

makes people more willing to lend money than they otherwise would be and encourages the efficient allocation of financial capital. Moreover, to the extent that managers lose in a bankruptcy—because their jobs, their perks, and their pensions may disappear—the threat of bankruptcy may serve as a check on managerial moral hazard vis-à-vis stockholders' interests.

Under U.S. tax laws, the payments that a corporation makes as interest on its debt are tax deductible, whereas dividend payments on its stock are not. Because both are payments by the corporation for the use of capital, this might suggest that the firm would gain by financing itself overwhelmingly with debt. The attendant moral hazard problem is one reason why this would not be automatically attractive, however. As the fraction of the firm financed by debt increases, there is a growing incentive for equity holders (and the managers who represent them) to take risks. This means that at very high levels of debt to equity, the firm will have to pay very high interest rates, put up extremely large amounts of collateral, and accord lenders extensive control rights if it is to persuade them to lend to it at all. Although this is far from a complete explanation of firms' decisions about how to finance themselves, it is an element. We will see more on this topic in Chapters 14 and 15.

OIL AND GAS TAX-SHELTER PROGRAMS¹¹ In the United States in the early 1980s, many oil and gas exploration and development operations were organized through **limited partnerships**, which are hybrid contractual arrangements mixing elements of the forms of both corporations and partnerships. There are two classes of partners in a limited partnership: the *general partners* and the *limited partners*. The limited partners are in a position very like that of the shareholders in a public corporation. They take no role in managing the partnership. Rather, they simply provide the cash as investors to finance its operations, and they enjoy **limited liability**: Their financial liabilities are limited to the amounts they invest. The general partners are like the partners in a regular partnership. They make all the managerial decisions about the partnership's operations, and they have *unlimited liability* for the partnership's debts: Their personal wealth can be seized by creditors if the partnership defaults on its debts.

The federal tax laws that prevailed in the early 1980s partially accounted for the popularity of this organizational form in oil and gas exploration. The partners could often save on taxes if the limited partners paid all the costs of exploring for oil (which were tax deductible when the costs were incurred), whereas the general partners paid the costs of completing wells in which oil is found (which were "capitalized costs" for tax reporting purposes). The general partners and the limited partners would then share any revenues enjoyed when oil was pumped from producing wells.

This tax avoidance scheme is beset with moral hazard problems that arise from the difference in interests it creates between the general partners and the limited partners. The most fundamental of these results because each bears a different kind of expense and receives only a share of the revenues. If a well is found to have oil, the general partners have to decide whether to bring it to completion so it will produce. If they decide to do so, they bear 100 percent of the cost of completing the well but typically receive only 25 percent of the oil revenues, with the rest going to the limited partners. Suppose that after the exploration costs have been sunk, a well is found to have enough oil that the well-completion costs will be just 50 percent of the resulting

¹¹ This section is based on Mark Wolfson, "Empirical Evidence of Incentive Problems and Their Mitigation in Oil and Gas Tax Shelter Programs," in *Principals and Agents: The Structure of Business*, J. Pratt and R. Zeckhauser, eds., (Boston: Harvard Business School Press, 1985), 101–25.

revenues, so that the partnership as a whole would profit from completing the well. Despite the fact that completing the well would maximize total value, the general partners would not find it in their individual interests to complete the well: Their 25 percent share of the revenue is not enough to cover their 100 percent share of the cost. Furthermore, it would be very hard for the limited partners, with no role in the management of the partnership and probably no expertise in the oil business, to ensure that their interests are being given proper weight in the general partners' decisions.

A second conflict of interest arises when, as was often the case, the general partners are involved in several exploration efforts at the same time and in the same area but have differing shares in different projects. As an extreme example, suppose the general partners have another exploration project on an adjoining tract that they own outright. In that case, by shifting their drilling on the partnership's tract towards the boundaries of their own tract, the general partners can acquire valuable information about the likelihood of finding oil on different parts of their private holdings, with the cost of that information acquisition being borne by the limited partners. Similar, if less severe, problems arise when the general partner is involved in several limited partnerships but has differing interests in each. The general partner may be led to distort his or her allocation of time, effort, attention, and resources among the partnerships, favoring the ones in which he or she has the greatest interest. Again, it would be very difficult for the limited partners to monitor this sort of behavior.

A third conflict often arises when the general partners or their affiliates sell equipment or services to the limited partnership. The problem is that the general partners have an incentive to overcharge on these transactions because the limited partners pay the bills, but the general partners, who make the decisions, collect the money.

All these conflicts are clearly recognized in the industry, and the prospectuses for the limited partnerships often discuss the incentive problems very clearly and candidly. We return to this example in Chapter 7, where some of the means used to offset the incentive problems are discussed.

