CHAPTER 2

The New Institutional Economics and Employment Regulation

GREGORY K. DOW
Simon Fraser University

The new institutional economics (NIE) is a large and unruly beast. A wide variety of definitions has been suggested, but the simplest defines the NIE as the study of social, economic, and political institutions using the tools of contemporary microeconomic theory. This definition highlights the fact that microeconomics has moved beyond its roots in price theory (roughly speaking, the study of competitive markets and monopoly) and now sees institutions through more subtle lenses. The analytic methods used by the NIE range from the sophisticated mathematical techniques found in game theory and principal-agent theory to rigorous and systematic verbal reasoning about economic history, property rights, public choice, and the evolution of social conventions.

For our purposes, the most important area of the NIE is the new theory of the firm, understood broadly to include the relationships linking the firm to surrounding markets for labor and capital. By the "new theory of the firm" I mean a line of research developed over the last two decades which tries to expose the inner workings of enterprise organization in order to show how firms cope with problems of coordination, incentives, and bargaining. In this introduction I will sketch out the NIE's conceptual apparatus, scrutinize some key intellectual premises (especially the NIE's reliance on efficiency explanations), and indicate possible rationales for regulatory policy within the NIE framework. The themes of coordination, incentives, and bargaining will also be addressed. In each case I identify some regulatory issues on which the NIE may shed new light. Finally, the NIE's contribution to the analysis of employment regulation is summarized.

Firms, Markets, and Contracting

In traditional microeconomic theory the firm is modeled as a set of technological possibilities with a profit-maximizing entrepreneur attached. The

NIE has sought to open up this black box and look at what is going on inside. Coase (1937), who is generally credited with initiating this line of inquiry, posed some deep questions early on: What is the nature of the firm? Why do firms exist? What determines the boundaries of the firm? When will transactions be organized within firms rather than by market exchange? Readers interested in the roots of the new theory of the firm and Coase's role in its development should consult Williamson and Winter (1991) as well as Coase's Nobel lecture (1992).

With few exceptions (e.g., Simon 1951; Coase 1960), there was little further work along these lines until the 1970s, when a turning point was reached with two publications: an article on team production and effort incentives by Alchian and Demsetz (1972) and a book entitled *Markets and Hierarchies* by Williamson (1975). Williamson in particular resurrected Coase's earlier agenda of specifying the relative advantages and disadvantages of firm organization in comparison with the alternative of market exchange. The following two decades saw an explosion of related analysis as economists began to apply technical tools drawn from game theory and informational economics to incentive, bargaining, and coordination issues within the firm. An overview of these developments is provided in the anthology edited by Putterman and Kroszner (1996), which reprints many classic NIE articles on firm organization. Other surveys that will guide the novice toward the large NIE literature on the firm include Milgrom and Roberts (1992) and Miller (1992).

The NIE has now reached a consensus on some basic points about employment. Most NIE writers agree on the need to distinguish employment per se, which is regarded as an intrafirm phenomenon, from independent contracting, regarded as a relationship of market exchange. There are various ways to draw this line depending on one's theoretical predilections. For instance, one could define employment by the mode of payment (flat wage for broadly defined labor services rather than payment for a well-specified finished product), by asset ownership (ownership of tools by the employer rather than the worker), or by the identity of the person directing the production process (a boss rather than the worker). Clearly, these features of employment are correlated empirically, but none taken in isolation appears to provide a fully satisfactory definition of the employment relationship.

Whichever definition one may adopt, NIE writers agree that employment would be uninteresting from an institutional perspective if labor contracts were complete. A complete contract fully specifies all of the obligations of each party in advance and is costlessly enforced by third parties such as the courts if necessary. If labor were bought and sold using complete contracts, labor services would become just another market commodity, no different

from apples or toothpaste. Firms would buy whatever services were required at the moment and pay the going market price for these services. In such a world, employees would be indistinguishable from contractors: everyone would in effect be self-employed.

The interesting questions for the NIE only arise after some source of contractual incompleteness has been identified. Contracts might be incomplete, for instance, if it is hard to anticipate all future contingencies, if negotiation is costly, or if enforcement of some provisions would require expensive monitoring. Such costs are generally called *transaction costs*. It then becomes necessary to have some decision process that determines the actions of each party as events unfold in circumstances where the original contract is silent. I will adopt Williamson's (1985) terminology and refer to the decision-making process that fills in contractual gaps over time as a *governance structure*. The key question for the NIE is then to explain why specific governance structures tend to be used in particular situations.

As a rule, NIE authors also tend to assume that product, capital, and labor markets are competitive in the sense that there are many alternative trading partners when any given contractual relationship is first established. However, this proposition must be treated with considerable care in a setting of contractual incompleteness. It is *not* assumed in general that the informational requirements of traditional competitive markets are met: there may be informational asymmetries at the time contracts are negotiated (*adverse selection*), or such asymmetries may arise after the contractual relationship begins (*moral hazard*). There may be problems of bilateral monopoly that unfold over time as the parties make investments that are specialized to the relationship and of little value to outside agents (*asset specificity*). It is also possible that employees may be paid more than their next best market alternative, either for incentive reasons (see the discussion of efficiency wage theory below), or for bargaining reasons (see the discussion of asset specificity below). Hence many of the ideas derived from the traditional theory of competitive labor markets (for instance, the notion that employees are paid compensating wage differentials for jobs having unusually severe risks of injury) may apply only in attenuated form, or not at all.

Economic Efficiency and the New Institutional Economics

The NIE has both strengths and weaknesses as a device for evaluating regulatory policy toward the employment relationship. On the positive side of the ledger, the NIE has placed the structure of employment contracts under very close analytic scrutiny and has brought a powerful and eclectic set of modeling tools to bear on the problem. However, on the negative side there are two important gaps. First, precisely because the NIE sought to open up

the black box of the firm, it has often downplayed the relationship between internal enterprise organization and the external market environment. The effects of outside labor or capital markets are often captured in summary form by specifying an exogenously given "next best alternative" for each participant in the firm. The NIE does not yet possess a well-developed theory where firm organization is determined simultaneously with market prices.

The second gap in the NIE is that its proponents have tended to see their job as one of explanation rather than prescription. A great deal of intellectual effort has gone into the construction of economic rationales for existing organizational practices, while much less time and energy has been devoted to the assessment of policy proposals aimed at changing those practices. This reflects a tendency among most NIE writers to assume, at least prima facie, that actual employment practices represent efficient solutions to complex contracting problems. This efficiency assumption is useful in generating explanatory hypotheses of a functionalist kind (employment practice X exists because it satisfies efficiency criterion Y under environmental conditions Z). However, it also places a heavy burden of proof on advocates of labor market regulation by obliging them to identify specific market failures that warrant governmental intervention. One must often read between the lines (and squint hard) in order to discover a rationale for regulatory policy in the NIE.

The confidence of the NIE in the efficiency of market solutions is puzzling at first glance, because in a world of incomplete contracts one can no longer appeal to the standard result that a perfectly competitive equilibrium is Pareto efficient (Mas-Colell, Whinston and Green 1995:Ch. 16). It is also odd that a theoretical framework seeking to explain why market exchange is displaced by hierarchical organization within firms would at the same time claim that market competition brings about efficient governance structures. Or to put the same point a bit differently, why doesn't the very existence of positive transaction costs become an obstacle to transaction cost minimization? Some circularity is apparent. It is worth taking time to unravel these puzzles, because the NIE's focus on economic efficiency is closely related to its view of regulation. The NIE justifies its efficiency assumptions in two ways: by arguing that rational economic agents have a common interest in designing an efficient governance structure (the ex ante rationale) or by arguing that inefficient modes of governance will be displaced over time by more efficient ones through a process of market competition (the ex post rationale). We examine each of these propositions in turn.

