

# Contested Exchange: New Microfoundations for the Political Economy of Capitalism

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## INTRODUCTION

SINCE World War II economics has shifted from being the spearhead of the left's critique of capitalism to its Achilles heel while neoliberals and the right have come to wield economics as a powerful political weapon. The contemporary left in the advanced capitalist countries is nearly unanimous in advocating forms of popular participation that make the exercise of power democratically accountable. Replacing capitalism with a democratic economy figures prominently in this program. Yet the left lacks a compelling account of the exercise of power in the economy, never having convincingly responded to the proposition that in a system of voluntary contractual exchanges no agent has power over any other simply because a buyer or seller can walk away from any transaction with impunity. Thus the Left has not effectively countered the notion that, because markets provide ample opportunities for individual exit, the demand for a collective voice in economic life is misplaced.

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The charge that capitalism is a form of despotism may still be heard, and the vision that people might one day become the authors of their individual and collective biographies still offers moral purpose. But the political critique of capitalism and the emancipatory vision of socialism and democracy alike seem peculiarly devoid of intellectual substance and deprived of practical import. More tangible concerns occupy most politically active leftists: Redistribution, not democratization, is the order of the day; fairness, not freedom, is the most we can hope for.<sup>1</sup> This is no less true in socialist than in social democratic circles. As the limits of Keynesian high employment policies have become evident and with the growing disenchantment with centralized economic planning and collective ownership, the economic programs of the left (if not its language) have become barely distinguishable from those of egalitarian liberals.

The diffidence with which leftists now advocate the *economic* case for a new society has many roots. But part of the problem, we think, may be traced to the fact that the standard microeconomic theory adopted by much of the contemporary left fails in modeling both the exercise of power and collective action, is for this reason congenitally hostile to the project of economic democracy, and in substance is no different from neoclassical microeconomics.

In this essay we present a contribution to a new microfoundation for political economy, one that illuminates rather than obscures the exercise of power and that thus is capable of addressing the democratic concerns of the left. We will treat the no less important issue of collective action only in passing.

We will argue that the model of general competitive equilibrium due to Leon Walras—the textbook standard of neoclassical economics as well as the foundation of much neo-Marxian theory—ought to be rejected.<sup>2</sup> We do not take issue with the concept of equilibrium or the assumption of competitive markets in the Walrasian model. We rather focus on its critical assumption that conflicts of interest in the economy are resolved in contracts that are either voluntarily observed or are enforceable at no cost to the exchanging parties. The distinguished economist Abba Lerner described the treatment of conflicts of interest in the Walrasian model in this way:

the solution is essentially the transformation of the conflict from a political problem to an economic transaction. An economic transaction is a solved political problem. Economics has gained the title of queen of the social sciences by choosing *solved* political problems as its domain.<sup>3</sup>

Exchanges may be solved political problems where contracts are comprehensive and enforceable at no cost to the exchanging parties. We use the term *exogenous claim enforcement* to refer to this type of comprehensive and third party (generally state) regulation of contracts; it tends to occur where the transaction is transparent in the sense that the characteristics of the goods or services

exchanged are readily determined, and hence contractual transgressions are readily detected and redressed, often by resort to the courts.

Where some aspect of the object of exchange is so complex or difficult to monitor that comprehensive contracts are not feasible or enforceable by a third party, however, exogenous claim enforcement does not obtain, and the exchange is *not* a solved political problem. By comparison with the transparency of the exogenously enforceable exchange, these exchanges are characterized by opacity: Some aspect of the good or service exchanged is not readily determined. Far from being a special case, the absence of exogenous claim enforcement is quite general; the two critical exchanges of the capitalist economy—the labor and the capital markets—provide, as we will see, the archetypal examples.

In these cases which we take to be quite general, we have a *problem of agency*: In an exchange between agents A and B, B can take actions that are harmful or beneficial to A's interests, and which cannot be precluded or guaranteed by contractual agreement.<sup>4</sup> Where a problem of agency exists, the *de facto* terms of an exchange result in part from the sanctions, surveillance, and other enforcement activities adopted by the parties to the exchange themselves. We refer to this process of regulation of the contract by the parties to the contract as *endogenous claim enforcement*.

A transaction characterized by both an agency problem and endogenous claim enforcement is termed a *contested exchange*. More formally, consider agent A who engages in an exchange with agent B. We call the exchange *contested* when B's good or service possesses an attribute that is valuable to A, is costly for B to provide, and yet is not fully specified in a costlessly enforceable contract.

*Our key claim is that the most important exchanges in a capitalist economy are contested and that in these exchanges endogenous enforcement gives rise to a well-defined set of power relations among voluntarily participating agents even in the absence of collusion or other obstacles to perfect competition.* Power relationships unrelated to endogenous claim enforcement—concerning state interventions in the economy or labor unions and other forms of collective action, for example—are important to the functioning of the capitalist economy; but they will not be our focus here as their importance is commonly recognized.

The roots of our reformulation of the microfoundations of political economy may be found in Karl Marx's reaction to classical economics. David Ricardo's labor theory of value, Marx charged, was a finely architected but depopulated world devoid of human agency and untouched by either memory or anticipation. Marx's representation of labor as an intentional human activity rather than an object, he thought, would forge a new economic theory of both history and human subjectivity. Two well-known aspects of Marx's concept of labor were critical to this wedding of agency and time in economic theory.

First, labor transforms nature and in the process transforms the worker and others. The labor process thus produces both commodities and people. Since the endogenous transformation of the worker—or more generally of economic agents—is irreversible and path dependent, economic processes have an intrinsically historical character.

Second, in the labor exchange, the employer pays the worker a wage in return for the worker's formal submission to the firm's authority. The activity of work itself, as distinct from the process of exchange, is not guaranteed in the labor contract, cannot be enforced by the state or any other external party, and thus must be extracted from the worker by whatever system of control the employer may devise. The enforcement of the *de facto* terms of the labor contract—what Marx termed the extraction of labor from labor power—is thus endogenous, involving a conflict of objectives between workers and their employers: Their distinct capacities to carry out competing projects is thus a central determinant of the evolution of the capitalist economy.

A critical difference between Marx and the liberal economists of his day then was his joint insistence on the endogeneity both of economic agents and of claim enforcement in the labor market against the liberal espousal of the presocial individual the classical theory of contracts. While familiar to contemporary Marxists, these insights are notably absent in much of modern Marxian economic theory. Marx himself may have contributed to the eclipse of what we regard as his most fundamental economic insights. For in his formal development of the labor theory of value both the endogeneity of economic agents and the conflict over the extraction of labor from labor power faded from view in favor of a structural logic hardly less inexorable than Ricardo's.<sup>5</sup>

With the evolution of the neoclassical general equilibrium model and the later development of the linear model of prices and profits due to Piero Sraffa, the distinctive characteristics of Marxian economics became increasingly elusive. "The labor theory of value," wrote Oskar Lange in 1935, "...is nothing but a static theory of general economic equilibrium..." and one, he insisted, superseded by modern (meaning neoclassical) economics. The superiority of Marxian theory, according to Lange, resides not in its economics but in its social and historical analysis.<sup>6</sup> Neither Lange nor later contributors to Marxian economic theory such as Michio Morishima<sup>7</sup> or John Roemer<sup>8</sup> found any difficulty in adopting an only slightly amended Walrasian general equilibrium model as the basis for their studies of socialist planning, profits and exploitation.<sup>9</sup>

Thus the 1930s debate on socialist economics that pitted Lange against Ludwig von Mises and Friedrich Hayek was ironically an exchange almost entirely within the confines of the Walrasian model: The problem of agency or the evolutionary characteristics of alternative economic models was a central concern of neither side.<sup>10</sup> Lange had chosen his weapons well, for the Walrasian

model provided a compelling foundation for a theory of optimal socialist planning, demonstrating the possibility of rational economic calculation in a centralized nonmarket economy: *In a world of well-informed decision makers and well-executed decisions, whatever the market could do the socialist planner could do as well or better.*

The conservative counterattack after World War II with Hayek at the forefront radically shifted ground by stressing the problems of both information and motivation in a centrally planned economy.<sup>11</sup> In the ensuing years the problem of agency has become central to the conservative critique of socialism, which events in the centrally planned economies have done nothing to dispel, and to the defense of capitalism: *In a world of agents who may choose not to do what they are supposed to do, the exchange of property on competitive markets is an effective motivational and disciplinary order.* In the face of this challenge, theoretical economists on the left have for the most part remained silent.<sup>12</sup> To be sure, leftists have continued to argue for socialism, but more often on noneconomic grounds, perhaps comforted by the thought that either the advance of technology or the attenuation of distributional conflict in a socialist society would lead to a withering away of the economic problem.

The failure of left political economy to take seriously the issue of agency is thus at once curious and debilitating—curious given Marx's pioneering work in the area and debilitating given the apparent centrality of agency problems in both capitalist and other economies. It is also unnecessary given recently developed post-Walrasian microeconomic analysis, which, unlike the Walrasian model, focuses attention on the choices of intentional actors on both sides of economic exchanges.<sup>13</sup>

The integration of post-Walrasian microeconomic theory with the original Marxian insights concerning the labor process provides an essential contribution to a new microfoundation for political economy, one that offers a critical perspective on the capitalist economy as well as providing some provisional insights concerning postcapitalist alternatives. The key substantive difference between our approach, which we call the theory of contested exchange, and such related strands of post-Walrasian economics as transactions cost economics is our focus both on the asymmetric power relationships arising in exchange and on the economic irrationalities entailed by endogenous enforcement in a highly unequal and hierarchical economy.

We first seek to demonstrate the need for a new microfoundation of political economy. Then we develop a model of contested exchange in the labor market followed by a discussion of the political relationship between employers and workers revealed by the model. We then address the sense in which the wealthy "have power" over workers in a competitive capitalist economy, illustrating the argument with a model of contested exchange in capital markets. Subsequently

we explore possible applications of the contested exchange framework to the theory of social stratification and income distribution. We conclude with some implications of the contested exchange model for the general orientation of economic theory.

The luxury of knowing that our essay will be the subject of comment in subsequent pages has prompted us to abandon the guarded discourse of academia, seeking above all to present a coherent framework and to suggest its possible implications, without the modifications and defenses that might otherwise be appropriate. While our analysis takes a mathematical form at several points, we have presented full nonmathematical descriptions of the relevant material for readers not interested in such technical details.

#### THE MICROFOUNDATIONS OF POLITICAL ECONOMY

Our claim that we need new microfoundations for political economy may be challenged on two grounds: that the present microfoundations are adequate or that we do not need microfoundations for political economy. Our response is that understanding an economy characterized by extensive individual options (that is to say, *any* economy) cannot be done without the analysis of choice, but the Walrasian model cannot be the basis for such an analysis. Opting for the Walrasian model, we will argue, amounts to abstracting from the domination of workers by bosses, the power of the wealthy, and structures of racial and gender discrimination. On the other hand, rejecting the microeconomic approach altogether amounts to denying the reality of the choices open to agents and thereby fundamentally misunderstanding the nature and dynamics of the capitalist economy.<sup>14</sup>

We will introduce the first part of our claim—that the Walrasian and classical Marxian microfoundations are alike inadequate—with what may seem a curious observation. We take the hallmark of a microeconomic analysis to be its attention to the full range of choices facing economic agents; but by this standard, the Walrasian model (and *a fortiori* of the neo-Marxian adaptations of it) is simply not microeconomics for it arbitrarily limits the range of situations in which agents optimize. If the *homo economicus* who inhabits the Walrasian world calculates marginal rates of substitution between apples and oranges at the grocery store so as to implement a utility maximizing program, one wonders why he does not optimize as thoroughly while deciding how hard to work for his employer or whether to default on a loan. *Homo economicus* turns out not to be the *great optimizer* he was touted to be but rather a stripped down version who obligingly declines to pursue his interest in any relationship plagued by agency problems. When generalized optimizing behavior is permitted—and it is only by fiat that standard neoclassical and neo-Marxian models exclude it—the Walrasian model

collapses, a new approach to microeconomic theory emerges, and a considerably richer set of analytical results follow.

Perhaps counterintuitively, a less restrictive assumption concerning the range of strategies available to individuals allows a more adequate model of the actual constraints faced by individuals. By broadening the range of individual choice available to economic agents, the model we develop in the pages to follow yields an account of conflict and hierarchy in production and, partly as a consequence, provides a more adequate basis for the theory of collective action. By contrast, the oversocialized agent of Walrasian theory—who maximizes only while shopping and who plays by the rules even when they may be advantageously ignored—gives us an insufficiently social concept of the economy, lacking in a structure of power and bereft of opportunities for effective cooperation among agents.

Let us begin by reviewing the representation of exchange relationships and economic institutions in the Walrasian model. James Buchanan describes *the anonymity of the market* and the uncontested nature of claims by reference to "a roadside stand outside Blacksburg:"

I do not know the fruit salesman personally, and I have no particular interest in his well-being. He reciprocates this attitude.... Yet the two of us are able to...transact exchanges efficiently because both parties agree on the property rights relevant to them.<sup>15</sup>

Milton Friedman similarly invokes the anonymity of exchange to assert *the incompatibility of competitive markets and discrimination*:

[A] free market separates economic efficiency from irrelevant characteristics...the purchaser of bread does not know whether it was made by a white man or a Negro, by a Christian or a Jew.... A businessman...who expresses preferences in his business activity that are not related to productive efficiency...is in effect imposing higher costs on himself than are other individuals who do not have such preferences. Hence in a free market they will tend to drive him out.<sup>16</sup>

Thus in a Walrasian competitive equilibrium, cost minimization precludes discrimination on the basis of race, gender, or other ascriptive traits among otherwise identical agents.

Armen Alchian and Harold Demsetz capture *the absence of substantive hierarchy* in the following provocative observation. The firm, they say,

has no power of fiat, no authority, no disciplinary action any different in the slightest degree from ordinary market contracting between any two people.... (The firm) can fire or sue, just as I can fire my grocer by stopping purchases from him, or sue him for delivering faulty products.<sup>17</sup>

Indeed, there is nothing in a Walrasian model suggesting that capital has even *formal* power over labor. As Paul Samuelson has noted concerning the distribution of income in a capitalist economy, "in a perfectly competitive market it really

doesn't matter who hires whom; so let labor hire capital."<sup>18</sup> The result, noted long ago by Joseph Schumpeter, is a *decentralization of effective power to consumers*:

The people who direct business firms only execute what is prescribed for them by wants....Individuals have influence only in so far as they are consumers...<sup>19</sup>

Underlying each of these positions is a single critical result of the Walrasian model: the proposition that in competitive equilibrium markets clear; prices and the level of transactions in each market ensure the equality of supply and demand. We will see why this result is so important; later we will show that the market clearing result depends on the assumption of exogenous contract enforcement and is thus a special case of quite limited relevance to the operations of a capitalist economy.

In the Walrasian model, equilibrium prices are defined as those consistent with each agent optimizing, given each other agent's transactions.<sup>20</sup> In equilibrium all agents are both *price takers* who have no control over prices and *quantity makers* who can buy or sell any amount at the going prices. Agents thus have equal power: no power over prices and complete power over quantities.

Yet differences in power are absent in a more fundamental sense as well. In an equilibrium exchange agent B's gain from trading with A exactly equals the gain from B's next best alternative. For suppose this were not the case in a competitive economy. There would be some third agent, C, currently occupying a position with the same value as B's next best alternative and who would benefit from occupying B's current position. Agent C could thus have offered A a contract superior to that offered by B, blocking B's exchange with A. Since this did not occur, no such C exists, and B's next best alternative must be at least as valuable as the exchange with A. On the other hand, B's next best alternative cannot have greater value, or B would not have entered into the current contract with A. We conclude that B's gain from trading with A exactly equals the gain from B's next best alternative, so A's threat of nonrenewal of contract with B imposes no costs on B and hence gives A no power over B.

But if all agents are indifferent between their current transactions and their next best alternative, then markets must have cleared for the presence of excess supply—say, of labor in the form of unemployment—would mean that employed workers were not indifferent between holding their present job and being without a job (their next best alternative), and the presence of excess demand—say, demand for loans in the form of borrowers willing but unable to borrow more at the going interest rate—would indicate that current borrowers would prefer their current transactions to their next best alternative (going without the loans). Put differently, if markets did not clear, some agents (borrowers and workers in the above example) would be *quantity constrained* (unable to transact as much as they would like at going prices).



The anonymity of exchange stressed by Buchanan is based on the fact that because all agents are indifferent between their current transactions and their next best alternative, the identity of one's exchange partners is irrelevant. There is no reason therefore to engage in long-term exchange relations, there is no possible gain to be made through strategic behavior, and the face-to-face aspect of exchange is irrelevant. Transactions take place, as it were, through a veil of prices. Paradoxically, it is because the objects of exchange are transparent that the parties to the exchange may be invisible to one another.

The apolitical conception of the economy directly follows, but showing this will require that we introduce an important (but we think uncontroversial) *sufficient condition for the exercise of power*. Let us accept the assertion that, *for A to have power over B, it is sufficient that, by imposing or threatening to impose sanctions on B, A is capable of affecting B's actions in ways that further A's interests while B lacks this capacity with respect to A.*<sup>21</sup> Because in Walrasian equilibrium the cost to B of foregoing an exchange with A is zero (B is free to deal with C on identical terms), A cannot affect B's well being by terminating the exchange. Thus in the competitive equilibrium of a Walrasian economy, no sanctions may be imposed through the private actions of noncolluding agents. Whence flows Alchian's and Demsetz's belief that one can walk away from one's employer or creditor with as little concern as one crosses the street to shop at one supermarket rather than another.

