

DOES MONITORING INCREASE WORK EFFORT? THE RIVALRY WITH TRUST AND LOYALTY

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Principal-agent theory suggests that tighter monitoring will raise an agent's work effort and will be applied provided that transaction costs are low. However, when a psychological contract exists between principals and agents, the agents perceive increased monitoring as an indication of distrust, and this induces them to reduce work effort. This "crowding out effect" is likely to dominate when the relationship between principals and agents is personal, while the "disciplining effect" is likely to dominate when the relationship is abstract, as in a competitive market setting. Empirical evidence from neighbouring sciences and from an econometric study supports this proposition.

I. EFFECTS OF MONITORING

Economic theory, in particular principal-agency theory, assumes that in work relations individuals pursue their own interest and expend work effort to the point where net utility is maximized. Whereas the income earned provides benefits, the effort of earning it produces disutility; therefore each individual will have an incentive to shirk. (Alchian and Demsetz [1972]). Agents relentlessly exploit every opportunity to ease their work burden, as long as the principals do not react and punish them so severely that their net utility from shirking is decreased. Whenever contracts, because of informational

problems, are incomplete and costly to monitor, shirking is assumed to be a frequent and highly significant activity in all principal-agent relationships (a recent survey is given in Sappington [1991]). Economists have, therefore, concentrated on finding out how shirking can be prevented. Shirkers can be "disciplined" by a variety of means such as more intensive supervision and control combined with sanctions, by bonuses for employees who identify shirkers, by mandatory retirement or dismissal, or by unemployment.¹

However, the view that agents can be prevented from shirking by stricter monitoring (or other such disciplinary devices) is one-sided and captures only part of the reality. I argue that under readily identifiable conditions, increased monitoring reduces agents' overall work effort. The reason is that an implicit (psychological) contract often existing between principal and agent is broken: by monitoring, the principal indicates distrust towards the agent's willingness to perform his or her

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1. See e.g. Becker and Stigler [1974], Lazear [1979; 1991], Shapiro and Stiglitz [1984] and Tirole [1986].

task. The agent's perception of this distrust leads to a "crowding out" of work effort. Such an effect is well documented in social psychology. In general, the "disciplining effect" (monitoring raises work effort) and the "crowding out effect" (monitoring reduces work effort) coexist.

I identify the conditions which determine when one or the other effect is likely to prevail and empirically test the hypotheses derived from them. The experimental and econometric evidence adduced suggests that under important circumstances, tighter monitoring by principals damages agents' work effort and, therefore, under these circumstances it is not rational for principals to discipline their agents.

Section II derives the work effort individual agents optimally choose. The following section III discusses how the principals choose the optimal level of monitoring in view of the agents' behavior. Section IV offers concluding remarks.

II. AGENTS CHOOSE WORK EFFORT

Agents rationally choose that amount of work effort E which maximizes their net utility U . Increasing work intensity yields both higher benefits B and higher cost C .

Benefits of Work

The benefits an agent derives from work are affected by his or her work effort as well as by the intensity of the monitoring, M , undertaken by the principal: $B = B(E, M)$. When a worker increases his or her application to the task set by the principal, his or her monetary remuneration and the social recognition received from others tends to increase, but most likely at a marginally decreasing rate:

$$\delta B / \delta E = B_E > 0, \delta^2 B / \delta E^2 = B_{EE} < 0.$$

The agent also benefits from a good relationship with the principal: good relations are often highly valued by the agents as

it makes life easier and more enjoyable. While this aspect is disregarded by standard neoclassical theory, its relevance has been pointed out by writers such as Williamson [1975], who speaks of "atmosphere," Akerlof and Yellen [1986], who argue that workers acquire sentiments towards the firm in which they are employed, Baker, Jensen and Murphy [1988], who stress the role of trust and loyalty, or Simon [1991], who contends that people in organizations do all sorts of things without receiving any specific reward. Breton and Wintrobe [1982] point out that while markets require law-based property rights, exchange within bureaucracies builds on trust-based property rights. People do not do the minimum they can do without getting caught, and they tend to identify strongly with the organization they are working for. These aspects are closely related to what Granovetter [1985] calls "social embeddedness," or Coleman [1990, 72] calls "conjointness," wherein one "actor vests authority in another because the first actor believes that he will be better off by following the other's leadership. He vests his rights of control unilaterally, without extrinsic compensation."² One may speak of an implicit "psychological contract" between principal and agent, a relationship which has been much discussed in the industrial relations literature.³