First, consider the argument that economic agents (e.g., employers and employees) are rational and therefore design governance structures that are in their mutual interest. By definition, it is true that all individuals involved in a collective endeavor would be at least as well off, and some would be better off, if efficient contractual arrangements were adopted rather than inefficient ones. This idea places natural theoretical restrictions on the kinds of contracts or governance structures we expect to observe empirically: inefficient structures can be ruled out because there will always be some feasible alternative that is unanimously preferred (Eggertsson 1990; Milgrom and Roberts 1992:Ch. 2). The idea of feasibility is a bit subtle here, since informational and incentive constraints must be taken into account in defining what is feasible. For example, a governance structure where all employees are required to report their own effort levels truthfully could violate incentive constraints with respect to information transmission. But the principle is clear: governance structures are predicted to be Pareto efficient in a *second best* sense, taking such incentive constraints into account. To the extent that there is a conflict over the distribution of the benefits derived from a governance structure, the parties would still adopt an efficient structure in order to maximize the size of the overall pie and settle the distributional conflict by bargaining at the start of the relationship over the size of the side payments to be transferred from one party to another. Efficient arrangements should thus prevail regardless of initial property rights or the relative bargaining power of the parties to the contract, a proposition that has been enshrined in the literature as the *Coase Theorem* (see Coase 1960).

Despite the commonsense appeal of this idea, it is problematic in several respects. First, it may be hard to separate efficiency issues from distributional ones if there are limits on the capacity of some parties (e.g., employees) to pay in advance for benefit streams that will arise later (Dow 1993a, 1993b). Such problems occur, for example, if an efficient governance structure would provide workers with considerable bargaining power after it is implemented, but workers are unable to "bribe" an employer up front to accept this structure due to their limited wealth. Second, even if wealth constraints are not binding, bargaining processes often fall short of Pareto efficiency when the parties have private information about their own preferences or resources (Milgrom and Roberts 1992:140-49; Miller 1992:Ch. 2; Kennan and Wilson 1993). If governance structures are the result of such bargaining processes, then there cannot be any general presumption that such governance structures are efficient. By the same token, labor market equilibria need not be efficient if there are adverse selection problems where firms are uncertain about the true characteristics of job applicants (Greenwald and Stiglitz 1986; Stiglitz 1987; Mas-Colell, Whinston and Green 1995:Ch. 13). The NIE usually finesses these problems by assuming (artificially) that informational asymmetries only emerge *after* a governance structure is established and that such structures do not need to be renegotiated later once private information does exist.

A third set of difficulties stems from the fact that multilateral bargaining is unlikely to be practical when large groups are involved (consider what would happen if pollution problems involving millions of people had to be resolved by direct multilateral negotiation among all affected parties rather than through government regulation). According to the NIE itself (Coase 1937), this is one key reason why firms typically have a central owner who makes bilateral contracts with other input suppliers. The NIE has also acknowledged in other ways that large employee coalitions face difficult collective action problems. For instance, Klein (1991) has argued that this is why groups of employees with firm-specific skills cannot easily seize quasi rents from their employers, and Hansmann (1996) identifies problems of collective choice among workers as the central reason why workers do not usually run their own firms. If we accept these arguments, then we must also conclude that the collective interests of employees as a group are unlikely to be fully represented either at the stage where governance structures are initially designed or in the ongoing management of the enterprise itself. The literature on the "collective voice" role of unions (Freeman and Medoff 1984) is concerned with precisely these problems.

Finally, claims that efficient governance structures arise through conscious ex ante design should meet with skepticism in contexts where bounded rationality is also assumed. This dilemma arises for Williamson's (1985) transaction cost theory, which assumes that comprehensive long-term contracts are infeasible due to the limitations on human cognitive capabilities. At the same time, Williamson argues that efficiency, and in particular the desire to economize on transaction costs, drives the choice among governance structures. This is puzzling because the very limits on rationality that thwart comprehensive contracting might be expected to obstruct a comprehensive assessment of the transaction costs associated with alternative governance systems (Dow 1987; Williamson 1987).

If efficient governance cannot be guaranteed by appealing to ex ante design, we are left with the natural selection analogy: governance structures revealed to be inefficient ex post will be driven out in the long run through competition from more efficient structures. Again, this proposition is debatable (for a thorough dissection of the relationship between evolutionary economics and neoclassical orthodoxy, see Nelson and Winter 1982). First, the assumption of a competitive market environment must now be taken seriously. When firms with differing employment practices compete in an oligopolistic product market, for example, inefficient firms may not be driven out if there are substantial entry barriers facing new competitors. Even if the product market is characterized by free entry, there are cases where the evolutionary selection criterion (profit) diverges from the appropriate efficiency measure

(e.g., total surplus). Suppose, for instance, that firm survival or growth depends on profit, but employees receive wages in excess of their outside market opportunities for efficiency wage or bargaining reasons (discussed later in this paper). The wage premium is clearly part of the aggregate social surplus generated by a firm, but firms paying higher wages may be at a competitive disadvantage in the product market because wages are seen by the firm as a cost item. Whenever there is a wedge between the profit captured by firm owners and the aggregate surplus generated by the firm as a whole, differences in rates of investment can lead to the dominance of inefficient organizational structures (Dow 1993c).

There may also be spillover or externality effects where the profitability of a given practice in an individual firm is directly affected by the practices adopted in other firms. For instance, Weitzman (1984) has argued that profit sharing could be unattractive to an individual firm if no other firm adopts it but might be quite attractive in a world where all other firms have profit-sharing plans. Along similar lines, Levine and Parkin (1994) argue that employers may provide too little training if workers are likely to move subsequently to some other firm. Due to this spillover, all firms might benefit by increasing their training expenditures simultaneously, even though no firm would gain by doing so in isolation.

Finally, there are typically multiple equilibria in repeated game models of the labor market (Carmichael 1989; MacLeod and Malcomson 1989, 1993). Two issues then arise: some equilibria will be superior to others on efficiency grounds, and the efficient equilibria will differ in their distributional implications for the players in the game. Although the implications for the theory of firm organization have not been adequately developed, three broad lessons emerge from this literature. First, history matters, because the nature of the currently prevailing labor market equilibrium may be determined in large part by social convention or random drift. Second, it can be misleading to examine firms or employment contracts in isolation from the larger market environment where they emerge and persist. Third, we again have reason to doubt the proposition that competitive markets generate efficient modes of organization, because market-wide coordination problems can arise.

Rationales for Regulatory Intervention

We have now sketched various difficulties with the ex ante (rational design) and ex post (natural selection) arguments commonly used to justify the efficiency of prevailing governance structures. These difficulties indicate that the scope for efficiency-enhancing policy intervention may be broader than a superficial reading of the NIE would suggest. In the remainder of this

introductory section, I will briefly summarize some possible sources of market failure that might justify regulation of employment. In each case I distinguish failures arising ex ante (before a specific governance structure has been adopted) and ex post (after a governance structure is already in place). It should be kept in mind, however, that this distinction is a bit contrived since governance systems may need to be renegotiated periodically in order to track a shifting external environment.

Informational asymmetries. The ex ante problem is that agents who will participate in a governance structure have unknown characteristics. This may lead to adverse selection in the labor market or to bargaining inefficiencies at the design stage. The ex post problem is one of enforcement or moral hazard. The enforcement tools available to private parties are usually confined to internal monitoring and incentive systems, along with reputational forces in the external market. These tools may fail because the parties are unable to commit themselves in advance to particular actions, because the future is discounted too heavily, or because information flows are thin.