CONTROLLING MORAL HAZARD

In order for a moral hazard problem to arise, three conditions must hold. First, there must be some potential divergence of interests between people. Conflicts of interest will not always arise, nor will they arise on all dimensions: Different individuals' interests may naturally be quite well aligned in particular circumstances. However, conflict will occur often, if only because scarcity of resources means that what one person gets another cannot have. Second, there must be some basis for gainful exchange or other cooperation between the individuals—some reason to agree and transact—that activates the divergent interests. Up to this point, simple market arrangements would work: Divergent interests are a factor in almost all exchanges, and yet exchanges are often made successfully without being troubled by moral hazard. The critical third requirement is that there must be difficulties in determining whether in fact the terms of the agreement have been followed and in enforcing the contract terms. These difficulties often arise because monitoring actions or verifying reported information is costly or impossible. However, they could also arise even when both parties know that the contract has been violated but this fact cannot be verified by third parties (such as a court or arbitrator) who would have enforcement powers. This means that the normal market solution will be problematic, because the parties will not be able to write enforceable contracts covering all the crucial elements of the transaction. These three conditions suggest ways to deal with the moral hazard problem.

①

②

③

private search
minimally over price
points are quite
measuring, figuring out
monitoring action
& verifying reported
into action
verification by 3rd parties
with enforcement power

recall ch 2

by an action as a misleading report

joint conditions on independent means
loss in value

Monitoring a reputation

The first remedy is suggested by the third condition: Increase the resources devoted to monitoring and verification. Sometimes the idea is to prevent inappropriate behavior directly by catching it before it occurs. For example, U.S. corporations are not allowed to publish financial statements until they have been verified by independent auditors, prospectuses describing investments for which funds are sought from the public must be approved by the Securities and Exchange Commission, and health care insurers may have patients obtain a second opinion on a physician's recommendation for some expensive treatment if they are concerned that the treatments may be unnecessary. In other situations, monitoring is intended to decrease the probability of getting away undetected with the socially inefficient, self-interested behavior. In this case, the results of monitoring are the basis for rewards or penalties. For example, workers are often required to punch a time clock, and their pay is reduced or other punishments are imposed if they arrive late or quit early. Monitoring may also be used to support a system of rewards for good behavior.

The payment of cash rewards is itself sometimes subject to a moral hazard problem of renegeing. The party who is supposed to pay the reward (may misrepresent the outcome of the monitoring, claiming that the other person's behavior was not appropriate and no reward is due. This is likely to be especially easy when the criteria for judging performance are hard to describe or measure precisely, so that evaluations will tend to be subjective. Sometimes, the need to maintain a good reputation is enough to control this temptation. (Reputation effects are discussed in more detail in Chapter 8.) In other circumstances, the efficacy of monitoring may depend on (generating evidence verifiable to a court) that can enforce payment of the agreed rewards.

A more subtle but related commitment problem arises when punishment is due but carrying out the punishment is costly for the party who is supposed to do it. For example, if company policy requires that an employee who breaks certain rules must be fired, and a valued, hard-to-replace employee is caught in a minor violation of the rules, then the employer may be loathe to carry out the punishment and lose the employee's services. Of course, if the worker foresees that the firm will be unwilling to punish transgressions, the threat of punishment is empty.

COMPETING SOURCES OF INFORMATION Although monitoring requires developing sources of information about the agent's truthfulness and performance, this does not always require direct expenditures of resources. One possibility is to rely on competition among different parties with conflicting interests to develop the needed information. In everyday life, competing sellers will often happily compare the relative merits of their own products against comparative defects in the competing product which the other seller would be unlikely to emphasize. The same phenomenon can occur within organizations, as for example when the navy and air force vie for responsibility for some military mission, each emphasizing its own advantages compared to its competitor. The danger with relying on competing information providers is greatest when they have some common interests that are in opposition to the decision maker's. For example, neither of two sellers of asbestos insulation was likely to emphasize the health hazards of asbestos before these became widely known.

MONITORING BY MARKETS Managerial moral hazard is frequently alleviated by monitoring provided for free by markets. Managers of firms in reasonably competitive product or input markets, who do a poor job (of generating profits) will face a greater probability of failure. The fear of unemployment and of carrying a reputation for having led a firm into bankruptcy may then provide managerial incentives. Similarly,

the "market for corporate control" provides incentives by threatening bad corporate managers with loss of their jobs following a takeover or a successful proxy fight.¹²

Explicit Incentive Contracts (to align incentives)

In some situations, monitoring actual behavior or the veracity of reports may be simply too expensive to be worthwhile. As we mentioned earlier, however, it may still be possible to observe outcomes and to provide incentives for good behavior through rewarding good outcomes. For example, even if it is impossible to monitor the care and skill exerted by machine maintenance personnel, it may still be possible to measure the percentage of time that machines break down. In fact, if the breakdown rate of machines were completely determined by the performance of the maintenance worker, basing pay on that rate would be a perfect substitute for basing it on care and effort. The same would be true even if other factors (such as the machines' inherent quality, the intensity and nature of their use, and the care exerted by the machine operators) also influence the breakdown rate, provided it were possible to control precisely for the effects of these other determinants of breakdown.

