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Innovative Enterprise or Sweatshop Economics? In Search of Foundations of Economic Analysis

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This paper presents core arguments that will appear in my book-in-progress, *The Theory of Innovative Enterprise*, to be published by Oxford University Press. A version of this paper has been written for inclusion in Grietje Baars and Andre Spicer, eds., *The Critical Corporation*, Cambridge University Press, forthcoming. Funding for the research in this paper has come from the Institute for New Economic Thinking (project on Collective and Cumulative Careers), Ford Foundation (project on Financial Institutions for Innovation and Development), and the European Commission (project on Innovation-fueled, Sustainable, Inclusive Growth). Ken Jacobson copyedited this paper, and Wynn Tucker provided research assistance. Leslie Hannah contributed an important comment on the issue of the separation of ownership and control. This paper was presented at the Harvard Business School Business History Seminar November 2, 2015.

ABSTRACT

In *Capitalism, Socialism, and Democracy*, Joseph Schumpeter asserts: “perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency.” For neoclassical economists, the large corporation is a “market imperfection” that, compared with “perfect competition,” should result in higher product prices and lower industry output. Yet business history reveals the capability of the most productive enterprises to generate massive quantities of output at low costs to attain large market shares with buyers benefiting from low prices even as employees receive higher pay and shareholders ample dividends. By integrating the history of industrial development in Britain and the United States with the ideas of leading economic thinkers, this essay demonstrates the absurdity of perfect competition as the ideal of economic efficiency. Indeed, I show that, in their desire to make the market rather than the firm the main arbiter of resource allocation, neoclassical economists have enshrined *the sweatshop* as the foundation of their analysis, with profoundly negative consequences for understanding how a modern economy actually operates and performs. In doing so, neoclassical economists ignore not only the economic history of capitalism but also the intellectual history of their own discipline. I conduct a journey through two hundred years of economic thought – from Adam Smith’s *The Wealth of Nations* (1776) to Alfred Chandler’s *The Visible Hand* (1977) – to derive analytical foundations for a theory of innovative enterprise that can explain and explore firm-level sources of productivity growth in the economy. What then do more sophisticated theories of the firm rooted in the neoclassical tradition have to offer? In a section of this essay that I call (borrowing a phrase from Adolf Berle and Gardiner Means) “Economic Theory for ‘an Era of Corporate Plundering,’” I outline the shortcomings of Williamsonian transaction-cost theory and Jensenian agency theory for analyzing the role of the business corporation in the operation and performance of the economy. From the perspective of the theory of innovative enterprise, I demonstrate how the methodology of constrained optimization trivializes the business enterprise while the ideology that companies should be run to maximize shareholder value legitimizes financial predators, many senior corporate executives among them, in the looting of the industrial corporation. The “era of corporate plundering” since the mid-1980s has contributed to extreme concentration of income among the richest households and the erosion of middle-class employment opportunities. Finally, I call for a transformation of economic thinking so that the innovative enterprise is at the center of economic analysis. The theory of innovative enterprise exposes as costly intellectual failures “perfect competition” as the ideal of economic efficiency, “constrained optimization” as the primary tool of economic analysis, and “maximizing shareholder value” as the ideology of superior corporate governance. The theory of innovative enterprise provides, moreover, a clear and compelling rationale for sharing the gains of business enterprise among stakeholders in the broader community, in conjunction with government policies that seek to support sustainable prosperity, characterized by stable and equitable economic growth.

1. The Managerial Corporation, Resource Allocation, and Market Competition

As with most other advanced economies, large corporations dominate the U.S. economy. In 2012, 964 companies that had 10,000 or more employees in the United States, with an average workforce of 33,542, were only 0.017 percent of all U.S. businesses. But these 964 companies had 9 percent of all establishments, 28 percent of employees, 31 percent of payrolls, and 36 percent of receipts. For 1,909 companies with 5,000 or more employees, these shares were 11 percent of establishments, 34 percent of employees, 38 percent of payrolls, and 44 percent of receipts.¹ In 2014, the 500 largest publicly listed U.S. companies by revenues (the Fortune 500) had a combined \$12.5 trillion in revenues, \$945 billion in profits, and 26.8 million employees worldwide.² How these large companies allocate the resources under their control has profound implications for employment opportunities, income distribution, and economic growth in the United States.

The centrality of the large corporation to the advanced economies is nothing new. A century ago, it had already attained a dominant position across a range of industries in the richest economies of the United States and Europe.³ Economists have had plenty of time, therefore, to figure out how to integrate the corporation into their thinking about how a modern economy operates and performs. Neoclassical economists, however, construe the large corporation as a “market imperfection” because they view markets, not organizations, as the arbiters of resource allocation in the economy. They hold to the ideal of the “perfect market” as the benchmark of superior economic efficiency – one in which, because of the multitude of firms in an industry, the output decision of any single firm will not have a discernible impact on the price of the product it sells. Most economists recognize that perfect competition is hard to find in the actual economy. Nevertheless, from the neoclassical market-oriented perspective, perfect competition represents the ideal for the economy’s efficient allocation of resources against which one can evaluate various states of imperfect competition.

In its most extreme form, this market imperfection is a monopoly in which one firm dominates a whole industry. “The evil of monopoly” – to quote the subhead that Paul Samuelson (1915-2009) uses in his famous introductory economics textbook when he discusses the concentration of industry – manifests itself in industry output that is lower and a product price that is higher in that industry than the output-price outcomes under perfect competition.⁴

Large corporations exercise vast control over the allocation of the economy’s resources. When, however, conventional economists argue that, by restricting

¹ United States Census Bureau, “Statistics of U.S. Businesses,” Data on “U.S., NAICS sectors, larger employment sizes” at <http://www.census.gov/econ/susb/>

² Fortune, “Fortune 500, 2015,” at <http://fortune.com/fortune500/>

³ Alfred D. Chandler, Jr., *Scale and Scope: The Dynamics of Industrial Capitalism*, Harvard University Press, 1990.

⁴ Paul A. Samuelson, *Economics; An Introductory Analysis*, first edition, McGraw Hill, 1948, pp. 126-127.

output and raising price, the large corporation results in inferior economic performance compared with the perfect-competition ideal, they fail to explain how, in a market economy, the large corporation was able to attain its monopoly status if indeed the perfect-competition alternative could have prevailed. If the answer to this question is that the large corporation acquired a dominant market share because it was able to generate more output at a lower cost than would have been possible under conditions of perfect competition, then, obviously the notion of perfect competition as the ideal benchmark of economic efficiency collapses.

In his book, *Capitalism, Socialism, and Democracy*, Joseph A. Schumpeter (1883-1950) makes precisely this argument:

What we have got to accept is that [the large-scale enterprise] has come to be the most powerful engine of [economic] progress and in particular of the long-run expansion of total output not only in spite of, but to a considerable extent through, the strategy that looks so restrictive when viewed in the individual case and from the individual point in time. In this respect, perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency.⁵

The research on the growth of the large industrial corporation that we now have available is vastly greater than that which Schumpeter could consult when he wrote these words in 1942. In the forefront of this effort have been business historians stimulated by the work of Alfred D. Chandler, Jr. (1918-2007) who synthesized huge bodies of research in three monumental books *Strategy and Structure* (1962), *The Visible Hand* (1977), and *Scale and Scope* (1990).⁶ Business-history research on the evolution of the large corporation leaves little doubt that the capability of producing massively greater quantities of output at lower costs, which could be passed on to buyers at lower prices, enabled the most productive enterprises to attain large market shares in the industries in which they competed. As Chandler recognized by entitling his most important book *The Visible Hand*, the history of the large industrial corporation poses a fundamental challenge to the basic tenets of neoclassical economic theory.

One of Schumpeter's great strengths as an economist was his recognition of the need to integrate history and theory so that empirical research on, in this case, the rise and dominance of the large corporation would not be simply a catalogue of facts.⁷ Rather, in doing this research economists can gain what Schumpeter called

⁵ Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy*, Harper, 1950, third edition, p. 106.

⁶ Alfred D. Chandler, Jr., *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*, MIT Press, 1962; Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business*, Harvard University Press, 1977; Chandler, *Scale and Scope*. On Chandler's work, see William Lazonick, "Alfred Chandler's Managerial Revolution," in William Lazonick and David J. Teece, eds., *Management Innovation: Essays in The Spirit of Alfred D. Chandler, Jr.*, Oxford University Press, 2012: 3-29.

⁷ Joseph A. Schumpeter, *History of Economic Analysis*, Oxford University Press, 1954, pp. 12-13; William Lazonick, "The Integration of Theory and History: Methodology and Ideology in Schumpeter's Economics," in Lars Magnusson, ed., *Evolutionary Economics: The Neo-Schumpeterian Challenge*, Kluwer, 1994: 245-263;

the “historical experience” to construct a theory of the growth of the firm that can comprehend the rise to dominance of the large corporation. The pioneering work in this regard is Edith Penrose’s *The Theory of the Growth of the Firm*, published in 1959.⁸ In this book, Penrose depicts the large industrial corporation as one that grows by investing in organizational learning with constant attention to building on its success in one line of business to redeploy its capabilities – especially its human assets – to new lines of business. As Chandler shows in *Strategy and Structure*, published just three years after Penrose’s book, from the 1920s through the 1950s U.S. industrial firms implemented the multidivisional organization to enable the growth of the firm, in line with Penrose’s theoretical argument.

Yet, despite Schumpeter’s warning that “perfect competition is not only impossible but inferior, and has no title to being set up as a model of ideal efficiency,” and notwithstanding the subsequent intellectual breakthroughs of Penrose and Chandler and their influence on many economists and historians (I would claim to be both), the neoclassical conception of perfect competition as an ideal state of industrial organization still pervades the textbooks and mindsets of conventional economists. By integrating the history of economic development in Britain and the United States with the ideas of leading economic thinkers on the theory of the firm, this essay seeks to demonstrate the damage to economic theory and policy that has been perpetrated by the acceptance of perfect competition as the ideal of economic efficiency. In this essay, I make the case that, for understanding the operation and performance of the economy, academic economists and public policy-makers need, instead, a theory of innovative enterprise.

The next section, entitled “The Sweatshop as a Foundation of Economic Analysis?”, focuses on the reasons why conventional neoclassical economists have been unable to comprehend the rise of the large corporation and its potential and actual importance to the superior operation and performance of the modern economy. In effect, as we shall see, in its desire to make the market rather than the firm the main arbiter of resource allocation, the economics profession has enshrined *the sweatshop* as the foundation of its analysis. Neoclassical economists find the proof of the superiority of perfect competition in a theory of monopoly in which, compared with the outcomes under perfect competition, the monopolist restricts the quantity of industry output and raises the product price. The comparison lacks logic: If perfect competition could prevail, how did monopoly emerge?⁹

In contrast, the theory of innovative enterprise that I have constructed through the in-depth study of business history demonstrates why we can expect the growth of the firm to result in higher industry output and lower product price than the optimizing firm of neoclassical theory that maximizes profits subject to

William Lazonick, “Innovative Enterprise and Historical Transformation,” *Enterprise & Society*, 3, 1, 2002: 35-54.

⁸ Edith Tilton Penrose, *The Theory of the Growth of the Firm*, Basil Blackwell, 1959.

⁹ William Lazonick, “The Chandlerian Corporation and the Theory of Innovative Enterprise,” *Industrial and Corporate Change*, 19, 2, 2010: 317-349.

technological and market constraints – of which the firm in perfect competition is a special, sweatshop-like, case.¹⁰

I then conduct a journey through the history of economic thought to derive the intellectual foundations of a theory of innovative enterprise. This part of the essay covers, by necessity briefly, two centuries of thinking on the growth of the industrial enterprise from Adam Smith's *Wealth of Nations* (1776) to Alfred Chandler's *The Visible Hand* (1977) to plumb key insights into how the growth of the firm can result in superior economic performance. In considering the contributions of these thinkers – among whom, in between Smith and Chandler, I include Friedrich List, Karl Marx, Alfred Marshall, Thorstein Veblen, Adolf Berle and Gardiner Means, Joseph Schumpeter, and Edith Penrose – we see the critical importance of not only considering their theoretical views in the particular historical contexts in which they were put forth, but also using the broader and deeper knowledge that we now possess of the history of economic development to consider how some of the critical assumptions of these thinkers may have been at variance with a changing reality even as they wrote.

Then, in a section of this essay that I call (borrowing a phrase from Berle and Means) “Economic Theory for ‘an Era of Corporate Plundering,’” I show the damage, intellectual and material, that has been done by neoclassical economists who from the 1970s have focused on the role of the modern corporation in the economy while accepting, implicitly at least, “perfect competition” as the ideal state of industrial organization for the efficient allocation of resources. First, I show how the transaction-cost economics of Oliver Williamson fails to explain the rise of the large corporation because of his ideological attachment to the historically incorrect view that “in the beginning there were markets” and his intellectual attachment to the neoclassical “constrained-optimization” methodology that cannot possibly explain, and indeed does not attempt to explain, the innovative enterprise. In effect, while deploying a more sophisticated framework than the textbook theory of the firm, Williamson's transaction-cost theory trivializes the analysis of the business corporation. Second, I show, again from the perspective of the innovative enterprise, how the shareholder-value economics of Michael Jensen, known as agency theory, legitimizes financial predators, among them many senior corporate executives, in the looting of the industrial corporation. The “era of corporate plundering” since the mid-1980s has contributed to extreme concentration of income among the richest households and the erosion of middle-class employment opportunities.¹¹ I conclude this section with a critique of the ideology, again from the perspective of the theory of innovative enterprise, that for the sake of economic efficiency companies should be run to maximize shareholder value.

¹⁰ William Lazonick, “The Theory of Innovative Enterprise: Foundation of Economic Analysis,” AIR Working Paper, August 2015, at www.theAIRnet.org.

¹¹ William Lazonick, “Labor in the Twenty-First Century: The Top 0.1% and the Disappearing Middle Class,” in Christian E. Weller, ed., *Inequality, Uncertainty, and Opportunity: The Varied and Growing Role of Finance in Labor Relations*, Cornell University Press, 2015: 143-192.

Finally, I call for a transformation of economic thinking that places the innovative enterprise at the center of economic analysis while exposing as costly intellectual failures “perfect competition” as the ideal of economic efficiency, “constrained optimization” as the primary tool of economic analysis, and “maximizing shareholder value” as the ideology of corporate governance. The theory of innovative enterprise possesses the potential, I argue, to put forward a clear and compelling rationale for sharing the gains of business enterprise among stakeholders in the broader community, in conjunction with government policies that seek to support sustainable prosperity, characterized by stable and equitable economic growth.

2. The Sweatshop as the Foundation of Economic Analysis?

Imagine a factory in which more and more workers are crowded into a confined workspace so that, for lack of elbow room, the productivity per worker falls as the facility’s owner-manager seeks to expand output. Now imagine also that, as the number of workers in the factory increases, the boss has less and less control over their work effort, better enabling workers to shirk so that the productivity of each worker declines as the firm seeks to expand output. What springs to mind, perhaps, is a clothing sweatshop in Indonesia or Bangladesh. But what I have just described is actually the foundation of economic analysis as taught semester after semester and year after year by thousands of PhD economists to millions of undergraduate students in introductory economics courses around the world.

How so? Almost seventy years ago, in the first edition of his pioneering textbook, *Economics*, Paul Samuelson, already a noted professor of economics at the Massachusetts Institute of Technology who had the previous year published his audaciously titled *Foundations of Economic Analysis*, succinctly laid out the reasons for assuming that a firm faces a U-shaped average-cost curve on the basis of which it seeks to maximize profits by equating marginal revenue with marginal cost. Buried in a passage on page 497 of the 622-page textbook, Samuel remarked:

After the overhead has been spread thin over many units, fixed costs can no longer have much influence on average costs. Variable costs become important, and as average variable costs begin to rise because of limitations of plant space and management difficulties, average costs finally begin to turn up.

