Organizational Prospects, Influence Costs, and Ownership Changes

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We augment efficiency-based theories of ownership by including influence costs. Our principal conclusion is that the prospect of organizational decline and layoffs creates additional influence costs in multiunit organizations that would be absent if there was no prospect of layoffs and would be lessened or eliminated in focused organizations. This helps explain the tendency of firms to divest poorly performing units, as well as the pattern of sales of such units to firms already in businesses related to that of the divested unit.

1. Introduction

In recent years, 40–45% of merger and acquisitions transactions in the United States have involved *divestitures*—firms selling individual product lines, divisions, or subsidiaries to new owners—as opposed to transactions in which entire firms pass to new ownership. These divestitures include not only transfers of ownership to other firms, but also management unit buyouts (MBOs), sales to the public through stock offerings, and spinoffs, in which shares in the divested unit are distrib-

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uted to the stockholders of the parent. The value of such sell-offs reached over $70 billion in the United States in 1989,[1] and similar (if less active) markets exist in the other industrialized market economies.[2]

Conventional wisdom holds that weak units are especially likely to be divested.[3] While firms may occasionally dispose of extremely profitable or fast-growing operations, apparently the more common pattern is that units with poor earnings records and bad future prospects are sold. Further, there is solid evidence that, when these units are acquired by other firms (rather than becoming independent enterprises), the purchasers have tended already to be in the unit's line(s) of business.[4]

Both the volume and nature of these transactions raise important questions for the economics of organization and for corporate strategy. What determines whether the complex bundle of assets that comprises a business should be a free-standing, independent enterprise or instead be a unit of a larger firm? If it should be within another firm, what determines which firm should own it? What determines whether a particular business unit should be divested, and, if so, when, how, and to whom? What accounts for the apparent patterns in the choice of units to divest and in the nature of the purchasers?

In this paper we examine a possible answer to these questions. We argue that the prospect of decline and consequent layoffs in one part of a multiunit firm creates special influence costs that arise as managers of the threatened unit attempt to protect their jobs.[5] These

1. *Mergerstat Review 1990* (1991).

2. U.S. firms accounted for only about one-third of global acquisitions in 1990 according to *The Merger Yearbook International* (1991).

3. See, for example, *Mergerstat Review* (1991), p. 59: "Companies have been divesting slow growing, cash-draining and/or other non-core businesses." We have not, however, found any very direct, systematic evidence on this point. One bit of indirect evidence relates to divestitures of previous acquisitions. Kaplan and Weisbach (1990) examined 271 large acquisitions made between 1971 and 1982. They found that, of those units that were subsequently divested, as large a percentage involved an accounting loss on sale as involved a gain. It seems implausible that half of all business units in large firms are unprofitable, and so (unless acquired units are quite unrepresentative of business units generally) unprofitable units would indeed seem to be overrepresented among divestitures.

4. For example, Bhagat et al. (1990) found that the asset sales following hostile takeovers in 1984–1986 fit this pattern, and Kaplan and Weisbach (1990) found that only 20% of previous acquisitions that were later divested were sold to firms in businesses that were not highly related. This pattern is also consistent with the well-documented trend to refocusing and de-conglomeration (Lichtenberg, 1991; Markides, 1990).

5. We could assume that they are also trying to protect the jobs of their employees and the results would be essentially unchanged. However, the data reported by McKee and Wintrobe (1989) renders such an assumption questionable. They found that decline in bureaucracies may even increase the absolute number of managers at the same time that the total number of employees is falling.

costs would not be a factor if there were no threat of layoffs. For example, the managers might exaggerate the unit's prospects in an attempt to gain access to corporate resources that can be used to prevent or delay the downsizing. These influence costs can be avoided if the unit is made independent, so that it can no longer attempt to claim corporate resources. Thus, exogenous shifts in the technological or business environment can generate incentives for divestitures, and the units that will be sold will be ones with weak prospects.

The fact that the influence costs would never have arisen if there were no prospect of layoffs suggests that they can also be avoided if the unit is sold to (or originally lodged in) a firm that can use the affected employees' business-specific skills and knowledge elsewhere and so need not let them go just because the unit to which they are currently assigned is shrinking. This in turn implies that acquiring firms should be especially likely to be ones using technologies and operating in markets that are related to those of the acquired unit. It also suggests a source of advantage to training employees in ways that are generally valuable in the firm, even if not in their current divisions, and also an advantage to corporate technological and market focus that facilitates moving people among units.

In the next two sections we develop these arguments more fully and contrast them and their implications with some alternatives. In Sections 4 and 5 we present a formal model that captures the essence of the arguments while revealing some unexpected subtleties. The final section is a brief conclusion.

2. Explaining Divestitures

A variety of arguments have been advanced to explain divestitures. For example, it has been suggested that the relaxed antitrust environment in the United States in the 1980s permitted firms to make acquisitions that would have previously been disallowed as anticompetitive (Shleifer and Vishny, 1990). This argument may have validity in the specific context, and it does account for the pattern of purchase by firms in related businesses. It cannot, however, explain the large volume of divestitures in earlier periods[6] or account for sell-offs that are not acquisitions by other firms (e.g., MBOs), nor is it informative on why units with poor prospects are apparently more likely to be sold.

6. For example, there were more divestitures in each year from 1970 through 1974 than in any year during the 1980s (*Mergerstat Review 1990*, 1991).

Jensen's free cash flow hypothesis (1986) suggests that managers who are imperfect agents of the stockholders will have a tendency to invest even in unprofitable businesses. He interprets the frequent asset sales following hostile takeovers as undoing excessive and unprofitable conglomeration. Increased discipline on managers from the strengthened market for corporate control in the 1980s reduced such investments and might also have led managers to divest their previous bad investments to avoid having their companies become subject to bust-up takeovers. This too may have been a factor in explaining divestitures during this period, and it does account for why firms would tend to dispose of poorly performing units. Combined with the relaxed antitrust argument, it can also account for the identity of purchasers. It obviously does not account for the high level of divestitures in earlier periods.

Porter (1987), Ravenscraft and Scherer (1987), and Kaplan and Weisbach (1990) have shown that many divestitures are of units that had previously been acquired rather than having been started from scratch by the divesting firm. Porter and Ravenscraft and Scherer both interpret these sales as recognitions of failure, which would account for the presumed performance-divestiture linkage. Alternative explanations are possible, however. For example, perhaps the unit was originally acquired with the intent of improving its performance and then selling it, or perhaps its fit with the rest of the firm's activities had previously been good and then changed. These latter explanations are consistent with the evidence assembled by Kaplan and Weisbach (1990) that less than one-third of the acquisitions that were later divested could be considered failures *ex post*.

There is something of a puzzle, however, in the basic idea that units with poor performance or prospects are sold: Why should anyone be interested in buying them for more than they are worth to the current owners? The obvious answer is that other managers may be better at using these assets, either alone or in conjunction with the assets they already control, than are the current managers when the unit is lodged within their firm along with its other assets. This answer, however, does not explain why there should be such differences among management teams.

