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On the relationship between intrinsic and extrinsic work motivation[1]

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Abstract

Monetary rewards and supervision crowd out intrinsic work motivation (work morale) under identifiable and relevant conditions. Work performance decreases if this crowding effect dominates the normally considered disciplining effect of external interventions. The crowding out effect is supported by experimental and econometric evidence. Crowding theory allows to explain empirical observations contradicting principal-agent theory such as why pay-for-performance is so little used, why bonding is virtually never observed, and why managers of for-profit institutions receive part of their salary in terms of bonuses, while managers in not-for-profit institutions receive a fixed payment. © 1997 Elsevier Science B.V.

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1. A neglected aspect

The principal-agent paradigm and the closely related theory of contracts, property rights and organization theory, as well as modern institutional economics in general have without doubt provided major insights for industrial relations. These theories have, however, been exclusively concerned with *extrinsic* work

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motivation and disregard *intrinsic* work motivation. Agency theorists consider the latter to be irrelevant for their purposes. When people work for *intrinsic* reasons the supply curve of labour is simply shifted rightward as an exogenously determined amount of work is added. The workers' *marginal* decisions with respect to work performance are unaffected. The principal-agent paradigm concentrates on the incentives that bring forth a desired amount and intensity of work. Selfish utility maximizing workers always try to do as little as possible as he or she benefits from avoiding work or shirking.

Agency theory sees industrial relations as being dominated by distrust, and in particular, workers' shirking.[2] As a result, the analysis focuses almost obsessively on the principals' need to monitor and control the agents (workers). Monitoring can be accompanied by negative sanctions, in particular the threat of dismissal, unemployment thus being a 'discipline device' (Shapiro and Stiglitz, 1984). A widespread use of individual incentive payments where the financial compensation is contingent on work performance is advised (e.g. Stiglitz, 1987).

This paper argues that a more balanced approach is needed. To understand the concept of work in firms (and elsewhere) *two* motivations must be taken into account: extrinsic *and* intrinsic. But what really matters is the systematic relationship existing between intrinsic and extrinsic work incentives, in particular, *the use of extrinsic incentives may crowd out intrinsic work motivation under identifiable conditions*. Aspects of organizational behaviour which are anomalous from the point of view of traditional theory (see Stiglitz, 1987) may be therewith explained. Empirical studies have found that pay-for-performance relationships are weaker than suggested by agency theory, that incentive payments are more frequently used for managers and low level workers, but less so for the large number of middle-level employees, that managers of for-profit organizations receive sizeable bonuses while those in non-profit organizations do not and that bondage of agents is not observed in reality.

Section 2 of this paper discusses the concepts of intrinsic and extrinsic motivation and sets them into the perspective of work. The conditions for external intervention crowding out (and sometimes crowding in) intrinsic work motivation are the subject of Section 3. Section 4 inquires for what work activities intrinsic work motivation is desirable and when damaging spill-overs occur. Section 5 discusses the implications for economics, and shows how crowding theory may account for open questions and empirically observed anomalies.

[2] There are certainly exceptions. Thus Sen (1977, p. 101) states that "to run an organization *entirely* on incentives to personal gain is pretty much a hopeless task" and points to "commitment and the social relations surrounding it". Some authors such as Williamson (1975, p. 256) acknowledge the importance of trust and atmosphere as well as 'work for work's sake' but they tend to dismiss these aspects because they are difficult to identify and to model.

2. Intrinsic and extrinsic work motivation in perspective

Persons are intrinsically motivated if 'work is performed for work's sake'. Many different conceptualizations of intrinsic preferences exist (see Deci and Ryan, 1985) but the phenomenon corresponds well to everyday observation and experience. For our purpose intrinsic work motivation is identified with work morale or work ethic.