Samuelson's affirmation that the locus of decision-making authority in a firm makes no difference follows trivially. For the boss has no more authority over the workers than conversely (they all have none), and there is no real decision-making authority to relocate. A worker-run firm would be constrained by competition simply to replicate the structure and functioning of the capitalist firm. By a simple extension of this argument, the traditional democratic and socialist critiques of the fragmentation of tasks, deskilling, and other aspects of work experience, technology, and the division of labor in capitalist production may be shown to be without foundation. Work may be unpleasant, but a socialist economy would offer the same unless it chose to sacrifice productive efficiency.

Friedman's argument for the unsustainability of discrimination in competitive equilibrium follows as well. If, for instance, the wages for black workers are lower than those for white workers, and if the two groups are equally productive, a single nondiscriminating employer could hire the cheaper black labor, and by producing thus at lower cost than the discriminators, expand at their expense. As a result the demand for black workers would increase while the demand for white workers would decline, driving up the relative wages of the group discriminated against. This process would continue until wages were equalized, and hence discrimination eliminated.

		Outcomes: Command over	
		People	Goods and services
Means: Command over	Violence	Obedience to laws	Taxation and transfers
	Economic resources	Power in exchange	Purchasing power

Figure 1 A taxonomy of power.

Schumpeter's consumer sovereignty is also an unavoidable implication of Walrasian equilibrium, but we can now see that it is a peculiarly toothless kind of sovereignty. By the definition of equilibrium, the influence held by the high-income consumer does not include the power to impose sanctions. Rather it is of the behavioral form: A (the well-to-do consumer with a taste for caviar) can cause others to do what they would not have done (produce more caviar) in the absence of A's purchases. A has power *over* none of the caviar producers, however, because each of them is indifferent between A's purchases and their next best alternative.<sup>22</sup>

Let us contrast these two forms of power by speaking of *command over goods and services* and *command over agents*. If we further identify two fundamental means of power as the command over violence and the command over economic resources, we can readily locate a key lacuna in the Walrasian model as a basis for a democratic political economy: its lack of a concept of command over agents based on the control of economic resources. We term this (admittedly loosely) *power in exchange*, as a more adequate term must await the development of the model in the subsequent sections. Its location in a simple taxonomy of power is illustrated in Figure 1.

As power in exchange is absent in the Walrasian model, the only power that wealth confers is purchasing power.<sup>23</sup> The owners of the means of production are powerful in no way different from a highly paid athlete: They have superior access to goods and services, may choose to enjoy more leisure than others, and may pass on similar advantages to their heirs. Though on a vastly different scale, the command they exercise is no different in *kind* from that which a worker exercises when buying a cup of coffee.

But those who use the Walrasian model never claimed it was about power or about race or gender; is it not enough for one model to illuminate the determination of prices and the distribution of income among agents who differ only in their holdings of property? It would indeed be enough, but as we will see, the manner in which the Walrasian model abstracts from power commits it to an insupportable

		Enforcement of claims:	
		Exogenous	Endogenous
Constitution of Agents:	Exogenous	Walrasian exchange: L. Walras M. Morishima K. Arrow–G. Debreu J. Roemer	Instrumental contested exchange: Oliver Williamson Transactions cost economics efficiency wage theory A. Alchian-H. Demsetz
	Endogenous	Constitutive-contractual exchange: Adam Smith A.K. Sen Evolutionary games F. Hayek	Constitutive-contested exchange: G. Akerlof D. North K. Marx Contested exchange

Figure 2 Varieties of economic theory.

theory even of its narrowly defined object of analysis: prices and income distribution.

It was largely dissatisfaction with the Walrasian model, on its own terms so to speak, that fostered the development of what we term post-Walrasian economics. We may clarify some key dimensions of the post-Walrasian departure and in passing define more carefully what we mean by Walrasian economics by pinpointing the two most critical abstractions of the Walrasian paradigm: the exogenous enforcement axiom and the assumption that agents are exogenously determined. We can then generate three variants of post-Walrasian economics by selectively dropping the exogenous enforcement and exogenous agent assumptions. These variants are exhibited in Figure 2.

Economists dropping the exogenous enforcement assumption alone model what may be termed *instrumental contested exchange* since the activities of the agents are explained as instruments towards preformed objectives. Efficiency wage theory<sup>24</sup> and transactions cost analysis<sup>25</sup> are generally of this type. Among the instrumental contested exchange theorists may be found an important subset, which we call the neo-Hobbesian economists, Oliver Williamson, Armen Alchian, and Harold Demsetz being leading representatives. They take the problem of *opportunism* as given by human nature, and find that the hierarchical structure of the capitalist firm is simply an efficient solution to this problem. Echoing Hobbes' argument for a powerful sovereign on the basis of the state of nature, Alchian and Demsetz<sup>26</sup> argue that a free and equal team of workers faced with the problem of their own opportunistic proclivities would grant one of their number the power to control, even to fire, other team members.

Conversely, economists who retain the external enforcement axiom but reject the exogeneity of preferences—A.K. Sen, for example—work with a model of *constitutive contractual exchange*: Agents are constituted in the process of exchange. Lastly, those like us, who drop both Walrasian assumptions take both agents and the enforcement of claims as endogenous, model a *constitutive contested exchange*. We will argue in the concluding section that, if exchanges are contested, there are compelling reasons to believe that they must also be constitutive. Aside from a brief treatment of discrimination based on race and gender, however, we will have little to say here about the constitutive nature of exchange.<sup>27</sup>

Particularly given these new developments in post-Walrasian theory, it would be a mistake to let misgivings about the Walrasian model foster a rejection of microeconomic reasoning altogether. Thus we suspect that the second part of our claim—concerning need for a microfoundations of political economy—is not so much controversial as subject to misunderstanding.<sup>28</sup> We mean simply that an adequate social theory must provide a consistent account of the manner in which individual choices made in historically given circumstances yield particular social outcomes.<sup>29</sup> Our position is a commitment to little more than the proposition that people make choices and that these choices make a difference. It is not even a useful shorthand to speak as if *structures reproduce themselves* or to say that rules are transformed by some intrinsic logic; the constraints under which choice is made and the evolution of these constraints over time are the result of what people do or fail to do.

Defined in this perhaps minimalist manner the assertion that microfoundations are essential to social theory passes judgement on neither the possibly truncated menu from which the choices are made, the perhaps despotic or opaque rules by which individual choices generate social outcomes, nor the conditions under which the preferences or commitments of agents were formed. In particular, it does not commit us to the idea that individual preferences are causally prior to the structural constraints under which decisions are made. The idea that agents make the rules and the rules make the agents is but a slightly amended (though less evocative) version of Marx's affirmation that people make history but under circumstances inherited from the past and not of their own choosing, the amendment being to add "circumstances also make people" an observation with which Marx would certainly have concurred.<sup>30</sup>

It is often insightful to reason from individual preferences and given constraints to social outcomes as we do in most of this essay. But given the endogeneity of the individual agents we do not—indeed logically we cannot—privilege the individual agent as a basis of explanation.<sup>31</sup> Thus the intellectual project of deducing rules and their evolution from pre-given individual preferences and capacities—the characteristic research program of social contract theory,

some versions of methodological individualism, the conservative property rights theorists, and some evolutionary game theory—is in our view intellectually incoherent and in any case not entailed by a commitment to microfoundations. It is no more reasonable to take people as given and ask what rules would evolve from their interaction in a ruleless environment, than to take a set of rules as given and ask what kind of people would evolve from the impact of these rules on the presocial genetic potential of *homo sapiens*. Both perspectives, when jointly deployed, are potentially insightful; the choice of emphasis cannot be determined by methodological fiat.

We believe that the centrality of choice upon which our case for microfoundations rests needs no defense on substantive grounds. We take this simply as a descriptive statement about the capitalist, state socialist, and other societies we seek to understand. It is also a normative commitment guiding democratic theory: The choices people make ought to make a difference.

We may introduce our constitutive contested exchange approach by modeling the labor market and the labor process.

#### BOSSSES AND WORKERS: THE LABOR MARKET AS A CONSTITUTIVE CONTESTED EXCHANGE

As Marx's discussion of the extraction of labor from labor power makes clear, the relationship between wage labor and capital is a contested exchange because while the worker's time can be contracted for, the amount and quality of actual work done generally cannot. The relationship of borrower to lender or of owner to the management of a firm is also a contested exchange because, while the repayment schedule of the loan can be contracted for, this is not true of the actions of the borrower that will determine the possibility of repayment. Exogenous enforcement will generally be absent and exchanges will be contested when there is no relevant third party (as when A and B are sovereign states), when the contested attribute can be measured only imperfectly or at considerable cost (work effort, for example, or the degree of risk assumed by a firm's management), when the relevant evidence is not admissible in a court of law (such as an agent's eye witness but unsubstantiated experience) when there is no possible means of redress (for example, when the liable party is bankrupt), or when the number of contingencies concerning future states of the world relevant to the exchange preclude writing a fully specified contract.

In such cases the *ex post* terms of exchange are determined by the monitoring and sanctioning mechanisms instituted by A to induce B to provide the desired level of the contested attribute.<sup>32</sup> We shall here stress one extremely important endogenous enforcement mechanism: *contingent renewal*. This obtains when A elicits performance from B by promising to renew the contract in future periods if satisfied and to terminate the contract if not. For instance, a manager may

promise a worker reemployment contingent upon satisfactory performance or a lender may offer a borrower a short-term loan with the promise of rolling over the loan contingent upon the borrower's prudent business behavior.

The labor market is a case in point. An employment relationship is established when, in return for a wage, the worker agrees to submit to the authority of the employer. The worker's promise to bestow an adequate level of effort and care upon the tasks assigned, even if offered, is legally unenforceable. At the level of effort expected by management, work is subjectively costly for the worker to provide, valuable to the employer, and costly to measure. The manager-worker relationship thus is a contested exchange.<sup>33</sup> The endogenous enforcement mechanisms of the enterprise, not the state, are thus responsible for ensuring the delivery of any particular level of labor services per hour of labor time supplied.<sup>34</sup>

A simple model of the manager-worker relationship will illuminate the archetypal contested exchange. Our objective is to identify the aspects of the labor market and the labor process that determine the terms of exchange: the wage rate and the intensity of labor. Let  $e$  represent the level of work effort provided by employee B. We assume effort is costly for B to provide above some minimal level  $e$ . B's employer, A, knows that B will choose  $e$  in response to both the cost of supplying effort and the penalty employer A will impose if dissatisfied with B's performance. The penalty imposed by A is the nonrenewal of employment—that is, dismissing the worker. Of course the employer may choose not to terminate the worker if the cost associated with the termination (demoralization or ill will among fellow workers, a work-to-rule slowdown, a strike, or simply the search and training costs of replacement) are excessive.

The level of work intensity is chosen in a proximate sense by the worker. But in choosing, the worker must consider both short- and long-term costs and benefits; working less hard now, for example, means more on-the-job leisure now and a probability of no job and hence less income later. To take into account this time dimension, we will consider the worker's job as an asset, the value of which depends in part on the worker's effort level.

We define the *value of employment*,  $v(w)$ , as the discounted present value of the worker's future income stream taking account of the probability that the worker will be dismissed; for obvious reasons it is an increasing function of the current wage rate  $w$ . We define the employee's *fallback position*,  $z$ , as the present value of future income for a person whose job is terminated—perhaps the present value of a future stream of unemployment benefits, the present value of some other job, or more likely a sequence of the two weighted by the expected duration of unemployment. Then A's threat of dismissal is credible only if  $v(w) > z$ . We call  $v(w) - z$ , the difference between the value of employment and the fallback position,  $z$ , the *employment rent* or the cost of job loss. We term this a *rent* as it represents a payment above and beyond the income of an identical employee

without the job.<sup>35</sup> Workers who receive employment rents are not indifferent to losing their job (their cost of job loss is not zero).

Employment rents accorded to workers in labor markets are a particularly important case of the more general category, *enforcement rents*, which arise in all cases of competitively determined contested exchange under conditions of contingent renewal. Our objective will be to show that employment rents—and more generally, enforcement rents—will exist in a competitive equilibrium of a contested exchange.

A sufficiently low wage would make the job no more desirable to the worker than a spell of unemployment followed by a job search and another job. Let  $w$  be this wage that equates  $v(w)$  and  $z$ . This wage rate implies a zero employment rent, hence the absence of effective sanctions by the employer, and thus induces the worker's freely chosen effort level,  $\bar{e}$ , the "whistle-while-you-work labor intensity." We term  $w$  the *reservation wage*. At any wage less than  $w$  the worker will refuse employment or quit if employed. The level of  $w$  depends obviously on the worker's relative enjoyment of leisure and work, the level and coverage of unemployment benefits, the expected duration of unemployment for a terminated worker, the loss of seniority associated with moving to a new job, and the availability of other income. In the Walrasian model, the equilibrium wage must be the reservation wage; otherwise workers could not be indifferent between their current transaction and their next best alternative.<sup>36</sup>

We assume A has a monitoring system such that B's performance will be found adequate with a probability  $f$ , which depends positively on B's level of effort. If this effort level is found to be inadequate, B is dismissed with probability  $1-p$  (that is, is the probability that the worker found to be working inadequately will *not* be dismissed). It is the link between effort and the likelihood of job retention that induces B to provide effort above  $\bar{e}$ .<sup>37</sup>

To elicit greater effort than  $\bar{e}$ , A is obliged to offer a wage greater than  $w$ , balancing the cost of paying the larger wage against the benefits associated with B's greater effort induced by a higher cost of job loss. For any given wage, the worker will determine how hard to work by trading the marginal disutility of additional effort against the effect that additional effort has on the probability of retaining the job and thus continuing to receive the employment rent. Noting that the fallback position  $z$  is exogenous to the exchange, we may write B's best response to  $w$ , which we call the *labor extraction function*, simply as  $e = e(w)$ . In the neighborhood of the competitive equilibrium  $e$  increases with  $w$ , though at a diminishing rate, or  $e_w > 0$ ,  $e_{ww} < 0$ .<sup>38</sup>

The equilibrium wage and effort level illustrated in Figure 3 is determined as follows. Agent A knows B's best response schedule,  $e(w)$ , so once A selects the wage, the level of effort that will be performed is known with certainty. Agent A then optimizes—maximizes profits or, what is equivalent in this model, mini-

mizes costs—given the response schedule of *B*. Contingent renewal equilibria are thus Stackelberg equilibria, where agent *A* is a Stackelberg leader, making a take it or leave it offer to *B*, the Stackelberg follower.<sup>39</sup>

The solution to *A*'s optimum problem is to set  $w$  such that  $e_w = e/w$ , or the marginal effect on effort of a wage increase equals the average effort provided per unit of wage cost.<sup>40</sup> This solution yields the equilibrium effort level  $e^*$  and wage  $w^*$ , shown in Figure 3. The ray  $(e/w)^*$  is one of the employer's isolabor cost loci: All points on this ray have the same effort per wage dollar, and the employer is hence indifferent amongst them. Its slope is  $e^*/w^*$ . Steeper rays are obviously preferred by the employer.

Two important results are apparent. First,  $e^* > \bar{e}$ , so *B* provides a level of effort greater than would have been the case in the absence of the enforcement rent and the employer's monitoring system; and second,  $w^* > \bar{w}$ , so *B* receives a wage greater than the reservation wage. The first result indicates that *A*'s enforcement strategy is effective; the second indicates that the labor market does not clear in competitive equilibrium: Workers holding jobs are not indifferent to losing them, and there are identical workers either involuntarily unemployed or employed in less desirable positions.

Both results are of course at variance with the Walrasian model, which can be seen to be a limiting case of contested exchange that obtains when there is

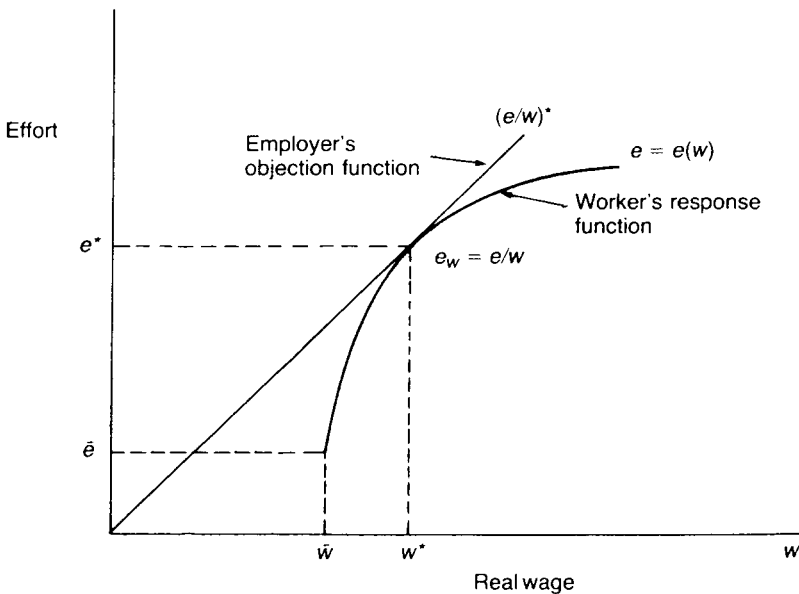


Figure 3 Optimal wages and labor intensity.



either an absence of a conflict of interest between employer and employee over effort or a costless means by which A can enforce a specific level of effort. The first of these conditions can be represented in Figure 3 by hypothetically increasing  $\bar{e}$ , the level of effort B supplied independently of the wage. This might occur, for example, if work norms were to change so as to favor greater work effort. Alternatively,  $\bar{e}$  might rise, for example, if the employer had some other means of extracting effort, for example through physical punishment. At some point  $\bar{e}/\bar{w}$  may exceed  $e_w$ , implying that the optimal solution for A is simply to pay  $\bar{w}$  and accept the effort level  $\bar{e}$ .<sup>41</sup>

The second Walrasian case may be illustrated by *flattening out* the best response schedule  $e(w)$ , so the level of effort does not vary significantly with the enforcement rent. This might occur, for example, if workers were so rich that they were indifferent to additional income. At some point we again arrive at the corner solution at  $(\bar{e}, \bar{w})$ , implying the Walrasian result: The employer offers a wage equal to the reservation wage  $\bar{w}$ , abandons the attempt to apply enforcement rent sanctions to the employee, and accepts the effort level  $\bar{e}$ .

