WORKER SATISFACTION AND ECONOMIC PERFORMANCE
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Microfoundations of Success and Failure

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK
To Louise
Contents

Foreword
Shlomo Maital ix

Acknowledgments xvii

1. Introduction: Revising the Microfoundations of Economics 3
2. Human Agency as a Determinant of Material Welfare 26
3. The Methodology of Economics and the Survival Principle Revised 50
5. The Economics of Exogenous Increases in Wage Rates in a Behavioral/X-Efficiency Model of the Firm 103
6. A Behavioral Model of Endogenous Economic Growth 119
7. Interfirm, Interregional, and International Differences in Labor Productivity: Why Convergence Need Not Take Place 137
8. The Economics of Profitable Inefficiency and Market Failure: A Behavioral Model of Path Dependency 150
CONTENTS

11. A Revisionist View of the Economic Implications of Child Labor Regulations 199
13. When Green Isn’t Mean: The Economics of Environmental Regulations 230
15. Culture as a Determinant of Material Welfare 260

References 271
Index 289
About the Author 299
Morris Altman has written a timely book. His theme is this: “How workers are treated in the context of the firm’s general human relations or industrial relations environment plays a fundamentally important role in determining the economic performance of the firm and, thereby, of the economy as a whole.” Put simply: firms, economies, and societies who treat workers well and pay them good wages will ultimately thrive and prosper. While most of us find this proposition appealing on normative grounds, Altman uses behavioral economics to refute neoclassical conventional wisdom and build positive foundations for his claim. For this reason, an additional subtitle for his book would be appropriate: “A Manifesto for Fairness and Equality.”

There are two reasons why Worker Satisfaction and Economic Performance is today particularly relevant. First is the theory of the overwhelming triumph of American free market capitalism as the world’s sole principle of social organization. The theory that legitimizes and justifies enormous, intolerable injustice and inequality worldwide deserves refutation. Second is the reality of the insufferable inequality and unfairness in the distribution of wealth and income both within countries—wealthy and poor alike—and among countries, which demands a manifesto showing why this is not only immoral, but also, in the long run, inefficient and wealth-destroying. Altman focuses on the core of this inequality: how workers are paid, how well they are treated, and why it pays to pay them well.

Darwin or Isaiah?

The fall of the Berlin Wall on November 9, 1989, signaled the final victory of American capitalism worldwide. Wall Street invented the term “emerging markets” and imposed a new set of rules: Developing countries must open
their capital markets to foreign investments and eliminate controls. As American capitalism triumphed, so did the Chicago neoclassical theorists who built its ideology. Miller, Coase, Becker, Fogel, and Lucas won five of six Nobel Prizes in economics between 1990 and 1995. Ironically, it was former secretary of the treasury Larry Summers, a modern Keynesian, who best expressed the triumph of the Chicago ideology. In an interview, Summers (2000) explained how the world had changed. The old economic model, he explained, was based on Newtonian thinking, which says there are causal laws that govern markets and determine policies. The new economic model, Summers claimed, is based on Darwin. From time to time, “mutations” occur. Most are unsuccessful; a few are successful, and the successful ones generate enormous wealth. The economic system must be open and flexible to permit these mutations.

In The Origin of Species, Darwin concluded by saying, “From the war of nature, from famine and death—the production of the higher animals [people] directly follows.” I reject Darwin both as a positive principle for social organization and as a normative principle for advancing human well-being. Try instead Isaiah: “Learn to do good, seek justice, relieve the oppressed; defend the fatherless; plead for the widow” (Isaiah 1:17). Which society will be more prosperous: Darwin’s or Isaiah’s? Morris Altman shows Isaiah’s. All other things being equal, which society would you rather live in? Isaiah’s, hands down.

The Rise of Global Inequality

Globalization has generated enormous amounts of wealth for a tiny fraction of the world’s population. Of the world’s 6 billion people, the richest billion, living in about twenty-five countries, get 78 percent of the world’s GDP and enjoy average incomes of $25,000 yearly. There, only 7 of every 1,000 children die before age 5. The poorest 1.5 billion people get an average of $1 a day, or about $400 a year; in fifteen years there will be almost 2 billion people living at this starvation level. The poorest 3 billion people, living in sixty-one countries, get only 6 percent of the world’s GDP and have per capita GDP of $2 a day or less. There, 90 of every 1,000 children die before age 5. An entire continent—Africa—has become deeply impoverished during the past generation. Since 1970, the wealthiest sixty countries doubled their per capita income. The middle sixty and poorest sixty countries gained little or no ground (World Bank 1999).

Nothing is more symbolic than the twin problems of obesity and hunger. A billion people in the world are hungry. An equal number are obese. Both groups suffer. A transfer of resources from the fat to the thin would help
both. (In the United States, 30 percent of the population is overweight.) Yet in an age of supercomputers, gene therapy, and Internet, more people go hungry, even more people grow obese, and the absurdity is more tragic than comic. The good news is that globalization has created unprecedented wealth. The bad news is that only a handful have gotten it. Why?

Inequality in the Home of Capitalism

"Theory is the lens through which we perceive and make sense of the world around us," Altman writes. The neoclassical theory showing that Darwinian survival of the fittest, among workers and firms, is a "given" has profound implications, Altman argues. It generates the belief that "living in a global and competitive world economy requires adherence to low-wage paths of economic development combined with minimalist government." This is a surefire recipe for inequality and unfairness. It has created enormous inequality in the home of capitalism itself: America. America chose the "low road."

According to the World Development Indicators 2000 (World Bank 2000, 3), between 1990 and 1999, the total value of financial assets listed on the world’s stock markets tripled, rising from $9,400 billion to $24,458 billion. Fully two-thirds of that $15,000 billion increase in wealth was created in the United States, where market capitalization rose from $3,100 billion (1990) to $13,500 billion (1999). According to Forbes Magazine, America now has 189 persons whose net personal wealth exceeds $1 billion! America has 20 million persons whose net worth now exceeds $1 million.

Many of America's globalization policies were framed when Robert Rubin was U.S. treasury secretary. Recall that Rubin came to the Treasury from the leading Wall Street investment bank Goldman, Sachs. Joseph Stiglitz (2000), Stanford University professor and until recently chief economist and vice president of the World Bank, asks rhetorically, "Did America push its policies ... because we believed they would help East Asia (and other nations)? Or because we believed they would benefit financial interests in the United States?"

The answer lies in the numbers. Two-thirds of the increase in market value of financial assets between 1990 and 1999 occurred in American stock markets. Yet according to the UN Human Development Index,

- America has the highest level of "human poverty"—life expectancy, illiteracy, and underemployment—among industrialized nations. In the United States one in every five adults is functionally illiterate (unable to read at a fifth-grade level).
- Some 17 percent of the U.S. population has income less than half the country's median.
• The wealthiest 1 percent of Americans own fully 40 percent of all the wealth.
• The wealthiest 10 percent of Americans have average incomes seventeen times higher than the poorest 10 percent.
• Forty-two million Americans (one person in every seven) have no health insurance at all, up from 30 million just eight years ago.

Why are both poverty and wealth rising in America? Because Americans, whose culture stresses fair play, seem unwilling to extend fairness to the business realm, by taxing the rich to help the poor. The United States has the lowest top marginal income tax rate of any industrial nation: 39.6 percent, a rate paid by Bill Gates and other billionaires.

**Capitalism Sinks Russia**

The triumph of neoclassical economic ideology, in its most single-minded form, has not only torn the fabric of American society, but ravaged the economy of Russia as well. According to Joseph Stiglitz (2000), after the fall of the Berlin Wall, two schools of thought emerged in the United States about how Russia should make a transition to a market economy. One group stressed that Russia must first build the infrastructure of a market economy: land titles offices, courts to enforce contracts, limited companies, and regulatory bodies. In this group were Nobel Prize winners, such as Kenneth Arrow. This group favored a gradual transition, with strong measures to fight inflation. A second group, comprised of American macroeconomists who knew nothing about Russia's history or society, advocated "shock therapy"—immediate, rapid transition to a market economy. They believed that the principles of market economics are universal and apply everywhere and anywhere. They won.

The result? Russia today is a poor, Third World country. There was a lot of shock—but no therapy. Criminal elements plundered Russia's wealth; the middle class had its savings destroyed twice—in 1991 and again in 1998; and many fear Russia is ripe for a fascist dictatorship. It was not Russia's economists who ruined Russia, but rather America's. Russia was not ready for free markets and was misled by classroom economists whose neoclassical ideology occupied brain cells normally dedicated to common sense.

**Low Wages? Or High Wages?**

Altman builds his argument methodically, ranging over such issues as labor relations, minimum wages, and child labor. Chapter 2 adopts Leibenstein's simple but powerful insight that "individuals have some choice over their effort inputs . . . and have different capacities to realize these inputs." He
shows that "relatively low-wage economies should tend to experience relatively low rates of economic growth." Higher wages will spur greater x-efﬁciency and higher effort from workers. He then shows, in chapter 3, that inefficient firms can survive even in highly competitive markets—a fact surprising to neoclassical economists but self-evident to anyone who has set foot in any real company, whether Fortune 500 or startup. In chapter 4, Altman shows that "redistributing income can increase both x-efﬁciency and the rate of technical change"—happier workers simply improve the ﬁrm’s performance—another of those basic principles that are axiomatic in organizational behavior but somehow exotic in economics. Chapter 5 refutes the neoclassical allergy to minimum wage laws by showing how “minimum wages and unions [can drive] ﬁrms into becoming more efﬁcient.” In chapter 6, Altman shows how higher labor costs can explain part of Solow’s total factor productivity “residual.” Firms and institutions respond to higher wages in ways that produce faster economic growth. I have seen ﬁrst-hand a living example of Altman’s “high road.” In Israel’s kibbutz (collective farm) system, the left-wing kibbutzim for years ideologically opposed solving their labor shortage by hiring outside workers at low wages. Instead they invested in labor-saving technology that in the long run proved far more proﬁtable. The right-wing kibbutzim hired cheap labor without compunction and as a result performed poorly in the long haul. Why has labor productivity across ﬁrms and across countries not converged, as it should according to the neoclassical “survival of the fittest” axiom? Under Altman’s behavioral theory, high-productivity and low-productivity ﬁrms coexist, with identical unit costs; the former simply pay higher wages than the latter. The two types of kibbutzim are a perfect example.

Chapter 8 uses David and Arthur’s theory of path dependency to show how “inefﬁcient products and regimes can survive over time if they can remain cost competitive.” Competitive markets thus do not guarantee efﬁciency. Chapter 9 asks why innovative, productive industrial relations practices are “neglected by most ﬁrms.”

Conventional wisdom believes that efﬁcient management regimes will always be chosen. Behavioral economics believes they will not if they fail to produce lower unit costs. Empirical data support the latter view. In their recent book, Jeffrey Pfeffer and Robert I. Sutton (2000) note that some 1,700 business books are published each year, $60 billion is spent on training, and $43 billion is spent on management consultants; yet despite the mountain of knowledge, the bottom-line results are molehills. There is a gap, they note, between knowing what to do and actually doing it. That gap should not exist at all, let alone match the Grand Canyon, under neoclassical economics. Indeed, Harvey Leibenstein found the initial inspiration for his x-inefﬁciency
theory in the pile of development consultant reports that were utterly ignored, though they could have done immense good for countries that chose to adopt their policies. The knowing-doing gap is a major source of \textit{x}-inefficiency.

Chapters 10 and 11 focus on labor practices, showing that better working conditions will lower, rather than raise, unit costs by eliciting higher-quality labor. Contrary to conventional wisdom, societies that take the high moral ground and ban child labor will be even more competitive than those that permit exploitation of young children. "Higher wages," Altman explains, "compensate, at least in part, for a family's loss in income that formerly flowed from the employment of children." In this area, as in many other aspects of labor markets, doing good, under behavioral economics, also means doing well.

Chapter 12 shows that Gary Becker's well-known principle—market forces eliminate discrimination because it fosters inefficiency and higher costs—does not hold under the behavioral model, where low-wage, low-efficiency firms match unit costs of high-wage, high-efficiency ones. A similar argument applies, in chapter 13, to pollution—nonpolluting firms can offset the higher costs by achieving higher \textit{x}-efficiency. Throughout Altman's book, \textit{x}-inefficiency plays a key role: socially constructive policies that boost costs (higher wages, working conditions, labor relations) can always be offset, under the behavioral model, by lower \textit{x}-inefficiency and generally will be when competitive pressures (Leibenstein's concept of "pressure") force firms to move closer to their production frontiers. Thus, he notes, "greener economies may be competitive with the dirtiest economies in the marketplace, and the greener economies need not fear competition from their more pollution-intensive trading partners." Statman (2000) has shown that between 1997 and 1999, assets invested in "socially responsible" portfolios of U.S. mutual funds almost doubled, to $2.2 trillion, and achieved at least comparable rates of return to "capitalist" portfolios.

Chapter 14 focuses on size and economies of scale. Altman shows how monopoly power stemming from size can increase \textit{x}-inefficiency; antitrust policy should always weigh economies of scale against diseconomies through higher inefficiency.

Chapter 15 concludes the book by focusing on the fascinating issue of "whether culture can affect a firm's productivity and thereby the relative wealth of nations," a topic addressed by Max Weber. Culture disappears in the utility-maximizing, effort-maximizing conventional model. But in the behavioral model, "culture can affect effort choices." Together with Shoshana Sharabani (Maital and Sharabani 1997), I have shown a direct link between wealth and culture variables, in a cross-section of countries, using empiri-
cally measured components of culture developed by Hofstede, Hampden-Turner, and Trompenaar.

Wise Choices

Woody Allen once wrote, “The world is at a turning point. We face the holocaust of nuclear destruction, or the hell of ecological disaster. May we have the wisdom to make the right choice.”

Altman says it better, though less amusingly: “What type of market economy evolves, be it high or low wage, cooperative or antagonistic in labor–management relations, green or dirty, efficient or inefficient, depends on the choices made by individuals in society.”

We have a choice. There is more than one kind of market economy. The Darwinian determinism of neoclassical economics tried to remove this choice. Behavioral economics has restored it.

There are loads of free lunches lying around out there. By recognizing this, our theories hold water. By utilizing them, our pipes hold water, and our societies become better places in which to live.

There is a kinder, gentler market economy than the one we now have. Read this book and learn why.

