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I. Introduction

The term *political economy*, once synonymous with economics, now generally refers either to the study of the interface between economy and state or to the application of models of rational choice to the analysis of state decision-making. The demise of the older usage expresses the conviction among social scientists and political philosophers that as an arena of voluntary contractual exchange, the capitalist economy is devoid of political content. In particular, the standard economic theory of competitive markets, the Walrasian model, denies the existence of power under competitive conditions. Because each economic agent can refuse any exchange at no cost, coercion must be absent in an equilibrium state of a competitive economy. Hence political and moral questions concerning the distribution of power and the presence of coercion in exchange relations do not arise.[1] David Gauthier expresses this view with considerable clarity: "The operation of the market cannot in itself raise any evaluative issues. . . . The presumption of free activity ensures that no one is sub-

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1. Basic contributions to this theory include Kenneth J. Arrow, "An Extension of the Basic Theorems of Classical Welfare Economics," in *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability*, ed. J. Neyman (Berkeley: University of California Press, 1951), pp. 507–32; Gerard Debreu, *Theory of Value* (New York: Wiley, 1959); Kenneth J. Arrow and Frank H. Hahn, *General Competitive Analysis* (San Fransisco: Holden-Day, 1971); and Andreu Mas-Colell, *The Theory of General Economic Equilibrium: A Differentiable Approach* (Cambridge: Cambridge University Press, 1985). The Walrasian model is the basis not only of professional but of textbook economics as well. It provides the reasoning that, for example, locates market equilibrium at the intersection of a supply and a demand curve.

ject to any form of compulsion or to any type of limitation not already affecting her own actions as a solitary individual."[2]

Among economists, however, this approach has come under serious criticism. Contemporary developments in microeconomic theory, particularly transactions cost analysis, and the theory of principal-agent relationships, have suggested major revisions of the Walrasian model.[3] We will explore the implications of such revisions for the study of the competitive economy as a political entity, demonstrating in particular that even in competitive equilibrium, a market economy sustains a system of power relations.[4]

In our approach, power is based on the capacity of some agents to influence the behavior of others to their advantage through the threat of imposing sanctions. While this conception of power is not exhaustive, to regard the application of sanctions to further one's interests as an exercise of power is uncontroversial. Thus Harold Lasswell and Abraham Kaplan make the expectation of "severe sanctions . . . to sustain a policy against opposition" a defining characteristic of a power relationship.[5] And Talcott Parsons makes "the presumption of enforcement by negative sanctions . . . in case of recalcitrance" a necessary condition for the exercise of power.[6]

The absence of such power in the Walrasian model is based on the fundamental Walrasian theorem that supply equals demand in competitive equilibrium. From the equality of supply and demand it follows that each agent loses nothing by abandoning his or her current, most pre-

2. David Gauthier, *Morals by Agreement* (Oxford: Clarendon Press, 1986), pp. 95–96.

3. For interpretation and bibliographic references, see George Akerlof, *An Economic Theorist's Book of Tales* (Cambridge: Cambridge University Press, 1984); Samuel Bowles and Herbert Gintis, "Contested Exchange: Political Economy and Modern Economic Theory," *American Economic Review* 78 (1988): 145–50; Samuel Bowles and Herbert Gintis, "The Revenge of *Homo Economicus*: Self-Interest, Property, and the Revival of Political Economy," *Journal of Economics Perspectives* (forthcoming); Joseph Stiglitz, "The Causes and Consequences of the Dependence of Quality on Price," *Journal of Economic Literature* 25 (1987): 1–48; and Oliver E. Williamson, *The Economic Institutions of Capitalism* (New York: Free Press, 1985).

4. For related treatments, see Adam Przeworski, *The State and the Economy Under Capitalism* (New York: Harwell, 1990); and Pranab Bardhan, "Some Reflections on the Use of the Concept of Power in Economics" (University of California, Berkeley, 1988).

5. Harold Lasswell and Abraham Kaplan, *Power and Society: A Framework for Political Enquiry* (New Haven: Yale University Press, 1950), pp. 74–75.

6. Talcott Parsons, "On the Concept of Political Power," in his *Sociological Theory and Modern Society* (New York: Free Press, 1967), p. 308.

ferred transaction in favor of the next-best alternative: if markets clear, agents are indifferent between their current transactions and their next-best alternatives. From this it follows that no agent can impose sanctions on another agent in competitive equilibrium. For instance, if the labor market clears, the manager of a firm cannot use the threat of dismissal to control the behavior of an employee, since a discharged worker can find equally desirable employment elsewhere. Similarly, the owner of an enterprise cannot use the threat of dismissal to control the behavior of the manager, and the lender of funds cannot use the threat of nonrenewal of credit to control the behavior of borrowers. Thus to the extent that such sanctions are the basis of power, neither owners, managers, nor creditors have power in Walrasian competitive equilibrium.

The putative absence of sanctions in a competitive economy is not easy to reconcile with the apparent exercise of power by those who own and control businesses. Charles E. Lindblom remarks: "Corporate executives . . . decide a nation's industrial technology, the pattern of work organization, location of industry, market structure, resource allocation and, of course, executive compensation and status. . . . In short, in any private enterprise system, a large category of major decisions is turned over to businessmen both small and large."[7] Lindblom does not here refer to the influence of business leaders on public policy; he is drawing our attention to power exercised *in* the economy.[8]

How are we to reconcile the evident exercise of economic power in everyday life with the standard economic model of competitive equilibrium? If one accepts both the centrality of sanctions in the exercise of power and the absence of sanctions in Walrasian competitive equilibrium, one must either deny that the market economies on which our observations are based are competitive or reject the Walrasian model. We shall follow the latter course.

Let us accept the assertion that for agent A to have power over agent B it is sufficient that, by imposing or threatening to impose sanctions on B,

7. Charles E. Lindblom, *Politics and Markets: The World's Political-Economic Systems* (New York: Basic Books, 1977), pp. 171–72.

8. For contributions stressing state-economy interactions, see Adam Przeworski and Michael Wallerstein, "The Structure of Class Conflict in Democratic Capitalist Societies," *American Political Science Review* 76 (1982): 215–38; and Przeworski, *The State and the Economy Under Capitalism.*

A is capable of affecting B's actions in ways that further A's interests, while B lacks this capacity with respect to A.[9] By a "competitive capitalist economy" we mean one in which productive assets are privately owned commodities, and all markets are characterized by free entry and large numbers of buyers and sellers. We will show that in such an economy, voluntary market exchange engenders a structure of power relations among economic agents in equilibrium in the sense just indicated. Specifically, in such a model the managers of the enterprise have power over employees, creditors have power over debtors, and under plausible conditions owners of the enterprise have analogous power over managers.