Extrinsic preferences are activated from outside the person concerned. External interventions inducing persons to perform may be positive (mainly financial work incentives) or negative (threat of wage cuts or of dismissal). The effect of an external intervention (E) on work performance (P) may be shown in a principal-agent context (see Frey, 1993a, Frey, 1994). An agent performs by considering the respective benefits B and cost C. Both increase in performance ($\partial B/\partial P = B_p > 0$, $\partial C/\partial P = Cp > 0$). Higher performance leads to diminishing marginal returns and is associated with increasing marginal cost ($B_{PP} < 0$, $C_{PP} > 0$). Benefits and cost are also influenced by the principal's external intervention

$$B = B(P,E) \tag{1}$$

$$C = C(P,E). \tag{2}$$

A rational agent chooses a level of performance P^* that maximizes net benefits ($B - C$), yielding the first-order condition

$$Bp = Cp. \tag{3}$$

Differentiating this optimality condition with respect to E shows how the agent's optimal performance P^* is affected when the principal changes the extent of external intervention

$$\frac{\mathrm{d}P^*}{\mathrm{d}E} = \frac{B_{PE} - C_{PE}}{C_{PP} - B_{PP}} > < 0. \tag{4}$$

Following standard principal-agent theory, external intervention raises performance by imposing a higher marginal cost on shirking, or, equivalently by lowering the cost of performing, i.e. $C_{PE} < 0$. This is the *disciplining effect* of external intervention. An external intervention which undermines intrinsic work motivation negatively affects the agent's marginal benefit from performing, i.e. $B_{PE} < 0$ which is called the *crowding-out effect of intrinsic motivation*. If, in contrast, an external intervention raises intrinsic work motivation, the agent's marginal benefit from performing is positively affected, i.e. $B_{PE} > 0$ which is called the *crowding-in effect of intrinsic motivation*.

The total effect of an external intervention on work performance depends,

according to Eq. (4), on the relative size of the marginal disciplining and crowding effects. Obviously, if a principal's intervention is disciplining and intrinsic work motivation is bolstered, performance increases ($dP^*/dE>0$). If, on the other hand, it undermines the agent's intrinsic work motivation and has no disciplining effect, performance decreases ($dP^*/dE<0$). This is also the case if the disciplining effect is weaker than the crowding effect, i.e. $(B_{PE}-C_{PE})<0$. It will be argued that this case is empirically relevant in relevant principal-agent relationships.

The two crowding effects relating to intrinsic work motivation are now sketched in turn (for a fuller discussion and references see Frey, 1992, Frey, 1993a, Frey, 1993b).

When a work activity is supported by both high work morale and external intervention, a 'psychologically' unstable situation arises. The agent is 'over motivated' as she would do the work even if one (or both) motivations were reduced. A rational actor responds by reducing that motivation which is under her control, i.e. she lowers her intrinsic work motivation. Intrinsic motivation is partially or totally substituted by externally controlled extrinsic work motivation. The crowding-out effect is based on a socio-psychological theory known as "hidden costs of reward" (Deci and Ryan, 1985) and is well supported by field studies and laboratory experiments.

When performing an activity that is insufficiently justified for them, people look for reasons for why they do the job, and then start to enjoy it. The strict work-for-pay orientation towards work is given up provided intrinsic rewards are perceived and are attainable. In that case intrinsic rewards undermine the importance of extrinsic rewards and there is a *crowding-in effect*. The process of building up work morale is certainly slower than destroying it, and is less reliable.

A second crowding-in effect is based on a different psychological mechanism. An external intervention may raise intrinsic work motivation when people regard this action as acknowledging their high work morale. Work remuneration perceived as fair may support work morale. According to equity theory (Adams, 1963) individuals attempt to make their ratios of outcomes equivalent to the corresponding ratios of other persons they are in contact with. When feeling overpaid, for example, individuals tend to reduce the inequity by raising their work motivation and by doing a better job. The equity literature therefore predicts that higher pay tends to result in higher productivity (for empirical evidence, see e.g. Lawler and O'Gara, 1967). This particular crowding-in effect does not always take place; it is no mechanic reaction. Moreover, the principals are likely to notice that their extrinsic rewards do not correspond to the performance of the agents, and will either reduce the rewards or dismiss the agents.