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Acknowledgments

Over the past twelve years or so I have been thinking through and writing about the implications for economic analysis and public policy of revising certain core assumptions of neoclassical microeconomic theory. The *raison d'être* for this exercise is to better explain economic events that appear to either contravene the conventional wisdom or be ignored by it. This book has been enriched by the comments, criticisms, and suggestions of many individuals. I would like to thank first and foremost Louise Edmée Lamontagne, who read the entire manuscript and with whom I have had endless and informed discussions on a multitude of issues related to this book and more. Our six-year-old daughter, Hannah Rachel Altman, has always been a joy who has enriched my life tremendously. Her patience has been invaluable to the completion of this book. Also I owe John Toomer a debt of gratitude for our many conversations on behavioral economics to which he has made important contributions. Many thanks to Rick Szostak for his thoughtful remarks and suggestions on many of the chapters published here. The late Harvey Leibenstein contributed in many ways to this book. He encouraged my initial ventures into behavioral economics in spite of our various methodological and substantive disagreements. Moreover, his *x*-efficiency theory has impacted significantly on many of the basic arguments presented in this book. This book also owes much to the many discussants and reviewers of my papers. Of vital importance have been my presentations and attendance of conferences sponsored by the Society for the Advancement of Behavioral Economics (SABE), the International Association for Research in Economic Psychology (IAREP), and the Association for Social Economics (ASA). These organizations play a pivotal role in providing an open and vibrant forum for discussion and debate to those scholars interested in ex-
tending the bounds of the conventional wisdom or even providing alternative analytical frameworks. This book was completed while I was a Visiting Scholar with the Department of Economics at Cornell University and with the Center for North American Studies at Duke University. I would like to thank both institutions for the facilities and resources made available to me. The University of Saskatchewan Publication Grant covered some of the expenses incurred in preparing the manuscript for publication. Many thanks to Sean Culhane, my initial M.E. Sharpe editor, for bringing this project to fruition and to my current editor, Elizabeth Granda, for seeing this manuscript into print. I would also like to thank the staff of M.E. Sharpe for all their efforts.

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WORKER SATISFACTION AND ECONOMIC PERFORMANCE
Although *Worker Satisfaction and Economic Performance* is much to do about economic theory, it is also fundamentally a work about public policy and economic welfare. In this book I attempt to lay more realistic microfoundations for analyzing a wide array of public policy questions. This alternative theoretical infrastructure subsumes the mainstream neoclassical worldview along with its related analytical predictions and their implications for public policy. The alternative analytical framework is akin to a general theory wherein the neoclassical narrative becomes one possible analytical tale, or a special case, among a variety of alternatives that are articulated in *Worker Satisfaction and Economic Performance*. I argue that whether or not the mainstream view holds critically depends on the behavioral assumptions that underlie the theory and upon the social and institutional context of the events that the economic theory is designed to explain. If the underlying assumptions of the mainstream theory prove to be the exception to the rule, which is what I argue, then the public policy recommendations that flow from this theory would be faulty, and this would have significant implications for public policy and economic welfare. Therefore, unlike the main- stream worldview, I maintain that the assumptions underlying economic theory matter. Faulty assumptions yield faulty analytical predictions or at best faulty conclusions relating to cause and effect, with potentially disastrous consequences for society.

The general theory presented in this book focuses on one set of alternative and more realistic behavioral assumptions that yield analytical predictions that are more in tune with the stylized facts of economic life and that recom-
mend public policy and private choices that often stand in stark contrast with what flows from the neoclassical worldview. In particular, I make the case that what happens within the firm, in particular how workers are treated in the context of the firm's general human relations or industrial relations environment, plays a fundamentally important role in determining the economic performance of the firm and, thereby, of the economy as a whole. Moreover, I argue, what happens within the firm is subject to the discretion of the decision makers inside of the firm. This is true even in a perfectly or extremely competitive product market. Individuals can choose the type of industrial relations system to be adopted by the firm. Market forces do not dictate what system must be adopted. Much ultimately depends on the power relationship among workers, management, and owners, which is in turn affected by market forces and labor market-related institutions, as well as by the preferences of the economic agents. There is no unique solution to what happens within the firm. This conclusion—that individuals have a certain degree of freedom in deciding how workers are treated within the firm even in a competitive environment—stands in sharp contrast to what is predicted by mainstream neoclassical microeconomic theory. Indeed, this contrary perspective also is opposed to the worldview held by many economists of a radical or more institutional bent, for whom market forces or noneconomic factors predetermine the choices made by individuals inside the firm. In the neoclassical world workers, managers, and owners ultimately construct the inner workings of the firm so that the firm is maximizing output per unit of input. In the neoclassical firm the best that can be done is accomplished. All opportunities for gain are exhausted. Economic agents and the firm are performing efficiently given the various constraints that they face. These constraints, most economists agree, include transaction and information costs.¹

Technically speaking, the firm is operating along its production possibility frontier, where this outermost boundary for maximum obtainable output is determined by traditional inputs such as labor, human capital, capital, land, and technology. Practically speaking, individuals are therefore assumed to be working as hard and as well as they can. This is the manner in which individuals operating within the firm must behave to survive in a reasonably competitive environment. This is the classic analytical position of what has been dubbed the "Chicago School," whose core is clearly articulated in Milton Friedman's essay on the methodology of economics, an essay that has found its way into the very heart and soul of contemporary economic theory (chapter 3 below; Friedman 1953a; Reder 1982). Market forces make economic agents perform invariably in an economically efficient way. In effect, individuals are assumed to be working as hard and as well as is possible by dint of market forces. Any other choice spells disaster for the firm. Therefore, no
choice is truly afforded to individuals as to how they do behave within the firm when it comes to deciding on the level of efficiency. Economic efficiency is a product of an economic imperative. Part and parcel of the assumption that economic efficiency is a given is the notion that individuals always choose the most efficient technology. They must. This again is a product of an economic imperative. Any other choice yields relatively high and uncompetitive production costs.

Moreover, implicit in economic theory in general and most especially in its neoclassical variant is the assumption that individuals behave efficiently as a product of a moral imperative, one that is ultimately geared toward maximizing the material welfare of the firm (Reder 1982). Deirdre McCloskey has eloquently expressed this fundamental principle of contemporary economic theory as the "American Question" or the "Axiom of Modest Greed": "The Axiom of Modest Greed involves no close calculation of advantage or large willingness to take risks. The average person sees a quarter and slides over it . . . he sees a $500 bill and jumps for it. The Axiom is not controversial. All economists subscribe to it, whether or not they believe in the market . . . and so should you" (1990, 112). Therefore, even in the absence of serious competitive pressures, even in a world dominated by monopolies, few economists would expect or predict that the typical individual will pass over reasonable opportunities for gain. A bit of small change might be overlooked on the sidewalk but certainly not a $500 bill or bills of even larger denominations. This particular axiom also presumes, quite implicitly at that, that all economic agents within the firm are interested in maximizing the material welfare of the firm and that they all stand to gain by working as hard and as well as they can. From this perspective, the existence of a relatively competitive product market is not a necessary condition for the existence of economic efficiency. Nevertheless, it goes without saying that the existence of severe and increasing competitive product markets serves to reinforce the view that economic agents have no choice but to be efficient in the market economy.

For those who do not necessarily buy into the argument that economic efficiency is a product of a moral imperative, the notion that it is an economic imperative, whence there is no escape, has been made ever more stridently in more recent years as globalization has become the catchword for a much more intense competitive environment forcing individuals to behave efficiently or perish in the whirlwind of market forces. Economists, other scholars, and experts from a wide spectrum of political proclivities, ranging from the left to the right, repeatedly make this point. Moreover, in the realm of economic theory, the theory of contestable markets developed by Baumol (1982) suggests that product market competition is even more severe than traditional measures of competitive productive markets imply since what
counts is not simply the number of firms in a market and their market share, but also the credible threat of entry of new firms into a particular product market, even in a world dominated by oligopolies and monopolies. Only by protecting an economy from unbridled market forces can the economic imperative be somewhat circumvented, but only at a loss of material welfare to society at large. However, once exposed to market forces, individuals have no choice but to behave in a prescribed manner. Individuals are forced to behave efficiently.

It is important to note that according to mainstream theory, efficient behavior is expected to take place by dint of a moral or economic imperative irrespective of the specific institutional framework within which economic agents work unless, of course, institutions are designed to protect the inefficient, relatively high-cost economic entities from market forces or to prevent economic agents from realizing their ingrained moral imperative to perform efficiently. Indeed, it is expected that institutions evolve that are compatible with and conducive to economic efficiency, for otherwise the economies contained within the bounds of efficiency-impeding institutions will fail the test of the market. Therefore, institutional convergence is expected, specifically with regard to institutions that encourage or facilitate economic efficiency. Within these or even less than optimal institutional constraints individuals are assumed to behave in an economically efficient manner.

Making the case in theory that what happens inside the firm is not a product of individual choice, but is rather a product of a moral and economic imperative, is not a moot esoteric point. It is fundamentally important for public policy. Whether we admit it or not, theory is the lens through which we perceive and make sense of the world around us. Theory helps both determine those facets of reality to which we pay attention and how we perceive this reality. If the theoretical lens is not the best of fits, it can provide us with only a distorted picture of how the world really works. This, in turn, affects public policy (chapter 3 below). Therefore, that economic theory predicts that economic efficiency is a necessary prior to the process of production, that it is a given, has profound implications for public policy. Under these assumptions, it is argued that living in a global and competitive world economy requires adherence to low-wage paths of economic development combined with minimalist government. The latter would be especially true when government participation in the economic realm refers to institutional or legal support for labor or the labor market writ large. This proposition at least implicitly presumes that a successful market economy, especially one that finds itself in the midst of an increasingly competitive global economy, comes at the expense of either the absolute or relative material well-being of the majority of any given society. The point is made, given the efficiency
assumptions of mainstream theory, that efforts to improve the level of material well-being of the working population can only increase production costs, reducing the competitive position of the firm and the economy as a whole. This argument flies in the face of the worldview of Adam Smith that workers should be the immediate beneficiaries of market production and that their material success positively affects the productivity of the economy (chapter 4 below). However, this argument is ironically consistent with Marx’s long disputed contention that the evolution of capitalism goes hand in hand with the immiserization of the working class. Of course, those leaning toward the left then call for efforts to protect society from the unbridled effects of globalization. Alternatively, many on the left argue that the key to success in an increasingly competitive market economy is to invest appropriately in both human and public capital, so as to allow a nation to take advantage of its comparative advantage, whence will eventually flow material benefits to all by wit of competitive market forces, albeit with some delay (Cohen 1998; Reich 1992). In stark contrast, those leaning to the right make the case that eventually the benefits of the market economy will trickle down and accrue to all as a product of unfettered market forces.

Challenging the view that improving the material well-being of workers (be they skilled or unskilled, blue or white collared, low or high tech) need not damage the economy and may even further contribute to the material well-being of society at large is not simply a matter of presenting a set of facts, however rigorously derived and presented, that appears to demonstrate that the mainstream worldview is wrong. It is a fact that facts per se have convinced few economists or others dealing with economic policy to shift worldviews. Facts must make sense in terms of a particular worldview to win the day. As Thomas Kuhn points out, “Anomalous observations . . . cannot tempt [a scientist] to abandon his theory until another one is suggested to replace it. . . . In scientific practice the real confirmation questions always involve the comparison of two theories with each other and with the world, not the comparison of a single theory with the world” (cited in Coase 1994a, 27). Moreover, it is theory that is our fact-finding machine. It both provides us with the means to search for facts and determines the type of facts we search for. A theory that is wrong fails to ask the right questions. It acts as a blinder, preventing the scholar or the activist from seeing facts that speak to the issues at hand. In addition, facts that appear to contravene theory can be and are dismissed as exceptional or simply a product of poor empirical analysis. To quote Kuhn once again, “The road from scientific law to scientific measurement can rarely be traveled in the reverse direction. To discover quantitative regularity one must normally know what regularity one is seeking and one’s instruments must be designed accordingly; even then
nature may not yield consistent or generalizable results without a struggle” (cited in Coase 1994a, 27). The mainstream point of view will also not be easily overturned by arguments for a more just society. If it cannot be shown that such a society is economically sustainable or what the opportunity costs, if any, for a differently structured market economy are, such calls will fall largely on deaf ears. The construction of an alternative economic theory is therefore critical in making the case that improved working conditions or an ecologically sustainable economy, for example, are possible within the bounds of a competitive market economy. Theory is required to demonstrate the conditions under which a more “just” society is economically viable or not and the potential costs of realizing such a society. This is the gist of this book. The mainstream worldview does not provide such an analytical framework. I hope to contribute to the construction of Kuhn’s other theory, which is both consistent with the facts and which can serve to confront the analyses and public policy recommendations that flow either explicitly or implicitly from the mainstream analytical framework.

Although this is a book that is largely theoretical in nature and is therefore concerned with the logical consistency of the arguments presented, the theoretical arguments presented in this book are not presented largely in mathematical prose. Nevertheless, there is math, as well as analytical diagrams, found throughout this book. Math and analytical diagrams often go a long way toward clarifying the logic of particular arguments. But the objective of the presentation is to expound the theory in a manner that is understandable to a wide audience without losing the necessary rigor required of theory. Moreover, a necessary condition for the formulation of good economic theory is not the extent of the math contained in the articulation of the theory, the capacity of an argument being convertible into mathematical form, or the extent to which logical–mathematical proofs are provided for the “existence” of certain axioms or basic propositions contained in the theory. Some of the most influential works in economics include the contributions of Adam Smith, John Maynard Keynes, Joseph Schumpeter, Milton Friedman, Ronald Coase, and Douglass North, whose works, although logically argued, lack mathematical form and rigor. In addition, I am not concerned with presenting theory without regard to the economic reality to which it must relate if the theory is to be economic theory as opposed to an exercise in mathematical logic or model building for the sake of model building. It is the latter that so much of economics has become (Blaug 1998; McCloskey 1996; Nelson 1995; Szostak 1999). This is a book in economic theory grounded and infused by real economic issues and problems and with a steadfast concern for the realism of the assumptions underlying the economic theory.