The assertion that the capitalist economy exhibits a system of power relations has typically been motivated by reference to such deviations from competitive conditions as the pervasiveness of monopoly,[10] the autonomy of management,[11] corporate influence over government policy and consumer demand,[12] and the ubiquity of disequilibrium.[13]

Whatever their attractions, none of these approaches offers an adequate response to the fundamental claim of the Walrasian model: that capitalism is a system of generalized choice in which the extensive opportunities to walk away from any transaction preclude the private use of sanctions in the absence of collusion. Even where empirical deviations from the competitive ideal are admitted, the presumed prescription is to restore competition, a not altogether utopian remedy in the highly competitive global economy of the late twentieth century.

For this reason approaches to economic power that fail to challenge the Walrasian logic can reasonably be accused of grounding what is ostensibly a fundamental aspect of economic life, power, on an ephemeral deviation of economic reality from the conditions of competitive equilib-

9. We do not claim that ours is a necessary condition for the exercise of power, since there may be forms of power that operate without the application of sanctions (e.g., persuasion or purchasing power). See Steven Lukes, *Power: A Radical View* (London: Macmillan, 1974).

10. See Paul Baran and Paul Sweezy, *Monopoly Capital* (Harmondsworth, Engl.: Penguin, 1966); John Kenneth Galbraith, *The New Industrial State* (Boston: Houghton Mifflin, 1967); and Max Weber, *Economy and Society*, ed. G. Roth and C. Wittich (Berkeley: University of California Press, 1978).

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

12. See Galbraith, *The New Industrial State.*

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

rium. It is thus not surprising that economists have traditionally banished the term *power* from their lexicon in analyzing market behavior. Like other phenomena inconsistent with competitive equilibrium, the real-world exercise of economic power in the sense we have indicated is thus thought to be an anomalous and unimportant feature of modern capitalism.[14]

Yet the Walrasian model need not be conceded. We here suggest that, far from representing a general analysis of informed, self-interested economic behavior, the Walrasian model is in fact a limiting case based on an arbitrary truncation of the concept of rational action. The Walrasian model allows agents to optimize when they shop for groceries but not, for instance, when they decide how hard to work for their employer or whether to default on a loan they have secured.[15]

In short, we demonstrate the existence of economic power by relaxing one of the more implausible assumptions of the Walrasian model: the *exogenous enforcement axiom*, which holds that exchanges between agents in the economy can be enforced by a third party (for example, the judicial system) at no cost to the exchanging parties. Neither the contract between employer and employee nor that between owner and manager nor that between lender and borrower nor that between parties to international exchanges is sufficiently subject to third-party enforcement to render the Walrasian account of these exchange relationships even remotely acceptable.[16]

14. Of course, if economic conditions in advanced capitalist countries deviated sufficiently from the norms of free entry and exit to account for the observed incidence of economic power, the need for an alternative account would be unnecessary. We do not believe this is the case.

15. Even this is not strictly true, since an optimizing shopper will steal, when the chance of detection is very small, and it may not be cost-effective for the firm to use the courts as the only antitheft strategy. There are more subtle and important issues here as well. See Herbert Gintis, "The Power to Switch: On the Political Economy of Consumer Sovereignty," in *Unconventional Wisdom: Essays in Honor of John Kenneth Galbraith*, ed. Samuel Bowles, Richard C. Edwards, and William G. Shepherd (New York: Houghton Mifflin, 1989).

16. See Armen Alchian and Harold Demsetz, "Production, Information Costs, and Economic Organization," *American Economic Review* 62 (1972): 777–95; Herbert Gintis, "The Nature of the Labor Exchange and the Theory of Capitalist Production," *Review of Radical Political Economics* 8 (1976): 36–54; Samuel Bowles, "The Production Process in a Competitive Economy: Walrasian, Marxian and Neo-Hobbesian Models," *American Economic Review* 75 (1985): 16–36; George Akerlof and Janet Yellen, eds., *Efficiency Wage Models of the Labor Market* (Cambridge: Cambridge University Press, 1986); Stiglitz, "The De-

In cases where third-party enforcement is infeasible or excessively costly, the exchanging agents must themselves enforce their agreements. In the presence of endogenous enforcement, the terms of exchange are continually subject to de facto respecification by the exchanging parties. The threat of coercive sanctions, the defining instrument of the state as third-party enforcer, is thus but one among several stratagems invoked by economic agents in the protection of their claims. Privately imposed sanctions, we will see, are essential to the workings of the key exchanges of a capitalist economy, those involving capital and labor. The neat division of society into an arena characterized by sanctions (the state) and a sphere of voluntary exchange devoid of political content (the economy) thus collapses.

In Section II we examine the role of third-party enforcement in the Walrasian model, developing an alternative model, which we term *contested exchange*, in which one party to exchange uses monitoring and sanctions as instruments of endogenous contract enforcement. We then provide in Section III a contested exchange model of a competitive labor market, and demonstrate that employers have power over workers in equilibrium. Competitive labor markets, and contested exchange markets in general, we show, do not generally clear in equilibrium.[17] Thus, to the surprise of many, equilibrium and market clearing are distinct concepts, neither entailing the other.

In Section IV we explore the type of power accruing to agents who occupy advantageous positions on such nonclearing markets. Sections V and VI address the relationship between power and wealth, showing that endogenous enforcement implies that in competitive equilibrium lenders have power over borrowers analogous to that enjoyed by employers over

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pendence of Quality on Price"; and Bowles and Gintis, "Contested Exchange." Yet many working within a post-Walrasian framework have reaffirmed the Walrasian conclusion that power is absent in competitive exchange. See Alchian and Demsetz, "Production, Information Costs, and Economic Organization"; Bengt Holmstrom and Jean Tirole, "The Theory of the Firm," in *Handbook of Industrial Organization*, ed. R. Schmalensee and R. Willig (Amsterdam: North-Holland, 1988); and Williamson, *The Economic Institutions of Capitalism.*

17. By an *equilibrium* we mean a situation where no agent has an incentive to change his or her behavior, given the behavior of the other agents in the economy. We say a market *clears* if supply equals demand. Thus in a nonclearing market, some agents are incapable of making the transactions they desire at the going price. For instance, equilibrium unemployment involves a nonclearing labor market, in which some workers (the unemployed) are unable to find work at the going wage.

workers. The association between wealth and power that is observed in capitalist economies, we maintain, arises from wealth-holders' structural location in nonclearing markets, which allows them to use sanctions to elicit managerial compliance with the objectives of profit maximization, or through their analogous use of sanctions to control workers directly.[18]

II. Contested Exchange

In the Walrasian model, equilibrium prices maximize each agent's utility subject to that agent's wealth constraint, and simultaneously clear all markets. In competitive equilibrium, moreover, conditions of free entry and exit ensure that for each commodity (including such factors of production as labor and capital), there is a selling price such that each buyer faces a large number of sellers offering this commodity at this price, and no seller offers the commodity at a lower price; similarly, there is an offer price such that each seller faces a large number of buyers offering to buy at this price and no buyer offering to buy at a higher price.

It follows that in equilibrium, if agents A and B engage in an exchange, B's gain exactly equals the gain from his or her next-best alternative. Were this not the case, competition would imply that a third agent consigned to such an alternative could have offered A a contract superior to B's, in which case A's contract with B would not have been accepted. Because in equilibrium the cost to B of foregoing an exchange with A is zero, A cannot affect B's well-being by terminating the exchange, and hence has no power over B.[19] In Walrasian competitive equilibrium of noncolluding agents, sanctions cannot be imposed.