Perhaps significantly, the Walrasian result can be seen to require either the unalienated or perhaps conformist norm-following Stakhanovite (the first case) or the income-satiated worker who cannot be manipulated by the wage carrot (the second case). In either case, the labor process would not then be a contested exchange, the labor market would clear in equilibrium, and no agent could sanction any other. Our sufficient condition for the exercise of power would thus not obtain. One might reasonably suspect, nonetheless, that in at least the first case the exercise of power is implicated, perhaps in the prior socialization of the worker to accept hard work as a norm or the effectiveness of employer sanctions unrelated to income. We regard both cases as unrealistic: Workers are not indifferent to additional income, and they would not choose the profit-maximizing level of effort in the absence of employer sanctions.

If one were rightly to dismiss on empirical grounds either the Stakhanovite or income-satiated worker routes back to the Walrasian model of clearing markets, however, one might equally charge that our representation of the labor process and labor market fails to capture important aspects of actually existing capitalism and particularly the social nature of the work process and the welfare state. By stressing the carrot of high wages and the stick of dismissal we do not, however, abstract from other possibly important aspects of the regulation of work such as conformism, good will, and pride in work for these determine the position of the labor extraction function.<sup>42</sup> Does not the welfare state and collective bargaining offer workers some protection from job termination and a minimum living standard when unemployed? True, but the degree of worker security from firing and unemployment insurance are integral parts of the model (reflected in  $p$  and  $z$  respectively). Indeed one of the advantages of the model is that it allows an

analysis of the economic effects of the welfare state that goes considerably beyond the standard treatments of the effects of taxes and transfers on the supply of factors of production and on individual saving behavior.<sup>43</sup>

#### SHORT-SIDE POWER IN THE PRODUCTION PROCESS

Does employer A have power over worker B? Given the sufficient condition for the exercise of power, the answer is surely yes: A may use the threat of sanction to cause B to act in A's interest, and the converse is not true. First, A may dismiss B, reducing B's present value to  $z$ . Hence A can apply sanctions to B. Second, A can use sanctions to elicit a preferred level of effort from B and thus to further A's interests.<sup>44</sup> Finally, while B may be capable of applying sanctions to A (for example, B may be capable of burning down A's factory), B cannot use this capacity to induce A to choose a different wage or to refrain from dismissing B should A desire to do so. Should B make A a take-it-or-leave-it offer to work at a higher than equilibrium wage or should B threaten to apply sanctions unless A offers a higher wage, A would simply reject the offer and hire another worker. For as we have seen in the previous section, in equilibrium there will exist unemployed workers identical to B who would prefer to be employed. Thus A has power over B.

This model can be extended to include many agents and firms in a system of general economic equilibrium, making explicit the centrality of nonclearing markets to contested exchange equilibrium. In particular, because such an equilibrium exhibits positive enforcement rents, it entails by definition involuntary unemployment as well. The existence of agents who are involuntarily without employment (or with less desirable employment than B) follows from the strict inequality  $v(w) > z$ : If B enjoys an employment rent, there must be another otherwise identical agent, C, who would be willing to fill B's position at the going, or even at a lower, wage.<sup>45</sup> Moreover, should C promise A to work as hard as B for a lower wage, the offer will rightly be disbelieved and hence rejected by A. The reason is that, other than their employment status, B and C are identical, A knows exactly how much effort is forthcoming for a given employment rent and has already selected a cost-minimizing wage. Agent C is thus involuntarily unemployed in equilibrium so A's threat to replace B is credible.<sup>46</sup>

Models in which markets fail to clear have traditionally been viewed as disequilibrium theories.<sup>47</sup> In the contested exchange model, however, nonclearing markets are characteristic of competitive equilibrium defined in the standard manner: No actor is capable of improving his or her position by altering a variable over which he or she has control. Employers have no interest in changing the wage offered, employed workers have no interest in changing the level of effort supplied, and workers in search of a job can do nothing but await an offer at the equilibrium wage.

The employer's power is thus related to his or her favorable position in a nonclearing market. We say that the employer A, who can purchase any desired amount of labor and hence is not quantity constrained, is on the *short side* of the market. Where excess supply exists—as in the labor market—the demand side is the short side and conversely.<sup>48</sup> Suppliers of labor are on the *long side* of the market. When contingent renewal is operative and where the institutional environment is such that the threat of sanctions by the short sider may be instrumental to furthering his or her interests, the principle of *short-side power* holds: Agents on the short side of the market will have power over agents on the long side with whom they transact.<sup>49</sup> Long-side agents are of two types: those such as B who succeed in finding an employer and thus receive a rent that constrains them to accept the employer's authority and those such as C who fail to make a transaction and hence are rationed out of the market. We will sometimes refer to agents such as B as long-side transactors and those such as C as quantity constrained.

Three aspects of this result deserve to be noted. First, it might appear that A has expressed a preference for power and has simply traded away some money—the enforcement rent—to gain power. But while real world employers may act this way, it is quite unnecessary for our result: A is assumed to be indifferent to the nature of the authority relationship *per se* and is simply maximizing profits.

Second, it might be thought that A has intentionally generated the unemployment necessary for the maintenance of his or her short-side power. It is true that the employer's profit maximizing strategy, when it is adopted by all other employers, results in the existence of unemployed workers and that other wage-setting rules would not have this result. But we have assumed that the employer treats the level of unemployment, which figures in the determination of the workers' fallback position,  $z$ , as exogenous for the simple reason that no employer acting singly can determine the level of aggregate employment.<sup>50</sup>

Third, it may be argued that B has power over A, if not in our formal sense then in the sense that B has the capacity to induce A to offer an employment rent over and above the amount needed to induce B to enter into the transaction. But B's advantage does not stem from B's *power* in the sense of a capacity that can be strategically deployed towards furthering one's interests. To see this, note that A's power to dismiss B is a credible threat, while B can put forth no credible threat whatever. Rather than attributing the fact that B receives a wage in excess of the reservation wage to "B's power over A," we might better say that the employment rent derives from B's autonomy, that is from the inability of A costlessly to determine B's level of effort. The rent is a cost to A of exercising power over B.<sup>51</sup>

We may summarize these results in the form of two propositions:

**Proposition 1 (short-side power):** A competitive equilibrium of a system of contested exchanges may allocate power to agents on the short side of nonclearing markets.

**Proposition 2 (the politics of production): Those in positions of decision-making authority in capitalist firms occupy locations on the short side of the labor market and exercise power over employees.**

Let us not overstate these results. First, not all contested exchanges give rise to short-side power. We analyzed an important case of contested exchange where contingent renewal strategies of endogenous enforcement are adopted by agents on one side of the market and where the short-side agents have the strategic capacity to act as Stackelberg leaders and thus to make use of their advantageous short-side location. But there may be other important cases in which our sufficient condition for the exercise of power do not obtain. Where no costlessly enforceable contracts can be written at all, for example, both agents may engage in endogenous enforcement activities, both may receive enforcement rents, and each may thus effectively pursue their interests by threatening to sanction the other. An employer facing a group of organized workers where the cost of replacing workers is high is an example of such bilateral power.<sup>52</sup>

Further if an enforcement strategy superior to contingent renewal is available, markets may clear and the short side may be eliminated altogether. We have seen that Draconian physical punishments or Stakhanovite work norms might hypothetically have this result in labor markets. More realistically we will see that the use of collateral in capital markets may produce this result when borrowers are sufficiently wealthy and not excessively risk averse. Lastly, the potential for short-side power may exist, but short-side agents may not have the strategic capacity to render the threat of nonrenewal an influence on the long sider's actions.<sup>53</sup>

Second, we have located power in the economy, but we have not shown that the exercise of this power is socially consequential. Indeed is it not inconceivable that, while short-side agents in labor markets exercise power over long-side transactors, there are no feasible alternative institutional arrangements that would yield superior outcomes. Rendering economic power democratically accountable is an important political project only if the exercise of power has socially consequential effects. While demonstrating this point is far from trivial, we think that the power of short siders does make a difference in both moral and political senses and have explored the implications of democratic accountability.<sup>54</sup>

We may extract two less obvious results from the contested exchange model of the labor process and labor market. The first concerns Milton Friedman's claim that labor market discrimination and competitive equilibrium are incompatible.<sup>55</sup>

In a contested exchange framework, discriminatory hiring practices may be an equilibrium employer strategy: Paying identical workers different wages (according to race, for example) will be profitable if it contributes to racial divisions that make cooperation among workers more difficult and hence lowers the cost of identifying and terminating a nonworking employee. Because all

workers receive wages above their reservation wage, paying some less than others is not precluded as it is in the Walrasian model by the lower wage workers withdrawing their labor supply. If we identify as *primary jobs* the higher-paying positions into which one racial group is hired and as *secondary jobs* the lower-paying positions into which the other is hired, the labor market then includes in addition to employed and unemployed, the new category of *job-rationed* workers: Agents who may be employed in one job category but are excluded from employment in another category for which they are qualified. A discriminated-against worker employed in a secondary position is thus job-rationed in the sense of being a long sider with a contract (a type B agent) with respect to the secondary market but a long sider without a contract (a type C agent) with respect to the primary job market.<sup>56</sup>

The efficacy of cooperation among workers is obviously critical to this argument. But how might collusion among workers benefit workers at the expense of their employers? Most obviously a unified work force could threaten to strike if even a single worker is terminated. Of course under competitive assumptions the striking workers could be replaced, but the search, recruitment, and training costs of an entire workforce might deter the termination of any but the most recalcitrant on-the-job loafer. If racial hiring practices impede collusion among

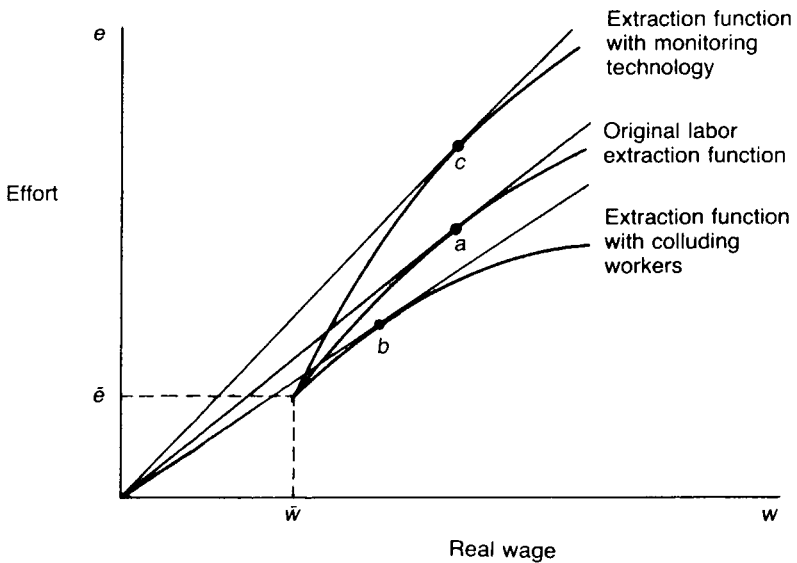


Figure 4 The effects of worker collusion and monitoring technologies on the labor extraction equilibrium (a, b, and c are the three equilibria corresponding to the three extraction functions).

workers and if they are not costly on other grounds, they will be an equilibrium strategy for the employer who as Stackelberg leader will design wage and working conditions packages with racial disunity as an objective and make these as take-it-or-leave-it offers to prospective employees.<sup>57</sup>

Formally, an increase in collusion will raise  $p$ , the probability of *not* being terminated if observed not working up to standard. This in turn will have the effect of reducing the optimal amount of effort offered at each wage rate, yielding a downward rotation around point  $(\bar{w}, \bar{e})$  of the labor extraction function as shown in Figure 4. The result, necessarily, is a fall in  $e/w$ , or what is the same thing, an increase in labor costs per unit of effective labor done. An analogous downward shift in the extraction function might take place if collusion among workers made the detection of nonworking workers more difficult or more costly, perhaps by workers refusing to cooperate with the surveillance system of the employer, giving false reports on the work activities of fellow workers and the like. We thus have:

**Proposition 3 (divide and rule): The competitive equilibrium of a contested exchange economy may exhibit racial, gender, and other forms of labor market discrimination among otherwise identical workers.**

It is worth noting that Proposition 3 relies on the constitutive as well as the contested nature of the exchange process: The structure of wages provides a basis for feelings of solidarity or antagonism.

Our last labor market result concerns the social determination of technology or what might be termed the shaping of the forces of production by the social relations of production.<sup>58</sup> The production system entailed by our model includes a production function, which describes the transformation of inputs into outputs, and a labor extraction function, which describes the manner in which the firm acquires work from employees whose time it has purchased on the labor market. Thus far we have assumed that the choice of the technologies that make up the production function is unrelated to the endogenous enforcement of claims arising in the labor market. But technologies differ markedly in their impact on the enforcement problem facing employers; some, like the assembly line, computerized point-of-sale terminals, or centralized word processing systems, make the detection of a laggard worker by a nonworker relatively simple while others, like team production methods, make the production process considerably more opaque to outsiders.

Thus the choice of technology will influence the cost of monitoring the work process and for any given cost level the probability that a nonworking worker will be detected. Formally the choice of a technology that yields an easily monitored production process may be represented as an upwards rotation of the labor extraction function, as shown in Figure 4. The result is a saving on the cost of

extracting labor from labor power that in the technical choice decision will be compared with the possibly greater production cost of the new technology stemming from its possibly lesser efficiency in transforming inputs into outputs.<sup>59</sup> Thus the efficiency of a technology in transforming inputs into outputs does not determine the course of technical change, and the choice of technique may be inefficient in the sense that production systems may be selected for their capacity to police the labor process despite their relative ineffectiveness in producing goods and services. We thus can assert:

**Proposition 4 (capitalist technology):** Where claim enforcement is endogenous, the profit-maximizing choice of production technologies will be made in light of both the efficiency with which technologies transform inputs into outputs and their efficacy in enforcing contested claims; the resulting technologies, though cost minimizing, will generally not be efficient.

Thus the technologies in use (and possibly technological research) will be influenced by the structure of the enforcement environments and enforcement instruments available. Because these are determined in important measure by the social institutions governing everything from civil liberties through bankruptcy law to the welfare state, we may expect social institutions and production relations in particular to influence technical choice in ways unrelated to the standard arguments concerning price and income effects.<sup>60</sup>

The concept of short-side power is the key to unraveling the relation between control over economic resources and command over people, or what we earlier provisionally termed *power in exchange*. But thus far we have supplied no reason why there is any connection between such power and the ownership of property. Exploring the relationship between wealth and power in the economy will require extended consideration of another contested exchange: the capital market.

#### WEALTH AND POWER

What is the connection between the ownership of wealth and the exercise of economic power?<sup>61</sup> As we have seen, the Walrasian model implies that, through the process of exchange, property rights confer on their holders no advantages other than the greater consumption, leisure, or capacity to bequest made possible by, and in proportion to, the values of one's holdings; the power of wealth is purchasing power. Yet where claims are endogenously enforced the connection between wealth and power is both more extensive and less direct.

The location of agents to the short and long sides of markets, and hence the locus of economic power, as well as the division between long siders who succeed in making transactions and those who fail, is often (but not always) related to ownership. The reason for this is straightforward: Capital markets are as much arenas of contested exchange as are labor markets.<sup>62</sup>

In return for a sum of money from lender A today, borrower B contracts to repay the loan together with a specified debt service at some given time in the future. This promise is enforceable, however, only if B is solvent at the time the repayment is called for. The borrower's promise to remain solvent is no more amenable to exogenous enforcement than is the employee's promise to supply a particular quality of work. And just as the worker will generally wish to work less hard than is profit maximizing for the employer, the borrower will generally have an incentive to run greater risk of insolvency than would be optimal from the lender's point of view.

The credit/labor market parallel may be extended. Just as the employer is not obliged to accept the level of work effort offered by the worker in the absence of the threat of sanctions, so the lender can devise incentives that induce more favorable performance than borrowers would spontaneously exhibit. It will generally be in the lender's interest to do so since there is an evident conflict of interest between lender and borrower concerning the choice of risk: The profits from choosing a high-risk, high-expected-return investment strategy accrue to the borrower while the costs of such a strategy—a heightened chance of bankruptcy—are borne by the lender.

If the borrower's choice among investment projects involving different profiles of risk and rate of return could be contractually specified and third party enforced, the exchange between lender and borrower would give rise to no need for endogenous enforcement. But this is not the case. Not only are the actions of borrowers too subtle to be subjected to effective contractual specifications, but also the penalties that may feasibly be imposed on a risk-loving borrower are limited by the borrower's exposed assets, which are normally a small part of the total investment.<sup>63</sup>

Given the need for endogenous enforcement, contingent renewal can be an effective strategy in the capital market, lender A promising borrower B continued access to credit so long as B performs on current obligations and gives evidence of prudent business behavior. But contingent renewal is less effective in capital markets than it is in labor markets. First, the sums involved in a typical business loan (and hence the costs imposed on lenders by, say, the choice of an overly risky investment by the borrower) are orders of magnitude greater than the damage an employee can typically impose on the firm by enjoying on-the-job leisure. Second, potential borrowers have much to gain from misrepresenting their investment opportunities, since the discovery of the misrepresentation is generally difficult and in any case takes place only after significant gains may be reaped by the borrower and possibly losses suffered by the lender. For instance, an investment project need not have a positive expected return to be attractive to a borrower subject only to contingent renewal since, except for reputation effects,



it is the lender who bears the complete cost of failure. Workers, by contrast, have less to gain, since they will be quickly discovered and dismissed.

