglect investment in the blue-collar labor force. What the unions did win was the protection of seniority in layoffs and rehiring, thus giving workers a high degree of employment security as long as the companies did not undergo massive downsizings. In practice, seniority was also the basis for movements up the blue-collar wage structure.

By securing the employment and earnings of blue-collar workers, this industrial relations system elicited cooperation on the shop floor, even as it made no attempt to upgrade the skills of workers or harness their creativity. Given the extraordinary organizational capabilities embodied in the managerial structures of the major industrial corporations, however, cooperation on the shop floor was all that was needed in the 1940s and 1950s to make American industry the most powerful collective force for value creation in the world.

The forces for value extraction

Adam Smith made famous the notion that the sole end of production should be consumption. He had a point. Even those of us who get intrinsic enjoyment out of our work still seek to extract the economic value that we create.

Building on Adam Smith's metaphor of the invisible hand of market forces, economists have elaborated a theory of the market economy in which each participant gets to extract just that value that his or her factors of production create. In the real world, however, for any particular participant in the economy, the relation between value creation and value extraction is not so clear cut. Contrary to the orthodox economist's conception of an individualistic market economy, value creation in the real world is a collective process in which it is impossible to isolate the value created by each individual participant. It is also a process in which differences in collective power enables some groups of people to extract more than they create and other groups of people to create more than they extract.

Indeed, if taken too far, attempts to align individual rewards with individual contributions may very well interfere with the teamwork that is central to the value-creation process, and reduce the amount of value created by the team as a whole. In addition, where innovation is involved, the value that will be available for extraction is inherently uncertain at the time that the innovative productive contributions are being made. It is the relation of people to the organizations through which they create value, not impersonal market forces, that determines how today's productive contribution will be rewarded if and when in the future returns to the innovative investments have been generated.

Value is extracted in the forms of wages, salaries, interest, dividends, and taxes. As such, the ability of different groups -- labor, management, creditors, owners, and the government -- to extract value determines the distribution of income. As I have already emphasized, in and of itself value extraction performs an indispensable economic function; it creates the demand for goods and services that justifies the supply of these goods and services. Without such demand, producers would stop creating value.

In a world of innovation, however, one never expects demand to be in equilibrium with supply. By creating more value than previously existed, the innovation process assures that any tendency toward equilibrium of supply and demand will be disrupted. What matters for long-term economic growth is whether those who extract value use that value in ways that can augment the creation of value in the future.

Specifically, to what extent do they use a portion of the value they extract to finance the next round of innovative investments? Or to what extent do they spend the value they extract in ways that actually erode the organizational capabilities that are critical for innovative investment strategies to succeed? Value created and value extracted are not independent of one another. An increase in the amount of value created opens up new possibilities for extracting value, while an increase in the amount of

value extracted can erode the capabilities for creating value. In the previous discussion of the forces for value creation in the United States, I explained how, in the "era of value creation", American companies secured the committed finance to permit them to develop and utilize new technologies. Now I shall explain how, in the "era of value extraction", the forces for value extraction have been undermining the value-creating capabilities of enterprises and industry in the American economy.

To illuminate the critical role of the relation between value creation and value extraction in the economy, and to elaborate the historical background to the era of value creation, let me begin by explaining why the trauma of the Great Depression of the 1930s could occur in the midst of what I have called the "era of value creation". The 1920s was a period of unprecedented economic expansion, with productivity growth in manufacturing averaging 5.6 percent per year over the decade. For manufacturing workers as a whole wages fell by almost six percent between 1920 and 1929, while managerial salaries rose by 22 percent and surpluses in the capital account rose by 63 percent. In the most dynamic industries, however, the distribution of income was markedly different from the average. In automobile manufacture, for example, wages rose by 24 percent between 1920 and 1929, while salaries rose by 15 percent. Over the same period capital surpluses in the automobile industry rose by 193 percent [see Lazonick 1990:ch.7].

During the 1920s, the major manufacturing corporations paid out over 60 percent of their net income to shareholders as dividends. Yet the retained earnings of these companies were so great that they were able to fund all new investment in plant and equipment internally. They also took advantage of the booming stock market to sell shares, which they then used either to bolster their cash reserves or to pay off previously acquired debt (a financial strategy remarkably similar to that employed by Japanese corporations in the late 1980s). A large amount of this excess cash was lent to stock-market speculators on the New York call market as brokers' loans, thus fueling the stock market boom [see Lazonick 1992].