At this point, it is essential to summarize and further clarify the distin-
guishing features of the model articulated in this book as compared to the mainstream theory and to the key alternative economic theories that directly relate to the analytical framework presented below, such as x-efficiency theory and efficiency wage theory. The theoretical framework provided in this book differs from the mainstream neoclassical framework in terms of three key assumptions. For the rest, I remain consistent with the mainstream model. This forces us to focus our attention on those assumptions that are critical both to the mainstream model in terms of the economic problems discussed in this book and to the alternative theory presented here. For example, I assume that given the constraints that they face, individuals are rational in the sense that they make best use of the information at hand and that they are forward looking in their decision making with the end in mind of maximizing their utility or general well-being. I also assume perfect product market competition. Deviations from these assumptions can only strengthen the arguments made in this book. In contrast with mainstream theory, however, I assume that individuals are typically not maximizing the quantity and quality of effort inputted into the process of production. Moreover, I assume that labor markets are imperfect in the sense that supply and demand factors will not typically result in identical wage rates for identical types of labor. Finally, I make the assumption that individuals within the firm hold different preferences with regard to conditions of work and that it is best to model the firm as composed of at least two groups of individuals or economic agents, such as workers and managers or owners, where these different groups have different preferences.

An important footnote to this discussion is to underscore that the analysis presented here is consistent with the major role of institutional factors as determinants of economic output. It is also important to note that the mainstream view that institutions should converge toward their efficiency-facilitating ideal is rejected here. However, this book is not about institutions per se or about institutional change. The focus here is on what happens inside the firm. I argue that the level of efficiency and the rate of technical change are affected by the work environment and by the overall choices made by economic agents within the firm irrespective of the institutional environment in which the firm finds itself and given other constraints, such as transaction and information costs, that it faces. The right macro-institutional environment—such as reasonable guarantees of the related variables of law and order, property rights, and the enforcement of contracts—is no guarantee, and it is not a sufficient condition for the realization of efficiency in production. One set of institutional parameters that is significant to this book and that is typically ignored in the literature relates to the labor market and overall conditions of work. One hypothesis that flows from the analysis presented here
is that institutions that strengthen the labor market—that is, improve the overall bargaining power of labor—can serve to improve the overall efficiency of the economy through their impact on the choices made by individuals within the firm. Related to this, the behavioral model articulated in this book serves to provide at least one explanation as to why institutional convergence need not take place.

Using Harvey Leibenstein's term, economic agents are assumed to be typically x-inefficient. Only under ideal conditions of work will individuals work their best. This ideal is characterized by a relatively cooperative system of industrial relations. Otherwise, economic agents and the firms that employ them are performing x-inefficiently. But when individuals are not doing their best, labor productivity is not maximized. In this case, firms and therefore economies would be performing below potential unless conditions of work are ideal. All else remaining the same, production costs would be higher (see chapters below). How can one address the fundamental question asked by good, logically thinking economists: how can such firms survive in the marketplace, and why are individuals knowingly forfeiting opportunities for gain, why are they passing over all this cash waiting to be picked up?

According to Leibenstein, who pioneered x-efficiency theory, x-inefficient firms can survive in spite of the fact that they are relatively high-cost producers only if they are protected by monopolistic markets, subsidies, tariffs, and the like. Economic agents are willing to be x-inefficient because maximizing utility involves things other than profits or income, such as leisure and less stress. So if you can get away with being x-inefficient, why not, if it serves to increase your utility. Moreover, not all individuals in the firm have the same goals and aspirations. Therefore, Leibenstein argues, the conflict in the objectives of economic agents can result in x-inefficient behavior by all, one that even degenerates into a worst-case productivity scenario or a Prisoner's Dilemma solution to the productivity question. Under these conditions, it is simply not worthwhile for individuals to chase after all this potential productivity. Of course, Leibenstein considers x-inefficient behavior to be only quasi-rational, making his work the bane of so many in the economics profession. Needless to say, so long as utility maximization's considerations about one's nonmaterial wants and desires are considered rational, there is no reason to define x-inefficiency as a product of irrational or even quasi-rational behavior. X-inefficiency is not possible when product markets become reasonably competitive since, in this case, x-inefficient firms cannot survive in the marketplace. So long as there are relatively x-efficient firms around, they will be the lower-cost producers, and they will successfully drive out of the market or force into x-efficiency the formerly laggard firms. Most economists are of the view that at least over time markets are
competitive enough to impose a certain discipline upon firms. But in this case, x-inefficiency in production would be an impossibility.

I argue that even under perfectly competitive product markets rational economic agents can be expected to act x-inefficiently unless ideal conditions of work prevail. How is this possible? Should not the x-inefficient firms be driven by the wayside? This is in no way the case once it is recognized that increasing the level of x-efficiency is not a free ride. It comes at a material or economic cost to the firm. Improved conditions of work typically involve increasing workers' income through wages, bonuses, or profit sharing and improved working conditions, such as safety and health standards. In addition, often firms need to invest in plant reorganization and management reorganization, where the latter involves a relatively smaller layer of management and more worker participation at different levels of the decision-making process within the firm. At the end of the day, the increased productivity accruing to the x-efficient firm might very well be simply offset by the increased production cost of achieving more worker satisfaction. In other words, there might be no cost advantage to the firm in becoming x-efficient, nor need there be any material advantage accruing to members of the firm hierarchy. Moreover, they experience a relative reduction of power and prestige in the x-efficient firm, where the hierarchical power structure becomes relatively flatter. In contrast, in remaining relatively x-inefficient, although the firm is relatively unproductive, it need not be uncompetitive to the extent that the lower productivity is compensated for by lower labor costs. Indeed, what is argued throughout this book is that the most appropriate approach to modeling the firm in terms of addressing a wide range of public policy questions is to assume a world where a unique unit cost of production is associated with a wide array of rates of labor compensation and overall working conditions. Unit costs remain constant as changes in labor productivity coinciding with changes in the level of x-efficiency offset any increases in labor costs. When x-efficiency is realized—that is, given technology, the firm is maximizing output per unit of labor input—further increases in labor costs yield increases in unit production costs, making the firm relatively uncompetitive. By way of contrast, in the mainstream model, given technology and where the quantity and quality of effort is not a variable and the firm is by definition x-efficient, the firm has no room to maneuver when faced with increased labor costs, no matter their point of origin. Unit costs must increase.

The static x-efficiency model, where technology is given, is extended in this book to incorporate technological change that is induced by changes in costs of production and where the choice of technology can be x-inefficient (chapters 6 and 8). In a nutshell, it is argued that technological change is in part a product of efforts within the firm to remain cost competitive in the face of rising production costs, especially when reductions in the level of
x-inefficiency are not a viable option. In this context, to the extent that the available or new technology is capable of just compensating for higher production costs by increasing labor productivity or total factor productivity, only those firms that would otherwise face higher unit costs of production will adopt the higher productivity technologies. More specifically, low-wage firms, for example, need not adopt the more productive technologies if they can remain competitive on the bases of low wages and poor working conditions. On the other hand, the relatively higher-wage, x-efficient firms will tend to adopt such technologies. In this scenario, firms are afforded an additional degree of freedom when confronted by potentially higher production costs than is possible in the static x-efficiency model and, of course, in the traditional modeling of technological change.

In the model developed in this book, where x-efficiency is not assumed a priori and where the benefits of becoming x-efficient fall in the hands of workers and x-efficiency need not yield a competitive advantage to the firm, rational decision makers within the firm can be expected to decide against building a relatively more x-efficient firm. In so doing, they would not be forfeiting material opportunities for gain for themselves, but only for their employees. Moreover, remaining x-inefficient or adopting a system of labor relations and labor compensation that yields x-inefficiency in production, need not result in any penalty to the decision makers or to the firm. Indeed, it might yield to them relatively more power, prestige, and even income. Remaining x-inefficient costs workers and society at large in terms of lost income, and of course this has significant welfare implications. But the x-inefficient solution to the productivity problem might very well be the equilibrium one, given the preferences of the decision makers. There is no economic imperative embodied in the analytical framework presented in this book that yields either an x-efficient or x-inefficient and correlated high- or low-wage solution to the productivity problem. This is unlike what is found in the conventional wisdom, where x-efficiency is assumed from the get-go, and more often than not this is correlated with a low-wage regime.

On the other hand, the results generated by my model also speak against the recent research in the cooperative game theoretic literature that argues for an economic imperative toward a high-wage cum x-efficient solution to the productivity problem (Fehr and Schmidt 1999; Fehr and Gachter 2000). According to this analytical framework, an x-inefficient course of firm development will be chosen unless the decision makers, in particular the owners and other members of the upper echelons of the firm hierarchy, have a preference for a system of labor relations that is more egalitarian. This of course assumes that workers and their representatives hold a similar set of preferences. Such preferences appear to be few and far between among mem-
bers of the firm hierarchy. It is therefore fundamentally important to the theory presented below that one recognize the extent to which individuals within the firm are not homogeneous in preferences. Of critical importance are the differences between those who make the decisions for the firm and those who are affected by these decisions. In the analytical framework presented here the decision makers within the firm, to the extent that they can exercise their preferences, can significantly affect the state of labor conditions within the firm. On the other hand, if a more egalitarian work structure is forced upon the firm or if market forces, labor organization, or legislation require improved working conditions and rates of labor compensation, the behavioral model of the firm presented in this book suggests that improvements in the level of x-efficiency within the firm can compensate for the increased labor costs, maintaining the competitiveness of the affected firm. Of course, if the organizational structure of the firm, combined with organizational inertia and lack of trust among economic agents, prevents the firm from reducing the level of x-inefficiency or from introducing new technology to sufficiently compensate the firm for factors that would otherwise cause increases in unit production costs, then the firm could fall by the wayside in the face of market forces and organizational failure within the firm. A critical point that stems from the theory enunciated in this book is that individuals can make choices that determine the level of material well-being in society and that such choices are not completely constrained even under conditions of perfect product market competition. Moreover, these choices need not be based on irrational preferences on the part of the decision makers.

The possibility that preferences and the capacities to realize a given set of preferences can affect the level of x-efficiency in a competitive market economy not only stands in contrast to the conventional wisdom and to traditional x-efficiency modeling of the firm, but it is also at variance with the analysis that stems from the efficiency wage literature. Of course, effort is a variable in the model presented here, as it is in efficiency wage theory, which was also pioneered by Leibenstein (1957, 1974). However, in the standard efficiency wage literature the wage rate is, in effect, the efficiency wage and is therefore not a choice variable. Rather, the efficiency wage is the unique wage rate, given technology and the human capital endowment of the economic agents, that yields minimum unit production costs by maximizing effort, where the latter is subject to diminishing returns with respect to productivity. The efficiency wage is therefore technologically and mechanically determined, and the system of industrial or human relations within the firm does not affect the efficiency wage. A wage higher than the efficiency wage will yield higher unit costs, as will a wage rate that is lower. In this model, rational decision makers must choose the efficiency wage if their firms are to remain competitive.
petitive world, the only wage rate that can be chosen is the efficiency wage, and therefore all wages must be efficiency wages. Under these circumstances, *ceteris paribus*, wages are inflexible both upward and downward. Moreover, one would not expect wages to differ among like workers and firms since they all must be paid the same efficiency wage if firms are to survive in the competitive market (Akerlof 1984; Akerlof and Yellen 1986; Shapiro and Stiglitz 1984; Stiglitz 1976, 1987). In fact, wage rates can differ in these circumstances only if workers have different preferences for working harder so that work unit costs are minimized at different wage rates (Albrecht and Vroman 1998). In this case, workers are effectively choosing their wage by choosing their preferences for effort inputs.

Unlike efficiency wage theory, the behavioral model presented here does not assume that there is a unique efficiency wage that yields a unique minimum unit production cost. The uniqueness given by efficiency wage theory is given by the assumption of diminishing returns to effort inputs. In the behavioral model, I argue that it is best to model the firm through the assumption that there is a one-to-one proportional, or linear, relationship between labor costs in general (inclusive of wages) and effort inputs. This type of relationship would hold up to a point, after which diminishing returns to effort inputs kick in. Such a potential modeling of the economic agent is clearly admitted by Stiglitz (1987) and Akerlof and Yellen (1990), among the leading contemporary efficiency wage theorists. Given the proportionality assumption of the behavioral model, there need not be a unique wage, but rather there is a unique unit cost of production associated with an array of working conditions, inclusive of the wage. In this model, the wage rate, for example, is not technologically determined, nor is it simply or necessarily a function of workers' preferences. Much is determined by the preferences of the decision makers. These can be affected by many variables, including culture, the law, the state of the labor market, and the relative power of labor organizations. Even workers who want to work hard and well will not do so if the decision makers have the capacity to opt for a low-wage regime. On the other hand, a high-wage regime can be realized with the same type of workers when decision makers opt for such a regime. Therefore, in the behavioral model, decision makers are not forced by circumstances to adopt a unique wage or unique set of working conditions. Decision makers and the economic agents within the firm in general are afforded a greater degree of freedom in determining wage rates and working conditions than in the efficiency wage model.

Unlike in efficiency wage theory, in the behavioral model one can have, in competitive long-run equilibrium, similar workers using the same technology being paid different wages in different firms. Moreover, wage rates need not
be inflexible downward or upward. Owners and managers might try to pressure for low-wage regimes when this will not increase unit costs. On the other hand, efforts to develop high-wage regimes with high-quality working conditions can prove competitively viable if these efforts do not negatively affect unit production costs. The behavioral model is also consistent with firm decision makers showing reluctance to cut wages during an economic downturn if this involves no improvements in costs and if this, moreover, involves costly short-run adjustments in the firm.\textsuperscript{5} Therefore, I would argue that this relatively more flexible model is better able to explain the stylized facts of economic life in a competitive environment, even when one assumes rational economic agents, than are either the efficiency wage or x-efficiency wage models.

The fact that individuals can exercise their preferences in the behavioral model presented here does not imply that market forces play no role in the determination of wages. Market forces affect the mean wage in the different labor markets of a particular economy. Labor shortages can be expected to yield higher wages, whereas surpluses provide firms with the opportunity to reduce wages. Rather, what is implied in the analytical framework articulated in this book is that given the existence of x-inefficiency, a whole array of wage rates is consistent with some unique and competitive cost of production. Firms can competitively pay workers above what is required by market forces per se given that such relatively high rates of labor compensation are covered by corresponding increases in the level of x-efficiency. In this case, there can exist, in equilibrium, a wide array of wage rates for any given state of labor supply and demand. But relatively high wage rates, above the market-determined mean, can create a surplus labor supply in the high-wage labor markets. In this scenario, however, the low-wage workers cannot easily compete down the wages or working conditions in the high-wage firms since lowering the wage rate need not provide the firm with any cost advantage if productivity moves with wages. Indeed, if there are any team effects in the firm accruing over time, replacing high-wage with low-wage workers might reduce firm productivity to such an extent that unit costs will increase until the team component of productivity is restored. Nevertheless, the firm's decision makers can adopt the low-wage option afforded to them if that is their preference and if this preference can be realized. This would be especially true in a nonunion environment. On the other hand, shifts upward in the economywide mean wage by market forces or government policy need not result in higher unit production costs, as would be true in the conventional model, when x-inefficiency exists and such wage increases motivate productivity increases.