The Walrasian treatment of exchange reinforces a long-standing tendency in the social sciences to view the economy purely as a system of resource allocation and the state as the quintessential system of power.

18. Here we focus on the implications of our model for the exercise of power. In a more extended treatment (Samuel Bowles and Herbert Gintis, "Contested Exchange: New Microfoundations of the Political Economy of Capitalism," *Politics and Society* 18 [1990]: 165–222) we develop its relationship to democratic accountability of the capitalist economy, class structure, racial and gender discrimination, distributive norms, workplace democracy, and alternative credit market institutions.

19. In fact, A may be capable of affecting B's well-being through some nonmarket channel (e.g., by inflicting physical harm upon B). However, assuming that the state enforces property and personal rights (an admittedly strong assumption in many cases), A cannot use this capacity to influence B's actions. Hence A's capacity to inflict harm upon B does not give A power over B in our sense of the term.

Indeed, the equation of "politics and power" with the state and "production and wealth" with the economy is still widely accepted as defining the disciplinary boundary between economics and political science. Among traditional economists the consequent excision of power from economic theory has been a source of celebration. Abba Lerner expresses a common sentiment: "An economic transaction is a solved political problem. . . . Economics has gained the title Queen of the Social Sciences by choosing solved political problems as its domain."[20]

Perhaps the most notable political implication of the Walrasian model, strikingly counter-intuitive, is that the location of decision-making authority within the enterprise (its political structure) has neither allocative nor distributive effects in competitive equilibrium, and hence may be considered irrelevant to economic theory.[21] Writing in the early years of this century, Joseph Schumpeter announced this now familiar theme: "The means of production and the productive process have in general no real leader. . . . 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. . . . In no other sense is there a personal direction of production."[22] Paul Samuelson has expressed the matter more succinctly: "In a perfectly competitive model," he wrote, "it really doesn't matter who hires whom; so let labor hire 'capital.' "[23]

The apparent power of the "people who direct business firms" is accordingly said to be illusory, since competition forces those in positions

20. Abba Lerner, "The Economics and Politics of Consumer Sovereignty," *American Economic Review* 62 (1972): 259.

21. This assertion is based on the distinction between the administrative and political structure of the enterprise. The former refers roughly to its organizational chart while the latter refers to the locus of final accountability within the firm. We might envisage, for example, a bureaucratic administrative structure combined with a democratic political structure, all members of the firm electing the chief executive officer who then enjoys broad organizational authority. This system is democratic by comparison with an organization with the same administrative structure and a political structure according to which the chief executive officer is accountable to no one.

22. Joseph Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle* (1911; Cambridge, Mass.: Harvard University Press, 1934), p. 21.

23. Paul Samuelson, "Wages and Interest: A Modern Dissection of Marxian Economics," *American Economic Review* 47 (1957): 894. Strictly speaking, Samuelson's claim applies only to the class of models, possibly quite limited, in which general equilibrium is unique. But this substantial caveat has not prevented its general acceptance among economists.

of authority to adopt a unique cost-minimizing solution to production problems determined by given prices and technologies. A relocation of command (for instance, from owners to employees) would not alter the decisions made by firms in equilibrium.[24] Moreover, the illusory nature of what many would consider a most palpable form of economic power, that of employer over employee, follows directly from the logic of market clearing. If all agents are indifferent between their current transactions and their next-best alternative, then Armen Alchian and Harold Demsetz are surely correct: "Telling an employee to type this letter rather than to file that document is like my telling a grocer to sell me this brand of tuna rather than that brand of bread."[25]

All this changes when contract enforcement becomes problematic. Consider agent A who purchases a good or service from 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, yet is not fully specified in an enforceable contract. Exogenous enforcement is absent when there is no relevant third-party enforcer (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 eyewitness 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 precludes 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.[26] In the next section

24. Precisely this point is made by Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974), in his well-known defense of laissez-faire. See esp. pp. 248–53.

25. Alchian and Demsetz, "Production, Information Costs, and Economic Organization," p. 777.

26. 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). We discuss the applicability of our analysis to this broader framework in the concluding section.

we analyze one important endogenous enforcement mechanism: *contingent renewal.* Contingent renewal 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 an employee reemployment contingent upon satisfactory performance, or a lender may offer a borrower a loan, promising to renew the loan if the borrower displays prudent business behavior. We will take the labor market as a case in point.

III. The Labor Market as Contested Exchange

An employment relationship is established when, in return for a wage, the worker agrees to submit to the authority of the employer for a specified period of time.[27] While the employer's promise to pay the wage is legally enforceable, the worker's promise to bestow an adequate level of effort and care upon the tasks assigned, even if offered, is not. 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. 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.[28]

27. This definition conforms to neoclassical (Ronald Coase, "The Nature of the Firm," *Economica* n.s. 4 [1937]: 386–405) as well as to Marxian (Karl Marx, *Capital* I [1868; Harmondsworth, Engl.: Penguin, 1976]), neo-Marxian (Gintis, "The Nature of the Labor Exchange"), and organization-theoretic (Herbert Simon, "A Formal Theory of the Employment Relationship," *Econometrica* 19 [1951]: 293–305) approaches.

28. 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 (1987): 195–228. Related models have been developed by Guillermo Calvo, "Quasi-Walrasian Theories of Unemployment," *American Economic Review* 69 (1979): 102–7; and Carl Shapiro and Joseph E. Stiglitz, "Unemployment as a Worker Discipline Device," *American Economic Review* 74 (1984): 433–44. Our model includes only those aspects of work and production necessary to demonstrate the exercise of power. In particular, we model a bilateral relationship between an employer and a single member of a team of employees, thus setting aside relationships among workers as an important aspect of the labor exchange (Akerlof, *An Economic Theorist's Book of Tales*; S.R.G. Jones, *The Economics of Conformism* [Oxford: Basil Blackwell, 1984]; and James Buchanan, "Rent Seeking and Profit Seeking," in James Buchanan, Robert Tollison, and Gordon Tullock, *Toward a Theory of the Rent-Seeking Society* [College Station: Texas A&M University Press, 1980]).

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 $e_{\min}$. B's employer A knows that B will choose e in response to both the cost of supplying effort and the penalty that employer A imposes if dissatisfied with B's performance. For simplicity we assume the penalty A will impose is the nonrenewal of the employment relationship: that is, the worker's dismissal. Of course the employer may choose not to terminate the worker if the costs 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.

In choosing a level of work intensity, the employee 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, or the present value of some other job, or more likely a sequence of the two. 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*,[29] or the cost of job loss. 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.

