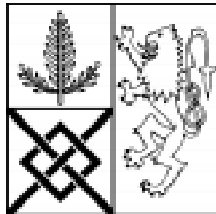


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Shareholder Interests, Human Capital Investment and  
Corporate Governance

John Roberts  
Eric Van den Steen

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# Shareholder Interests, Human Capital Investment and Corporate Governance<sup>1</sup>

John Roberts and Eric Van den Steen  
Stanford Graduate School of Business  
Stanford, CA 94305-5015 USA

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## ABSTRACT

Corporations simultaneously claim that human capital is increasingly important to their success and that they seek to maximize shareholder value. This paper studies the relationship between these two developments. We show that the pursuit of shareholder interests may require ceding a role in corporate governance to employees in order to motivate their investing in firm-specific human capital. Doing so becomes more attractive as these investments increase in importance. This result also bears on the debate about reforming European and Japanese governance systems in the direction of the American system, reducing employees' influence. In this context, we present a model on the optimal choice of governance systems, along ideas suggested by Holmström.

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<sup>1</sup> Many of the ideas developed here emerged in discussions with Jonathan Day and Bengt Holmström. We are indebted to them and to the participants in the First Humboldt University Forum on Economics and Management and in seminars at the Stanford GSB, the London School of Economics, the University of Toulouse, and Cambridge University. Roberts was a visitor at Nuffield College, Oxford, and McKinsey & Company while working on this paper, and he thanks both institutions for their hospitality. Van den Steen gratefully acknowledges financial support from ICM/CIM.

“People and the knowledge they create are our company’s most important assets.”

“Our primary corporate goal is the maximization of shareholder value.”

Statements akin to each of these seem to feature in every public pronouncement from a major corporation these days, at least in the Anglo-American economies. But how do these fit together? What are the implications of an increasing importance to firm-specific human capital for corporate governance? Does pursuit of shareholder value mean that governance should be solely in the hands of the loyal and diligent representatives of the shareholders? Or, perhaps, if employees are so important, should shareholders be willing to grant them an explicit role in governance? If so, what are the implications for the current international debate about the desirability of increasing the focus on shareholder value in European and Japanese governance systems? These questions are the subject of this paper.

## 1. INTRODUCTION

Whose interests should count in deciding how the corporation will be run? A remarkably widely espoused consensus has emerged on this issue in the United States in the last decade: Shareholders’ interests are paramount. Two decades ago few corporation executives would have said that their primary responsibility was to increase shareholder value. Now they are loath to say anything else. Further, the mechanisms of corporate governance are now largely aligned to ensure that shareholders’ interests actually do get primacy. The majority of the members of corporate boards are now “independent,” and these non-executive directors dominate boards’ nomination, audit and compensation committees. Activist investors such as CalPERS have access to and influence over boards and executives. Increased transparency in reporting has facilitated monitoring by investors both large and small. Most notably, executive compensation has become highly responsive to share price performance.

While perhaps most developed and best accepted in the US, shareholder capitalism is also well established in the other major English-speaking economies. Moreover, it seems it may now be spreading to other advanced economies, including ones that have traditionally adopted very different models of corporate governance. Germany and Japan are the most notable examples. In both countries, leading executives are calling for adoption of more American-style corporate systems, arguing that this is necessary if they are to compete in increasingly global capital markets. Moreover, the market for corporate control, which provided the initial mechanism for US shareholders to assert dominance, finally seems to be beginning to emerge in these countries as well.

At the same time, it is widely perceived that human capital is becoming more important in production. It seems every firm claims that “people are our most important asset.” Leading CEOs report that they spend very large fractions of their time on human resource

management and consider it to be among their most important responsibilities.<sup>2</sup> Knowledge, all of which is created by humans and much of which is embedded in peoples' heads, is meanwhile asserted to be the key to competitive advantage and business success (see, e.g., Stewart, 1997).

How do these apparent trends fit together? Does the pursuit of shareholder interest mean that other potential claimants on the corporation – most notably employees – should have no role in governance? Or, instead, does the increasing importance of human capital imply an increasing need to account for and protect employees' interests? If so, does this mean that employees ought to have a role in governance? Should shareholders be willing to grant them this role?

On the basis of a series of comparative statics exercises on simple models, we conclude that shareholder interests may well be promoted by giving employees a role in governance. Further, the attractiveness of doing so is increased as people and knowledge become more important.

Our modeling of people and knowledge is in terms of specific human capital. General human capital may also be important, of course, but motivating its provision ought not to be problematic because markets will provide the needed protection. Further, capital that is valuable anywhere and for which each firm must pay the market value could not be a source of competitive advantage to any single firm. The idea that human capital is becoming more important is then modeled by shifts in the production function.

We take corporate governance to be the entire set of rules, procedures and institutional arrangements that shape decision-making within the firm and the distribution of the returns generated by implementing these decisions. Some of these features are set by law or stock exchange regulations, others by corporate charter and bylaws. Corporate governance arrangements give “voice” to empowered parties – the right and ability to affect decisions and distributions and thereby the means to protect their interests. Such protection then may provide incentives for investment. Other methods are, of course, available to protect these interests, including enforceable contracts, the option of exit, and reputation mechanisms. When these other mechanisms give inadequate protection, however, voice must be used.

Our analysis is in two parts. In the first, we focus on employees' decision to invest in specific human capital, the returns to which initially accrue to the firm. We assume that the costs of human capital investments must be borne by the employees, and their willingness to undertake these investments depends on the returns they anticipate. If enforceable contracts of various sorts are possible, then motivating these investments is not problematic. However, our main focus is on situations where investments cannot be verified by third parties, although insiders may observe them. In this context, enforceable contracts that would provide investment incentives cannot be written. Similarly, the lack of verifiability undercuts the potential for reputation concerns to motivate rewarding the

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<sup>2</sup> Examples include John Reed, co-CEO of Citigroup, and Jorma Ollila, CEO of Nokia, which, although based in Finland, operates largely on the US governance model.

investments.<sup>3</sup> The third option, exit, provides negligible protection because the investments are not valuable to other employers. Thus, if employees are to be motivated to invest in firm specific human capital, they must have some role in governance.

We assume that the firm is owned by the providers of financial capital. Only they have voice in the first instance, and they can ensure that any decisions taken by the firm are in their interest. Together these assumptions mean that the returns belong and accrue to the financial investors and that profits are maximized. Thus we presume that full-blown shareholder capitalism obtains. Further, we are assuming away any conflicts between executives and shareholders, although this area has been the focus of most of the recent research and popular writing on governance.

The issue is whether it is in the enlightened self-interest of the investors to cede a role in governance to employees and, in particular, whether it is more attractive to do so as human capital becomes more important. Does shareholder capitalism mean employees are excluded from governance? Or does the intelligent pursuit of shareholder value in fact lead shareholders to share power and influence within the firm?

All parties in our analysis are risk neutral. Thus, if transfers are possible, total wealth maximization corresponds to Pareto efficiency. It is clear that protecting employees' investments, thereby motivating their provision of human capital, might enhance total wealth. Similarly, it is clear that if the owners of the firm could be compensated directly for providing this protection, they would gain. However, we will show that even if the employees cannot directly compensate investors, it can still be in the investors' interest to take measures to protect the employees' interests.

We model three different ways of protecting employees' investments. One is by giving employees a claim on the firm's profits. This might come simply through contracts if the returns are verifiable. Whether this contractual solution should be considered as a governance measure is perhaps debatable. A second approach is to empower employees to bargain *ex post* for some of the returns from investments in the firm. This could be achieved by giving them board representation and adopting rules requiring board agreement on the division of the returns. The third is by committing to give employees' interests weight in the firm's strategic decisions, which might also be achieved through board representation. These latter two definitely can be considered governance solutions to the problem of motivating investment.

All three approaches can be costly for the original owners, who are giving up some of their returns. Moreover, giving away a share of profits or of decision power typically may weaken the original investors' incentives to acquire physical capital. But as the importance of human capital relative to physical capital increases, the net attractiveness of including human capitalists in governance increases.