Market power. Although the NIE usually assumes "large numbers" at the ex ante stage, this assumption can fail if market search for alternative partners is costly, since then there will be some degree of bilateral monopoly even at the design stage. This is particularly likely if prospective partners are heterogeneous, so that a match between a firm and worker may be "good" or "bad." The ex post issue is that of bilateral bargaining, which can lead to costs or rigidities when information is not complete. The Coase Theorem then fails and it may not be possible to alter existing governance structures in a way that efficiently tracks the external environment.

Collective action. Ex ante, the problem is twofold. Because numerous employees are usually hired by a single firm using bilateral contracts, it is highly unlikely that collective worker interests regarding local public goods such as working conditions will be well-represented at the design stage. For similar reasons, bargaining power is unequally distributed ex ante, because firms can deal with one worker at a time in designing a governance structure rather than with workers as an organized group. At the ex post stage, workers need to overcome preference aggregation and free rider problems, both in articulating their interests and in enforcing agreements.

Exit costs. The mechanism of compensating wage differentials requires that labor markets function in a frictionless manner, so that the overall compensation package for each job leaves an employee indifferent between taking that job or instead taking the next best market alternative. But for either informational or bargaining reasons, workers may negotiate compensation exceeding their outside opportunities and thus the labor market may not clear. In this situation there is no guarantee that wages will adequately compensate for unsafe or otherwise unattractive working conditions. At the ex post stage, workers will not generally be indifferent toward losing their jobs, and this provides the employer with some power that can potentially be abused in a self-interested way. Private safeguards devised by the parties themselves may fail to restrain such opportunistic behavior.

Externalities and multiple equilibria. Two issues arise ex ante. First, governance structures adopted by some firms may have spillover effects on other firms, so that unaided market forces do not ensure overall efficiency. Second, in a repeated game setting there can be many possible market equilibria which differ in their efficiency and distributional features. At the ex post stage, related indeterminancies give rise to multiple equilibria inside firms, perhaps leading to social conventions about work effort, working conditions, wage structures, or career paths that have more to do with historical accident than with overarching equity or efficiency criteria.

With these preliminary ideas in hand, we next turn to three key themes in the new theory of the firm: coordination, incentives, and bargaining. In each case we will first consider some relevant theoretical literature and then identify regulatory implications.

Coordination

By far the most popular way of characterizing the difference between firms and markets involves the idea that firms use *authority structures* rather than prices to allocate resources (Menard 1994; Flannigan 1995; Dow 1996). This distinction was emphasized by Coase (1937), and Simon (1951) took a similar view in his theory of employment. Williamson (1975, 1985, 1991, 1996) has repeatedly highlighted the authoritative or "fiat" aspects of hierarchy in firms. Milgrom and Roberts (1990a) characterize the firm by "the substitution of centralized authority for the relatively unfettered negotiations that characterize market transactions." Finally, there is an extensive literature in business history that interprets the firm as an authority structure (see Chandler 1992).

Theoretical Background

What are the advantages of central authority in relation to the price system? It has been recognized at least since Adam Smith (1994:Ch. 1-3) that the division of labor can increase productivity. Modern writers have emphasized

that these gains from specialization can only be realized if there is some way to coordinate the complementary tasks performed by individual members of a production team (Milgrom and Roberts 1990b; Becker and Murphy 1992). This coordinating job could be performed in principle either by market prices or by an authority relationship within a firm (Coase 1937; Arrow 1974). We thus need to explain when each coordinating mechanism will be used and why.

Markets are rather good at solving coordination problems involving large numbers of traders and the equalization of supply and demand for homogeneous goods. But markets seem ill-suited to coordination problems that involve small groups of individuals interacting in complex ways (Richardson 1972). Tasks within production teams must be coordinated both in time (*synchronization*) and in space (*localization*). Intermediate goods often have idiosyncratic features that are of little importance in their own right but which must be made compatible to facilitate final assembly or use (*standardization*). It may make no difference who performs which job, but every job must be assigned to someone without duplication (*assignment*). In cases of this sort, the price system is likely to be displaced by an authority structure as the main mechanism for coordination (Milgrom and Roberts 1992:Ch. 4).

Central authority entails some degree of power over subordinates, at least in cases where subordinates would be tempted not to comply. Numerous regulatory issues turn on the question of whether such managerial power is a source of social concern. This debate was especially sharp in the early 1970s. At one pole, Alchian and Demsetz (1972) rejected the view that firms have power over employees by pointing to the voluntary nature of the employment contract. At the other pole, New Left writers saw the firm as an arena where capitalists use hierarchy to dominate and exploit workers (Marglin 1974; Edwards 1979).

More recently there has been some convergence between the mainstream and radical perspectives. Bowles and Gintis (1990, 1993), for example, argue for the centrality of the power idea but overlap in various other ways with mainstream NIE. Williamson (1980, 1993, 1996) argues for the primacy of efficiency goals but is willing to entertain power as an auxiliary factor. Other points of contact between the two camps have been identified by Goldberg (1980), Rebitzer (1993), and Stiglitz (1993). A reasonable synthesis might be (a) to accept the theoretical possibility that coordination problems could motivate the use of hierarchy even when all parties have identical objectives but (b) to recognize the ubiquity of conflict between peak coordinators and their subordinates (Dow 1987). Or as Milgrom and Roberts (1990a) put it, "The authority to intervene inevitably implies the authority to intervene inefficiently. Yet such interventions, even if they are inefficient overall, can be highly beneficial for particular individuals and groups. Thus either inefficient interventions will be made and resources will be expended to bring them about or to prevent them, or else the authority to intervene must be restricted."

How might authority be abused within firms? Among other things, employers may try to extract more effort than workers are willing to offer at current wages; assign tasks or working conditions in ways counter to worker interests; shift surpluses away from workers by cutting wages, withholding promised bonuses, appropriating pension funds, or shutting down plants; or discriminate on the basis of race, sex, and other irrelevant characteristics. Apart from discrimination, these dangers from employer discretion would disappear if the labor contracts involved were complete and competitive. Bosses who wanted employees to work faster or at more dangerous jobs would have to offer higher wages to attract or retain workers (Rosen 1986), and workers displaced by plant shutdowns would quickly obtain equivalent jobs at some other firm. No employer would be able to cut wages or withhold pensions because the relevant contracts would be enforceable at zero cost. But when contracts for labor are incomplete or costly to enforce, authority is a more dangerous tool.

In theory, the danger would be minimal if employees were paid a wage equal to their next best market alternative, because then worker interests would be adequately protected by the option of exit to an external labor market. But for various reasons the labor market may not clear and employees may enjoy *rents* or *quasi rents* (wage payments exceeding the minimum needed to keep workers in their current jobs). Casual observation indicates that this phenomenon is widespread, since workers are seldom indifferent toward dismissal or layoff. The existence of rents or quasi rents can derive from incentive problems (discussed below), specialized worker skills (also discussed below), adverse selection problems (Weiss 1990), or the search costs incurred to obtain good matches between workers and firms (Rosen 1991). In each case, workers prefer not to leave their current employers, and employers will count the wage premium flowing to workers as a part of total cost. Because the firm does not properly internalize the costs borne by workers, we may see excessive output demands (Dow 1993a), inefficient task assignments (Garvey 1993), or premature plant shutdown decisions (Miceli and Minkler 1995).