There is another enforcement strategy open to the lender, however—that of requiring the borrower to post collateral in order to qualify for a loan. Since this collateral is forfeited in case the borrower becomes insolvent, the incentive incompatibility between borrower and lender, as well as the adverse selection problem, are considerably attenuated: A highly collateralized borrower has objectives more nearly similar to the lender and has little incentive to invest in projects involving excessive risk. But collateral, by its very nature, must involve the borrower's own wealth and cannot (except through subterfuge) itself be borrowed without undermining the enforcement effect of the collateral requirement.

The observed relationship between the ownership of wealth and the exercise of command in a capitalist economy thus flows from the fact that only those who possess wealth can post collateral. The wealthy are thus in an advantageous position to make offers characterized by reduced incentive incompatibility. In the next section we will use a simple model to illustrate this point.

#### ENDOGENOUS ENFORCEMENT ON CAPITAL MARKETS

Given the contested nature of exchanges on capital markets, it is not surprising that our model bears a strong resemblance to the model of Stackelberg leadership in the labor market, but the importance of collateral differentiates the capital market in a number of ways.

Consider the borrower choosing among investment projects of differing levels of risk in response to a particular level of interest and collateral required by the lender and the lender choosing the interest rate and collateral requirement. The borrower's response function—the risk level chosen in response to each interest rate and collateral requirement—will then be taken as a constraint in the lender's maximizing problem. The lender will determine the interest rate and collateral requirement which maximize the lender's expected return on the transaction and offer these terms to the borrower. Competition among lenders then ensures that all loans have the same risk-adjusted rate of return—the same expected return, assuming lenders are risk neutral.

We shall see that unless borrowers are themselves wealthy, this model has an equilibrium similar to that of the labor market: Lenders offer some borrowers favorable terms, using the threat of nonrenewal of credit to elicit proper investment behavior while otherwise identical borrowers are denied credit. If, however, borrowers have sufficient wealth, lenders will increase their collateral requirements and lower enforcement rents to the point where the contingent renewal aspects of the exchange may vanish. In this latter case lenders do not have short-side power over borrowers, but since borrowers are themselves wealthy, our

asserted association between wealth and power (in this case the wealthy borrower's control of production and investment in the enterprise) remains. At the other extreme, where borrowers hold little wealth, collateral will play an insignificant role, and contingent renewal will be the primary endogenous enforcement mechanism. In this case, the results of the capital market reproduce those of the labor market, the (nonwealthy) borrower now appearing as a *manager* occupying a long-side position constrained by the short-side lender. For purposes of generality, we will assume in the remainder of this section that the actual situation includes both contingent renewal and collateral elements.

We assume lenders are risk neutral and have perfect information concerning the asset position and the expected distribution of returns on each investment project available to potential borrowers and loans are fixed-return agreements so all profits accrue to the borrower.<sup>64</sup> We also suppose borrowers have privileged access to information and/or skills that are not generally available or easily acquired and that render them, but not the lenders, capable of exploiting the investment opportunity.<sup>65</sup>

Suppose a potential borrower—one of many seeking a loan in a competitive capital market—has a set of investment opportunities that differ in the amount of risk entailed. Each project requires an outlay today and offers a later return that varies with the level of risk of the project. If all projects are (for simplicity) of one period's duration and all require the outlay of 1 (dollar, say), the return is  $r(f)$  at the beginning of the next period where  $r$  is the rate of return on the project and  $f$ , the measure of risk, is the probability that the investment project fails. Higher returns are available on riskier projects, so  $dr/df > 0$ .

If the project is not successful, the project returns nothing, and the original outlay is lost. Suppose also that posting collateral of value  $k$  on the loan costs the borrower not only the loss of the collateral in case of bankruptcy but also some opportunity costs because *tying up* collateral on one project renders it unavailable for other projects or unforeseen contingencies.<sup>66</sup>

Consider the case of a single lender facing such a borrower. Like the borrower, the lender is one of many operating under competitive conditions. Suppose a loan is offered at interest rate  $i$ , provided the borrower posts collateral  $k$ . The lender promises the borrower that the loan will be repeated indefinitely so long as it is paid back. Then, just as the worker selected a level of labor intensity to maximize the value of the job, the borrower will choose the riskiness of the project to maximize the present value of the borrower's assets,  $v$ , which will vary inversely with the rate of interest.<sup>67</sup>

The power of the lender over the borrower is based on the exposure of the borrower to two types of losses: the loss of the collateral and the nonrenewal of the loan. Specifically, the present value of the borrower's assets should no loan be secured,  $k$ , is the borrower's *reservation position*: if  $v < k$  the borrower will

refuse the loan. When  $v \geq \bar{k}$  the borrower is willing to accept the loan. The enforcement rent associated with the loan is the difference between the value of the borrower's assets with the loan,  $v$ , and the borrower's *fallback position*  $k^0$ , which is the value of the borrower's assets should the loan be secured, the project then fail, and as a consequence the collateral  $k$  be lost.<sup>68</sup> There will be some interest rate  $\bar{i}$  sufficiently high such that  $v$  is equal to  $\bar{k}$ , the minimal present value needed to induce the borrower to post collateral  $k$  and accept the loan. If an interest rate  $i < \bar{i}$  is offered, we term the difference  $i - \bar{i}$  a *contingent renewal premium* because only if  $i$  is less than  $\bar{i}$  will the borrower have the incentive to ensure the renewal of the exchange relationship (the contingent renewal premium is clearly analogous to the difference between the wage  $w$  and the reservation wage  $\bar{w}$  in the labor market model). At interest rate  $\bar{i}$  there is no contingent renewal premium, and the enforcement rent equals the collateral  $k$ , which the borrower loses in case of default.<sup>69</sup>

The lender, who knows the options open to the borrower, can thus determine the borrower's probability of default schedule, which is the borrower's best response schedule  $f = f(i, k)$  analogous to the worker's labor extraction function: The borrower chooses  $f$  to maximize  $v$ , given  $k$  and  $i$ , yielding  $f = f(i, k)$ . In general the higher the interest rate charged by the bank, the less the value of the project to the borrower, the smaller the enforcement rent, and the greater the default probability. Thus  $df/di > 0$ .

For simplicity of exposition, we assume the borrower has a fixed amount of capital  $k$  to invest in this project. A more general treatment would include an

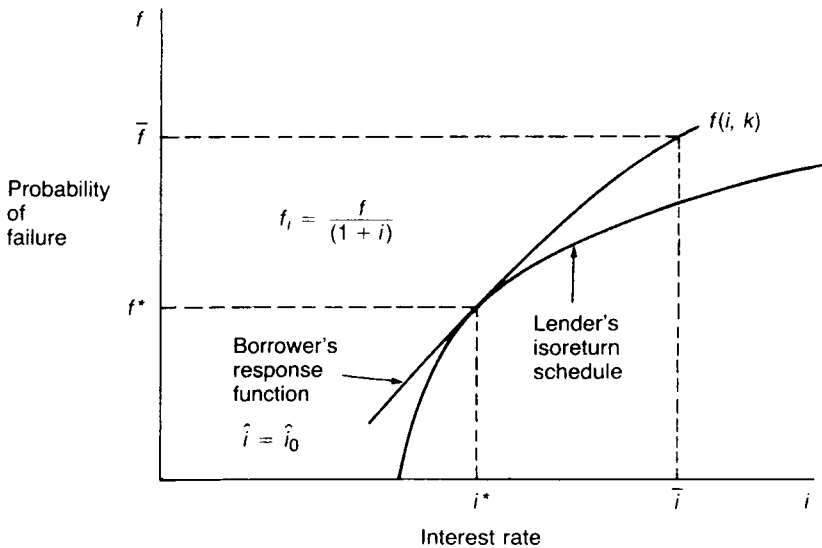


Figure 5 Lender's optimal interest rate.

analysis of the equilibrium level of  $k$ . Given  $k$ , and subject to the borrower's response function, the lender will then choose  $i$  to maximize the expected return  $i^e$ , setting the interest rate to balance the returns resulting from a high interest rate against the lower probability of repayment induced by this higher rate.<sup>70</sup> This maximizing problem, corresponding to the first equation of the lender's optimum conditions is illustrated in Figure 5.

The rectangular hyperbola  $i^e = i^e_0$  is one of a family of loci of points (isoreturn schedules) yielding to the lender identical levels of expected return. The lender's optimum occurs where the borrower's response function is tangent to one of these isoreturn schedules.<sup>71</sup> The resulting equilibrium configuration  $(i^*, f^*)$ , given our assumption that borrowers have limited collateral  $k$ , will support an optimal interest rate  $i^*$  less than the interest rate  $\bar{i}$ , yielding a positive enforcement rent composed of two elements:  $v - \bar{k}$ , the present value corresponding to the interest premium  $i^* < \bar{i}$ , and  $k$ , the borrower's collateral. Two characteristics of the equilibrium may be noted. First, because  $i^* < \bar{i}$ , the lender may use the threat of nonrenewal to sanction borrower behavior. Indeed the positive enforcement rent entailed by  $i^* < \bar{i}$  implies the existence of capital-rationed agents (analogous to the unemployed) who would prefer to borrow at  $i^*$  but cannot.<sup>72</sup> So the lender's threat to terminate the relationship with the borrower is credible. Second,  $f^* < \bar{f}$ , so the borrower has chosen a response favorable to the lender that would not have been chosen in the absence of the threat of the contingent renewal sanction.<sup>73</sup>

Now consider a lender A facing two types of borrowers, B and C, who have the capacity to carry out equivalent investment projects but who differ in the amount of collateral they can costlessly provide, the B's being wealthier than the C's so  $\bar{k}_B > \bar{k}_C$ . The difference in the level of collateral will appear in distinct response functions for the two types of borrowers, the probability of repayment at a given interest rate being greater the larger the collateral provided. Thus B's response function will lie below C's (and hence be more favorable to the lender). The lender will offer loans to all B's before offering any loans to a C. Because of their lack of wealth some or all of the C's may thus be credit constrained. Those Bs that secure loans (or all Bs and those Cs that secure loans) can translate their success on the long side of the capital market into a short-side position in the labor market, using their loans to finance employment.

We may summarize this result in:

**Proposition 5 (money talks):** Ownership of wealth confers power on agents by allocating them to short-side positions in contested exchange markets.

Money talks for the perhaps ironic reason that it is the most perfect Walrasian good; holders of money (or other assets concerning which costlessly enforceable contracts may be written) become Stackelberg leaders in contested exchange markets because they can make credible promises and costlessly enforceable commitments. In the labor market the wage is transparent while the quality and

intensity of labor delivered are opaque. In the capital market the size of the loan is transparent while the borrower's actions determining the probability distribution of returns is opaque. Indeed, the capital market is really a market in risk-taking behavior that is no easier to monitor and regulate than is the quality and intensity of labor. The striking parallelism of the two markets is this: money is in both cases on the short side of the market, held prior to the transaction by both the lender and the employer.

Those who deny the connection of wealth to power, ranging from neoclassical economists to institutionalists such as Berle and Means<sup>74</sup> and Robin Marris<sup>75</sup> claim that in the context of perfectly competitive capital markets managers may hire capital in much the same way they purchase raw materials and hire labor. The success of such managers depends purely upon their entrepreneurial talents and acquired skills the criterion of which is competitive survival. According to this view, such managers are no more dependent upon the will of financial investors than they are subservient to those who supply the firm with electric power or any other input. The result, of course, would be the reduction of wealth holding to a distributional advantage with no relationship to power over such *real* economic activity as production and investment.

But hiring capital is precisely borrowing in the sense of this section. Thus ownership of wealth is a *prerequisite* to favorable access to capital markets, and when ownership is limited, the necessary process of borrowing imposes the possibility of sanctions on the borrower thus critically limiting the autonomy of any but the wealthiest managers.

The ownership of wealth thus confers power, but not all forms of wealth confer power equally. Only wealth that can be transferred at low cost when offered as collateral unambiguously serves to discipline potentially errant borrowers. Wealth in Walrasian theory takes the form of *assets*, and the value of an asset is the expected present value of the future income stream the asset generates. Thus a piece of property that yields rental income may have the same present value as an acquired skill or talent that adds to an agent's labor income. But the two assets are clearly not equivalent in their ability to serve as collateral in capital markets since the promise of payments from future labor incomes is not third-party enforceable (there may be no future labor income, for example). The fact that future labor incomes cannot be used as collateral results from the *inalienable* character of labor: Unlike real estate and money, labor cannot be separated from its owner and transferred to another. Liberal societies further limit the ability of labor income to serve as collateral through legal prohibitions against personal servitude and through the protection that liability in property law affords individuals. We thus have:

**Proposition 6 (forms of wealth matter):** Different assets with equivalent present values (for example alienable property or streams of future labor

**income) correspond to different positions in contested exchange markets and hence differing locations in the political structure of the capitalist economy, the differences depending on the degree to which claims on the asset must be endogenously enforced.**

Thus while a stream of future labor income may be expressed as a present value (*human capital*) and may be indistinguishable in a distributional sense from property, it does not provide the political advantages associated with the ownership of assets the claims on which are exogenously enforceable, which we term property or wealth.

The existence of credit-constrained agents in the capital market and job-constrained agents in the labor market supports an important inference: Identical long-side agents will have differing incomes depending on whether they succeed in making their preferred transactions. The unemployed and the employed (possibly identical agents) have differing income levels ( $\bar{w}$  and  $w$  respectively or  $v$  and  $z$  in present value terms); on capital markets, successful borrowers and the credit-constrained receive different returns on identical assets. But if identical assets yield different incomes, we must reject the designation of incomes as returns on assets. Thus we have:

**Proposition 7 (income not a return on an asset): An agent's income cannot be represented as a return on the agent's asset holdings even if these are defined broadly to include skills.**

While substantial ownership of wealth confers power by allowing the holder to assume a short-side position, short siders may have lower incomes than do equally wealthy long-side transactors. Contingent renewal in capital markets, for example, implies that successful borrowers (long-side transactors) earn a higher return than otherwise identical, but unsuccessful, borrowers (long-side nontransactors). Suppose then that potential borrowers B and C both have wealth  $\bar{k}$ , which we assume they are willing to offer as collateral, but B receives a loan while C does not. Then C must enter the capital market as a lender, receiving income  $\rho\bar{k}$  in equilibrium, where  $\rho$  is the rate of time preference. Since B has present value  $v$ , which is greater than the reservation position  $\bar{k}$ , B's expected income  $\rho v$  is greater than C's expected income  $\rho\bar{k}$ .<sup>76</sup> Thus B's income exceeds that of the long-side nontransactor C; but by the above reasoning, B's return exceeds that of the short-side lender A. Thus we have:

**Proposition 8 (noncorrespondence between income and power): In a contingent renewal equilibrium, a long-side transactor receives a higher income than an otherwise identical long-side nontransactor, but there is no necessary relationship between the incomes of short-side and long-side transactors.**

We turn now from an explication of our approach to what is necessarily a provisional discussion of its implications, touching first on class and stratification theory and then (in the subsequent section) on the theory of income distribution.

#### CLASS, STRATIFICATION, AND PROPERTY

Arguments concerning class structure are rarely divorced from political projects. Ours are no exception. Our conception of social stratification, like the model of contested exchange on which it is based, seeks to elucidate both the unequal incomes and unaccountable concentrations of power generated within the capitalist economy. This focus embodies a joint commitment to democracy and fairness. Less obviously it is motivated by the observation that the experience of production from alienated labor through the submission to arbitrary authority to racial and sexual discrimination in employment is a powerful basis for mobilization of collective actors, of an importance possibly equal to or greater than income inequality due to differential property ownership.

We here address three issues: the structure of class positions, the allocation of agents to class positions, and the distribution of income among class positions. Our focus on the politics of production distances this approach from recent neo-Marxian contributions such as those of Erik Olin Wright and John Roemer, which place virtually exclusive emphasis on the distribution of wealth and income. We share with these contributions, however, the affirmation that ownership is central to a theory of social stratification. By introducing short-side power and endogenous enforcement, however, we affirm that the study of class structure should concern more than the distribution of income and wealth. We reject the idea that agents are allocated to class positions solely on the basis of property, and we find the policy of redistribution (or socialization) of wealth inadequate to meet egalitarian, not to mention democratic, objectives.

Let us start with what Wright aptly calls the "embarrassment" of the middle class in Marxian theory.<sup>77</sup> While we have modeled just two contested exchanges (the markets for labor and capital), our analysis may illuminate the position of managers as occupying intermediate locations between capital and labor. By a *manager* we mean an agent possessing specialized production- and investment-related skills but lacking sufficient wealth to obtain sufficient credit to form a business who is engaged to run the firm by wealth holders lacking, or uninterested in exercising, such skills. The contested exchange framework applies to the exchange between owners and managers, the quality and the prudence of managerial decision making being analogous respectively to the labor effort of the employee and the risk-taking decisions of the borrower.<sup>78</sup>

Thus the manager in a contested exchange economy is neither Marx's capitalist-entrepreneur, the heroic entrepreneur imagined by Joseph Schumpeter, the autonomous power merchant of John Kenneth Galbraith's *New Industrial*

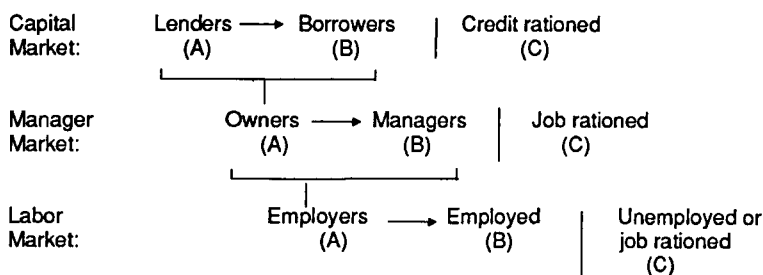


Figure 6 Contested exchange, short-side power and class categories. (A) indicates a short sider, (B) is a long sider who makes a transaction, (C) is a long sider who fails to make a transaction or who is forced to make a suboptimal transaction. Arrows indicate the direction of *power over*.