In this way the phenomenal value-creating capabilities of the major industrial corporations set the stage for the Great Crash of 1929. The product markets for consumer durables and houses had shown signs of saturation as early as 1928, but the financial disruption that occurred in the aftermath of the Great Crash took much needed credit out of the hands of farmers and other small businesspeople in, among other sectors, mining and textiles who, throughout the 1920s, had been mired in "cut-throat competition". The resultant bankruptcies further diminished the demand for the mass-produced goods of the dynamic manufacturing sector. Unburdened by debt, the major companies could cut back production rather than engage in cut-throat competition. By 1931 major companies such as General Motors and General Electric were laying off blue-collar workers in droves, thus depressing consumer demand, and the economy as a whole, even further.

The Great Depression was not caused by a lack of productive capabilities but rather by the inability of formidable productive capabilities to find sufficient access to markets. Even in fragmented sectors such as textiles, mining, and agriculture, that were described as "sick" in the 1920s, the United States led the world in technology and hence value-creating potential. A major goal of the New Deal was to rectify this situation by permitting farmers and workers, whose purchasing power was essential

for the existence of mass markets, to extract more of the value created by mass production. In agriculture, price supports and commodity credits made it possible for the farmer to invest in new technologies. In manufacturing, labor legislation made it possible for blue-collar workers to organize unions and engage in collective bargaining to raise wages and stabilize employment. In addition, the New Deal put in place social welfare programs that entailed a transfer of money from the wealthier segments of society who had more money than they could spend to the poorer segments of society who needed more money to spend.

Despite these changes, the redistribution of income that occurred in the late 1930s was not sufficient to generate sustained recovery. It took the entry of the United States into World War II and the consequent mandate to mobilize resources for military purposes to unleash the productive potential of the American economy. Once unleashed, the economy kept booming even after the war ended, in part because of pent-up consumer demand that households could finance from their wartime savings, in part because of a much expanded role of the government in building American infrastructure and military capability in the context of the Cold War, and in part because of the enhanced power of unions in the growing economy to extract value that was then used to buy American goods and services. In the quarter century or so after World War II, the United States was also able to extract value through its access to cheap materials around the world, the low revenues in the rest of the world in effect increasing the amount of value created that could be extracted by workers, managers, financiers, and governments in the United States.

Up to the 1950s, the forces for value extraction tended to support rather than undermine the forces for value creation. The higher wages of workers not only expanded mass markets. Combined with the renewed promises of employment stability, the higher wages of workers in the mass production industries gave them incentives to cooperate in the value-creation process. Within managerial organizations, a structure of hierarchical salary differentials evolved that provided managers with incremental rewards over the course of their careers as they progressed from lower level to middle level to upper level positions. Government taxes were used to build social infrastructure such as schools, hospitals, and highways that directly and indirectly supported the value-creation process. From World War II, the government also began to spend heavily on basic scientific research in medicine and weapons, in addition to its existing commitments to agriculture. Even government funding of military-related research generated new knowledge that found uses in commercial applications.

Beginning in the 1950s and continuing over the ensuing decades, however, forces for value extraction gained strength. These forces adversely affected the dynamic interaction of the six Ms, and thereby undermined the value-creating capabilities of business enterprises. The opposition of the forces of value extraction to the forces of value creation took decades to unfold. In historical retrospect, however, we can see the process whereby the ability to extract value by various groups in the American economy became separated from the ability to create value. Leading the forces for value extraction was the financial sector [the following arguments draw on Lazonick 1992].

Up until the late 1970s -- when the American financial system was deregulated, American industrial corporations had access to inexpensive finance. Wealthholding households placed their money in life insurance policies, bank accounts, and, if they were willing to face the risks, common stocks. The institutional investors of the era of value creation -- insurance companies, commercial banks, and mutual savings banks -- channeled household savings into industrial investments by holding corporate debt. In a regulated financial environment, 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, had, again by virtue of their dominance, access to relatively low cost funds for industrial expansion. During the 1940s the yield in Moody's Aaa-rated corporate bonds averaged 2.71 percent, varying between a low of 2.53 percent in 1946 and a high of 2.83 percent in 1942.

As for the shares of the industrial corporations, they were held primarily by households that bought them on the secondary market with the expectation of receiving dividends and capital gains. With shareholding widespread and fragmented, these households had little ability to influence the payout ratios -- the proportion of current earnings that were paid out as dividends -- of the companies that they ostensibly owned. Shareholders who did not like the dividends that they were getting from holding the stocks of a particular company could simply call their stockbrokers and sell their shares.