Unfortunately, perfect connections between unobservable actions and observed resulting outcomes are rare. More often people's behavior only partially determines outcomes, and it is impossible to isolate the effect of their behavior precisely. For example, a firm's total sales depend not only on the efforts of the sales force but also on a host of other factors: the price and advertising policy of the firm, competitors' prices and promotions, and other conditions that affect customers' demands. Rewarding on the basis of results therefore makes the salespeople's incomes dependent on random and uncontrollable factors. A similar effect arises when the outcomes are fully determined by the person's effort but are not measured precisely, instead being only estimated or measured with some unknown, random error. Again, incomes become subject to random variations.

THE PROBLEM OF RISK-BEARING Most people dislike having their incomes dependent on random factors. They are risk averse, and would rather have a smaller income whose magnitude is certain than an uncertain income that is somewhat larger on average but is subject to unpredictable and uncontrollable variability. The risks created by incentive contracts are costly to these people. They are not as well off with a risky income as they would be receiving the same expected level of pay for certain, and they thus have to be paid more on average to convince them to accept these risks. From the employer's perspective, this extra income is a cost of using incentive pay.

Moreover, this cost can be a real one to society, one that can reduce overall efficiency. The employer (often) is more tolerant of risk and better able to bear it than are employees. In the extreme case, where the employer is a well-financed and widely held corporation whose stockholders keep their wealth in broadly diversified portfolios, the stockholders can be assumed to be risk neutral—concerned mostly with expected returns and virtually indifferent about variability in the net earnings of the firm, especially variations of the magnitude of an individual worker's performance pay. Tying workers' pay to their job performance means that a source of the variability of earnings is transferred from the owners to the workers: When things go well on the job, some of the extra returns accrue to the workers, and when things go badly, the

¹² The stockholders in a corporation have the right to elect the directors and to vote on certain major policy decisions at stockholders' meetings. Few stockholders ever attend these meetings, however. To allow for this, they are permitted to give their proxy to someone else to cast their votes on their behalf. Typically, the proxy is given to management. In a proxy contest, rival groups will attempt to win stockholders' proxies so that they can elect different directors or prevent management and the current directors from enacting a policy change that the group opposes. See Chapter 15.

False positives vs false negatives?

alter the terms of/basis for exchange

Moral Hazard and Performance Incentives

interferences? search?

apply to health!

epidemiology

"false risks" breakdown of machines vs people

!! condition on?

except at high cost

NB (in reason, time, or other factors... what about in expectation...)

unknown (confusion with certainty) well-being

on the part of the measurement

* or health (or both...)

Join rethink this in light of CARA - contract creates opposite for bounded risk taking

compensation is important what do you have to be paid to accept a risk

this position RAND Journal

variability in health variability in earnings

Pharmac

when you have different beliefs - not some beliefs

on: ts, and es prior appropriate

results reputation tied to measures

action

U

in 100%

with (limit to) within mechanisms

A

B

C (with punishment)

2

credible reputation? disclosure?

publicly available performance measures

JP work through with CARA

impact on the owners is cushioned by the lower levels of incentive pay. However, transferring risk from the owners (who care little about the risk and benefit little from its reduction) to the workers (who may strongly dislike bearing risk) means that the total costs of the given amount of risk in the system are increased.

RISK COSTS AND INCENTIVE BENEFITS Designing efficient incentive contracts involves balancing the costs of risk bearing against the benefits of improved incentives. Insulating risk-averse employees' pay from variations in measured job performance minimizes the costs of risk bearing, but it also eliminates monetary performance incentives. Shifting risk to the employees strengthens their incentives because their pay now depends on actual performance, but the costs of risk bearing rise as well. The efficiency principle suggests that observed contracts will tend to be efficient, subject to the constraints imposed by observability problems.