Crowding Out Effect

When such a psychological contract exists, the agent may perceive more intensive monitoring by the principal as an indication of distrust, or as a unilateral break of the contract built on mutual trust. As a consequence, the agent affected sees no reason why he or she should not be-

2. See also the extensive review by Frank [1992].

3. See e.g. Kaufman [1989], and, for empirical evidence, Ribeaux and Poppleton [1978] and Beer et al. [1984].

have in a opportunistic way (to use Williamson's terminology). This will maximize his or her utility by exploiting all possibilities for profitable shirking to the full. Hence, intensified monitoring reduces the agent's marginal benefit from work effort, i.e. $\delta B_E / \delta M = B_{EM} < 0$. Equivalently, increased monitoring raises the marginal utility from shirking as the agent's "bad conscience" is absolved by the breakdown of trust with the principal: Thus to some extent monitoring "crowds out" work effort.

This crowding out effect is supported by a wealth of experimental and real-life evidence in two strands of theories in cognitive psychology:

Overjustification is reduced. This psychological effect states that when people are extrinsically rewarded for a task which they are ready to undertake for its own sake, the intrinsic reason is negatively affected or crowded out (so-called "hidden costs of reward").⁴ As a result, when the extrinsic reward is discontinued, less of the task will be performed.⁵ Agents with high work morale feel "overjustified" when the (high) morale they have is not required, as principals' monitoring activities and the regulations imposed upon them enforce a particular behavior anyway.

A *norm of reciprocity* is violated, or in other words, the equilibrium of recognition and work effort included in the implicit contract is disrupted. According to "equity theory" as well as "social exchange theory" people will continue to interact only as long as all parties derive net benefits from it.⁶ In the context of a principal-agent relation, the employees with a high mar-

4. For a survey see McGraw [1978] and Deci and Ryan [1985].

5. For experimental evidence see Lepper, Greene and Nisbett [1973], Deci [1975], and Staw, Calder and Hess [1980].

6. The "norm of reciprocity" is discussed in Gouldner [1960]. For "equity theory," see Adams [1963; 1965], Walster, Walster and Berscheid [1977], and for "social exchange theory," see Homans [1950; 1961] and Blau [1964].

ginal benefit of work effort feel that their relationship with their superiors no longer yields positive net benefits for them as their special dedication to work is not appreciated; consequently their marginal benefit from work effort decreases. In industrial psychology, "much research shows that unless they are rewarded more highly, people who have high inputs tend to be most dissatisfied" (Lawler [1973, 140]). Accordingly, they reduce their work effort. Akerlof [1982] suggests in a similar situation that a "gift" is offered by the agents but is not accepted by the principals.

Monitoring *may*, but *need not*, crowd out the agents' intrinsic motivation for work. Indeed, there are many circumstances in which the principals' more intensive monitoring has no psychological effects on agents (i.e. $B_{EM} = 0$), or may even contribute to a higher work motivation (i.e. $B_{EM} > 0$). Psychologists (see in particular Deci and Ryan [1985]) identify two conditions under which monitoring tends to crowd out work effort:

(a) When an agent affected feels that the extent of *self-determination* is unduly restricted by the principal. In that case, the agent rationally substitutes intrinsic for extrinsic control.

(b) When the principal's control reduces the agent's *self-evaluation*. Monitoring which indicates that the principal is convinced that the agent is unable or unwilling to fulfill the assigned task to the principal's satisfaction tends to reduce the agent's intrinsic motivation.

Principal-agent relationships vary widely with respect to how far the agents' self-determination and self-evaluation are affected by the principals' monitoring activities. In jobs with high discretion such as in management, many financial services or research, where factors such as "intuition" and "judgement" are crucial, controlling by the principals tends to have a negative effect on self-determination and self-evaluation compared to well-defined, simple occupations, not least because the former job will be chosen by people who

care for these values.⁷ As an adviser to executives, Drucker [1986, 121] even contends that major assignments should not be given to people who need monitoring, but rather to someone "who has earned trust and credibility within your organization." In more personalized relationships, the crowding out effect also tends to be larger. On the other hand, when the agent is disciplined by an organization with more or less anonymous actors, no such psychological effect arises. In the extreme case of impersonal disciplining through the market, no psychological crowding out is to be expected.