From the 1950s, however, a new type of shareholder arose -- the institutional investor. Before the 1950s, the only significant institutional investors that held corporate securities were the insurance companies, and, as prudent institutions, their portfolios consisted of massive amounts of corporate bonds but very small amounts of corporate stocks. The growth of mutual funds and pension funds in the American economy manifested the collectivization of the savings of millions of American wage and salary earners. The specific purpose of a mutual fund is to generate high yields for its members by collectively giving them access to professional money managers who can buy and sell large blocks of stock. Because individual wealthholders can buy and sell shares in mutual funds as easily as they can buy and sell shares of individual stocks, there is vigorous competition among mutual funds to attract investors. In the attempt to generate the higher yields that can attract investors, the mutual funds are constantly buying and selling large blocks of stocks.

During the 1950s, when the mutual funds became significant financial institutions, common stocks accounted for 85 percent of their assets compared with 30 percent of the assets of pension funds and only 3 or 4 percent of the assets of life insurance companies. During the 1960s the mutual funds played an important role in the conglomeration movement by buying up blocks of stock of target companies that were rumored to be in play, and selling them to the conglomerate raiders at higher prices.

The specific purpose of a pension fund is to provide for its members in retirement -- a goal that, under conditions of sustained economic growth, might best be achieved by holding stable portfolios of securities for the long term rather than by buying and selling in an attempt to boost short-term yields. Hence the tendency of pension funds at mid-century to put the majority of their assets into long-term bonds. Over the past

few decades, however, with American industrial corporations subject to intense pressures from foreign competitors and domestic value extractors, long-term investments have become increasingly uncertain investments. At the same time, pension-fund managers have been under pressure from their beneficiaries to match the yields of the mutual funds. They sought to do so by increasing the proportion of their holdings in stocks from 30 percent in the 1950s to 50 percent in the 1980s. More importantly, as pension funds grew by leaps and bounds, the proportion of all equities outstanding in the United States that they owned increased from two percent in 1955 to 22 percent in 1985.

The Employee Retirement Income Security Act (ERISA) of 1974, as interpreted by the Department of Labor in 1978, provided government-sanction to the pension funds to search for higher yields by getting involved in riskier investments. Accordingly, during the 1980s, the pension funds became the major source of the burgeoning size and number of "venture capital" pools in the United States, an occurrence that might have boded well for value creation had these pools really been providing the financial commitment required to transform new ventures into going concerns. In fact, these "venture capital" pools became major players in the search for higher yields, with the timing and amounts of value extracted from these new ventures often ensuring that they would not become self-sustaining going concerns.

Table 1. Average Annual Yields on Corporate Bonds and Common Stocks 1950-1992

	Real Interest on Bonds*	Dividend/Price Ratio on Stocks**
	(percent)	(percent)
1950-54	0.39	5.85
1955-59	2.12	3.94
1960-64	3.29	3.20
1965-69	2.21	3.18
1970-74	1.63	3.47
1965-79	0.67	4.69
1980-84	5.43	5.06
1985-89	6.45	3.58
1990-92	4.51	3.28

* Moody's Aaa

** For all common stocks listed on the New York Stock Exchange

Source: Economic Report of the President, 1993,
Government Printing Office, 1993, 416, 428, 453.

The trends in the yields on stocks and bonds from the 1950s to the early 1990s reveal the success of the institutional investors' search for higher yields. As Table 1 shows, the yield on stocks, as measured by the dividend-price ratio, was already high in the 1950s. What is important for the relation between value extraction and value creation, however, is not the yield on stocks per se but whether the dividends paid out to generate this yield constrain the investment strategies of the industrial corporations. In the 1950s yields on stocks were high because, in an era of rapid growth and high profitability, stocks were undervalued (a overhang from the Great Depression) and companies could afford to take on debt. They could, therefore, pay out reasonable amounts of dividends while still retaining enough earnings to finance

expansion. In the late 1970s and up to 1987, however, stocks were overvalued and companies were approaching or surpassing the debt-to-equity ratios that were consistent with financial stability. Yet, in response both to pressures from the institutional investors for higher yields and the availability of new forms, and norms, of corporate debt, companies paid out excessive amounts of dividends to maintain high yields and took on too much debt to keep themselves in cash.