One implication of this analysis is that it is inefficient to use contracts that make risk-averse employees bear avoidable risks unless the contracts also provide useful incentives.¹³ For example, consider a firm whose risk-neutral owners want to maximize profits and which has a problem motivating production workers to be productive. Because the owners care about profits, one possibility is to provide incentives for everyone by paying bonuses based on profitability. This exposes workers to income variations arising not just from their own productivity, however, but also from all the other factors influencing profits that are beyond their control: input prices and availability, the efforts of the sales force, the quality of executive decisions, variations in demand and in the interest rate the firm has to pay on its debts, the actions of competitors, and so on. In this case, it may be preferable to use an incentive plan based not on profits but on direct measures of the contributions made by individual workers or work group, such as the volume of output, the number of defects, the number of days absent from work, and so on. Even these measures expose the workers to risk, because productivity is not completely under their control, but they do insulate them from some unnecessary risks.

The basic idea behind incentive contracts is that of achieving goal congruence: An appropriately designed reward system causes self-interested behavior to approximate the behavior (the designer) wants. Alternatively, we can think of a well-designed incentive scheme as removing the conflict of interests by effectively altering individual objectives, aligning them more closely with those of the designer. We will usually think of incentives as altering rewards to increase the benefits associated with the desired behavior; for example, motivating employees' interest in profit seeking by tying their pay to profitability. However, behavior can also be modified through job design, employee involvement programs, and the provision of a better work environment, all of which reduce the unpleasantness of work and lower the costs to employees of providing effort. Requiring office workers to be at their desks during certain hours can be seen in similar terms. Because they have to be at the office, they may as well do their jobs, although if they were free to be elsewhere, they would find other things to occupy their time.

We give a (relatively) simple mathematical example of what is conceptually involved in designing an efficient incentive contract in the appendix to this chapter. In Chapter 7 we examine this issue in much more detail and develop a number of principles that can be used to understand and evaluate actual contracts and to guide contract design. Also, in Chapter 12 we examine managerial issues that arise in using incentive pay in organizations.

¹³ The point is closely related to the adage that people should be held responsible only for things under their control. Actually, the adage with this phrasing is misleading, as seen in Chapter 7.

Bonding

In some industries, it is common to require the posting of bonds to guarantee performance. The bond is a sum of money that is forfeited in the event that inappropriate behavior is detected. For example, contractors often must post a bond that they lose if the project is not completed by the agreed date and in the agreed manner. Similarly, the capital provided by the owners of a bank or an S&L (acts like a bond) because in the event of losses the capital must be paid out to meet obligations. In the early 1970s, Electronic Data Systems Corporation (EDS)—Ross Perot's computer service company that was later acquired by General Motors—required trainees who resigned within three years of joining the firm to pay the firm \$12,000.¹⁴ This bonding was designed to prevent employees from receiving costly training without doing substantial work for the firm. The \$12,000 amount was comparable to an engineer's annual salary at the time.

Posting a bond can be a very effective way to provide incentives, but the problem is that people often will lack the financial resources to post a sufficiently large bond. This is especially the case when the gains from cheating are large and the probability of getting caught is small, so that the bond would have to be large to give an adequate incentive. These ideas are examined more carefully in Chapter 8, but one application that sheds light on the puzzle of positively sloped age/wage profiles can be discussed here.

AGE/WAGE PATTERNS, SENIORITY PROVISIONS, AND MANDATORY RETIREMENT As noted in Chapter 5, pay tends to increase with age and experience, even after controlling for productivity. In Chapter 5 we offer an explanation for this pattern based on inducing self-selection to reduce employee turnover. Bonding as a deterrent to employee shirking has been suggested as an alternative explanation by Edward Lazear.

Suppose that the firm can fire any workers detected shirking. We may think of workers who shirk as receiving some valuable benefit, such as a reduced level of stress or more time to pursue personal interests, which cannot be taken away from them. If workers were to post bonds of sufficiently greater value than these benefits, and if being caught cheating resulted in losing the bond, then they would not cheat. Their value to the firm would be increased by the bond and, with competition among employers, so too would be the amount they would earn. In any case, when it is efficient for workers not to cheat and shirk, the bond may allow efficiency to be achieved. If the gain from cheating is substantial, however, or the likelihood of getting caught is small, workers may not be able to afford to post a big enough bond, and the potential efficiency gain would be lost.

Suppose the firm in this circumstance makes a credible promise to the workers that, late in their careers, it will pay them more than the value of what they produce and thus of what they could earn elsewhere. If the firm pays workers less than their marginal products early in their careers, then the value of lifetime earnings and the firm's total outlay need not be affected by this scheme. As the years of high pay draw near, however, the high promised wages serve as a bond that the worker would forfeit by dishonest behavior or shirking: The wage pattern duplicates the effect of a bond. Therefore, the observed pattern of wages might be explained by a need to make workers value their jobs in order to ensure honest, hard-working behavior.