*State*, nor the *factotum* represented in the Walrasian model. Rather the manager is the capital-labor intermediary Marx envisioned in his later work, wielding power over workers (a short sider in the labor market) but whose actions are monitored by wealth holders (a long sider in the market for managers).

This formulation recalls Wright's earlier insightful conception of contradictory class locations: In our terms, the position of the manager is contradictory because it is located on the short side of one market and the long side of another.<sup>79</sup> Managers thus have power over some agents while other agents exercise power over them. Equivalently, managers are Stackelberg leaders vis à vis workers and Stackelberg followers vis à vis owners.

Unifying the (now) three contested markets—for managers, labor, and capital—we arrive at the structure of locations in the private economy described in Figure 6.<sup>80</sup>

Our approach has the attractive property of displaying the political nature of economic relationships, but because it is based on a general equilibrium model of the economy, it does not attain this goal by abstracting from the competitive mechanisms accounting for the distribution of income and wealth. Moreover, by including the borrower-lender relationship as no less a determinant of distributional outcomes than the labor process and by representing labor and capital markets as interpenetrating sites of contested exchange, it explains the reproduction of capitalist class relationships in competitive markets: Wealth confers power because successful borrowers emerge as employers while workers cannot become employers or form their own firms because, lacking wealth, they are denied access to capital markets.

In addition, our perspective gives importance to the unemployed and the underemployed. This major social category is typically either assimilated to that



of employed workers or is ignored altogether in class analyses based on Walrasian models in which the labor market clears. Indeed, by providing a basis for the differentiation among identical workers in competitive equilibrium (employed/unemployed, high wage/low wage), we avoid the common implication that these divisions (if they are recognized at all) are based entirely on skill differences. Our intent, of course, is not to deny the importance of skills but rather to recognize that many positional differences among workers are due to racial, gender, and other differences not related to skill. Finally, the contested exchange framework provides a plausible interpretation of management and entrepreneurship, categories that escape theoretical recognition in models that ignore agency problems in either work effort or risk taking.

A possible additional contribution of the approach is its ability to model competitive economic processes in a way that illuminates the opportunities for, and obstacles to, collective action in capitalist economies. This may seem an intrinsically contradictory objective for accepting (on empirical grounds) a highly competitive market framework would appear to stack the deck against collective action. And indeed this is the case in the Walrasian model and its neo-Marxian variants for when markets clear the rewards to collective action (and hence the possibilities of overcoming the free rider obstacles) are very limited. While we have not used our approach to model collective action in any but the most formal ways, we believe that by comparison to other models of competitive economic processes, the contested exchange framework has several advantages.

For one, the rents identified in the model are not only enforcement instruments, they are also prizes to be won or enhanced through collective action. Collusion by one group of workers to exclude others on the basis of racial, gender, or ethnic differences, for example, can increase the employment rents of this group. Moreover, as we have seen in the case of the labor market, collective action by long-side workers may enhance their economic position vis à vis their short-side employers and (although we have not demonstrated this) even reduce a short-side Stackelberg leader to a more symmetrically located exchange partner who must bargain with a collective of erstwhile long siders. Finally, even our highly simplified model of the political structure of exchange in capital and labor markets may provide a framework more adequate than the Walrasian model for the analysis of similarities and differences in experience of production and exchange.

How are agents allocated to the positions in Figure 6? Recalling Proposition 5 (money talks) we know that both lenders and borrowers in the capital market are likely to own substantial assets in which contracts enforceable at low cost may be written. We call them *the wealthy*. Recalling Proposition 6 (forms of wealth matter), equally rich agents (those with similarly large expected income streams), who do not own alienable property, may be credit rationed. Credit-rationed agents

in capital markets have uniformly less wealth than otherwise identical successful borrowers; failing in their attempt to obtain a loan they become short-side agents in the same market by loaning the assets they were previously willing to offer as collateral in their unsuccessful attempt to borrow.

Managers employed by owners are selected from a pool of agents, including the credit-constrained agents from the capital market, with the appropriate skills. The basis for their selection does not concern us, except to observe that because the market for managers is a contingent renewal exchange, whatever characteristics the managers have there will be identical individuals unable to find a position (or as desirable a position) as manager. Thus identical agents, in terms of organizational assets and human capital, will be allocated to different positions.

Similarly, those workers who make their desired transactions (the Bs) and those who are either job rationed (occupy lower paying secondary jobs) or unemployed (the Cs) will likely differ on such grounds as skill, experience, and contacts; and recalling Proposition 3 (divide and rule), race, gender, and other ascriptive characteristics are likely to appear as discriminators between these two groups.

A complex relationship between property and short-side power emerges. It is true, as Proposition 5 asserts, that the two are related. But we also have:

**Proposition 9 (noncorrespondence of wealth and power): Wealth ownership is neither necessary nor sufficient for holding short-side power.<sup>81</sup>**

Substantial ownership of property improves access to short-side positions in the capital market and also increases the likelihood of success as a long sider in securing capital and hence becoming a short sider in the market either for managers or for labor. But some agents with wealth (for example, the self-employed) exercise no short-side power, and some agents with short-side power (managers) need not own wealth.<sup>82</sup>

We may summarize the relationship between property and power as in Figure 7.

		Power	
		Yes	No
Property	Yes	Wealth holders (as employers and lenders)	Self-employed
	No	Managers	Workers (employed and unemployed)

Figure 7 Property and power.

It may be objected that, since we define wealth narrowly (as assets that may be used as collateral), it is hardly surprising that we find wealth to be of reduced explanatory value. We reject this argument on two grounds. First, the importance ascribed to wealth narrowly defined in our model is in an important respect greater, not less, than in other models. The reason is that, in the contested exchange framework, wealth confers short-side power over labor (Proposition 5) while wealth in other models confers only greater scope for consumption and leisure. Second, Proposition 6 (forms of wealth matter) provides a compelling reason for not assimilating, say, skills, to the category of wealth. The fact that one may express the higher average future income of those with highly developed skills as a present value indicates only that one *may* adopt the human capital framework but not that it will be insightful to do so. One convinced by some prior principle that all income and class differences should be asset-based could recognize the importance of race, gender, and other ascriptive characteristics in our model by referring to the higher future incomes of whites or of men as returns on *racial assets* or *gender assets*. But it is not clear what insights would be gained by so doing. Other than clarity, what may be lost is an appreciation of the possibly profound differences between the dynamics of relationships mediated by the ownership of property and those mediated by race or gender, these differences stemming from the distinct nature of the opportunities for collective action and formation of interests afforded by race-, gender-, and property-based structures of domination.<sup>83</sup>

#### PROPERTY, POLITICS, AND INCOME DISTRIBUTION

We turn finally to the question of the distribution of income among class positions, an issue directly related to the normative orientation of our approach. Our claim here will be that contested exchange, by highlighting the political element in the economy, not only illuminates what are sometimes termed the noneconomic concerns of egalitarians and democrats but also provides a more compelling account of the distribution of income.

Economists in the Walrasian tradition represent the capitalist economy as a pattern of property holdings and a set of rules governing competitive exchange among noncolluding agents that, along with the technologically given methods of production and exogenously determined preferences of agents, determine a Pareto-optimal equilibrium set of prices and transactions. Because this equilibrium uniquely determines a distribution of income (or in some models of income and leisure), it determines a distribution of welfare as well. This argument is the basis for the famous Fundamental Theorem of Welfare Economics, which asserts that the question of distributive justice reduces to that of initial property holdings.<sup>84</sup> The only political element in this model is the costless enforcement

of property rights by the state—the protection of property and the enforcement of claims arising in exchange.<sup>85</sup>

Marxists in this tradition, notably John Roemer, have effectively used this result to dramatize the determining role played by property holdings in generating the distribution of income and to advocate a redistribution (or socialization) of property as the *sine qua non* of an egalitarian economic program. Thus Roemer directly reproduces the Fundamental Theorem, the second part of which asserts that any Pareto-optimal distribution of welfare may be supported by some distribution of property holdings followed by competitive exchange. He writes "If the exploitation of the worker seems unfair, it is because one thinks the initial distribution of the capital stock, which gives rise to it, is unfair."<sup>86</sup> It should be clear from Roemer's work that there is nothing intrinsically conservative about the distributional implications of the Walrasian model: If the distribution of income is unfair, a solution is the redistribution or socialization of assets.

In our model by contrast property, race, gender, and other distinctions jointly determine positions in the political structure of the capitalist economy, and the distribution of income among agents is determined through competitive exchange on markets that do not clear even in equilibrium. Because enforcement rents associated with such distinctions are ubiquitous and because these and other benefits may be garnered through collective action both in the economy and in the state, the model presumes neither atomistic nor collusive behavior but rather includes both as possibilities. As our discussions of the choice of technology and divide-and-rule strategies reveal, neither the methods of production nor the preferences of the agents is regarded as exogenous in this model.

The state, while lacking Walrasian omnipotence, possesses distributional influence in ways precluded in the Walrasian model. State effects on the income distribution highlighted by our model, even in the simple form presented here, include the determination of the worker's fallback position through the level of unemployment and the availability of unemployment insurance, the impact of labor law and of policies concerning race and gender on the extent of cooperation among workers, the effects of bankruptcy law on the workings of the capital market, and the like.

The key difference emerging from a comparison of the Walrasian and contested exchange approaches to income distribution concerns the relative importance of property and politics. Of course property is not absent from the contested exchange model, but its importance is mediated by the political relations among economic agents—the configuration of power and endogenous enforcement on labor and capital markets the distribution of property supports. Indeed one can imagine distributions of power in which the ownership of property would yield no return at all as, for example, would occur if unemployment insurance were sufficiently generous that labor could not profitably be extracted from workers

(though this could hardly be a long-term, reproducible solution for a capitalist economy). Similarly politics is not absent in the Walrasian model, but its primary importance is in the state—in enforcing property rights and perhaps in taxation and transfers.

The contested exchange model denies the implication of the Fundamental Theorem of Welfare Economics: even under competitive conditions the redistribution of wealth is neither necessary nor sufficient as an egalitarian policy. It is not necessary because there are other ways of equalizing the distribution of income: If we are willing to assume a political movement (or state) with the power to equalize wealth, we could as well give it the power to reduce the private rate of return to zero and to devise new institutional arrangements for the allocation of credit thereby making wealth irrelevant to the income distribution. The equalization of wealth is thus not sufficient as a distributional policy in a contested exchange economy simply because the income differences generated in equilibrium are not reducible to returns on differential asset holdings (Proposition 7). Since enforcement rents are major sources of inequality in addition to wealth differences, an egalitarian program can fruitfully address the redistribution of these benefits, for instance, through antidiscrimination policies or promotion of full employment.

Of course equalization of property would predictably generate a more equal distribution of income and may be supported on this ground. But by itself such a redistribution would not alter the political structure of the economy and might leave the inequalities due to enforcement rents unaffected. Yet the model of the capital market as a contested exchange suggests at least one telling argument for wealth redistribution *per se*: It is possible that broader asset ownership will place currently credit-constrained, less well-to-do agents (groups of workers, for example) in a position to borrow and thus to experiment with new ways of organizing production, investment, innovation, and distribution. In this respect, our criticism of the Walrasian model is not that it overstates but rather that it misunderstands the importance of wealth.

We close this discussion by pointing to a fundamental normative problem with the Walrasian model—one we believe is not shared by our approach. Aside from the question of fairness, other normative issues—concerning democracy or dignity in the workplace, for example—do not arise in this model, because the only social relationship it admits is competitive exchange that, under Walrasian assumptions, yields Pareto-optimal allocations. Nor can one ask what kind of people this economy might produce—a question which troubled Adam Smith no less than Karl Marx—for it is a timeless system in which agents are given. Thus within the Walrasian framework criticism of the despotic structure of production in the capitalist firm or the fragmented and meaningless experience of the worker

and the waste involved in managing contested exchanges in a class-divided society, simply misses the mark.

#### CONCLUSION: NEW DIRECTIONS IN POLITICAL ECONOMY

"A Marxist economic theory," wrote Adam Przeworski, "must be a political theory of the economy." Przeworski was referring to a theory-building *task*, rather than an extant body of thought.<sup>87</sup> In a sense, however, a political conception of the economy is nothing new. Institutional economists have long urged just this, and it is rather standard among Marxian scholars not overly impressed with Walrasian logic. But one might hesitate to term the insights flowing from such considerations a *theory of the economy*.

Any novelty our approach might have lies in our demonstrating the compatibility of a *political theory of the economy* with a competitive model of general economic equilibrium. Put somewhat differently, we have tried to provide an economic theory that is noneconomic in that it recognizes the political and cultural aspects of the economy as no less important in principle than its distributive and productive side. The result, we hope, will be to bridge some of the distance between those who have been drawn to economic thinking through their conviction that a theoretical understanding of the economy is important and those tending to downplay the economy because of a conviction that politics and culture matter.

A similar division may be found within economics. Because the logic of the Walrasian model precludes the exercise of the kinds of power institutionalists consider important and everyday observation confirms, many have been driven to question the assumption that the capitalist economy is competitive. The alternative assumptions of monopoly and oligopolistic competition in product markets have yielded important insights as the work of Paul Sweezy and the *Monthly Review* school or of John Kenneth Galbraith indicate. But to assume a general lack of competition in product markets (even if empirically justified, which we strongly doubt) is insufficient and unnecessary. It is insufficient because, as we have seen, among the key power relationships in a capitalist economy are those mediated by capital and labor markets rather than product markets. It is unnecessary because the Walrasian model is inadequate even where markets are competitive.

To affirm the logical coherence of the contested exchange model of course does not imply its empirical validity. For instance, to show that contested exchange labor markets do not clear in equilibrium is not to claim that this is the only, or even the major, reason we have unemployment (the system may, for instance, be perpetually out of equilibrium) or how much unemployment we have (which may perhaps be better explained by the level of aggregate demand and the average productivity of labor). A critic might well concede the coherence of the

model, yet doubt its importance in understanding real capitalist societies. This is a key issue for which we cannot offer a decisive response.

But we suspect that any framework adequate to understanding the capitalist economy will be obliged to take account of the fact that contracts do not enforce themselves nor can they be costlessly enforced by the state; that markets—and particularly the labor market—do not clear; that agents are generally quantity constrained; that enforcement rents are ubiquitous and the subject of political conflict both within the state and in the capitalist economy; that the economy produces people as well as goods and services; that capitalism is not simply a system of rich and poor but of bosses and subordinates as well; and that social divisions not reducible to property, such as race and gender, have an enduring importance. We take all of these attributes as descriptions of the actual workings of at least some important capitalist economies; admittedly these are rough and imprecise descriptions whose generality may be questioned.

Some aspects of the contested exchange framework, however, particularly those concerning the labor process, have been subjected to extensive empirical analysis using data on the United States and the United Kingdom. While hardly conclusive, these studies strongly suggest the importance of employment rents. In the early 1980s, for example, aggregate after-tax employment rents in the United States exceeded the after-tax profits of the nonfinancial corporate business sector.<sup>88</sup>

We have deliberately attempted to model the capitalist economy rather than economies in general. But we cannot resist, in conclusion, suggesting several broader implications with possible relevance to building an egalitarian and democratic postcapitalist economy.

First, it is well known that markets are allocation mechanisms, promoting movements to and along an exogenously defined production possibility frontier. But markets are also disciplinary mechanisms, altering the supplies of inputs and technologies alike and thus shifting the production possibility frontier. Just as allocative efficiency is a sensible normative standard for economic institutions, we may reasonably inquire to what extent and under what conditions markets provide efficient disciplining mechanisms.

Many critiques of market allocations concern the inefficiencies that arise in the presence of external economies and economies of scale while arguments against state intervention often focus on the problems of the effective monitoring and disciplining of economic agents in the absence of market competition. We are thus asked to choose, as it were, between the allocational irrationalities of markets and the motivational and disciplinary shortcomings of the state. But the choice may be less stark. The allocational and disciplinary aspects are often thought to be inseparable, but they are not. There may be a wide range of economic arenas in which allocational inefficiencies can be significantly attenuated through

tax and subsidy policy without impairing the disciplinary function of the market.<sup>89</sup>

The idea that markets discipline may help identify economic arenas in which markets might effectively be superseded by nonmarket mechanisms and conversely. Rather than pointing to *strategic sectors* or *heavy industry* as the appropriate arena for centralized planning, one might advocate that markets be used where their allocational inefficiencies are minor or readily attenuated and where they perform an effective disciplinary function. Market discipline is likely to be most effective when the good or service in question closely approximates the Walrasian ideal of exogenous enforceability of claims and to be least effective where significant conflicts of interest divide agents exchanging a good or service that is difficult to monitor or that, for other reasons, is not susceptible to exogenous enforcement.

Even where markets work imperfectly as disciplinary devices, they may be improved rather than replaced. For example, where monitoring is costly or imperfect, a case may be made for reducing the stakes of the game so that the degree of conflict of interest among exchanging parties is attenuated and hence monitoring costs are reduced. This generalizes the argument that effective cooperation in the labor process may require a substantial equality of reward as a precondition.