One possibility is simply that different management teams are, inherently or as a result of experience, more or less skilled in managing particular sorts of firms. Such an explanation is not very satisfactory, however, because it is so hard to refute. Another is that different combinations of business units are simply more difficult for anyone to manage than other combinations of the same assets. For example, perhaps more focused firms are easier to manage and so create greater

value. If a theory of what determines the costs of managing different sorts and combinations of assets were developed, this approach would be potentially useful. In either case, one could then interpret divestitures and acquisitions as resulting from a learning process through which it is discovered where and in what combinations various units create the most value, or from a process in which the determinants of the efficient assignment of ownership and management changed over time and, with them, the efficient ownership patterns.

Much recent economic research is, in fact, relevant to the question of determining which sorts of assets should be under common control and, more generally, identifying the efficient patterns of asset ownership. This work supposes that the ownership of business units (and other assets) should be allocated in the way that maximizes value, and it seeks to understand observed ownership patterns by interpreting them as the ones that actually do maximize value. The major focus of this research has thus been to explore how ownership patterns might affect economic outcomes and, thereby, efficiency.

A variety of mechanisms has been suggested through which the allocation of ownership might influence productive outcomes. The most prominent among these have been ones based on *asset specificity* and *cospecialization*—the conditions under which particular assets are distinctly more valuable in a particular use or when used in conjunction with other particular assets than they would be in their next best use (e.g., see Klein et al., 1978; Tirole, 1986; Williamson, 1979). These conditions give rise to the possibility of *holdups*—postcontractual opportunistic behavior by one party to the transaction that is designed to expropriate the *quasirents* generated by the asset.[7] Because these quasirents may be part of the normal return needed to induce undertaking the investment, the fear of future holdups may inhibit making efficient investments in specific assets. Different ownership assignments can generate different threats of holdups and, thus, different investment incentives. According to this theory, the assignment should be made in the way that minimizes the losses arising from inefficient patterns of investment.

Other mechanisms by which the pattern of ownership might affect value have been advanced more recently. For example, the necessity of providing comparably intense incentives for each of several activities that a principal wants an agent to perform may influence the choice of which party should own the capital equipment that the

7. Quasirents are the portion of the returns to an investment that exceed what could be obtained by shifting the asset *ex post* to its next best use.

agent uses (Holmstrom and Milgrom, 1991); the possibility of manipulation of performance measures can affect the efficiency of merged businesses (Williamson, 1985); stock market evaluations of separated units can reduce the costs of motivating managers (Aron, 1988); and, in a variation on the specific assets theme, the allocation of residual decision rights through ownership can influence the parties' eventual bargaining strengths in the relationship and, hence, their willingness to make specific investments (Grossman and Hart, 1986; Hart and Moore, 1990).

These theories have proven useful in rationalizing the observed patterns of asset ownership and vertical integration in various contexts, including electric utilities' ownership of coal mines (Joskow, 1985), publishers' ownership of printing presses (Klein et al., 1978), vertical integration in automobile manufacturing (Monteverde and Teece, 1982), vertical integration in sales and distribution (Anderson and Schmittlein, 1984), the choice between franchising and using company-owned retail outlets (Brickley et al., 1991; Shepard, 1991), and so on. The theories do not, however, easily explain time-series variation in ownership of business units—the very large volume of transfers of control that is observed in actuality. For example, in general it seems implausible that the patterns of physical asset specificity and cospecialization should shift so much as to generate the frequent divestitures that mark modern economies.

Moreover, these theories do a poor job of explaining the apparently greater frequency with which units with weaker growth prospects are divested. As noted, we have not in fact found systematic evidence that supports the conventional wisdom on this point, but numerous specific examples are readily available. The largest Japanese chemical firms divested their domestic bauxite smelter operations when sharply rising world oil prices in 1973–1974 made the energy-intensive aluminum production business unprofitable in Japan. Quaker Oats in 1990 divested its troubled Fisher-Price toy operation. IBM in early 1991 divested its typewriter business, along with the manufacture of printers to use with personal computers. Neither of these lines of business appeared to have great growth prospects, at least as part of IBM. Later in the year the company announced its intention to divest (partially or completely) a whole range of its different activities at the same time that it was planning to cut its work force by 20,000. Also in late 1991, W.R. Grace was seeking to sell off units with poor sales, Westinghouse was trying to sell its badly performing credit unit, and, in the context of probable reductions in defense spending, Unisys was planning to sell its defense-related business through a public stock offering. In each of these cases it seems to have been deteriorating prospects for the divested units, rather than changing patterns of asset specificity or changing estimates of relative managerial competence, that triggered the ownership changes. Existing theories of efficient ownership patterns offer no explanation of why that might occur.

In this paper, we propose a supplement to these existing theories that seems better equipped to help explain both the frequency of changes in ownership and the particular decisions to divest declining units.

3. Influence and Divestitures

Our arguments build on the concept of influence activities and the resulting influence costs (Milgrom, 1988; Milgrom and Roberts, 1990a; 1992). *Influence activities* are attempts to affect the distributive results of organizational decisions: They are the private sector analog of what students of the public sector have labeled rent-seeking behavior. Examples might include an individual employee spending time campaigning for a promotion or a choice assignment, an academic department politicking to gain a larger share of the university's limited number of faculty slots, or a corporate division pushing to have its investment project accepted rather than another division's equally good or better one. *Influence costs* include the resources that are devoted to affecting the distribution of benefits rather than to creating value, the value that is lost when influence results in suboptimal decisions being made, and the degradation in organizational performance that comes from altering policies, decision processes, or organizational structure to limit influence activities or their effects.

Earlier work has already argued that influence costs can depend on organizational boundaries (Milgrom and Roberts, 1990a, 1992; McAfee and McMillan, 1990). In market economies with the sorts of property rights common in the industrialized world, influence costs are typically more problematic within organizations than across organizational boundaries. Senior managers of firms have broad discretion over a wide range of administrative decisions that can create rents and quasi-rents within the organization and shift the distribution of these returns among the organization's members.[8] This means

8. This assertion implies that compensating differentials are not universal within organizations: There are, for example, "good jobs" and "bad jobs" within a single firm, and pay does not adjust to offset these differences. For discussions of this point, see Milgrom (1988) and Milgrom and Roberts (1990a).

there is a motive for the organization's members to attempt to influence their decisions and alter their distributive impact. At the same time, the senior decision makers have to rely on information provided by these same members of the organization, and this ongoing communication creates the opportunity to influence their decisions.

On the other hand, the incentives for executives to redistribute wealth from within the organization to outsiders are clearly limited, and no external agency—even government—has powers to effect comparable redistribution within the firm or, except in very limited circumstances, to force transfers across organizational boundaries. Thus, while interorganizational influence activities are certainly possible, they are of secondary importance in this context.