In the following, I will concentrate on the *crowding-out effect* because it is more relevant for the problems of principal-agent theory: it questions the possibility of control of agents by external intervention, and thus puts into doubt one of the bases of that theory, and of neo-classical economics more generally. However, the crowding-in effect is not altogether uninteresting for principal-agency theory

because, as will be argued later, it is not always desirable to have agents motivated by higher work morale.

3. Conditions for crowding out

There are two requirements for work morale to be crowded out by external interventions: (A) The agent must have a (sufficiently) high intrinsic work motivation at the outset; and (B) conditions for crowding out intrinsic work motivation must be present. These two requirements will now be discussed in turn.

3.1. High work morale

Persons can have a high intrinsic work motivation for many different reasons. The following three are of particular interest:

1. The more *interesting* a task is for the agents, the higher is their intrinsic motivation to perform well. Manual workers generally have low intrinsic work motivation; they essentially are in a firm because they need the monetary income to survive (see e.g. Lane, 1991, chapter 18). However, when their income rises above the (culturally defined) subsistence level, they seek meaning in work. Recently, a general increase in intrinsic satisfaction with work has been observed (e.g. Yankelovich, 1994). Professions with internalized standards of excellence have in general a higher work motivation based on feelings of competence and self-determination. Indeed, scientists and artists are difficult to imagine without a significant level of work motivation.

2. More *personal* relationships between principals and agents imply recognition, trust and loyalty which support intrinsic work motivation. In a situation of perfect competition, the relationship between individuals is totally guided by the price, and there is in principle anonymity between the trading partners. As soon as one moves outside the perfect market, personal interactions become important and therewith the role of intrinsic work motivation.

3. The more extensive the agents' *participation* possibilities are, the higher is work morale. It is this relationship which lies at the heart of the arguments for co-determination and flatter hierarchies. In Japanese firms relying on consensus processes and collaboration among employees, workers have higher work morale and more commitment to their firm than in comparable American firms relying more on hierarchical decision-making (Aoki, 1990). In an econometric cross-section study Gordon (1994) has found that the intensity of supervision is smaller, the higher the workers' bargaining power. This is consistent with the existence of a large crowding-out effect and a corresponding rational reaction by the principals, namely to discipline workers less. The same difference is reflected between

governments where citizens may directly participate in political decision-making and representative democracies where they cannot.

3.2. Negative effect on work ethic

The psychological conditions under which an external intervention lowers the agents' intrinsic motivation have been well isolated. Crowding-out effects take place when an external intervention is perceived to be *controlling*. In that case, the intervention shifts the 'locus of control' (Rotter, 1966) away from the agent. The principal then determines her behaviour, and the externally guided actor sees no longer any need to maintain his intrinsic work motivation. In contrast, when the intervention by the principal is understood to be *informative* (in the sense of a positive feed-back), intrinsic work motivation is unaffected or may even rise. Whether the principal's intervention crowds out intrinsic work motivation thus depends on the agent's perception. This perception is, however, not haphazard but may be linked to economically relevant determinants.

Four conditions may be identified which systematically influence the way external interventions are perceived by agents.

(1) External interventions by *rewards* and *commands* have different effects. With rewards, the agents feel that they have a certain amount of freedom in their intensity of responding. They perceive rewards as less restrictive to their self-determination than commands, which are felt to intrude directly into the agents' realm of self-determination. It may be hypothesized that external interventions in the form of monetary rewards crowd out intrinsic motivation less than regulations used for the same purpose, because rewards shift the locus of control less than commands do.

(2) The more a *reward is contingent on the performance* desired by the principal, the more strongly the locus of control is shifted from intrinsic to extrinsic incentives, and the more is intrinsic motivation crowded out. A monetary reward received through the functioning of the market constitutes a case where the reward depends on performance; in a perfectly competitive market the reward (wage rate) depends exactly on the marginal product performed. The price system therefore tends to substitute intrinsic by extrinsic motivation due to a perceived shift in the locus of control. Instead of being perceived as a control instrument, a market reward may also indicate competence and then tends to raise intrinsic motivation, an aspect which has been emphasized by Schumpeter (1936).