The disciplinary aspect of markets may also illuminate the structure of power in centrally planned economies. While this structure is often implicitly assumed identical to the bureaucratic structures of the planning apparatus and the constituent firms, the concept of short-side power adds a distinct dimension. For reasons that need not be explored here, consumer goods markets (and other goods markets as well) tend to be in chronic excess demand in centrally planned economies.<sup>90</sup> Thus sellers of goods are short siders (As), who have power over the long siders who often literally wait in line to make a transaction, some succeeding (Bs) and others not (Cs). By contrast, goods markets in capitalist societies are often characterized by excess supply, businesses being unable to sell as much as they would like at the going price, and consumers occupying short-side positions. Thus the location on the short side of non-clearing markets may be a key difference in the political structures and in the mechanism generating inequality and securing elite control of the surplus product of capitalist and centrally planned economies.

Perhaps ironically, the importance of consumer sovereignty in a capitalist economy is more effectively argued in a contested exchange model than in the usual neoclassical framework.<sup>91</sup> In such a model the contested aspect of the consumer good is product quality, which is not costlessly contractible. Because the price of such a good will exceed the marginal cost of its production in equilibrium, the seller receives a rent for each unit of the good sold.<sup>92</sup> Consumers



can thus impose costs upon suppliers by switching to another firm, and the threat of loss of patronage can discipline the supplier to maintain a high level of product quality. It might appear that consumers wield short-side power. But while the consumer, A, may effectively sanction the seller, B, by switching to another seller, C, and depriving B of the rent, the sanction, unless exercised collectively or by a single dominant consumer, is not exercised in order to induce B to act in the interests of A but rather to avail A of a superior supplier. Although A's interests are furthered by switching and the switch imposes a sanction on B, the sanction is an ancillary byproduct of the switch. Thus while its position as a long sider in equilibrium induces the firm to improve its product quality, the consumer's action is not an exercise of short-side power in the sense of Stackelberg leadership. Consumer sovereignty is thus a structural result not attributable to any individual consumer's power over a seller.

Second, firms, not only in a capitalist setting but in any modern economy, face two crucial problems of agency: how to handle the money of outsiders and the labor of its members. We think it is insightful to see the capitalist firm as a particular solution to these two problems. Our own preliminary investigations have led us to suspect that by comparison with the currently feasible alternatives (for example, democratically run worker-owned cooperatives or central planning) the capitalist firm is a relatively poor solution to the labor agency problem and a relatively attractive solution to the agency problem concerning credit and investment.

Among advocates of economic democracy, however, the problem of capital allocation is generally given scant attention while the internal management of the democratic firm is the subject of a lively debate. The omission is serious in its own right, and distorts the analysis of workplace democracy. For some organizational forms that might have attractive properties from the standpoint of the democratic regulation of labor (no ownership by nonmembers of the firm, for example) impinge in unfortunate ways on attractive solutions to the agency problems associated with the allocation of capital.<sup>93</sup>

Third, enforcement capacities are a determinant of institutional evolution. Like markets, all important economic institutions have consequences for the enforcement of claims arising from exchange. The evolution of such institutions responds to the changing technologies of enforcement no less than to the changing technologies of production and demographic shifts stressed in the standard treatment by neoclassical economic historians.<sup>94</sup> The workings and larger consequences of economically important institutions (schooling and the welfare state come to mind) may also be fruitfully analyzed from the standpoint of their effects on endogenous enforcement environments.<sup>95</sup>

The relationship between claim enforcement and institutional evolution suggests an extension of the Marxian theory of economic crisis: Economic crises may

be induced by declining profitability and stagnating investment associated with a deteriorating enforcement environment. We think that explanations based on this insight make sense of the experience of the advanced capitalist economies in recent decades more successfully than do competing models based on Keynesian (aggregate demand failure or realization crisis) of classical Marxian (rising organic composition of capital) notions.<sup>96</sup>

Fourth, if claim enforcement is endogenous, economic agents cannot be exogenous. In contested exchanges it is often cost minimizing to forego the flexibility of spot contracting and to make and secure long-term commitments from one's trading partners. The resulting durability of exchange relationships generally gives them a face-to-face quality involving sufficiently few actors that the reciprocal effects of one's actions can be calculated and taken into account in selecting a strategy. In important exchanges one generally knows and cares about the identity of one's exchange partners.

The paradigmatic form of economic action is thus not an actor intervening in an impersonal external world (as, for example, decision making by a price-taking firm) and interacting with other agents only through the veil of prices but rather an interaction among two or more intentional agents. Each may have not only an *interest* in altering the capacities, trustworthiness, aggressiveness, and the like of the other agent, but the *capacity* to do so as well, given the long-term and nonanonymous nature of the exchange. The logic of the divide and rule strategy illustrates this: The gains to be made for the employer by fostering racial sentiments arise because of the contested nature of the exchange while the possibility of structuring labor relations to reproduce or exacerbate racism arises because workers are engaged in a long-term relationship with the firm and hence experience its labor relations as an important learning environment.

Because contested exchanges, as strategic, nonanonymous relationships, are constitutive of economic agents, the relationship between constitutive and contested exchange is integral rather than elective.<sup>97</sup> Where claim enforcement is endogenous, it is not even a useful fiction to represent exchanges as if they were among things rather than people.

Like the treatment of the economic advantages conferred by short-side power, the approach to endogenous agents suggested by the contested exchange model focuses attention on asymmetries among economic agents. Economic structures have effects on the evolution of all agents, of course, both by providing them opportunities to change or reaffirm themselves and by affecting their personal development in ways unintended and perhaps unknown to them. The contested exchange framework goes further and identifies contexts in which some agents, the holders of short-side power, have both the objective and the capacity to shape the development of other agents. Just as their Stackelberg leadership position allows short siders the advantage of making take-it-or-leave-it offers concerning

the wage or interest and collateral, short-side power may be used to make take-it-or-leave-it offers to participate in a work experience or some other environment designed to alter or affirm some preference, capacity or other attribute of a long-side agent. Long-side agents lack this agent-making capacity for the same reason that they cannot generally make effective counter offers with respect to wages, interest rates, and other more conventional economic variables.

The constitutive aspect of exchange must be added to our previously considered allocative and disciplining aspects in deciding between market and nonmarket solutions to economic problems. Relationships among agents mediated wholly by markets militate against cooperative solutions to economic problems since each agent can always withdraw from the exchange (exit) rather than actively intervene in the interests of a collective solution (voice).<sup>98</sup> While the exit possibilities provided by markets are essential to their disciplinary function, the dominance of exit over voice in market relationships promotes an instrumental attitude of individuals to their social environments and thwarts the development of the collective decision-making skills on which the viability of a democratic society depends. And, as we have just seen, contested exchange markets not only affect agents' preferences, they also place influence over the evolution of some agents (the long sides) in the hands of other agents (the short sides). The decision to use markets in a certain sphere, in short, is the decision to favor individual choice over democratic control, an issue that must be weighed along with questions of allocational and disciplinary efficacy in assessing alternative economic institutions.

The recognition of markets as learning environments suggests a reconsideration of the notion of evolutionary equilibria. If we are to use equilibrium concepts to illuminate evolutionary paths, and we think it is useful to do so, we must conceive of a joint equilibrium in which agents and rules are mutually constitutive, perhaps in complex and highly mediated ways. Thus an adequate discussion of any alternative to capitalism must ask not only what allocations of resources and distribution of reward the proposed economic system would yield, but how would the agents making up the system reproduce or transform the rules of the game defining it, and how would the game reproduce or transform them.

#### APPENDIX: PROPOSITIONS ON CONTESTED EXCHANGE

**Proposition 1 (short-side power):** A competitive equilibrium of a system of contested exchanges may allocate power to agents on the short side of nonclearing markets.

**Proposition 2 (the politics of production):** Those in positions of decision-making authority in capitalist firms occupy locations on the short side of the labor market and exercise power over employees.

Proposition 3 (divide and rule): The competitive equilibrium of a contested exchange economy may exhibit racial, gender, and other forms of labor market discrimination among otherwise identical workers.

Proposition 4 (capitalist technology): Where claim enforcement is endogenous, the profit-maximizing choice of production technologies will be made in light of both the efficiency with which technologies transform inputs into outputs and their efficacy in enforcing contested claims; the resulting technologies, though cost minimizing, will generally not be efficient.

Proposition 5 (money talks): Ownership of wealth confers power on agents by allocating them to short-side positions in contested exchange markets.

Proposition 6 (forms of wealth matter): Different assets with equivalent present values (for example alienable property or streams of future labor income) correspond to different positions in contested exchange markets and hence differing locations in the political structure of the capitalist economy, the differences depending on the degree to which claims on the asset must be endogenously enforced.

Proposition 7 (income not a return on an asset): An agent's income cannot be represented as a return on the agent's asset holdings even if these are defined broadly to include skills.

Proposition 8 (noncorrespondence between income and power): In a contingent renewal equilibrium, a long-side transactor receives a higher income than an otherwise identical long-side nontransactor, but there is no necessary relationship between the incomes of short-side and long-side transactors.

Proposition 9 (noncorrespondence of wealth and power): Wealth ownership is neither necessary nor sufficient for holding short-side power.

#### NOTES

1. Needless to say, this tendency hardly describes the full range of leftist thought on the subject. Some important contemporary contributions direction include Michael Albert and Robin Hahnel, *Quiet Revolution in Welfare Economics* (Princeton, N.J.: Princeton University Press, 1990); Norberto Bobbio, *Which Socialism: Marxism, Socialism, and Democracy* (Minneapolis: University of Minnesota Press, 1987); Joshua Cohen and Joel Rogers, *On Democracy: Towards a Transformation of American Society* (New York: Penguin, 1983); Martin Carnoy and Derek Shearer, *Economic Democracy* (White Plains, N.Y.: M. E. Sharpe, 1980); Ernesto Laclau and Chantal Mouffe, *Hegemony and Socialist Strategy: Towards a Radical Democratic Politics* (London: Verso, 1985); Andras Hegedus, Agnes Heller, Maria Markus, and Mihaly Vajda, *The Humanization of Socialism: Writings of the Budapest School* (London: Allison and Busby, 1976). Our views on this subject are presented in Samuel Bowles and Herbert Gintis, *Democracy and Capitalism: Property, Community, and the Contradictions of Modern Social Thought* (New York: Basic Books, 1986).

2. We say more explicitly what we mean by the Walrasian model in the next section and in the section on "Property, Politics, and Income Distribution."

3. Abba Lerner, "The Economics and Politics of Consumer Sovereignty," *American Economic Review* 62, no. 2 (May 1972): 259.

4. For completeness we should add that A cannot avoid the relationship with B (some Bs) by assuming B's functions.

5. The historian Edward P. Thompson in *The Poverty of Theory and Other Essays* (London: Merlin Press, 1978), critiques precisely this development in Marx's thinking. In a pair of papers [Samuel Bowles and Herbert Gintis, "The Marxian Theory of Value and Heterogeneous Labor: A Critique and Reformulation," *Cambridge Journal of Economics* 1, no. 2 (June 1977): 173–192; and "Structure and Practice in the Labor Theory of Value," *Review of Radical Political Economics* 12, no. 4 (Winter 1981): 12–26], we attempted a reformulation of the labor theory of value to capture the centrality both of agency and the endogeneity of workers. Our present approach is an alternative strategy for the introduction of political and human developmental reasoning into formal economic theory.

6. Oskar Lange, "Marxian Economics and Modern Economic Theory" in David Horowitz, *Marx and Modern Economics* (New York: Monthly Review, 1969), pp. 76–77. He added that labor theory of value really is not about capitalism at all: "it really holds precisely only in a non-capitalistic exchange-economy of small producers each of whom owns his own means of production..."—a comment that might even better have been aimed at the Walrasian model.

7. Michio Morishima, *Marx's Economics: A Dual Theory of Value and Growth* (Cambridge, Eng.: Cambridge University Press, 1982).

8. John E. Roemer, *A General Theory of Exploitation and Class* (Cambridge, Mass.: Harvard University Press, 1982).

9. Lange's embrace of the Walrasian model is explicit. Morishima's critical work on Walras does not touch on any of the issues raised here. Roemer, in *A General Theory of Exploitation and Class*, p. 95 n. 1, emphasizes the centrality of the exogenous claim enforcement assumption to his models:

If to make sense of the optimization in these models we admit that labor enforcement is a necessary assumption, then it is difficult to maintain that such an assumption is at a lower level of abstraction than the current specification of the model.

In this article we will return to Roemer's work, which we regard as the outstanding contribution to modern Marxian economics in the Walrasian tradition. While we find his defense of microanalytic reasoning persuasive and we welcome his insightful treatment of the duality of credit and labor markets and his powerful demonstration that the Marxian theory of class can be developed without the labor theory of value, we take issue with implications of his approach that flow from the assumptions of exogenous contract enforcement and the absence of agency problems.

10. Those on the left who did not embrace the Walrasian model, notably Paul Sweezy, found its primary flaw in the assumption of perfect competition, preferring instead a theory of monopolistic competition. Although we cannot argue the point here, we think that the assumption of a highly competitive environment is one of the least troublesome features of the Walrasian model, particularly where low transportation costs and the relatively unimpeded movement of goods and capital make competition a global phenomenon.

11. Hayek's position on information developed during the 1930s; its 1945 formulation is perhaps most influential. His current views, amended but no less uncompromising, appear in F. A. Hayek, *The Fatal Conceit: The Errors of Socialism*, (Chicago: University of Chicago Press, 1988).

12. Some, like Roemer, have continued the debate while candidly avoiding the issue of agency by assumption. In a book that closes with a carefully reasoned argument for public ownership of the means of production and against a redistribution of property to individual holders, he remarks "I have generally ignored incentive issues in this book and will continue to do so here." (John E. Roemer, *Free to Lose* [Cambridge, Mass.: Harvard University Press, 1988]: 134). Far more have simply abandoned the case. Roemer's recent work, "Incentives and Agency in Socialist Economies," Department of Economics Working Paper, University of California at Davis (1989), takes up the issue of agency in a socialist economy.

13. For reasons that will become clearer in our concluding section, we think that what we term *post-Walrasian economics* marks a significant break with the neoclassical tradition although whether one wants to call these economists *neoclassical* seems of purely terminological interest. See in particular, Joseph Stiglitz, "The Causes and Consequences of the Dependence of Quality on Price," *Journal of Economic Literature* 25 (March, 1987): 1-48; George Akerlof and Janet Yellen, *Efficiency Wage Models of the Labor Market* (Cambridge, Eng.: Cambridge University Press, 1986); Oliver Williamson, *The Economic Institutions of Capitalism* (New York: Free Press, 1985); Louis Putterman, "On Some Recent Explanations of Why Capital Hires Labor" in *The Economic Nature of the Firm*, ed. Putterman (Cambridge, Eng.: Cambridge University Press, 1986); Gregory Dow, "The Function of Authority in Transaction Cost Economics," *Journal of Economic Behavior and Organization*, 8, no. 2 (March 1987): 13-38; as well as our own contributions to this literature: Herbert Gintis, "The Nature of the Labor Exchange and the Theory of Capitalist Production," *Review of Radical Political Economics* 8, no. 2 (Summer 1976): 36-54; Samuel Bowles, "The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models," *American Economic Review* 75, no. 1 (March 1985); Samuel Bowles and Herbert Gintis, "Power and Wealth in a Competitive Capitalist Economy," Department of Economics Working Paper 1989-10 (June 1989); and "The Revenge of *Homo Economicus*: Post-Walrasian Economics and the Revival of Political Economy," *Journal of Economic Perspectives* (forthcoming 1990). In the last cited paper, we comment on the varieties of post-Walrasian economic theory, its relationship to neoclassical economics, and our relationship to it.

The insights of the post-Walrasian models have not been widely applied to questions of power and social structure that we address here. See, however, Charles Perrow, "Economic Theories of Organization," *Theory and Society* 15, no. 1 (January 1986): 11-45; and Terry M. Moe, "The New Economics of Organization," *American Journal of Political Science* 28 (November 1984): 739-777.

14. This argument may evoke the logic of the early chapters of Volume I of *Capital* in which Marx attempted to reconcile the fact of exploitation with the no less real structure of competition and free entry and exit in markets, termed a "very Eden of the rights of man."

15. James Buchanan, *The Limits of Liberty* (Chicago: University of Chicago Press, 1975), p. 17.

16. Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), pp. 109-110.

17. Armen Alchian and Harold Demsetz, "Production, Information Costs, and Economic Organization," *American Economic Review* 62 (December 1972): 777. The reader has by now noted the frequent reference to grocery stores and fruit markets in this discourse.

A glance at any introductory textbook will confirm the impression. The reason will become apparent.

18. Paul Samuelson "Wages and Interest: A Modern Dissection of Marxian Economics," *American Economic Review* 47, no. 6 (December 1957): 894. The reader who doubts the affinity between the work of John Roemer and the Walrasian model should read his comments on what he terms Samuelson's "neoclassical adage": "Truly this is so...but the wealthy exploit and the poor are exploited in either case." [John Roemer, "New Directions in the Marxian Theory of Exploitation and Class," *Politics & Society* 10, no. 2 (June 1982), reprinted in *Analytical Marxism*, John Roemer, ed. (Cambridge, Eng.: Cambridge University Press, 1986) p. 95]. The fact that what Roemer terms *exploitation* would be described by Samuelson as a characteristic of the distribution of income is obviously not an analytical disagreement.

19. Joseph Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle* (Oxford, Eng.: Oxford University Press, 1934), p. 21. The essay was written in 1911 in German.