Regulatory Implications

The capacity of private parties to overcome these hazards is limited. One possibility is that direct bargaining within the firm may ensure efficiency for Coase Theorem reasons. However, if bargaining processes worked smoothly, there would be no reason to rely upon hierarchical allocation mechanisms in the first place (Milgrom and Roberts 1990a; see also below). There is also a

fundamental asymmetry derived from the fact that hierarchical firms have a single central authority but many subordinates. Hence efforts by subordinates to forestall or penalize harmful managerial decisions run up against the standard free-rider problems associated with the provision of any public good.

Apart from bargaining within the firm, the greatest protection furnished through the private market is provided by reputational mechanisms. Such mechanisms can operate both within the firm and in the broader labor market. If there is sufficient solidarity among the work force, for example, a firm could find that abusing one employee would provoke costly retaliation from other employees. The recruiting or training costs associated with replacing all employees simultaneously may be prohibitive, so that the firm is effectively deterred. A firm which routinely breaks its promises may also have to offer higher wages in the labor market in order to attract new employees. Depreciating one's reputation can thus be costly.

Unfortunately, reputational mechanisms can be ineffective because new employees may be easy to hire, the firm may not place enough weight on future payoffs relative to the present gains from cheating, or outsiders may lack information about events inside the firm. Hence it can be hard for a firm to credibly commit itself to keep promises, even when a credible commitment would be in the interest of all parties. For instance, a firm might want to promise that a plant will remain open if its employees agree to wage concessions. However, both the firm and its work force know that the firm will be free to demand further concessions later and that promises to the contrary are not credible. Hence no agreement is reached and the plant is closed, contrary to the mutual interests of the parties involved.

Regulation can address these problems in a variety of ways. First, regulation can indirectly facilitate private enforcement. Reducing the obstacles to union organization, for instance, helps workers to overcome the free-rider problems associated with monitoring or punishing opportunistic behavior. Regulation can also overcome precommitment problems by assuring both parties that promises about safety, pensions, and similar matters will be kept or by taking the relevant decisions out of the hands of private parties altogether. Blair (1995), for instance, argues for greater portability of employee benefits across firms, in part to reduce the incentive for firms to renege on implicit agreements with their employees. The reality of such concerns is suggested by Shleifer and Summers (1988), who show that hostile takeovers can be motivated at least in part by the financial windfalls resulting from the abrogation of implicit contracts concerning wages or benefits.

More far-reaching policies to curb employer opportunism have also been proposed, including expanded employee representation on boards of directors.

For example, Levine (1995) suggests that tax subsidies be offered for employee stock ownership plans (ESOPs) holding more than 5% of company stock. To qualify, a firm would have to allow workers to vote all shares held by the ESOP and elect a proportional share of the board of directors and implement a profit-sharing or gainsharing plan. Similarly, Blair (1995:Ch. 9) argues that all stakeholders of the firm should be represented on the board of directors and that employees should exercise full voting rights over shares held for them in ESOPs or profit-sharing plans. Finally, both Blair and Levine recommend changes in U.S. labor law to permit greater employee participation in day-to-day management activities.

Such proposals amount to a form of co-determination, and resemble policies that have already been implemented in Germany and other European countries (Smith 1991). Some potential advantages are readily identified. First, there are the productivity benefits that may be associated with profit-sharing. Second, board representation, even in a minority capacity, may provide employees with access to credible accounting data. Third, to the extent that worker voting power suffices to block decisions detrimental to the interests of employees, such as plant shutdowns, employees would be able either to prevent such actions altogether or secure adequate compensation in advance.

Proposals for employee board representation raise a wide range of issues. For the sake of brevity, I will focus here on a specific theoretical problem involving the aggregation of individual preferences. It is well known that majority voting can exhibit pathologies, including problems of indeterminacy where no proposal commands a majority of votes against all feasible alternatives (Plott 1967). At a more general level, Arrow's Impossibility Theorem shows that individual preferences cannot be aggregated to yield a social preference ordering even under relatively weak requirements on the properties of the social ordering (e.g., Pareto efficiency and nondictatorship; for details, see Miller 1992:Ch. 3). These pathologies are unlikely to be severe when boards of directors represent the interests of a relatively homogeneous group such as shareholders, though even here there are sometimes serious conflicts over merger offers and other forms of corporate restructuring. But under most proposals for employee representation, the board would need to reconcile a far wider range of conflicting interests. Hansmann (1996) argues that collective choice problems are the central reason why more firms are not managed by employees rather than by investors. Furthermore, Skillman and Dow (1996) show that worker-owned firms where preferences are heterogeneous will be vulnerable to takeover by investor-owned firms. This is not to say that employees cannot successfully run firms but just that the obstacles to preference aggregation in worker-owned firms must be faced squarely and overcome

(Benham and Keefer 1991). For more on the topic of worker control, see Dow and Putterman (1996).

Incentives

Measured by sheer volume, the greatest contribution of the NIE to the theory of the firm during the past two decades is surely in the area of effort incentives. The key premise of this literature is that workers view income as a good and effort as a bad. Employees will accordingly shirk unless employers provide appropriate work incentives. Of course, there would be no shirking problem if employment contracts were complete since then employers could simply specify a desired type and level of effort and pay the corresponding market wage. However, it is usually impossible to write sufficiently detailed contracts or to prove in court that an employee has shirked, and thus firms must rely on other incentive systems.

Theoretical Background

The classic NIE piece on incentives is by Alchian and Demsetz (1972). They begin with the idea that teamwork is often more productive than work by an equal number of isolated individuals (due for example to gains from a division of labor). But production in teams makes it difficult to assess individual efforts. Unless rewards are tied closely to individual contributions, the productivity gains from team production will be lost because each worker will shirk. In the view of Alchian and Demsetz, the solution is to appoint a specialist who monitors the effort levels of team members and pays wages as a function of estimated effort contributions. One difficulty with this proposal is immediate: why wouldn't the monitor shirk? They handle this objection by pointing out that the monitor can also be the *residual claimant*. That is, the monitor keeps the difference between firm revenues and costs (including wage payments to team members directly engaged in production tasks). In this case any shirking by the monitor implies that wage payments will not be properly aligned with individual efforts, and thus the residual income available to the monitor will fall.

Several standard criticisms of Alchian and Demsetz can now be reviewed (see also Putterman 1984). First, they one-sidedly emphasize shirking by production workers, without appreciating the potential for opportunistic behavior on the part of the monitor. There is a clear incentive for the monitor to understate the true effort inputs, because as the residual claimant the monitor gains a dollar of income for every dollar not paid in wages. Second, it may not be true that monitoring can only be accomplished through vertical supervision by a specialist. One could imagine instead that a team might share profits among its members and rely on horizontal monitoring, where each team member's contribution is reviewed by colleagues. Finally, the Alchian and Demsetz story has been criticized for overplaying the need to monitor effort inputs rather than overall team output. Even if one cannot measure the contributions of individual workers, incentive schemes involving group rewards and penalties have been proposed that could potentially avoid the need for costly monitoring (Holmstrom 1982).