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<sup>3</sup> Reputational mechanisms necessarily involve dynamic considerations. Note that multiperiod settings also allow for complex contractual arrangements that might be potential solutions to the incentive problem, even if the investments themselves are not contractible. Although we illustrate this point later, for simplicity our models throughout the paper are static, single period ones.

In the limit, if all that matters is human capital, then, from a wealth-maximization perspective, the human capitalists should control the firm and receive all the returns. If the firm were started up from scratch, it would optimally be employee owned. Even if investors control the firm, they will find it optimal to cede a large role to employees.

This conclusion is consistent with one of the striking stylized facts of corporate governance. In professional service firms, where arguably only human capital matters, ownership and control is typically vested solely in the human capitalists: These firms are overwhelmingly organized along partnership lines (although many of them are limited liability professional corporations or other legal forms of a similar nature). As well, employee stock ownership is a significant matter in large numbers of knowledge-intensive and human capital-intensive firms, such as software companies. For example, roughly half of Microsoft's shares are held by employees, and more than half of Merrill Lynch's stock is used for employee option schemes.

The force of these conclusions is that the implementation of shareholder governance should be accompanied by various measures to protect employees' interests. Yet these are exactly the sort of measures that are under attack in Germany and Japan. This raises the issue of when shareholder-dominated governance is appropriate.

The second part of our analysis builds on ideas due to Bengt Holmström to offer a model whose comparative statics properties speak to this question. The driving force in this model is the opportunity for the firm to respond to changing strategic opportunities. Shareholder domination facilitates this, but it has the disadvantage that employees have to resort to costly conflict (e.g. strikes) to influence decisions. Conflict and the attendant costs can be avoided by ceding some influence over strategic decisions to employees in the normal course of events. The results of this model suggest that the differing approaches to governance that have characterized the Anglo-American economies and those of continental Europe and Japan may reflect differing economic environments. In particular, international differences in labor market conditions and in employees' bargaining power in strikes line up with the choice of governance systems in the way the model predicts. The model also suggests, in line with Holmström's arguments, that when the desired changes are expected to be greater, shareholder control is favored. If we take the current period to be one where technological change and globalization are generating greater need for firms to change strategies radically, then this result would fit the moves towards shareholder governance.

At the same time, bringing the increasing importance of human capital into this model points, as before, to the increasing value of involving employees in governance.

## 2. MOTIVATING HUMAN CAPITAL INVESTMENT

The driving element in the models in this section is the problem of motivating workers to acquire firm-specific human capital, denoted  $h$ . We take  $h$  to be completely firm specific,

so that it is of no value outside the firm. As a result, once it has been created, the workers need not be paid for their investment in order to keep them in the face of labor market competition. We focus on the incentives to acquire  $h$ , how these may be provided by giving the investors in  $h$  a role in governance and on how the value of providing such incentives depends on the importance of human capital.

We assume that  $h$  is chosen as if by a single maximizing worker. This amounts to assuming that any coordination and incentive problems among workers can be fully solved. We are also assuming that there is only one sort of human capital, so that issues of motivating different sorts of investments in human capital do not arise in the models. The relaxation of both these heroic simplifications would be useful objectives for further research.

We need to capture formally the idea that the importance of human capital is increasing. Unfortunately, the discussions of this idea are as vague and imprecise as they are numerous, so the appropriate formalization is not completely obvious. The approach we actually adopt is to consider a parameterized production function linking the use of physical capital  $k$  and human capital  $h$  to output (or, equivalently, operating profits),  $y$ :

$$y = f(k, h, \mathbf{b}).$$

The idea is that higher values of  $\mathbf{b}$  will correspond to greater “importance” for  $h$ , while for fixed values of  $\mathbf{b}$ , we simply have a standard production function. Thus  $\mathbf{b}$  proxies for whatever technological, strategic or organizational forces are affecting the importance of human capital.

We then have to specify how increases in  $\mathbf{b}$  shift the production function, that is, what it means for human capital to become more important. Perhaps the most natural is that the isoquants should become steeper with respect to the  $h$  axis as  $\mathbf{b}$  increases. A sufficient condition for this single-crossing property is that the marginal product of  $h$  be increasing in  $\mathbf{b}$  while the marginal product of  $k$  is non-increasing. This stronger condition is met in the examples on which we focus.

The models in this section all treat a situation in which workers alone can invest in  $h$  and the providers of financial capital pay for  $k$ . We take the unit cost of physical capital to be one, while the cost of  $h$  is given by  $c(h)$ , which is non-decreasing and convex with  $c(0) = 0$  (one obvious case is  $c(h) = h$ ). In particular, we do not require that  $c$  is strictly increasing, so that obtaining some human capital may be costless. We assume that all parties are risk neutral.<sup>4</sup>

Our basic concern is whether, beginning from a situation where existing corporations are controlled by financial capitalists, an increase in the importance of human capital favors

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<sup>4</sup> We thus assume away one of the possible issues in the allocation of ownership, namely the efficient allocation of risk. Efficient risk sharing was central to Frank Knight’s theory of the firm and has figured prominently in much recent literature on contracting. Zingales (1998) notes its potential importance in governance.

*giving* employees a greater role in governance in order to help motivate them to acquire human capital. We thus suppose throughout that the firm is initially controlled by the providers of  $k$ . By this we mean first that they are entitled to monopolize the production function  $f$ . In this regard, we might think that they hold a patent on the use of the technology embodied in  $f$  or on the product that it yields. Further, the providers of  $k$  are entitled to collect the operating profits. In this sense, they “own” the firm.<sup>5</sup> We also suppose that any internal agency issues between the investors and hired managers can be resolved so that the firm will be run in the owners’ interests, which means maximizing their returns net of their investment costs. Thus, full-blown shareholder capitalism obtains.

### *Contractual Solutions*

Contracts are the most obvious device for inducing investment in human capital. The simplest case is when  $h$  can be made subject to enforceable contract. Then there is no real problem: The providers of  $k$  simply contract to reimburse the employees for making the desired investments in human capital, and the courts can and will enforce this contract on both parties. This will actually achieve the first-best, total-wealth-maximizing result. If  $h$  becomes more important, the contracts can be adjusted and the first-best again achieved, all with the firm being run solely in the interests of the investors in  $k$  and without any involvement of the human capitalists in governance.

If enforceable contracts cannot be written on  $h$ , then there will be potential problems motivating human capital investments. Promises to pay for the investments are empty. The owners of the firm can simply refuse to pay for the human capital after the investment costs have been incurred, and there is no recourse possible to the courts to enforce the promise. The threat of hold-up will then deter investment. Paying the human capitalists in advance to make the desired investments will not work either. Because the courts cannot determine if the human capitalists have made the investments, once they have been paid they would have no incentive to incur the costs of investing.

Despite this, a contractual solution would still be possible if  $k$  were contractible and the title to the production function  $f$  could be transferred. Before the investments are made, let the original owners sell the firm to the workers, giving them the right to monopolize  $f$  and collect the returns generated in production. The workers could then contract with the providers of capital to make the investment in  $k$ , compensating them for this directly through an enforceable contract. Again the first-best levels of investment are achievable. Moreover, if the workers are initially wealth-constrained, the original owners can finance the sale for the workers through a debt contract obliging the workers to pay a fixed amount out of the realized operating profits. Since this payment is fixed, it does not distort the choice of investments. Note that if motivating investment in  $h$  is increasingly

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<sup>5</sup> Note that this may not be the total-value-maximizing allocation of ownership. Although the efficient allocation of ownership has been a central focus of much recent work (e.g. Hart and Moore, 1998, Bolton and Xu, 1999), it is not our primary concern here.

important, the gains involved in this governance-altering transaction ought to be increasing.

We thus assume that neither  $k$  nor  $h$  can be made the subject of enforceable contracts. We also assume that the shifting of ownership of the production function  $f$  is not possible. Even in these circumstances, however, there may be a contractual partial solution to the incentive problem if operating profits,  $y$ , can be shared contractually.