The behavioral model presented here opens the door to preferences, insti-
tutions, and public policy as critical determinants of cost-competitive wage rates. As is argued in Galbraith (1998), the extent of unionization, legislation on minimum wages, unemployment insurance, welfare, and the like, as well as unemployment and related macroeconomic policy, can affect the wage rate in the economy as a whole, as well as differentials in pay across labor markets within a particular economy. In the behavioral model of the firm such exogenous influences on labor market outcomes are consistent with a firm’s ongoing competitiveness even in a highly competitive product market. Moreover, in the behavioral model, rational preferences, however formed, can affect the wage regime in the firm and in the overall economy. Certainly, unlike in the conventional model, where the quantity and quality of effort is not a variable and where firms are assumed to be performing x-efficiently, especially in competitive markets, preferences for a high-wage regime can be realized without harming a firm’s competitive position. This would be true even in a world dominated by firms where low-wage regimes rule the roost. Throughout this book the behavioral model is elaborated upon as it is applied to a variety of social, public policy, and theoretical issues. The driving force behind this book is a concern for the capacity of economic theory to explain economic reality and guide empirical research, as well as the role played by theory’s underlying assumptions in achieving these critically important tasks.

This book begins (chapter 2) with the presentation of a basic theoretical framework wherein individuals have some choice over their effort inputs, different preferences with regard to effort inputs, and different capacities to realize these inputs. Moreover, in this model, what happens inside of the firm matters for firm productivity. Of vital importance is the relationship between workers and employers. Under these assumptions, preferences, culture, firm organization, and the institutional constraints faced by the firm affect the level of material well-being in society through their effect on the level of x-efficiency and the rate of technological change. One of the central analytical predictions of this chapter is that relatively low-wage economies should tend to experience relatively low rates of economic growth and relatively low levels of material well-being. It is here postulated that labor costs represent a significant spur to reductions in the level of x-inefficiency and to increases in the rate of technical change.

Some of the basic implications of my economic methodology are explored in chapter 3. I focus on Milton Friedman’s survival principle, which has dominated economic discourse either explicitly or implicitly for generations. Friedman marginalizes the importance of behavioral assumptions for the construction of economic theory and focuses on the predictive powers of the theory, irrespective of the theory’s underlying assumptions. In his type of
methodology, although facts matter, they are always under deep suspicion when in conflict with the predictions of the theory. However, critical to Friedman's methodological approach is the assumption that individuals perform efficiently (x-efficiently) inside the firm. This, he argues, must be so, for if human behavior were otherwise, firms could not survive in a competitive market. Of course, inefficient firms could survive when protected from market forces, but at a cost of material welfare to society at large. However, the methodological legacy of Friedman's contribution is the presumption that if firms survive, they must be efficient. I argue that once one admits to the possibility of effort discretion, this version of the survival principle is inappropriate and misleading. In the behavioral model presented in this book, inefficient firms can survive even in highly competitive markets, so they pass the critical test of survival. But survival of the firm can no longer be proof of efficiency and what happens inside of the firm, and the assumptions one makes about the behavior of economic agents take on critical importance in understanding the dynamics of a competitive market economy. In this scenario, Friedman's narrative holds true only under very special and unrealistic assumptions. Still, it remains important to appreciate that firms must remain cost competitive to survive in the marketplace. However, in accordance with the behavioral model, becoming efficient is not the only means of achieving this end. This opens the door to questions relating to the survivability of x-inefficient firms and the dynamic process involved in building more x-efficient firms and economies.

In chapter 4, the methodological discourse is carried one step further. The traditional economic approach to so many public policy issues remains immersed in the notion of Pareto Optimality, which presumes that society's well-being is somehow maximized when it is not possible to make one individual better off without reducing the well-being of at least one other individual. Well-being is typically taken to mean economic or material well-being that is tied to society's measurable output. Underlying the contemporary rendition of Pareto Optimality is the assumption that individuals are efficient from the start and that the level of efficiency and the rate of technical change are independent of events that redistribute income from one individual to another. Moreover, it is presumed in the conventional wisdom that a dollar yields the same level of welfare to all economic groups in society so that, for example, a dollar transferred from the rich to the poor has the same welfare effect as a dollar transferred from the poor to the rich. Pareto Optimality has been central to economists avoiding public policy analyses that speak to the distribution of income and its redistribution. The behavioral model suggests that redistributing income can have a positive impact on both the level of x-efficiency and the rate of technical change. Moreover, redistribution of in-
come need not result in any one individual being worse off at the end of the day. The argument is simple. If, for example, working conditions are improved in the firm and the costs of so doing are recuperated through improvement in the firm’s efficiency and the adoption or development of more cost-competitive technology, income is in effect redistributed to labor but not at the expense of managers or owners. In the behavioral model there is a dynamic relationship between income redistribution and the level of economic welfare and therefore there need not necessarily be a trade-off between equity and economic efficiency. Moreover, equity can contribute to efficiency and economic growth. The behavioral model opens the door to public policy questions that speak directly to the redistribution of income as one potential tool for promoting efficiency and growth as opposed to benefiting one group at the expense of another.

In chapter 5, the behavioral model is applied to the issue of minimum wages and unions. The standard economic model predicts that legislative and union interference in the marketplace can only damage the economy, especially its poorest, least skilled members. Empirical studies that suggest that this is not so are typically dismissed as being necessarily flawed, as they are out of whack with the analytical predictions of mainstream theory. However, critical to mainstream theory is the assumption that all firms are necessarily efficient, for otherwise how could they survive in the marketplace? In the behavioral model, of course, no such assumption is made a priori. Therefore, contrary to the conventional wisdom, it is quite possible for institutions such as minimum wages and unions to have positive effects on the economy by driving firms into becoming more efficient. On the other hand, the absence of such institutions can add to persistent inefficiencies in the economy. Empirical studies suggesting that minimum wages and unions are not harmful to the economy should therefore not be so easily dismissed. Indeed, in the behavioral framework they might serve as proof of a positive and dynamic relationship between labor costs and economic efficiency.

The behavioral model has significant implications for growth theory (chapter 6). The traditional growth model developed by Robert Solow serves as the backbone to the behavioral model developed here. The essence of the behavioral model is to offer an explanation for what Solow refers to as the “residual,” which in his model remains unexplained. Most scholars agree that the majority of increases in per capita growth are not a product of increases in capital and labor inputs. Rather, they are a function of technical change and other factors that generate increases in per capita output. Most recently, some economists have argued for an endogenous theory of economic growth whereby per capita growth is driven by investments in knowledge, such as research and development, suggesting that such investments
generate per capita growth that have a ripple effect on growth that is sustained over time. Most economists remain highly dubious that technical change, no matter how constructed, can have an effect on growth, which is much more than a one-shot deal. The behavioral model retains this basic assumption of the conventional growth literature but offers a causal explanation of sustained growth that is wanting in the conventional worldview. Simply put, in the behavioral model, growth is a function of increasing costs of labor, which provoke improvements in the levels of x-efficiency and the rate of technical change. Even in an economy where there are significant investments in research and development and education, if the economy is characterized by low wages and poor working conditions, the incentives for firms to become more efficient and more technologically advanced are lacking. In the behavioral model, per capita growth is induced or hindered by labor market conditions that are filtered through the modus operandi of the firm. This model suggests that economies where labor market pressure is brought to bear and where firms and institutions respond to these pressures appropriately are the economies most likely to grow at the fastest pace and to achieve the highest level of real income per capita.

In chapter 7, the behavioral model is used to address the persistent lack of convergence in labor productivity and thereby per capita output across the economies of the world. This failure of convergence stands starkly against what the conventional wisdom predicts should occur—that is, market forces would pressure the less productive firms into becoming more productive for reasons of survival. The relatively less productive firms should be characterized by relatively higher unit costs, making them uncompetitive. In the behavioral model, convergence is not inevitable since the more productive firms need not be any more competitive than their less productive counterparts when productivity is positively and causally related to labor costs. In such a world, relatively low- and high-productivity firms can produce at the same unit cost and therefore be cost competitive. In this scenario, market forces per se cannot force convergence in productivity. However, in the behavioral model convergence in labor costs, through its effect on the level of x-efficiency, can contribute to convergence in labor productivity and therefore per capita output.

An important and controversial theory, one that is marginalized by the conventional wisdom, is the theory of path dependency, pioneered independently by Paul David and Brian Arthur. In essence this theory argues that inefficient products and economic systems can persist over time if they were chosen by happenchance. Future economic inefficiencies become path dependent or products of historical choices, and these inefficiencies become locked into an economy’s future development even with known and more
efficient products and regimes. The conventional wisdom rejects this theory, which presumes that economic inefficiency can persist over time in the face of competitive market forces. But with the behavioral framework (chapter 8), it is shown that economically inefficient products and regimes can survive over time if they can remain cost competitive. Moreover, both efficient and inefficient products and regimes can exist simultaneously over time. In a world where effort is variable, the existence and persistence of both efficient and inefficient products and regimes can be path dependent. Therefore, a competitive market is no guarantee of the dominance of efficient products and regimes. Of course, this was the central message of the original proponents of path dependency theory.

The persistence of economic inefficiencies is again raised in chapter 9, where the paradox of the dominance of traditional, apparently less efficient work practices over more innovative, apparently more efficient work practices is examined. There is a large empirical literature suggesting that relatively more productive systems of industrial relations or firm management are known to firm decision makers but remain neglected by most firms. These systems are typically more cooperative and egalitarian in nature. The conventional wisdom rejects the notion that efficiency can be determined by firm organization per se, but to the extent that it can, it is assumed that the management regimes that are chosen will be the efficient ones. Therefore, what appear to be more efficient work practices are, in effect, not that at all. The behavioral model suggests, however, that the innovative work regimes might very well be the relatively more x-efficient ones, but all or even most firms need not adopt them if they do not generate lower unit costs than their less x-efficient counterparts. And this might very well be the case since the more innovative regimes must be developed at a cost. As long as the decision makers do not see benefit to themselves in constructing a more innovative, efficient, but more costly system of industrial relations, it will not be done. According to the behavioral model, the more efficient work regimes will be adopted if there is labor market or institutional pressure to do so or if the preferences of the decision makers become biased toward the innovative systems.

In chapter 10, the question of work practices is examined from the perspective of the potential impact of improved working conditions and enhanced power of labor on economic welfare and upon the competitive position of the firm. This takes us back to some of the issues raised specifically in chapter 5 and more generally to one of the central themes of this book, which addresses the role that worker satisfaction plays in determining the efficiency of the firm. The conventional wisdom contends that improvements in labor standards, be they imposed institutionally or through the enhanced bargaining power of workers, will increase production costs, thereby damaging the
long-run viability of the firms and economies that are so affected. In contrast, the behavioral model suggests that improvements in labor standards might have no such negative impact on the economy given the positive effects that such investments can be expected to have on the firm’s economic efficiency. Therefore, economies with high labor standards need not fear competition from economies with substandard working conditions when superior working conditions contribute to improve firm productivity and when inferior working conditions tend to have the opposite effect.

The arguments presented in chapter 10 are narrowed down in chapter 11 to examine the economics of child labor. Most economists, no matter their political perspective, accept the view that using child labor provides economies with a competitive edge given the poor working conditions and low wages that characterize the employment of children. Restrictions to child labor, therefore, will tend to damage the economies that employ such labor, while economies that place restrictions on child-labor for moral reasons will find themselves at a competitive disadvantage with child-labor-intensive economies. Moreover, it is also argued that restricting child labor tends to damage the already fragile level of material welfare that characterizes families whose children are employed. In the behavioral model it is argued that economies employing child labor need not have any competitive advantage. Child labor is typically less productive than adult labor. This productivity differential can serve to neutralize any cost advantage that a child-labor-intensive economy might otherwise have. Moreover, a diminution in child labor would have the effect of reducing the overall supply of labor, thereby placing upward pressure on the adult wage rates. The conventional wisdom predicts that will invariably damage the economy. But the behavioral model suggests that the induced higher adult wages can serve to increase an economy’s level of x-efficiency and the rate of induced technical change. Moreover, the increased wages can compensate, at least in part, for a family’s loss in income that formerly flowed from the employment of children. Finally, I argue that in a world where adults are income maximizing and real target income increases over time, one cannot expect parents to reduce child labor without some institutional intervention in the decision-making process. Still, the important economic and social question remains what to do when a reduction or elimination of child labor has at least the short-run effect of reducing a family’s already low level of real income.

The sustainability of pay discrimination in a competitive market economy is the subject of chapter 12. The long-standing argument in economic theory, following upon the work of Gary Becker, is that discriminatory pay inequality cannot be sustained over time since the firms doing the discriminating—against women, for example—will be the high-cost firms, and they will be driven out
of business by their relatively low-cost, nondiscriminating competitors. I argue that in a world where wages and working conditions affect productivity, nondiscriminating firms need not have any competitive advantage over the discriminating firms by hiring the relatively low-wage women. To the extent that low levels of efficiency match the low wages, both the discriminating and nondiscriminating firms will be cost competitive. In this case, market forces in themselves cannot be expected to rid society of pay inequality due to discrimination, as the conventional wisdom would have us believe.

In chapter 13, the behavioral model is applied to environmental policy, addressing the issue of whether or not efforts to reduce pollution can be expected to increase production costs and reduce the regulating economy's level of material welfare. The conventional wisdom argues that although less pollution is no doubt a good thing, it must come at a cost, and individuals must decide if the benefits outweigh the costs. But the argument that pollution abatement necessarily increases production costs assumes that firms are always x-efficient and that pollution abatement policy cannot affect the rate of technical change. If these two assumptions do not hold, pollution abatement need not generate higher unit costs. In the behavioral model the cost involved in pollution abatement can serve to pressure firms into becoming more x-efficient and developing and adopting more productive but greener technology. These productivity-enhancing behaviors represent cost offsets to the cost involved in making firms greener. In this scenario, greener firms need not be the higher-cost firms, as is predicted by the conventional wisdom. Indeed, greener economies may be competitive with the dirtiest economies in the marketplace, and they need not fear competition from their more pollution-intensive trading partners. However, there is no reason to expect, on theoretical grounds, that firms will be greener on the basis of the free will of their decision makers when pollution abatement provides no cost advantage to the greener firms.