An alternative approach to the incentive problem is provided by *principal-agent theory* (for a survey see Sappington 1991 or Milgrom and Roberts 1992:Chs. 7 and 10-13). Imagine first that output is easily measured for an individual employee, where output depends not just on effort but also on random events. The firm keeps the worker's output and pays the worker a wage that could depend upon output. However, the wage cannot depend on effort, which is unobservable. In standard models the firm is risk neutral and the employee is risk averse. The task is to design an efficient contract between the firm and employee. Due to employee risk aversion, efficiency considerations suggest that all risks should be borne by the firm. Unfortunately, the only way to do this is to have the worker receive a flat wage regardless of output, which would eliminate effort incentives. An optimal contract thus involves some dependence of wages on output (to deal with the incentive problem), but not too much dependence (to deal with the risk aversion problem). In a generalization termed *multi-task principal-agent theory*, Holmstrom and Milgrom (1991) have shown that firms should be cautious about rewarding employees for easily measured aspects of performance, because this induces workers to allocate time and effort toward such dimensions at the expense of other tasks. For instance, sales agents who are paid large commissions will spend less time helping colleagues establish valuable contacts (Holmstrom and Milgrom 1994), and teachers who are rewarded when their students achieve higher scores on standardized tests will spend less time teaching hard-to-test but qualitatively important skills (Milgrom and Roberts 1992:230-31).

Another variation on the basic principal-agent model is to reward workers based on their performance relative to similar colleagues. Such incentive schemes are widely used by firms in making promotion decisions and have come to be known as *tournaments* in the economic literature (Carmichael 1989). A detailed case study illustrating how promotion tournaments are actually used has been provided by Baker, Gibbs, and Holmstrom (1994a, 1994b), who find for a medium-sized U.S. firm in a service industry that there is a simple and well-defined hierarchy of job titles and that employees have standard career paths involving movements from one hierarchical level to the next. This system simultaneously addresses incentive issues as well as the problem of

matching employees to jobs: as the firm accumulates internal information about its employees over time, it promotes those who are identified as having higher ability into upper-level jobs that require broader competence.

Tournaments have a number of attractive features. Because rewards are based on relative rather than absolute performance, sources of uncertainty that affect all workers jointly are eliminated. Contests of this kind also reduce temptations for the firm to cheat because promotions must be given to someone, unlike a promised bonus payment that may be withheld by the firm. But on the negative side, tournaments undermine incentives for competitors to help one another in a team setting and could trigger acts of sabotage against rivals. Collusion by contestants to withhold effort is also a danger. And as with standard principal-agent contracts, the employer must possess measures of individual performance, at least of a comparative kind, in order to conduct a tournament in the first place. Some amount of costly individual monitoring is therefore likely to be needed in a team setting.

Yet another approach to the problem of effort incentives is provided by *efficiency wage theory* (for surveys, see Akerlof and Yellen 1986; Weiss 1990; Carmichael 1990; and Lang and Kahn 1990). In this framework, firms offer a wage above the going market rate and threaten to fire anyone who is caught shirking. The dismissal threat must be taken seriously by employees, because their only recourse is to accept a lower wage from some other firm. Of course, if all firms raise wages simultaneously, this is no longer true, but as the market wage increases, the quantity of labor demanded falls while the quantity supplied rises. This generates unemployment so that fired workers cannot quickly find other jobs. In equilibrium, the prospect of prolonged unemployment serves as the penalty for shirking. Models of this kind have been developed by many authors over the last two decades; two of the most influential examples are Shapiro and Stiglitz (1984) and Bowles (1985).

The efficiency wage approach to the effort problem leads naturally to repeated game models, because a long-term relationship between firms and employees must be assumed: if an employee plans to quit in the near future anyway, the firing threat carries little weight. In particular, it has long been recognized that team production has the same structure as the famous prisoner's dilemma game. If output or profit is shared among the members of the team, there is an incentive to withhold effort because effort is costly to individual workers, while its benefits are spread across the entire group. But it has also been recognized that cooperation can sometimes be achieved when such prisoner's dilemma games are played repeatedly (Axelrod 1984). The key idea is that shirking by a worker in the current round of the game can be punished by having other team members engage in retaliatory shirking in future rounds.

When each worker places enough weight on payoffs anticipated in future periods, the transitory gain from shirking now is smaller than the expected losses resulting from retaliation in all future periods. In principle, this mechanism can sustain efficient effort levels even in large teams. Such repeated game equilibria have been studied extensively in the context of partnerships (MacLeod 1984, 1988; Putterman and Skillman 1992; Dong and Dow 1993). A similar mechanism can be used in repeated interactions between a firm and its employees. Here employee shirking is punished not by retaliatory shirking from other team members but by wage cuts or dismissal as in the efficiency wage model.

This research has led to several significant conclusions. First, it is vital to consider the incentives of the firm as well as the employee, since firms can always dismiss or cut the wages of nonshirkers if this happens to be profitable. Such firm-side opportunism may sometimes be restrained by the firm's concern for its reputation in the outside labor market, but reputational forces are limited for the reasons mentioned previously. Second, efficient effort levels may be sustainable even when each individual employee works for a finite period of time in a given firm and the employee's date of retirement is known in advance. At first glance this is surprising, since a finitely repeated prisoner's dilemma normally leads to cheating in the last round, hence also in the next to the last round, and so on back to the initial round. But cooperation nevertheless remains feasible if there is no terminal date for the firm itself and employee cohorts are overlapping (Cremer 1986; Bull 1987). A third conclusion is that efficient effort levels can only be viable if some surplus is generated within the employment relationship, so that either the firm or the employee (or both) prefers to preserve the relationship rather than end it. Carmichael (1989), MacLeod and Malcomson (1993), and Dow (1995) demonstrate that this surplus can be appropriated by either party, depending on whether the labor market is characterized by excess supply or excess demand. But in general, the labor market will not clear, and if employed workers appropriate some of the surplus, they may well face significant exit costs.

Finally, in models of this kind there are multiple equilibria, including an inefficient equilibrium where everyone shirks. The potential for inefficiency is easy to see: if firms expect employees to shirk, they may as well dismiss them, and if the employees expect to be fired, they may as well shirk. The prevalence of multiple equilibria is a standard problem in the analysis of repeated games. A result called the Folk Theorem shows that any individually rational outcome can arise in an infinitely repeated game if the players put enough weight on future payoffs (see Rasmusen 1994:Ch. 5; Fudenberg and Tirole 1991:Ch. 5). Thus there is no guarantee that high-effort solutions must occur, and scope remains for an active managerial role in achieving superior organizational

equilibria (Miller 1992:Chs. 9-11). This multiplicity of equilibria carries over to the labor market as a whole, contrary to the usual expectation that market discipline imposes efficient behavior on individual firms and workers. Indeed, it can be shown that labor market equilibria vary not only in their efficiency but also in the way that surpluses are distributed between firms and workers (Carmichael 1989; MacLeod and Malcomson 1989, 1993; Dow 1995).

Given the inability of game-theoretic models to predict a unique effort equilibrium and the mixed track record of principal-agent theory in explaining observed compensation systems (Baker, Jensen, and Murphy 1988), various writers have turned their attention to the organizational and sociological sources of effort incentives. Akerlof and Yellen (1990) argue that workers supply high effort to firms as a gift in exchange for reciprocal gifts offered by their employers (generous wages, job security, respectful treatment). Related ideas have been advanced by Leibenstein (1987). Indeed, game theorists themselves have emphasized the importance of a corporate culture conducive to mutual trust (Kreps 1990). A major task for the NIE is to identify conditions under which such high-trust equilibria are likely to evolve and persist (see Miller 1992:Chs. 9-11, and Ghoshal and Moran 1996).

Regulatory Implications

Much recent discussion has emphasized the value of maintaining continuity in the employment relationship. This concern coincides with fears in the 1990s about the effect of corporate downsizing not only on laid-off workers themselves but also on the morale and productivity of the survivors. A related element in such policy discussions has been greater awareness of the merits of Japanese employment practices, which provide large segments of the work force with an expectation of lifetime employment (Aoki 1990). Levine (1995:Ch. 8) recommends a number of policy changes inspired in part by the Japanese example, including just cause dismissal rules and measures to discourage labor turnover.