American industry has always relied on retained earnings as the foundation for long-term corporate investment. By the 1980s and early 1990s, as the value-creating capabilities of foreign competitors were becoming more formidable, earnings began to flow out of American companies at an unprecedented rate. The proportion of after-tax profits distributed as dividends was already high at 44 percent in the 1960s and 45 percent in the 1970s. Yet it rose to 60 percent in the 1980s and climbed to 85 percent in the early 1990s. As for external finance, in the decades prior to the 1980s real interest rates on Moody's Aaa corporate bonds averaged as low as 0.39 percent in 1950-54 and as high as 3.29 percent in 1960-64. Yet in 1980-84, this yield averaged 5.43 percent, and in 1985-89, 6.15 percent. In the early 1990s, amidst prolonged recession, these real interest rates abated somewhat from the levels of the 1980s, but remained high by historical standards.

The successful search for higher yields -- the enhanced ability of wealth holders to extract value from the economy -- has made money more expensive and less committed to the value-creation process. More than that, however, the forces for value extraction have served to erode the organizational capabilities of those productive enterprises that are central to the value-creating economy. The erosion has been most evident at the top of the industrial corporation where top managers, who constitute the critical link between investment strategy and organizational structure, have increasingly turned from value creation to value extraction. From the 1950s, even before the advent of financial pressures from Wall Street and the institutional investors, top managers of major American corporations were developing both the incentives and abilities to extract more value for themselves rather than, as had been the case in the era of value creation, use their control over money to invest in the future of their productive organizations.

In the 1950s stock options became a standard form of top management compensation in major corporations. In the late 1940s, the top executives of a sample of 50 Fortune 500 manufacturing companies derived less than three percent of their total after-tax compensation from stock-based rewards. But 1950 tax legislation that favored corporate compensation in the form of capital gains combined with increases in common stock prices on the New York Stock Exchange at a rate of 24 percent per year between 1949 and 1956 created new opportunities for value extraction by top managers. By 1953 after-tax compensation from stock-based rewards had risen to 14 percent, and by 1955 it had jumped to 20 percent, thus permitting a 58 percent increase in total after-tax compensation for these executives from 1950 to 1955.

Stock options need not necessarily bias top managers against innovative investment strategies. The stock options received by strategic decision-makers in the American industrial corporations could typically be exercised over a period of ten years. Short time horizons were not therefore built into these compensation schemes. In a rising stock market, however, options exercised earlier added to income earlier, and the

exercise of existing options could form the basis for the granting of new options. And the fact is that from the late 1940s to the late 1960s, the stock market in the United States was generally on the rise.

As stock-based rewards came to represent a substantial proportion of executive compensation, the tendency was for beneficiaries to consider them as basic earnings rather than as a reward for superior performance. For example, when stock prices declined substantially in 1969 and 1970 -- the first large decline since 1947 -- stock-based compensation of the Fortune 500 executive sample fell to only 12 percent of total compensation but was replaced by other forms of income. The lesson for top managers was to be concerned with short-run stock market performance so that they could exercise their options early, establish a higher level of base pay, and get more options.

The ability of top managers to buy stocks at a discount transformed career employees into substantial owners. The exercise of stock options meant a stream of dividends if the managers held onto the stocks or, in a rising market, capital gains if the managers (usually after a restricted period) sold the stocks. During the 1950s ownership income began to dwarf compensation income for top managers. With capital gains income over twenty times dividend income in the early 1960s, top managers gained a palpable interest in preventing even short-run declines in the value of their companies' stocks. Along with the ever more powerful managers of institutional financial portfolios, the strategic decision makers who ran America's major industrial corporations increasingly developed an interest in focusing on the "bottom line" of their companies' quarterly corporate reports.

In the process, these top managers began to view their own interests as distinct from the interests of other managers (never mind blue collar workers) lower down the corporate hierarchy. Manifesting this divergence of interest was the increasing tendency for the pay of top managers of industrial corporations to be determined by "market forces" external to their organizations -- for example, the pay of other top managers or of Wall Street financiers -- rather than by a structure of incentives and rewards internal to their particular organizations. 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 [see Lazonick 1992 and Lazonick 1993b].

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 CEOs \$0.5 million [*New York Times* 01/20/92]. 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.

This enhanced value-extracting power of America's top industrial managers has weakened their incentives to engage in innovative investment strategies. Their ability to command high salaries depends on their cooperation with the financial community in pursuing adaptive investment strategies that generate the "free cash flow" that can be extracted from these corporations rather than dedicate these revenues to investment for the future.