Another issue addressed in this book (chapter 14) is whether or not economic efficiency and corporate bigness go hand in hand. The standard approach in contemporary economics is to argue that bigger is just about always better. Mergers take place so as to exploit various economies, including the reduction in transaction costs, that corporate bigness affords firms. Therefore, bigger firms mean more efficient and lower-cost firms than would otherwise be possible. Efforts to prevent mergers, therefore, can be expected to typically be harmful to the economy. However, these expectations stem from modeling that presumes that firms are always x-efficient irrespective of the market structure in which they find themselves. In the behavioral model, it is argued that one variable omitted from the conventional analysis is the possibility that any market power garnered by the larger corporations will, through
the protection this affords to such firms, result in increased levels of x-ineffic-
ciency. Monopolistic power yields x-inefficiency. To determine whether or
not corporations are getting too big, according to this analysis, one has to
incorporate the possibility of x-inefficiency and weigh it, among other costs,
against any possible gains corporate bigness can be expected to generate.

The final section of this book (chapter 15) brings us back in some sense to
chapter 2, as it focuses on the role of culture in economic development and
thereby at a more general level on the role of choice or human agency as a
determinant of material welfare or economic well-being. Culture has been
long neglected by economists as a possible cause of differentials of income
among individuals and among economies, although most recently cultural
factors have been shot into the limelight by Francis Fukuyama (1995), David
Landes (1998), and Thomas Sowell (1994). In previous chapters, I have
emphasized the role that work culture can play, directly and indirectly, in
affecting the level of material welfare. In this chapter the focus is on the
more traditional definition of culture in terms of norms and social context
and their effect on the choices made by economic agents in the workplace.6

In the tradition of Max Weber, this chapter addresses the question of whether
culture can affect a firm's productivity and thereby the relative wealth of
nations. The conventional wisdom, assuming effort to be always maximized,
assumes away the possibility of culture affecting productivity. Moreover, it
is argued that individuals choosing for cultural reasons to work x-inefficiently
would be eliminated by market forces. In other words, the conventional wis-

da...
one basic premise of mainstream theory with important implications for the direction of theoretical and empirical analysis, as well as for public policy. The conventional wisdom, by assuming that firms are efficient in terms of effort inputs, as well as in the use of technology, assumes away significant potential explanations for economic problems, dilemmas, and paradoxes. In particular, it assumes away problems that derive from how the firm is organized for production and the social context in which the firm operates. The behavioral model presented here, by allowing for effort discretion, as well as for different preferences across individuals, opens the door to a better understanding of a series of important economic questions that cannot be effectively addressed by the conventional wisdom. The mainstream model holds sway only when efficiency is ever present and a firm’s achievement is independent of its organization, market structure, factor prices, and the institutional framework of society. The latter, I argue, holds only as a clear exception to the rule. Using the conventional model or allowing its reasoning to dominate one’s thinking implicitly or explicitly when one deals with issues that relate to efficiency can create highly distorting and misleading pictures of economies, resulting in public policy that can only pretend to cope scientifically and objectively with economic and social problems. The behavioral model presented in this book provides no definitive or exact answer to any particular problem. However, this model suggests that market economies can be varied and multifaceted. One cannot, therefore, predict a priori which type of economy will survive or dominate over time. Many types of capitalist economies can exist simultaneously, even in a highly competitive world. What type of market economy evolves—be it high or low wage, cooperative or antagonistic in labor–management relations, green or dirty, efficient or inefficient—depends on the choices made by individuals. There is in the behavioral model no economic imperative that forces individuals to necessarily choose one route over another. Preferences and the capacity to realize these are, for this reason, of fundamental importance to understanding how an economy evolves. The behavioral model hopefully opens the door to such an understanding.

Notes

1. Mainstream economic theory has, for the most part, incorporated into its analytical core the reality that transaction and information costs are positive and, moreover, that individuals are imperfect processors of information. However, this has in no way altered the conventional wisdom’s core assumption that economic agents perform efficiently. Only now productivity and output are less than they would be in a world with no transaction and information costs and with individuals with the computational capacity of computers. See Williamson (1985, 1986) and De Alessi (1983) on transaction costs and Simon (1959, 1978, 1987) on information and processing costs.
2. A growing body of economists now argues that institutional convergence need not occur, largely for reasons of transaction costs, following upon the work of North (1990). Still, individuals are assumed to behave efficiently given the constraints that they face. However, suboptimal institutions can make efficient economic agents less productive than they might otherwise be. North concludes from his analysis of the development of economic institutions through time that these institutions created environments that "overwhelmingly favor activities which promote redistributive rather than productive activity, that create monopolies rather than competitive conditions, and that restrict opportunities rather than expand them. . . . The organizations that develop in this institutional framework will become more efficient—but more efficient at making the society even more unproductive and the basic institutional structure even less conducive to productive activity" (1990, 9). For further discussion of the role of institutions in the macroeconomic growth process see, for example, Lamoreaux, Raff, and Temin, eds. (1999) and Olson and Kähkönen, eds. (2000).

3. It is important to note, however, that a growing body of economics literature suggests that a significant amount of individual behavior is inconsistent with the neoclassical modeling of rational behavior (see, for example, Maital 1982; Maital and Maital 1993; Shiller 1993; Thaler 1992a).

4. The conclusion that a relatively cooperative system of industrial relations will yield economic efficiency not otherwise achievable has also been reached more recently by Miller: "Cooperation will be defined as occurring when individuals in a social dilemma select alternatives that are not rewarded by the formal incentive system but that result in Pareto-efficient outcomes. Cooperation will offer efficiency gains that short-term hierarchical incentives cannot promise. In the limit, indeed, cooperation will reestablish ideal efficiency as a benchmark for organizations that can never achieve it otherwise" (1992, 177). A similar point is also made in Fehr and Schmidt (1999), Fehr and Gachter (2000), and Gordon (1996, 1998).

5. The most recent contributions to efficiency wage theory have been directed toward explaining the downward inflexibility of money wages during economic downturns (Akerlof 1984; Akerlof and Yellen 1986; Bewley 1999; Shapiro and Stiglitz 1984; Yellen 1984).

6. On a more microeconomic level, Lamontagne (2001) shows how cultural factors, often mediated through community organizations, can help explain how one group of individuals can become economically successful while another group, facing similar economic constraints, might fail. See Yang and Lester (2000) for a discussion of the relationship between unemployment and cultural factors.


2. More recent literature in efficiency wage theory, argues that effort per unit of labor time is a variable and need not be typically at some maximum. However, this literature assumes that members of the firm hierarchy will behave in a manner consistent with minimizing the efficiency wage or the wage to marginal product of labor ratio. In that model, a unique real wage minimizes the efficiency wage, and this unique
wage will, at a minimum, be searched for by members of the firm hierarchy. See Akerlof and Yellen (1986a), Katz (1986), Shapiro and Stiglitz (1984), Solow (1986), and Stiglitz (1987).

3. This view of economic efficiency is rejected by conventional theorists such as George Stigler (1976) and Louis De Alessi (1983) since they maintain that economic efficiency simply means cost and output results that are consistent with constrained cost-minimizing and profit-maximizing behavior. Thus, by definition, all behavior becomes minimizing or maximizing once we specify the prevailing constraints. It follows, therefore, that costs are being minimized at all times. According to such a view, there can be no unique minimum unit cost since minimum costs can vary as constraints change. This perspective is, as Leibenstein points out (1973a, 210; 1987, appendix), one that makes neoclassical microtheory into a tautology. One cannot use the x-efficiency definition of efficiency in this general form to determine what is or is not efficient production since production is always by definition efficient.

4. It should be noted that Leibenstein makes the case, quite controversially, that economic agents behave only quasi-rationally in the firm when they do not behave in a fashion consistent with x-efficiency. However, although Leibenstein does argue that for his purposes dropping maximization and minimization from one's analytic toolbox is best, he does not contend that these concepts are necessarily incompatible with x-inefficiency. Indeed, Leibenstein (1985, 12–13) is largely concerned that these conventional concepts should not be used in a tautological fashion. If, in fact, economic agents are largely partially maximizers-minimizers, as Leibenstein would have it, then the case for the existence of x-inefficiency becomes even stronger (see also Leibenstein 1986).

5. Scitovsky (1943–44) demonstrates that for profit maximization to take place, the utility of the entrepreneur can be maximized only when profits are maximized, irrespective of the sacrifice incurred in terms of time and effort.

6. Tomer (1987) points out that x-efficient production requires the investment of organizational capital, which includes a sacrifice in terms of time and effort on the part of members of the firm hierarchy.

7. Referring to the Yerkes–Dodson Law, which relates “performance” to stress, Leibenstein (1987, 18–20, ch. 8) argues that pressure or stress will affect performance positively only up to a limit. Thereafter, one would expect performance (effort in this case) to diminish. Simply trying to force workers to work harder will eventually hit a wall.


9. See Mokyr (1990) for an elaborate discussion of the process of technological innovation through time.

10. See Leibenstein (1973) for a discussion of the relationship between x-inefficiency and technical change.

11. The arguments presented here can be seen as part of the induced technological change literature, although the model here emphasizes the causal role of increasing labor costs to shifts in the production isoquant as opposed to movements along it (see chapter 6; Hicks 1932; Hayami and Ruttan 1971; Ruttan 1997).

12. Although increasing wages explicitly play no positive role in inducing technical change, such a positive causal relationship is consistent with the logic of Brenner's model. As long as higher wage rates cause a fall in the relative economic position of members of the firm hierarchy, one would expect that the hierarchy would be induced to engage in technical change if this served to restore or improve its standing in the distribution of income or wealth.
1. See H.A. Simon (1987) for a concise discussion of the importance of behavioral economics with a focus on bounded rationality. See Altman (1999b) for a more general discussion. The essence of behavioral economics is the view that the realism of the behavioral assumptions underlying economic theory is of fundamental analytical importance. Therefore testing for the empirical validity of a theory's behavioral assumptions and determining the analytical and policy-related significance of introducing more realistic assumptions into standard theories becomes a critical exercise.

2. See, for example, McCloskey (1996, ch. 3), who argues that the current focus by economists on logic and mathematical proofs relating assumptions to predictions serves to remove economists from a concern for issues flowing from economic reality. For similar concerns, see Leontief (1971), Rosenberg (1992), and Blaug (1998). Blaug writes: "Perhaps the real trouble [with modern economics] is our age-old belief, going back to Ricardo, that economics is essentially a deductive science, in which we infer economic behavior on the basis of some assumptions about motivations and some stylized facts about prevailing institutions, suppressing even the temptation to ask whether these assumptions are descriptively realistic assumptions and accurately chosen facts. It is high time that economists re-examine their long-standing antipathy to induction, fact-grubbing, and fact gathering before, and not after, we sit down to theorize" (1998, 30).

3. Friedman (1953a, 41) also makes the point that the validity of a theory cannot be tested by the realism of the assumptions independent of the power of the predictions yielded by the theory. This at least suggests a two-part test for the validity of theory that involves both a reality check on the assumptions and a power check on the predictive power of the theory. However, Friedman himself does not see the reality check on the assumptions to be of any analytical significance.

4. In contrast to methodological instrumentalism, there is the institutionalist instrumental approach to value theory whereby technology is an instrument to implement values, such as social norms and rules, and the adequacy of the instrument is determined by its capacity to actualize the said values. Failure of the instrument requires that it, as well as the values, be revisited and revised (Gordon 1980, 43). See also Rutherford (1996, 66–67).

5. See Caldwell (1980) on these points.

6. Friedman (1953a, 19, n.14) favorably references Alchian (1950) in his discussion of the survival principle. For a detailed and critical discussion of some of the implications of the survival principle for social evolution, see George (1989, 66), who argues that inefficient processes can survive well in larger systems that are, on net, efficient.

7. See, for example, Altman (1999b), Becker (1998), Kahneman and Tversky (1979), Shiller (1993), Thaler (1992a), and Tversky and Kahneman (1981) for contrasting views on the impact of different behavioral assumptions for an understanding of economic choice in a realm where the survival principle is apparently of negligible importance.

8. See references in chapter 9, for example. See also Akerlof and Yellen (1986) and Stiglitz (1987).

9. See especially Baumol (1982) on the theory of contestable markets, whereby merely the threat of credible entry into an industry suffices to make even seemingly monopolistic markets competitive.

10. See Altman (1996b, 1998) and Miller (1992) on this point. The game theoretic literature strongly suggests that under conditions of mistrust among economic agents utility-maximizing and rational economic agents will not perform x-efficiently. The appropriate environment must be fostered within the firm and sustained over time for
x-efficiency in production to be approached.

11. Unlike the efficiency wage literature, I do not assume that a unique wage rate generates a unique and maximum level of labor productivity, which in turn yields a unique and minimum average cost of production (chapter 1; Akerlof and Yellen 1986). Stiglitz (1987), a leading efficiency wage scholar, however, recognizes that it is possible for there to be an array of wage rates consistent with a unique unit cost when effort and therefore productivity change sufficiently to just compensate for changes in the wage rate. There is no evidence to suggest that the latter is not the most appropriate assumption.

12. The conventional wisdom holds that wage rates can increase without negatively impacting the economy if, ceteris paribus, labor productivity increases first. The increase in labor productivity is not a product of the wage increase in the sense of its contributing toward greater efficiency in production. In contrast, I am arguing that higher wages and overall improvements in working conditions, inclusive of the system of industrial relations, contribute to offsetting increases in labor productivity. Labor productivity is, thereby, at least partially endogenized.

13. These points are discussed in great detail in this book, especially in chapters 5 and 9, and in Altman (1990, 1998). Apart from affecting the level of x-inefficiency, movements in wage rates can also be expected to affect the rate of technological change, where the relatively high-wage firms are induced to develop and adopt new technology to remain cost competitive. Low wages serve as a substitute for technological change in the sense and to the extent that low-wage firms can remain cost competitive in the absence of technological change (chapters 2 and 6).