That it could be worthwhile to *sell* workers a claim on operating profits is obvious. With such a claim, they get a share of the returns generated by their investments and so are motivated to invest in a level of  $h$  above the zero-cost amount (say zero). Meanwhile, the marginal returns to investors in  $k$  are lowered, lowering the choice of  $k$ . But if the returns to  $h$  at  $h = 0$  are sufficiently large relative to the marginal cost of investing, the total value created will increase. Since the owners are compensated, they are surely better off.

More interesting is the possibility that it may be worthwhile for the owners to *give* the workers a claim on operating profits, even if there is no direct compensation, and that this is more attractive as  $\mathbf{b}$  increases. The costs to the  $k$ -capitalists of granting a free claim on  $y$  to the human capitalists are of two sorts. First, they are giving away some of the returns. Second, they are worsening their own investment incentives, since they will compare only a fraction of the marginal product of  $k$  to the full marginal cost of the investment in  $k$ . The gains, however, are that the human capitalists now see some assured return to their investments and will be motivated to invest.

Clearly, if the production function has  $f(k, 0, \mathbf{b}) = 0$ , as with the Cobb-Douglas or Leontief technologies, it is worthwhile to give away a share of profits to induce human capital investment. To see that such unreimbursed profit sharing could be attractive more broadly, consider the separable example  $f(h, k, \mathbf{b}) = (1-\mathbf{b})k^{1/2} + \mathbf{b}h^{1/2}$  and let  $c(h) = h$ . Let the share of operating profits going to human capital be  $\mathbf{a}$ . Suppose the owners give the share  $\mathbf{a}$  to the workers, then each side invests, after which operating profits are realized and shared.<sup>6</sup> In making the investment choices, each side bears the cost of its choice but recognizes it will receive a share of the operating profits generated by both investments. The choice of  $h$  will then satisfy

$$h = \mathbf{a}^2 \mathbf{b}^2 / 4$$

and, similarly, the choice of  $k$  will be

$$k = (1-\mathbf{a})^2 (1-\mathbf{b})^2 / 4.$$

Net of the investment cost of  $k$ , which must be borne by the  $k$ -investors, the total profit that accrues to them is

$$(1-\mathbf{a})\{(1-\mathbf{b})^2(1-\mathbf{a})/2 + \mathbf{b}^2 \mathbf{a}/2\} - (1-\mathbf{a})^2(1-\mathbf{b})^2/4.$$

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<sup>6</sup> With the separable production function, whether the investments are simultaneous or, instead, that in  $k$  is made first (perhaps before  $\mathbf{a}$  is announced) is immaterial.

This is maximized by

$$\mathbf{a} = (1-2\mathbf{b})/(1-2\mathbf{b} - \mathbf{b}^2),$$

which yields a strictly positive value of  $\mathbf{a}$  for all  $\mathbf{b} > 1/2$ . It is worthwhile for a firm run solely in the interests of its capitalist shareholders to give away a claim on operating profit to employees, even when human capital is not essential for production. Further, as  $\mathbf{b}$  tends to one, the share that the owners will want to give to workers increases monotonically to one-half. As human capital becomes more important, the attractiveness of giving away a claim increases.

Note that the share that maximizes *total* value (subject to the lack of contractibility of  $h$  and  $k$ ) is given by  $\mathbf{a} = \mathbf{b}^2/(1-2\mathbf{b} + 2\mathbf{b}^2)$ . This amount, which is strictly positive for all  $\mathbf{b} > 0$  and tends to one as  $\mathbf{b}$  tends to unity, is the share that would be sold to workers if such a transaction were feasible. It represents the size of the role that workers should have in governance from a pure efficiency point of view, and it too is increasing in the importance of human capital. It is everywhere greater than the share the owners will give away for free in order to influence the investment decision in  $h$ . Still, the point is that employers will find it in their interest to give workers a share in the firm if human capital is sufficiently important.

The monotonicity in  $\mathbf{b}$  in this example is, however, not fully general. The property does extend, for example, to the case where  $f(k, h, \mathbf{b}) = (1-\mathbf{b})k^s + \mathbf{b}h^t$  for  $s + t \leq 1$  and to the Cobb-Douglas case,  $f(k, h, \mathbf{b}) = k^{(1-\mathbf{b})}h^{\mathbf{b}}$ , when we take  $c(h) = h^2/2$ . In the first of these cases, the profits of the investors net of their investment costs have a positive cross-partial in  $\mathbf{a}$  and  $\mathbf{b}$  when  $\mathbf{a} \leq t$ . Since the optimum choice of  $\mathbf{a}$  always satisfies this latter inequality, the optimal amount of sharing increases in the importance of human capital. In the Cobb-Douglas case, the optimum from the point of view of investors is  $\mathbf{a} = \mathbf{b}/2$ , and this is clearly increasing in the importance of human capital. More generally, as long as  $f_h(k, 0, \mathbf{b})$  is sufficiently large relative to  $f(k, 0, \mathbf{b})$  at  $f_k(k, 0, \mathbf{b}) = 1$ , an envelope theorem argument shows it will be worthwhile to give some share of operating profits to employees. Further, the conditions for wanting to give a share to workers will be met for large enough  $\mathbf{b}$  if  $f_h$  goes to infinity while  $f_k$  goes to zero in a neighborhood of  $(k, h) = (0, 0)$  as  $\mathbf{b}$  rises, so that  $f_h / f_k$  goes to infinity. However, whether the optimal share to give generally increases in  $\mathbf{b}$  is less clear. Even for concave, separable functions parameterized with respect to  $\mathbf{b}$  as  $K(k) + \mathbf{b}H(h)$ , monotonicity of the optimal share for all  $\mathbf{b}$  depends on the sign and magnitude of the third derivative of  $H$ .

We should note that a multiperiod analysis might allow other contractual approaches to the problem of motivating investments. For example, if employment is verifiable, the firm might contract to pay current employees an extra amount above market wages if it renews their employment into the next period. Continuing to employ the workers then is worthwhile if and only if they have developed enough human capital. This would motivate the workers to acquire just enough  $h$  to avoid being fired. Note, however, that this contract is not renegotiation proof: The firm in the second period is indifferent between continuing employment and not, while the workers earn substantial quasirents

on their sunk investments. This leads to complications that are avoided in the one-period context.

### *Sharing Returns by Sharing Governance*

Given the preceding results, we now assume that none of  $h$ ,  $k$ , or  $y$  is contractible and that the sale of  $f$  is not contractually feasible either. So contractual solutions to the problem of motivating investment are no longer available and some other methods must be found. In essence, these must operate *ex post*, after the investments have been made, and they must function to give the employees an assured return on their investments. We study two approaches to modeling employees' having a role in governance. The one in this subsection allows for *ex post* bargaining over the distribution of the operating profit. The other, treated in the next subsection, involves committing to respect employees' interests in making decisions about the operations of the firm.

Bargaining has, of course, featured centrally in many recent treatments of the economics of the firm, including especially those in the property-rights line beginning with Grossman-Hart (1986) and Hart-Moore (1990). Zingales (1998) actually defines governance as including anything that affects the *ex post* bargaining over the value created in the firm. Our approach here is in this line, with governance provisions being the mechanisms that determine the course of the bargaining and thus its outcomes.

We will examine two alternative models of bargaining shaped by governance procedures<sup>7</sup>: It will then be obvious how other such models could be constructed. The general shape of the models will be familiar from the literature on non-cooperative bargaining. In both, we think of the employees as having a fraction  $q$  of the seats on the board of directors, which must agree on the division of the operating profits in order for them to be fully realized. In the bargaining over the division, offers are made by board members representing one side or the other until agreement is reached. We presume that the board representatives of each type of capital will all act together to accept or reject an offer from the other side. We also assume that any board member is equally likely to be the next one to make an offer after one has been rejected. Thus, the probability that any offer is made by the representatives of employees is  $q$ .