Strikingly, a mandatory retirement provision will be necessary for efficiency under this scheme. For efficiency, people should retire when the value of what they produce just equals the private cost to them of continuing working. If they were paid

¹⁴ Doron Levin, *Irreconcilable Differences: Ross Perot versus General Motors* (New York: Plume, 1989), p. 46.

Moral Hazard and Performance Incentives

rental housing contracts in Christchurch
substantial leave entitlements

think of goal structures & tutoring & getting part way thru the year?

inappropriate
ch 8

shirking
personal "posting"

conditional on appropriate behavior (somehow measured & monitored)

as well as by leaving

couldn't find best principle
increase chances of --

it is on the pay

some "stock" of value (money or otherwise)

job matching

Motivation: Contracts, Information, and Incentives

2 1-person self-managed firms vs 1 firm with 2 managers (maybe even 10 owners...!)

not automatically align incentives. The problem is that integration only transforms a self-interested manager who formerly worked for the supplier into a self-interested manager who works for the firm. The basic incentive problem may still need to be solved.

The upshot is that merger does not always eliminate the incentive problem that exists between separate firms. Compounding the problem is the fact that there are additional unavoidable costs of bringing previously separate activities under common direction. An important component of these are the influence costs, which increase with the increased potential for central control of activities in an integrated organization. Although the influence activities that give rise to influence costs are a form of moral hazard, they are of such importance in understanding organizations that they deserve separate treatment.

INFLUENCE ACTIVITIES AND UNIFIED OWNERSHIP

What costs are involved in bringing two separate organizations under unified direction? Why can't the merged entity do everything the separate components did and more? What are the limits, if any, on the efficient size of organizations? Why isn't all economic activity organized in a single firm?

From our discussion in Chapter 2, it is clear that the answer must be that bringing everything within a single organization involves inefficiently high transactions costs of some sort. But what are they? In fact, until recently, little attention has been given to the task of identifying the transactions costs of internal, nonmarket organization. This is a subtle matter. In actual organizations, much time and ingenuity is spent overcoming transactions costs: Witness the example of the development of the multidivisional form in Chapter 1. Moreover, a strikingly simple idea—the policy of selective intervention—undercuts many of the possible candidates that come to mind as distinctive disabilities of unified control.

Unified Ownership and Selective Intervention

Suppose it is efficient for two parts of a big organization to be independent and operate as separate entities. Then, in the original organization the center could direct the two units to conduct their transactions at arm's length as if they were not both part of a single structure. For example, when market transacting works well, why not replicate its operation within the firm, using internal, transfer pricing? Meanwhile, where there are efficiency gains to be had from deviating from the patterns of transactions that would occur in the market, why not have the central management selectively intervene in the operations of the component units to ensure that the gains are realized?

Following a policy of selective intervention consistently ought to mean that the unified organization can do everything the separate pieces could do, and do so at least as well. There would then be no bound on the efficient size of the organization. Why then is all activity not brought under a single firm? The logical answer must be that adhering to a thoroughgoing policy of selective intervention is impossible. But why should this policy be infeasible? Influence activities provide part of an answer.¹⁵

Influence activities arise in organizations when organizational decisions affect the distribution of wealth (or other benefits) among members or constituent groups of the organization and, in pursuit of their selfish interests, the affected individuals or groups attempt to influence the decision to their benefit. The costs of these influence activities are influence costs.

¹⁵ A broader discussion of influence costs is found in Chapter 8.

tech & info activities shareable can
Might be but difficult

Costs selfish is too performance

Moral Hazard and Performance Incentives

more costs than required to make in the organization
a strategic resource

Pharmaceuticals top on the list
Pharmaceutical decision

Influencing Interventions

"managerial" decision rights, entrepreneur mechanism self-interested

The fundamental difficulty with the policy of selective intervention is that it requires that there be a decision maker with the power to intervene who collects information with which to make decisions. These things can by themselves impose costs on the organization. The most obvious costs are the decision maker's salary and the cost of providing information to support the decision-making system, including the time that lower-level decision makers spend reporting information to the decision maker. Often more important is that individuals and units within the organization may have selfish reasons to seek unproductive interventions, and they may expend resources trying to influence the decision maker to bring them about. Even when the attempts fail, the resources expended in these influence activities represent a cost that brings no offsetting gain. When they do succeed in influencing the central decision maker to intervene inappropriately, there are further costs in bad decisions being made and implemented. Finally, if the organization recognizes these possibilities and adjusts its structure, governance, policies, and procedures to control attempts at influence, these deviations bring further costs. All of these are elements of influence costs.

As is evident, the magnitude of influence costs depends on the existence of a central authority, the kinds of procedures that govern decision making, and the degree of homogeneity or conflict in the interests of organization members. All this is treated in more detail in Chapter 8. Here, we focus on how influence costs limit the optimal scope of formal organizations.