Let $w_{\min}$ be the wage that equates $v(w)$ and z. This wage rate implies a zero employment rent, and hence induces the worker's freely chosen

29. We term this a *rent* as it represents a payment above and beyond the income of an identical employee without the job. It is thus similar to the rents in the theory of rent-seeking behavior (Buchanan, Tollison, and Tullock, *Toward a Theory of the Rent-Seeking Society*; and Anne Krueger, "The Political Economy of the Rent Seeking Society," *American Economic Review* 64 [1974]: 291–303), except that contested exchange rents arise without state intervention, while rent-seeking literature focuses on state intervention as the source of rents.

effort level e_{min}. We term w_{min} the *reservation wage* corresponding to the fallback position z; at any wage less than w_{min} the worker will refuse employment, or will quit if employed. Its level obviously depends 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 w must equal the reservation wage w_{min}. For if w were greater than w_{min}, an employed worker would prefer his or her present employment to the next-best alternative, which is impossible in a clearing labor market.[30]

We assume A has a monitoring system such that B's performance will be found adequate with a probability f that depends positively on B's level of effort.[31] If this effort level is found to be inadequate, B is dismissed; it is the link between effort and the likelihood of job retention that induces B to provide effort above e_{min}.[32]

To elicit greater effort than e_{min}, A is obliged to offer a wage greater than fallback wage w_{min}, 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 off 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

30. Note that while w_{min} is the only wage compatible with full employment, it is in no sense a "market-clearing wage." Indeed, in general there is no market-clearing wage in a contested exchange model, since supply and demand curves for labor simply do not intersect.

31. It is assumed that B knows A's criteria of dismissal, or B at least has a subjective assessment of the probability of dismissal associated with each level of effort.

32. More complete models allow an endogenous selection by A of an optimal schedule $f(e)$, an optimal choice of the level of surveillance (Bowles, "The Production Process in a Competitive Economy"; and Gintis and Ishikawa, "Wages, Work Discipline, and Unemployment"), and the choice of production technologies as an aspect of endogenous enforcement (Samuel Bowles, "Capitalist Technology: Endogenous Claim Enforcement and the Choice of Technique" [Working Paper, University of Massachusetts, Amherst, 1989]). We lose little, however, by assuming that the probability of detection is exogenously given as a function of effort, and that the worker detected providing substandard effort is dismissed, and that the production technology is exogenously determined.

as $e = e(w)$. In the neighborhood of the competitive equilibrium e increases with w, though at a diminishing rate.[33]

The equilibrium wage and effort level are determined as follows. Agent A knows B's best response schedule $e(w)$. Thus once A selects the wage, the level of effort that will be performed is known. The employer thus chooses the wage w to maximize e/w (that is, work done per unit of wage expended), subject to the worker's best response schedule $e = e(w)$. The solution to A's optimum problem is to set w such that $e_w = e/w$, or the marginal effect of a wage increase on effort equals the average effort provided per unit of wage cost. This solution yields the equilibrium effort level e^* and wage w^*, as shown in Figure 1. The ray $(e/w)^*$ is one of the employer's iso-labor cost loci; its slope is e^*/w^*. Steeper rays are obviously preferred, while the employer is indifferent to any point on a given ray, as each entails an identical labor cost.

The equilibrium effort/wage configuration (e^*,w^*) in this contested exchange results from A optimizing *given the response schedule of B*.[34] Two important results are apparent. First, $e^* > e_{\min}$, 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, $w^* > w_{\min}$, 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, since $w^* > w_{\min}$ implies $v(w^*) > z$, and there are identical workers either involuntarily unemployed or employed in less desirable positions.

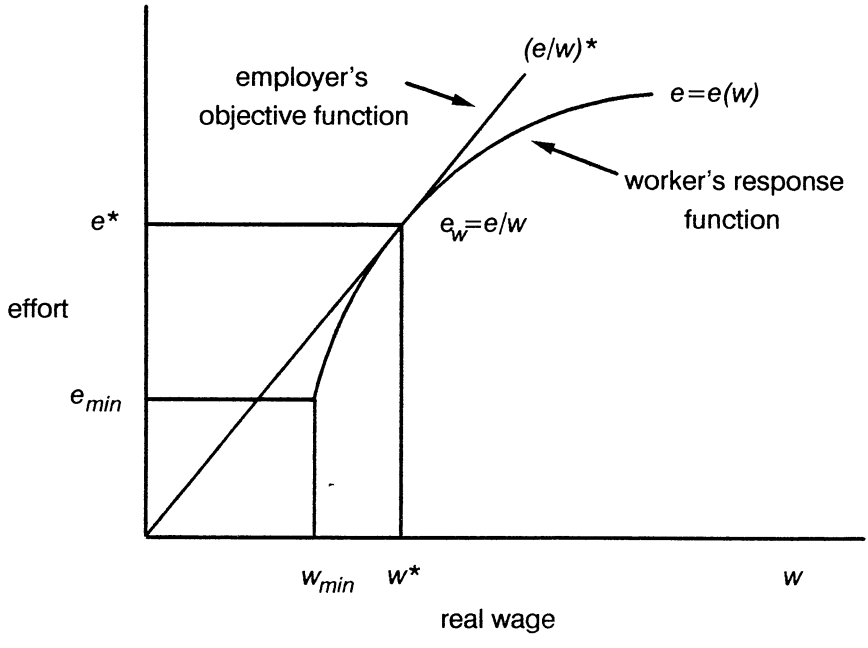
Both results are of course at variance with the Walrasian model, which is a limiting case of contested exchange obtaining either in the absence of a conflict of interest between employer and employee over effort or

33. For a complete mathematical exposition, see Samuel Bowles and Herbert Gintis, "The Democratic Firm: An Agency-Theoretic Evaluation," in *Democracy and Markets: Participation, Accountability, and Efficiency*, ed. Samuel Bowles, Herbert Gintis, and Bo Gustafsson (Cambridge: Cambridge University Press, forthcoming).

34. A complication arises if there is more than one type of worker (e.g., high-productivity and low-productivity), and the employer cannot distinguish among types. This problem of asymmetrical information and heterogeneous labor renders the analysis more complex, but does not change the result. In particular, the imperfect information available to the employer may raise the employment rent offered to a worker, but will not eliminate the power relationship.

FIGURE 1.

OPTIMAL WAGES AND LABOR INTENSITY



when effort is exogenously enforceable.[35] The first of these conditions can be represented in Figure 1 by assuming that workers will freely choose to work increasingly hard, thus increasing $e_{\min}$, the level of effort B supplied independently of the wage; at some point $e_{\min}/w_{\min} > e_w$, implying that the optimal solution for A is simply to pay $w_{\min}$ and accept the effort level $e_{\min}$.[36] The second may be illustrated by assuming the employer has an effective enforcement strategy other than contingent re-

35. This limiting case rarely obtains. When worker output is exogenously enforceable, contracts normally take the form of a business hiring an independent agent rather than an employee, such as a firm hiring an electrical contractor to deliver specific services (Coase, "The Nature of the Firm"). When employees are paid piece-rate, ostensibly the best case for the Walrasian model of labor, there are still usually strong noncontractual elements to employee productivity (e.g., employee reliability, interaction with co-workers, treatment of tools and materials).