When a formerly separate organization is merged into another and made subordinate to the second organization's senior executives, new opportunities are created to transfer rents among the units. These new opportunities can lead to increased influence activities and costs. This effect is a cost of merger that can offset whatever coordination or other gains the merger might create. Thus, for example, if an investment bank and a business school were to merge, the finance professors could spend huge amounts of their own time—and that of their bosses—arguing that they are as good as the "rocket scientists" in the bank, that their teaching and research are as important as the bankers' work, and that they should be paid comparably to the bankers. The professors can, of course, make the same arguments without a merger, but—in sharp contrast to the CEO of the merged entity—the dean of the independent business school does not have the power to transfer money from the bankers' paychecks to the professors. Thus, the incentives to attempt such influence are relatively muted by the separation of the two organizations.

Note that—in contrast to many of the other costs that have been proposed as possible disabilities of larger firms[9]—these increased influence costs cannot be completely avoided by decentralization, divisionalization, and an attempted policy of selective intervention. The firm's senior executives always have the right to intervene in the operations of the units, and it is this fact that leads to attempts to influence them to use their power to one or another individual's or group's advantage.

In this paper, we examine how changing business conditions can affect the costs and benefits of influence activities by members of a

9. Such as the increased garbling of information that might occur as the height of the managerial hierarchy grows with the firm's size (Williamson, 1967).

business unit. The result is a changed level of influence costs and, correspondingly, a possible change in the optimal ownership pattern for the unit.

The key idea is that there is a basic asymmetry between growth and decline for units of a firm that operates in multiple businesses. In a business unit where prospects are relatively bad and there is a positive probability of layoffs, any job-related quasirents being received by the members of the unit are at risk. The members may then have incentives to use resources in influence activities aimed at protecting their jobs. In particular, if the endangered unit is part of a larger organization, and there is a possibility of saving jobs by allocating extra resources to the troubled unit, then the unit's members may try to lobby to get those resources allocated. They may emphasize advantages in their own unit and disadvantages in others, perhaps even distorting or concealing information to make the desired reallocation seem efficient. Such influence activities that use up real resources merely to exaggerate or distort information represent a pure drain on efficiency. Of course, if there were no threat of layoffs, the job protection motive for influence activities would be missing.

One way to avoid these influence costs and thereby increase efficiency is to isolate the endangered unit so that it can no longer attempt to claim corporate resources. Doing this while maintaining the unit within the parent firm is impossible because the parent remains liable for any debts the unit incurs and any use it makes of the firm's reputational capital. Managing the unit requires that there be communication channels between the unit and the central office, and these can be used to attempt influence. Moreover, the discretion enjoyed by central office management makes it hard for them to commit to ignoring influence attempts, even then they recognize that these attempts may be occurring.

In effect, then, isolation necessitates divestiture. Indeed, this path was explicitly taken in the spinoffs of Japanese bauxite operations described earlier: "The aluminum producing units have been separated from their parent companies to isolate the problem and the losses, and their production facilities are being steadily reduced."[10] This approach would generate spinoffs, sales to the investing public, and MBOs. It would also generate sales to organizations (such as some LBO firms) that have mechanisms in place to prevent transfers of capital among units.

10. Abegglen and Stalk (1985), page 25. See also Sheard (1991).

Other approaches to controlling influence work by reducing the danger of layoffs or the degree of competition among the units of the firm. The first can sometimes be accomplished by transferring ownership of the unit to another firm that can use the affected employees. For example, if the acquiring firm has successful, growing operations in the business of the threatened unit, it may be able to absorb the unit without layoffs. Even if the acquiring firm's operations are not growing, influence costs may be lower if the units are more focused around a common business, relying on one another for services, because then the competition among them for limited corporate resources may be mitigated.

Of course, to the extent that the original owner's operations were focused on a set of related technologies and products, it might have been in a position to avoid the influence costs by making internal personnel transfers. A less focused firm would be unable to do this because it would have little use outside the threatened unit for the employees' particular, business-specific knowledge and skills.

These arguments suggest that declining and unprofitable units should be overrepresented in divestitures, which accords with the conventional wisdom. The prediction also fits the specific examples cited previously. The arguments further suggest that when units are sold to other firms, the acquiring firms should tend to be already operating in the business of the divested unit. There is some strong evidence that this has been the case during the 1980s.

To test some of these ideas in a more formal way, we have investigated a series of models, one of which is reported here. The models confirm that the effects we have discussed are consistent with the usual economic concepts of rational, self-interested behavior and equilibrium. They also highlight three points not yet mentioned in our general discussion. The first is the possibility of multiple equilibria, that is, the possibility that the exogenous circumstances do not fully determine behavior. In the models, managers' influence activities are caused by their pessimism about the firm's growth prospects. Poor prospects can arise because of exogenous circumstances, but they can also arise endogenously through a vicious circle in which unit managers' fear of a decline leads them to increase influence activities that divert their attention from their managerial tasks and result in poor earnings performance, thus causing the fears to be realized. This first point, though of some relevance to management policy, leads to no special new conclusions about likely patterns of empirical observation.

The second point to emerge from the formal analysis is that, in equilibrium, the influence is ineffective.[11] Corporate top management will understand the unit managers' incentives to distort information and will make allowance for this distortion in interpreting the reports they receive. Thus, the costs of influence do not include an aspect of incorrect corporate decisions being made. Nevertheless, the unit managers will still attempt influence, even though it is costly to them and to the firm, because it is expected, and an honest report will not be seen as such, but rather as a normally exaggerated one about conditions that are actually very bad. This sort of pattern is, of course, familiar from other models of informational asymmetries and communication. Nevertheless, it is clear that such deciphering could be costly and that, more generally, there would be significant efficiency gains if influence could be eliminated. This points to another dimension on which a focused firm may have an advantage: The experience and better knowledge about individual units' businesses that the focused firm's senior executives would have may facilitate their seeing through attempts at influence. With the responsiveness of corporate decisions to influence decreased, the level of influence attempted may be less.

The third feature to emerge from formal modeling is more unexpected: Although influence activities aimed at protecting jobs are uniquely associated with potentially declining businesses, it is not generally true that these influence costs are greater, the greater the likely rate of decline. In one model that we have studied, we found that rapid decline reduces the rents and quasirents associated with continued employment. This had the effect of making employees less willing to expend personal resources on influence as their unit's prospects worsened, because the jobs just are not as valuable. To see if this *job value effect* is the only source of nonmonotonicity, the model formulated in the next section excises it by assuming that the firm's environment is stationary and that employee welfare is determined (at the time of hiring) by a competitive labor market.

Even so, a monotone relationship cannot be expected in general. The reason is technological: In a rapidly declining organization, marginal changes in the firm's estimate of the unit's prospects may have less effect on its employment decision than in a less rapidly declining one. This means that the potential returns to influence may be smaller at the margin when the prospects are worse, and so again there is

11. This is in contrast to rent-seeking in the public sphere. For example, Baldwin (1989) notes the frequency with which declining industries receive trade protection.

little reason to absorb personal costs in attempting to influence perceptions. To eliminate this *technology effect* as well, we analyze the special case of a linear profit function, where the marginal effects of changing prospects on employment are unaffected by the rate of growth or contraction. For this case, with both the job value and technology effects set at zero, we do obtain the comparative statics result that the extent of influence activities and the associated losses increase monotonically when the organization's environment deteriorates.