The two treatments differ in the motive for speedy agreement and in the options of the  $k$ -investors. In the first, the motivation is time preference combined with the fact that, as long as no agreement is reached, the operating profits are only a fraction  $e < 1$  of what they would be otherwise. Until an agreement is reached, these returns accrue to the  $k$ -investors as owners of the firm, with the employees getting zero. In the second model, settlement is motivated by the possibility that the bargaining can break down irrevocably if an offer is rejected, leaving no further possibility of agreement. If breakdown occurs, the  $k$ -investors will be able to produce using the technology that they control and their investment in  $k$ , but will not have access to any investment in human capital. Meanwhile, the employees will again get zero, because their capital is useless outside this firm.

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<sup>7</sup> For a analysis of voting behavior by employee-owners in function of their characteristics, see Lazear and Freeman (1996)

For the first model, let there be a fixed period of time that must elapse between successive wage offers and let the discount factors applied to the period be  $\mathbf{d}^h$  for the employees and  $\mathbf{d}^k$  for the  $k$ -investors. Once an agreement is reached, the  $k$ -investors will get  $f(k, h, \mathbf{b})$  and pay  $w$  to the employees, each period forever after.<sup>8</sup> As long as no agreement is reached, the  $k$ -investors get only a fraction  $\mathbf{e}$  of these operating profits, but do not make any payment to the workers. In the extreme, with  $\mathbf{e} = 0$ , there can be no revenue generation absent an agreement, even though the investments in  $h$  and  $k$  have been sunk. We may think of the ability of employee representatives to limit value creation (to ensure  $\mathbf{e} < 1$ ) as being exogenously given. Alternatively, we might take it as being effected through provisions in the corporate charter and bylaws.

Following standard methods, we look for a stationary subgame-perfect equilibrium of the bargaining game. In such equilibrium, agreement must always be reached in the first period. It thus follows that whichever side makes the first offer, that offer must make the other agent indifferent between two options: (1) accepting the current offer immediately and (2) rejecting the offer and waiting for the next round. This means that if  $k$  makes the first offer of a wage  $w^k$ , it must satisfy

$$w^k = 0 + \mathbf{d}^k [q w^h + (1 - q) w^k],$$

where  $w^h$  is the wage that the human capitalists will demand in equilibrium if they get to make the proposal and  $q$  is the probability that they get to make the next offer.

Developing the corresponding condition when  $h$  makes the first offer requires looking at the utility of the financial capitalists. In order for a discounted utility representation of intertemporal preferences to be valid here, it must be the case that the utility of the returns that accrue to them until agreement is reached is zero (Binmore, Rubinstein and Wolinsky, 1986), i.e., the utility must be normalized so that

$$u^k(x) = x - \mathbf{e} f(k, h, \mathbf{b}).$$

The condition then is

$$f - w^h - \mathbf{e} f = 0 + \mathbf{d}^k [q(f - w^h - \mathbf{e} f) + (1 - q)(f - w^k - \mathbf{e} f)]$$

where we have suppressed the arguments of the  $f$  function.

Solving these two equations yields

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<sup>8</sup> Thus the interpretation of  $f$  is somewhat different in this model than elsewhere in the paper. For consistency it might be better to write the per-period payoffs in terms of streams whose present value is  $f$  and  $w$ , but in the interests of notational simplicity we do not bother doing so.

$$w^h = \frac{(1-d^k)(1-(1-q)d^h)(1-e)f}{(1-(1-q)d^h - qd^k)}$$

$$w^k = \frac{(1-d^k)qd^h(1-e)f}{(1-(1-q)d^h - qd^k)}$$

as the unique subgame-perfect initial offers. In equilibrium, whichever offer is made at the first round is accepted immediately. Thus the expected equilibrium payment to the employees is  $qw^h + (1-q)w^k$  or

$$w = \frac{q(1-d^k)(1-e)}{(1-(1-q)d^h - qd^k)} f(k, h, \mathbf{b}).$$

This is, of course, simply a payment of the form  $w = \mathbf{a}f$ , just as under profit sharing: human capitalists get  $\mathbf{a}f(k, h, \mathbf{b})$  and the financial capitalists get  $(1-\mathbf{a})f$ . Thus the results obtained earlier apply. In particular, in this interpretation of employee bargaining power, the owners of the firm can determine the share of profits accruing to employees by the choice of the fraction  $q$  of board seats to give to employees (and perhaps by the choice of  $e$ ). This then determines the human capitalists' investment incentives.

As argued earlier, increases in  $\mathbf{b}$ , the importance of human capital, then tend to favor giving a larger share to human capitalists. In this context, this is most naturally done by increasing their board representation. However, it may also be worthwhile to increase employees' ability to prevent financial capital from enjoying returns in the absence of agreement, e.g. by giving them a veto on, or the power to delay, certain decisions and investments. In particular, when  $e$  is large and the employees are much more impatient than the financial capitalists, it may be the case that employees cannot be given as strong incentives as might be desirable solely through board representation.

In various special cases it is straightforward to compute the required levels of  $q$  and  $e$  needed to yield a given share  $\mathbf{a}$  to employees. For example, when the two parties are equally impatient, the solution is  $w = q(1-e)f$ , and so  $q = \mathbf{a}/(1-e)$  does the trick. Note that the two sources of employees' power are substitutes: If their ability to reduce the return to financial capital increases, their required board representation falls. Somewhat more generally, suppose  $d^h = t^H$  and  $d^k = t^K$  for some values of  $H$  and  $K$ . Let  $t$  go to unity to reflect the idea that the period between offers becomes arbitrarily small. We then get (via l'Hôpital's rule)

$$\lim_{t \rightarrow 1} w = \frac{qK(1-e)}{qK + (1-q)H} f$$

Letting  $\mathbf{a} = [qK/(qK+(1-q)H)](1-e)$ , we again see how the role of employees in governance can be adjusted to induce human capital investment.

Given that this model of bargaining leads to the same results as profit sharing, we will henceforth simply refer to the “profit-sharing model” but understand the term to encompass both that model and the preceding model of bargaining.

The second bargaining model yields similar results but even simpler formulae. In this model, if the current wage offer is accepted, the firm gets a one-time payoff<sup>9</sup>  $f(k, h, \mathbf{b})$  and pay the employees a one-time wage  $w$ . If it is not accepted, there is an exogenous probability  $p$  that bargaining breaks down, in which case the parties get their outside options. Assuming that the investments in  $k$  are sunk, these outside options are  $f(k, 0, \mathbf{b}) \equiv f^0$  for the  $k$ -investors and zero for the employees. This specification reflects the assumptions that the financial capitalists own the production function  $f$  and that the employees’ human capital is completely firm specific. If there is no breakdown, the bargaining moves to the next round. Payoffs accrue only once agreement is reached or a breakdown occurs.

The equations characterizing the unique stationary perfect equilibrium are

$$f - w^h = p f^0 + (1 - p)[q(f - w^h) + (1 - q)(f - w^k)]$$

and

$$w^k = p \cdot 0 + (1 - p)[q w^h + (1 - q) w^k].$$

Some tedious algebra on these yields

$$w^h = (1 - (1 - p)(1 - q))(f - f^0)$$

and

$$w^k = (1 - p)q(f - f^0).$$

The expected payment to employees is then simply  $w = q(f - f^0)$ .

The bargaining thus gives each side the value of its outside option plus a fraction (equal to its fraction of board seats) of the value created by agreement. The human capitalists get  $0 + q[f(k, h, \mathbf{b}) - f(k, 0, \mathbf{b})] = q[f(k, h, \mathbf{b}) - f(k, 0, \mathbf{b})]$  and the financial capitalists get  $f(k, 0, \mathbf{b}) + (1 - q)[f(k, h, \mathbf{b}) - f(k, 0, \mathbf{b})] = (1 - q)f(k, h, \mathbf{b}) + qf(k, 0, \mathbf{b})$ . These give the benefits to each party of investing, which then are compared with the costs to establish the chosen levels of  $h$  and  $k$ .