Indeed, quite in keeping with this perspective of an erosion of the organizational capabilities of American industrial corporations, as those at the top of the American industrial corporations have fared extremely well, the employment security and pay of those further down the corporate hierarchy have deteriorated. As a result, the best and the brightest of young Americans have much less incentive to pursue careers as technical specialists in the industrial corporations. At the same time, fueled in large part by the flow of earnings out of these corporations, alternative employment opportunities for these people as value-extractors in the financial sector have grown more attractive. In 1989 the average compensation (salary and bonus) for the more highly paid stratum of corporate finance and merger and acquisitions specialists at the top ten securities firms was \$450,000 if they entered the firm in 1983, \$300,000 if they entered in 1986, just over \$200,000 if they entered in 1987, and about \$140,000 if they entered in 1988. The average compensation of the lower-paid specialists ranged from just under \$300,000 if they entered in 1983 to "only" \$100,000 if they entered in 1988 [Wall Street Journal 12/08/89:C1 and C5]. In 1993, after several years of recession, the average annual pay of employees at Wall Street was over \$130,000 [New York Times 9/30/93:B5]. As the forces for value extraction have become ascendant, it is not only with the Japanese that American industry must compete [see Bok 1993].

Meanwhile, American industry was simply not making the types of investments that were required to remain competitive on global markets [the following discussion draws on Lazonick 1994]. The recession of the late 1980s and early 1990s greatly accelerated the tendency that had been building since the early 1980s to terminate the employment of salaried personnel. To some (as yet undetermined) extent, this downsizing represents a necessary rationalization of overstuffed corporate bureaucracies. There is a danger, however, that forced downsizings might be diminishing the abilities of U.S. industrial enterprises to pursue innovative investment strategies. The inability of the enterprise to offer long-term employment security and income growth even to its salaried employees may reduce the organizational commitment of those salaried employees whom the company retains. As shown by the recent experience of many dominant U.S. companies (including IBM), the most able and experienced employees may look outside the company for employment. If and when they do in fact leave the company, they take with them skills acquired through in-house training and experience. The company not only loses its investments in human resources but often finds that these resources are subsequently at the service of direct competitors. The loss of human resources as well as competitive advantage makes the company reluctant henceforth to invest in the skills of its key personnel.

The long-term result of such responses is an erosion of organizational capabilities within the enterprise without any guarantee that the reduction of investment in human capabilities and the reconstitution of comparable organizational capabilities will occur elsewhere in the economy.

The number of scientists and engineers per 10,000 labor force participants in the United States was 65 in 1970 and 66 in 1986. The Japanese, who had only half the number of scientists and engineers per 10,000 labor force participants as the United States in 1970, had caught up with the United States by the mid-1980s. During the last half of the 1980s, R&D expenditures as a percent of GNP were about equivalent in these two nations -- about 2.8 percent. But the much greater role of the military in U.S. R&D expenditures (about 30 percent of the total for the United States and virtually nothing for Japan) reduces the impact of U.S. R&D investment because of a lack of spillover from military to civilian applications. One reason for the lack of spillover in particular and of the decline in U.S. leadership in technological development more generally may be a neglect of long-term generic (or "pre-competitive") research at the corporate level of major industrial enterprises, with the R&D focus devoted overwhelmingly to product and process development at the divisional level.

Evidence from Japan is that its major high-technology corporations that in the past emphasized applications of technology as part of the process of catching up are now using some of the returns from catching up to finance central research laboratories in which to generate knowledge about the technologies of the future. As for the present, analyses of patent citations show that by the beginning of the 1990s, Japan was forging ahead in virtually every high-technology field.

If a reversal in long-term technological capability between U.S. and Japanese industrial corporations is taking place, it may also be affecting the different ways in which U.S. and Japanese industrial enterprises are making use of the unparalleled public-sector research capabilities of major American universities. Unlike the United States, where over a century ago, the U.S. federal government, through the Department of Agriculture, began funding basic research, the Japanese never developed universities for this purpose. Instead, as part of the process of catching up, Japanese companies applied scientific knowledge generated abroad to Japanese industrial requirements. But now that they have caught up, Japanese high-technology companies have been establishing close links between U.S. universities and their central research laboratories. U.S. industrial corporations, in contrast, appear to be increasingly interested in making use of university research capabilities for applied rather than basic research. If so, it may be that in the future Japanese companies will use the basic-research capabilities of U.S. universities to help them forge ahead in high-technology industries such as aerospace, medical equipment, chemicals, and biotechnology, while, by failing to make use of these basic-research capabilities, U.S. companies will forgo a powerful means of catching up.