When two previously separate organizations are brought under a common, central management with the power to intervene, the scope for influence increases and influence costs increase. For example, members of one unit can try to influence top management to transfer resources from the other unit to theirs. They can argue that they have better investment opportunities and so can better use the funds being generated in the other division, or that they have more valued uses for the most talented people now assigned to the other group, or that all marketing, or production, or research and development (R&D) should be consolidated in a single unit (theirs!) rather than remaining inefficiently spread over several units. The other group will have a similar incentive to defend itself and even to counterattack. It can argue that other units should be required to purchase its outputs, even though the outside market may provide superior or cheaper substitutes, because doing so helps cover corporate overhead or helps build the firm's core competencies, or it may complain that equity, morale, and ultimately productivity demand that its members be paid as well as those in another group whose members may be especially productive or may have particularly valuable skills or knowledge. Large amounts of time, ingenuity, and effort may go into these attempts at influence, and huge amounts of the central executives' time can be consumed dealing with them.

Of course, none of this would occur if there were no central authority with the power to make the proposed changes. Thus, although the merged organization may be able to achieve things that were not possible before, it also suffers costs that were not present when the parts were separate.

Influence Costs and Failed Mergers

This logic gives insight into the great frequency with which corporate mergers and acquisitions apparently fail. In a study of the diversification records of 33 large U.S. corporations between 1950 and 1986, Michael Porter found that fully 60 percent of the acquisitions in new fields of business by these firms were later divested, and 61

pharmaceuticals selectively direct resources to their own unit

with the power selectively intervene spend resources arguing that

predation

influences influences

regulatory institutional structure

Can we study records of P

See evidence of costs ... ??

NB

percent of the firms ended up divesting more of their acquisitions than they kept.¹⁶ Although not all divestitures of previous acquisitions necessarily represent failures, even the sophisticated firms in Porter's sample had real problems making acquisitions work.

There are obviously major problems involved in attempting to integrate two different organizations with their own unique histories, their own ways of doing things, their own reporting and control systems, their own pay and benefit schemes, and so on. To focus on a pure case in which these factors should be of minimal concern, consider a pure conglomerate merger in which one firm acquires another with the intent of running it as a completely separate division, intervening in its operations only when there are clear gains to doing so. Even here, influence costs present problems that may cause the merger to fail.

TENNECO'S ACQUISITION OF HOUSTON OIL AND MINERALS A well-documented example is the 1980 acquisition of Houston Oil and Minerals Corporation by Tenneco, Inc., which was then the largest conglomerate in the United States.¹⁷ Houston's business was finding, developing, and bringing petroleum and mineral deposits into production. The company was very aggressive and quite successful before its acquisition by Tenneco. Tenneco's stated intent was to run Houston as a separate company, maintaining the entrepreneurial, risk-taking style that had marked it as an independent concern. In particular, it planned to maintain a separate compensation and reward system at Houston that would provide unusually large individual payoffs to professionals for successful discovery and development of petroleum reserves. (Several Houston explorationists had become wealthy with the bonuses they earned from successful explorations, and such packages were common among smaller firms in the industry.) Yet Tenneco had great difficulty developing such a plan, and it ultimately failed to do so. Within a year, more than a third of Houston's managers, a quarter of its exploration staff, and almost a fifth of its production people had left the company for better opportunities elsewhere. This severely hampered operations, and ultimately it became impossible to maintain Houston as a distinct unit within the firm.

Tenneco's costly failure to institute the intended reward policy apparently resulted from a concern for equity in pay across the organization. The Tenneco Vice President of Administration was quoted in *The Wall Street Journal* as saying: "We have to ensure internal equity and apply the same standards of compensation to everyone." Meeting this perceived need was very costly. It contributed to the exodus and to the ultimate failure of the acquisition. Failure to meet this need might well have been even more costly, however. Tenneco's 100,000 employees, jealously looking at the huge bonuses that would have been paid to the few hundred Houston professionals, might have consumed large chunks of their superiors' time with their jealous complaining and their attempts to get some of these funds for themselves. Given the relative sizes of the two groups, the overall impact on productivity at Tenneco could have been disastrous.

¹⁶ Michael Porter, "From Competitive Advantage to Corporate Strategy," *Harvard Business Review* (May-June 1987), 43-59.

¹⁷ This example is discussed by Oliver Williamson in *The Economic Institutions of Capitalism* (New York: The Free Press, 1985), p. 158. The primary source is George Getschow, "Loss of Expert Talent Impedes Oil Finding by New Tenneco Unit," *The Wall Street Journal* (February 9, 1982), A-1. The quotation in the next paragraph is from this story.