Indeed, fifty years ago, when I took my first course in economics, using the fifth edition of Samuelson’s textbook, I was taught that a firm remains small relative to the size of the industry in which it competes because as more and more variable-cost labor is added to the workplace the productivity of labor falls through overcrowding and shirking.¹² As summarized in Samuelson’s statement above, the

¹² See Paul A. Samuelson, *Economics: An Introductory Analysis*, fifth edition, McGraw-Hill, 1961, p. 524. The wording of this passage is slightly different from that quoted above from the first edition. There is also a graphic on p. 525 with the caption “The average cost curve is generally U-shaped.” This passage and the

U-shaped cost curve occurs when the resultant increase in average variable costs offsets the inevitable, but asymptotical, decline of average fixed costs, thus limiting the growth of the firm. Students are then taught that, with a rising supply curve caused by increasing variable costs, the decision rule for profit maximization is the choice of a level of production at which the extra cost of producing one more unit of output (marginal cost) is just equal to the extra revenue from producing that extra unit of output (marginal revenue).

Samuelson's next step is to assume that all firms in an industry face precisely the same cost structures; that is, all firms make the same investments in factories that become overcrowded and all of the managers of these firms have equal difficulty extracting work effort from the workers whom these firms employ. The final step in making the sweatshop the foundation of economic analysis is to assume that rising variable costs – that is, increasing costs due to sweatshop conditions – overwhelm declining fixed costs at such a low level of output relative to the output of the industry as a whole that any individual firm can sell all of its profit-maximizing output without affecting the market price of that output. This condition of the firm that is *ultra-small because it is ultra-inefficient* being able to sell all the output it wants without affecting the product price is what, for the last century or so, economists have called “perfect competition.”

For economists, “perfect competition,” based on the sweatshop, then became, as it ludicrously remains, the benchmark for the most efficient economy possible, with all other states of economic organization, including the domination of industries by large corporations, representing “imperfect competition.” Apparently, it does not occur to economists who talk of imperfect competition, and teach it to their students, that the only thing perfect about their “perfect competition” ideal is that it perfectly describes an industry populated by sweatshops. In the name of efficiency, neoclassical economists in effect advocate an economy made up of firms that are small because of the inefficiencies caused by overcrowded workplaces and shirking workers.

More than that, the ideal of perfect competition assumes that all firms in an industry are content, or constrained, to be equally inefficient. To be sure, in the “long run” (in which the firm gets to make a new choice of plant size) all firms in the industry may decide to build larger factories, but it continues to be assumed that “perfect competition” will prevail if, with the larger plants in place, rising variable costs overwhelm declining fixed costs at a very low level of output so that each firm can produce and sell its profit-maximizing output without affecting the product price. If not, a state of “imperfect competition” will prevail.

But what kind of firm characterizes a state of “imperfect competition”? In his successive editions of *Economics*, Samuelson himself recognizes the importance of

accompanying graphic were cut from Samuelson's sixth edition, leaving no explanation for why firms are constrained to be extremely small under “perfect” competition.

the large industrial corporation in the U.S. economy. In the 1948 edition, in a section of a chapter on “Business Organization and Income” that discusses “The Modern Corporation,” he observes (p. 125):

A list of the 200 largest nonfinancial corporations reads like an honor roll of American business, almost every name being a familiar household word...The tremendous concentration of economic power involved in these giant corporations may be gauged from the following facts: they alone own more than half of the total assets of all nonfinancial corporations, more than a third of all banking assets, and four-fifths of all life-insurance assets. In manufacturing alone, the 100 most important companies employed more than one-fifth of all manufacturing labor and accounted for one-third of the total value of all manufactured products.”

After commenting that “their power did not grow overnight,” Samuelson states: “Large size breeds success, and success breeds further success.”

Samuelson then launches into a discussion of “the evil of monopoly.” The economic problem, as elaborated theoretically later in the book (Chapters 20-22), is that even if perfect competition is an unachievable ideal, the problem with big business is that it may use its market power to restrict output and raise price. “Too high a price, wastage of resources, and creation of monopoly profits are economic evils,” Samuelson (p.127) argues, “however they are brought about and whatever the legal technicalities of the matter.”

Yet, Samuelson (p. 127) recognizes that it is possible that the monopoly came into existence because it established new standards of productivity, or as he puts it in his list of “monopolistic devices,” “because a company comes to dominate an industry simply because it is actually most efficient.” In a section, “The Curse of Bigness?,” that concludes the chapter on “The Modern Corporation,” Samuelson (p. 132) warns, quoting Joseph Schumpeter: “Lest it be thought that the present chapter emphasizes too strongly the defects of the big business, the following view by a world-famous economist is presented”:

“...the modern standard of life of the masses evolved during the period of relatively unfettered ‘big business’...As soon as we go into details and inquire into the individual items in which progress was most conspicuous, the trail leads not to the doors of those firms that work under conditions of comparatively free competition but precisely to the doors of the large concerns – which, as in the case of agricultural machinery, also account for much of the progress in the competitive sector – and a shocking suspicion dawns upon us that big business may have had more to do with creating that standard of life than keeping it down.”¹³

¹³ Quoting J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, Harper and Brothers, 1942. I have only partly reproduced the passage that Samuelson quotes.

The lesson that Samuelson draws from Schumpeter's view is that "the future problem may not be one of choosing between large monopolistic corporations and small-scale competitors, but rather of devising ways to improve the social and economic performance of large corporate aggregates."¹⁴ To devise such policies of corporate governance, however, one would need to have a theory of the growth of the firm that can explain how, in attaining a dominant position in its industry, the large corporation can contribute to a high standard of living.

Indeed, in the Second Edition of his textbook (pp. 510-511), in his theoretical discussion of how a monopoly can restrict industry output and raise product price, Samuelson recognizes that if a firm can capture a large share of the market by spreading out its fixed costs without an offsetting increase in variable costs, the "breakdown of perfect competition" will be the result. As he puts it, "if marginal cost is falling, the firm has every reason to expand its output further, since each new step brings in the same extra revenue but lower extra cost." He goes on to say that such a cost curve "is not just a theoretical refinement. It shows us how and why competition tends to break down! Technology of a given industry often becomes more and more complicated so that efficient production only is possible on a gigantic scale."¹⁵

Yet the analysis that ended up appearing in Samuelson's textbook in its many editions, and becoming standard fare for analyzing the economic impact of large-scale enterprise in the countless Samuelsonian knock-offs, is one in which monopoly restricts industry output and raises product price. Indeed, in the post-World War II decades, the neoclassical monopoly model became the theoretical foundation of the "structure-conduct-performance" school of industrial organization, a perspective rooted in the ideal of "perfect competition."¹⁶ According to the monopoly model, a firm that dominates its industry will raise price and restrict output compared with price and output under perfectly competitive conditions (see the left-hand side of Figure 1 below).

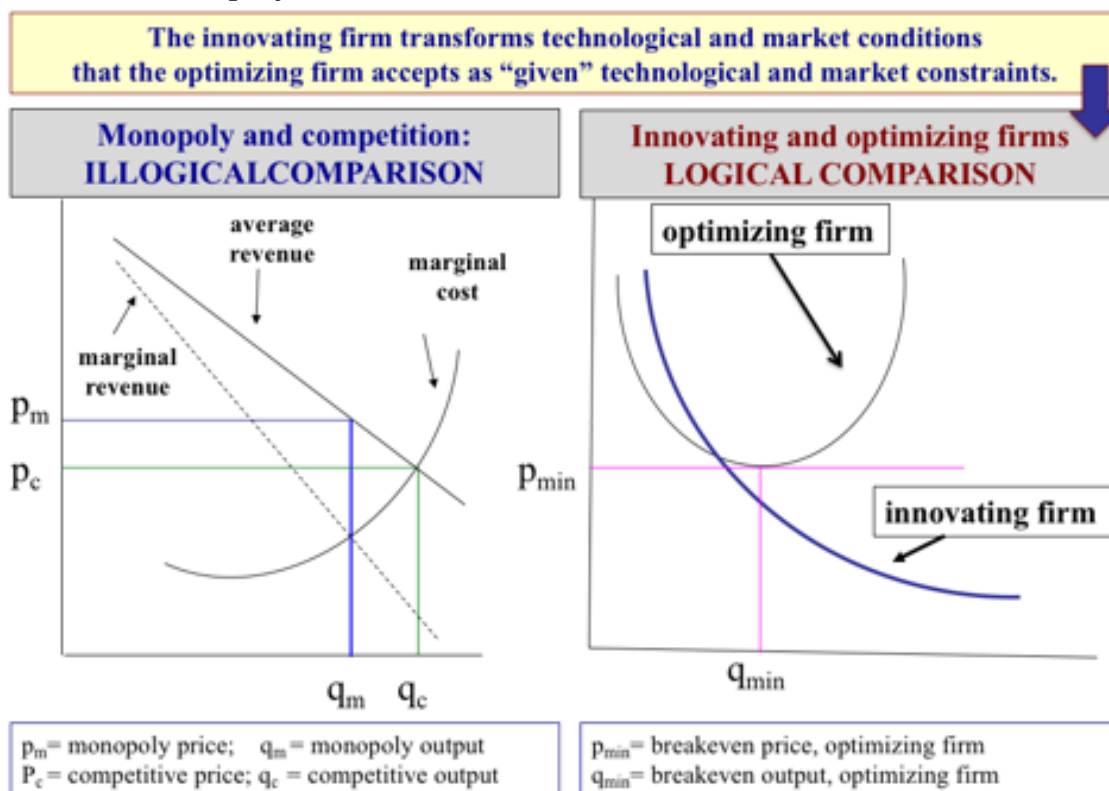
The comparison of profit-maximizing outcomes under conditions of perfect competition and monopoly contains, however, a fundamental flaw. The problem is not with the internal logic of constrained optimization as a basis for profit maximization, be it in its competitive or monopoly form. Rather *the problem is with the logic of using the competitive model as the benchmark for evaluating the efficiency, in terms of output and price, of the monopoly model.* If technological and market conditions make perfect competition a possibility, how can one firm (or even a small number of firms) come to dominate an industry?

¹⁴ Samuelson, *Economics* (148), 132.

¹⁵ Paul A. Samuelson, *Economics: An Introductory Analysis*, second edition, McGraw-Hill, 1951, p.p. 510-511.

¹⁶ See Joe S. Bain, *Industrial Organization*, second edition, Wiley, 1968; Richard Caves, *American Industry: Structure, Conduct, Performance*, fourth edition, Prentice-Hall, 1977; Leonard W. Weiss, "The Structure-Conduct-Performance Paradigm and Antitrust," *University of Pennsylvania Law Review*, 127, 4, 1979: 1104-1140.

Figure 1. The theory of innovative enterprise exposes the illogic of the monopoly model



One would have to assume that the monopolist somehow differentiated itself from other competitors in the industry. But the constrained-optimization comparison shown on the left-hand side of Figure 1, which demonstrates the inferiority of monopoly, argues that both the monopolist firm and perfectly competitive firms *optimize subject to the same cost structures* that derive from given technological and factor-market conditions. All that differentiates the perfect competitor from the monopolist is that when a large number of small firms populate the industry the firm can make its profit-maximizing output decision assuming that it can sell all of its output at a constant price while when one firm constitutes the industry the firm is so large that it can only sell more output at a lower price. But how would monopoly ever emerge under such conditions?

Economists have long argued that *natural monopoly* characterizes some industries, as exemplified by electric utilities. Relative to the size of the market to be served, the fixed costs of setting up an enterprise in such an industry are so high that it is uneconomical to have more than one firm serving a particular market area. But, if that is the case, then the comparison of output and price under natural monopoly with the “optimal” levels of product price and product output under competitive conditions is irrelevant. If one opts for the “natural monopoly” explanation for the concentrated structure of an industry, one cannot then logically invoke the “perfect

competition” comparison to demonstrate the inefficiency of monopoly. Recognizing the irrelevance of the competitive alternative under certain technological and market conditions, local governments have long, in principle at least, regulated utilities by setting output prices that can balance the demands of consumers for reliable and affordable products with the financial requirements of utility companies for developing and utilizing the productive resources that will enable the delivery of such products to consumers.

The analysis of the conditions for evaluating such long-term projections concerning the evolving relation of supply of and demand for such products requires a theory of the *innovating firm* that can transform technological and market conditions, not a theory of the *optimizing firm* that takes these conditions as given constraints.¹⁷ To draw conclusions concerning the relative economic performance of the optimizing firm of neoclassical theory, its output and price should be compared with those that can be achieved by an innovating firm that transforms technological and/or market conditions to generate higher-quality, lower-cost products than had previously been available at prevailing factor prices (see the right-hand side of Figure 1). As a general rule, the innovating firm has an interest in lowering prices in order to increase the extent of its market, thus driving down unit costs and expanding industry output.

Indeed, in my elaboration of the theory of innovative enterprise, I use the distinction between fixed costs and variable costs to argue that an innovating firm that experiences rising variable costs as it seeks to expand output will recognize the need to exercise control over the quality of the variable input, the use of which is causing decreasing productivity. To do so the innovating firm will integrate the production of that input into its internal operations, *thus transforming variable costs into fixed costs as part of its strategy for innovation*. This strategic move will place the innovating firm at a competitive *disadvantage* at low levels of output (as in Figure 1), increasing the imperative that it attain a large market share to drive down unit costs. Moreover there are often high fixed costs of accessing that market share (branding, advertising, distribution channels, a salaried sales force, etc.), and indeed in some consumer-oriented industries the fixed costs of accessing a large market share are greater than the fixed costs of investing in production processes.

Nevertheless, the logic of the innovating firm remains the same: it makes high fixed-cost investments in transforming technology and accessing markets, and to be profitable it must then gain a large share of the market to convert its high fixed costs into low unit costs. The innovating firm thereby transforms a potential competitive disadvantage into an actual competitive advantage. A potent way for an innovating firm to attain a greater extent of the market is to share some of the gains of this cost transformation with its customers in the form of lower prices.¹⁸

¹⁷ See Lazonick “The Theory of Innovative Enterprise” and references therein.

¹⁸ See A. Michael Spence, “The Learning Curve and Competition,” *Bell Journal of Economics*, 12, 1: 1981: 49-70; Jamee K. Moudud, *Strategic Competition, Dynamics, and the Role of the State: A New Perspective*, Edward Elgar, 2010.

When successful, the innovating firm may come to dominate its industry, but its output is far larger and its product price far lower than it would be if a large number of small firms had continued to populate the industry. Indeed one might even find this transition from competition to monopoly manifested by a transformation of a large number of overcrowded sweatshops with alienated labor into a small number of spacious factories with highly motivated labor! The overall gains from innovation will depend on the relation between the innovating firm's cost structure and the industry's demand structure, while the distribution of those gains among the firm's various "stakeholders" will depend on their relative power to appropriate portions of these gains.¹⁹

What is important in the first instance is that, as a result of the transformation of technological and market "constraints," there are gains to innovative enterprise that can be shared. In expanding output and lowering cost, it is theoretically possible (although by no means inevitable) for innovative enterprise to result, simultaneously, in higher pay and better work conditions for employees, a stronger balance sheet for the firm, more secure paper for creditors, higher dividends and stock prices for shareholders, more tax revenues for governments, and higher quality products at lower prices for consumers.

It is one thing, however, to model the possibility of the innovating firm as shown on the right-hand side of Figure 1. It is another thing to comprehend the conditions under which such an innovative transformation occurs. The starting point is the characterization of the innovation process that can generate a higher-quality product at lower unit cost than was previously available as *uncertain, collective, and cumulative*.

- Innovation is uncertain because when investments in transforming technologies and accessing markets are made the financial returns cannot be known, even probabilistically. Hence the need for *strategy*.
- Innovation is collective because, to generate higher-quality, lower-cost products than were previously available, the business enterprise must integrate the skills and efforts of large numbers of people with different hierarchical responsibilities and functional capabilities into the organizational learning processes that are the essence of innovation. Hence the need for *organization*.
- Innovation is cumulative because collective learning today provides the foundation for collective learning tomorrow, and these organizational learning processes must be sustained over time until, through the sale of higher-quality, lower-cost products, financial returns can in fact be generated. Hence the need for *finance*.