Nevertheless, it should be accentuated that the fundamental result—that the prospect of decline creates costs that would otherwise be absent—is robust: It appears in all the models.

4. The Model

We analyze the interaction between the owners or top management of a multidivisional firm ("the firm") and the management team of one of its divisions ("the managers"), focusing on how changes in the division's growth prospects affect the managers' behavior and the resulting performance of the division.

We assume that there is a competitive market for identical managers with a reservation wage of v per period. Managers who lose their jobs incur a cost for job search and relocation that is equivalent in flow terms to k per period, so that the net value received by a manager who becomes unemployed and must enter the market is $v - k$ in flow terms. The difference k between the actual expected wage and the value of being unemployed is a quasirent that exposes a manager to a potential holdup. For example, if the firm were to refuse to pay more in expectation than $v - k$ per period, the manager would still not find it worthwhile to quit.

The simplest way to mitigate the holdup problem would be for the firm to commit to make a separation payment equal (in flow terms) to the relocation costs k to any managers who become unemployed. This would eliminate the quasirents and the incentives for influence. However, such a scheme would be beset with other problems. For example, the firm might be reluctant to make the payment to anyone who quits or is fired for cause, especially because the threat of losing k can provide useful (but here unmodeled) incentives to provide effort and reduce turnover. Yet, it may be very difficult for third parties to distinguish quits from firings,[12] and so we assume that such separation payments are not feasible.

12. See, for example, Carmichael (1983) on this point.

Instead we assume that, to mitigate the holdup problem, the firm makes two kinds of commitments to its newly hired managers through a long-term contract. First, it specifies a wage w that must be paid as long as the manager remains employed. Second, it commits never to remove a member of the management team except for misbehavior or in a period when the work force is being contracted. In our model, the second commitment costs the firm nothing. In addition, we assume that the firm treats managers symmetrically so that members of the management team have common interests. This allows us to focus on the conflict between the firm and the managers, rather than on the one among the managers themselves.[13] Finally, the firm commits to firing managers who are caught misbehaving.

In this context, the wage w offered by the firm will coincide with the reservation wage v only if long-term employment is completely secure and there are no other disadvantages to the job. At equilibrium, the wage w will be determined as v plus compensation for the expected job-related and turnover costs that the employee expects to bear.

Once the managers are employed, they engage the firm in an ongoing game that lasts for the whole period of employment. In each period t of the game, the firm chooses the number of managers N_t to employ in the division for the period, and managers choose how much effort i_t to expend in attempts to influence the firm's *next period* employment decision. The firm's payoff from its employment decision in period t depends on the outcome of an exogenous shock θ_t, where θ_t directly parameterizes the firm's marginal return to employing a larger pool of managers, that is, the marginal return is an increasing function of θ_t. We assume that $\theta_1, \theta_2, \ldots$ are independent and identically distributed and drawn from a distribution that is common knowledge among all the managers and the firm. The support of the distribution is some finite interval $[\bar{\theta}_l, \bar{\theta}_h]$.

The firm receives information about the prospects θ_t for period t in the form of a signal $s_t = \theta_t + i_{t-1}$, generated by the managers. The i_{t-1} term is the level of influence effort exerted by each of the managers who are employed in period $t - 1$; this influence effort is not directly observed by the firm. The firm cannot commit to how it will respond to the signal s_t. At a pure strategy equilibrium, the firm can be regarded as producing an estimate $\hat{\theta}_t = s_t - \hat{i}_{t-1}$ of θ_t by adjusting the

13. There could also be a conflict among the managers in the unit who may be in competition to save their jobs. This, too, would be present only in a declining organization.

observed signal for some conjectured level of influence $\hat{i}_{t-1}$ and basing its decision directly on $\hat{\theta}_t$. Of course, at a pure strategy equilibrium $\hat{i}_{t-1} = i_{t-1}$ and $\hat{\theta}_t = \theta_t$: No one is fooled. These are, however, properties of the equilibrium, not identities, and they do not constrain individual action.

In each period $t - 1$, the currently employed managers act as a team in choosing a common level of influence effort $i_{t-1} \in [0,I]$. They make their joint choice before observing the realization of θ_t. The managers' incentives to exert influence derive from their ability to affect the firm's estimate of its prospects, $\hat{\theta}_t = \theta_t - \hat{i}_{t-1} + i_{t-1}$, by exerting more influence i_{t-1} at the margin than expected and thereby increasing the probability of being retained and collecting quasirents in the future. Influence activities do impose two types of costs on managers, however. First, they require the expenditure of effort or other personal resources, represented by the continuous and nondecreasing function $C(i)$. Second, a manager engaging in influence i diverts attention from other managerial activities, leading to probability $1 - q(i)$ of being caught and fired for failing to attend to the job, where $q(\cdot)$ is continuous and nonincreasing. Managers who are fired or laid off incur the turnover cost k. We assume that at least one of C or q is strictly monotone, so that influence activities do impose some cost on the managers.

The time line for this game is shown in Figure 1, with the t indicating the period of employment. Figure 1 shows the order of actions to be taken and when information arrives. We have treated the estimate $\hat{\theta}_t$ in the time line as if it were an action chosen by the firm before misbehavior is observed and punished. To keep the notation simple, we will treat the number of managers caught and fired as a deterministic function of i_{t-1} in the payoff calculations, but we do not wish to suppose that the firm can infer i_{t-1} from that number. Our assumption that the firm's estimate is made before misbehavior is detected is a mere formalism to represent our assumption that the firm makes no inferences about influence activities from data about managers found neglecting their work.[14]

14. This assumption can be made into a conclusion by reformulating to allow the number of managers caught misbehaving and the associated losses to be stochastic with their support independent of i. Then, at a *pure strategy equilibrium*, the firm would ignore this information in drawing its conclusions about i. The reason is that it would start its analysis with prior beliefs about i represented by a point mass at the equilibrium value and would then make an observation consistent with that value. In this variation of the model, $q(i)$ and $L(i)$ would be understood to be the *expected* fraction of managers fired and the *expected* firm losses from influence, respectively.

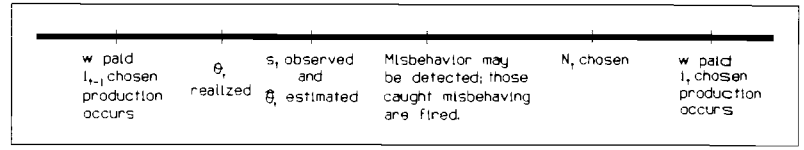

FIGURE 1. TIME LINE FOR THE REPEATED GAME.

Expansions and contractions in the managerial work force made in response to the forecast $\hat{\theta}_t$ have asymmetric effects on the managers' payoffs. Reductions in employment are costly to managers, because they deprive them of the job-related quasirents k or, equivalently, force them to bear the moving cost k, while expansions leave these quasirents unchanged.