14. Stigler has articulated a fundamental critique of x-inefficiency theory as delineated by Leibenstein where x-inefficiency is part and parcel of quasi-rational behavior. Stigler maintains x-inefficiency is not inefficiency at all since "In neoclassical economics, the producer is always at a production frontier, but his frontier might be above or below that of other producers." Moreover, "The near-universal tradition in modern economic theory is to postulate a maximum possible output from given quantities of productive inputs [...] and to assert that each firm operates on this production frontier as a simple corollary of profit or utility maximization" (1976, 214, 215). Utility maximizing behavior yields efficiency in production, otherwise economic agents would be forsaking an increase in output that could be obtained at less than cost, where costs and benefits are "measured" in terms of disutility and utility. X-inefficiency is impossible by definition. Whatever economic agents do at any given time is defined as efficient. What x-efficiency theory asserts (at least in my rendition of it) is that changing the constraints faced by economic agents, such as the system of industrial relations and wage rates, yields a utility-maximizing increase in productivity. Productivity could be higher than it is under a more ideal set of constraints yielding a higher level of material welfare to society. This is not to say that increasing the level of x-efficiency is a free lunch. Agents might have to work harder, but more particularly, more smart. Also, investments in organizational capital might have to be made in the short term (Tomer 1987). Nevertheless, if an economy can be made more efficient in a utility-maximizing manner by changing the objective constraints facing the firm’s economic agents, society loses out if it is x-inefficient in production.

1. Leibenstein (1966) points out that microeconomic theory is largely concerned with allocative inefficiency, which in reality is of a trivial dimension, to the exclusion of other types of inefficiencies, which Leibenstein broadly groups under the province of x-inefficiency. In fact, the conventional wisdom assumes that x-inefficiency cannot exist (Altman 1999b).
2. Herbert Simon writes that behavioral economics is "a commitment to empirical testing of the neoclassical assumptions of human behavior and to modifying economic theory on the basis of what is found in the testing process." In addition, "behavioral economics is concerned with drawing out the implications, for the operation of the economic system and its institutions and for public policy, of departures of actual behavior from the neoclassical assumptions" (Simon 1987, 221).


4. See Thorbecke (1990) on the question of institutional x-inefficiency. See also North (1990) for a discussion of the raison d'être of the persistence of inefficient institutions based upon a transaction cost analysis.

5. In this scenario, technical change is induced by changes in the cost of labor. To remain cost competitive firms must develop or adopt technologies that serve to reduce unit costs to competitive levels. Such technical change results in an inward shift of the firms' production isoquant and an outward shift of the economy's production possibility frontier.

6. See Bowles and Gintis (1998) and Gordon (1996, 1998) for a detailed discussion on the significance of different types of distribution for productivity. Bowles and Gintis focus on the redistribution of assets as the means for enhancing productivity and redistributing income, whereas Gordon focuses on reorganizing the work culture of the firm.

7. Aghion, Caroli, and Garcia-Peñalosa (1999) also discuss some underlying theoretical conditions under which more equity yields more real per capita output. They focus on the impact that imperfect capital markets and limited liability have upon suboptimal investments in the economy, inclusive of human capital. In such a world, increasing income equality yields higher levels of per capita output.

1. For the classic arguments on the effects of minimum wage legislation and those of trade unions, see Stigler (1946) and Friedman (1951) respectively. See Lewis (1954) for the quintessential statement on the negative impact of higher wage rates on the process of economic growth and development. Altman (1988) offers a critique of the Lewis argument.

2. Recently, another approach to the labor market, most eloquently expressed by Akerlof (1982, 1984) and Akerlof and Yellen (1986), has been developed to explain why nominal wage rates tend to be sticky downward over the business cycle. Referring to it in the literature as efficiency wage theory, its proponents assume that effort per unit of labor time is variable and a function of the wage rate. The profit-maximizing firm is expected to choose the wage rate that minimizes labor costs per efficiency unit (see also Solow 1986). A further fall in the wage rate is expected to yield a fall in labor productivity such that unit production costs increase. Thus the wage rate will not fall further even in the face of unemployment. The argument presented here is consistent with the logic of efficiency wage theory in so far as x-efficiency theory also assumes that effort is variable per unit of labor time. However, I do not assume that effort input per unit of time is necessarily a function of the wage rate in that all that is required to minimize cost is for the firm to choose an appropriate wage rate given the effort supply function of labor. In other words, x-efficiency theory does not assume that the firm hierarchy chooses or even can choose wage rates that will necessarily maximize profits or even minimize costs. Therefore, the prevailing wage rate need not be the efficiency wage and a particular efficiency wage can be consistent with the existence of x-inefficiency (see chapter 1). See Katz (1986) for a critical review of the efficiency wage literature.

3. See Frantz (1988, 1997) for an excellent summary of x-efficiency theory, as well as of the debates and empirical work surrounding this paradigm.
4. See Pencavel and Hartsog (1984, 209, 210, 215, 217) on the relationship between changes in the wage ratio in the union relative to the nonunion sector of the American economy and the relative changes in employment in these sectors. The authors conclude that "when we come to the effect of unionism on relative man-hours worked, we are not at all satisfied that the analysis of these data unambiguously points to a negative effect" (217). The empirical literature on minimum wage legislation does suggest a small but negative effect on the employment of teens. Results for the overall macroeconomic effect on employment of minimum wage legislation are ambiguous. See also Wellington (1991), Brown (1988), Eccles and Freeman (1982), and Brown, Gilroy, and Kohen (1982). In addition, one of the most comprehensive empirical studies to date on minimum wages suggests no negative effect on employment (Card and Krueger 1995). There is much evidence to suggest that unions both increase wage rates and contribute toward increased labor productivity, although they may also yield lower firm profits (see Brown and Medoff 1978; Freeman and Medoff 1984; Marshall 1987, 121–131, 149–154). See chapter 6 and Altman (1988) for a discussion of how higher wage rates can increase the rate of economic growth by motivating an increase in labor productivity. See Holzer (1990) for estimates on the positive relationship between increasing wage rates and productivity. For an opposite view see, for example, Bemmels (1987). Bemmels uses sample data for 1982 and concludes that unions have a negative impact on productivity, to a large extent, through their negative effect on the sample firms’ industrial relations. Kochan, Katz, and McKersie (1986) place the relationship among unions, high wages, labor productivity, and profits, in the context of the firm’s industrial relations system and the preferences of the firm hierarchy (see also chapter 9). American management prefers nonunion shops, low-wage labor, and minimal labor participation in the management’s of the firm. To avoid unions, management tends to invest in new plants, that are nonunion; therefore, new technologies are embodied in new plants, as opposed to the older, increasingly antiquated union shops (Kochan, Katz, and McKersie 1986, 14, 34, 55, 65, 66–79, 176, 180). To keep plants from becoming unionized, given the presence of a union threat, management provides workers with a relatively cooperative, high-trust framework of industrial relations, and this contributes to higher productivity in many nonunion plants. The viable threat of unionization spurs firms to become, in effect, more x-efficient (Kochan, Katz, and McKersie 1986, 88–103). Thus an important factor in making nonunion plants more productive than union plants, when this is the case, is management’s choosing to adopt more productive technologies and management techniques in nonunion plants (Kochan, Katz, and McKersie 1986, 104–108). However, such productive procedures can be and are adopted in union plants if the management cannot avoid the process of unionization (Kochan, Katz, and McKersie 1986, 158–176). To the extent that unions diminish in strength and the threat of unionization diminishes, management will tend to compete on the basis of low wages with little labor–management cooperation (Kochan, Katz, and McKersie 1986, 228–251). Simply put, the firm’s productivity is related to its technology and its industrial relations system. Union shops can be as productive as nonunion shops. Much depends on the choice of management and, of course, the cooperation of labor. To the extent that nonunion shops are more productive than union shops, this is, to a large extent, due to the threat of unionization providing management with enough incentive to do what it would otherwise prefer not to do: establish a system of industrial relations based on labor–management cooperation. Without unions, such pressure would collapse, and management would revert to competition based on low wages. See chapter 9 and Bluestone and Harrison (1988) for an elaboration on this theme.

6. By maximizing behavior, I am assuming only that economic agents are doing their best given the constraints they face. These constraints include transaction and search costs plus the costs in utility that can be a byproduct of the environment of a particular set of labor–management relationships. From Leibenstein, it appears that nonmaximizing behavior is behavior that involves the use of habits, conventions, or incomplete information through bounded rationality. It can be argued, however, that in a world where transaction and search costs are positive, the use of habits and conventions reduces these costs and is therefore consistent with maximizing behavior. In such a world, incomplete information can be viewed as a product of the costs involved in acquiring more information on the margin. It should be noted that Leibenstein does not consider dropping the maximization assumption as a necessary precondition to the existence of x-inefficiency. Defining what is being maximized or minimized is critical for Leibenstein, as is specifying the conditions under which maximization or minimization will or will not occur (1978a; 1985; 1987, appendix).

7. It is not clear if this is Leibenstein's preferred definition of x-efficiency. Nevertheless, this definition is adopted in this chapter as the most viable from a methodological standpoint. In many instances, Leibenstein suggests that pressure is necessary in order to induce individuals into providing more effort per unit of time than they would otherwise. However, this type of pressure is required in a world where economic agents mistrust one another, where labor–management relations are antagonistic. In this case, a latent Prisoner's Dilemma solution to the productivity problem always lurks menacingly in the background. See, for example, Leibenstein's most recent contribution (1987, chs. 3–5, 7–8, 10, 12, 14).

8. Weitzman and Kruse (1990, 100, 101, 105, 108, 114, 123–126, 133–134) summarize the literature on profit sharing and conclude that strong evidence exists on the positive relationship between profit sharing and labor productivity given an appropriate industrial relations system based on trust and cooperation. Also Kochan, Katz, and McKersie (1986) and Frantz (1988). Finally, Ehrenberg and Milkovich (1987) argue that the evidence on a positive relationship between the type and level of compensation to labor and management is not unambiguous. Compensation policies are part of a larger resource package and cannot be examined in a vacuum. On theoretical grounds, Rozen (1990) argues that building an industrial relations system based on trust and cooperation is crucial to avoiding what would approach a Prisoner’s Dilemma solution to the productivity problem (see also chapter 9).

9. Efficiency wage theory, on the other hand, assumes that labor productivity is a function of the wage rate and that there is a unique wage rate that, when chosen by the firm, minimizes the cost of production through its direct effect on effort supply per unit of labor input. See note 2 above for more details.

10. When Leibenstein refers to “effort discretion” or “effort input,” he refers to more than the pace of effort per unit of time. He understands effort input to have four dimensions: (1) activity, (2) pace, (3) quality, and (4) time duration and sequence. In this chapter, the focus is on the pace component of effort input. In a survey conducted on a randomly selected sample of American jobholders, Yankelovich and Immerwahr (1983) find that effort discretion exists in the American labor market and that such discretion is increasing in the new categories of jobs coming on-line. For example, 75 percent of those surveyed (1983, 2) said that they could have been significantly more effective on the job than they actually were. Yankelovich and Immerwahr find that workers would work much harder and much more carefully if there were more and better positive incentives in the workplace.
11. Hashimoto (1990), using modern Japan as a case in point, provides us with important insights on the role transaction costs can play in affecting changes in labor productivity. He argues that the low transaction-cost environment that has developed in many Japanese firms has made it profitable for firms to invest in the employment relationship.

12. However, Wessels (1985) argues that what is referred to here as the x-efficiency effect must result in even more unemployment than standard theory would predict. Wessels assumes that if labor productivity increases proportionally to wage increases, labor demand must fall in proportion to the increase in labor productivity. Thus, in effect, the firm is constrained to sell what it sold prior to the increase in labor productivity. Therefore, a critical assumption made by Wessels is that the demand for labor is constrained by the firm's demand function, which, in turn, takes on a particular form. This extreme form of a demand function, however, need not characterize firms facing increasing wage rates.

1. Many of these arguments, often referred to as the new growth theory, are predated by Abramovitz (1952), albeit in a less formal presentation. Moreover, Schumpeter's (1974) classic study on technological change, first published in 1934, has also informed much of the new growth theory literature, as well as the recent work on evolutionary growth (see Nelson 1995, 1998).

2. See Hodgson (1989) for a critical assessment of Kaldor's theory of cumulative causation. Kaldor's (1970) rendition of "Verdoon's Law" is that there exists a strong positive relationship between the rate of growth of productivity and efficiency and the rate of growth in the scale of economic activities. Thus there is a strong positive correlation between the rate of growth of exports and the rate of growth of productivity and efficiency.

3. Nelson (1998) points out that both the basic Solow growth framework and the new growth theories fail to take us beyond a discussion of the immediate sources of economic growth. He argues that variables that underlie the immediate sources of growth hold the secret to a better understanding of the persistence of growth and per capita income differentials across nations. Nelson identifies the organizations that adopt technologies, the institutional framework in which they operate, and the process of technological change as key underlying variables that affect the process of economic growth.

4. Unlike the Solow model, the model developed in this chapter does not assume x-efficiency in production or perfect labor market mobility. Also, as with the conventional growth models the demand side is not dealt with here, which is not to say that it is unimportant. Rather, I focus on the supply-side variables that may affect the growth process. See You (1994) for an alternative wage-led growth model that incorporates the demand side.

5. In the traditional efficiency wage literature there exists a unique wage that maximizes effort per unit of time and thereby minimizes the cost of labor per unit of time. This unique wage is chosen by the profit-maximizing firm (Akerlof and Yellen 1986).

6. The argument presented here clearly fits in with the notion of induced technological change, wherein changes in relative factor prices affect the direction of technological change (Hayami and Ruttan 1971; Hicks 1932; Ruttan 1997).

7. Reviewing the history of technological change, Nelson and Wright (1992) find that the globalization of the world economy has resulted in common technologies across nations, easing the international transfer of technology when the appropriate social capabilities are available in the target nations. Fagerberg (1994) finds
that the most important determinant of technological change, given the existence of a sufficiently strong social capability, are the "intentional activities of private firms." The model presented in this chapter suggests that in a world of accessible technologies and adequate social capabilities differentials in wage regimes can have a significant impact on the "intentional activities of private firms."

1. The conventional analysis also attempts to incorporate variables such as unions, tax policy, and government regulation. For an excellent compilation of the traditional approach, see Kendrick, eds. (1984). Refer to Salter (1969) for an analysis of differences in labor productivity due to the different vintages of best-practice equipment used among firms.

2. That different management techniques can significantly affect labor productivity is clearly demonstrated by Kilby (1962, 303–10; 1971, 29–35). One should note that Leibenstein (1966) gives great weight to the former article in his initial formulation of x-efficiency theory.