As for an industry such as automobiles in which the U.S. clearly fell behind in the 1980s, what the Japanese have shown in recent years is their ability to gain competitive advantage even when manufacturing in the United States by transplanting the modes of shop-floor work organization that have already worked so well in generating exports from Japan. A key component to Japanese success in the

United States has been the willingness of Japanese transplants to invest in the capabilities of shop-floor workers. Yet these are precisely the investments that dominant U.S. mass producers have been reluctant to make in the United States.

In competition with the Japanese over the past quarter century, the organization of work on the shop floor has been the Achilles heel of U.S. manufacturing . With its managerial structures in place, American industry may have entered the second half of the twentieth century in the forefront in the development of productive resources. But its weakness lay in the utilization of productive resources manufacturing processes in which large numbers of shop-floor workers had to interact with costly plant and equipment.

Into the 1960s, U.S. enterprises dominated in the mass production of automobiles and consumer electronics by making investments in special-purpose machinery that then required the cooperative efforts of masses of relatively unskilled labor to generate high levels of productivity. Aided by a centralized union movement, these enterprises secured a degree of shop-floor cooperation from production workers by offering them more employment security and better pay than could be found elsewhere in the U.S. economy. But the major industrial enterprises did not provide these blue-collar workers with substantive training. Nor did they ever make explicit, and hence more secure, the long-term attachment of the "hourly" employee to the enterprise. Without this commitment of the organization to the individual, one could not expect the commitment of the individual to the organization that might have enabled U.S. mass producers to respond quickly and effectively to the Japanese challenge.

Production workers in the United States receive much less training and tend to be much less skilled than their counterparts in Japan or Germany. Historically, the deskilling of shop-floor work in the United States arose out of successful managerial strategies to introduce mass-production technologies that could take control over the work organization out of the hands of craft workers and make use instead of inexperienced and untrained immigrant labor. The development and utilization of these mass-production technologies required investment in skills. But those who received extensive training were better educated technical specialists who were integrated into the managerial structure as salaried employees with the potential for rising up the managerial hierarchy. It was on this organizational and technological foundation that U.S. industrial enterprises achieved their positions of global industrial leadership.

The problem for the United States is that it has been in those mass-production industries in which the United States was once pre-eminent that the Japanese have changed the organizational and technological foundations of industrial leadership by developing and utilizing the skills of production workers as well as technical specialists. They have done so, moreover, on the basis of a mass-education system that since the late nineteenth century has provided the pre-employment cognitive foundations for the subsequent skill development of production workers as well as technical specialists in the workplace.

In the United States, the unskilled shop-floor worker is the product of an inferior primary and secondary education that sufficed as long as the U.S. model of skilled

technical specialists and unskilled production workers yielded global competitive advantage. But the educational requirements of industrial leadership have changed. Numerous comparisons of educational achievement among the OECD nations have shown that the United States ranks at or near the bottom.

One might expect that a nation such as the United States, with its historic commitment to equal opportunity through mass education, would quickly respond to the changed educational requirements of global competition by upgrading the cognitive capabilities of its future workforce. In the past, the captains of industry have recognized the need to improve the education of the masses. Much of the funding of mass schooling after the turn of the century came from the philanthropic foundations established by major industrialists. That was, however, in the "era of value creation" when the U.S. economy was rising to its position as global industrial leader. Despite a general consensus in the United States that investments in mass education are the top priority for industrial regeneration, the wealthiest Americans have shown little interest in making the funding available, either through philanthropic means or through tax-financed government expenditures.

The failure to provide high-quality mass education in turn constrains attempts by industrial employers to develop the skills of production workers to complement advanced process technologies. U.S. industry underinvests in the training of its shop floor workers, both relative to own investments in managerial personnel and the investments of its international competitors. Given this lack of in-house training and the difficulty in utilizing advanced process technologies (for example, robotics) on the shop floor, U.S. industrial enterprises tend to search for alternative, less technologically complex, investment strategies.

If present-day U.S. industrialists are unwilling or unable to take the lead in effecting the necessary educational and training transformations, one might expect that the workers themselves, through their unions, would apply pressure on business and government to make such investments in human capabilities. In many Western European nations and to some extent in Japan, unions play precisely this role, be it through direct participation in investment decisions at the enterprise level or through political representation in local and national governments. In the United States, however, the 1970s and 1980s witnessed a dramatic weakening of the labor movement at precisely the time when unions needed to be brought into the investment decision-making process in both the private and public sectors. To do so the adversarial business unions of the 1950s and 1960s needed to be transformed into partners of industry. Instead, through plant closings and legal rulings, the union movement was weakened. The sharp decline of union membership from over 20 percent of wage and salary workers in the early 1980s to less than 15 percent in the early 1990s reflects a longer run trend that manifests the erosion of organizational capabilities in the United States.