Let $M_{t-1} = N_{t-1}q(i_{t-1})$ be the number of experienced managers on hand at the start of period t and $N_t(\hat{\theta}_t,M_{t-1})$ the number of managers employed in period t as a function of the firm's estimate $\hat{\theta}_t$ and M_{t-1}. Let $x_t(\hat{\theta}_t,M_{t-1}) = N_t(\hat{\theta}_t,M_{t-1})/M_{t-1}$. When the managers exert influence i_{t-1} in period $t - 1$, the probability of being still employed ("retained") in period t is given by $r_t(i_{t-1};x_t) = q(i_{t-1})[\alpha + (1 - \alpha)E_{t-1}\text{Min}\{1,x_t\}]$, where α is the probability that a manager no longer useful in the current division is reassigned elsewhere in the firm. In this expression, $q(i_{t-1})$ is the probability that the manager is not fired for malfeasance and $\alpha + (1 - \alpha)E_{t-1}\text{Min}\{1,x_t\}$ is the conditional probability that a manager who is not fired is retained somewhere in the company. The expectation is computed by the managers taking i_{t-1} as given but regarding θ_t as random.

Under the assumptions on the firm's technology made later, there will exist *stationary equilibria* in which the periodic strategy i_{t-1} is independent of time and $x_t(\cdot)$ is independent of both time and the state variable M_{t-1}. With contractual wages constant over time, the value to a manager of remaining employed will then be constant at v. We can then write the managers' problem of choosing i in period t as:

$$v = \max_i (1 - \delta)(w - C(i)) + \delta[r(i;x)v + (1 - r(i;x))(v - k)] \qquad (1)$$

where δ is the time discount factor. In the current period, the manager receives the wage w and incurs the personal cost of influence $C(i)$. If a manager is retained in the next period, he receives value v. If he is released, either because he has been caught misbehaving or because of a layoff, he reenters the labor market where the expected wage, net of moving costs, is $v - k$.

Notice that the weights in eq. (1) on the present and future payoffs are $1 - \delta$ and δ, respectively. This weighting expresses pres-

ent values in equivalent flow terms, making them easy to compare to periodic payoffs. The corresponding values as stocks can be found by dividing through by $(1 - \delta)$. We use the flow representation in all our calculations later.

Next, we describe the firm's choice of employment in each period. Let the firm's revenue in period t be $N_t\pi(\theta_t, N_t/M_{t-1})$, where π is increasing in its first argument and decreasing in its second. The dependence of π on the ratio N_t/M_{t-1} represents the idea that experienced managers are repositories of knowledge about the organization's routines and business practices, so the smaller the number of available experienced managers M_{t-1} relative to the total number of managers currently needed N_t, the lower the revenue per manager.

Influence activities by managers are costly to the firm in several ways. First, the diversion of managerial attention to influence activities imposes a loss of $L(i)$ per manager on the firm, where L is a nonnegative, increasing function. In addition, firing those caught in the diversion reduces the number of experienced managers available. Finally, the wage the firm pays must compensate the managers for any anticipated influence activities [see eq. (1)].

Suppose the firm conjectures in period t that the managers will engage in influence $\hat{\imath}$ in period t. Then the firm's problem has two parts. It first forms an estimate $\hat{\theta}_t$ and then chooses an employment level N_t to solve:

$$\underset{N_t}{\text{Max}}\ (1 - \delta)N_t\left(\pi\left(\hat{\theta}_t, \frac{N_t}{M_{t-1}}\right) - w\right) + \delta W_t(N_t, \hat{\imath}) \tag{2}$$

The value function $W_{t-1}(N_{t-1}, i_{t-1})$ is determined recursively on the assumption that the firm's estimate $\hat{\theta}_t$ is correct and that the managers' influence in the current period is i_{t-1}:

$$W_{t-1}(N_{t-1}, i_{t-1}) = -(1 - \delta)N_{t-1}L(i_{t-1}) + \underset{N_t(\theta_t, M_{t-1})}{\text{Max}}\ E\left[(1 - \delta)N_t \times \left(\pi\left(\theta_t, \frac{N_t}{M_{t-1}}\right) - w\right) - \delta W_t(N_t, \hat{\imath})\right] \tag{3}$$

We assume that the discount factor δ, the revenue function π, and the distribution of θ are such that even if $\hat{\imath}$ were fixed at zero, the infinite-horizon value of the firm's problem would be finite. Note again that these payoffs are expressed in flow terms.

To describe a stationary equilibrium, suppose the managers choose the same level of influence, $\hat{\imath}$, in each period. Let $F(i_t) = W_t(N_t, i_t)/N_t$ be the firm's per capita payoff and let $F = F(\hat{\imath})$. Dividing eq. (3) by N_{t-1}, substituting x and F, and dropping the time subscripts yields the recursion:

$$F = -(1 - \delta)L(\hat{\imath}) + q(\hat{\imath})\ \underset{x(\theta)}{\text{Max}}\ E\{x[(1 - \delta)(\pi(\theta, x) - w) + \delta F]\} \tag{4}$$

The firm's optimal x is a solution to the maximization problem in eq. (4).

We will study pure strategy stationary equilibria of the model, that is, strategy combinations for which the following five conditions are satisfied:

1. The firm's stage game strategy $x^*(\cdot)$ and the managers' stage game strategy i^* are independent of time and history.
2. In each period, $x^*(\theta)$ is optimal for the firm, given the wage w and its future payoff F [that is, $x^*(\theta)$ solves the maximization in eq. (4)].
3. In each period, i^* is collectively optimal for the managers, that is, i^* solves eq. (1) given $x = x^*$.
4. The conjectures held by the firm are correct, that is, $\hat{\theta} = \theta$ and F satisfies eq. (4) with $\hat{\imath} = i^*$.
5. The wage offer w clears the market [solves eq. (1)]:

$$w = v + C(i^*) + \frac{\delta}{1 - \delta}[1 - r(i^*; x^*)]k \tag{5}$$

5. Results

Our first conclusion is an easy one:

Proposition 1: *If, at equilibrium, $x^*(\hat{\theta}) \geq 1$ for all $\hat{\theta}$, then $i^* = 0$.*

Proof. Under condition 4 with $x^* \geq 1$, $r(i; x^*) = q(i)$. It then follows from eq. (1) that the managers' payoff is a decreasing function of i. With condition 3, this establishes that $i^* = 0$. □

Within this model, influence costs are a problem only for organizations that are at risk of experiencing a decline in employment. Only then do employees have quasirents to protect that make it worth their while to bear the personal costs of politicking and to risk being fired.