Within the bureaucracy of a firm or other organization, the effect of reward contingency depends very much on the context and the way rewards are being applied. Three cases may be identified:

– *Promotion* based on performance, if interpreted as an acknowledgement of general competence, tends to raise work morale, but if perceived as a reward contingent only on one's specific performance, tends to reduce it. In the latter case

the promoted person marginally substitutes his or her intrinsic motivation by the external incentive induced through promotion. Tournaments (see Lazear and Rosen, 1981) may still raise performance provided the disciplining effect is larger than the crowding-out effect.

– *Prizes* given for a particular performance tend to negatively affect intrinsic motivation, as these extrinsic factors will take its place instead. Indeed this has been widely understood, because such rewards are often given in recognition of a person's dedication to his or her work or career *in general*. Titles, orders or other honours (such as honorary doctorates or Nobel prizes) are normally given for one's lifelong work. They are therefore perceived by the recipients as a recognition of their competence, raising intrinsic motivation.

– The *monetization* of rewards tends to emphasize performance contingency because agents are used to establish a relationship between the size of the income received and their performance. Non-monetary gifts in kind (i.e. in the form of flowers, a book or chocolates) constitute a conscious effort to disassociate the reward from any particular performance. Rather, these gifts are chosen so that the person's self-esteem is acknowledged, thereby bolstering the agent's intrinsic work motivation. This relationship is understood by firms that increase their employees' attachment not by handing out monetary rewards but rather by giving them gifts in kind. Experimental evidence moreover suggests that cash payments discourage altruistic acts (see Condry and Chambers, 1978, p. 72).

(3) The agents' perception of whether the principals' intervention is controlling or informing depends on the extent of *differentiation made between the agents*. At one extreme, all agents are treated the same by the principal; at the other extreme, the principal makes a conscious effort to distinguish the rewards or commands according to the agents' presumed level of intrinsic motivation. The more uniform the external intervention, the more negatively are those agents affected who have above-average work morale. They feel that their competence is not recognized by the principal and therefore adjust their intrinsic motivation downwards. A case in point is the government administration which is bound by general rules to intervene more uniformly than private institutions. In particular, the government is more bound by a general salary scale and has fewer possibilities to vary it according to the intrinsic motivation and performance of an employee. It can be hypothesized that in state-run institutions, more employees reduce their intrinsic work motivation to a low level than is the case in the more flexible private institutions. It would follow that public sector employees, who entered highly motivated to promote the 'public good', over time become increasingly disillusioned, so that after some time their work morale is lower than at equivalent positions in private institutions. (This is reflected by an initial substantial private sector wage premium which over time is eradicated; see e.g. Poterba and Rueben, 1994.)

(4) The more strongly an external intervention implies an *acknowledgement* of

the agent's high intrinsic motivation, the more strongly it fosters work morale. The pure price system is free of any moral connotation; it is a-moral. According to standard economics, if the price-external social costs are internalized by Pareto-optimal prices or charges, there is nothing to disapprove of morally: "...if the charges were to be paid, few economists would express any criticism of a person undertaking the behaviour." (Kelman, 1983, p. 31). Accordingly, Friedman (1970) argues that the only business of business is to make profit. Actors who partially act according to their intrinsic motivation are often ridiculed. Once crowding out intrinsic motivation is taken into account, such global statements are no longer warranted.