20. In other words the Walrasian equilibrium is a Nash equilibrium.

21. This is obviously not a necessary condition for A to have power over B in the ordinary (plural) senses of the term. Our conception of power is relational (characteristic, not of an individual, but of a relationship among individuals) and interest-based (rather than behavioral). The stress in this conception on power as a dyadic relation between agents may at first glance appear too narrow to include such central forms of power as the ability to set the decision-making agenda facing agents [see Peter Bachrach and Morton Baratz, *Power and Poverty: Theory and Practice* (New York: Oxford University Press, 1970)] or the capacity to influence agents' preferences and conception of their interests [see Steven Lukes, *Power: A Radical View* (London: Macmillan, 1974)]. However, we show that in general economic equilibrium, agenda-setting power (for example, control of the decision-making structure of the enterprise) flows from power in our more limited sense. And as will become clear what we term (somewhat loosely) an interest-based concept of power does not preclude, but rather illuminates, the endogenous formation of preferences. We treat these questions at greater length in Samuel Bowles and Herbert Gintis, "Power and Wealth in a Competitive Capitalist Economy," Department of Economics Working Paper 1989-10 (June 1989).

22. The *purchasing power* conferred by a high income thus would be termed *power* according to Dahl's well-known definition that "A has power over B to the extent that he can get B to do something that B would not otherwise do" (Robert A. Dahl, "The Concept of Power," *Behavioral Science* 2 (1957): 202-203). Yet according to our usage, which stresses sanctions as integral to the exercise of power, this is not *power over* these other agents who, by the implementation of their optimal equilibrium-defining programs, are on the margin indifferent to exactly which services they provide or to whom they are provided and who therefore are not subject to sanctions by any of their trading partners.

23. Note that according to this distinction, the purchase of the service of an independent contractor (for example, hiring an electrician to provide certain services) involves *purchasing power* only while hiring an electrician to work as an employee subject to the will of the employer involves 'power over' the worker. As we will presently see, consumers may also have power in a sense that goes beyond the Walrasian notion of purchasing power.

24. Surveyed by Akerlof and Yellen, *Efficiency Wage Models*.

25. Williamson, *The Economic Institutions of Capitalism*.

26. Alchian and Demsetz, "Production, Information Costs, and Economic Organization," for example.

27. We have analyzed endogenous preferences and constitutive exchange in Herbert Gintis, "Consumer Behavior and the Concept of Sovereignty," *American Economic Review* 42, no. 2 (May 1972): 267–278; and Bowles and Gintis, *Democracy and Capitalism*.

28. Thus the paragraphs that follow are more an attempt to clarify than to defend the second part of our claim.

29. We thus use the term *foundation* without any implication of primacy; there are also structural *foundations* of individual action.

30. Not to be misunderstood: When we say agents make the rules we mean that agents acting in a given set of rules transform or reproduce the rules; correspondingly by *rules make agents* we mean that agents acting under given rules reproduce or transform themselves and others. Whether explanatory attention is focused on the agents or the rules depends in part on how constraining the rules are and relatedly how effective the individual choices are.

31. In Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life* (New York: Basic Books, 1976), we attempted a historical and econometric analysis of the manner in which the evolution of capitalism fostered a configuration of interests giving rise to the modern school system, which structures personal development to reproduce workers fit for capitalist production. In this analysis we took the structure of schooling and child rearing as endogenously generated by the conflicting interests of industrialists, workers, and professionals and treated the *next generation* of workers as endogenously generated by the choices of students, teachers, and others given the structure of schooling and child rearing.

32. We refer to these as enforcement mechanisms or strategies rather than adopting the broader term *transactions costs*. Transactions costs as used by Williamson (*The Economic Institutions of Capitalism*) pertain to much more than enforcement of claims arising in contested exchanges, and in any case the distinction between transactions costs and production costs cannot be coherently made when production technologies are selected with their enforcement capabilities in mind. We avoid the term *enforcement costs* for the same reason. Our analysis is limited to the case where enforcement problems are present on only *one side* of the exchange. By addressing cases in which one side of the exchange provides a monetary payment (the costs of monitoring of which are assumed to be zero), we set aside the more general problem of *bilateral endogenous enforcement*, in which both parties to exchange exercise strategic power. See Masahiko Aoki, *The Co-operative Game Theory of the Firm* (London: Clarendon, 1984).

33. We present a more complete model of this incentive incompatibility and monitoring problem in team production in Samuel Bowles and Herbert Gintis, "The Inefficiency and Competitive Survival of the Capitalist Firm," Department of Economics Working Paper 1989-6, University of Massachusetts (May 1989).

34. The analysis presented in this section is developed in Gintis, "The Nature of the Labor Exchange;" Bowles, "The Production Process in a Competitive Economy"; and Herbert Gintis and Tsuneo Ishikawa, "Wages, Work Discipline, and Unemployment," *Journal of Japanese and International Economies* 1, no. 2 (June 1987): 195–228.

35. It is thus similar to the rents in the theory of rent-seeking behavior [James Buchanan, Robert Tollison, and Gordon Tullock, *Toward a Theory of the Rent-seeking Society* (College Station: Texas A&M University Press, 1980)] except for the important



difference that contested exchange rents arise through the *lack* of effective state intervention while rent-seeking literature focuses on state intervention as the source of rents.

36. Note that while  $w$  is the only wage compatible with the absence of involuntary unemployment, it is in no sense a Walrasian *market-clearing wage*. Indeed, in general there is no market-clearing wage since supply and demand curves for labor simply do not intersect. The reservation wage  $w$  might also be considered in the Marxian framework the cost of reproducing labor power as it is the minimal wage consistent with the worker supplying his or her effort to the employer, the employment rent representing a part of the surplus. But we do not find this Marxian interpretation of  $w$  particularly illuminating as it presupposes an ability to separate the costs of reproducing labor power from the costs of extracting labor from labor power.

37. More complete models allow an endogenous selection by A of an optimal schedule of dismissal probabilities and an optimal choice of the level of surveillance underlying the function  $f(e)$  (Bowles, "The Production Process in a Competitive Economy"; Gintis and Ishikawa, "Wages, Work Discipline, and Unemployment"). We lose little, however, by assuming that the probability of detection is exogenously given as a function of effort.

38. The single and double subscripts, respectively, indicate first and second derivatives of the function  $e$ . The labor extraction function can be derived as follows. Let  $u = u(w, e)$  be B's utility function, and assume  $u_w > 0$ ,  $u_e < 0$  for  $(w, e) > (w, \bar{e})$ . In the simplest case, where the worker is dismissed if detected not working (that is,  $p = 0$ ), B's value of employment is then

$$v = \{u(w, e) + f(e)v + (1 - f(e))z\} / (1 + \rho),$$

where  $\rho$  is the employee's rate of time preference: B receives  $u(w, e)$  this period plus the present value  $v$  if retained, which occurs with probability  $f(e)$ , and plus the present value  $z$  if dismissed, which occurs with probability  $1 - f(e)$ . Assuming for simplicity that income and the disutility of effort are both evaluated at the end of the period, the whole expression is discounted to the present by the factor  $1/(1 + \rho)$ . Solving for  $v$ , we obtain

$$v = (u(w, e) - \rho z) / (1 - f(e) + \rho) + z,$$

where the first term on the right hand side is obviously the employment rent,  $v - z$ , or *value of employment = employment rent + fallback position*. The  $e(w)$  schedule then results from B's choosing  $e$  to maximize  $v$  for given  $w$ , taking the schedule  $f(e)$  as given. The resulting first order condition, to equate  $u_e$  to  $-f_e(v - z)$ , expresses the tradeoff mentioned in the text.

39. This asymmetry between leader and follower that is absent in the Walrasian equilibrium. In the latter both agents make offers, and only offers (those that clear markets) are accepted. A Stackelberg equilibrium [see H. von Stackelberg, *Marktform und Gleichgewicht* (Vienna: Springer Verlag, 1934) and Hugo Sonnenschein, "Oligopoly and Game Theory," in *The New Palgrave: A Dictionary of Economics*, John Eatwell, Murray Milgate, Peter Newman, eds. (London: Macmillan, 1987), pp. 705–708] is one in which the leader, A, has no incentive to change strategy given the offer curve (response function) of the follower B, and B has no incentive to change strategy given that followed by A. B gains no strategic advantage by considering A's response function since A will choose a single cost-minimizing wage no matter what B does. (Strictly speaking B is also optimizing with respect to A's response function. In this case, however, A's response function is simply a vertical line in  $(e, w)$  space, as A's action cannot be influenced by B's choices.)

40. This is the first order condition for the problem: Select  $w$  so as to maximize  $e(w)/w$ .

41. A similar result obtains if the reservation wage  $\bar{w}$  is decreased sufficiently, provided  $\bar{e} > 0$ .

42. Michael Burawoy [*Socialist Review* 1 (1989)] has criticized our model on related grounds. Our response to Burawoy is in Samuel Bowles and Herbert Gintis, "Democratic Demands and Radical Rights," *Socialist Review* 19, no. 4 (October–December 1989): 57–72.

43. For example, as  $p$  approaches 1 (complete job security) or unemployment insurance coverage is extended such that  $z$  approaches  $v$ , the effectiveness of a dismissal based labor extraction system is eroded. See Samuel Bowles and Herbert Gintis, "The Crisis of Liberal Democratic Capitalism," *Politics & Society* 10, no. 1 (January 1982): 51–93; and Samuel Bowles and Herbert Gintis, "The Welfare State and Long-Term Economic Growth: Marxian, Neoclassical, and Keynesian Approaches," *American Economic Review* 72, no. 2 (May 1982): 341–345.

44. A game theorist might object that the threat to dismiss the worker is not credible so long as the dismissal imposes costs upon the employer (for example, costs of search and training). Clearly, however, if the firm's overall contingent renewal strategy is profit maximizing, and if shirking and dismissal are observed by other workers, a shirking worker must be dismissed to maintain the credibility of the employer's threat.

45. Such agents, rather than being unemployed, may simply prefer B's position to their own at the going wage. The point is that they are quantity constrained: They would prefer to sell more of their services at the going rate but are unable to (unless B is dismissed).

46. Does A have power over C? The negative sanction that A may impose on B (withdrawal of the employment rent) is exactly equal to a positive sanction that A might offer or refuse to extend to C. If A refuses to hire C in order to maintain a racially homogeneous workplace, for instance, we might say that A has furthered his or her interests (gratification of racial prejudice) and A has sanctioned C (refused to offer the employment rent). By contrast to the relationship of A to B, however, the sanction is incidental to the furthering of A's interests. Thus A does not have power over C in our sense.

47. For example, Jean-Pascal Benassy, *The Economics of Market Disequilibrium* (Orlando, Fla.: Academic Press, 1982).

48. More generally, the short side of an exchange is located where the total amount of desired transactions is least; the demand side, if there is excess supply; and the supply side, if there is excess demand (Benassy, *The Economics of Market Disequilibrium*).

49. Note that being on the short side of a nonclearing market does not *in itself* ensure that an agent has short-side power. Since such a market does not clear, short sider A can indeed impose sanction on long sider B. A, however, need not have the ability to use this capacity in any way to affect B's behavior. Consumers buying on glutted markets present an example of agents whose short-side location does not confer short-side power (unless they collude).

50. If employers act collectively, of course, a quite different picture emerges, as the contested exchange model demonstrates the interests of employers in the existence of unemployment and suggests that they might use their influence on the state to foster macroeconomic policies to maintain adequate levels of unemployment. An interpretation of recent U.S. macroeconomic policy along these lines is presented in Samuel Bowles, David M. Gordon, and Thomas E. Weisskopf, "Business Ascendancy and Economic Impasse: A Structural Retrospective on Conservative Economics, 1979–1987," *Journal of Economic Perspectives* 3, no. 1 (Winter, 1989): 107–134. A parallel treatment of the

collective action of workers is presented in Samuel Bowles and Robert Boyer, "Labor Market Flexibility and Decentralization as Barriers to High Employment?" Working paper, Department of Economics, University of Massachusetts (March, 1989).

51. A fourth possible objection is that the employment rent could be recouped by the employer by requiring that workers post a bond—that is, to transfer a sum of money to the employer as a condition of employment, in effect paying the employer for the job. Since the present value of the job exceeds the present value of being unemployed, potential employees might be willing to post such a bond to gain access to the job. Because bonding will generally be profit enhancing for the employer, our abstraction from bonding on empirical grounds cannot be motivated theoretically within the framework of our models. But if bonding is used, its availability to workers is likely to be related to their holdings of property. Thus were we to take account of bonding, the importance of wealth in the market for managers and labor would be considerably enhanced. Reasons for the absence of bonding are explored by B. Curtis Eaton and William D. White, "Agent Compensation and the Limits of Bonding," *Economic Inquiry* 20, no. 3 (July 1982): 330–343; George A. Akerlof and Lawrence F. Katz, "Workers' Trust Funds and the Logic of Wage Profiles," NBER Working Paper 2548 (March 1988); William T. Dickens, Lawrence F. Katz, Kevin Lang, and Lawrence H. Summers, "Employee Crime and the Monitoring Puzzle," *Journal of Labor Economics* 7, no. 3 (July 1989): 331–347; and Samuel Bowles and Herbert Gintis, "Bonding and Dismissal in Labor Discipline Models," Xerox, University of Massachusetts (1990).

52. See Aoki, *The Co-operative Game Theory of the Firm*, and Williamson, *The Economic Institutions of Capitalism*. We doubt, however, the substantive symmetry between employers and workers on empirical grounds. A terminated worker experiences a significant reduction in net wealth, roughly equivalent to a year's income, following termination. By contrast, in all but the smallest firms, the loss inflicted upon the firm in the form of search, recruitment, and training costs is a very small percentage of net profits [Bowles and Gintis, "Bonding and Dismissal in Labor Discipline Models"; and Daniel J. B. Mitchell and Larry J. Kimbell, "Labor Market Contracts and Inflation," in *Workers, Jobs, and Inflation* Martin Neil Bailly, ed. (Washington, D.C.: Brookings Institution, 1982)].

53. We will presently identify two cases of this type: consumer goods markets in which product quality is contested and in which many individual consumers (the short siders) buy from each firm (the long sider); and financial intermediation in which the riskiness of loans is contested and in which many individual lenders (the short siders) place their deposits in a single bank (the long sider).

These distinct scenarios may be briefly summarized. We distinguish between a principal versus multiagent problem in which a single party offering a costlessly enforceable claim (the principal) faces a multiplicity of exchange partners offering a good or service, claims against which must be endogenously enforced (the agents) and its converse, the multiprincipal versus agent problem. In principal versus multiagent cases (for example, a worker can be employed by only one firm or a borrower can obtain finance from at most a small number of lenders), Stackelberg leadership obtains, and power resides with the principal. In multiprincipal versus agent cases (for example, one firm sells to a large number of consumers or a bank accepts deposits from large numbers of lenders), markets do not clear, but in the absence of collusion among the principals, short-side position does not entail Stackelberg leadership. In cases where endogenous enforcement is required on both

sides of the exchange, a form of bilateral power not captured in our sufficient condition obtains. Which of these cases emerges in a particular contested exchange depends in part on the relevant pattern of economies of scale and indivisibilities in production and exchange.

54. Samuel Bowles and Herbert Gintis, "The Power of Capital: On the Inadequacy of the Conception of the Capitalist Economy as 'Private,'" *Philosophical Forum*, 14, no. 3-4 (Spring-Summer 1983); Samuel Bowles and Herbert Gintis, "The Inefficiency and Competitive Survival of the Capitalist Firm"; Herbert Gintis, "Financial Markets and the Political Structure of the Enterprise," *Journal of Economic Behavior and Organization* 1, no. 3 (May 1989): 311-322; Herbert Gintis, "The Principle of External Accountability in Financial Markets," in *The Firm as a Nexus of Treaties*, Masahiko Aoki, Bo Gustafsson, and Oliver Williamson, eds. (New York: Russell Sage, 1990).

55. Using slightly different models, a number of writers have challenged the Walrasian assertion that competition will eliminate discrimination among agents who differ solely with respect to race or gender. See Gintis, "The Nature of the Labor Exchange"; James Devine and Michael Reich, "The Microeconomics of Conflict and Hierarchy in Capitalist Production," *Review of Radical Political Economics*, 12, no. 4 (Winter 1982): 27-45; Bowles and Gintis, "The Marxian Theory of Value and Heterogeneous Labor," John Roemer, "Divide and Conquer: Microfoundations of the Marxian Theory of Wage Discrimination," *Bell Journal of Economics* 10, no. 2 (Fall 1979): 695-705; and Bowles, "The Production Process in a Competitive Economy." The non-Walrasian model developed by Roemer for this purpose was abandoned in favor of the Walrasian approach in his later work on exploitation and class.

56. Note that this model does not assert any particular relationship between the dominance or subordination of a racial group in the larger society and the particular job segment to which it is assigned. Ours is thus a model of the manner in which distinctions like race and gender, which are already salient in the population, may alter the workings of a competitive capitalist economy. A more complete approach should account for the empirical regularity that the dominant group, in terms of race or gender, are assigned to the higher job category.

57. Collusion among agents is not allowed in the Walrasian model, and even if it were, it would generally not take place because where large numbers of anonymous agents interact in an environment in which all are indifferent between their current transactions and their next best alternatives, the rewards to collective action are small if not nonexistent, and the costs of its coordination are high.

58. Our model here is obviously inspired by, but is a drastic simplification of, primarily historical and institutionalist arguments presented in the now vast literature initiated by Stephen Marglin's treatment of this problem, "What Do Bosses Do?" *Review of Radical Political Economics* 6, no. 2 (Summer 1974): 60-112. For a more extended contested exchange treatment of technical change with some historical examples, see Samuel Bowles, "Capitalist Technology: Endogenous Claim Enforcement and the Choice of Technique," University of Massachusetts Working Paper (1989).

59. The higher costs of production using the new technology would have to be considered enforcement costs (or transactions costs in Williamson's framework), thus precluding any coherent distinction between production costs and enforcement (or transactions) costs.