Notice, however, that the hypothesis of the theorem is a statement about the endogenous decision rule $x^*(\cdot)$—not a statement about the distribution of the parameter θ. It is possible that there may be multiple equilibria of the game, even when one of them involves no chance of layoffs. The firm may expect high levels of influence in the future, leading it to reduce its estimate of the value of maintaining

the firm's size, thereby encouraging the very influence activities that it fears. Of course, given condition (V), the managers' payoffs are equal to the same constant v in equilibrium. So, the equilibrium that maximizes the firm's welfare is weakly Pareto preferred. There are real issues of how the firm's management can exercise effective leadership in reaching the most preferred equilibrium, but we set those aside here. Instead, we adopt the view of equilibrium as a self-enforcing agreement and of stationary equilibrium as a kind of renegotiation-proof solution concept. Then, it is natural to focus on the Pareto-preferred equilibrium as the one the firm would have chosen at the time of initial contracting and make it the basis for our comparative statics analysis.

It is not hard to construct examples of π functions for which the firm's equilibrium choices of x are relatively insensitive to variations in its estimate of $\hat{\theta}$ when $\hat{\theta}$ is small. In that case, influence activities may be lower in a firm with poor prospects than in one with better prospects, where prospects are ordered by first-order stochastic dominance on the distribution of θ. This is what we earlier dubbed the technology effect.

The model already excludes the job value effect, because the value v is taken to be independent of the firm's prospects. To examine whether the technology effect and the job value effect together exhaust the reasons why influence costs may be lower in a rapidly declining organization in our model, we specify a linear form for the technology: $\pi = A\theta - Bx$. This will imply that the responsiveness of the firm to changes in its estimate $\hat{\theta}$ is equal across the whole range of $\hat{\theta}$ values. Indeed, using eq. (4), we have:

$$x(\theta) = \frac{A}{2B}(\theta + \tilde{x}) \tag{6}$$

where:

$$\tilde{x} = \frac{1}{A}\left[\frac{\delta}{1-\delta}F - w\right] \tag{7}$$

If the firm's conjecture about each manager's influence efforts is i^*, a manager's probability of being retained is $q(i)[\alpha + (1-\alpha)R(i + \tilde{x} - i^*)]$, where:

$$R(i + \tilde{x} - i^*) = E\{\text{Min}[1, \frac{A}{2B}(\theta + i + \tilde{x} - i^*)]\} \tag{8}$$

The integrand in this expression is concave because it is the minimum of two linear functions of $i + \tilde{x} - i^*$. Hence, its expectation is concave, as well.

Denoting a manager's payoffs by $P_m(i;\tilde{x} - i^*,\alpha)$, we have:

$$P_m(i;\tilde{x} - i^*,\alpha) = (1-\delta)(w - C(i)) + \delta\{(v-k) + q(i)[\alpha + (1-\alpha)R(\tilde{x} + i - i^*)]k\} \tag{9}$$

The comparative statics of the managers' choice of i plays an important role in the analysis below, so we treat it next. To reduce ambiguity, we assume that the manager chooses the smallest i consistent with maximization of eq. (9).

Observe first that the managers' optimal choice of i in eq. (9) does not depend on the current wage w or, given the value of $\tilde{x} - i^*$, on F. From the concavity of R and the assumption that q is decreasing, one can deduce that $\tilde{x} - i^*$ inversely parameterizes the marginal return to i in P_m, that is, a decrease in the parameter $\tilde{x} - i^*$ raises the incremental returns to influence i. (For the differentiable case, one can show this by checking that $\partial^2 P_m/\partial i \partial(\tilde{x} - i^*) \leq 0$.) It follows by Topkis's Theorem[15] that the optimal choice of i is a nonincreasing function of $\tilde{x} - i^*$. For the comparative statics in α, consider the parameter-scaled objective function $P_m(i;\tilde{x} - i^*,\alpha)/(1-\alpha)$, which obviously has the same maximizer as P_m when $\alpha < 1$.[16] Again, one can verify that α inversely parameterizes the marginal return to i (because C is increasing and q is decreasing), so the optimal choice of i is a nonincreasing function of α.

We are now ready to state and prove our main propositions.

PROPOSITION 2: *The model with $\pi = A\theta - Bx$ has at least one equilibrium. Among the equilibria, there is one with the lowest wage, the lowest level of influence, the highest value of $\tilde{x}$, and the highest value of F.*

Proof. Define a map $T: \mathbb{R}^4 \to \mathbb{R}^4$ that takes any initial specification of the four-tuple $(-F, -\tilde{x}, i^*, w)$ into another such specification as follows. Let the first two variables be determined by eqs. (4) with $\hat{\imath} = i^*$ and (7), where the equals signs are regarded as function definitions. Let i^* be determined as the smallest i that maximizes eq. (9). Finally, define the map for w by eq. (5), substituting for x^* from eq. (6), as follows:

$$w = v + C(i^*) + \frac{\delta}{1-\delta}\left(1 - q(i^*)\left\{\alpha + (1-\alpha)E\{\text{Min}[1, \frac{A}{2B}(\theta + \tilde{x})]\}\right\}\right)k \tag{10}$$

By construction, any fixed points of T are the equilibria of the model.

Notice that we have specified the firm's value $-F$ and the strategy variable $-\tilde{x}$ in this mapping with negative signs. With this sign

15. See Milgrom and Roberts (1990b).

16. The method of parameter-dependent transformations for comparative statics analysis was introduced by Milgrom and Shannon (1991).

convention, by the earlier comparative statics analysis of the managers' choice and by inspection for the other components, T is a nondecreasing function of its four arguments. Observe that regardless of the arguments of T, w lies in $[v, v + c(l) + k\delta/(1 - \delta)]$; i^* is bounded by assumption; $F \in [-L(l), \text{Max } x(\pi(\bar{\theta}_n, x) - v)]$; and $\bar{x}$ inherits its bounds from these. Therefore, the mapping T is a nondecreasing map from a given interval into itself. Hence, by Tarski's Fixed Point Theorem, it has a fixed point and, indeed, a fixed point that is smallest in every component. □

There are two comparative statics conclusions regarding this equilibrium that we wish to emphasize. Note that obtaining these involves examining how the fixed points of a mapping from an interval in $\mathbb{R}^4$ into itself change with a parameter. The idea is that the function is monotone increasing, so that if it shifts upward, so do the fixed points. The formal argument follows from the following lemma, borrowed from Milgrom and Roberts (1990b).

LEMMA: *Let $T_\nu(z)$ be a function from an interval $[\bar{z}_l, \bar{z}_u]$ into itself, and suppose that T is nondecreasing in both z and the real parameter ν. Let $z^*(\nu)$ be the largest (smallest) fixed point of T_ν. Then $z^*(\nu)$ is nondecreasing in ν.*

Proof. We prove the lemma for the largest fixed point. The proof for the smallest fixed point is similar.

Let $\nu < \nu'$. Then $T_{\nu'}(z^*(\nu)) \geq T_\nu(z^*(\nu)) = z^*(\nu)$, so $T_{\nu'}$ maps $[z^*(\nu), \bar{z}_u]$ into itself. Hence, it has a largest fixed point $z^*(\nu') \geq z^*(\nu)$, and that is also the largest fixed point of $T_{\nu'}$ on the original interval. □

The first main comparative static exercise is to investigate what happens when the distribution of θ increases stochastically. It is this comparative static that establishes our claim in the introduction that the job value and technology effects are the only ones that might prevent influence costs from being more intense in less favorable business conditions.