3. For an empirically oriented examination of this question, see Altman (1988). See also Shen (1984, 99, 104), who hypothesizes that in developing countries changes in input productivity are dominated by changes in x-inefficiency, whereas in developed countries they are dominated by changes in factor proportions. He argues that a change in the wage level, as one moves from developing to developed countries, is one variable that can explain changing productivity between these two groups. In this chapter, the connection between wages and x-inefficiency is made explicit and conceptually developed in terms of the more general problem of relative wage differences.

4. Leibenstein writes: "It is frequently stated that if the cost of some input, say labor, increases, the cost of the output must increase accordingly. But this does not necessarily follow. If there is a rise in the cost of some input but at the same time the pressure on management to be more effective increases, resulting in more effective effort choices, then this may engender a reduction of x-inefficiency and a decrease in costs" (1981, 104). Leibenstein never further developed this important insight. See also Freeman and Medoff (1984, 12, 15, 95, 101, 105, 163–70, 178–79). Elsewhere, Leibenstein and others argue that wages can affect productivity by affecting the caloric intake of workers. This argument applies to individuals earning subsistence wages. For a summary of other arguments relating labor productivity to wages, see Akerlof and Yellen (1986; Akerlof and Yellen, eds. 1986; Stiglitz 1987).

5. Leibenstein writes: "It is important to consider that there exists a set of effort/wage–cost combinations that imply the same profit level. Clearly the firm seeking to maximize profits would be quite happy with a lower, rather than higher, effort/wage–cost combination, so as to avoid some of the resistance to the high effort levels obtained by monitoring and sanctions. In other words, at very high effort levels there is a disutility to the hierarchy to obtaining that effort, and it is easier to live with a lower effort/wage–cost combination" (1987, 104).

6. Krueger and Summers (1988) and Thaler (1992a) suggest that efficiency wage theory best explains wage differentials among identical workers employed in different industries. Efficiency wage theory assumes that wages are independently increased by profit-maximizing members of the firm hierarchy so as to minimize average costs by, for example, minimizing turnover and shirking. This raises the question as to why the firm hierarchies in all industries do not raise wage rates to the same extent. Of course, if this were the case, wage differentials among identical workers would not exist. In contrast, the behavioral model presented here allows for profit-maximizing members of the firm hierarchy to choose or be forced to accept, because of unions, for example, from an array of wage rates. In this model, each wage rate, up to the point of
diminishing returns to effort, is consistent with competitive average costs and profits.

7. Although Sutcliffe (1971, ch. 5) finds that different capital—labor ratios exist for the same industry, he argues that these are typically few in number and may very well reflect the different products being produced within a specific industrial product classification. This suggests that the production isoquant for firms producing similar output are far from smooth. Rather, the isoquant would at best be characterized by a few alternative capital—labor ratios.

1. On a related argument with respect to the process of economic development, see Krugman (1991).

2. An interesting perspective on the persistence of inefficiency that is related to the path dependency literature is presented by George (1989). In his modeling, inefficient subsystems persist when they are nested within larger relatively efficient systems. See also Boyer (1997) and Boyer and Hollingsworth (1997), who also discuss persistent differences in economic and social regimes and the need to better explain their concurrent viability.

3. If increasing returns existed without bound, then the first mover would have a permanent advantage over any and all newcomers unless unit costs fell at a faster pace in the newcomer’s than in the first mover’s plant. In the former case, however, one cannot make the case that the newcomers are more efficient than the first movers. However, what characterizes path dependency theory is the assumption that the newcomer’s product, firm, or industry is initially the relatively more efficient one.


6. Leibenstein (1966, 1987) coined the term x-inefficiency to describe a level of output that fell below the neoclassical ideal, where all economic agents are maximizing effort per unit labor input (see also Frantz 1988; Dean and Perlman 1998). Leibenstein believed that maximum labor productivity (x-efficiency) could possibly be achieved only under conditions of an ideal system of industrial relations. X-efficiency could not be achieved by simply writing an ideal contract and then enforcing the terms of this contract. For a similar argument focusing on a game theoretic approach to production inefficiencies, see Miller (1992).

7. This argument is elaborated upon in, for example, chapters 1, 2, and 9; Card and Krueger (1995); Levine and Tyson (1990); and Freeman and Medoff (1984).

8. A standard argument in the efficiency wage literature is that although effort is a discretionary variable with respect to wages, there exists a unique wage rate that will serve to maximize effort per unit of labor, thereby maximizing labor productivity and thus minimizing unit costs. This is the wage rate that efficiency wage theory predicts will be selected by a profit-maximizing firm. Any deviation from this unique wage rate would serve only to increase unit production costs. For the classic statement on this, see Solow (1986). Refer also to a detailed discussion in Stiglitz (1987).

9. In chapters 2 and 6, the significance of relatively low wage rates and x-inefficiency to the persistence of suboptimal, low-productivity technologies is discussed.

10. In chapter 6 and Altman (1998), I discuss the conditions for multiple long-run equilibrium wage and productivity paths of economic growth using the type of behavioral modeling of the economic agent presented above.
11. On this point, see also Lane (1958, 1975). It is important to note that North’s point is empirically validated by the time series evidence on the absence of convergence in terms of real per capita GDP in the world economy. See Altman (1999c) for a summary discussion of the relevant literature.

12. A very basic definition of a slave is an individual who by law is a chattel or property of his or her owner. The serf, on the other hand, is legally free. The serf was bound to his or her “master” by institutional as opposed to contractual ties, which made the serf into a subset of unfree labor. As with the slave, the relative freedom of the serf varied over time and space.

13. The debate on the relative efficiency of American slavery has been particularly heated. Two critical articles on the subject are by Fogel and Engerman (1971) and G. Wright (1975).

14. Domar (1970) provides considerable theoretical insight into the economics of free versus unfree labor systems. He argues that unfree labor becomes the norm when landlords are no longer able to earn a rent from their land on the free market—when the income of the free peasant is driven up to the point where the only rents earned are on land of superior quality—and when government provides the landlord with the legal and political wherewithal to create a class of unfree labor. Domar argues that the use of unfree labor would dominate even if free labor were relatively more productive if the productivity differential was outweighed by the relatively higher costs of free labor. Unlike in the behavioral modeling of the economic agent, Domar assumes that productivity is independent of the wage rate—there is no effort discretion, and wages and working conditions have no effect on labor productivity. For this reason, he argues that reducing wages is central to making free labor relatively more attractive to the landlord since a fall in the wage rate has no predictable impact on labor productivity. Labor productivity is assumed to be a positive function of the extent to which labor is legally free, irrespective of the working conditions of such labor.

15. See Ichniowski et al. (1996) for a detailed accounting of the literature discussing relatively innovative, productivity-enhancing, alternative modes of workplace organization that consistently fail to be adopted for material and utility cost considerations. See also chapter 9.
3. Much of the empirical and theoretical literature on x-efficiency theory is surveyed in Frantz (1998).

4. Gordon’s analysis also incorporates data from the Netherlands, Norway, and Sweden as representatives of the more cooperative work cultures.


6. Leibenstein (1966, 1978a, 1979) assumes that economic agents who do not perform x-efficiently in production are only quasi-rational. Rational behavior is assumed to be behavior that is consistent with x-efficiency. However, rational economic agents need not perform x-efficiently if such behavior is not of a utility-maximizing type (chapters, 1–3).

7. The x-efficiency literature largely assumes that x-inefficiency is possible only when x-inefficient firms are afforded some protection, through monopolistic powers or subsidies, for example, since it is assumed that the x-inefficient firm must be a relatively high unit cost producer (Leibenstein 1966; Frantz 1998). I argue (chapters 1 and 2) that this need not be the case since x-efficient production entails higher costs than x-inefficient production so that, on balance and controlling for quality, the unit cost of the x-efficient and x-inefficient firms might be identical.

8. In the standard efficiency wage literature a unique wage exists that generates a unique level of effort per unit of labor time consistent with maximizing labor productivity and thereby unit labor costs. In this case, however, it is not possible for two sets of firms with different wage rates and associated work culture, both producing at the same unit costs, to exist (Akerlof and Yellen 1986; Akerlof and Yellen, eds. 1986). This assumes a traditional production function, generating an inverted-U relationship between wages and effort and productivity. Assuming some linearity in the production function allows for a set of different levels of labor compensation yielding a unique level of unit costs (Chapters 1, 7, 8; Stiglitz 1987).

9. These results fit into the unfair Prisoner’s Dilemma game designed by Merrill Flood and Melvin Dresher (Poundstone 1992, 106–116). In this game all players combined are better off if the cooperative (in this book, the superior HRM system) strategy is adopted. However, one player, the firm hierarchy, is no better off than if it defects to the traditional work strategy. Labor finds the cooperative strategy superior but only if the firm hierarchy adopts the same strategy. Otherwise, labor would be worse off. If labor expects the firm hierarchy to defect, it is in labor’s self-interest to adopt the same strategy. We end up with a Prisoner’s Dilemma solution (both parties defecting) when the firm hierarchy does not gain from cooperation—that is, the adoption of the superior HMR system. Assuming that all strategies are consistent with being cost competitive, we end up with a social dilemma where the socially superior results are rejected by the firm given an institutional structure that is not conducive to cooperation (Miller 1992).

1. This chapter’s focus is on the possible cost implications of improving labor’s rights and related standards. For this reason, I abstract from the important question of the possible employment and welfare implications that bans or further restrictions on child labor might have, especially on low-income families, even if such tightened standards are shown not to have any positive effect on unit production costs or any negative effect on profits. Some of these issues are addressed in chapter 11 and Basu (1999a, 1999b).

2. A recent OECD (1996) study using conventional neoclassical analysis examines what impact can be expected on the efficiency of market economy from the elimi-
nation of child labor, forced labor, and discriminatory hiring practices and the freedom of association and the right to organize and bargain collectively—referred to as core labor standards. The study argues that child labor, forced labor, and discriminatory hiring practices distort the allocation of resources away from the free market ideal, thereby shifting the production possibility frontier inward. Ending these practices would have the opposite effect. Neoclassical theory, however, would suggest that successful profit-maximizing firms would not adopt such practices if these were efficiency reducing since this would only increase unit costs and the competitive position of these firms. The report further argues that the absence of freedom of association and the inability to bargain collectively might result in workers being exploited—being paid below the equilibrium market rate—and that labor power might force employers to pay workers their marginal product and might even have the dynamic effect of increasing labor productivity. However, the latter possibilities are marginalized in the standard neoclassical analysis of the labor market. This entire gamut of theoretical possibilities can be encompassed within the framework of the behavioral model of the firm, which broadens the horizons of the neoclassical analytical framework. It is noteworthy that this OECD report finds no empirical evidence to support the view that improvements in core labor standards have negative economic effects.


5. This assumption is unlike the one that underlies the traditional efficiency wage literature, which presumes without any evident empirical bearing that there exists one unique wage that yields a unique minimum unit production cost through its impact on effort per unit of labor input (Akerlof and Yellen, eds. 1986; Stiglitz 1987). Any deviation from this efficiency wage yields higher unit costs. No rational firm hierarchy should therefore attempt to reduce or increase wages, ceteris paribus.

6. See Altman (1996b) for a detailed discussion of the relationship among wages, levels of x-inefficiency, and labor productivity and how a behavioral model of the economic agent and the firm better explains the lack of convergence between low- and high-wage economies than do the conventional economic models.

7. For more details on this point, see chapters 5 and 6.

8. One argument against the imposition of international labor standards is that this will reduce the competitive advantage of less developed low-wage–low labor standards economies (Amsden 1994; Krugman 1994). However, to the extent that such international standards pressure these economies into becoming more efficient, there is no reason to expect that they should become less competitive. In this sense, what’s good for the goose is good for the gander.

1. For a discussion of the difficulties in constructing estimates for child labor, see International Labour Organisation (2000a) and Lansky (1997). Often much lower estimates are used, but these exclude child workers who are less than ten years of age.

2. For a detailed review of the literature on child labor, see Basu (1999a, 1999b); Cummingham and Viazzo (1996); Human Rights Watch (1996); Mendelievich, ed.
See Sengenberger (1994a, 1994b) and OECD (1996) for a review of the more general issue of labor standards.

3. The argument presented here applies more generally to the relative competitiveness of low- and high-wage regimes, where x-inefficiency exists and where the level of x-efficiency is sensitive to relative labor costs and the rate of technical change is also sensitive to this same variable (chapters 2, 6, and 9).

4. The employment to population rate equals the labor force participation rate only when full employment exists in the economy.

5. There is a possibility, of course, that higher wages, by inducing increased levels of x-efficiency and technological change, will generate long-term increases in the unemployment rate, thereby serving to reduce family income by reducing the household employment rate. However, there is no evidence that such a long-term effect is present. In fact, unemployment rates tend to be lowest where rates of technical change, measured by improvements to labor productivity, tend to be greatest. Unemployment rates tend to vary more as a result of differences in macroeconomic policy and savings rates (Maddison 1995).

6. Other key components of strategies to eliminate child labor include access to low-cost quality education, more equitable economic growth, and stabilizing the income flow of households. It is also argued that increases in the adult female real wage are more strongly correlated with a reduction in the child labor force participation rate than are increases in the adult male real wage (Grootaert and Kanbur 1995).

1. See Gunderson (1989, 47) for more contemporary estimates of gender pay inequality for relatively developed market economies as well as the former USSR. See Altman and Lamontagne (1996) and Goldin (1986, 1990) for historical gender inequality estimates for Canada and the United States respectively. See also Groshen (1991) for a detailed empirical analysis of labor market segmentation within and across firms and occupations.


3. In elaborating upon Becker’s influential work, Kenneth Arrow (1973, 1980) relies on the persistence of imperfect information over time, and thus on the persistence of statistical discrimination, or on the costs of hiring and firing workers (nonconvexities in employment) to explain the fact that the market has not forced the elimination of pay inequality. Lester Thurow (1975) also relies on the persistence of imperfect information and statistical discrimination to explain pay inequality. However, Thurow also argues that wage competition is typically unimportant, even over the long run. This prevents women, for example, from bidding low for what will become a high-wage job. By bidding low, women would be compensating their employers for their negative perceptions of the potential lower productivity of women. Barbara Bergmann’s (1971, 1986) classic research on labor market segmentation argues that discrimination causes the segmentation of labor markets; increasing the labor supply (shifting the labor supply curve outward) in one market and reducing it in another (shifting the labor supply curve inward) from what it would be in a world with an integrated labor market results in pay inequality. However, labor market segmentation must persist over time; the lower paid women must be kept from entering the higher paid labor market dominated by men. See also note 2 above and note 8 below.