Note that the incentives for the human capitalists are the same as under profit sharing (or the other bargaining model). In choosing  $h$  they are effectively looking at  $\mathbf{a}f(k, h, \mathbf{b}) - c(h)$ , where  $\mathbf{a} = q$ . If  $\mathbf{a}$  is positive – that is, if workers have representation on the board – there is now some incentive to them to invest. Consequently, a positive level of  $h$  can be

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<sup>9</sup> We could also formulate this model in terms of income streams, but this would just multiply all income with a constant factor and thus clutter the equations.

expected to result so long as the marginal product of  $h$  at zero is sufficiently large. Note, however, that incentives are weaker and investment in  $h$  is lower than the first-best if  $\mathbf{a} < 1$ .

The incentives facing the owners are more complex, involving a convex combination of the returns to capital when all the capital of both sorts is used and the returns that can be earned without  $h$ . If the two inputs are strongly complementary – in the sense that  $f(k, 0, \mathbf{b}) = f(0, 0, \mathbf{b})$ , as with the Leontieff and Cobb-Douglas functions – then the payoff to the investors is also as in the profit-sharing case. In the separable case, in contrast, the marginal product of  $k$  is independent of the level of  $h$ , so  $(1-q)f_k(k, h, \mathbf{b}) + qf_k(k, 0, \mathbf{b}) = f_k(k, h, \mathbf{b})$ . Thus, the choice of  $k$  is in fact driven by the full returns to  $k$  and so is efficient. If  $h$  and  $k$  are complements, then  $f_k(k, h, \mathbf{b}) \geq f_k(k, 0, \mathbf{b})$ , and there is a tendency toward under-investment in  $k$ , while the reverse is true with substitutes.

In the separable example considered earlier, the chosen level of  $h$  is  $h = (\mathbf{a}\mathbf{b})^2/4$  and the chosen level of  $k$  is  $k = (1-\mathbf{b})^2/4$ . Thus, the total net profits are

$$(1-\mathbf{b})^2/2 + \mathbf{a}\mathbf{b}^2/2 - (1-\mathbf{b})^2/4 - (\mathbf{a}\mathbf{b})^2/4 = (1-\mathbf{b})^2/4 + \mathbf{a}(2-\mathbf{a})\mathbf{b}^2/2$$

while the returns accruing in the bargaining to the owners of the firm are

$$(1-\mathbf{b})^2/2 + \mathbf{a}(1-\mathbf{a})\mathbf{b}^2/2 - (1-\mathbf{b})^2/4 = (1-\mathbf{b})^2/4 + \mathbf{a}(1-\mathbf{a})\mathbf{b}^2/2.$$

To maximize total value creation,  $\mathbf{a}$  should be set at unity, so that all the *ex post* bargaining power goes to the workers, because then both sorts of investors face the first-best incentives. Maximizing the returns to the owners, however, given that they will not be compensated for the change, leads to  $\mathbf{a} = 1/2$ . Again the owners of the firm will find it worthwhile to allow human capital to have some bargaining power in order to motivate them, but less than the wealth-maximizing amount. Note that in this context, the optimal and the chosen levels of  $\mathbf{a}$  are not strictly increasing in  $\mathbf{b}$ , but that they are positive for all  $\mathbf{b} > 0$ . This result seems to be an artifact of the separability assumption, which means that the investors in  $k$  do not face distorted incentives.

Quite generally, however, whenever the two sorts of capital are complementary in production ( $f_{hk} \geq 0$ ), *ex post* bargaining with an outside option of  $f(k, 0, \mathbf{b})$  for the  $k$ -investors will yield higher levels of both  $h$  and  $k$  than result from profit sharing (assuming the same value for human capital's share,  $\mathbf{a}$ , in each circumstance). To see this, let  $x$  be an indicator variable that is 0 under profit sharing and 1 under bargaining, and denote the outside option for human capital (taken to be zero above) by  $H(h)$ . Then the payoffs to the human capitalists can be written as

$$\mathbf{a} f(k, h, \mathbf{b}) + x(1-\mathbf{a}) H(h) - x(1-\mathbf{a})f(k, 0, \mathbf{b}) - c(h)$$

and that to the financial capitalists as

$$(1-a) f(k, h, \mathbf{b}) - x a H(h) + x a f(k, 0, \mathbf{b}) - k.$$

When  $x$  is zero, these are the payoffs under profit sharing; when  $x$  is equal to 1, they give the payoffs under bargaining. So long as  $H$  is nondecreasing in  $h$ ,<sup>10</sup> the first expression has nondecreasing differences in  $h$  and  $x$ , while the second has nondecreasing differences in  $k$  and  $x$ . Then, with  $h$  and  $k$  being complements in production, we can regard the two payoff functions as defining a supermodular game parameterized by  $x$ . As a consequence (Milgrom and Roberts, 1990, Theorem 6), the highest and lowest solutions to this pair of problems are nondecreasing in  $x$ : There is at least as much capital invested under *ex post* bargaining as under profit sharing.

The greater levels of investment mean that the *ex post* bargaining solution with outside options yields a outcome that is preferred to the profit-sharing one. Thus, even if profit sharing is feasible, it should not be employed. Instead, the investors should give the workers a chance to bargain, for example by giving them a role on the board of the company. Further, the rules for bargaining should be set as in the outside option model.

This conclusion that bargaining is better is, however, very heavily dependent on the assumption that the bargaining is costless. No resources are expended in bargaining, in improving outside options (which, because they will never actually be taken, serve only to shift the threat points) or in establishing bargaining power, and there is no possibility that the bargaining outcome will be inefficient. All these are very difficult assumptions to accept as descriptive. One disadvantage of the profit-sharing solution – at least if it is achieved by giving shares – is that shares are claims on the full future flow of returns, not just those that are affected by current investments in  $h$ . In principle this might be solved by a complicated system of option grants, but the realism of such a solution must also be questioned.

### *Respecting Human Capitalists' Interests*

The foregoing models have solely been concerned with the division of the profits among the parties creating them. However, it is also possible to give incentives by adopting governance processes that allow the firm to commit to respecting human capitalists' interests in situations where the value of their capital is at risk.

To illustrate this possibility, suppose that, after the investments have been made, a new technology may arise that renders the human capital worthless but that would be profitable *ex post* for the  $k$ -controlled firm to adopt. We will show that committing not to adopt the technology can be valuable. The formal argument is largely the same whether we assume that profit sharing is used to induce human capital investments<sup>11</sup> or that *ex post* bargaining with outside options is employed. However, the expressions and calculations in the latter case are simpler, and we focus on it.

<sup>10</sup> That  $H$  is nondecreasing essentially means that the investment in firm specific human capital does not, for example, make it harder to acquire general purpose human capital.

<sup>11</sup> Assuming that if the employees are laid off, they no longer eligible to collect any profits that might have been promised.

If the firm adopts the new technology, the human capitalists can no longer gain a share of the operating profit through bargaining, because their capital now adds no value. This possibility worsens their incentives to invest. In this case, the owners may find it worthwhile to commit *ex ante* not to adopt the innovation, which maintains the incentives to invest. We interpret this commitment as taking account of the human capitalists' interests, even at the direct expense of serving the (*ex post*) interests of the financial capitalists. This might be achieved through governance provisions. For example, employees (or their board representatives) might be given a veto over layoffs or major changes in work rules.

More specifically, consider again the separable example  $f(k, h, \mathbf{b}) = (1-\mathbf{b})k^{1/2} + \mathbf{b}h^{1/2}$  and suppose that with probability  $p$ , the option arises to produce using the production function  $g(k, h, \mathbf{b}) = (1-\mathbf{b})k^{1/2} + \mathbf{d}$ .

Assume that the human capitalists have chosen a level of  $h$  that makes adoption of the new technology attractive *ex post* and that the firm has not committed to abjure the new technology. Then the human capitalists will be able to bargain to get a return on their investment only with probability  $(1-p)$ . In this case the first-order condition on their investment choice will yield  $h^{1/2} = \mathbf{a}\mathbf{b}(1-p)/2$ . Alternatively, they could instead invest enough that adopting the new technology would not be attractive. We will put aside this possibility for now, assuming then that  $h^{1/2} = \mathbf{a}\mathbf{b}(1-p)/2$  if the firm has not committed to avoid adoption. Of course, we will need to check later that the option of investing more to deter adoption is not worthwhile for the workers.