Through empirical research on innovative enterprise in different times, places, and industries, I have identified three "social conditions of innovative enterprise" – *strategic control, organizational integration, and financial commitment* – that can

¹⁹ Lazonick, "The Theory of Innovative Enterprise."

enable the firm to manage the uncertain, collective, and cumulative character of the innovation process.

- *Strategic control*: Innovation requires the strategic allocation of human, material, and financial resources to developing and utilizing productive capabilities. The social condition that can transform strategy into innovation is strategic control: a set of social relations that gives decision-makers the power to allocate the firm's resources to confront the technological, market, and competitive uncertainties that are inherent in the innovation process. For innovation to occur, those who occupy strategic decision-making positions must have both the abilities and incentives to allocate resources to innovative investment strategies. Their abilities to do so will depend on their knowledge of how the current innovative capabilities of the organization over which they exercise allocative control can be enhanced by strategic investments in new, typically complementary, capabilities. Their incentives to do so will depend on the alignment of their personal interests with the company's purpose of generating competitive products.
- *Organizational integration*: The implementation of an innovative strategy requires organization. The social condition that can transform organization into innovation is organizational integration: a set of social relations that creates incentives for people with different hierarchical responsibilities and functional capabilities to apply their skills and efforts to strategic objectives. The need for organizational integration derives from the developmental complexity of the innovation process combined with the imperative to secure high levels of utilization of innovative investments if the high fixed costs of these developmental investments are to be transformed into low unit costs. Modes of compensation in the forms of work satisfaction, promotion, remuneration, and benefits are important instruments for integrating individuals into the organization. To generate innovation, however, a mode of compensation cannot simply manage the labor market by attracting and retaining employees. It must also be part of a reward system that manages the learning processes that are the essence of innovation; the compensation system must motivate employees as individuals to engage in collective learning over a sustained period of time.
- *Financial commitment*: For this collective learning to cumulate over time requires the sustained commitment of financial resources to keep the learning organization intact. The social condition that can transform finance into innovation is financial commitment: a set of social relations that ensures the allocation of funds to sustain the cumulative innovation process until it generates financial returns. What is often called "patient" capital enables the capabilities that derive from collective learning to cumulate over time, notwithstanding the inherent uncertainty that the innovation process entails. Internal revenues are generally a critical form of financial commitment. Such "inside capital" must often be supplemented by external sources of finance such as stock issues, bond issues, or bank debt that, in different times and places, may be more or less committed to sustaining the innovation process.

The “social conditions of innovative enterprise” perspective asks how and under what conditions the exercise of strategic control ensures that the enterprise seeks to grow using the collective processes and along the cumulative paths that are the foundations of its distinctive competitive success.²⁰ Of central importance to the accumulation and transformation of capabilities in knowledge-intensive industries is the *skill base* in which the firm invests in pursuing its innovative strategy.

At any point in time a firm’s functional and hierarchical division of labor defines its skill base.²¹ In the effort to generate collective and cumulative learning, those who exercise strategic control can choose how to structure the skill base, including what types of employees (e.g., white-collar versus blue-collar) are integrated into the organizational learning processes and how employees move around and up the enterprise’s functional and hierarchical division of labor over the course of their careers. At the same time, however, the organization of the skill base will be constrained by both the particular learning requirements of the industrial activities in which the firm has chosen to compete and the alternative employment opportunities of the personnel whom the firm wants to employ.

The innovative enterprise requires that those who exercise strategic control be able to recognize the competitive strengths and weaknesses of their firm’s existing skill base and, hence, the changes in that skill base that will be necessary for an innovative response to technological opportunities and competitive challenges. These strategic decision-makers must also be able to mobilize committed finance to sustain investment in the skill base until it can generate innovation – that is, higher-quality, lower-cost products than were previously available.

3. From the Wealth of Nations to the Visible Hand

At the 1961 meeting of the American Economic Association, Paul Samuelson’s presidential address, entitled “Economists and the History of Ideas,” relegated major figures in the history of economics such as Adam Smith, David Ricardo, Karl Marx, John Stuart Mill, and Alfred Marshall to mere footnotes.²² His message was that whatever ideas one could find in the history of economic thought, current economic thinking, as propounded by his colleagues assembled in the audience, had retained those contributions that had scientific merit while rejecting those that did not.

“Ours is an uncertain truth and economic scholars are humble about its precision,” Samuelson told his congregation, “but our humbleness is built out of knowledge,

²⁰ This perspective has an affinity to the “dynamic capabilities” approach to business management. See David J. Teece, *Dynamic Capabilities and Strategic Management: Organizing for Innovation and Growth*, Oxford University Press, 2009; Lazonick, “Innovative Enterprise and Historical Transformation.”

²¹ William Lazonick, “Organizational Learning and International Competition,” in Jonathan Michie and John Grieve Smith, eds., *Globalization, Growth, and Governance*, Oxford University Press, 1998: 204-238; William Lazonick, “The Innovative Firm,” in Jan Fagerberg, David Mowery, and Richard Nelson, eds., *The Oxford Handbook of Innovation*, Oxford University Press: 2005: 29-55; Lazonick, “The Chandlerian Corporation.”

²² Paul Samuelson, “Economists and the History of Ideas,” *American Economic Review*, 52, 1, 1962: 1-18.

not out of ignorance.” What need did they have for either study of the history of economic ideas or validation from a wider community that the ideas that they currently espoused made sense? All that was necessary was that the economics profession was in agreement about what was knowledge and what was ignorance. As Samuelson concluded his address: “In the long run, the economic scholar works for the only coin worth having – our own applause.”²³

The economics profession’s self-satisfied attitude may explain why in the late 1970s when as a junior faculty member in the Harvard economics department I decided to teach a graduate course in the history of economic thought, I was told that no one had taught such a course, graduate or undergraduate, at Harvard for about a decade. I offered the course out of the conviction that the prevailing economic orthodoxy had indeed ignored, or remained ignorant of, most of the best ideas in the history of economics, retaining much that was nonsense, albeit increasingly highly mathematized nonsense. This section of the essay provides a quick tour of what I have learned from the history of economic ideas from Smith’s *The Wealth of Nations* to Chandler’s *The Visible Hand* that is relevant for building a theory of innovative enterprise. One can garner useful knowledge from these ideas by, in all cases, placing them in their historical contexts and by, in some cases, understanding why major thinkers misinterpreted important aspects of the reality that they were seeking to explain.

Adam Smith (1723-1790) is best known for his argument in his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations* that an economy in which individual self-interest determines the allocation of resources results in the highest common good. Or as Smith puts it in his only use of the phrase “the invisible hand” in *The Wealth of Nations*, “by directing that industry in such a manner as its produce may be of the greatest value, he [an enterprising individual] intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention.”²⁴

But how does an enterprising individual direct an “industry in such a manner as its produce may be of the greatest value”? Smith opens *The Wealth of Nations* with a chapter “Of the Division of Labour” in which he argues that the key to increasing productivity is a more specialized division of labor, and that the condition that enables a more specialized division of labor is “the extent of the market.” The greater the extent of the market, the more opportunity for specializing labor in defined tasks with the capitalist employer acting as what we would today call the “systems integrator” to turn the subcomponents into a final product for sale on the market. To illustrate this process of productivity-enhancing division of labor, Smith uses the “very trifling” business of pin manufacture because there, he argues, the

²³ Ibid., p. 18.

²⁴ Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, fifth edition (edited by Edwin Cannan), Methuen, 1904, p. 421

simplicity of the various tasks permits the intricate division of labor to be observed in one workplace rather than in number of vertically specialized workplaces.²⁵

But what for an individual manufacturing enterprise or vertically specialized industry (perhaps located in an industrial district, as Alfred Marshall would a century later observe²⁶) determines the “extent of the market”? *The Wealth of Nations* was an argument for dismantling the mercantilist institutions that the British nation had built up over the previous 200 years, with large joint-stock monopolies such as the East India Company, Royal African Company, and Hudson’s Bay Company, not to mention the Bank of England, as central actors. Yet it was this business system, linked with protectionist policies based on national power that, by the time Smith was writing, placed global markets so extensively under British control.²⁷ If, as Smith argued, the extent of the market was the key to raising productivity through division of labor, then producers located in Britain benefited from its national power.

In 1841 when the industrial revolution of the previous 60 years had greatly increased Britain’s wealth, the German economist Friedrich List (1789-1846) would argue in *The National System of Political Economy*, with reference to British invocation of Smithian theory to advocate international free trade, that “it is a very common clever device that when anyone has attained the summit of greatness, he kicks away the ladder by which he climbed up, in order to deprive others of the means of climbing up after him.”²⁸ Drawing inspiration from Alexander Hamilton, a founding father of the United States, who published his *Report on the Subject of Manufactures* in 1790, and Daniel Raymond, a U.S. economist with publications in the 1820s, List articulated the “infant-industry” argument for tariff protection.²⁹ This argument posits that it requires time for a manufacturing industry in a less-developed nation to attain the productivity levels of one in an already developed nation, and to permit this “growing-up” process to take place the less-developed nation must give its domestic industry privileged access to the domestic market.

In this regard, the theory of innovative enterprise outlined above is highly relevant. Just as an innovative enterprise tends to be at a competitive disadvantage at a low level of output compared with established competitors (see the right-hand side of Figure 1), and needs privileged access to resources in the forms of integrated labor and committed finance to generate a competitive product, so too for a young industry in a less-developed nation. In fact, I have argued that a national manufacturing industry that engages in learning with the benefit of protected markets may go beyond merely imitation of the production methods of the world

²⁵ Ibid, pp. 5-6.

²⁶ See the discussion below.

²⁷ William Lazonick, *Business Organization and the Myth of the Market Economy*, Cambridge University Press, 1991, ch. 1.

²⁸ Friedrich List *The National System of Political Economy*, Longmans, Green, 1909, p. 295 at oll.libertyfund.org/titles/315.

²⁹ Ha-Joon Chang, *Kicking Away the Ladder: Development Strategy in Historical Perspective*, Anthem, 2002, ch. 2.

leader to engage in “indigenous innovation” that, once the learning has been done, can give it a source of distinct competitive advantage on global markets.³⁰

In the production process itself, productivity depends on a combination of skill and effort on a given technology and the skill-displacing/effort-saving characteristics of new technology.³¹ It has been argued that the extreme specialization that Smith described in his pin-making example – “one man draws out the wire; another straightens it; a third cuts it; a fourth points it; a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on is a peculiar business; to whiten the pins is another; it is even a trade by itself to put them into the paper...”³² – might result in such extreme stultification of the workers’ capabilities that it could actually reduce productivity.³³ Under such circumstances, the only way to raise productivity would be for the employer to somehow increase the work effort per unit of time supplied by the people whom he has hired. Moreover, in using an example of unmechanized production on the eve of the world’s first industrial revolution, Smith did not deal with the potential for skill-displacing and/or effort-saving mechanization to raise productivity.

For this analysis, we must look to the work of Karl Marx (1818-1883), who more than any other economist placed the interaction of technological change (forces of production) and work effort (relations of production) at the center of his theoretical framework.³⁴ In arguing that the sources of productivity can be found not in the process of market exchange but in the process of capitalist production, Marx originated a critique of the theory of the market economy that remains as relevant today as it was in the 19th century. And in focusing on investments in productive capabilities and the management of the labor force, Marx provided a substantive theory of how the capitalist enterprise generates productivity. Yet, as I explain below, key arguments that he made about how capitalist employers extracted unremunerated labor effort – that is, surplus value – from production workers in the British industrial revolution were empirically misleading or in some cases wrong.

In *Capital, Volume 1*,³⁵ Marx constructs the general equilibrium system of market exchange on the basis of *the labor theory of value*, in the tradition of the classical economists, especially David Ricardo.³⁶ Marx argues that in a general equilibrium of market exchange capitalism presents itself as “a very Eden of the innate rights of

³⁰ William Lazonick and William Mass, “Indigenous Innovation and Industrialization: Foundations of Japanese Development and Advantage,” in Association for Japanese Business Studies, *Best Papers 1995*, Ann Arbor 1995; William Lazonick, “Indigenous Innovation and Economic Development: Lessons from *China’s Leap into the Information Age*,” *Industry & Innovation*, 11, 4, 2004: 273-298.

³¹ William Lazonick, *Competitive Advantage on the Shop Floor*, Harvard University Press, 1990.

³² Smith, *Wealth of Nations*, Volume 1, p. 6.

³³ Nathan Rosenberg, “Adam Smith on the Division of Labour: Two Views or One?” *Economica*, New Series, 32, 126, 1965: 127-139.

³⁴ Lazonick, *Competitive Advantage on the Shop Floor*, chs. 1-2.

³⁵ Karl Marx, *Capital: A Critique of Political Economy*, Volume 1, at <http://www.marxists.org/archive/marx/works/download/pdf/Capital-Volume-I.pdf>.

³⁶ David Ricardo, *On the Principles of Political Economy and Taxation*, John Murray, 1817.

man” because all parties can exchange commodities, including the commodity “labor power,” at their own free will.³⁷ A century after Marx wrote *Capital*, Milton Friedman would encapsulate this ideology of the market economy in his tract *Capitalism and Freedom* (without, of course, invoking the labor theory of value) while subordinating production to the market through the theory of the firm in perfect competition, or what as we have seen should be called the theory of the unproductive firm, or the sweatshop.³⁸

In Parts 1 and 2 of *Capital*, Marx begins the analysis of the capitalist system by laying out the logic of a general equilibrium system of exchange based on labor values so that he could then demonstrate that capitalism does not in fact operate according to the principles of “Freedom, Equality, Property and Bentham” that market exchange appears to offer.³⁹ In asking how capitalists could extract profits out of a supposed general equilibrium of market exchange, Marx argues that a theory of how capitalism generates productivity has to be rooted in *a theory of organized production*. It is only in a theory of production – i.e., in a theory of the firm – that one can discover the sources of *surplus value*.

Fundamental to Marx’s theory of surplus value is the distinction between the commodity “labor power,” which the worker sells to the capitalist employer in exchange for a wage, and “labor effort,” which represents the actual amount of labor services that the worker performs in production. For a given wage, labor effort supplied in production will depend on the number of hours worked per day as well as the expenditure of labor effort per unit of time. Marx argued that the tendency of capitalist development was to generate a “reserve army” of unemployed labor that would keep wages at a culturally determined minimum while giving capitalist employers the power to extract high levels of labor effort, and hence surplus value, from their employees in the production process.⁴⁰

For Marx, the major factor in creating an industrial reserve army was labor-saving technological change. It not only displaced workers, adding to the reserve army, but also replaced their skills, thus undermining craft unions and increasing the power of the employer to extract unremunerated labor effort from the worker – now more easily replaceable – in the production process. Marx argued that, even with legislation that capped the length of the working day, capitalists could use technology to enhance their ability to extract labor effort, the value of which was in excess of the amount that had to be paid to labor as daily wages. The dependence of the worker on wage labor for survival combined with the introduction of skill-displacing machinery was, according to Marx, the basis for the appropriation of labor effort that was the source of surplus value, or capitalist profit.

³⁷ Marx, *Capital*: Volume 1, p. 123.

³⁸ Milton Friedman, *Capitalism and Freedom*, University of Chicago Press, 1962.

³⁹ Marx, *Capital*: Volume 1, p. 123.

⁴⁰ *Ibid.*, ch. 25.