Cost of Work

Work in our context is accompanied by the cost of expending effort as well as by the cost imposed by the principal's monitoring activity: $C = C(E, M)$. The marginal cost of expending effort is positive ($C_E > 0$) and increasing ($C_{EE} > 0$).

Tighter monitoring raises the marginal cost of shirking or reduces the marginal cost of effort ($C_{EM} < 0$).⁸ This is the *disciplining effect* of monitoring stressed in standard principal-agent theory. Depending on specific circumstances, monitoring is more or less able to affect agents' behavior; in the extreme, there is no disciplining effect ($C_{EM} = 0$).

The conditions under which the disciplining effect of monitoring is rather weak have been extensively discussed in principal-agent theory. Important sets of conditions are when the activities assigned to the agent are difficult to define exactly (incomplete contracts) or when there are informational asymmetries in favour of the agents.

7. This selection effect is recognized by Kornhauser [1962] and Beauvais [1992].

8. As Holmström and Milgrom [1990] have shown, performance incentives applied to one of several tasks may cause effort to be allocated away from others, so that in the latter there is a perverse disciplining effect ($C_{EM} > 0$).

Agents' Optimal Effort

Rational agents maximize utility $U[B(E, M) - C(E, M)]$ by choosing their effort level E , taking the extent of monitoring M to be constant. They choose E so that $B_E = C_E$, yielding optimal effort E^* . Differentiating this optimality condition with respect to the extent of monitoring imposed by the principal indicates how agents (optimally) react:

$$(1) \frac{dE^*}{dM} = B_{EM} - C_{EM}/C_{EE} - B_{EE} \frac{d}{dM} = 0$$

Three results may be singled out.

(a) Following standard principal-agent theory (e.g. Alchian and Demsetz [1972], Jensen and Meckling [1976], Fama and Jensen [1983]), there is a disciplining effect of monitoring ($C_{EM} < 0$), while the crowding out effect is neglected ($B_{EM} = 0$). Under these assumptions, principals' tighter monitoring induces agents to put in more effort ($dE^*/dM > 0$).

This result is expected to obtain when there exists an abstract or neutral relationship between the principal and the agent, i.e. when personal factors are unimportant. This will be the case in competitive market relationships between buyers and sellers. (According to Adam Smith, the customer does not depend on the producer's benevolence, or on any other such "psychological" motivation.) Clearly, these conditions characterize a very large part of all economic transactions in developed economies.

(b) In contrast, when a crowding out effect does exist ($B_{EM} < 0$), while the disciplining effect of monitoring is small, or does not work at all ($C_{EM} = 0$), tighter monitoring by the principals reduces the agents' effort ($dE^*/dM < 0$). Such an outcome is expected in strongly personalized relationships between principals and agents when psychological contracts matter, and when the superiors are unable to effectively control the behavior of their inferiors.

Personalized relationships between principals and agents exist in a great many spheres of economic life, a fact which has been fully appreciated in the neighbouring sciences such as industrial relations, industrial psychology or organization theory.⁹ It should be noted that it is not only relevant in purely bilateral relationships, but can be of great importance within large cooperations or in the financial world, where aspects of "trust" and "honour" play a very large role. The propositions here developed suggest that when such a psychological contract exists and monitoring is ineffective ($B_{EM} < 0$, $C_{EM} = 0$), leaving the agents more discretion raises their work effort, because their sense of self-determination and self-evaluation is increased.

(c) In general, both the disciplining and the crowding out effect are active ($C_{EM} < 0$, $B_{EM} < 0$), so that monitoring has two opposite effects on the agents' work effort. Whether monitoring is beneficial from the principal's point of view depends on the conditions discussed determining the size of the crowding out and disciplining effects. While it can be theoretically speculated which effect dominates under what circumstances, the outcome must be empirically investigated.