PROPOSITION 3: *A first-order stochastic increase in the distribution of θ alters the high F equilibrium as follows: It leads to higher values of F, lower wages w, less influence i, higher values of $\bar{x}$, and higher equilibrium values of $x(\theta)$ for every realization of θ. (Words like "higher" and "lower" are understood to mean weak inequality).*

Proof. Let ν parameterize the distribution of θ and let T_ν denote the mapping used in the proof of Proposition 2. By inspection, T_ν is nondecreasing in ν, so the lemma applies. □

The second key comparative static is the one concerning α, which is the variable we have used to describe the firm's ability to absorb workers who are displaced from one division in another division.

PROPOSITION 4: *An increase in α alters the high F equilibrium as follows: It leads to higher values of F, lower wages w, less influence i, higher values of $\bar{x}$, and higher equilibrium values of $x(\theta)$ for every realization of θ.*

Proof. Apply the lemma with $\nu = \alpha$. □

Our modeling has assumed that corporate management has the flexibility to transfer resources into or out of the particular division being studied. This flexibility is represented by the ability to adjust the employment level in response to the information that the division managers provide about its profit prospects. The benefits of this flexibility are accompanied by the costs of influence activities when there is a possibility of decline.

The costs could be avoided if the firm could prevent manipulative communication between division managers and top management about the division's prospects. As argued earlier, however, suppressing such communication could be very difficult. The ongoing tasks of managing the unit as a part of the corporation require that there be communication channels between the division and head office. It will be difficult to prevent the division managers from using these to convey information about their unit's prospects, and very difficult for the top managers to commit not to use any information that does get through to them.

A more effective method for the firm to avoid these influence activities is to divest the division to create a free-standing business, as through a spin-off, a sale to the public through a stock offering, or an MBO. Of course, if the managers were to respond to the sell-off by expending comparable levels of resources in trying to persuade the capital market that the new firm's prospects were better than they are, then there would be no efficiency gain. Moreover, if this behavior was forecast, the firm could gain nothing for its owners through the divestiture. However, it seems likely that the capital market may be less subject to influence at the margin than was corporate management. Indeed, as recent work on financial contracting has indicated,[17] often the independent firm might expect to be completely unable to tap the

17. For example, Stiglitz and Weiss (1981), Gale and Hellwig (1985), and Myers (1977) explain why firms might be unable to borrow. Greenwald et al. (1984) make a similar argument about why firms might be unable to issue new equity.

outside capital markets, and even when it can, the moral hazard problems faced by providers of outside finance make it likely that they will be quite unresponsive to unverifiable information that management might provide about future prospects. In terms of our model, this means that the x function after separation would be much less sensitive to $\hat{\theta}$, and perhaps completely unresponsive. This effect ought to limit influence activities and costs after divestiture. A similar analysis would apply if the unit were sold to an organization that is set up to prevent new capital infusions into its units.

More formally, we analyze the performance of the divested unit by changing the model in only one simple respect: We assume that the x_t chosen in any period can no longer depend on reports about θ_t, but only on the time-invariant, commonly known distribution of θ_t. Incentives for influence are thus entirely eliminated, but at the cost of making the division's size unresponsive to transient shocks. Henceforth, we refer to this mode of managing as the *N mode* (for "no influence") and the previous, interactive modes as the *I mode* (for "influence").[18]

To show that divestiture can become value enhancing when the distribution of θ worsens, we examine the effect of such a change in the distribution on the owners' payoffs per manager, F^N and F^I, in the N and I modes, respectively. Note that the value change experienced by the owners is the only relevant effect for efficiency analysis because, at equilibrium, the managers always receive the market-determined value v. We focus on changes in the distribution that leave its shape unchanged, that is, we write $\theta = \bar{\theta} + \epsilon$, where $\underline{\epsilon} \leq \epsilon \leq \bar{\epsilon}$ and $E\epsilon = 0$, and we let the constant $\bar{\theta}$ vary. In the N mode, let w^N be the wage and x^N the (time-invariant) fraction by which employment contracts or expands each period. Assume $q(0) = 1$ and normalize so that $C(0) = L(0) = 0$ and $A = 1$. For simplicity, we evaluate only the case where $\alpha = 0$.

Then, when $\pi = \theta - Bx$, F^N and w^N solve

$$F^N = \underset{x^N}{\text{Max}}\ x^N[(1 - \delta)(\bar{\theta} - Bx^N - w^N) + \delta F^N] \tag{11}$$

and

$$w^N = v + \frac{\delta}{1 - \delta}\,\text{Max}[0, 1 - \frac{1}{2B}\,(\bar{\theta} + \frac{\delta}{1 - \delta}\,F^N - w^N)]k. \tag{12}$$

18. The N mode is perhaps a better representation of a firm that has been spun off, sold through a public offering, or sold to a firm that is not subject to influence than of one that has gone through an MBO, because we continue to assume that the owners, who set the employment level through capital allocations, are distinct from the managers.

Arguments analogous to those used to prove Propositions 2 and 3 then establish:

PROPOSITION 5: *In the N mode with $\pi = \theta - Bx$, there is at least one equilibrium. Among the equilibria is one with the highest value of F^N, the lowest w^N, and the highest x^N. An increase in $\bar{\theta}$ changes the equilibrium with the maximum F^N by increasing F^N, decreasing w^N, and increasing x^N.*

Henceforth, the term *equilibrium* applied to either mode will refer to the equilibrium with the highest value of F^I or F^N.

Inspection of eqs. (11) and (12) reveals that an increase in $\bar{\theta}$ increases F^N directly and, if it causes w^N to fall, indirectly as well. The direct effect is larger the larger is x^N. The indirect effect is absent if $x^N \geq 1$, because then $w^N = v$. Straightforward calculations (using the formula for the optimal value of x and the fact that if $x^N = 1$ then $F^N = \bar{\theta} - v - B$) show that $x^N \geq 1$ if $\bar{\theta} \geq v + B(2 - \delta)$.

Now consider the effect of an increase in $\bar{\theta}$ on F^I, the owners' payoff per manager in the I mode, where the unit is not separated from the rest of the firm. From eq. (4), the direct effect depends on $q(i^*)Ex^*(\theta)$ in exactly the same way that the direct effect on the N mode depends on x^N. There are also several indirect effects. From eq. (10) an increase in $\bar{\theta}$ reduces w^I, which in turn increases F^I. Also, when $\bar{\theta}$ increases, the value of i that maximizes eq. (9) falls which reduces $L(i)$, $C(i)$, and w and increases $q(i)$; all of these changes raise F^I. It therefore follows that if $q(i^*)Ex^*(\theta) > x^N$ and $x^N > 1$, then both the direct and indirect effects of an increase in $\bar{\theta}$ are larger than in the I mode than in the N mode. Hence, under these conditions, a fall in $\bar{\theta}$ decreases the difference $F^I - F^N$: The relative attractiveness of the N mode (compared to the I mode) increases as the unit's prospects worsen.