36. A similar result obtains if the reservation wage $w_{\min}$ is decreased sufficiently, pro-

newal, such that the level of effort does not vary significantly with the enforcement rent, thus "flattening out" the best response schedule $e(w)$. At some point we again arrive at the corner solution at $(e_{\min}, w_{\min})$, implying the Walrasian result: the employer offers a wage equal to the reservation wage $w_{\min}$, abandons the attempt to apply enforcement rent sanctions to the employee, and accepts the effort level $e_{\min}$.

IV. Short-Side Power and Political Theory

Does employer A have power over worker B? As we have seen, in equilibrium there will exist unemployed workers identical to B who would prefer to be employed. Thus A's threat to dismiss B is credible and dismissal is costly to B. Hence A can apply sanctions to B. In addition, A can use these sanctions to elicit a preferred level of effort from B, and thus to further A's interests. 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. Thus A has power over B.

This model can be extended to include many agents and many firms in a system of general economic equilibrium.[37] This system will exhibit nonclearing markets. In particular, because such an equilibrium exhibits positive enforcement rents, it entails, by definition, involuntary unemployment as well. The existence of agents without employment (or with less desirable employment than B) follows from the strict inequality $v(w^*) > z$. This unemployment persists in equilibrium and is not derived from an aggregate demand failure, as in the Keynesian model; it is a simple inference from the fact that if B enjoys an employment rent, then there must be another otherwise identical agent, C, who would be will-

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vided $e_{\min} > 0$. In both cases we must assume that $e(w)$ does not have infinite slope at $w = w_{\min}$.

37. The proof of the existence of equilibrium for this model, and conditions for its uniqueness, are given in Gintis and Ishikawa, "Wages, Work Discipline, and Unemployment."

ing to fill B's position at the going, or even a lower, wage.[38] Moreover, should C promise A to work as hard as B for a lower wage, the promise will rightly be disbelieved and hence rejected by A. The reason is that other than their employment status, B and C are identical, so 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.[39]

Models of nonclearing markets have traditionally been viewed as disequilibrium models.[40] In the contested exchange model, however, nonclearing markets are characteristic of competitive equilibrium defined in the standard manner: actors are incapable of improving their position by altering variables over which they have control. Employers have no desire to change the wage offered, employed workers have no interest in changing the level of effort supplied, and workers in search of a position can do nothing but await an offer at the equilibrium wage.

The manager'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.[41] Suppliers of labor are on the *long side* of the market. When contingent renewal is operative, the principle of *short-side power* holds: agents on the short side of the market have power over agents on the long side with whom they transact.[42] Long-side agents are of two types: those such as B who

38. 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).

39. 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 has sanctioned C (refused to offer the employment rent). However, in contrast to the relationship of A to B, the sanction is not imposed to affect C's behavior and thus is incidental to the furthering of A's interests. Thus A does not have power over C in the sense defined here.

40. Benassy, *The Economics of Market Disequilibrium.*

41. 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*).

42. Note that the power conferred upon an agent holding a short-side position need not

succeed in finding an employer and 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.

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 this is false: 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 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.[43]

Third, it may be argued that B has power over A 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. We believe this argument confuses the *costs of exercising power* with the *location* of power. This position is supported by Harsanyi, in whose framework enforcement rents would be considered elements of "the costs of A's

be exercised instrumentally or consciously by the agent. For instance, consumers may be short-siders facing demand-constrained sellers. Such consumers ensure the delivery of proper produce quality by switching suppliers when dissatisfied. They thus have power in our sense of the term, yet each consumer's purchase is typically too small, and collective action by consumers too difficult to organize, to render the strategic exercise of this power infeasible. See Gintis, "The Power to Switch."

43. 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 Gordon, and Thomas E. Weisskopf, "Business Ascendancy and Economic Impasse: A Structural Retrospective on Conservative Economics, 1979–1987," *Journal of Economic Perspectives* 3 (1989): 107–34. 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? Notes on Employer Collusion, Centralized Wage Bargaining and Aggregate Employment," in Renato Brunetta and Carlo Dell'Aringa, *Labour Relations and Economic Performance* (London: Macmillan, 1990).

power over B," rather than a form of power that B has over A.[44] In particular, the fact that B receives a rent, while certainly conferring a distributional advantage to B as compared to a no-rent alternative, does not involve "power" in the sense of a capacity that can be strategically deployed toward furthering one's interests. To see this, note that A's power to dismiss B is a credible threat, while B cannot credibly threaten A at all.

Despite the clear disparity in the positions of A and B in this case, both parties gain from A's exercise of power over B. Short-side power is not a zero-sum game, since if A did not exercise this power, the best mutual agreement would involve the wage/effort pair $(e_{\min}, w_{\min})$, which is strictly inferior to (e^*, w^*) for both parties. Short-side power thus is not purely distributive; it is also productive.[45]

Our concept of power bears a close affinity to the standard analytical conception of power offered by Dahl, French and Raven, Harsanyi, March, and Simon.[46] Following Robert Dahl, we may describe the "base"

44. John C. Harsanyi, "Measurement of Social Power, Opportunity Costs, and the Theory of Two-Person Bargaining Games," *Behavioral Science* 7 (1962): 67–81; the quote is from p. 68. Harsanyi assumes agents can enter into binding agreements, and hence employs a cooperative game-theoretic model of power. In our model, the endogenous enforcement assumption precludes such binding agreements, so a noncooperative Stackelberg leadership model is more appropriate. Our "enforcement rents" are thus only roughly analogous to Harsanyi's "costs of exercising power." See also Jack H. Nagel, "Some Questions About the Concept of Power," *Behavioral Science* 13 (1968): 129–37.

45. Also for Parsons ("On the Concept of Political Power") power is a non–zero-sum phenomenon. Parsons infers from its non–zero-sum character that power is a functional "system resource" that does not in principle confer differential advantage upon those who possess it. The structure and distribution of short-side power, however, despite its non–zero-sum character, is not an efficient solution to production and exchange problems even in competitive equilibrium. We suggest elsewhere (Bowles and Gintis, "New Microfoundations of Political Economy") that A's power does not entail a Pareto-efficient allocation of resources, and the deviations from efficiency can be explained in terms of the distributional advantages A enjoys by virtue of the exercise of power.

46. Robert A. Dahl, "The Concept of Power," *Behavioral Science* 2 (1957): 201–15; J.R.P. French, Jr., and B. Raven, "The Bases of Social Power," in *Studies in Social Power*, ed. D. Cartwright (Ann Arbor: University of Michigan Press, 1959), pp. 150–67; John C. Harsanyi, "Measurement of Social Power in n-Person Reciprocal Power Situations," *Behavioral Science* 7 (1962): 81–91; J. G. March, "Measurement Concepts in the Theory of Influence," *Journal of Politics* 19 (1957): 202–26; and Herbert Simon, *Models of Man: Social and Rational* (New York: Wiley, 1957). This approach has been criticized by Peter Bachrach and Morton Baratz in *Power and Poverty: Theory and Practice* (New York: Oxford University Press, 1970) for focusing too closely upon the *actions* involved in exercising power, rather than the *structural context* that frames such acts. Our stress on the struc-

of short-side power as economic sanctions, the "means" of its exercise as contingent renewal, and its "scope" as the contested attributes of exchange (for example, work intensity). Following John Harsanyi, we may take the "cost" of exercising power as the enforcement rent A offers to B.