The investors in  $k$  will, as before, select  $k^{1/2} = (1-\mathbf{b})/2$ . This also determines their outside option in the bargaining, should it occur. Thus, if they opt for the new technology whenever it is available, their returns are

$$\begin{aligned} & pg(k, h, \mathbf{b}) + (1-p)\{f(k, 0, \mathbf{b}) + (1-\mathbf{a})[f(k, h, \mathbf{b}) - f(k, 0, \mathbf{b})]\} - k \\ &= p[(1-\mathbf{b})^2/2 + \mathbf{d}] + (1-p)\{(1-\mathbf{b})^2/2 \\ &\quad + (1-\mathbf{a})[(1-\mathbf{b})^2/2 + \mathbf{a}\mathbf{b}^2(1-p)/2 - (1-\mathbf{b})^2/2]\} - (1-\mathbf{b})^2/4 \\ &= p\mathbf{d} + (1-\mathbf{b})^2/4 + (1-\mathbf{a})\mathbf{a}\mathbf{b}^2(1-p)^2/2. \end{aligned}$$

If they commit not to adopt the new technology (so that  $h^{1/2} = \mathbf{a}\mathbf{b}/2$ ), then from our earlier calculations they get

$$(1-\mathbf{b})^2/4 + (1-\mathbf{a})\mathbf{a}\mathbf{b}^2/2.$$

Thus, if committing to protecting the value of the human capital is to be worthwhile, we must have

$$p\mathbf{d} + (1-\mathbf{a})\mathbf{a}\mathbf{b}^2(1-p)^2/2 < (1-\mathbf{a})\mathbf{a}\mathbf{b}^2/2,$$

or

$$\mathbf{d} < (1-\mathbf{a})\mathbf{a}\mathbf{b}^2(2-p)/2.$$

Next, for consistency, we need that the capital owners actually prefer to switch to the new technology when it is available. This requires that  $\mathbf{d} > (1-\mathbf{a})\mathbf{b}h^{1/2}$ . Under our assumption on the human capitalists' investment behavior, this becomes

$$\mathbf{d} > \mathbf{a}(1-\mathbf{a})\mathbf{b}^2(1-p)/2.$$

Letting  $\mathbf{g} = \mathbf{a}(1-\mathbf{a})\mathbf{b}^2 \geq 0$ , these two conditions combine to yield

$$\mathbf{g} \frac{(1-p)}{2} < \mathbf{d} < \mathbf{g} \frac{(2-p)}{2}$$

Finally, employees should not be willing to make the extra investment that would render the technology switch *ex post* unattractive even though the firm has not committed. To deter adoption, they would have to set  $h = [\mathbf{d}/(1-\mathbf{a})\mathbf{b}]^2 \equiv h^*$ . This is greater than the choice given by their first-order condition if  $\mathbf{d} > (1-p)\mathbf{g}/2$ , which we have already assumed, so adoption is not deterred by the first-order-condition choice. Thus the consistency condition is that their payoff at investment level  $h^*$  should be less than what they get from the investment given by the first-order condition. If they invest at level  $h^*$  to deter adoption, their payoff is  $\mathbf{d}[\mathbf{a}(1-\mathbf{a})\mathbf{b}^2 - \mathbf{d}]/(1-\mathbf{a})^2\mathbf{b}^2$ , and this should be less than what they get from the regular investment,  $(1-p)^2\mathbf{a}^2\mathbf{b}^2/4$ . Some calculation shows that this requires that we need either

$$\mathbf{d} < \frac{\mathbf{g}}{2}(1 - \sqrt{2p - p^2})$$

or

$$\mathbf{d} > \frac{\mathbf{g}}{2}(1 + \sqrt{2p - p^2}).$$

Combining this with the earlier inequalities it follows that committing to not switch technology is worthwhile to the financial capitalists when

$$\frac{\mathbf{g}}{2}(1 + \sqrt{2p - p^2}) < \mathbf{d} < \frac{\mathbf{g}}{2}(2 - p).$$

As long as  $p < (\sqrt{2} - 1) / \sqrt{2} \approx 0.29$ , this region is non-empty and its length decreases in  $p$  and increases in  $\mathbf{g}$ . More importantly, the size of the region also increases in  $\mathbf{b}$ . As human capital becomes more important, there are more instances where such commitment is valuable. This is in line with the suggested intuition: when human capital becomes more important, it becomes more valuable for financial investors to explicitly account for employees' concerns with the value of their human capital, even at the expense of the investors' direct returns.

These various models formalize various ways in which it could be valuable to give human capital a role in governance that lets it receive some of the returns needed to induce this investment. They further show that the role given to human capital should be

increased as the importance of this investment increases. In the next section we consider these conclusions in light of the current debates on corporate governance.

### 3. THE INTERNATIONAL GOVERNANCE DEBATE

In recent years, corporate governance has become the subject both of increasing popular debate and increasing academic research. Yet there is a divide between the two. Much of the research on corporate governance, especially that by American academics (who initially led the development of the topic), takes a narrow view of the subject:

Governance is simply about ensuring that managers diligently pursue the interests of shareholders.<sup>12</sup> This is in line with the wide acceptance in the US of the primacy of shareholders' interests. Meanwhile, the popular debate – especially outside the English-speaking economies – does not automatically accept that the firm should be run in solely the interests of shareholders. Indeed, the point of debate is precisely about whose interests should be protected through governance.

Some part of the academic literature does address this more fundamental issue. In particular, Henry Hansmann (1996) argues that voice in the firm – a role in governance – is given to those whose interests are not well protected by contract or exit options and who are likely to make effective use of the power that comes from voice. Hansmann argues that, at least in the US context, the providers of equity capital to the firm are particularly poorly protected. There is little that contracting can do to ensure their money will be used in ways they would want, and collectively they cannot withdraw their funds (although any one of them might be able to do so by selling the shares he holds). In contrast, other possible claimants – suppliers, employees, lenders, customers – are arguably better protected by exit or contract. Further, Hansmann argues, equity investors are relatively efficient users of voice, because they have very homogeneous interests and so avoid the inefficiencies that tend to mark decision making by heterogeneous groups. Thus, shareholder capitalism has a central efficiency logic supporting it.

Yet other economies have adopted very different systems of governance from the Anglo-American model. The two most prominent examples are Germany and Japan.

In German corporations, the mandated system of codetermination has given workers' representatives half the seats on the supervisory boards that oversee senior management. Workers' councils and strong industrial unions have supplemented the influence that employees enjoy from codetermination. Other factors have simultaneously made it difficult for shareholders to exert influence and push for their interests. Banks supply most of the corporate finance, both through loans and through holding equity. The hired managers of the banks have had little reason to push their counterparts in the corporations to pursue stockholders' interests diligently and energetically. This effect is magnified by the prevailing arrangements for these banks to vote the shares owned by small shareholders, which has helped prevent the emergence of an active market for corporate

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<sup>12</sup> See, for example, Shleifer and Vishny (1997).

control. Finally, the limited transparency mandated under German reporting requirements has further restricted the ability of shareholders to monitor performance.

In Japan, corporate management has felt even less pressure from shareholders. A number of factors have contributed to this. One is the complete dominance of corporate boards by directors who are lifetime employees of the organization. The system of cross-shareholdings by related firms has also contributed by ensuring the majority of shares are in friendly hands. The general social acceptance of the primacy of corporate survival and growth and of permanency of employment over profitability has shaped the environment and set expectations. Finally, the lack of transparency in reporting, restrictive rules governing shareholder suits and other legal provisions affecting shareholder rights and powers have contributed too. The net effect has been that the corporations have been run essentially in the interests of their permanent employees, with shareholders' returns needing only be kept above some minimal level.<sup>13</sup>

These systems are now under attack. Leading German CEOs are increasingly arguing that to compete in the increasingly global capital markets, their country must move toward Anglo-American shareholder capitalism. Juergen Schrempp of DaimlerChrysler is only the most prominent example. Moreover, change is occurring. Several firms have actually taken moves in this direction, such as adopted US GAAP, listing their shares in the US and adopting more American-style executive compensation schemes. Additionally, the recent acquisition of Mannesmann by Vodafone-Airtouch in a deal that began as a hostile raid signals the emergence of an active market for corporate control. The increasing share of stock held by American and British institutional investors is playing a significant role, both in supporting the market for corporate control and in placing direct pressure on companies to pay attention to shareholders. Similarly, in Japan both the Ministry of International Trade and Industry and the leading association of executives in Japan (the *Keisai Doyukai*) have called for fundamental reforms of the Japanese system to bring it closer to the Anglo-American model and, in particular, for giving much more attention to shareholder interests.