3.3. Empirical evidence

While the possibility of external intervention crowding out intrinsic motivation, and especially work morale, has been analysed in a great number of field and laboratory experiments, there is so far only one econometric study directly addressing the issue. Barkema (1995) looks at firms where the intensity of the personal relationship between the principals and the agents depends on the form of *supervision*. For the case of managers as agents of a certain firm one can distinguish three major types: (i) The managers are controlled by the parent company. This corresponds to a rather impersonal relationship, so that following our above proposition, a positive influence of monitoring on managers' performance is expected, because intrinsic motivation is little or not at all affected. (ii) The managers are controlled by their firm's chief executive officer which represents a personalized relationship. According to our proposition, monitoring in this case tends to reduce the agents' effort, as an external intervention shifts the locus of control towards external preferences, and the agents perceive that their competence is not acknowledged by their superiors. (iii) The managers' behaviour is regulated by the board of directors. The crowding-out effect is, according to our hypothesis, expected to be greater than in case (i) but smaller than in case (ii). Barkema's data set refers to 116 managers in medium-sized Dutch firms in 1985. They range from between less than 100 to more than 30 000 employees and cover a wide variety of industries. The managers' individual effort is in line with Holmström and Milgrom (1990), operationalized as the number of hours invested. The intensity of regulating 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 'regulating'. A structural model is then used to show the influence of so-defined external intervention on managers' performance. The empirical results are consistent with the theoretical proposition advanced. The econometrically estimated parameters capturing the effect of external intervention on work performance turn out to be positive and statistically

significant in case (i) of impersonal control. In case (ii) of personalized control, on the other hand, the corresponding parameter is statistically significant and negative; regulating strongly crowds out intrinsic motivation, so that the net effect of control on performance is counterproductive. In the intermediate case (iii) of somewhat personalized control, the estimated parameter does not deviate from zero in a statistically significant way.

4. Consequences for work performance

Economists might argue that *for their purpose* the crowding-out effect is irrelevant. Not being interested in cognitive processes as such, but only in their effect on human behaviour, there does not seem to be any problem when intrinsic work motivation is substituted by an extrinsic one. Hence it is concluded that what kind of motivation that induces people to work is quite irrelevant.

This view is too simple because (A) the performance induced by intrinsic motivation is not necessarily desirable, and (B) there may be undesired side-effects or spill-overs induced by external intervention which range beyond the area of the intervention. These two aspects will be discussed in the following.

4.1. When is intrinsic motivation desirable?

In some ('humanitarian') circles self-determination and therewith intrinsic work motivation is considered an almost absolute value to always be aimed at. However, self-determined workers may well be more content but not necessarily more productive, hence caution must be exerted. Here only a selection of some of the benign consequences of intrinsic work motivation can be discussed (for empirical evidence see Lane, 1991, chapter 20; Congleton, 1991).

– For the agents themselves work governed by intrinsic motivation is associated with better mental and physical health so that work and life satisfaction is higher than under externally determined work motivation.

– Learning capacity is higher. Curiosity is possibly the clearest case of an intrinsically rewarding activity, and curiosity leads to creativity and learning. Extrinsic motivation does not exclude learning in the sense of an adaptation by trial and error. Indeed, the price system is an extremely efficient mechanism in this respect (Hayek, 1978). Learning due to extrinsic incentives is, however, specific to the situation to which the incentive refers, and ceases when it is no longer rewarded. This aspect has been documented by the so-called "token economy experiments" (e.g. Winkler, 1980). More complex forms of learning such as double-loop learning (where the new insights are put into the framework of a theory) and deutero-learning (where the new insights are evaluated from the point

of view of various theories) are fostered more by intrinsic than by extrinsic incentives (see Osterloh et al., 1994).

– When the agents have high work morale, the principal saves costs of disciplining them. In contrast, persons undertaking work only for the financial rewards restrict their activity strictly to aspects *they* deem relevant to attain the contingent reward (see Kruglanski, 1978, p. 95).

Major shortcomings of having work performed by intrinsically motivated persons are:

– Agents with high work morale are difficult to guide. Intrinsically motivated workers tend to be idiosyncratic, and it takes more effort and 'psychological feeling' by the principal to get along with them. With intrinsically motivated workers, a wrong word or two may completely destroy that kind of motivation. The principals must reckon with the danger that disgruntled employees sabotage work. The principals, due to the basic informational asymmetry, are unable to do much about it.