We note one important difference between ours and Dahl's approach. According to Dahl's well-known definition, "A has power over B to the extent that he can get B to do something that B would not otherwise do."[47] Purchasing power has precisely this capacity in the Walrasian model: by paying money A can induce others to provide the goods and services A desires that would otherwise not have been provided. Yet according to our conception, 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. Furthermore, within Dahl's framework it might be considered that employee B has "power over" employer A, because by working hard B can induce A not to terminate the employment relationship.[48]

V. Wealth and Power

What is the connection between the ownership of wealth and the exercise of economic power?[49] The Walrasian model answers that through the process of exchange, property rights confer on their holders no advantages other than the greater consumption, leisure, or capacity to be-

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ture of general economic equilibrium exempts us, we believe, from this charge. Lukes, in *Power: A Radical View*, further suggests that, by taking agents' objectives as exogenously given, the behavioral approach overlooks the most effective form of power: the capacity to influence the *preferences* of others. We believe that contested exchange, far from being hostile to Lukes's concern, may contribute significantly to a theory of "persuasion" in a competitive market economy. We have elsewhere argued (Bowles and Gintis, "The Revenge of *Homo Economicus*") that in contested markets exchange is nonanonymous, social, and durable. Thus those with power in our sense (i.e., those with the opportunity to engage in persuasion) have the motivation to do so.

47. Dahl, "The Concept of Power," pp. 202–3.

48. This ambiguity may represent a defect in the behavioral conception of power not shared by interest-centered approaches, of which ours is an example. See Alvin I. Goldman, "Towards a Theory of Social Power," *Philosophical Studies* 23 (1972): 221–68.

49. We define wealth as property rights in alienable assets; we will consider other forms of wealth, such as "human capital," presently.

quest made possible by, and in proportion to, the value of one's holdings: the power of wealth is purchasing power. Yet where claims are endogenously enforced and short-side power obtains, the connection of wealth to power is both more extensive and less direct. Let us first show that there is no simple a priori relationship between the two.

Consider first a capitalist economy where all wealth-holders manage firms, and employees have no wealth. In this case there is a perfect correspondence between wealth and short-side power. In effect, wealth can buy power, since the wealthy have the means to provide employment, and thus to offer others the enforcement rents upon which the power to elicit compliance rests.

Second, consider an economy in which all firms are controlled by manager-owners, but not all wealth lies in the hands of these manager-owners. Then wealth is a necessary but not sufficient condition for power. The self-employed possess wealth but they do not exercise power over others save in the Walrasian and perhaps Dahlian sense of being able to purchase their services at a market price.

Third, consider an economy in which nonowning managers run firms, but are monitored and sanctioned by groups of stockholders. In this case wealth and power are associated, in the sense that the wealth of the stockholders confers power over holders of short-side power in the labor market, who in turn exercise power over labor market long-siders—their employees. In effect, managers are themselves on the long side of the market for management services, in which wealth-holders hold positions of short-side power. In this case managers have power over workers without themselves owning wealth.

Finally, consider an economy where wealth-holders receive interest from banks but have no authority over bank managers, bank managers own no wealth, and their tenure depends only on the competitive survival of the bank. Suppose further that banks lend money to firms, and firms are controlled by nonowning managers who are not subject to the will of wealth-holders, but rather whose tenure depends only on the competitive survival of the enterprise. In this case there may be no correspondence between wealth and short-side power.[50]

50. It may be objected that this economy could not, or would not, in fact emerge from unfettered market exchange, given the contested nature of the capital market. However, the Walrasian model sustains precisely such a "noncorrespondence" between wealth and

Notwithstanding this wide array of potential alternatives, however, capitalist economies do not exhibit purely arbitrary linkages between wealth and power. The location of agents to the short and long sides of markets, and hence the locus of short-side power, as well as the division between long-siders who succeed in making transactions and those who fail, are often (but not always) related to ownership: short-siders, as well as those long-siders who receive enforcement rents, are likely to be wealth-holders, while long-siders who are rationed out of the market are not. Access to wealth, through either ownership or favorable location in capital markets, as we will see, thus not only affords the benefits of purchasing power, but also often confers the advantages of short-side power.

The reason for this is straightforward: capital markets are as much arenas of contested exchange as are labor markets. 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 in a court of law, 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.

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 a more favorable level of performance than borrowers would spontaneously exhibit. The lender will generally have an interest in doing so, since there is a 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—an increased chance of default—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 effectively enforced by a third party, the exchange between lender and borrower would be Walrasian in character. But this is not the case. Not only are the actions of borrowers too subtle to be subjected to effective contractual specifications, but penalties imposed on a reckless borrower are limited by the borrower's exposed assets. Thus capital markets involve contested exchange.[51]

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decision-making authority in the firm. We explain below why such an outcome is not empirically encountered.

51. It might be thought that the problem of borrower insolvency can be solved by simply

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 than in labor markets. First, the sums involved in a typical business loan are orders of magnitude greater than the damage an employee can typically impose on the firm by choosing to enjoy 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 losses are 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.

However, there is another enforcement strategy open to the lender: that of requiring the borrower to post collateral.[52] Since this collateral is forfeited in case the borrower defaults, the incentive incompatibility between borrower and lender and the adverse selection problem are considerably attenuated: a highly collateralized borrower has little incentive to invest in projects involving low expected return or excessive risk. But collateral, by its very nature, must involve the borrower's own wealth, and cannot itself be borrowed without undermining the enforcement ef-

raising the interest rate on risky loans. However, problems of adverse selection and moral hazard limit the effectiveness of the price mechanism in this case. See Joseph Stiglitz and Andrew Weiss, "Credit Rationing in Markets with Imperfect Information," *American Economic Review* 71 (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.

52. An employer may rely on the similar strategy of requiring a prospective worker to post a bond that is forfeited in case of dismissal. Since the present value of the job exceeds the present value of being unemployed, potential employees might quite willingly post such bonds. Indeed, one could conceive of this bonding process proceeding to the point that prospective workers are indifferent between taking the job and remaining unemployed. Yet for various reasons bonding of this type rarely proceeds to this point in practice. See B. Curtis Eaton and William D. White, "Agent Compensation and the Limits of Bonding," *Economic Inquiry* 20 (1982): 330–43.

fect of the collateral requirement. Furthermore, collateral must itself be exogenously enforceable. An agent without tangible property, for example, cannot generally offer claims against future labor earnings as collateral. 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 property.

The observed relationship between wealth and 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.

VI. Endogenous Enforcement on Capital Markets

Let us now model the lender-borrower exchange, the borrower choosing an investment project in response to a particular level of interest and collateral required by the lender. The borrower's response function will then be taken as a constraint by the lender choosing an optimal interest rate and required levels of equity. The formal structure of the example is thus identical to the previous model of the labor market.