The NIE provides some support for such ideas, but not of an unqualified kind. The theory of repeated games does establish that high-effort equilibria are more likely to prove viable when workers have long-term attachments to their employers. Indeed, if exit were costless, workers could simply shirk and then quit. But on the other hand, when exit is too costly for employees, there is a serious risk that managerial authority will be abused and that the labor market will no longer function effectively as a mechanism for resource allocation. It can also be argued that if the benefits from continuity of employment are understood, the parties themselves will take steps to reduce labor turnover. Henry Ford's decision to adopt the $5 day in 1913-14 can be explained in this way (Raff and Summers 1987) and modern parallels are easy to find: for example, the Starbuck's coffee chain offers stock options to part-time employees in order to limit labor turnover and reduce training costs.

Unfortunately, firms may find it profitable to renege on promises of job security if demand declines in the product market, if replacement workers can be hired at low wages, if information about firm cheating becomes more difficult to obtain, or if takeovers lead to the breaking of prior implicit agreements. Thus it is possible that regulatory assurances of greater job security could facilitate more commitment to long-term relationships than market forces alone can provide. These could come in the form of tax incentives rather than direct administrative controls: for example, the employer contribution to unemployment insurance might involve more experience rating, with higher taxes for firms with frequent layoffs.

Levine (1995) also advocates abandonment of the doctrine of at-will employment (Epstein 1984) in favor of a rule allowing dismissal only for cause. While such a shift would no doubt promote continuity of employment, as well as providing some protection from employer opportunism, it also raises problems from the standpoint of efficiency wage theory. A policy of just cause dismissal would shift the burden of proof to firms to show that an employee shirked rather than permitting the firm to dismiss shirkers unilaterally. Precisely because it is hard to write legally binding contracts governing effort contributions (if such contracts were feasible, incentives would be redundant), it is also hard to show in court that shirking has actually occurred. Hence a just cause standard might force firms to switch to more costly or less effective incentive devices, such as output-based performance contracts or promotion tournaments.

Another regulatory policy that may be illuminated by the use of NIE concepts is the encouragement of profit-sharing plans through tax benefits to firms which adopt such plans, as has occurred in the U.S. and the U.K. There is now a good deal of econometric evidence indicating that firms which implement profit sharing have a small but nontrivial (4%-5%) increase in labor productivity (for the U.S., see Kruse 1993; for the U.K., see Wadhwani and Wall 1990; and for related Japanese results, see Jones and Kato 1995). This is prima facie evidence against the Alchian and Demsetz (1972) shirking model, which argues for the importance of a single residual claimant who monitors employees. In a more tentative vein, it may be taken as evidence supporting the repeated game idea that shared profit claims facilitate the emergence of cooperative, high-trust equilibria within firms (Weitzman and Kruse 1990). Here, however, we want to focus on a different question: Does this empirical evidence provide a justification for subsidies to firms that share profits?

A believer in market efficiency would say no, for a plausible reason: firms that will benefit from profit sharing already have incentives to implement such plans and require no governmental assistance to do so. The main effect of a subsidy program is to induce profit sharing in firms where it is not particularly beneficial, perhaps because employees already have strong effort incentives and want to avoid further risks to their income (as suggested by the principal-agent framework). The presumption in this view should be that firms and workers will implement on their own whatever employment contract is ex ante efficient in the sense of maximizing the total surplus from the relationship, because then the aggregate gain to be divided between the two parties is as large as possible.

Is this reasoning decisive? Perhaps not. One line of counterargument involves the idea that compensation plans adopted within individual firms have spillover effects on other firms, generating macroeconomic externalities and calling the efficiency of market solutions into question (Weitzman 1984; Levine 1995). An alternative story that invokes adverse selection in the labor market runs as follows. Suppose employers have private information about the financial prospects of their firms. Workers will then wonder whether an offer of profit sharing signals anything about the firm's true prospects. At any specified wage rate, perhaps firms anticipating future financial difficulties are more inclined to propose profit sharing because they want to transfer some downside risk to their employees. If there are enough fly-by-night firms of this type, workers will understandably reject compensation packages that include profit sharing. Unfortunately, financially healthy firms attempting to use profit sharing to raise productivity will also have their proposals rejected by workers. Hence firms that *should* adopt profit sharing will not do so in equilibrium. Under these conditions it may be possible to construct a subsidy that makes profit sharing attractive to workers despite adverse selection problems, where the subsidy pays for itself by increasing labor productivity and thus the tax revenues of government (Greenwald and Stiglitz 1986).

It is impossible to assess the merits of this story here. As pointed out previously, the key point is simply that information or bargaining problems at the ex ante design stage can undermine the efficiency of governance structures and may thus open the door to efficiency-enhancing policy interventions. Whether or not this is true in particular instances cannot be settled through armchair theorizing: careful empirical investigation guided by a relevant body of theory is needed. But the theory used should not directly postulate, as the NIE often does, that market forces lead automatically to efficient employment contracts.

I close this section by looking at a rather different role for regulation, one suggested by the potential for multiple equilibria in repeated game models and by the importance of custom, history, and random drift in evolutionary versions

of game theory (Weibull 1995). In this context, regulation may provide a means for recoordinating markets around socially preferred equilibria. Within the firm, for instance, comparable worth or affirmative action programs may provoke reconsideration of traditional and unexamined assumptions about the criteria by which wages are attached to jobs. When implemented by many employers simultaneously (such as large private firms or local and state governments), such programs may also have some impact on the social conventions prevailing in an entire labor market. The same is true for laws prohibiting discrimination based on race, gender, age, disability, or sexual orientation. In effect, regulation identifies a new focal point (Schelling 1960) around which the expectations and practices of private agents can begin to converge.

Bargaining

We have now considered two themes in the new theory of the firm: coordination and incentives. A third theme in the NIE is that of bargaining. NIE writers often see the firm as an institution that enables private agents to avoid costly bargaining across a market. Others, however, regard the firm itself as an arena where bargaining processes are played out. One's view of the efficiency of firm organization, as well as the costs and benefits of regulatory intervention, depends to a large degree on which of these ideas is emphasized.

Theoretical Background

The literature on transaction cost economics originating with Coase (1937) poses a basic question: Why is it that some transactions are organized within a firm, while other transactions are carried out across a market interface? The paradigm application is to vertical integration. Firms buy many inputs from external suppliers, but they also generally produce some of their own components or inputs. What forces govern this make-or-buy decision? One answer advanced by transaction cost economics (Williamson 1975, 1979; Klein, Crawford, and Alchian 1978) is that transactions requiring investments in specialized assets are likely to be carried on within a firm, while transactions that do not require such investments will be conducted via market exchange. For example, a coal mine located next to an electric generating plant is likely to be owned by the electric utility (Joskow 1985). Similarly, Masten (1984) establishes that aerospace companies are more likely to produce specialized components in-house, especially when they are technically complex. But on the other hand, few companies find it necessary or desirable to produce their own paper clips.