4. Gary Becker (1985) argues that married women can be expected to be paid less than men due to their specialization in household work in general and child-rearing in particular. This has the effect of leaving women with less effort per unit of time avail-
able for market work and lower productivity than men per hour worked. Thus women are paid less than men. See also Fuchs (1988), who argues that the portion of pay inequality between men and women that cannot be accounted for in terms of such differences as schooling and work experience can largely be explained in terms of women's specialization in child care.

5. The model developed in this chapter draws upon the behavioral model developed in this book, the fair wage–effort hypothesis (Akerlof and Yellen 1990), and an important paper exploring the significance of effort variability in the workplace by Becker (1985). See also Drago and Heywood (1992).

6. The above argument is drawn from but not identical to Arrow's (1973, 6–8).

7. Gary Becker very skillfully elucidates some of the dynamics involved in establishing a long-run equilibrium rate of pay inequality: "If all firms had the same linear and homogenous production function, firms that discriminated would always have larger unit net costs than firms that did not. . . . The smaller (in absolute value) the DC [discrimination coefficient] of any firm, the less would be its unit net costs. The firm with the smallest DC would produce total output, since it would undersell all others; therefore the equilibrium MDC [market discrimination coefficient] would equal the firm's DC. . . . If firms did not have homogenous production functions, unit costs would rise with output, and the firm with the smallest DC would not produce everything. . . . In general, firms with DC's [sic] less than the MDC are profitable and tend to expand relative to other firms. The ease with which a firm expands is determined by the relation of unit costs to output; if unit costs are independent of output, expansion is easy; if costs rise sharply with output, expansion is difficult. Firms with small DC's expand more in comparison with other firms, the less this expansion increases their costs relative to others; hence production conditions facing firms must be important determinants of the MDC" (1971, 44) See also Arrow (1980, 124, 126).

8. In an effort to explain the persistence of gender pay inequality between women and men with the same productivity characteristics, Gary Becker (1985, S43, S49, S52–53, S55) has argued that labor productivity is affected by effort intensity. His focus is not on intrafirm dynamics but rather on the allocation of time and effort to nonmarket activities. A critical assumption of Becker's model (1985, S45) is that each identical economic agent completely allocates his or her fixed amount of energy among an array of market and nonmarket activities, inclusive of leisure. Married women can be expected to be less productive than married men because women choose to devote a disproportionate amount of their time and effort to household work. Thus less effort is available to married women to devote to market work, resulting in their market-related effort intensity being less than married men's (Becker 1985, S52–S53). In Becker's model, effort devoted to market activities is determined by the amount of effort allocated to nonmarket activities. In equilibrium, married women will be paid less than married men even in the absence of labor market discrimination because they are less productive than their male counterparts. This model allows the economic agent to choose not to exhaust the effort constraint either within each period of time or over his/her life cycle in market activities. But once effort is allocated to nonmarket activities, it is assumed that the economic agent will be working as hard as possible, or at what one might refer to as the effort possibility frontier. However, an economic agent who works relatively hard in the household does not necessarily devote relatively less energy to market activities. The married woman can be as productive as the married man if she applies more total effort across all activities than the married man, working as hard as the married man in market activities and harder in household activities. He is left with more residual effort (leisure) than the married woman, and she is operating closer to the effort
possibility frontier. Indeed, some empirical evidence derived from 1973 and 1977 U.S. survey data, now exists to support the hypothesis that women who engage in household work do not do so at the expense of the energy devoted to labor market activities (Bielby and Bielby 1988, 1043, 1050, 1055; Bielby 1991, 1001). The allocation of effort between market and nonmarket activities does not appear to be the key to an explanation of the persistence of gender pay inequality.

9. M. Reich (1981, 204–215) also develops a model of pay inequality in which effort is variable, but it is quite distinct from the model of pay inequality presented in this chapter. In Reich’s formulation, effort intensity is negatively related to the bargaining power of workers. Reich assumes that as bargaining power improves, effort intensity declines and this, ceteris paribus, reduces profits. To reduce the bargaining power of workers, employers set out to pay black and white workers different wages, with the white workers being paid a premium above their marginal product. This tends to divide workers and reduce their bargaining power. For this model to work, firms must be integrated by race (or by sex). Otherwise, workers will fail to develop feelings of resentment and antagonism that cause a reduction in their bargaining power. Presumably, labor market segmentation increases the effort intensity among all workers and increases the overall profits of the discriminatory employers. In this model “unfair” wages seem to have the effect of increasing the productivity of labor. The model also predicts that racist firms should drive out non racist firms from the marketplace and that the winning firms should be highly integrated, with a record of poor if not abysmal labor relations. These predictions do not seem to be consistent with the reality of labor market segmentation: fair wages inducing higher productivity and unions having a positive effect on productivity.

10. The traditional efficiency wage theory assumes that profit-maximizing employers choose the wage rate, the efficiency wage, that will minimize labor cost per efficiency unit (the real wage divided by effort per unit of time). There is a unique wage rate consistent with profit maximization. Under such assumptions one would not expect profit-maximizing employers, such as nondiscriminating employers, to pay women less than men if the wage paid to men is the efficiency wage. Moreover, discriminating employers, by paying women less than men, will be at a competitive disadvantage. If they pay women less than the efficiency wage, women will supply less effort per unit of time to market work, shifting their marginal revenue product curve inward and causing higher labor and unit costs than would otherwise exist. Pay inequality could not therefore persist in the long run. On this point see Bullow and Summers (1986, 398).

11. See Leibenstein (1966, 1974). See Button, ed. (1989) for a collection of some of Leibenstein’s most important contributions to the subject. See also chapters 1 and 2 for a detailed discussion of x-efficiency theory. See also Leibenstein (1987) and Frantz (1988, 1997).

12. On a related point Gary Becker suggests that if women and men are characterized by the same basic productivity and women are paid less than men due to discrimination, the lower rate of pay might induce women to specialize in household work, reducing their effort intensity in market work and thereby reducing their productivity in market work relative to that of men. This would further increase the extent of pay inequality. In this case, Becker points out, a decomposition of the pay differential would attribute most of the pay differential to differences in human capital. This would be so in spite of the fact that: “the average earnings of men and women would be equal without discrimination.... More generally, discrimination and other
causes of sexual differences in basic comparative advantage can be said to explain the entire difference in earnings between men and women, even though differences in human capital may appear to explain most of it" (Becker 1985, S42).

1. For the methodological worldview of the Chicago School, see Reder (1982). See also chapter 3.

2. The Porter Hypothesis was articulated in a weaker form in an OECD (1985) study on technical change.

3. Stigler makes a similar point in his critique of Leibenstein’s x-efficiency theory: “The near-universal tradition in modern economic theory is to postulate a maximum possible output from given quantities of productive inputs—that is the production function—and to assert that each firm operates on this production frontier as a simple corollary of profit or utility maximization. . . . In neoclassical economics, the producer is always at a production frontier, but his frontier may be above or below that of other producers. The procedure allocates the foregone product to some factor, so in turn the owner of that factor will be incited to allocate it correctly” (1976, 214–215).

4. There is now an extensive empirical literature relating various forms of cooperative work cultures to higher levels of productivity (chapter 9; Alcaly 1997; Appelbaum and Batt 1994; Barney 1995; B. Becker and Huselid 1998; Gordon 1996; Ichniowski et al. 1996; Levine and Tyson 1990; Neal and Tromley 1995; Logue and Yates 1999; Pfeffer 1995).

5. This argument, specific to the potential impact of environmental regulations or greener preferences on the part of firm decision makers on the level of x-inefficiency in a competitive environment, is a subset of a more general theory developed in this book, whereby increased costs to the firm potentially induce offsetting increases in productivity. This alternative theoretical framework helps explain the stylized fact of the simultaneous existence over time of both efficient and inefficient economic regimes (see chapter 8). A pollution-intensive firm, in this light, can be viewed as a subset of an x-inefficient economic regime that can compete with its more efficient and greener counterparts.

6. This discussion follows the argument developed in chapters 2 and 6 above and Altman (1998).

7. The notion that environmental regulations might induce technological change has been explored by Faucheux and Nicolaï (1998).

1. Demsetz (1973, 1–9), presents the view that integration is typically the result of superior economic performance. Williamson (1980, 197; 1981, 1564; 1985, 103, 120, 273) in effect adds specificity to the more general argument of Demsetz. Refer to Adams and Brock (1991) for a comprehensive review of the literature on corporate bigness and antitrust economics. It must be emphasized, however, that Williamson clearly recognizes that it is possible that integration can yield net economic losses to society. For this reason, he advocates vigilant antitrust activity to uncover cases where corporate size generates net economic losses (1980, 197; 1981, 1537, 1564; 1985, 100). Finally, Shepherd (1986, 31–32, 41–42, 45–47) and Mueller (1986, 225–230) find, after critically reviewing the literature, that the larger corporations (those with the greater market share) are typically not more cost efficient. These authors point to strong evidence that suggests that such firms are at best no more efficient than the smaller firms. Indeed, most large corporations are much larger than they need to be to realize minimum economies of scale.

2. Williamson also writes: “Neoclassical economics maintains a maximizing orientation. That is unobjectionable, if all of the relevant costs are recognized” (1985,
3. Williamson (1980, 195) is critical of Chandler’s (1977) analysis of integration in the sense that Chandler emphasizes technological change as a determinant of integration as opposed to transaction cost economizing.

4. See Demsetz (1982, 47–57) for a critical discussion of the concept of barriers to entry in economic theory.

5. An inefficient organizational mode can also evolve as a result of a firm’s workers receiving relatively low wages because low wages relieve the pressure on firm management to produce relatively x-efficiently. Low wages keep the firm’s unit cost from rising excessively even as its input productivity is relatively low. This theme is developed throughout this book. See, for example, chapter 1. A similar point is hinted at by Williamson (1985, 319).

6. Leibenstein (1966, 392–415) argues that by focusing on allocative inefficiency, one ignores the more significant cost of monopoly or of imperfections on the product market that would be x-inefficient. See also Balibot, Frantz, and Green (1987).

7. Such a scenario would be more likely in Japan according to Williamson (1985, 122).

8. I have introduced x-inefficiency into Williamson’s line of argument arbitrarily. Nevertheless, as already mentioned, the existence of x-inefficiency is consistent with Williamson’s behavioral assumptions of the economic agents of the firm—that owners and managers need not be concerned entirely or largely with cost minimization.

9. The geometric conceptualization of allocative x-inefficiency presented here is similar to that developed in Balibot, Frantz, and Green (1987), except that their measure of allocative and x-inefficiency pertains only to what is equivalent to my ABC and PpPxJB. Accordingly, their estimate of x-inefficiency is less than and their estimate of allocative inefficiency is greater than what I suggest. However, our estimates of the total social cost of monopoly and x-inefficiency are similar.

10. This point is further developed in chapter 7 above and in Thorbecke (1990).

11. Nevertheless, Lamoreaux (1985, 153–154) argues that the development of the larger economic organizations did not generate any significant market power to them, at least in the long run and therefore did not threaten the competitive structure of the American economy.

1. Becker’s (1998) concept of constrained utility maximization is consistent with the standard neoclassical fare, although his conceptualization of the question incorporates into the objective function of the economic agent variables such as habits, cultures, peer pressures, childhood, altruism, addiction, and other forms of individual experience and social interaction typically ignored in the traditional modeling of the economic agent.

2. See also Ayal (1963), Hampden-Turner and Trompenaar (1993), Hofstede (1984), Landes (1998), and Maital and Sharabani (1997) for notable efforts to document and assess the importance of culture to the process of economic development.

3. Himmelfarb discusses the importance of the individual as an independent determinant of history in the context of the various deterministic methodological approaches to history where individual behavior is simply a product of circumstance, be it economic or sociological. This obliterates or at least denigrates free will as a causal factor of historical events. The same can be said of the other disciplines, including economics. Himmelfarb points to Alexis de Tocqueville who, writing in the nineteenth century, comments: “Once the trace of the influence of individuals on the nations has been lost, we are often left with the sight of the world moving without
anyone moving it. As it becomes extremely difficult to discern and analyze the reasons which, acting separately on the will of each citizen, concur in the end to produce movement in the whole mass, one is tempted to believe that this movement is not voluntary and that societies unconsciously obey some superior dominating force. . . . Not content to show how events have occurred, they [democratic historians in America] pride themselves on proving that they could not have happened differently. They see a nation that has reached a certain point in its history, and they assert that it was bound to have followed the path that led it there. That is easier than demonstrating that it might have taken a better road” (Himmelfarb 1994a, 42).


5. Leibenstein (1978, 1987) assumes that behavior that deviates from the neoclassical ideal of x-efficient production is only quasi-rational, while the neoclassical ideal typically assumes that effort discretion does not exist and that effort is fixed at some maximum level in terms of its quantity and quality.

6. Unlike the efficiency wage literature, I do not assume that a unique wage rate generates a unique and maximum level of labor productivity that in turn yields a unique and minimum average cost of production (Akerlof and Yellen 1986). A leading efficiency wage scholar, J.E. Stiglitz (1987; see also Akerlof and Yellen 1990), however, recognizes that it is possible for there to be an array of wage rates consistent with a unique unit cost when effort and therefore productivity change sufficiently to just compensate for changes in the wage rate. There is no evidence to suggest that the latter is not the most appropriate assumption. The founding fathers of economics, led by Adam Smith, also argue that wage rates and productivity are positively correlated (N.G. Marshall 1998).

7. Stiglitz (1987) further elaborates upon this point.

8. Buchanan (1994) argues that societies with a stronger work ethic yield benefits that go beyond those achieved by the individual. He argues that if an individual works more hours, this increases his own output and thereby market size. This in turn yields more specialization and thereby increases productivity throughout the economy. This assumes increasing returns to market size and thereby externalities to an individual’s income-leisure choice decision. In terms of the model presented here, a more x-efficient work ethic yields a greater productivity impact than would be predicted in a world of constant returns.

9. See chapter 3 for a discussion of the survival principle and for a reconstruction of this principle that allows for the long-run equilibrium existence of inefficient firms even in a competitive environment.
References


REFERENCES 275


REFERENCES


REFERENCES


REFERENCES


REFERENCES 283


286 REFERENCES