“Marxian exploitation” – unremunerated labor effort – was and remains a source of profit in sweatshops and many other types of workplaces, although these tend to be in workplaces in which advanced technology has *not* been introduced. For the most technologically advanced workplaces, Marx’s case in point in *Capital* is the allegedly destructive impact of the introduction of the “self-acting mule” – the central and most sophisticated technology of the 19th-century British cotton-textile factory – on the employment and unionization of the skilled adult-male workers known as mule spinners. Drawing heavily on the pronouncements of Andrew Ure, an expert on, but apologist for, the British factory system, Marx argues that by the 1840s the adoption of the self-acting mule had made it possible to replace the adult males who had ruled the occupation before the spinning machines had been made “self-acting” with women and children who received lower wages and had less collective power than the men.⁴¹

The case of the self-acting mule appears to be a great story for proving the tendency of capitalism to subject even the most skilled workers to Marxian exploitation during the British industrial revolution. The problem is that, contrary to Marx (and his source, Ure), the introduction and diffusion of the more automated technology did not undermine the position of the adult-male mule spinners in the production process.⁴² Well into the 20th century, adult-male mule spinners, known as “minders,” remained the principal workers on the “self-acting” machines, and indeed by the last decades of the 19th century had one of the best-organized and best-financed craft unions in Britain.⁴³ More generally, even in the presence of factory automation, skilled shop-floor workers remained central to British manufacturing into the second half of the 20th century.⁴⁴

An understanding of where Marx went wrong is of substantial relevance for understanding the sources of productivity growth in the capitalist economy, not only in his time but also in ours. The mechanization of certain motions on mule spinning machines that led them to be described as “self-acting” still left a number of other functions to be performed that required the constant attention of experienced workers. In addition, in the British textile factories throughout the 19th century and well into the 20th century, the minders were directly responsible for hiring, training, supervising, and paying junior workers known as piecers, some of whom might one day ascend to minder positions. The earnings of the minders were highly regulated by union-bargained wage lists that spelled out in great detail the relation between productivity and pay.

This cooperation between employers and employees both raised productivity in the British cotton-textile factories, while sharing gains in ways that could broadly be described as equitable. Problems for the British cotton-textile industry arose,

⁴¹ Ibid., ch. 15.

⁴² William Lazonick, “Industrial Relations and Technical Change: The Case of the Self-Acting Mule,” *Cambridge Journal of Economics*, 3, 3, 1979: 231-262.

⁴³ Lazonick *Competitive Advantage on the Shop Floor*, chs. 3-5.

⁴⁴ Bernard Elbaum and William Lazonick, eds., *The Decline of the British Economy*, Oxford University Press, 1986.

however, with the introduction of effort-saving technologies abroad that depended much more than in Britain on the role of managerial, as distinct from shop-floor, organization to develop and utilize the new technologies.⁴⁵ But with the rise of “managerial capitalism,” the principle of capitalist development would remain the same: *Capitalist enterprise generates higher-quality, lower-cost products by sharing the value gains with its leading groups of employees whose contributions of skill and effort are essential to the generation of those productivity gains.*⁴⁶

Marx also overemphasized the monopoly power that British factory capitalists exercised over the labor force. Writing *Capital* in the 1850s and 1860s, Marx viewed the British cotton-textile factories, which were enabling Britain to extend its lead as an industrial power, as “big business.” Yet during this period and beyond, the British cotton textile industry, centered in the county of Lancashire, became increasingly vertically specialized between spinning mills and weaving mills, with large numbers of one-factory firms competing at each vertical layer. Individual towns in Lancashire became specialized on certain counts of yarn (from coarse to fine spinning) and certain qualities of cloth (also coarse to fine). Servicing these towns was a railway system that enabled the representatives of spinning firms and weaving firms to travel to the Manchester Exchange two times a week where the weaving firms would get orders from cloth merchants, most of them from foreign nations, and then give orders for yarn to spinning firms. With these orders in hand, the spinning-firm representatives would in turn take the train to Liverpool once a week to place orders for cotton of various grades and staples, grown mainly in the United States, Egypt, and India, delivered to the Liverpool Exchange by hundreds of cotton merchants from around the world. The largest firms in this structure of industrial organization were the converters, who printed large orders of cloth according to specifications from the cloth merchants, who were located in Manchester, but exported to all parts of the globe.⁴⁷

It was this type of industrial organization, vertically specialized and horizontally competitive, and centered in a particular industrial district (in the case of cotton textiles, Lancashire) that by the third quarter of the 19th century had given Britain title to being “the workshop of the world.”⁴⁸ Alfred Marshall (1842-1924) made the analysis of these industrial districts central to his *Principles of Economics*, published in eight editions between 1890 and 1920.

External economies of scale enable many smaller competitors to participate in the growth of the productive capabilities of the industry as a whole. The external

⁴⁵ William Mass and William Lazonick, “The British Cotton Industry and International Competitive Advantage: The State of the Debates,” *Business History*, 32, 4, 1990: 9-65

⁴⁶ Lazonick, *Competitive Advantage on the Shop Floor*; William Lazonick, *Organization and Technology in Capitalist Development*, Edward Elgar, 1992; William Lazonick, “Varieties of Capitalism and Innovative Enterprise,” *Comparative Social Research*, 24, 2007: 21-69.

⁴⁷ Douglas Farnie, *The English Cotton Industry and the World Market, 1815 to 1896*, Oxford University Press, 1979.

⁴⁸ See e.g., http://www.makingthemodernworld.org.uk/learning_modules/history/02.TU.02/;
http://www.bbc.co.uk/history/british/victorians/workshop_of_the_world_01.shtml

economies derive in part from the spreading out of the fixed costs of the industry infrastructure – for example, Lancashire’s regional railway system, which supported the vertical specialization of the industry described above. But what is more important, external economies result from the accumulation of productive capabilities, embodied in a skilled labor force, on the local level. As Marshall puts it in his chapter in *Principles* that focuses on “the concentration of specialized industries in particular localities”:

When an industry has thus chosen a locality for itself, it is likely to stay there long; so great are the advantages which people following the same skilled trade get from near neighbourhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas. And presently subsidiary trades grow up in the neighbourhood, supplying it with implements and materials, organizing its traffic, and in many ways conducing to the economy of its material.⁴⁹

In contrast, *internal economies of scale* reflect the growth of the individual firm as the driver of the growth of its industry. Marshall provides a succinct analysis of the process in which “an able man, assisted by some strokes of good fortune” can build superior capabilities to the point at which “the increase in the scale of his business increases rapidly the advantages which he has over his competitors, and lowers the price at which he can afford to sell.”⁵⁰ Marshall recognizes that if these internal economies of scale could persist long enough, then the firm could come to dominate its industry, but only, in his view, if the process “could endure for a hundred years.” Long before that, Marshall argues, the firm’s superior capabilities would be dissipated. Invoking the aphorism “shirtsleeves to shirtsleeves in three generations,” Marshall doubts that the energy and creativity of the founder can be sustained by his familial successors, and hence, like trees in the forest, older firms will die and newer firms will take their place.⁵¹ In Marshall’s view, the growth of the firm is limited by the ability of successive generations of family owners to manage it.

Writing in Britain at a time when international industrial leadership was shifting to the United States, Germany, and (in textiles) Japan, Marshall missed the transcending of this “managerial limit” by the development of managerial capabilities that permitted internal economies of scale. On the one hand, he witnessed cotton textiles, a key industry for British employment and exports, expanding on the basis of external economies up until World War I. On the other

⁴⁹ Alfred Marshall, *Principles of Economics*, 9th (variorum) edition, Macmillan, 1961, Bk. Four, Ch. 10.

⁵⁰ *Ibid.*, p. 315.

⁵¹ *Ibid.*, p. 621.

hand, during the first decades of the 20th century the development of managerial capabilities in the new capital-intensive and science-based industries that were driving the second industrial revolution occurred more slowly in Britain than in the United States.⁵² As Chandler documents in *The Visible Hand*, by the 1920s in industries that were both knowledge-intensive and capital-intensive “the managerial revolution in American business” (to quote the book’s subtitle) was complete.⁵³

The development of managerial capabilities, independent of enterprise ownership, became particularly important to the growth of the firm in the United States with the separation of share ownership from managerial control that began in the Great Merger Movement of the 1890s and early 1900s. The most successful mergers proved to be in those industries in which continuous product and process innovation and high-speed utilization of production and distribution facilities were most important for sustaining competitive advantage. And the most successful firms in those industries were the ones with superior managerial capabilities for the development and utilization of productive resources.

While the Great Merger Movement concentrated market shares, it also separated share ownership from managerial control. With J. P. Morgan taking the lead, Wall Street financed the mergers by selling to the wealthholding public the ownership stakes of the entrepreneurs who had built up their companies from new ventures into going concerns during the rapid expansion of the U.S. economy in the decades after the Civil War. The result, over the first three decades of the 20th century, was the transfer of ownership of corporate assets from the original owner-entrepreneurs to an increasingly widely distributed population of shareholders. As a result, as business historians Thomas Navin and Marion Sears show, a market in industrial securities slowly emerged.⁵⁴

The rise of the large-scale industrial corporation, therefore, created the stock market, not vice versa. The enhanced dominance of the new combinations plus the backing of Wall Street encouraged private wealth-holders to invest in industrial stocks. The result by the 1920s was a highly liquid market in industrial securities that made stock ownership all the more attractive.⁵⁵ Beyond the price of the stock, shareholding required no financial commitment by the new “owners,” nor any further commitments at all of time, effort, or finance to the firms in which they had bought shares.

⁵² William Lazonick, “Strategy, Structure, and Management Development in the United States and Britain,” in Kesaji Kobayashi and Hidemasa Morikawa, eds., *Development of Managerial Enterprise*, University of Tokyo Press, 1986: 101-146; Chandler, *Scale and Scope*.

⁵³ Chandler, *The Visible Hand*.

⁵⁴ Thomas R. Navin and Marion V. Sears, “The Rise of a Market for Industrial Securities, 1887–1902,” *Business History Review*, 29, 2, 1955: 105–38. For the comparative development of the stock market in the United States, United Kingdom, Germany, and France in the early 20th century, see Leslie Hannah, “Rethinking Corporate Finance Fables: Did the US Lag Europe before 1914?” CIRJE Discussion paper, October 2015, at <http://www.cirje.e.u-tokyo.ac.jp/research/dp/2015/2015cf994ab.html>

⁵⁵ Mary O’Sullivan, “The Expansion of the U.S. Stock Market, 1885-1930: Historical Facts and Theoretical Fashions,” *Enterprise & Society*, 8, 3, 2007: 489-542.

In contrast to the owner-entrepreneurs who, as direct investors, had built the new public corporations into going concerns, the new shareholders were portfolio investors. The purchase of common shares did not in general finance new investments in organization and technology. In newly listed companies, stock issues financed the retirement of the old owners from the industrial scene. The stringent listing requirements of the New York Stock Exchange (NYSE), on which the major U.S. corporations were traded, meant that the firms had a record of profitability and significant capitalization when their shares were made available to the public. Hence the top executives of these corporations could expect that, even after paying dividends, they would control a stream of earnings that would provide committed finance for sustained investment in the corporation's productive capabilities. The main financing role of Wall Street was to float long-term bond issues that, in making these investments, enabled these corporations to leverage their retained earnings.⁵⁶

The separation of ownership from control that occurred in U.S. industrial enterprises at the turn of the 20th century enhanced the managerial capabilities of dominant firms. When these companies went public, they already had in place powerful managerial organizations that enabled salaried executives to take over strategic control from the retiring owner-entrepreneurs. By reducing the possibility of nepotism in top-management succession, the removal of proprietary control opened up new opportunities for upward mobility for career managers that helped to ensure the commitment of these managers to the long-run productive performance of their particular firms.⁵⁷

Over the course of their careers, these salaried managers, increasing numbers of whom in the first decades of the 20th century held engineering or advanced business degrees, developed irreplaceable knowledge of their firms' technological capabilities and organizational structures. These managers, their upward mobility unimpeded by family control, increasingly rose to top-management positions in major industrial firms. Not coincidentally, the first decades of the 20th century also saw the dramatic transformation of the U.S. system of higher education away from the elite British model with its aristocratic pretensions – which were impeding the development of managerial capabilities in Britain – to one that serviced the growing needs of U.S. industrial corporations for professional, technical, and administrative personnel.⁵⁸

From the perspective of sustained industrial innovation, therefore, the key enabler of the successful separation of share ownership from managerial control in the United States was the building of managerial capabilities for the development and utilization of productive resources. The growth of the managerial enterprise

⁵⁶ See Hannah, "Rethinking Corporate Finance Fables."

⁵⁷ Lazonick "Strategy, Structure, and Management Development."

⁵⁸ Ibid.; David F. Noble, *America by Design: Science, Technology, and the Rise of Corporate Capitalism*, Knopf, 1979; Louis Ferleger and William Lazonick, "Higher Education for an Innovative Economy: Land-Grant Colleges and the Managerial Revolution in America" *Business and Economic History*, 23, 1, 1994: 116-128.

enhanced the access of these firms to committed finance, rooted in retained earnings and supplemented by bond issues, to fund investments in organization and technology. The managerial revolution in American business was a powerful engine of economic growth, especially in corporations that invested in deep technological capabilities. Even in the Great Depression, when, for lack of product demand, major industrial corporations laid off production workers, they continued to invest in their research capabilities.⁵⁹ During World War II and the post-war decades, these investments enabled U.S. industrial corporations to be integral to what in 1961 President Dwight Eisenhower would call the “military-industrial complex.”⁶⁰

Attempts by contemporary American economists to analyze the transformation of the governance of U.S. business in the first decades of the 20th century failed to comprehend the significance of the managerial revolution. In *The Instinct of Workmanship and the State of the Industrial Arts*,⁶¹ Thorstein Veblen (1857-1929) argues that the creative effort that people exercise in their work is important to their well-being, contrary to the standard assumption among economists that work is a disutility, done only to earn a living. He contends that big business stifles the instinct of workmanship because “absentee owners,” acting like monopolists, engage in the “conscientious withdrawal of efficiency,” restricting output to raise price.⁶² In *The Engineers and the Price System*, a series of articles first published in 1919,⁶³ Veblen avers that to remedy this situation, U.S. engineers should take a cue from the Soviet revolution by taking control of industry.

With Chandler’s historical account of the managerial revolution in American business still decades in the future, what Veblen did not realize was that, through the separation of ownership and control, the ascent of American engineers to positions of strategic control in the large U.S. industrial corporation was, by the 1910s, already well underway. The notion that “absentee owners” were undermining investments in productive capabilities is contradicted by the mass-production revolutions taking place in the first decades of the 20th century, and by the growing role of engineers in formulating corporate investment strategy and participating in the processes of organizational learning.

Indeed, by the 1920s, some economists were concerned that it was the holders of corporate shares who were being harmed by the separation of share ownership from managerial control. In the mid-1920s, economist William Z. Ripley, in lectures, articles, and his book *Main Street and Wall Street*, decried the lack of power of shareholders and their abuse by the managers who exercised control over the

⁵⁹ David C. Mowery and Nathan Rosenberg, *Technology and the Pursuit of Economic Growth*, Cambridge University Press, 1989, chs. 2-4.

⁶⁰ Dwight D. Eisenhower, “Military-Industrial Complex Speech” at coursesa.matrix.msu.edu/~hst306/documents/indust.html

⁶¹ Thorstein Veblen, *The Instinct of Workmanship and the State of the Industrial Arts*, Macmillan, 1914.

⁶² See Thorstein Veblen, *Absentee Ownership and Business Enterprise in Recent Times: The Case of America*, B. W. Huebsch, 1923.

⁶³ Thorstein Veblen, *The Engineers and the Price System*, B. W. Huebsch, 1923.

allocation of corporate resources. Specifically, some corporations had created “management shares” – or what today would be called dual-class shares – with disproportionate voting rights that gave their holders *de jure*, rather than just *de facto*, control over the allocation of corporate resources. Indeed, some companies were even issuing common shares with no voting rights.⁶⁴

Ripley’s arguments resounded with those of law professor Adolf A. Berle (1895-1971), who in 1927 secured a grant from the Social Science Research Council to study the extent and implications of the separation of ownership and control.⁶⁵ Working at Columbia University, Berle hired a Harvard graduate student Gardiner C. Means (1896-1988) to help carry out the statistical research. The collaboration resulted in the publication in 1932 of *The Modern Corporation and Private Property*.⁶⁶

In the short concluding chapter of their landmark book, Berle and Means call for “a new concept of business enterprise as concentrated in the corporate organization.”⁶⁷ They recognize that “by tradition a corporation ‘belongs’ to its shareholders, or, in a wider sense to its security holders and theirs is the only interest to be recognized as the object of corporate activity.”⁶⁸ But with the separation of ownership and control, the shareholder had become a “passive property owner.” Under these circumstances, the application of the doctrine of strict property rights (analyzed by Berle and Means in their chapter, “Corporate Power as Powers in Trust”) would place the group that was in control of the corporation...

in a position of trusteeship in which it would be called on to operate or arrange for the operation of the corporation for the *sole* benefit of the security owners despite the fact that the latter have ceased to have power over or to accept responsibility for the active property in which they have an interest. Were this course allowed, the bulk of American industry might soon be operated by trustees for the sole benefit of inactive and irresponsible security owners.⁶⁹

In direct opposition to this doctrine of strict property rights was one that contended that the separation of ownership and control “has created a new set of relationships, giving to the groups in control powers which are absolute and not limited by any implied obligation with respect to their use.”⁷⁰ But Berle and Means continue:

⁶⁴ William Z. Ripley, *Main Street and Wall Street*, Little Brown, 1927.