As already noted, x^N will exceed 1 if $\bar{\theta}$ exceeds $v + B(2 - \delta)$. The condition that $q(i^*)Ex^*(\theta)$ exceed x^N is also met if $\bar{\theta}$ is sufficiently large. To see this, define $\bar{\theta}^0$ to satisfy $x^*(\bar{\theta}^0 + \underline{\epsilon}) = 1$, so that $\bar{\theta}^0$ is the smallest value of $\bar{\theta}$ such that, in the I mode, the division's managers have no reason to fear for their jobs. For values of $\bar{\theta} > \bar{\theta}^0$, $w^I = v \leq w^N$ and $i^* = 0$, so $F^I > F^N$, reflecting the value of being able to adapt x to information about prospects in the I mode. Because $x^N = (\bar{\theta} - w^N + \delta F^N/(1 - \delta))/2B$ and $q(i^*)Ex^*(\theta) = (\bar{\theta} - v + \delta F^I/(1 - \delta))/2B$, $x^N < q(i^*)Ex^*(\theta)$ follows.

If θ has a continuous distribution and the q, C, and L functions are all continuous and have zero derivatives at zero, then the equilibrium value of F^I falls and that of w^I rises as $\bar{\theta}$ falls below $\bar{\theta}^0$, because the managers now fear for their jobs and so exert influence. If, in addition, $\bar{\theta}^0 > v + B(2 - \delta)$, then there will be an interval of values for $\bar{\theta}$ below $\bar{\theta}^0$ in which both $x^N > 1$ and $x^N < q(i^*)Ex^*(\theta)$ continue to hold. Thus, as

influence costs begin to mount with a decline in the unit's prospects, the attractiveness of the N mode relative to the I mode increases.

Increases in the direct costs of influence to the firm's owners, $L(i)$, and increases in the turnover costs k when $v + B(2 - \delta) < \bar{\theta} < \bar{\theta}^0$ both increase the likelihood that a fall in $\bar{\theta}$ will make separation preferable. From eq. (4), an increase in $L(i)$ for $i > 0$ reduces the equilibrium value of F^I but leaves F^N unchanged. When $\bar{\theta} < \bar{\theta}^0$, an increase in k raises i^* and w^I and so reduces F^I,[19] but so long as $\bar{\theta} > v + B(2 - \delta)$, then $x^N \geq 1$, so $w^N = v$, and the value of F^N is independent of k.

So far we have yet to demonstrate conclusively that F^N can actually exceed F^I, although we have shown that falls in $\bar{\theta}$ and increases in k and in $L(i)$ increase the relative attractiveness of divestiture. To establish this, we make use of a second virtue of the N mode beyond its eliminating influence.

From equation eq. (10), it is evident that a mean preserving reduction in the variability of x reduces the wage the firm must pay and so raises the division's value. In effect, it is as if the managers are risk-averse with respect to variations in θ, because they enjoy no marginal benefit when an already high θ increases further but experience a loss when a low value of θ falls. This effect can be so strong that F^N may even exceed the value of the unit under the hypothetical regime in which the top management observes θ directly and so can adjust x without any influence costs being incurred. In such a situation, it is *a fortiori* the case that F^N exceeds F^I.

An example of this case is the following. Let ϵ take on each of the two values D and $-D$ with probability $\frac{1}{2}$, where $D < B$. Let $\bar{\theta} = v + B(2 - \delta)$, so that $x^N = 1$. Then one can calculate that there is a value $k(D) > 0$ for the moving costs such that if $k > k(D)$, then F^N exceeds the value in the hypothetical case. (The value $k(D)$ is decreasing in D and goes to zero as $D \to 0$.) Then, as $\bar{\theta}$ falls from $\bar{\theta}^0$ toward $v + B(2 - \delta)$, the difference $F^I - F^N$ goes from positive to negative: Divestiture becomes preferable.

6. Conclusion

Divestitures are an important economic phenomenon. We have explored one reason for them: to avoid the influence costs that arise when managers' jobs are threatened by the prospect of possible layoffs. This explanation helps account for the fact that divestitures are more common among divisions with poor growth prospects. It also helps account for the pattern that when divested units are bought by other firms, the acquirers tend to be in related businesses. The arguments also suggest an advantage of corporate focus.

The influence cost approach generates a number of additional implications that are not incorporated into our model. One is that, once the inevitability of a reduction in employment becomes known, it is best to act quickly and decisively, thereby limiting the time over which influence can be attempted and the corresponding costs incurred.[20] Another is that, if top management's forecasts are used by employees both for decision making in the organization and for personal decisions about influence attempts, it may pay top management to deter influence by making excessively rosy predictions in bad times to signal that things aren't really so bad.[21] The whole set of predictions fits the stylized facts well and highlights the advantages of influence cost theory for explaining economic behavior in declining units of organizations.

There are, of course, many features of divestitures and organizational politicking that we have not treated here. Two of these are particularly worth mentioning. First, we have modeled the influence costs that arise when the unit is within the larger organization and would be avoided if the unit were divested and run as a separate organization. We have interpreted these as a reason for preferring the latter mode, but we have not treated the influence costs that would arise when the mode choice is being made. In general, if different organizational forms ultimately give rise to different distributions of costs and benefits for their participants, then we should expect that the choice of organizational form will itself be the subject of influence activities. Thus, for example, there might be severe politicking when the divestiture decision is being made, for example, to attempt to ensure that the unit is sold to another firm that can use the unit's managers, rather than, for example, spun off as a stand-alone operation, where their jobs are threatened.[22] These activities could be interestingly modeled, and, more generally, it would be worthwhile to study the nature and effects of influence activities aimed at affecting the choice of organizational structure.

19. To see this, transform eq. (9) by dividing through by k (which leaves the maximizing value of i unaffected), then note that the only interaction between i and k is through the term $C(i)/k$. In the modified problem, an increase in k lowers the marginal cost of i and so leads to an increase in i.

20. This conclusion emerges from a model in which there is a one-time change in the optimal size of the firm and employees compete among themselves to keep their jobs.

21. A simple signaling equilibrium model generates this conclusion.

22. In some circumstances, the firm might be able to limit influence activities by committing itself to provide outplacement services for employees or to sell only to firms who are expected to maintain employment near its current levels.

Second, as we noted earlier, firms do in fact sometimes divest fast-growing, profitable units. Although our present treatment does not address this phenomenon, it appears that influence costs might have an important role here as well. Units with especially good prospects generate lots of rents, for example, in the form of superior promotion opportunities. These would be the object of influence activities arising in other units of the firm whose members would like to have these opportunities for themselves. The arguments of Milgrom and Roberts (1990a, 1992) about how influence costs can account for the frequent failure of acquisitions of small, innovative, fast-growing firms by larger, more traditional ones might thus be turned around to suggest that influence costs may be avoided by spinning off winners. Exploring this possibility in a formal model would be worthwhile.

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