Econometric Evidence

The major proposition here established is that more intensive monitoring applied by the principal increases an agent's work effort in an abstract, neutral relationship, while his or her work effort is reduced in a personalized relationship. A test requires data on individual agents' effort levels, monitoring intensity, and the principal-agent relationship. Such data are hard to come by. Fortunately, a recent study by Barkema [1992] can be used for the pur-

9. See e.g. Donaldson [1980], Beer et al. [1984], Simon [1991], with many references.

pose at hand. His data set refers to 116 managers in medium-sized Dutch firms in 1985. They range between less than one hundred to more than 30,000 employees.¹⁰

The managers' individual effort is (in line with Holmström and Milgrom [1987, 1990]) operationalized as the number of hours put in. The intensity of monitoring is captured by three aspects: the regularity with which their performance is evaluated; the degree of formality of the evaluation procedure, and the degree to which the managers are evaluated by well-defined criteria. A measurement model is used to empirically establish that these variables meaningfully represent the latent variable "monitoring." A structural model is then used to show the influence of so-defined monitoring M on managers' effort level E^* . Three different principal-agent relationships are distinguished:

The managers are monitored by the parent company. This corresponds to a rather impersonal relationship. Following our propositions, a positive influence of monitoring on managers' efforts is expected. The corresponding parameter estimate $\alpha = dE^*/dM$ turns out to be positive and is statistically significant.

The managers are monitored by their firm's chief executive officer who represents a personalized relationship in which implicit psychological contracts tend to be important. According to our proposition, monitoring in this case tends to reduce the agents' effort. The econometric estimate is consistent with this proposition, yielding a statistically significant negative parameter α .

An intermediate case is represented by the managers being monitored by the board of directors. The crowding out effect is, according to our hypothesis, expected to be larger than in the first case, but smaller than in the second case. The estimate yields a parameter

10. For a more complete description of the data, the statistical model and the estimation model, see Barkema [1992].

$\hat{\alpha}$ not statistically different from zero, and is thus consistent with the theoretical expectations.

III. PRINCIPALS CHOOSE MONITORING

The principals maximize their utility or profit M by accordingly monitoring the agents, taking into account their reactions $E^* = E^*(M)$. Profit is raised by higher output X which depends on the agents' effort input, $X = X(E)$, with diminishing marginal returns ($X_E > 0, X_{EE} < 0$). Monitoring is costly for the principals, $K = K(M)$, and marginal costs tend to increase ($K_M > 0, K_{MM} > 0$). As some monitoring is "impacted" in the principal-agents relationship, up to $M_0 > 0$, no costs arise ($K = 0$). Optimal monitoring M^* requires

$$(2) \quad X_E \cdot (dE^* / dM) - K_M = 0.$$

It is useful to distinguish three cases:

Monitoring does not affect the agent's effort level ($dE^* / dM = 0$). The principal will then only monitor as long as no marginal costs arise; $M^* = M_0$.

The disciplining effect of monitoring dominates the crowding out effect: $dE^* / dM > 0$, and $M^* > M_0$.

The crowding out effect outweighs the disciplining effect: $dE^* / dM < 0$, and $M^* < M_0$.

In industrial relations, there is substantial empirical evidence in favour of these propositions. Thus, for example, supervision theory (see e.g. Reber and van Gilder [1982], Donaldson [1980]), suggests that employers should, and do indeed, regulate jobs requiring a high work morale less than other jobs.

Barkema [1992] provides to some extent an empirical test of the propositions in

Dutch firms. Unfortunately, he does not distinguish the same principal-agents relationship as discussed in our section II, but lumps it into two categories. He finds that when the chief executive officer or the board of directors monitor the managers, the intensity of monitoring is weaker than when monitoring is undertaken by either the chief executive officer or the parent company. In consonance with our hypothesis, this suggests that the more personal the principal-agent relationship is (which is the case when the CEO or the board of directors are the superiors), the less monitored are the subordinate managers. When, on the other hand, the relationship is less personal, as when the parent company is in charge, monitoring is more regular, well-defined and formal.

IV. CONCLUSIONS

Does monitoring increase work effort? The unqualified positive answer implicit in much of principal-agent theory is correct only under specific conditions. The answer is negative under a wide and quantitatively important set of conditions, when there exists a personal relationship between principal and agent. Monitoring is thus perceived as an increased indication of distrust, which induces agents to reduce their work effort. The disciplining effect proposed by standard principal-agent theory is likely to obtain in abstract relationships for which the competitive market is paradigmatic. The crowding out effect is likely to result when the relationship between principal and agent is personalized. This proposition is supported by substantial evidence for industrial relations theory, by industrial psychology and by organization theory, as well as by econometric evidence.

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