⁶⁵ John C. C. McIntosh, “The Issues, Effects, and Consequences of the Berle-Dodd Debate, 1931-1932,” *Accounting, Organizations, and Society*, 24, 1999: 139-153.

⁶⁶ Adolf A. Berle and Gardiner C. Means, *The Modern Corporation and Private Property*, Macmillan 1932.

⁶⁷ *Ibid.*, p. 309.

⁶⁸ *Ibid.*, p. 310.

⁶⁹ *Ibid.*, p. 311.

⁷⁰ *Ibid.*

This logic leads to drastic conclusions. For instance, if, by reason of these new relationships, the men in control of a corporation can operate it in their own interests, and can divert a portion of the asset fund of income stream to their own uses, such is their privilege. Under this view, since the new powers have been acquired on a quasi-contractual basis, the security holders have agreed in advance to any losses which they may suffer by reason of such use.⁷¹

Given these two alternatives, Berle and Means favor, as “the lesser of two evils,” a system of corporate governance in which “the control” acts as a trustee for the collectivity of security holders. It is better to “[strengthen] the rights of passive property owners” than to “grant the controlling group free rein, with the corresponding danger of a corporate oligarchy coupled with the probability of an era of corporate plundering.”⁷²

But with their recognition that passive shareholders have surrendered control over the allocation of corporate resources and that, unconstrained, “the control” would be given free rein to plunder the corporation, Berle and Means argue that “a third possibility exists.” The separation of ownership and control, they contend has “placed the community in a position to demand that the modern corporation serve not alone the owners or the control but all society.”⁷³ They continue (with my emphasis):

*It remains only for the claims of the community to be put forward with clarity and force....Should the corporate leaders, for example, set forth a program comprising fair wages, security to employees, reasonable service to their public, and stabilization of business, all of which would divert a portion of the profits from the owners of passive property, and should the community generally accept such a scheme as a logical and human solution of industrial difficulties, the interests of passive property owners would have to give way. Courts would almost of necessity be forced to recognize the result, justifying it by whatever of the many legal theories they might choose. It is conceivable – indeed it seems almost essential if the corporate system is to survive – that the “control” of the great corporations should develop into a purely neutral technocracy, balancing a variety of claims by various groups in the community and assigning to each a portion of the income stream on the basis of public policy rather than private cupidity.*⁷⁴

I would argue that “for the claims of the community to be put forward with clarity and force,” as Berle and Means put it, *the community needs a theory of innovative enterprise*. The community requires an explanation of how the firm generates high-

⁷¹ Ibid.

⁷² Ibid.

⁷³ Ibid., p. 312.

⁷⁴ Ibid., pp. 312-313.

quality, low-cost products that secure revenues in competitive markets, with a recognition of the critical role of investments in productive capabilities. In the rise of the large business corporation, the community has been and remains involved in making these investments and has a claim on returns on these investments if and when these investments succeed in generating profitable products.

The theory of innovative enterprise recognizes “the community” in households acting as taxpayers, workers, consumers, and savers. Through government agencies, households as taxpayers make investments in physical infrastructure and human knowledge without which even, and perhaps especially, the largest business enterprises would not be able to generate competitive products. Hence, through the tax system, the body of taxpayers should get shares of corporate profits if and when they accrue. Through the employment relation, households as workers supply business enterprises with skill and effort that are central to the processes of generating competitive products. Hence, through job stability as well as higher pay and benefits, workers should also share in profits if and when they accrue. Through demand for goods and services, households valorize the products that businesses generate. Hence, households should gain from the innovative capabilities of companies through the production of higher-quality, lower-cost products, which is indeed the purpose of the business corporation.

Finally, the theory of innovative enterprise permits the distinction between *investors* who participate in the process of *value creation* and *savers* who derive incomes from the process of *value extraction*. Investors in value creation provide *financial commitment* to industrial enterprises to sustain the development and utilization of productive resources, and hence should receive an equitable share in profits from the generation of competitive products if and when they accrue. In contrast, savers who, as value extractors, use their money to purchase outstanding corporate shares without in any way contributing to the value-creation process should get an income in the form of dividends *after all other valid claims of the community have been paid*. Indeed, in providing *financial liquidity*, the stock market permits this separation of ownership and control, making savers as passive shareholders able and willing to place their savings in securities in the hope that they will be able to obtain dividends or if they choose to sell their shares, capital gains. But again, households as savers should expect dividend income only after all other valid claims to the community have been paid.

The theory of innovative enterprise, I argue, provides “clarity and force” to the valid economic claims of the community that Berle and Means had in mind. Therefore, it is ironic, and unfortunate, that at precisely the time when Berle and Means were calling for a new conception of the corporation that could establish the claims of the community, neoclassical economists were elaborating the theory of “perfect competition” as the ideal of economic efficiency.

Marshall’s *Principles of Economics* set the stage for this emasculation of economics in the 1920s and 1930s, although Marshall himself bears only partial blame. In the

first four of the five books of *Principles*, Marshall analyzes the dynamic process of economic development, focusing on the relative roles of external and internal economies of scale; concepts that, as I have argued, are very useful for considering the relation between the growth of the individual firm and the growth of the regional industry of which it is a part. The fifth and final book of *Principles*, however, focuses on the static equilibration of supply and demand, with Marshall's concept of "the representative firm" opening the door to the absurd theory of "perfect competition."⁷⁵

And, as I discuss in detail in the chapter "The Making of the Market Mentality" of my 1991 book *Business Organization and the Myth of the Market Economy*, it was Marshall's fifth book that gripped his equilibrium-obsessed followers. Ultimately, in the early 1930s, the chief culprits were Jacob Viner and Edward Chamberlin in the United States and E. A. G. Robinson and Joan Robinson in Britain.⁷⁶ And they in turn set the stage for Paul Samuelson (who studied with Viner as an undergraduate at the University of Chicago and was influenced by Chamberlin as a graduate student at Harvard) to bequeath to millions, perhaps inadvertently but nonetheless with great authority, the notion that the sweatshop is the foundation of economic analysis.

As we have seen Schumpeter called into question the validity of espousing "perfect competition" as the ideal of economic efficiency. Indeed, as we have also seen, Samuelson even cited Schumpeter's argument that a large-scale enterprise that dominates its industry could be helping to generate a higher standard of living. Yet, preserving the myth that resource allocation by markets, not organizations, results in a more efficient economy, Samuelson conveniently put Schumpeter's critique aside in favor of promulgating the completely contrary, and completely illogical, monopoly model of the modern corporation.

As for Schumpeter, his most important contribution to economic theory is his recognition in his 1911 book *The Theory of Economic Development* that the achievement of higher living standards cannot be understood from the perspective of the general equilibrium of market exchange, or what he calls in the title of the first chapter of the book "The Circular Flow of Economic Life as Conditioned by Given Circumstances." Rather he argues that increases in per capita productivity depend on entrepreneurial innovation, which in the title to the second chapter he calls "The Fundamental Phenomenon of Economic Development."⁷⁷ In arguing that a general equilibrium of market exchange cannot explain economic development as

⁷⁵ See Lazonick, *Business Organization*, ch. 5.

⁷⁶ Jacob Viner, "Cost Curves and Supply Curves," *Zeitschrift für Nationalökonomie*, III, 1931: 23-46; E. A. G. Robinson, *The Structure of Competitive Industry*, Nisbet, 1931; Edward H. Chamberlin, *The Theory of Monopolistic Competition*, Harvard University Press, 1933; Joan Robinson, *The Economics of Imperfect Competition*, Macmillan, 1933. See also Jan Horst Keppler and Jérôme Lallement, "The Origins of the U-Shaped Average Cost Curve: Understanding the Complexities of the Modern Theory of the Firm," *History of Political Economy*, 38, 4, 2006: 733-774

⁷⁷ Joseph A. Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, and the Business Cycle*, Harvard University Press, 1934 (first published in German in 1911).

a prelude for positing a developmental phenomenon – innovation – that enables the economy to escape from equilibrium, Schumpeter followed Marx’s approach in *Capital*, outlined above. In Marx’s case, the developmental phenomenon is the introduction of skill-displacing technologies in the capitalist enterprise, which in turn enhances the power of capitalists to extract surplus value from workers in the production process.

While, as I have shown, in applying his theory of surplus value Marx, failed to see the importance of the sharing of productivity gains with skilled workers as a driving force of 19th-century British development, his approach does provide a framework for analyzing the interaction of organization and technology in the development process.⁷⁸ In contrast, Schumpeter’s focus on entrepreneurial innovation does not delve into the production process, unless one sees fit to call Schumpeter’s general proposition that innovation entails “new combinations” of resources a theory of the innovating firm. And, while by the 1940s, when he wrote *Capitalism, Socialism, and Democracy*, Schumpeter recognizes that the entrepreneurial function initiating the innovation process can be a collective rather than individual endeavor and that the search for innovation can become routinized within the research labs of the large corporations, he never develops a theory of the firm as a learning organization.⁷⁹

It would be Edith Penrose (1914-1996) who would take up that task. Working in the 1950s as a research associate at John Hopkins University, where in 1950 she had obtained her PhD with a dissertation on the international patent system, Penrose was employed by her mentor Fritz Machlup on a project on the growth of the firm.⁸⁰ The result, published in 1959, was *The Theory of the Growth of the Firm*.⁸¹

In it, Penrose conceptualizes the modern corporate enterprise as an organization that administers a collection of human and physical resources. People contribute labor services to the firm not merely as individuals, but as members of teams who engage in learning about how to make best use of the firm’s productive resources – including their own. This learning is organizational; it cannot be done all alone, and hence is collective, and it cannot be done all at once, and hence is cumulative.⁸²

At any point in time, this organizational learning endows the firm with experience that gives it productive opportunities unavailable to other firms, even in the same industry, that have not accumulated the same experience. The accumulation of innovative experience enables the firm to overcome the “managerial limit” that in the neoclassical theory of the optimizing firm causes the onset of increasing costs

⁷⁸ Lazonick, *Competitive Advantage on the Shop Floor*, chs. 1-3.

⁷⁹ See Lazonick, “The Integration of Theory and History.”

⁸⁰ Michael H. Best and Elizabeth Garnsey, “Edith Penrose, 1914-1996,” *Economic Journal*, 109, 1999: F187-F201.

⁸¹ Penrose, *Theory of the Growth of the Firm*.

⁸² See Michael H. Best, *The New Competition: Institutions of Industrial Restructuring*, Harvard University Press, 1990, 125.

and constrains the growth of the firm. The innovating firm can transfer and reshape its existing productive resources to take advantage of new market opportunities. Each move into a new product market enables the firm to utilize productive assets, including human capital, that had been accumulated through the process of organizational learning in generating its previous, now mature, products. These unused productive assets, along with some of the profits that they previously generated, can provide foundations for the further growth of the firm, accompanied by in-house complementary investments in new-product development or the acquisition of other firms that have already developed complementary productive resources.

Covering the same subject matter and time period as Penrose (but working quite independently of her work), Chandler's historical work *Strategy and Structure*, published in 1962, confirmed that her theory of the growth of the firm depicted the type of industrial corporation that had in fact driven the growth of the U.S. economy from the 1920s through the 1950s (notwithstanding the disaster of the Great Depression).⁸³ In his 1977 book *The Visible Hand*, which covers the historical period up to the 1920s that set the stage for the multidivisional structure, Chandler's focus is on the use of managerial coordination to integrate mass production and mass distribution, achieving what he calls "economies of speed" – or economies of scale per unit of time.⁸⁴ This high-speed (or high-throughput) utilization of productive resources transforms high fixed costs into low unit costs. Chandler emphasizes that the source of high fixed costs are investments in not only plant and equipment that permit mass production but also distribution facilities required to access a large enough extent of the market so that the mass produced goods can be sold at competitive prices. The higher the rate of throughput, the lower the unit costs, and the greater the profits that can be shared among those who contribute to the innovation process.

Building on my analysis of how in 19th-century Britain cooperation between employers and employees served to generate the productivity gains in which both parties could share, and set out in my 1990 book *Competitive Advantage on the Shop Floor*, my contribution to the Chandlerian historical analysis of the relation between managerial coordination and economies of speed is to show how by the 1920s this win-win outcome was achieved, even without unions, in U.S. mass-production workplaces. With mass layoffs of blue-collar workers in the 1930s, cooperative relations between management and labor broke down in major U.S. industrial enterprises, but owing to the rise of mass-production unionism, with its protection of workers' seniority rights, this cooperation was resurrected in the immediate post-World II decades. Nevertheless, by the 1970s, by virtue of an even more thorough organizational integration of shop-floor workers into the processes of mass production, the Japanese were outcompeting U.S. business in industries

⁸³ Chandler, *Strategy and Structure*.

⁸⁴ Chandler, *The Visible Hand*.

such as automobiles, electronics, and steel in which U.S. companies had been the world's leading mass producers.⁸⁵

In *The Visible Hand* Chandler focuses on the *utilization* of productive resources while largely ignoring the *development* of productive resources, which is, as we have seen, the primary emphasis of Penrose's theory of the growth of the firm. But in his 1990 book *Scale and Scope*, in which he compared "the dynamics of industrial capitalism" in the United States, Britain, and Germany, Chandler began to pay more attention to the development of productive resources. This business activity is inherent in the concept of *economies of scope* as well as in the practice of multi-divisionalization, the organizational structure that held center stage in his 1962 book *Strategy and Structure*. In 1993 Chandler launched what he called his "paths of learning" project, researching and writing two books, one on the history of the consumer electronic and computer industries and the other on the evolution of the chemical and pharmaceutical industries.⁸⁶

By the 1990s, therefore, what Chandler called "the dynamics of industrial capitalism" – a process that he first articulated in *Scale and Scope* – entailed *both* the development *and* the utilization of productive resources. To emphasize the dependence of this dual process on managerial organization, Chandler called these productive resources "organizational capabilities," defined as "the collective physical facilities and human skills as they were organized within the enterprise."⁸⁷

Management *develops* productive resources by creating and maintaining these organizational capabilities in an economic system characterized by changing technologies and markets, thus contributing to the wider transformation of these technologies and markets. Management *utilizes* productive resources by ensuring the high-speed flow of goods through the processes of production and distribution, so that the high fixed costs of creating and maintaining these organizational capabilities can be transformed into low unit costs and large market shares. The outcomes of these processes of developing and utilizing productive resources are economies of scale and scope that enable the firm to grow and contribute to the growth of the economy in which it operates.

In his work, Chandler pays little attention to the role of the state in U.S. economic development, using the term "the visible hand" to refer to managerial coordination of the large-scale industrial enterprise. Yet, in terms of investing in physical infrastructure and human knowledge, the United States has had the most formidable developmental state in history.⁸⁸ Of particular importance is investment

⁸⁵ Lazonick, "Organizational Learning and International Competition."

⁸⁶ Alfred D. Chandler, Jr., *Inventing the Electronic Century: The Epic Story of the Consumer Electronic and Computer Industries*, Harvard University Press, 2001; Alfred D. Chandler, Jr., *Shaping the Industrial Century: The Remarkable Story of the Evolution of the Modern Chemical and Pharmaceutical Industries*, Harvard University Press, 2005.

⁸⁷ Chandler, *Scale and Scope*, p. 594.