SUMMARY

The term *moral hazard* originated in the insurance industry, where it referred to the tendency of people who purchase insurance to alter their behavior in ways that are costly to the insurance company, such as taking less care to prevent a loss from occurring. Within economics, the term has come to refer to any behavior under a contract that is inefficient, arises from the differing interests of the contracting parties, and persists only because (one party to the contract) cannot tell for sure whether the other is honoring the contract terms. Moral hazard problems arise frequently in *principal-agent* relationships, where one party (the "agent") is called upon to act on behalf of another (the "principal"), because the agent's interests commonly differ from the principal's (and) the principal cannot evaluate how well the agent has worked or whether the agent has been honest. *easy*

The savings and loan crisis in the United States illustrates the problem of moral hazard and how it is most often dealt with in ordinary business transactions. The difference of interests between the owners of the S&L and the federal insurance agency (the FSLIC) arose because the owners benefited from risky investments when they turned out well, but the costs of failures are borne by the insurance agency. When the agency failed to monitor and control the S&L, this led the S&L management to make risky investments or even to engage in fraud in a way that was costly to taxpayers. Competition for depositors' funds only intensified this effect, increasing the interest rates paid on deposits and forcing more conservative S&L management to find higher-yielding—and hence usually riskier—investments.

The relation of depositors to their S&L is similar to the relationship of lenders to any other kind of firm. Normally, lenders protect their money by imposing controls and requiring reporting by and audits of the borrower. What distinguished the S&L case is that the depositors, being insured, had little reason to monitor the savings institutions, and the federal government, whose money was at risk, did not monitor on its own behalf, in part because powerful congressmen were protecting the S&Ls.

Problems of fraud and excessive risk taking similar to the S&L problem can be found in many federally insured programs. Among those described are programs insuring workers' retirement benefits, farmers' crops, mortgage loans, and student loans. Similar problems exist in private-sector insurance programs, but these tend to be less severe partly because profit-oriented insurers monitor the insured more carefully and partly because private insurers refuse to offer insurance when the moral hazard problem is too severe.

Moral hazard is not only a problem of markets, but exists in other kinds of organizations as well. Air traffic controllers seeking to collect disability benefits have "punched out," causing incidents that seemed to indicate that they suffered job-related stress and were unable to continue their duties safely. The general partners in oil and gas drilling partnerships sometimes fail to complete wells that are profitable for the partnership as a whole because their own interests differ.

Various means are available to control the moral hazard problem. One is explicit monitoring, which can reduce the information problem that is a fundamental component of moral hazard. A second is the use of *incentive contracts* that pay for output performance when inputs cannot be measured. *Posting a bond* that is forfeited if the agent is caught cheating can be effective in a principal-agent relationship. This bond can be implicit in the rising pattern of wages over a worker's career: A worker caught cheating after several years of employment stands to lose the high wages paid to more senior workers. Sometimes, the whole problem can be avoided by the "do-

down or reporting contract and agreement * some parties to the contracts incomplete contracts - so many terms "implicit"

finding out about firms

in Pharms can one reason looking groups may set up by private - private agents is not adequate and some esp agent choose it

2) risk bearing/covering contracts

but costly

credibility

incomplete

incomplete

REFERENCES

Aghion, P., and P. Bolton. "An 'Incomplete Contract' Approach to Bankruptcy and the Financial Structure of the Firm," *IMSSS Technical Report*, No. 536 (Stanford, Ca: Stanford University, 1988).

Arrow, K.J. "Uncertainty and the Welfare Economics of Medical Care," *American Economic Review*, 53 (1963), 941-73.

Berle, A., and G. Means. *The Modern Corporation and Private Property* (New York: MacMillan, 1932).

* Carmichael, L. "Self-Enforcing Contracts, Shirking and Life Cycle Incentives," *Journal of Economic Perspectives*, 3 (1989), 65-83.

Lazear, E. "Why Is There Mandatory Retirement?" *Journal of Political Economy*, 87 (December 1979), 1261-84.

→ Milgrom, P., and J. Roberts. "Relying on the Information of Interested Parties," *Rand Journal of Economics*, 17 (1986), 18-32.

* → Milgrom, P., and J. Roberts. "Bargaining Costs, Influence Costs, and the Organization of Economic Activity," in *Perspectives on Positive Political Economy*, J. Alt and K. Shepsle, eds. (Cambridge: Cambridge University Press, 1990).

Mirrlees, J. "An Exploration in the Theory of Optimum Income Taxation," *Review of Economic Studies*, 38 (1971), 175-208.