The weakening of the U.S. labor movement is also reflected in the decline in the real wages of U.S. manufacturing workers over the past two decades. Real hourly wages have been declining in manufacturing since the late 1970s, and from 1978 to 1990 real weekly wages declined by well over ten percent. This decline in the real wages of manufacturing workers manifests the growing inequality in income distribution that characterized the 1980s and persists in the 1990s. More than that, however, it

also manifests an erosion of organizational capabilities. Within a major manufacturing enterprise (which was the type most apt to be unionized), well-established arrangements for sharing productivity gains with workers provide the social basis for generating the gains to be shared [see Lazonick 1990:ch.8-10 and appendix]. The willingness of workers to supply high levels of effort increases productivity, while the cooperation of workers in the utilization of productivity-enhancing process technologies creates incentives for employers to invest in these technologies. A loss of control over the supply of effort on the shop floor, therefore, makes employers reluctant to invest in advanced machine technologies as well as the skills of shop-floor workers needed to complement these machines. The long-run decline in real manufacturing wages manifests these perverse impacts of prevailing labor-management relations on shop-floor technological change and productivity growth. The inability of masses of Americans to extract value from the economy is integrally bound up as both cause and effect of their inability to create value.

Confronting the ideology of ownership

From the perspective of value creation and value extraction, therefore, the problem of short time horizons does not simply reside in the heads of strategic decision-makers. The structure of the American economy combined with the rise of formidable foreign competition have generated incentives for strategic decision makers in American industry to pursue adaptive investment strategies. As I have argued, the forces for value extraction have been gathering power in the United States since the 1950s. But it was the movement for financial deregulation, and other "free-market" ideologies that were put into practice during the years of the Reagan administration that permitted the forces for value extraction to overwhelm the forces for value creation.

What the American economy now needs is massive value-creating investments in many dimensions. We need to invest in schools from kindergarten through grade 12 so that in the world of work masses of people will have the value-creating capabilities to make their enterprises and industries competitive. We need to invest in higher education so that it turns out people who are adept at products that are good for our physical and mental health rather than turning out people who are adept at manipulating financial markets for their own personal gain. Within enterprises, we need investments in research and development specifically and in human capabilities more generally -- not only in the management structure where such investments have traditionally been made but also on the shop floor where deskilled work has traditionally prevailed. To truly create value for people, these investments at the levels of the society and the economy must be sensitive to environmental and social concerns. Indeed, as a society, we need new measures of "value" that go deeper than money to gauge our ability to generate goods and services that elevate human existence.

As a step toward achieving these goals in the United States, power over investment decision making in both business and government must shift from the value extractors to the value creators. As a prerequisite, such a shift will require an ideological revolution in the way in which Americans think about what the forces for value creation actually are. Unfortunately, it is not only conservatives who espouse the belief in the efficacy of the free market economy. In the late 1970s, financial deregulation was a Democratic initiative, and for decades before that many liberal economists had preached what I have called the "myth of the market economy" [Lazonick 1991].

Such an ideological revolution will be a hard sell. Many if not most critics of "short-termism" in American industry are unwilling to contemplate the shift in control over strategic decision making that an eradication of the problem would entail. Obsessed with an ideology of ownership, they look to financial markets to direct the American economy toward the long term. For example, in a book entitled Short-Term America: The Causes and Cures of Our Business Myopia [1991], Michael T. Jacobs, a former director of corporate finance in the United States Treasury Department under Reagan, bemoans the impact of the financial revolution of the 1980s on investment in America's industrial future. Yet he still retains a misguided faith in the

role of financial markets to determine the nation's industrial development. "In spite of the many shortcomings of our present equity markets," Jacobs [1991:74] argues,

the collective wisdom of our markets is still the best judge of economic value. Poor information, rather than poor judgment, is the root of inappropriate evaluations. If we allow companies to ignore their stock price, there will be no mechanism to force them to deploy resources more efficiently. Consequently, pursuit of other goals at the expense of maximizing the value of the corporation would not only violate the directors' fiduciary responsibility to the shareholders, it would also undermine the capitalistic system which we have always relied on to satisfy the long-run interests of employees, communities, and customers.