⁸⁸ Fred Block and Matthew R. Keller, eds., *The State of Innovation: The U.S. Government's Role in Technology Development*, Paradigm, 2011; William Lazonick and Öner Tulum, "US Biopharmaceutical Finance and the

in the nation's "knowledge base." Households and governments interact by investing in education. Governments and businesses interact by investing in research and development. Businesses and households interact by investing in the productive capabilities of the labor force.

The quality of these interactions is of critical importance to the productivity of investments in the knowledge base. At the level of the firm, organizational integration is the social condition for the collective and cumulative learning that is the essence of the innovation process. But investment in organizational learning and the productivity that results from it depend critically on the two other social conditions of innovative enterprise: strategic control and financial commitment.

It is possible that those executives who exercise strategic control over the allocation of corporate resources will decide to eschew investments in innovative capabilities. In *The Theory of the Growth of the Firm*, Penrose assumes that the firm will make use of its "unused resources," largely embodied in the accumulated capabilities of its labor force, to invest in new processes and products. It is possible, however, that instead of using internal funds for financial commitment, senior executives will decide to "create value for shareholders" by increasing distributions to them in the forms of cash dividends and stock repurchases. Indeed, in the name of market efficiency, with its "perfect market" ideal, it is possible that, as Berle and Means warned, corporate executives might embark on an "era of corporate plundering." Since the mid-1980s, in the name of "maximizing shareholder value," that era has come to pass and, some three decades later, continues virtually unchecked.⁸⁹

4. Economic Theory for an "Era of Corporate Plundering"

During the 1960s, Penrose's *The Theory of the Growth of the Firm* was cited by a few economists – most notably William Baumol, Robin Marris, and Oliver Williamson⁹⁰

Sustainability of the Biotech Business Model," *Research Policy*, 40, 9, 2011: 1170-1187; William Lazonick and Mariana Mazzucato, "The Risk-Reward Nexus in the Innovation-Inequality Relationship: Who Takes the Risks? Who Gets the Rewards?" *Industrial and Corporate Change*, 22, 4, 2013: 1093-1128; Mariana Mazzucato, *The Entrepreneurial State*, Anthem, 2013; Matt Hopkins and William Lazonick, "Who Invests in the High-Tech Knowledge Base?" Institute for New Economic Thinking Working Group on the Political Economy of Distribution Working Paper No. 6, September 2014 (revised December 2014), at <http://ineteconomics.org/ideas-papers/research-papers/who-invests-in-the-high-tech-knowledge-base>.

⁸⁹ William Lazonick, "Profits Without Prosperity: Stock Buybacks Manipulate the Market and Leave Most Americans Worse Off," *Harvard Business Review*, September 2014, 46-55; Lazonick, "Labor in the Twenty-First Century."

⁹⁰ William Baumol, "On the Theory of Expansion of the Firm," *American Economic Review*, 52, 5 1962: 1078-1087; Robin Marris, *The Economic Theory of 'Managerial' Capitalism*, Free Press, 1964; Oliver Williamson, "Hierarchical Control and Optimum Firm Size," *Journal of Political Economy*, 75, 2, 1967: 123-138. The articles by Baumol and Williamson, and excerpts from Marris' book were included in G. C. Archibald, ed., *The Theory of the Firm: Selected Readings*, Penguin, 1971. In his later work, Williamson made only passing references to Penrose; see, for example, Oliver E. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, Free Press, 1985, p. 135; Oliver E. Williamson, *The Mechanisms of Governance*, Oxford University Press, 1996, pp. 225, 309. For an early recognition of the importance of Penrose to business history, see Louis Galambos, "Business History and the Theory of the Growth of the Firm," *Explorations in Entrepreneurial History*, 2nd series, 4, 1, 1966: 3-16.

– in debates on the relationship between the profitability of the firm and its growth. But economists generally ignored the book. One glaring example was Fritz Machlup, advisor on Penrose's dissertation on the international patent system and co-director of the project on the growth of the firm that resulted in her pioneering contribution. Machlup's 1966 American Economic Association presidential address, entitled "Theories of the Firm: Marginalist, Behavioral, and Managerial," takes up thirty-one pages of text and contains a total of forty-eight bibliographic references. But no mention of Penrose is to be found.⁹¹

Why? It is possible that given the centrality of organizational learning to Penrose's argument, Machlup did not consider *The Theory of the Growth of the Firm* to be "economic theory" but rather "organization theory." As a prelude to summarizing his survey of the three types of theories of the firm, he states:

I am not happy about the practice of calling any study just because it deals with or employs a concept of the firm "economics" or "microeconomics." But we cannot issue licenses for the use of such terms and, hence, must put up with their rather free use. My own prejudices balk at designating organization theory as economics – but other people's prejudices are probably different from mine, and we gain little or nothing from arguing about the correct scope of our field.⁹²

Combined with this admitted prejudice, Machlup was the quintessential neoclassical economist. He was obsessed with its "marginalist" constrained-optimization methodology, one that, as we have seen, precludes any discussion of the conditions of innovative enterprise. It is fair to say that Machlup, who was best known among economists for his 1962 book *The Production and Distribution of Knowledge in the United States*, a highly empirical piece of work, had a trained incapacity (to borrow a phrase from Veblen⁹³) for comprehending the theoretical breakthrough contained in Penrose's book, which centers on her analysis of the dynamics of organizational learning in enterprise growth. As Machlup summed up his survey of "theories of the firm" in his Presidential Address:

As far as the proponents of managerial theories are concerned, they have never claimed to be anything but marginalists, and the behavior goals they have selected as worthy for incorporation into behavior equations, along with the goal of making profits, were given a differentiable form so that they could become part of marginal analysis. Thus, instead of a heated contest between marginalism and managerialism in the theory of the firm, a marriage between the two has come about.⁹⁴

⁹¹ Fritz Machlup, "Theories of the Firm: Marginalist, Behavioral, and Managerial," *American Economic Review*, 57, 1, 1967: 1-33. Nor does he refer to Penrose in his book, *The Production and Distribution of Knowledge in the United States*, Princeton University Press, 1962.

⁹² Machlup, "Theories of the Firm," p. 29.

⁹³ See Erin Wais, "Trained Incapacity: Thorstein Veblen and Kenneth Burke," *Journal of the Kenneth Burke Society*, 2,1, 2005.

⁹⁴ Machlup, "Theories of the Firm," p. 29.

As for Chandler, even when conventional economists have cited his work on corporate strategy and organizational structure, they seek to cram it into a constrained-optimization box. A prime example is the 1980 *Journal of Economic Literature* survey of recent work in business history, business policy, and organizational behavior by Richard Caves, a prominent proponent of the neoclassical structure-conduct-performance paradigm, who, as a professor in the Harvard economics department, headed the business economics PhD program offered jointly with Harvard Business School, where Chandler was a professor. In his survey, Caves cites Chandler's *Strategy and Structure* and *The Visible Hand* prominently. He concludes by arguing that "the well-trained professional economist could have carried out many of the research projects cited in this paper more proficiently than did their authors, who were less effectively equipped by their own disciplines."⁹⁵ He continues:

If one accepts the weak postulate that the firm is a purposive organization maximizing some objective function, it follows that its strategic and structural choice represents a constrained optimization problem. My reading is that students of business organization with disciplinary bases outside of economics would accept that proposition but have lacked the tools to follow its blueprint. Constrained-maximization problems are mother's milk to the well-trained economist.

An economist committed to the constrained-optimization methodology who in the 1970s and 1980s drew heavily on Chandler was Oliver Williamson, developing the field of transaction-cost economics. This theoretical approach draws inspiration from Ronald Coase's 1937 article "The Nature of the Firm," which seeks "to discover why a firm emerges at all in a specialized exchange economy"⁹⁶ and contends that, once one recognizes that there may be costs to using the market, one can answer the question using the Marshallian notion of "substitution at the margin" – that is, the methodology of constrained optimization.⁹⁷ In effect, Coase conceives of the firm as a "market imperfection."

Like that of Coase, Williamson's approach is ideologically neoclassical, as is evidenced by his frequently reiterated belief that "in the beginning there were markets." The emergence of "hierarchy" manifested by the industrial corporation must, therefore, be explained as an aberration in the form of a "market imperfection." And Williamson's approach is methodologically neoclassical in its commitment to viewing the choice between market and hierarchy as the result of constrained-optimization decision-making.⁹⁸ At the same time, Williamson rejects the conventional neoclassical monopoly model, and the structure-conduct-

⁹⁵ Richard Caves, "Industrial Organization, Corporate Strategy and Structure," *Journal of Economic Literature*, 18, 1, 1980, p. 88.

⁹⁶ Ronald Coase, "The Nature of the Firm," *Economica*, New Series, 4, 16, 1937, p. 390.

⁹⁷ *Ibid.*, pp. 386-387. See Lazonick, *Business Organization*, pp. 168-171.

⁹⁸ See Lazonick, *Business Organization*, chs. 6 and 7, for an extended analysis of Williamson's perspective.

performance paradigm that is built on this model, because they do not explain why “hierarchy” replaces the “market” as an economic institution of capitalism.

Williamson seeks to explain the existence of hierarchy by locating transactions, and hence transaction costs, not only in market exchange but also within the firm. Therefore, to assess the relative performance of markets and hierarchies in allocating resources, one must compare the transaction costs of the two different modes of economic organization. Williamson attributes “transaction costs” to a behavioral condition that, following Kenneth Arrow, he calls “opportunism” – defined as “self-interest seeking with guile” – and to a cognitive condition that, following Herbert Simon, he calls “bounded rationality” – in which limited information renders people “intendedly rational but only limitedly so.”⁹⁹ Williamson’s inclusion of these behavioral and cognitive conditions as central to the transaction-cost theory of the firm distinguishes his contribution from conventional neoclassical theory.

In effect, Williamson’s arguments represent a version of agency theory, in which one party – the principal – must depend on another party – the agent – to perform economic functions to achieve the principal’s economic goals. In doing so, the principal has to contend with the agent’s “hidden action” – a behavioral condition that creates the problem of moral hazard – and “hidden information” – a cognitive condition that creates the problem of adverse selection. In Williamson framework, it is opportunism that constitutes hidden action and bounded rationality that constitutes hidden information. The economic problem, as posed by Williamson, is to determine whether transactions on markets or transactions in hierarchies are more effective at minimizing economic losses because of opportunism and bounded rationality.

The phenomenon that links the cognitive condition of bounded rationality with the behavioral condition of opportunism is uncertainty. The possibility of unforeseen “disturbances” in the economic environment creates the need for “adaptive, sequential decision making,” and markets and hierarchies “differ in their capacities to respond effectively to disturbances.” With unbounded rationality, the changing environment would not create cognitive uncertainty and pose problems of adaptation, because “it would be feasible to develop a detailed strategy for crossing all possible bridges in advance.”¹⁰⁰ Given bounded rationality, however, the occurrence of these unforeseen disturbances creates opportunities for one party to a transaction to take advantage of the other. Whenever the parties to transactions are looking for the opportunity to seek their own self-interest in deceitful, dishonest, or guileful ways, cognitive uncertainty is transformed into behavioral uncertainty – that is, “uncertainty of a strategic kind . . . attributable to opportunism.”¹⁰¹

⁹⁹ Williamson, *Economic Institutions of Capitalism*, pp. 8, 45-47.

¹⁰⁰ *Ibid.*, pp. 56-57.

¹⁰¹ *Ibid.*, pp. 58-59.

What then does the interaction of bounded rationality and opportunism tell us about the choice between markets and hierarchies, and hence about the activities in which a firm will engage as an alternative to using the market? Given the behavioral condition of opportunism and the cognitive condition of bounded rationality, individuals who want to minimize transaction costs should choose to organize their transactions *through markets rather than hierarchies*. Markets permit those entering into a contract to attenuate opportunism by switching to other parties, and to operate within the constraint of bounded rationality by engaging in adaptive, sequential decision-making.

Why then do firms exist and grow in a modern economy? The critical condition favoring hierarchies over markets, according to Williamson, is “asset specificity.” In a 1979 article on “transaction-cost economics,” Williamson introduces “transaction-specific assets” (i.e., asset specificity) into his argument as a *deus ex machina* after it became apparent to him that the assumptions of opportunism and bounded rationality employed in his 1975 book *Markets and Hierarchies* provided an explanation for why transactions would be organized by *markets, not hierarchies*.¹⁰² The phenomenon that Williamson wanted to explain, however, was why, given the possibility of organizing transactions by markets, hierarchies – that is, business organizations – exist. As Williamson himself puts it: “The absence of asset specificity [would] vitiate much of transaction cost economics.”¹⁰³

For Williamson, asset specificity is inherent in “transaction-specific durable assets,” both human and physical, that cannot be deployed to alternative uses – that is, to other transactions – without incurring a financial loss. Williamson distinguishes between *physical* asset specificity and *human* asset specificity. Physical asset specificity can exist because of what he calls “site specificity” – the physical immobility of invested resources that have been located in a particular place to be near a particular supplier or buyer – or because they are “dedicated assets” – a term invoking the special-purpose nature of capital goods (even those that can be easily moved), especially when the investments have been made to service a limited segment of the market (in the extreme, a particular buyer). Human-asset specificity can exist because of the need for continuity (“learning by doing”) or collectivism (“team configurations”) in the development of human resources.¹⁰⁴

In effect, asset-specificity is a form of fixed cost that requires that an asset be utilized for a high “frequency” of transactions if this fixed cost is to be transformed into a low unit cost.¹⁰⁵ In Williamson’s framework, the governance of the frequency of transactions in the presence of asset specificity is critical to minimizing costs because, with bounded rationality, the participation of particular parties in

¹⁰² Oliver E. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, 1975; Oliver E. Williamson, “Transaction-Cost Economics: The Governance of Contractual Relations,” *Journal of Law and Economics*, 22, 2, 1979: 233-261.

¹⁰³ Williamson, *Economic Institutions of Capitalism*, p. 56.

¹⁰⁴ *Ibid.*, pp. 55-56, 95-96, 104.

¹⁰⁵ *Ibid.*, pp. 52, 60, 72-73.

transactions creates the possibility for opportunistic behavior. In the presence of asset specificity, opportunism, and bounded rationality, the critical question that Williamson's transaction-cost framework poses is why internal organization, or hierarchy, outperforms market contracting.

According to Williamson, the economic advantage of internal organization resides in its relative ability to "work things out": "Whenever assets are specific in nontrivial degree, increasing the degree of uncertainty makes it more imperative that the parties devise a machinery to 'work things out' – since contractual gaps will be larger and the occasions for sequential adaptations will increase in number and importance as the degree of uncertainty increases." The internal governance structures that "work things out" add to the fixed costs of internal organization, thus requiring that those costs be spread over larger numbers of transactions (which presumably result in more units of revenue-generating output) to obtain lower unit-governance costs.¹⁰⁶

As the frequency of transactions organized by a particular governance structure increases, economies of scale and scope appear. But these economies are not the result of spreading out the costs of indivisible technology and/or the fixed entrepreneurial factor, as post-Marshallian economists assumed. Rather, Williamson contends, these economies of scale and scope are the result of economizing on the combined costs of asset-specific investments and the governance structures to "work things out" in the face of opportunism and bounded rationality.

When contrasted with the neoclassical theory of the firm, the primary virtue of Williamson's transaction-cost theory is its focus on organizational relationships among self-interested individuals with cognitive limitations. The main problem with Williamson's theory is that he takes these behavioral and cognitive conditions as given – what, quoting Frank Knight, the founder of the Chicago school of economics,¹⁰⁷ Williamson describes as "human nature as we know it" – and employs a constrained-optimization methodology to analyze their economic implications in the presence of externally-imposed technological conditions inherent in asset specificity. Hence Williamson's perspective lacks a theory of innovative strategy – that is, a strategy for confronting and transforming the "constraining" conditions.¹⁰⁸ Indeed, reflecting the neoclassical monopoly model, Williamson views corporate strategy as inherently predatory behavior that raises the product price and restricts the industry output whereas the theory of innovative enterprise that I put forward sees corporate strategy as integral to an innovation process that can lower price and expand output.¹⁰⁹

¹⁰⁶ Ibid., p. 60; also pp. 79, 151, 204.