We make the following simplifications for expositional purposes: all parties are risk-neutral, lenders have perfect information concerning the asset position and investment options of potential borrowers, and all loans are fixed-return agreements, so the borrower remains the full residual claimant. We also suppose borrowers have privileged access to production- and investment-related information and skills that are not generally available or easily acquired, and that render them, but not the lenders, capable of exploiting the investment opportunity.[53]

Suppose a potential borrower, one of many seeking a loan in a competitive capital market, has a set of investment opportunities that vary with respect to risk; each requires an outlay 1 today and offers return $1 + r(f)$ at the beginning of the next period where f, the measure of risk,

53. Without this privileged position of the borrower, lenders could exploit investment opportunities directly, the division between lenders and borrowers would break down, and collateral alone would emerge from competitive exchange, enforcement rents being driven to zero.

is the probability that the investment project will fail. Higher returns are available on riskier projects, so $r' > 0$.

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 some opportunity costs of tying up collateral on one project, rendering it unavailable for other projects or unforeseen contingencies. Moreover, the borrower may be capable of posting only a limited amount of collateral; above this level we take the cost of posting collateral to be infinite.[54]

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 the borrower is offered a loan at interest rate i, provided he or she 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 project, v, which obviously will vary inversely with the rate of interest and the level of the required collateral k.[55]

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. The present value of the borrower's assets should no loan be secured, k_{res}, is the borrower's *reservation position*: if $v < k_{res}$, the borrower will refuse the loan. When $v \geq k_{res}$ 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^o, 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.[56] There will be some interest rate

54. 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 $f = 0$. The capital market model where the lender chooses an interest rate and the borrower chooses the risk level is developed by Stiglitz and Weiss in "Credit Rationing," who demonstrate credit rationing in equilibrium. The interaction of contingent renewal and collateral is analyzed in Herbert Gintis, "Financial Markets and the Political Structure of the Enterprise," *Journal of Economic Behavior and Organization* 1 (1989): 311–22.

55. For a complete mathematical exposition, see Bowles and Gintis, "The Democratic Firm."

56. Note that because collateral has been paid, the long-sider's reservation position k_{res}

i_{max} sufficiently high such that $v = k_{res}$, the minimal present value needed to induce the borrower to post collateral k and accept the loan. If an interest rate $i < i_{max}$ is offered, we term the difference $i - i_{max}$ a *contingent renewal premium*, because only if i is less than i_{max} will the borrower have the incentive to ensure the renewal of the exchange relationship. At interest rate i_{max} there is collateral k, which the lender "holds hostage" in case of borrower default.[57]

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 $f = f(i,k)$. In general $f_i > 0$; the higher the interest rate charged by the bank, the less will be the value of the project to the borrower, the smaller will be the enforcement rent, and the greater will be the probability of default.

Subject to the borrower's response function, the lender will then choose i and k to maximize the expected return i^e. The lender seeks to select the rate of interest and the level of collateral to maximize the expected return. The solution to this maximum problem is that the borrower set the interest rate to balance the returns resulting from a high interest rate against the lower probability of repayment induced by the higher rate.

If we assume (for simplicity) that the borrower has a limited amount of collateral k^* that is costless to provide, after which the cost is infinite, we can set aside the choice of the optimal level of k and focus on the choice of an optimal interest rate by the lender. This maximizing problem is illustrated in Figure 2.

The rectangular hyperbola $i = i_o$ is one of a family of loci of points (iso-return schedules) yielding to the lender identical levels of expected return for the given collateral level. The lender's optimum occurs where the borrower's response function is tangent to one of these iso-return schedules.[58]

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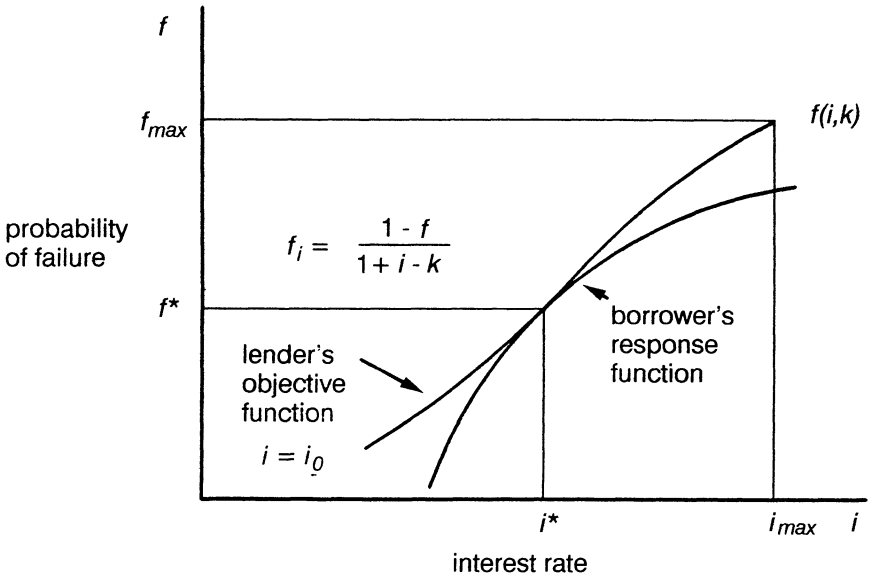
and fallback position $k^o = k_{res} - k$ differ; thus there will exist a positive enforcement rent even where $v = k_{res}$. In the labor market (assuming the worker is not required to post a bond) both are equal to z.

57. Note that if i_{max} is optimal for the lender, which is not an implausible case, then i_{max} 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.

58. From the definition of the realized rate of return (1), the slope of the lender's iso-return locus is the ratio of the marginal effects of i and f on the lender's return, giving

FIGURE 2.

THE BORROWER-LENDER RELATIONSHIP AND THE CHOICE OF RISK



The resulting equilibrium configuration (i^*,f^*) will generally be such that the optimal interest rate i^* is less than the reservation interest rate i_{max}, yielding a positive enforcement rent. Two characteristics of the equilibrium may be noted. First, because $i^* > i_{max}$, the lender may impose an effective sanction on the borrower. Moreover, the positive enforcement rent entailed by $i^* < i_{max}$ implies the existence of capital-rationed agents (analogous to the unemployed) who would prefer to borrow at i^* but cannot. So the lender's threat to terminate the relationship with the borrower is credible. Second, $f^* < f_{max}$, the borrower's most preferred risk level, so the borrower has chosen a response favorable to the lender that would not have been chosen in the absence of the threat of sanctions.

As in the case of the labor market, the Walrasian equilibrium in which

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$(1 - f[i,k^*])/(1 + i - k^*)$. The probability of default $f(i,k^*)$ has slope $f_i(i,k^*)$. The point of tangency between the two occurs where $f_i = (1 - f)/(1 + i - k^*)$, and is the solution to the lender's optimizing problem in the previous note.