At least part of the reason for this challenge to traditional governance systems lies in the recent success of the American economy, especially in comparison to the economies of the major continental European countries and Japan. The unprecedented performance of the US economy in the 1990s has led to suggestions that there is an inherent superiority to the "Anglo-Saxon," shareholder-dominated model of governance. For society's good, shareholder value should be the overriding objective, and the governance system should ensure that it is relentlessly pursued.

Yet it is good to remember that, only a very short time ago, fashion was very different. Through the 1980s, the German and Japanese economies seemed to be doing brilliantly, and their systems of "patient capital" were held up as superior models for the US to emulate.<sup>14</sup> Germany's system of codetermination and bank-dominated finance was credited with bringing labor peace, minimal unemployment and robust economic growth.

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<sup>13</sup> See Milgrom and Roberts (1994) for an extended analysis of the Japanese system in these terms.

<sup>14</sup> See, for example, Michael Porter (1996).

Japan's corporations, with their cross-shareholdings and insider-dominated boards, had similarly produced high, stable levels of employment, immense growth and, until the asset-price bubble burst a decade ago, spectacular stock market returns. American capitalism, meanwhile, was identified with short-termism, layoffs and downsizing.

How then to think about the choice of governance systems? Which is best?

Holmström (1999) has persuasively argued that what system of governance works best depends on the underlying economic environment. He then argues that the rapid pace of globalization and technological change means that there is a great need today for transferring resources to radically different uses from those where they have been employed. Shareholder-dominated governance is an especially effective model in this context. Shareholders will freely and “unemotionally” move the resources they control to higher-valued uses. Other claimants, and in particular employees and managers, are less easily motivated to make such shifts, which are personally and perhaps professionally disruptive. So, if the resources need to be moved, giving primacy to shareholder interests is more likely to ensure it will happen.

There is a danger in shareholder domination – that shareholders will transfer their capital in pursuit of higher returns for themselves even though the losses incurred by others are large enough to be more than offsetting. These welfare losses are minimized by having active, flexible labor markets that facilitate the movement of labor and the embodied human capital to new uses. These in turn are supported by the willingness and ability of the population to move physically to new locales and by relatively ungenerous unemployment compensation, which encourages those who ought to move to new employment to do so quickly. A second problem with shareholder control is that if employees do not have voice through the governance process, their only means to protect their interests is through strikes and other costly conflicts. Equally, of course, there is a danger that if employees are empowered by having a role in governance they will block reallocations that increase efficiency but reduce the returns to them and the value of their human capital.

A simple model captures some of these ideas. Suppose that strategy can be represented by a real variable  $t$ . Workers unambiguously prefer the current strategy, normalized to  $t = 0$ , perhaps because change requires extra effort and uncertainty or because they have made personal choices (housing location, development of personal networks) that are geared to the *status quo*. In contrast, the preferred strategy of capitalists will be  $T$ , which is initially uniformly distributed on  $[0, T^*]$ . If financial capital alone makes the decision on strategy, then it will implement the new strategy  $t = T$ . If workers are given weight  $m$  in governance, then the decision will be  $t = m\theta + (1-m)T = (1-m)T$ . Giving workers such a role has a direct cost to the investors of  $\gamma m T^*$ . The motivation for this formulation is that workers' representatives need educating if they are to play a role in governance, and their involvement might slow down the process. The cost of these is plausibly increasing in the size of the role they will play ( $m$ ) and the range of issues they must be prepared to face ( $T^*$ ). The bilinear form captures this in a simple way.

Given  $T$  and  $m$  workers have three options: accept the new strategy and stay with the firm, exit the firm (leaving the decision to the owners), or stay on but go into open conflict (e.g., a strike) to change the decision to one more favorable to them. Acceptance results in the strategy  $(1-m)T$ . If workers leave, the decision becomes  $t = T$  but the firm incurs a cost  $c$  to replace the workers. If open conflict ensues, the decision becomes  $t = (1-n)T$ , where  $n$  is a measure of labor's bargaining power in disputes. However, open conflict carries a cost  $s_E$  for employees and  $s_I$  for investors.

Employees' utility with decision  $t$  if they stay in the firm is then taken to be  $1 - t - xs_E$ , where  $x$  is an indicator for whether open conflict occurs. If they leave, their utility is  $w < 1$ . Investor utility is  $1 + t - T - xs_I - yc$ , where  $y$  is another indicator variable which is one when workers quit, in which case the firm incurs the cost  $c$ . Notice that we always have  $0 < t \leq T$ , so that the utilities can be interpreted in terms of the distance between the chosen  $t$  and what each party would prefer. In the current context, the employees' outside option  $w$  reflect the flexibility of the labor market and the ease of finding a new job, as well as the quality of the job.

The payoffs to workers from accepting the shareholders' choice of strategy, exiting and striking are, respectively,  $1 - (1-m)T$ ,  $w$  and  $1 - (1-n)T - s_E$ . Thus, the condition for a strike to occur is

$$\frac{s_E}{(n - m)} \leq T \leq \frac{1 - w - s_E}{(1 - n)}.$$

Strikes occur when the desired change in strategy is large enough that changing it is worth the costs of conflict but not so large that even if the strike is called, the resulting compromise is still worse for workers than exiting the firm.

Thus, shareholders can guaranty that (with probability one) there will be no strikes if they select  $m^3 \bar{m} \equiv (n(1-w) - s_E) / (1-w - s_E)$ , so that the region yielding a strike is empty. This is then the highest level of  $m$  that could ever be optimal because there is no gain to shareholders from yielding even more influence to workers.

The payoff to shareholders in the event of no strike is  $1 - mT$ , their payoff under a strike is  $1 - nT - s_E$  and if workers leave then the payoff is  $1 - c$ .<sup>15</sup> Then the expected utility of the shareholders is

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<sup>15</sup> The following calculation assumes that the firm has to announce its true preferred strategy,  $T$ . Yet when  $T$  falls in the region yielding a strike, shareholders might receive higher payoffs by moderating their demands so as not to induce a strike. Whether allowing such a possibility seems appropriate depends on what we think about the firm's ability to commit to its position before either side incurs the costs of preparing for conflict. Our belief is that it is sensible to assume that if preferences are too divergent, conflict is probably unavoidable. We have, nevertheless, developed a more complex model that generates similar results to the present one and in which this issue does not arise. However, the methodological gain did not seem to justify the cost in added complexity, so we simply assume that the firm must "announce" the actual  $T$ . Note, however, that in a variant developed below we do allow a limited option for moderation.

$$E(u_I) = 1 - c - \mathbf{g}mT^* + \frac{1}{T^*} \left[ \frac{(c - s_I)(1 - w - s_E)}{(1 - n)} - \frac{n(1 - w - s_E)^2}{2(1 - n)^2} + \frac{s_E(s_E + 2s_I)}{2(n - m)} \right].$$

By simple calculation, this expression is seen to have a positive second derivative with respect to the choice variable  $\mathbf{m}$  while the sign of the first derivative at  $\mathbf{m} = 0$  may be either positive or negative. Thus, the optimal choice of  $\mathbf{m}$  is always either  $\mathbf{m} = 0$ , corresponding to complete shareholder control (and the possibility of open conflict between shareholders and workers when a significant change in strategy is desired) or else the level  $\mathbf{m}_0$  calculated above that guarantees no strikes.