¹⁰⁷ Frank H. Knight, *Risk, Uncertainty, and Profit*, Harper & Row, 1965, p. 270.

¹⁰⁸ Lazonick, *Business Organization*, chs. 6 and 7.

¹⁰⁹ To quote Williamson, *Economic Institutions of Capitalism*, p. 128: "Suffice it to observe here that strategic behavior has relevance in dominant firm or tightly oligopolistic industries. Since most of the organizational change reported [here] occurred in nondominant firm industries, appeal to strategic considerations is obviously of limited assistance in explaining the reorganization of American industry over the past 150

In taking “asset specificity” as a given constraint on the behavior and performance of the firm, Williamson avoids the analysis of innovative enterprise. As Williamson himself recognizes explicitly: “The introduction of innovation plainly complicates the earlier-described assignment of transactions to markets and hierarchies based entirely on an examination of their asset specificity qualities. Indeed, the study of economic organization in a regime of rapid innovation poses much more difficult issues than those addressed here.”¹¹⁰ In line with a long tradition in neoclassical economics, Williamson’s transaction-cost theory explains the modern corporate enterprise as a “market imperfection.” The basic market imperfection is “asset specificity” – a technological condition that is given to the firm – while the market imperfections that are economically problematic are opportunism, which is inherent in “human nature as we know it”; and bounded rationality, which results from the limited capacity of individuals to absorb information.

From the Williamsonian perspective, markets create “high-powered” incentives for participants in the economy because the returns that participants can reap from the application of their efforts are not constrained by the need to share them with any other participants on a continuing basis. The modern business corporation, in contrast, according to Williamson, offers only “low-powered incentives,” as exemplified by the payment of salaries that detach remuneration from productive effort.¹¹¹ In the presence of asset specificity, and given inherent limits on cognitive competence and inexorable individual pursuit of self-interest with guile, in the Williamsonian firm “working things out” means optimizing subject to these technological, cognitive, and behavioral constraints.

In sharp contrast, for a theory of the innovative enterprise “working things out” focuses on how, through an investment strategy and an organizational structure, the enterprise transforms industrial and organizational conditions so that the *resultant* asset specificity supports the generation of higher-quality, lower-cost products than had previously been available. From this perspective, the growth of the modern business corporation demonstrates the use of strategic control to make financial commitment to organizational integration for the purpose of producing competitive products. For “working things out,” organizational integration is critical to the success of an innovative strategy.

As we have seen, organizational integration is a set of social relations that provides participants in a complex division of labor with the incentives to cooperate in contributing their skills and efforts toward the achievement of common goals. Organizational integration provides an essential social condition for an enterprise

years.” This despite numerous references by Williamson to Chandler’s *The Visible Hand*, a work that documents the rise of dominant firms in the U.S. economy. For Williamson, “[s]trategic behavior has reference to efforts by dominant firms to take up and maintain advance or preemptive positions and/or to respond punitively to rivals.” See Lazonick, *Business Organization*, ch. 7, where I analyze in detail how, guided by transaction-cost theory, Williamson misrepresents and misinterprets the historical evidence on innovative enterprise presented by Chandler in *The Visible Hand*.

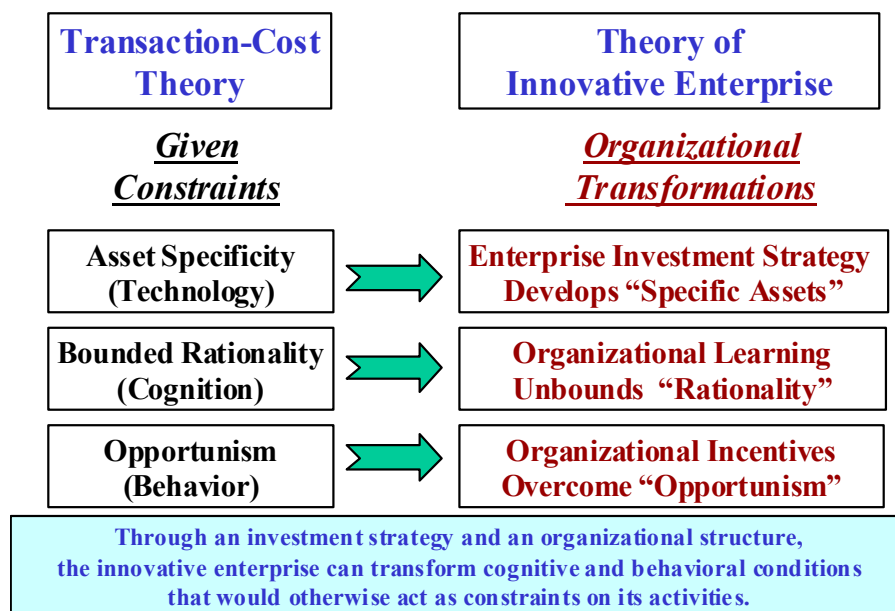
¹¹⁰ Williamson, *Economic Institutions of Capitalism*, p. 143.

¹¹¹ *Ibid.*, pp. 132, 144-145.

to engage in and to make use of collective and cumulative, or organizational, learning. Through organizational integration, people in a hierarchical and functional division of labor work together to create value that would otherwise not exist. And as a condition and inducement to engage in organizational learning, employees share in the gains of innovative enterprise in the forms of careers in the company through which they attain stable employment and augmented pay and benefits.

Figure 2 considers the key concepts of Williamsonian transaction-cost theory from the perspective of the theory of innovative enterprise. Whereas Williamson takes bounded rationality and opportunism as given constraints on economic activity, organizational integration generates organizational learning by *transforming* “bounded rationality” and “opportunism” so that the cognitive and behavioral characteristics of participants in the enterprise contribute to the innovation process.

Figure 2. Innovative enterprise transforms the “given” conditions of transaction-cost theory



Organizational integration can transform “individual rationality” into “collective rationality”, and thus unbounds the cognitive abilities available to the enterprise.¹¹² Organizational integration can transform opportunism – and indeed transform

¹¹² The seminal theoretical work on the role of the executive in integrating the individual into the organization is Chester Barnard, *The Function of the Executive*, Harvard University Press, 1938. In the book, Barnard, who from 1927 to 1948 was the president of New Jersey Bell Telephone Company, focuses on how the organization can transform (using Williamsonian terminology) “opportunism” into cooperation and “bounded rationality” into collective knowledge.

“human nature as [Frank Knight and Oliver Williamson] know it” – by both generating and sharing the productivity gains of the innovation process in ways that create “high-powered” incentives – employment security, career opportunities, collective purpose – for the people in the hierarchical and functional division of labor on whom the enterprise relies to develop and utilize productive resources.

From the perspective of economic analysis, the bigger problem with Williamson’s transaction-cost theory is that since the 1970s it has provided conventional economists who seek to understand how the modern industrial corporation operates and performs with the illusion that it provides a relevant framework. Meanwhile, emanating from the Chicago school of free-market economics, another less-benign version of agency theory was launched in 1976 with the publication of Michael Jensen and William Meckling, “Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure.”¹¹³ Agency theory argues that since the large corporation is inherently a “market imperfection,” the economic institutions of capitalism should be structured to “disgorge” (Jensen’s evocative term) from the corporation the cash flow that has come under its control. By the mid-1980s, with Jensen taking the lead, this agency perspective had evolved into the theory that a corporation would maximize the efficiency of the economy if it maximizes the value of the company’s publicly traded shares.¹¹⁴ The problem, as Jensen saw it, was that the senior executives of large corporations, in control of the allocation of significant resources, had a tendency, if left to their own devices, to build empires and invest in wasteful projects.

The “maximizing shareholder value” (MSV) perspective views hostile takeovers, or what is more generally known as “the market for corporate control,” as one way in which shareholders can force managers to stop wasting corporate resources and distribute cash to them. The proponents of MSV also argue that by making stock-based pay a major proportion of executive compensation, the incentives of corporate managers in the allocation of resources can be aligned with those of public shareholders.¹¹⁵ Only by disgorging the corporation’s “free cash flow” to shareholders, the MSV proponents contend, will the economy’s resources be allocated to their most efficient uses. The money from the corporate coffers can be distributed to shareholders in the forms of cash dividends and stock repurchases.

The MSV argument is that, of all participants in the business corporation, shareholders are the only economic actors who make productive contributions *without a guaranteed return*. All other participants such as creditors, workers, suppliers, and distributors allegedly receive a market-determined price for the goods or services

¹¹³ Michael C. Jensen and William H. Meckling, “Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure,” *Journal of Financial Economics*, 3, 4, 1976: 305-360.

¹¹⁴ Michael C. Jensen, “Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers” *American Economic Review*, 76, 2, 1986: 323-329. For one of my earlier critiques of this view, see William Lazonick, “Controlling the Market for Corporate Control: The Historical Significance of Managerial Capitalism,” *Industrial and Corporate Change*, 1, 3, 1992: 445-488.

¹¹⁵ Michael C. Jensen and Kevin J. Murphy, “Performance Pay and Top Management Incentives” *Journal of Political Economy*, 98, 2, 1990: 225-264.

that they render to the corporation, and hence take no risk of whether the company makes or loses money. On this assumption, only shareholders have an economically justifiable claim to the “residual” of revenues over costs after the company has paid all other stakeholders their guaranteed contractual claims for their productive contributions to the firm.

By the MSV argument, shareholders are the only stakeholders who need to be incentivized to bear the risk of investing in productive resources that may result in superior economic performance. As the only “residual claimants,” the MSV story goes, shareholders are the only stakeholders who have an interest in monitoring managers to ensure that they allocate resources efficiently. Furthermore, by buying and selling corporate shares on the stock market, public shareholders, it is argued, can directly reallocate resources to more efficient uses.

The fundamental theoretical flaw with MSV lies in the erroneous assumption that shareholders are the only corporate participants who bear risk. Taxpayers through government agencies and workers through the firms that employ them make risky investments in productive capabilities on a regular basis. From this perspective, households as *taxpayers* and *workers* may have “residual claimant” status: that is, an economic claim on the distribution of profits.

Through government investments and subsidies, taxpayers regularly provide productive resources to companies without a guaranteed return. As an important example, but only one of many, the 2016 budget of the U.S. National Institutes of Health (NIH) is \$32.3 billion, with a total NIH investment in life-sciences research from 1938 through 2015 of \$958 billion in 2015 dollars.¹¹⁶ Businesses that make use of life-sciences research benefit from the public knowledge that the NIH generates. As risk bearers, taxpayers who fund such investments in the knowledge base, or physical infrastructure such as roads, have a claim on corporate profits if and when they are generated. Through the tax system, governments, representing taxpayers in general, seek to extract this return from corporations and individuals that reap the rewards of government spending. However tax revenues on the prospective gains from innovation depend on the success of innovative enterprise while, through the political process, tax rates on those gains are subject to change. Hence, for both economic and political reasons, the returns to taxpayers whose money has been invested for the benefit of business enterprises are by no means guaranteed.

Workers regularly make productive contributions to the companies for which they work through the exercise of skill and effort beyond those levels required to lay claim to their current pay, but without guaranteed returns.¹¹⁷ Any employer who is seeking to generate a higher-quality, lower-cost product knows the profound

¹¹⁶ National Institutes of Health, “Budget,” at <http://www.nih.gov/about-nih/what-we-do/budget>. See also Lazonick and Tulum, “US Biopharmaceutical Finance.”

¹¹⁷ Lazonick, *Competitive Advantage on the Shop Floor*; Lazonick, “*The Theory of Innovative Enterprise*.”

productivity difference between employees who just punch the clock to get their daily pay and those who engage in learning to make productive contributions through which they can build their careers and thereby reap future returns in work and in retirement. Yet these careers and the returns that they can generate are not guaranteed.

As risk bearers, therefore, taxpayers whose money supports business enterprises and workers whose efforts generate productivity improvements have claims on corporate profits if and when they occur. MSV ignores the risk-reward relation for these two types of economic actors in the operation and performance of business corporations.¹¹⁸ Instead it erroneously assumes that only shareholders are residual claimants.

The irony of MSV is that the public shareholders whom it holds up as the only risk bearers typically never invest in the value-creating capabilities of the company at all. Rather they invest in outstanding shares in the hope that they will yield dividends and rise in price on the market. And, following the directives of MSV, a prime way in which the corporate executives who control the allocation of company resources fuel this hope is by “disgorging” the so-called free cash flow. Indeed, the proponents of MSV have advocated that, through stock-based pay, the remuneration of senior executives be tied to the company’s stock price, thus incentivizing those who exercise managerial control to engage in what, following Berle and Means, we can only call “corporate plundering.”¹¹⁹

As I have documented in detail, since the mid-1980s Corporate America has become addicted to share repurchases, more commonly known as stock buybacks. Until the mid-1980s buybacks were insignificant. But since then, buybacks have become massive and pervasive.¹²⁰ For the decade 2006-2015, US corporations’ total net equity issues – new share issues less shares taken off the market through buybacks and merger-and-acquisition deals – averaged *minus \$416 billion per year*.¹²¹

Over the past three decades, in aggregate, dividends have tended to increase as a proportion of corporate profits. Yet in 1997 buybacks surpassed dividends in the U.S. corporate economy. While buybacks are more volatile from year to year than dividends, they have become more dominant as a mode of distribution of corporate cash to shareholders. Over the decade 2005-2014, the 459 companies in the S&P

¹¹⁸ Lazonick and Mazzucato, “Risk-Reward Nexus”.

¹¹⁹ William Lazonick, “Taking Stock: Why Executive Pay Results in an Unstable and Inequitable Economy,” Roosevelt Institute White Paper, June 5, 2014, at <http://www.rooseveltinstitute.org/taking-stock-executive-pay>

¹²⁰ William Lazonick, “Stock Buybacks: From Retain-and-Reinvest to Downsize-and-Distribute,” Center for Effective Public Management, Brookings Institution, April 2015, at <http://www.brookings.edu/research/papers/2015/04/17-stock-buybacks-lazonick>

¹²¹ Board of Governors of the Federal Reserve System, Federal Reserve Statistical Release Z.1, “Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts,” Table F-223: Corporate Equities, December 10, 2015, at <http://www.federalreserve.gov/releases/z1/current/>.

500 Index in February 2015 that were publicly listed over the decade expended \$3.75 trillion on stock buybacks, representing 52.7% of net income, plus another 35.7% of net income on dividends. Much of the remaining 11.6% of profits was held abroad, sheltered from U.S. taxes. Many of America's largest corporations routinely distribute more than 100% of net income to shareholders, generating the extra cash by reducing cash reserves, selling off assets, taking on debt, or laying off employees.

The earnings that a company retains after distributions to shareholders have always been the financial foundation for investment in innovation and sustained employment. These retained earnings can fund investment in plant and equipment, research and development, and training and retaining employees. If dividends alone are too high, investments in the company's productive capabilities will suffer. The addition of buybacks to dividends over the past three decades reflects a failure of corporate executives to develop strategies for investing in the productive capabilities of the companies in which they exercise strategic control.

Dividends are the traditional, and legitimate, way for a publicly listed corporation to provide income to shareholders. Dividends provide shareholders with an income for (as the name says) *holding* shares. Moreover, if the firm retains enough of its profits to finance further investment in the company's productive capabilities, there is the possibility (although by no means the certainty) that it will generate competitive products that will help lift its future stock price. When, for whatever reason, shareholders who have benefited from a stream of income on their holdings decide to sell some or all of their shares, they stand to make a capital gain. In contrast, by creating demand for the company's stock that provides an immediate boost to its stock price, buybacks reward those shareholders who *sell* their shares. The most prominent sharesellers are those stock-market traders, including corporate executives, investment bankers, and hedge-fund managers, who are able to time their stock sales to take advantage of buyback activity done as open-market repurchases. Buybacks also automatically increase earnings per share (EPS) by decreasing the number of shares outstanding. Since EPS has become the major metric by which financial interests evaluate the performance of a company, buybacks tend to increase demand for a company's stock, thus creating opportunities for stock-market speculators to sell their shares at a gain even in the absence of increased corporate revenues or profits.