$i^* = i_{max}$ is a special case that may occur under either of two conditions. First, if collateral is sufficiently plentiful and costless for the lender to provide, bonding may provide a means of endogenous enforcement preferable to the use of contingent renewal. This can be seen in Figure 2 by noting that as the borrower provides increased collateral approaching an amount equal to the liability owed the lender so that $k^* = 1 + i$, the iso-realized return loci become vertical, since their slope is $(1 - f)/(1 + i - k^*)$. This will displace i^* upwards to i_{max}, at which point the borrower will choose f_{max}, and beyond which the borrower would not accept the loan. Second, if the range of projects available to the borrower is such that successful low-risk projects yield a higher return than successful high-risk projects ($r'[f] < 0$), the borrower and lender have no conflict of interest concerning the borrower's difficult-to-monitor choice of risk level. In this case the borrower's response function would not have a negative slope and the lender would have no incentive to reduce the interest rate below the borrower's reservation rate.

Now consider a lender facing two types of borrowers, B and C, who differ in the amount of collateral they can costlessly provide, the B's being wealthier than the C's, so $k^*_B > k^*_C$. 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 except at point (i_{max}, f_{max}), and the lender will offer loans to all B's before offering any loans to a C. Some or all of the C's will thus be capital-constrained.

We can now see why short-side power and wealth are connected even in competitive equilibrium. Those who deny such a connection, ranging from neoclassical economists to institutionalists such as Berle and Means (*The Modern Corporation*) observe that in the context of perfectly competitive capital markets, managers should hire capital in much the same way that they purchase raw materials and hire labor. The success of such managers depends purely upon their entrepreneurial skill, the indicator of which is competitive survival. Such managers are no more dependent upon the will of financial investors than they are subservient to those, say, who supply the firm with electrical power. This reasoning implies, of course, that wealth-holding offers distributional advantage, but has no relationship to power over "real" economic activity, including production and investment.

The contested exchange emphasis on endogenous enforcement quickly locates the error in this reasoning: "hiring capital" is precisely "borrowing" in the sense of this section. In general, lenders maximize profits not only by imposing an enforcement rent on borrowers, but also by requiring borrowers to post a bond in the form of equity or collateral in their investments. Thus access to wealth is a *prerequisite* to access to capital markets, but when ownership is limited, the necessary process of borrowing imposes the possibility of sanctions on the borrower, thus critically limiting the autonomy of managers.

VII. Conclusion

In contrast to public choice theory, which models politics *as if it were* an exchange, and other variants of modern-day political economy that focus on the relationships *between* politics (the state) and exchange, in this article we have modeled the *politics of exchange* itself.

Our project has been to give precise theoretical content to the way institutions involving the production, allocation, and distribution of wealth promote certain forms of power, regulate the exercise of this power, and establish the conditions for access to positions of power. Additionally, we might hope to specify the mechanisms by which this power is (or might be) rendered accountable to individuals and groups in the economy. We thus defend a concept of political economy that has been denied a place in the study of market economies on grounds that the exercise of power is impossible in competitive equilibrium, and thus no concept of economic power is needed.

Since the logic of competitive price determination and resource allocation involves a system of power relations among economic agents, it follows that political philosophy, which has traditionally limited the study of democratic accountability to the sphere of government, has an important role in analyzing economic relationships. We obtain this result by relaxing a single assumption of the Walrasian model: the existence of costless third-party enforcement. Indeed, we have seen that state power and short-side power are in a sense substitutes: the power associated with advantageous market position comes into play precisely where the state cannot be called upon to enforce contracts. It is perhaps ironic that the Walrasian model, so essential to the economic underpinnings of liberal political philosophy, is a limiting case valid only in the context of a

state sufficiently powerful and omniscient to enforce all claims arising from exchange.[59]

Our analysis will perhaps be questioned on the grounds that models of general competitive equilibrium, Walrasian and post-Walrasian alike, are of limited applicability to a real market economy. We submit, however, that the mistrust sometimes exhibited by students of economic power toward microeconomic models of competitive exchange involves a misplaced generalization from the experience with one particular model: the Walrasian. Moreover, while no single empirical investigation can be decisive, there is substantive evidence at least for the United States of the importance of enforcement rents and hence of short-side power. Estimates over the post–World War II period, for example, indicate that the level of employment rents in the U.S. economy exceeds aggregate after-tax corporate profits by a considerable margin.[60] Moreover, year-to-year variations in the level of employment rents are statistically associated in plausible ways with the levels of strike activity, profits, productivity, and a direct measure of work intensity.[61] Indeed, the quite extensive empirical literature fostered by the contested exchange model suggests an attractive feature of the approach: that some of its major concepts, such as employment rents, are readily measurable.

We do not consider the contested exchange model to be a general model of the exercise of power in market economies. Economic power

59. We have not sought to elucidate the relationship of our conception of contested exchange to the new literature of what might be called post-Walrasian economics other than to point to the common reliance on endogenous enforcement of claims arising from exchange. We undertake this comparison in a related article (Bowles and Gintis, "The Revenge of *Homo Economicus*"). See also Terry M. Moe, "The New Economics of Organization," *American Journal of Political Science* 28 (1984): 739–77; and Charles Perrow, "Economic Theories of Organization," *Theory and Society* 15 (1986): 11–45.

60. Juliet B. Schor and Samuel Bowles, "Employment Rents and the Incidence of Strikes," *Review of Economics and Statistics* 64 (1987): 584–91.

61. See James Rebitzer, "Unemployment, Long Term Employment Relations, and Productivity Growth," *Review of Economics and Statistics* 69 (1987): 624–35; 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, "Power and Profits: The Social Structure of Accumulation and the Profitability of the Postwar U.S. Economy," *Review of Radical Political Economics* 18 (1986): 132–67; Bowles, Gordon, and Weisskopf, "Business Ascendancy and Economic Impasse"; David Gordon, Samuel Bowles, and Thomas Weisskopf, "Hearts and Minds: A Social Model of U.S. Productivity Growth," *Brookings Papers on Economic Activity* 2 (1983): 381–450; and Francis Green and Thomas Weisskopf, "The Worker Discipline Effect: A Disaggregative Analysis," *Review of Economics and Statistics* (1990): 241–49.

may flow, in addition, from such widely recognized sources as influence over public policy and the control of the means of persuasion. Yet our conception of power in a competitive economy invites a reconsideration of the boundaries traditionally drawn in liberal political philosophy between the marketplace, represented as a private arena of voluntary transactions devoid of coercion, on the one hand, and the state as public arena vested with coercive enforcement capacities, on the other. Upon this partition of spheres is constructed an important conclusion: while liberal precepts of choice apply in both state and economy, the democratic precept of accountability of power applies only to the state. But as we have seen, private enforcement is ubiquitous, particularly in labor and credit markets, and hence the time-honored private-public partition is unsustainable. The implications of extending democratic claims of accountability to the economy is, however, the subject of another investigation.[62]

62. Samuel Bowles and Herbert Gintis, "An Economic and Political Case for the Democratic Firm," in *The Idea of Democracy*, ed. David Copp, Jean Hampton, and John Roemer (Cambridge: Cambridge University Press, forthcoming).