* Pauly, M. "The Economics of Moral Hazard," *American Economic Review*, 58 (1968), 31-58.

Ross, S. "The Economic Theory of Agency: The Principal's Problem," *American Economic Review*, 63 (1973), 134-39.

Spence, A.M., and R. Zeckhauser. "Insurance, Information and Individual Action," *American Economic Review*, 61 (1971), 380-87.

Williamson, O. *The Economic Institutions of Capitalism* (New York: The Free Press, 1985).

← JP 1st br dept review

JP 6-81

Ref to wrong article is ok

Dixit - Lawlessness & Economic ... alt modes of governance - Trans costs appt to pooled econy

EXERCISES

Food for Thought

1. Widespread fraud brought down some S&Ls. Does deposit insurance itself make fraud more attractive? How did the changes in regulation of the S&Ls contribute to the problem of fraud?
2. As part of a plan to rescue the savings and loan industry, in late 1988 the U.S. government encouraged private investors to purchase the assets of failing savings and loans. They offered guarantees of principal and, in some cases, interest on some of the properties taken over by the S&Ls when borrowers defaulted on loans. What effect would you expect these guarantees to have on the behavior of the new owners?
3. In automobile collision insurance and health insurance, the insurance policy often has a provision calling for a deductible according to which the portion of any insured loss up to some fixed limit, such as \$500, is paid for by the insured person; only the excess is paid for by the insurance company. In addition, health-insurance policies often provide for copayments by the insured, according to which the insurance company pays only some fraction, such as 80 or 90 percent, of the medical costs in excess of the deductible, until the insured has paid some maximum amount (such as \$2,000 in a year). What economic function do deductibles and

Rand Journal 1986 vol 17 65-83

Mark Pauly AER 1968 31-58

AER 1971 310

Grossman J Law Econ 1981 44

P. 1078-8

Journal of Economic 1988

it-yourself" solution, which does not rely on an agent with differing interests. Similarly, a firm can sometimes eliminate conflicts of interest with its suppliers by integrating vertically, though this does not eliminate any individual differences of interests between the formerly independent manager of the supplier and the same person who is now an employee of the firm.

- but also will not create incentives for outside...
so inter...
don't...
like...

An especially important category of moral hazard is the category of *influence activities* and the associated costs, known as *influence costs*. These arise when employees divert effort to influence organizational decisions. Even if those decisions are not ultimately affected, the time, effort, and ingenuity devoted to attempts at influence are unavailable for more productive activities. Influence costs are one of the important costs of centralized control and help to explain the importance of organizational boundaries. These costs are largely eliminated when there is no decision maker with authority to make the decisions that employees wish to influence, and this condition can sometimes be brought about by creating legal or other boundaries between operating units.

every...
the book...

* [

BIBLIOGRAPHIC NOTES

As with so much else in the economics of organizations, the problems of misaligned incentives and what we now call moral hazard were noted and understood by Adam Smith: see his discussion in *The Wealth of Nations* of the incentives in joint stock companies (Book V, Chapter I, Part III, Article I) and of the incentives for university teachers (Book V, Chapter I, Part III, Article II). The nature of moral hazard and its importance to economic analysis was made explicit by Mark Pauly in the context of an article on the economics of health insurance by Kenneth Arrow. The principal-agent model, which underlies much of the discussion in this chapter, has several early contributors, including James Mirrlees, Michael Spence and Richard Zeckhauser, and Steven Ross. More recent references are given in the next chapter. The explanation of the age/wage profile and mandatory retirement in terms of bonding is due to Edward Lazear. A useful discussion and development of Lazear's bonding model is given by Lorne Carmichael.

Adolphe Berle and Gardner Means began the debate about whether the ownership structure of the modern corporation has made it particularly susceptible to managerial moral hazard. The papers published in the *Journal of Law and Economics* [26 (June 1983)] from the Hoover Institution conference on "Corporations and Private Property" held to commemorate the fiftieth anniversary of the publication of the Berle and Means book give some flavor of current thinking on this issue, which in turn has been central to the debate over hostile takeovers. The "Symposium on Takeovers" in the *Journal of Economic Perspectives* [2(1988), 3-82] provides an overview of economists' views on this debate, which we consider in Chapter 15.

The modeling of bankruptcy as a means for effecting efficiency-enhancing changes in control is due to Phillippe Aghion and Patrick Bolton. The determinants of firms' financing decisions are treated in Chapters 14 and 15, and further references are given there.

The importance of the policy of selective intervention was emphasized by Oliver Williamson. The concept of influence costs as a major element of the transactions costs of nonmarket organization was developed by the present authors. The theory of information provided by competing sources is developed in our *Rand Journal of Economics* paper.