Corporate executives give a number of reasons for doing buybacks.¹²² But all are deeply flawed.

- Executives claim that they are making an investment in the company because its stock is undervalued. But the evidence is overwhelming that most buybacks occur when stock prices are high, not when they are low.
- Executives claim that their companies do buybacks to offset dilution of earnings per share (EPS) that results when employees exercise stock options that they

¹²² Lazonick, "Profits Without Prosperity."

have received as part of their compensation. But if stock-based pay is supposed to induce employees to work harder and smarter, then those who receive it should have to wait until their efforts pay off in higher corporate earnings and stock prices rather than expecting to gain right away from buybacks that simply increase EPS by reducing the number of shares outstanding.

- Executives may claim that buybacks are done when the company is mature and new investment opportunities have vanished. But any CEO who makes this argument is *not* doing his or her job of devising a strategy to invest in the company's future.

The only logical explanation for the prevalence of buybacks is that stock-based pay gives executives ample incentives to do them.¹²³ There are two main types of stock-based pay: stock options, in which the realized gains depend on the extent to which the stock price on the date the option is exercised exceeds the stock price on the date that the option was granted, and stock awards, which often vest if and when a company hits specified EPS or stock-price targets.

By using stock buybacks to boost stock prices, executives can augment the gains that they realize from exercising stock options and the vesting of stock awards. From 2006 through 2014, the average annual total pay of the 500 highest-paid US executives (not including high-end outliers) ranged from \$14.4 million in 2009 to \$30.3 million in 2012, with realized gains from the combination of exercising options and vesting of awards making up from 66% to 82% of the total.¹²⁴

The MSV proponents of stock-based pay argue that these incentives align the interests of corporate executives with those of shareholders. But the use of buybacks to boost stock prices represents an alignment of interests *among sharesellers*, especially corporate executives, investment bankers, and hedge-fund managers, who are in the business of gaining from manipulation of the stock market.¹²⁵

5. Putting Forward the Claims of the Community with Clarity and Force

Economics needs a theory of innovative enterprise. As a body of knowledge for understanding the creation and distribution of the wealth of nations, neoclassical economics is a colossal failure. In idealizing the small inefficient firm as the best of all possible economic worlds, neoclassical economists have ceded any claim to analyzing why and under what conditions the large corporations that dominate the advanced economies promote or undermine the attainment of stable and equitable economic growth.

¹²³ Lazonick, "Taking Stock."

¹²⁴ Matt Hopkins and William Lazonick, "The Mismeasure of Mammon: The Uses and Abuses of Executive Pay Data," Report to the Institute of New Economic Thinking, forthcoming.

¹²⁵ See William Lazonick, "Stock Buybacks: From Basics to Politics," The Academic-Industry Research Network Special Report, August 2015, at www.theAIRnet.org; William Lazonick, "How Stock Buybacks Make Americans Vulnerable to Globalization," Paper prepared for the conference on Mega-Regionalism: New Challenges for Trade and Innovation, East-West Center, Honolulu, January 20-21, 2016.

Yet, even as the neoclassical perspective restricts creative economic thinking and exacts a high price on actual economic performance, it retains a virtual monopoly on the teaching of economics. In this academic version of “the evil of monopoly,” Samuelson’s textbook and its imitators – with their high-priced, low-quality products – bear an important part of the blame. But, of course, the triumph of Samuelson’s “grand neoclassical synthesis,” as he called it, required both a receptive audience and institutional legitimation.¹²⁶

For the audience, recall that in his 1961 AEA presidential address, Paul Samuelson defended neoclassical economics against its ill-informed critics by saying that “the economic scholar works for the only coin worth having – the applause of our fellows.” But as Samuelson’s MIT colleague Robert Solow would write in a 1967 review of John Kenneth Galbraith’s *The New Industrial State*, answering the big questions that the book posed about the exercise of corporate power in the economy was not what well-trained economists do. “The world can be divided into big thinkers and little thinkers,” said Solow. “Economists are determined little thinkers....[but] little thinking can degenerate into mini-thinking or no thinking at all.”¹²⁷ Often behind a facade of mathematics, degeneration is an apt characterization of what has happened to the economics profession in general over the past half century or so.

For legitimation, beginning in 1969 the Swedish Central Bank, at the behest of some neoclassical economists in the Swedish Social Democratic Party, provided the economics profession with an even more valuable “coin worth having” than simply the applause of their fellows: namely, the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, popularly known as the Nobel Prize in Economics.¹²⁸ After the first prize was dutifully awarded in 1969 jointly to two Europeans, Ragnar Frisch of Norway and Jan Tinbergen of the Netherlands, for their work in econometrics, Samuelson received his prize the following year “for the scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science.”¹²⁹

As I have shown in this essay, one of Samuelson’s greatest achievements in “raising the level of analysis in economic science” was to make the sweatshop the foundation of economic analysis, as taught, semester after semester, to millions students of economics who are supposedly learning how a modern economy operates and performs. By characterizing the ideal firm as a small, inefficient entity in which, given technological possibilities and market prices, the good manager

¹²⁶ Samuelson, *Economics*, third edition, p. vi.

¹²⁷ Robert M. Solow, “The New Industrial State or Son of Affluence,” *The Public Interest*, 9, 1967, p. 100. See also Lazonick, *Business Organization*, pp. 347-349.

¹²⁸ See Gabriel Söderberg, *Constructing Invisible Hands: Market Technocrats in Sweden, 1880-2000*, PhD dissertation, Uppsala University, 2013, Paper III.

¹²⁹ “All Prizes in Economic Sciences,” The Official Website of the Nobel Prize, at http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/.

equates marginal revenue with marginal cost to produce the “optimal” output, Samuelson helped convince the world that the U.S. economy is a market-coordinated economy in which the major problem is “the evil of monopoly”: the tendency of large enterprises to undermine the efficient working of the market by restricting output and raising price.

To be sure, representing the liberal wing of the economics profession, and as part of his grand neoclassical synthesis, Samuelson insisted that we live in a “mixed economy” in which the government has a legitimate economic role to play in smoothing out business cycles through countercyclical fiscal policy. From this perspective, however, it was easy for the conservative wing of the economics profession, with Chicago economist Milton Friedman as its Samuelsonian counterpart, to argue that such Keynesian-style government intervention would just exacerbate business cycles if only because of poor timing in providing and withdrawing fiscal stimuli. Just let the Federal Reserve Bank expand the money supply at the rate necessary to finance inflation-free economic growth, Friedman contended, and the free-market economy would perform just fine.¹³⁰

As for the business corporation, in a 1970 *New York Times Magazine* article, “The social responsibility of business is to increase profits,” Friedman issued what subsequently became viewed as the clarion call for the MSV version of agency theory:

In a free-enterprise, private-property system, a corporate executive is an employee of the owners of the business. He has direct responsibility to his employers. That responsibility is to conduct the business in accordance with their desires, which generally will be to make as much money as possible while conforming to the basic rules of the society, both those embodied in law and those embodied in ethical custom.

Friedman concludes the article by quoting himself from his 1962 book *Capitalism and Freedom* (from which his 1970 article is drawn): “There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.”¹³¹

To produce profits, however, the firm must generate competitive – that is, high-quality, low-cost – products. On how a firm generates such products, Friedman’s *Capitalism and Freedom* has *absolutely nothing* to say.¹³² To make his free-market arguments, Friedman did not need to articulate the view of “perfect competition”

¹³⁰ See, e.g., J. Daniel Hammond, “Friedman and Samuelson on the Business Cycle,” *Cato Journal*, 33, 3, 2011: 643-660,

¹³¹ Milton Friedman, “The social responsibility of business is to increase its profits” *New York Times Magazine*, September 13, 1970.

¹³² Milton Friedman, *Capitalism and Freedom*, University of Chicago Press, fortieth anniversary edition, 2002.

with its small unproductive firms as the epitome of economic efficiency. His liberal fellow-economist Samuelson, among others, had done it for him, and by the 1960s, among well-trained economists, it had become a dominant system of belief. No doubt, Friedman was in the audience at the 1961 AEA meeting when Samuelson gave his presidential address, and was generous with his applause.

Ironically, it was the very success of the U.S. industrial corporation in supporting prosperity in the post-World War II decades that enabled neoclassical economists to get away with their absurd view of the world. Largely because, in Penrosian fashion, major corporations provided employees with the norm of a career with one company, supported by massive government spending on physical infrastructure and human knowledge, the U.S. economy experienced relatively stable and equitable growth for a quarter century from the mid-1940s.¹³³ Economists could then pose the main economic problem as the macroeconomic task of smoothing the business cycle. Why worry about whether the micro-foundations of economics made any sense?

There would, however, be a big price to pay for well-trained economists' ignorance of how the U.S. business system worked. The prime beneficiaries of the postwar era of stable employment relations and easy government spending were white males, leaving many economic and social problems related to racism, sexism, imperialism, consumerism, and environmental degradation to fester.¹³⁴ Although these problems have been confronted in a variety of ways, they still persist.

Meanwhile the U.S. business corporation increasingly ceased to be a force for stable and equitable economic growth. Rather, under cover of the neoclassical theory of the market economy and in the name of maximizing shareholder value, what can only be described as the looting of the industrial corporation has gone on for some three decades now, unabated and unquestioned by neoclassical economists, liberal and conservative alike. This largely legal process of predation can take preponderant blame for extreme concentration of income among the richest households and the ongoing erosion of middle-class employment opportunities. With the advent of an era of corporate plundering, prospects for achieving stable and equitable economic growth have disappeared.¹³⁵

American liberals, even the more progressive among them, have not had effective responses to the plundering of the U.S. corporation because they adhere

¹³³ William Lazonick, *Sustainable Prosperity in the New Economy? Business Organization and High-Tech Employment in the United States*, Upjohn Institute for Employment Research, 2009; Lazonick, "Labor in the Twenty-First Century."

¹³⁴ For major critiques of the U.S. economic and social order written in the 1960s in which the large business corporation played a major role, see Michael Harrington, *The Other America: Poverty in America*, Macmillan, 1962; Betty Friedan, *The Feminine Mystique*, W. W. Norton, 1963; Ralph Nader, *Unsafe At Any Speed: The Designed-In Dangers of the American Automobile*, Grossman, 1965; John Kenneth Galbraith, *The New Industrial State*, New American Library, 1967; and Paul A. Baran and Paul M. Sweezy, *Monopoly Capital: An Essay on the American Economic and Social Order*, Monthly Review Press, 1968.

¹³⁵ Lazonick, *Sustainable Prosperity*; Lazonick, "Labor in the Twenty-First Century"; Lazonick, "Profits Without Prosperity."

fundamentally to the myth of the market economy. They espouse a theory of the ideal economy that has the sweatshop as its microeconomic foundation. The poverty of neoclassical economics becomes transparently clear when the intellectual heirs of Samuelson embrace the sweatshop as the salvation of the Third World. In a perceptive piece entitled “Rethinking Sweatshop Economics,” Jason Hickel, an anthropologist, comments on a flap in the British press in 2011 when it was learned that a high-profile dress worn by Kate Middleton, Duchess of Cambridge, had been manufactured in a Romanian sweatshop by workers who were paid about \$1.50 per hour.¹³⁶ Hickel observes that “the truly troubling part of the story is the logic that Kate’s defenders have invoked to justify this trend, drawing on arguments made by allegedly ‘progressive’ U.S. economists.” Hickel goes on:

Jeffrey Sachs, well-known author of *The End of Poverty*, once famously stated, “My concern is not that there are too many sweatshops, but that there are too few.” Similarly Paul Krugman has argued that sweatshops “move hundreds of millions of people from abject poverty to something still awful but nonetheless significantly better... [so] the growth of sweatshop employment is tremendous good news for the world’s poor.”¹³⁷

Economists such as Sachs and Krugman extol “sweatshop economics” because, whether they realize it or not, as neoclassical economists they have embraced the sweatshop – the overcrowded, low-productivity firm – as the foundation of economic analysis.¹³⁸

Long overdue is a new conception of the business corporation that recognizes, as Berle and Means put it, “the claims of the community with clarity and force.” For the academic discipline that calls itself economics, replacing the sweatshop as the foundation of economic analysis with a theory of innovative enterprise is the place to start. If economists do not ask, let alone answer the following six questions about the operation and performance of the business corporation – the first three having to do with business enterprises and the second three having to do with economic institutions – they cannot possibly in my view understand the operation and performance of the modern economy.¹³⁹

¹³⁶ Jason Hickel, “Rethinking Sweatshop Economics,” *Foreign Policy in Focus*, July 1, 2011, at http://fpif.org/rethinking_sweatshop_economics/

¹³⁷ As another example of the limits of American liberal thinking, Hickel also cites an article by journalists Nicholas D. Kristof and Sheryl WuDunn, “Two cheers for sweatshops,” *New York Times Magazine*, September 24, 2000, at <http://www.nytimes.com/library/magazine/home/20000924mag-sweatshops.html>. For Sachs’ quote, see Allen Meyerson, “In principle, a case for more ‘sweatshops,’” *New York Times*, June 22, 1997. For Krugman’s quote, see Paul Krugman, “In praise of cheap labor: Bad jobs at bad wages are better than no jobs at all,” *Slate*, March 20, 1997, at <http://web.mit.edu/krugman/www/smokey.html>.

¹³⁸ See, for example, Paul Krugman and Robin Wells, *Microeconomics*, second edition, Worth Publishers, 2009, Part 6. See also Joseph E. Stiglitz, *Principles of Economics*, W. W. Norton, 1993, chs. 12-14.

¹³⁹ For the analytical framework on which this set of research questions is based, see Lazonick, “The Theory of Innovative Enterprise.”

Social conditions of innovative enterprise (SCIE):

- How is enterprise investment in innovation dependent on the abilities and incentives of those who exercise strategic control over the allocation of business resources?
- Whose skills and efforts in a hierarchical and functional division of labor must be organizationally integrated into the collective and cumulative learning processes that are the essence of innovation?
- What are the sources of financial commitment that can sustain the innovation process from the time investments in innovation are made until, through transforming technologies and accessing markets, higher-quality, lower-cost products are available that can generate financial returns?

Institutions that support or undermine SCIE:

- Influencing strategic control, what are society's governance institutions that regulate rights and responsibilities in the allocation of productive resources in the business enterprise?
- Influencing organizational integration, what are society's employment institutions that regulate the provision of education, training, and access to productive employment for the society's members?
- Influencing financial commitment, what are society's investment institutions that mobilize finance for the development of productive capabilities, and from what sources, on what terms, with what expected returns, and with returns to whom is this finance made available?

With sufficient and appropriate research, all of these questions can be answered. One needs a theory of innovative enterprise as the analytical framework. One also needs a methodology that integrates theory and history so that theory becomes both a distillation of what we know and a guide to what we need to know.¹⁴⁰

As for neoclassical economics, one thing is absolutely clear. The "mother's milk" of the "well-trained economist" of which one neoclassical economist whom I have quoted in this essay so confidently and arrogantly spoke does not provide the methodological nutrients that the cognizant economist needs. It is time to wean the well-trained economist off the teat of constrained optimization. Each of those Samuelson-type textbooks that enshrines the sweatshop as the foundation of economic analysis should bear the following warning across its front cover: THE CONTENTS OF THIS BOOK MAY STUNT YOUR INTELLECTUAL GROWTH.

¹⁴⁰ Lazonick, "Innovative Enterprise and Historical Transformation"; William Lazonick, "The Theory of Innovative Enterprise: Methodology, Ideology, and Institutions," in Jamee K. Moudud, Cyrus Bina and Patrick L. Mason, eds., *Alternative Theories of Competition: Challenges to the Orthodoxy*, Routledge, 2012: 127-159.

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The Academic-Industry Research Network – theAIRnet – is a private, 501(c)(3) not-for-profit research organization devoted to the proposition that a sound understanding of the dynamics of industrial development requires collaboration between academic scholars and industry experts. We engage in up-to-date, in-depth, and incisive research and commentary on issues related to industrial innovation and economic development. Our goal is to understand the ways in which, through innovation, businesses and governments can contribute to equitable and stable economic growth – or what we call “sustainable prosperity”.

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