This statement misconceives the forces for value creation that made the American economy the world's most powerful in the past. It was precisely when stock prices were low and shareholders had little power to extract higher yields that the top managers had both the incentives and abilities to invest for the long term. The stock market does not exist, and never has existed, to finance industrial development. Rather, as I outlined in this essay, from the perspective of value creation, it has existed to permit collective business organizations to invest for the long term unconstrained by the abilities of individual property owners and by their desires for value extraction. Underlying the financial revolution that has played a major role in shortening the time horizons of American managers has been the rise of the collective power of property ownership in America's major industrial corporations. In the successful search for higher yields, the collective power of stock ownership has become a force for value extraction that has overwhelmed, surpassed, and ultimately undermined the forces for value creation.

In a recent study, Capital Choices: Changing the Way America Invests in Industry [1992:3], Michael E. Porter of the Harvard Business School has recognized that "the U.S. system of allocating investment capital is threatening the competitiveness of American firms and the long-term growth of the national economy." Porter [1992:3] argues that many American corporations have been investing "too little in those assets and capabilities most required for competitiveness (such as employee training), while wasting capital on investments with limited financial or social rewards (such as unrelated acquisitions)." He views short time horizons, ineffective corporate governance, and the high cost of capital as symptoms of "a much broader problem, involving the entire system of allocating investment capital within and across companies." Competitiveness, Porter [1992:4] argues,

requires sustained investments in a wide variety of forms, including not only physical assets but also intangible assets such as R&D, employee training, and skills development, information systems, organizational development, and close supplier relationships. These "softer" investments are of growing importance to competition and are also the most difficult to measure and evaluate using traditional approaches to evaluating investment alternatives.

Yet, in the American economy, such investments have been made on a massive scale in the past (and continue to be made on an apparently lesser scale today), albeit more

within the managerial structure and less on the shop floor. What needs to be confronted, and what Porter avoids, is why the interests of, and pressures bearing on, those doing investment decision making at the levels of both business and government have changed.

Porter's very use of the adjective "intangible" to refer to human assets is a clue to the bias that now pervades the American business community. Investments in human assets are quite tangible to the people who possess these assets. These assets are acquired through educational institutions, government-sponsored and business-sponsored training programs, and particular employment opportunities. When these human assets are in demand, the bearers of these assets get jobs, employment security, and decent pay. When combined with the productive capabilities of others and appropriate physical assets, these human assets generate returns not only for the people who possess them but also for the organizations of which they are an integral part.

When top managers as strategic decision makers invest for the sake of these organizations -- that is, when they act as value creators -- they count the allocation of capital to human assets as critical investments and the higher standards of living that result as basic returns. When they invest for the sake of themselves and the financial community, they see both the allocations of capital to, and the returns from, human assets as expenses that reduce the amount of value that they can extract. When top managers view their mission as "creating value for shareholders" -- which during the 1980s became a typical refrain -- they tend to neglect investments in human assets precisely because assets that reside in humans are assets that shareholders cannot own.

Why have America's foreign competitors not fallen victim to the value extractors? Porter [1992:9] repeats a common misconception when he states that in Germany and Japan "the dominant owners are principals rather than agents and hold significant ownership stakes." In terms of investment decision making, the principals in Germany and Japan are managers and workers. For reasons having to do with an ideology of collectivism and the organization of labor, in both Germany and Japan ownership has been subordinated to membership. Porter [1992:10-11] implicitly recognizes the subordination of ownership in investment decision making when he argues that "in both Japanese and German companies, the dominant goal is to ensure the perpetuation of the enterprise....Financial controls and capital budgeting are practiced in Japan and Germany, but investments are heavily driven by technical considerations and the desire to ensure the firm's long-term position in the business."

To get the American system of capital allocation back on track, Porter's [1992:14] prime recommendation is to "expand true ownership throughout the system . . . to include directors, managers, employees, and even customers and suppliers". To do so is to endow membership with the rights of ownership -- controls over the disposition of the assets and the allocation of the revenues of the corporation. The irony is that control by the "membership" over the capital allocation process in American industry is nothing new. Such control characterized the "era of value creation".

Back then, however, the membership was a club of white anglo-saxon protestant men -- the "organization men". When organizations make investments in people they in effect define these people as members with the rights and responsibilities that membership entails. Today, the investments required to be competitive on a global scale demand a much more inclusive definition of membership than prevailed in the past -- one that cuts across gender, ethnic, race, and class lines. For those who recognize the importance of these investments in organizational capabilities, the first step is to confront the ideology of ownership that dominates American thinking on corporate governance. It is an ideology that in the name of "creating value for shareholders" is denying the rights of corporate membership to millions of Americans who could be creating value while legitimizing the destructive activities of those who wield wealth and power by extracting value.

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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.