60. Analogous reasoning applies to the choice of which goods to produce. According to a number of economic historians, for example, the production of some products—like sugar—present relatively few endogenous enforcement problems while others—tobacco, for example—depend heavily on subtle variations in the quality of care that are highly costly to extract from a resistant workforce. Fernando Ortiz, *Contrapunto del Tabaco y el Azucar* (Barcelona: Editorial Ariel, 1963), used this argument to construct a powerful interpretation of the modern history of Cuba. Eric Nilsson, *International Trade and the Social Relations of Production*, Ph.D. Diss., University of Massachusetts (1989), has analyzed product-related enforcement effects in an incisive critique of the neoclassical theory of comparative advantage and international specialization.

61. We define wealth as property rights in assets for which exogenously enforceable contracts may be written; thus land, buildings, and money are wealth and a college degree or even a skill is not. We will consider *human capital* forms of wealth presently.

62. Despite the apparent implications for his approach, Roemer concedes that endogenous enforcement may be characteristic of real-world credit markets: "if a borrower has no collateral, some enforcement mechanism is needed (in the capital market)..." (Roemer, *General Theory*, p. 95, n. 1). But Roemer's credit markets, like his labor markets, are Walrasian; contracts are exogenously enforced, and credit markets clear in equilibrium. And his objective is to show that exploitation may be based on the workings of either taken singly while we find that the capital-labor relationship can be understood only by modeling the two markets jointly as contested exchanges.

It is curious that the post-Walrasian literature, while recognizing the contested exchange character of both labor and capital markets, rarely addresses their *interaction*. For an important exception, see Mukesh Eswaran and Ashok Kotwal, "Credit and Agrarian Class Structure," in *The Theory of Agrarian Institutions*, Pranab Bardhan, ed. (New York: Oxford University Press, 1989).

63. It might be thought that the problem of borrower insolvency can be solved by simply raising the interest rate on risky loans. Problems of adverse selection and moral hazard, however, limit the effectiveness of the price mechanism in this case (Joseph Stiglitz and Andrew Weiss, "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71, no. 3 (June 1981): 393–411). In the adverse selection case, an increase in the interest rate induces borrowers with safe but low expected return investment opportunities to drop out of the pool of credit applicants while those with risky projects remain. Hence the lender's expected return may decline even when the interest rate rises. Moral hazard also obtains since an increase in the interest rate induces borrowers to take more risks since only highly favorable outcomes allow positive profits when high interest rates must be paid.

64. We thus abstract from a critical aspect of contested exchange in capital markets: adverse selection in the choice of investment projects. We can support our assertions with the weaker assumption that risk is not contractible.

65. These informational assumptions are common to principal-agent models, of which ours is an example: The principal (employer or lender) knows the set of alternatives available to the agent but does not have the capacity to make the choice in the agent's place. Without this privileged position of the borrower, lenders could exploit investment opportunities directly, the division between lenders and borrowers would break down, and as suggested above collateral alone would emerge from competitive exchange, enforcement rents being forced to zero.

66. To avoid trivial cases, we assume that no borrower chooses to provide full collateral for the loan, and  $r(0)$  is so small that it is never profitable to choose the risk-free investment with  $f=0$ . We also assume  $d^2r/df^2 > 0$ . The capital market model where the lender chooses an interest rate and the borrower chooses the risk level is developed by Stiglitz and Weiss, "Credit Rationing," who demonstrate credit rationing in equilibrium. The interaction of contingent renewal and collateral is analyzed in Herbert Gintis, "Savings, Investment, and the Interest Rate: Credit Rationing in Competitive Equilibrium," University of Massachusetts Working Paper 2 (February 1988).

67. Suppose that  $g(k^0)$  is the return to the borrower on that part of his or her wealth  $k^0$  not involved in this transaction. The borrower's total wealth is  $\bar{k} = k^0 + k$ . The annual opportunity cost of tying up the collateral is then  $g(\bar{k}) - g(k^0)$ . The borrower's present value having secured a loan is:

$$v = [(1-f)(r-i(1-k)) + g(k^0) + (1-f)v + fk^0]/(1+p)$$

where the first term in the numerator is the probability of success times the annual net return; the second term is the annual financial returns to the unrelated assets  $k^0 = \bar{k} - k$ , and the remaining terms are the expected change in the borrower's asset position, taking into account the probability of failure; the whole expression is discounted at the rate of time preference, assuming for simplicity that the returns accrue at the end of the current period.

68. Note that because collateral has been paid, the long sider's reservation position  $\bar{k}$  and fallback position  $k^0 = \bar{k} - k$  differ; thus there will exist a positive enforcement rent even where  $v = k$ . In the labor market (assuming the worker is not required to post a bond), both are equal to  $z$ .

69. Note that if  $\bar{i}$  is optimal for the lender, which is not an implausible case, then  $\bar{i}$  is a market-clearing interest rate. Thus in sharp contrast to contested exchange labor markets, contested exchange capital markets can clear although in the non-Walrasian sense that ownership is a prerequisite for borrowing *as well as* lending.

70. This expected return may be expressed as

$$i^e = [1 - f(i,k)](1+i) - 1.$$

The first term on the right is the expected value of the loan itself (the borrower's liability times the probability of repayment) and the second is the initial cost of making the loan. Differentiation of the expression for the expected return with respect to  $i$  and equating the results to zero yields the first order condition

$$(1+i)f_i = 1 - f.$$

The lender sets the interest rate  $i$  to balance the advantages of a high return against the lower probability of repayment associated with a higher  $i$ : a small increase,  $\delta i$ , in the interest rate directly generates an increased expected return to the lender of  $\delta i(1-f)$ ; in response to the higher interest rate, however, the borrower will reduce the probability of repayment by  $(\delta i)f_i$ . The lender increases  $i$  until these effects are just offsetting.

71. From the definition of the realized rate of return, the slope of the lender's isoreturn locus is the ratio of the marginal effects of  $i$  and  $f$  on the lenders return, or  $[1-f(i,k)]/(1+i)$ . The probability of default schedule,  $f(i,k)$ , has slope  $f_i$ . The point of tangency between the two occurs where  $f_i = (1-f)/(1+i)$ , and is the solution to the lender's optimizing problem for  $i$  (as indicated in the previous note).

72. Might it be objected that  $v - (\bar{k} - k)$  is not an enforcement rent but rather a rent to the private information that makes potential borrowers (but not lenders) able to carry out investment projects? This suggestion is plausible since, in the absence of the privileged position of borrowers based on their private information, contingent renewal would not be an equilibrium strategy, and hence the rent would disappear. But the rent is not a return to private information since those who are rationed out of credit markets and thus receive no rents possess the same information.

73. Under what conditions will the Walrasian equilibrium obtain? In Figure 5 the equilibrium lender isoreturn schedule is given by the equation  $i(1-f) = \rho$ , where  $\rho$  is the risk-free interest rate. When  $k$  is sufficiently large that contingent renewal is not operative, the borrower's response function is very flat and intersects the lender isoreturn schedule at  $\bar{i}$ . As  $k$  decreases, the borrower's response function becomes steeper (the debt burden is more consequential in the choice of risk), shifts downward (the borrower chooses a lower level of risk for any interest rate), and  $\bar{i}$  decreases. At a certain level of  $k$ , the two functions become tangent at  $\bar{i}$ , and for  $k$  below this value, contingent renewal is in force. The Walrasian solution, which involves the absence of contingent renewal even when  $k = 0$ , obtains when the borrower's response function remains very flat over the whole range of collateral levels; that is, when the borrower has little control over the choice of risk level.

74. Adolph A. Berle and Gardiner C. Means, *The Modern Corporation and Private Property* (New York: Macmillan, 1932).

75. Robin Marris, *The Economic Theory of "Managerial" Capitalism* (New York: The Free Press, 1963).

76. Recall that the asset value associated with an annual income flow in perpetuity of  $y$  is  $y/\rho$  where  $\rho$  is the rate of time preference; it follows that the expected income flow associated with the asset  $v$  is  $\rho v$ .

77. Erik Olin Wright, "What is Middle about the Middle Class?" in *Analytical Marxism* John E. Roemer, ed. (Cambridge, Eng.: Cambridge University Press, 1986), p. 114.

78. See Gintis, "Financial Markets and the Political Structure of the Enterprise" and Gintis, "The Principle of External Accountability in Financial Markets," for developments of this line of reasoning.

79. Erik Olin Wright, "Class Boundaries in Advanced Capitalist Societies," *New Left Review*, 98, no. 4 (July–August 1976). In more recent work, Wright ("What is Middle about the Middle Class?" pp. 116–117) has criticized the contradictory class location framework because, among other things, "it tends to shift the analysis of class relations from exploitation to domination," and thus to favor "the 'multiple oppressions' approach to understanding society." Yet we do not see exploitation and domination as competing concepts, having argued (in Bowles and Gintis *Democracy and Capitalism*, ch. 4) that exploitation is a form of domination that cannot be defined independently of the political relations among agents—a view recently defended by Jeffrey Reimer, "Exploitation, Force, and the Moral Assessment of Capitalism: Thoughts on Roemer and Cohen," *Philosophy and Public Affairs* 16, no. 1 (Winter 1987): 3–41, with a response by John E. Roemer, "What is Exploitation? Reply to Jeffrey Reimer" *Philosophy and Public Affairs* 16, no. 1 (Winter 1987): 90–97. Nor do we believe that racial or gender oppression reduce to class oppression or that class phenomena have any explanatory priority in principle over other forms of domination. Neither are we persuaded by Wright's more recent exploitation-based interpretation in which the middle class is *middle* because it is exploited with respect to some assets it owns and is an exploiter with respect to others. On this account, a person with very

few work skills who owns a substantial amount of capital and works as a poorly paid employee would have to be called middle class. Aside from such curiosa, Wright's asset-based approach, we believe, obscures the political nature of the production process, represents class structure as a purely distributional phenomenon, and reduces income differences to the differential holdings of a taxonomically expanded, and in our view unwieldy, category of *assets*. For a balanced, critical assessment of these issues, see Erik Olin Wright, "Rethinking Once Again the Concept of Class," in E.O. Wright, *The Debate on Classes* (New York: Verso, 1990).

80. This is far from a comprehensive model of the class structure: We do not address the question of state employees, the role of skills in class position, and the position of domestic labor, among other issues. The self-employed do not engage in transactions in any of these markets and are hence excluded. They will be introduced presently.

81. In view of Proposition 9 the reader may be tempted to pose the question: What would be the effect of perfectly equal wealth holdings on the distribution of power in the economy? In particular, might not the elimination of wealth differences abolish short-side power? The answer is "No," for the existence of short-side power does not logically depend on wealth inequalities. But the concept of equilibrium could not be used to analyze this situation: Wealth equality at a point in time would more or less quickly devolve into wealth inequality over time as the effects of business successes and failures and employment and employment termination accumulate. This tendency, moreover, could not be counteracted by compensating redistributions (for example, by the state) without undermining the incentives systems in contested exchange labor and capital markets.

82. A caveat: To say that  $x$  is neither necessary nor sufficient for  $y$  does not imply that the correlation between  $x$  and  $y$  is low or that  $x$  is unimportant for  $y$ ; all that is required is a case of  $y$  without  $x$  and a case of  $x$  without  $y$ . Thus the interpretation of Proposition 9 hinges on how one assesses the importance of cases such as nonwealthy managers and the self-employed.

83. There is, however, a more troublesome objection. Our treatment of wealth in the stratification system involves both collateral and contingent renewal as enforcement strategies deployed by lenders while contingent renewal alone is used by employers. We think this distinction reflects a real difference between credit markets and labor markets since, as we have suggested above, bonding is rare in contested exchange labor markets while collateral is prevalent in capital markets.

84. See, for instance, Kenneth J. Arrow and Frank H. Hahn, *General Competitive Analysis* (San Francisco: Holden-Day, 1971).

85. In fact only extremely stringent assumptions guarantee the uniqueness of such an equilibrium given an initial distribution of assets. Hence a nonmarket mechanism must in general be invoked to ensure that the proper equilibrium is implemented by decentralized exchange.

86. Roemer, *Free to Lose*, p. 54. If this result seems like a rather obvious oversimplification implied by the Walrasian model, it may also be read as a valuable attempt by Roemer to refocus the attention of egalitarians on property relations and thus to "bring class back in" to the discussion of inequality, which has sometimes been overly focused on such issues as skill, luck, and the like.

87. Adam Przeworski, *Capitalism and Social Democracy* (Cambridge, Eng.: Cambridge University Press, 1985), p. 234.



88. The studies in question involve the measurement of the cost of job loss; the relationship between the cost of job loss on the one hand and strike incidence, a direct measure of labor intensity, and the rate of change of labor productivity on the other; the relationship between the workers' fallback position and movements in the real wage and the profit rate; and even movements in United States monetary policy. See James Rebitzer, "Unemployment, Long Term Employment Relations, and Productivity Growth," *Review of Economics and Statistics* 69, no. 4 (November 1987): 624–635; Juliet B. Schor, "Does Work Intensity Respond to Macroeconomic Variables? Evidence from British Manufacturing, 1970–1986," Harvard Institution of Economic Research, Discussion Paper #1379, (April 1988); Samuel Bowles, David Gordon, and Thomas Weisskopf, *Beyond the Waste Land: A Democratic Alternative to Economic Decline* (New York: Doubleday, 1983); Samuel Bowles, David Gordon, and Thomas Weisskopf, "Hearts and Minds: A Social Model of U.S. Productivity Growth," *Brookings Papers on Economic Activity* 2 (1983); Samuel Bowles, David Gordon, and Thomas Weisskopf, "Power and Profits: The Social Structure of Accumulation and the Profitability of the Postwar U.S. Economy," *Review of Radical Political Economics* 18, no. 1-2 (1986): 132–167; Bowles, Gordon, and Weisskopf, "Business Ascendancy", Francis Green and Thomas Weisskopf, "The Worker Discipline Effect: A Disaggregative Analysis," University of Michigan (February 1989); and Gerald Epstein and Juliet Schor, "Macropolicy in the Rise and Fall of the Golden Age", in *The Rise and Fall of the Golden Age: Lessons for the 1990's* Stephen Marglin, ed. (Oxford, Eng.: Oxford University Press, 1990). We doubt that the strong support for the contested exchange framework evident in these studies of the United States would be forthcoming for all capitalist economies. Empirical support for capital rationing in the international economy is presented in Gerald Epstein and Herbert Gintis, "An Asset Balance Model of International Capital Market Equilibrium," University of Massachusetts Working Paper 7 (October 1989).

89. This defense of an activist state planning function in a market environment may appear similar to arguments for the selective use of markets [Oskar Lange and Fred M. Taylor, *On the Economic Theory of Socialism* (Minneapolis: University of Minnesota Press, 1938)]. It differs, however, by stressing the disciplinary as well as the allocative aspect of markets.

90. Janos Kornai, *The Economics of Shortage*, (New York: North Holland, 1980).

91. Herbert Gintis, "The Power to Switch: On the Political Economy of Consumer Sovereignty," in *Unconventional Wisdom: Essays in Honor of John Kenneth Galbraith*, Samuel Bowles, Richard C. Edwards, and William G. Shepherd, eds. (Boston: Houghton-Mifflin, 1989).

92. Price may exceed marginal cost in addition because firms face downward-sloping demand curves, or are sales constrained due to aggregate demand failures or for other reasons.

93. For instance, under reasonable conditions we would expect worker-run firms in a market economy to be superior in terms of productive efficiency but to choose investment projects involving a socially suboptimal degree of risk taking. See Gintis, "Financial Markets and the Political Structure of the Enterprise" and "The Principle of External Accountability in Financial Markets."

94. Here Douglass North's recent work, *Structure and Change in Economic History* (New York: Norton, 1981), represents a major contribution to the post-Walrasian theory of institutional structure and evolution [see also Margaret Levi, *Of Rule and Revenue*,

(Berkeley: University of California Press, 1988), and Ugo Pagano, "Determinazione endogena dei diritti di proprietà in un economia di mercato," Working Paper, University of Siena, Siena, 1988], while his earlier work is closer to the Walrasian tradition.

95. Failure to analyze the effect of schooling on the labor market enforcement environment was our main critique of human capital theory. See Samuel Bowles and Herbert Gintis, "The Problems with Human Capital Theory," *American Economic Review* 65, no. 2 (May 1975): 74–82; and Bowles and Gintis, *Schooling in Capitalist America*. On the effect of the welfare state on enforcement environments see Bowles and Gintis, "The Crisis of Liberal Democratic Capitalism"; Bowles and Gintis, "The Welfare State and Long-Term Economic Growth"; and Juliet B. Schor and Samuel Bowles, "Employment Rents and the Incidence of Strikes," *Review of Economics and Statistics* 64, no. 4 (November 1987): 584–591.

96. See Bowles, Gordon, and Weisskopf, *Beyond the Waste Land*; Bowles, Gordon, and Weisskopf, "Business Ascendancy"; and Samuel Bowles, David M. Gordon, and Thomas E. Weisskopf, *After the Wasteland: A Democratic Economy for the Year 2000* (Armonk, N.Y.: M.E. Sharpe, 1990), for an elaboration of this theory of crisis with empirical reference to the United States.

97. The upper-right cell of Figure 2 (Instrumental contested exchange) by this reasoning is contradictory.

98. This theme is developed using a repeated prisoner's dilemma game in Samuel Bowles, "Mandeville's Mistake: The Moral Autonomy of the Market Reconsidered," University of Massachusetts Economics Department Working Paper, 1990. The relationship between *exit*, *voice*, and *loyalty* have been insightfully analyzed by Albert Hirschman, *Exit, Voice, and Loyalty* (Cambridge, Mass.: Harvard University Press, 1970).

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