By calculating the partial derivatives of  $\partial E(u_I)/\partial \mathbf{m}$  with respect to  $s_I$ ,  $\mathbf{g}$  and  $T^*$  we see that the first of these is positive while the latter two are negative. Thus, giving the workers a role in governance gets more attractive as the cost of strikes to the firm increases and less so as the possible strategic changes and the direct costs of involving workers in governance increase. Further, by examining the difference  $E(u_I(\mathbf{m}_0)) - E(u_I(0))$  we see that, if  $T^*$  is not too large, the relative attractiveness of the  $\mathbf{m}_0$  solution is decreasing in the employees' outside option  $w$  and increasing in  $n$ , their bargaining power in open conflict. Finally, from the formula for  $\mathbf{m}_0$ , it follows that if employees are given a role in governance, then the size of this role is increasing in their bargaining power and decreasing in the attractiveness of their exit option and the cost to them of strikes.

We can bring the assumed increasing importance of human capital into the model in a simple but perhaps useful way. Assume now that the firm can choose initially whether to have workers focus on building skills that are particularly valuable under the *status quo* strategy. These investments carry a cost to the firm of  $\mathbf{d}$ . As well, making the investments may worsen the employees' outside option,  $w$ , perhaps because they have not developed as much general human capital. If the strategy-specific investments are made, the payoff to the firm is increased by an amount  $\mathbf{b}$  so long as the strategy is unchanged from the *status quo*. Otherwise, the firm's payoffs are as above. Thus, the payoffs to the firm are  $1 + \mathbf{b} - T$  if it sticks with  $t = 0$  and  $1 + t - T - xs_I - yc$  otherwise. Increases in the magnitude of  $\mathbf{b}$  will again model increasing importance of firm-specific (and strategy-specific) human capital.

We allow the firm to decide not to try to institute a new strategy if doing so would result in lower payoffs than sticking with the *status quo* of  $t = 0$ . Taking this option means that the firm that has chosen the specific investments will display inertia, sticking with  $t = 0$  over a range of strategy options  $T$  that it would otherwise pursue. For  $\mathbf{b}$  sufficiently small,<sup>16</sup> the range over which inertia holds is  $[0, \mathbf{b}/(1 - \mathbf{m})]$ , which lies in the accept region for the workers. For larger  $T$ , the firm will seek to change the strategy, even though it loses the benefit of the strategy-specific investment.

The expected payoffs to the firm are now

<sup>16</sup> Precisely,  $\mathbf{b} \leq ((1 - n)s_E - ns_I)/n$ , which we henceforth assume to hold.

$$E(u_I) = 1 - c - g\mathbf{m}l^* - dz + \frac{1}{T^*} \left[ \frac{z\mathbf{b}^2}{2(1-\mathbf{m})} + \frac{s_E(s_E + 2s_I)}{2(\mathbf{n} - \mathbf{m})} + \frac{(c - s_I)(1 - w - s_E)}{(1 - \mathbf{n})} - \frac{\mathbf{n}(1 - w - s_E)^2}{2(1 - \mathbf{n})^2} \right]$$

where  $z$  is an indicator that is one if the strategy-specific skills have been chosen and zero otherwise and where we allow that  $w$  may depend on whether these have been chosen.

Given  $z$ , the expected payoff is again a convex function of  $\mathbf{m}$  whose derivative at zero can be negative or positive, depending on the magnitudes of the parameters. Consequently, there are again two regimes,  $\mathbf{m} = 0$ , corresponding to complete shareholder control but the possibility of strikes, and  $\mathbf{m} = \mathbf{m}_0$ , with employees having a sufficiently large role in governance that open conflict is avoided. The comparative statics on the various parameters that appeared in the earlier version of the model are also as before.

The first new feature of the comparative statics is that, as  $\mathbf{b}$  increases, the attractiveness of the  $\mathbf{m} = \mathbf{m}_0$  regime increases, because the cross partial of the expected payoff with respect to  $\mathbf{m}$  and  $\mathbf{b}$  is positive. Further, because the payoff function is also supermodular in  $\mathbf{b}$  and  $z$ , increases in  $\mathbf{b}$  make investing in the strategy-specific skills more attractive, and this then favors involving workers in governance. As well, inducing the strategy-specific investments is more attractive if the firm is committed to  $\mathbf{m} = \mathbf{m}_0$  than if it has chosen  $\mathbf{m} = 0$ . The convexity of payoffs in  $\mathbf{m}$  also implies that constraining  $\mathbf{m}$  to be strictly positive (as, for example, in German codetermination) favors the  $\mathbf{m}_0$  solution and the associated investment choice. Finally, if  $w$  does not depend on  $\beta$ , then (because the cross partial between  $z$  and  $T^*$  is negative), larger potential strategy changes  $T^*$  discourage the adoption of the specific investments.

Thus we should see clustering. One cluster involves shareholder dominance, low investments in specific human capital and relatively large changes in strategy. It should be seen when relatively large changes in strategy need to be considered, when workers' outside opportunities are good, when their bargaining power in strikes is weak and when the costs to the firm of a strike are low. The other cluster involves shared governance, labor peace, higher investments in firm-specific human capital, inertia in the face of some opportunities for strategic change and then moderated changes in strategy when they do occur.

On balance, the conditions in the Anglo-American economies in recent years arguably have favored getting the reallocation decisions made quickly and cleanly, even if not with perfect internalization of all costs and benefits, via a system of shareholder-dominated governance. The American and post-Thatcher British labor markets have been very flexible, at least in comparison to continental European and Japanese ones. The new strategies have often been significantly different from what has come before. And, after the Reagan Revolution, employees' bargaining power has fallen with the decline in legal and public support of unions.

A number of observers, including Holmström, in fact ascribe a goodly part of the success of the American economy in the 1990s to its corporate governance having become shareholder focused in the preceding decade and thus to the US's having made much more progress than Europe in shifting resources to new uses.

Whether this implies Europe and Japan should adopt shareholder-oriented governance is less clear. To the extent that resources need to be moved a long way in strategic terms, a shift is indicated. However, there are points on the other side. First, despite the steady erosion of legal and regulatory mobility barriers in Europe, very real ones exist internationally, most notably language and educational systems. Moreover, Europeans and Japanese appear to show much less willingness to relocate even intra-nationally in pursuit of better jobs than do Americans (the relative levels of benefits for the unemployed are only a part of the explanation for this). On top of this, the rates of new job creation in Europe and Japan seem quite low compared to the US. This in turn is arguably linked both to the social attitudes towards entrepreneurial failure and the high economic and status costs of layoffs and plant-closings, as well as to the underlying systems for financing business investments. Yet these are, in part, a function of the governance systems that have been in place.

This last point brings home the fact that different approaches to governance have to be interpreted in the context of the broader economic and social systems of which they are a part. Different governance processes and procedures fit with different economic contexts, and performance is determined systemically, not just by the individual components in isolation. Shareholder-dominated governance fits with active labor markets, a high propensity to relocate and easy job creation and destruction. One by-product is low investments in firm-specific human capital. Systems where labor's interests are well represented in corporate decision making make more sense where high levels of investment in firm-specific human capital are desired and where workers are ill-protected by the exit options afforded by labor markets. Clearly, in such a context, disenfranchising labor from governance and grafting in shareholder capitalism can yield radically different performance than is achieved in the American system, where shareholder capitalism is supported by other institutional features.

This is not to argue that Europe or Japan can or should ignore the pressures from globalization and technological change to shift resources in major ways. Nor should they underestimate the value of shareholder-oriented governance in achieving such reallocations. But there are costs to these reallocations and to this governance system, and the European and Japanese contexts make these costs higher than they are elsewhere. This means that the appropriate response is not an isolated change in governance, but rather fundamental systemic reform involving both governance and labor market institutions.

A final point. No matter what governance processes are in place in a corporation, most decisions will in fact be taken by executives, not by the board or the empowered claimants. There is a real danger then that telling the executives to consider the interests of multiple stakeholders will give them little or no guidance for decisions. It in fact may

simply allow them to rationalize any course of action they might fancy. In contrast, a single-minded focus on the interests of one group, especially when those interests are relatively easy to discern, gives executives a clear direction and provides a relatively unambiguous performance measurement. This seems to us a strong argument for shareholder governance.

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