To understand these ideas, we need to develop the concept of quasi rent. A quasi rent is defined to be any flow of payments in excess of what is required to keep an asset in its current use after the investment expenditures to create the

asset are sunk. For example, suppose it costs $1 million to build a widget factory; but after this ex ante expenditure has been incurred, the factory owner would be able to get at best $500 per month by putting the factory to an alternative use (it is only designed to produce widgets, cannot be operated by anyone else, and would be very expensive to retrofit). At the ex post stage, once the factory exists, any net revenue to the factory owner beyond $500 per month is a quasi rent. Similarly, a worker who has invested time and effort to learn a particular job may be able to get at most $5 per hour by taking the next best available job. In this case any payment on the current job that exceeds $5 per hour would be a quasi rent. Notice that a quasi rent can be viewed as the return on the portion of the initial investment that is sunk. More specialized assets tend to have a higher sunk component and thus yield larger quasi rents. A rent is also a payment exceeding what is needed to keep an input in its current use, but ordinary rents do not represent returns on earlier investments (consider the financial rewards derived from Wayne Gretzky's genetic talent for playing hockey).

Once an asset has been put in place and its cost is sunk, there is a danger of ex post opportunism because other parties can gain by reducing the existing flow of payments to the asset owner. More generally, we can expect owners of related assets to engage in ex post bargaining over the available pool of quasi rents. Bargaining occurs because after the initial investment expenditures are sunk, the various parties find themselves in a situation of bilateral or multilateral monopoly where it would be expensive to transact with an outsider who has not already made the required investments. Such bargaining can be very costly if the parties have private information (Kennan and Wilson 1990, 1993). Bargaining costs can take many forms: lawyers may be hired, agreements may be delayed, unnecessary risks may be incurred, or expensive precautions may be taken. The clearest example arises during a strike or lockout, where the value of lost production becomes painfully obvious.

For the generating plant and the coal mine, the need for repeated haggling can be eliminated in a simple way: the owner of one firm can buy the other. Once all the assets are in the same hands, there is only one profit stream, namely, the profit going to the owner of the combined firm. A large amount of NIE analysis has been motivated by the idea that the costs of opportunistic bargaining can be eliminated by means of integrated asset ownership (Williamson 1975, 1979, 1985; Klein, Crawford, and Alchian 1978; Grossman and Hart 1986; Hart and Moore 1990; Hart 1989, 1991). But this solution only circumvents bargaining problems associated with *physical* assets. Specialized skills present a more intractable problem because it is impossible to own someone else's *human capital* (that is, a person's accumulated stock of productive knowledge, skill, and experience).

Therefore, we now consider a firm where (a) employees have specialized skills that are valuable to the firm, (b) it is costly for the firm to train replacement workers, and (c) the skills of the employees would be less valuable in other firms. Such skills are firm-specific, and constitute a specialized asset on which quasi rents can be earned. But after employees have acquired their skills, the firm would like to push wages down to the lowest level that would be compatible with retention of its employees, while employees would like to push wages up until the firm is just indifferent toward continuing their employment.

Several problems arise in this situation. First, there are the usual bargaining costs due to bilateral monopoly, perhaps aggravated by the costs of overcoming collective action problems on the employee side. Second, there is the issue of who pays for worker training ex ante, and whether investments in specialized assets of this sort will even occur. If the employees expect to receive a low wage because the employer will have most of the ex post bargaining power, they have little incentive to invest in costly training (e.g., by sacrificing time that could have been used for other purposes). On the other hand, if the firm expects to be "held up" by opportunistic workers once the specific human capital is in place, it will not have much interest in financing the training either. Ideally, each party will bear a share of the up-front cost equal to its expected share in the ex post quasi rent, since this will lead to efficient contributions by each party. However, this may be difficult or impossible to arrange when the true costs (such as the opportunity cost of a worker's time or the cost to the firm of reduced production during the training period) are private information. A third issue is the possible waste of resources on strategic moves aimed at strengthening one's ex post bargaining position. For instance, employers may adopt new production methods in order to appropriate quasi rents from workers by reducing the level of firm-specific skill required from the work force (Dow 1985, 1988, 1989; Skillman and Ryder 1993).

Many NIE authors claim that such difficulties have motivated the creation of internal labor markets within firms. The ILM idea dates back to Doeringer and Piore (1971) and earlier institutionally oriented labor economists. Rock and Wachter (1996) summarize ILM norms in the following way: "Wages increase with seniority; a business downturn results in employee layoffs rather than wage reductions; if layoffs occur, junior workers lose their jobs before senior workers; discharges are for cause; if an employer catches an employee shirking, the employer will discharge the employee rather than reduce his wages; and if firms discharge older workers before younger workers, they do so through voluntary retirement mechanisms in which the firm buys out the 'contract' of the older worker."

The first explicit application of the new institutional economics to internal labor markets was by Williamson, Wachter, and Harris (1975). These authors argued that ILMs represent an efficient response to two problems: the existence of firm-specific human capital acquired through on-the-job training, and informational asymmetries between the firm and its employees. To diminish costs associated with opportunistic bargaining, the ILM attaches wages to jobs or hierarchical levels rather than individuals and offers an arbitration or grievance apparatus to resolve conflicts. Reliance on internal promotion not only preserves the continuity of the employment relationship (and hence the quasi rents associated with specialized skills), but also helps to overcome informational asymmetries in two respects. First, as the firm learns more about the true abilities of its employees, it can promote higher productivity people into more responsible positions. Second, the internal promotion system motivates effort through a tournament process where high performance is rewarded over time through rapid career advancement. For this system to work, outside hiring must be confined to specified ports of entry near the bottom of the career ladder. Otherwise, firms would fail to take full advantage of the information they accumulate about internal candidates and would dampen work incentives by reducing the pool of prizes in the promotion tournament. These ideas have subsequently been elaborated by Wachter and Wright (1990) and Rock and Wachter (1996); for an empirical assessment in the context of a detailed case study, see Baker, Gibbs, and Holmstrom (1994a, 1994b).

Regulatory Implications

What policy implications emerge from the literature on intrafirm bargaining and internal labor markets? Here I will focus on the continuity of the employment relationship and extend the previous discussion on regulatory implications of incentives above. Clearly there can be efficiency losses if valuable skills are sacrificed through layoffs or plant shutdowns. One might think that complementarities between the physical assets owned by the firm and the human assets of employees would motivate both parties to preserve the relationship (Williamson, Wachter, and Harris 1975). However, the quasi rents from such investments are typically shared through bargaining, so that firms and employees both appropriate ex post returns above their next-best market alternatives. Proximately, therefore, a wage premium that is paid to an employee with specialized knowledge or experience is a cost item from the standpoint of the firm; or to put it another way, the private cost to the firm of retaining such an employee is higher than the true social cost. Because the firm does not take into account the quasi rent losses that layoffs inflict on employees, it may be tempted to jettison workers with specific skills prematurely.

Empirically, these costs appear to be large: Hamermesh (1987) estimates that laid-off or displaced workers lose between $4,700 and $15,700 in present value terms (using 1980 dollars) and provides evidence that these losses were unexpected for the individuals involved. These figures do not include losses associated with spells of unemployment between jobs or the value of lost skills that are specific to an occupation or industry rather than a firm. There is also little indication that workers are paid significant compensation up front for the risk of layoff (Murphy and Topel 1987).

According to the Coase Theorem, inefficient layoffs will not occur if workers are prepared to bribe firms in order to retain their jobs, because such a bribe (if equal to the full employee share of the quasi rent on firm-specific skills) would lead the firm to take account of employee losses in making its layoff or plant shutdown decisions. Thus, if the losses to workers from a shutdown were severe, the workers would offer large concessions to their employer to keep the plant open, and if maintaining operations were the efficient solution, then the employee bribe would be sufficiently large to persuade the employer to continue operations. In practice, this process is unlikely to function smoothly due to informational asymmetries, wealth constraints, collective action difficulties facing worker teams, and the firm's inability to commit not to extort further bribes in the future. Indeed, the transaction cost framework identifies such bargaining rigidities as a central rationale for internal labor markets where wages are attached to jobs rather than individuals. More fundamentally still, if short-term bargaining were frictionless, there would be no need for authority structures to coordinate production in the first place (Milgrom and Roberts 1990a). A corollary is that layoff and shutdown decisions by management may be inefficient from a social standpoint.