– Intrinsic motivation is not always 'good' and 'socially beneficial'. Historical experience shows that many of the worst crimes in mankind were performed by people who followed inner motives and ideologies. Himmler provides a vivid example that such persons may create evil.

4.2. Motivational spill-over effects

External interventions may have undesired effects on areas that are not covered by the external intervention because it is too costly or even impossible to apply. If intrinsic motivation is crowded out in those areas where it is the only incentive, the overall outcome of an external intervention may well be against the principal's interest.

An important example is provided by environmental policy. Instruments such as effluent charges or tradable permits work efficiently where they are applied, but the induced substitute of environmental ethics by monetary incentives leads people to protect the environment less in those areas where the instruments are not applied. Another example is tax morale. When it is undermined, it may spill over to the rest of society. This undesirable effect not only takes place with monetary incentives but also with rules and regulations. If this spill-over effect is sizeable, all kinds of external interventions are less desirable from the principal's point of view.

5. Implications for economics

This paper suggests a particular link between economics and psychology which has so far been neglected. This disregard exists quite generally: "The research...in

those two disciplines has proceeded independently; for the most part there has been little cross referencing involved and few attempts to provide a synthesis of the research findings" (Nalbantian, 1987, p. 8). A recent survey on "Labor economics and the psychology of organizations" by Lazear (1991) shows that this situation has not changed since.

Crowding-out theory is able to explain some open questions and anomalies in agency theory. Jensen and Murphy (1990) have empirically established that pay-for-performance is applied much less broadly, and with less intensity, than proposed by agency theory. This general observation is consistent with crowding theory. The conditions outlined (Section 3) obtain in many relationships between principals and agents analysed by economists. As the principals are aware that payments contingent on performance tend to crowd out their agents' work morale they are reluctant to use it across the board and intensively.

A more specific unresolved problem is that incentive wages are used for managers but rarely for lower-level employees (Stiglitz, 1987). This may be explained by noting that managers are more inclined to perceive incentive wages as information about their performance while middle-level employees perceive them as controlling, so that the condition for crowding out applies. Crowding-out theory is also consistent with the observation that incentive pay in the form of piece rates is more often used for workers engaged in repetitive activities than for middle-level employees because they typically have little if any work morale which would be crowded out.

The empirical finding that managers of non-profit organizations receive a substantially smaller share of their income in the form of pay-for-performance compared with for-profit organizations (Roomkin and Weisbrod, 1994) can also be explained by crowding theory. Volunteers as well as managers of non-profit firms are found to be more intrinsically motivated than those in profit-oriented firms, i.e. there is pronounced sorting across industries (Segal et al., 1994). A payment system contingent on performance therefore risks crowding out work ethic more strongly in non-profit than in for-profit institutions. As this is presumably known, bonus systems related to performance are more viable in profit-oriented than in non-profit firms.

Becker and Stigler (1975) suggest that agents should offer bonds in order to make 'credible commitments' and to therewith support exchange (Williamson, 1983). However, such bonding has 'virtually never' been observed in reality, not even where the liquidity constraint is irrelevant (Baker et al., 1988, p. 613). Crowding-out theory suggests why: when the principal requires agents to post a bond, he thereby signals massively that he distrusts them with the result that the latter's work morale is crowded out. As a consequence, only persons with purely extrinsic motivation would apply for such a job, i.e. the principal foregoes the possibility of hiring persons with intrinsic interest in the tasks to be fulfilled.

Finally, the effort to flatten hierarchies and to move towards participatory management is consistent with crowding-out theory. The increasing role of intrinsic work motivation in economically advanced societies forces principals to

make a greater effort to maintain work morale. One of the means to reach this goal is to increase participation. In hierarchical organizations with close supervision in contrast, agents are more induced to shift the locus of control to their superiors, losing intrinsic interest in their work. This arrangement is more inefficient, the more costly monitoring and controlling agents is. As a consequence, it may be observed (Donaldson, 1980; Reber and van Gilder, 1982) that those economic activities tend to have a flatter hierarchy, less intensive supervision and more extensive participation possibilities.

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