One response in the U.S. has been legislation mandating advance notice for large plant closures. Another approach would be to expand public insurance against the risk of layoff, either through ordinary unemployment insurance or by subsidizing the retraining of displaced workers. Both advance notice and UI can lead to incentive problems. In the case of advance notice, effort incentives can drop off sharply once all players realize that they are now in the last round of a prisoner's dilemma game; and in the case of UI, unemployed workers may defer serious job search until near the end of the eligibility period. But on the positive side, both measures may improve the quality of matches between laid-off workers and subsequent employers by increasing the average duration of job search. Both policies also help to cushion the blow of unemployment itself either by allowing more precautionary saving after advance notice is given or through UI payments and retraining opportunities. However, neither policy directly addresses the underlying problem, which is the failure of employers to

internalize the costs of job loss that layoff or shutdown decisions impose on employees. From a social standpoint, it would be better to discourage inefficient layoffs in the first place, rather than shifting their costs to society at large.

As noted previously, Levine (1995) has suggested an alternative approach where long-time employees can be fired only for cause. This policy would effectively transfer property rights from firm owners to workers, since employees would have to be bribed to leave, rather than needing to bribe the firm in order to stay. One could argue that legislated protections against unjustified dismissal represent an extension to the nonunion sector of provisions already found in existing collective agreements and that such protections would merely codify existing norms in internal labor markets (Rock and Wachter 1996). It is also true that Western European countries have generally adopted public policies providing more job security than is available in North America (although the value of such rigidities has been under active debate in Europe itself). Finally, one can argue that the U.S. and Canada are already moving implicitly toward such a system through the growing number of court decisions where employees are awarded damages for wrongful dismissal.

Does this clinch the case for ending employment at will? Probably not. It remains unclear how just cause requirements would be enforced in sectors that lack the monitoring and enforcement capabilities of unions or the firm-side reputational mechanisms that help to keep internal labor markets viable. The practical result would probably be a shift in the burden of proof toward the employer in civil litigation (although mandatory arbitration by a third party might be used to provide a better informed, faster, and lower cost method of dispute settlement). It is also far from clear how workers with high levels of firm-specific human capital, who are often the chief intended beneficiaries of such proposals, could be distinguished from workers who have made little investment in such skills (by length of service? occupation? degree of responsibility?). Indeed, it might not be desirable to make such distinctions at all. Even if their skills are not firm-specific, employees could be paid a premium for incentive reasons; they might capture some production surpluses through bargaining (Osborne and Rubinstein 1990); or they might capture part of the value from an especially good job match (Rosen 1991). A case could be made that workers who derive wage premiums from any of these other sources are also inadequately protected by the option of exit to an outside labor market. Thus it is not obvious how one should define the employee constituency to be targeted for regulatory or judicial protection.

There are other labor market implications to be considered as well, not least whether employers will insist on lowering wages in order to offset the reduced ex post flexibility associated with constraints on dismissal. As noted above, dismissal threats might have to be replaced with less effective ways of eliciting effort from workers. And finally, if employers must bribe employees to leave by proposing a mutually acceptable severance payment, bargaining costs might make it difficult to end a bad match between a firm and worker and could give employees incentives to shirk or even sabotage production in order to support demands for better severance packages. It is impossible to evaluate all of these issues here, but this short discussion should give some idea of the questions that would be posed by the NIE with regard to modifications in the rule of employment at will.

Conclusion: What Does the NIE Have to Say about Employment Regulation?

In our tour through the topics of coordination, incentives, and bargaining, we have seen how the NIE can help to shed some light on regulatory issues involving employment. While the NIE framework rarely provides a sharp policy conclusion, it does spotlight some questions that need to be addressed when regulatory proposals are evaluated.

As I emphasized previously, the NIE generally starts from a presumption that individual rationality and competitive market forces can be counted upon to induce efficient governance responses from private agents. At the same time, we noted a tension between the NIE's stress on market failures as the rationale for firm organization and its belief that competitive markets will bring about an efficient set of governance structures. In contrast, we argued that there is a second-order efficiency problem: market failures similar to those motivating the creation of hierarchical firms may prevent private parties from arriving at efficient governance systems and so may justify regulatory intervention. In this closing section I will briefly review the major forms of market failure that can lead to inefficient private governance and summarize the ways in which regulation might be of assistance.

Informational asymmetries. The most direct remedy for informational problems will often be disclosure requirements, if these can be enforced successfully. Other remedies include tax and subsidy systems designed to offset the distortions from adverse selection or moral hazard in the labor market. Unemployment insurance is a prominent example, and subsidies to promote profit sharing might be justified in a similar way.

Market power. Monopsonistic distortions can arise if job search is costly and firms or workers are heterogeneous. Depending on the situation, possible solutions might be to legislate restrictions on the outcome of wage bargaining (a minimum wage), to diminish search costs through information dissemination

(public data banks on job openings), or to strengthen worker bargaining power (unionization). Bilateral monopoly combined with informational asymmetries can lead to bargaining rigidities, which may warrant policies to enhance job security or to ensure a larger employee voice in firm governance.

Collective action. Free-rider issues in negotiating and enforcing agreements involving many workers simultaneously are usually addressed through legal recognition of the right to bargain collectively. Other frictions resulting from inadequate representation of worker interests might be handled by requiring employee representation on the board of directors or by subsidizing worker buyouts of conventional capitalist firms.

Exit costs. For reasons involving search costs, firm-specific investments, or efficiency wages, it may be costly for workers to exit from firms. Possible restraints on the abuse of managerial authority in such situations include direct regulatory controls (to prevent raids on employee pension funds or limit exposure to toxic materials), guarantees of job security (dismissal for cause), mechanisms through which workers can discipline firms (grievance procedures, arbitration, strikes), and direct employee participation in corporate governance.

Externalities and multiple market equilibria. Externalities across firms (e.g., with respect to worker training) could be addressed by suitable incentive schemes (such as a subsidy to training) or other controls (such as mandatory provision of training opportunities). Labor market conventions where wages are governed in part by social custom or historical accident could be altered by antidiscrimination rules, comparable worth programs, or by other regulatory policies that provide new focal points for private sector practice.

It is far beyond the scope of this chapter to comment on the practical merits of any of these policy suggestions. A serious examination would require competent theoretical analysis, detailed empirical knowledge, and a sober assessment of unintended side effects. The main lesson to be drawn is a more general one. The NIE can offer at least two kinds of insights that might aid in the process of policy evaluation. First, it forces advocates of regulatory intervention to explain in a clear and rigorous way why there is a market failure at all, given the incentives of private agents to reach mutually beneficial agreements. This is an important form of intellectual discipline that should help to forestall well-intentioned but misguided interventions. Second, it provides some clues about the kinds of failure one might want to watch out for. As we have seen, a central concern of the NIE is to identify a set of market failures serious enough to motivate the creation of firms. But many of the same frictions that make it attractive

to suspend market forces within the firm can reappear elsewhere as reasons to question the market's own judgment about privately established governance systems. Indirectly, therefore, the NIE identifies some important grounds for regulatory intervention in the labor market. One can only hope that future work in this field will begin to address these questions in a more explicit and systematic way.

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