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Crowding-Out and Crowding-in of Intrinsic Preferences

By Bruno S. Frey

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CROWDING-OUT AND CROWDING-IN
OF INTRINSIC PREFERENCES

by

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Standard Micro-Economics: Homo Oeconomicus

The centre-piece of modern micro-economic theory is that: Individuals act rationally - i.e. consistently – and are subject to external constraints. This model of man has often been called the “*Homo Oeconomicus*”; it provides clear and therewith empirically testable predictions about how individuals react to changes in relative prices, controlling for the income changes induced. The *Price Effect* applied to demand states that a price rise reduces

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the quantity demanded; the demand curve is negatively sloped. Applied to supply the Price Effect states that a higher price induces an increase in supply; price and quantity are positively related. Paying a higher compensation unequivocally raises the effort and quantity of work.

This simple theory of human behaviour has been extremely successful¹. What has become known as “*Economic Imperialism*” (Stigler 1984, Hirshleifer 1985, Lazear 2000), or the “*Rational Choice Approach*”, is mainly due to an application of the Price Effect to a large number of issues and problems, as pioneered by Gary Becker (1976). The more traditional applications are to education, health, the natural environment and politics, more unorthodox ones to e.g. the family, the arts, crime, sports, and religion. This imperialism has not been without controversy both inside and outside of economics. One of the major points of criticism has been that this theory of behaviour is too simplistic and does not account for human behaviour especially outside the area dominated by explicit prices (e.g. Sen 1977, Lane 1991). In these applications outside the market, the term “Price” is – used in its broad sense as a cost – often difficult to observe as it takes the form of opportunity cost. As the large literature on the non-market applications demonstrates, a skilful use of the Price Effect yields fascinating and non-trivial insights².

Economic imperialism has had a substantial impact on other social sciences and beyond. In political science, the corresponding field is called “Public Choice” or “Political Economics”; in sociology “Rational Choice”, in legal studies “Law & Economics”, and in historical studies “Cliometrics”.

A Broader Set of Motivations

There has been a dramatic change over the past few years in how motivation is seen to affect behaviour³. Based on results originally found in experimental social psychology (Deci 1971), an effect of a price change on behaviour has been identified. This predicts the exact

¹ However, the empirical application is not always easy especially as all other factors, except the price change, must be controlled for. For small price changes, and when only a small part of total expenditures is spent on the respective goods and services, the income effect can be disregarded because of its insignificance. This helps to identify the Price Effect.

² See e.g. McKenzie and Tullock 1975, Radnitzky and Bernholz 1987, Kirchgaessner 1991, Frey 1992, 2001.

³ See e.g. the papers by Gaechter, Meier, Bohnet, Benz and Oberholzer-Gee in Frey and Stutzer (2007).

opposite effect on behaviour. In particular, a price increase is predicted to *decrease*, rather than increase, the supply of work offered. This is a remarkable result; it goes much beyond the many “behavioural anomalies”⁴ identified in other parts of what today constitutes “Psychology and Economics”⁵ (sometimes also called “Behavioural Economics”⁶). This “Crowding-Out Effect” is part of a larger theory including a neutral and a “Crowding-In Effect”. As will be argued, the crowding effects lead to a generalization of the relationship between motivation and behaviour; it certainly does not substitute for the Price Effect. Rather, the Price Effect is taken to always work in the way suggested by standard theory, but an additional type of motivation is added, *intrinsic motivation*, which under identifiable conditions leads to dramatically different behavioural responses to price changes.

The *Crowding-Out Effect* may be illustrated by two examples:

‘A boy on good terms with his parents willingly mows the lawn of the family home. His father then offers to pay him money each time he cuts the lawn’.

The Crowding-Out Effect suggests that the boy will lose his intrinsic motivation to cut the lawn (he may go on doing so, but now he does it because he is paid), but he will not be prepared to do any type of housework for free.

‘You have been invited to your friend’s home for dinner, and he has prepared a wonderful meal. Before you leave, you take out your purse and give your friend an appropriate sum of money’.

Probably nobody in his right mind would behave in this way, because virtually everyone knows that this would be the end of the friendship. By paying, the relationship based on benevolence is fundamentally transformed; if it survives at all, it becomes a commercial one. Yet there is one person who would not hesitate to pay his friend for dinner: classical Homo

⁴ Such as the endowment, reference point, opportunity cost, anchoring, availability, representativeness, overconfidence effects and biases (see e.g. Kahneman, Slovic and Tversky 1982, Dawes 1988, Thaler 1992, Frey and Eichenberger 1994).

⁵ Important forerunners are Hirschman 1970, Scitovsky 1976, Leibenstein 1976, Schelling 1980, Akerlof 1984, Frank 1988, Schlicht 1998, Brennan and Pettit 2004. An effort to develop a ‘psychological economics’ independent of neo-classical economics has, for example, been undertaken by Furnham and Lewis (1986) and Lea, Tarpy and Webley (1987).

⁶ This is a misnomer because the „behavioural“ school in psychology posits a mechanistic response to outside interventions which is, of course, in clear contrast to what psychological economics stands for.

Oeconomicus would do so, following the Price Effect – and ends up without friends, to his own chagrin.

The examples show that the Price Effect, on which economics is founded, is not valid for all conditions and under all circumstances, and that the connection between a monetary reward offered and its supply must be analysed in a wider perspective. The ‘sacred cow’ of modern economics needs to be reconsidered. External, in particular, monetary incentives do not mechanically move human beings to act in the desired way, as they crowd-out intrinsic motivation under identifiable conditions. Thus, external and internal incentives are not cumulative, as has long been assumed as a matter of course in economics. A more refined model of humans is needed whose behaviour relies to some extent on purely internal considerations, in particular on self-esteem and self-determination.

Section III develops Crowding Theory, discusses its basis in social psychology, integrates it into economics, and analyses the conditions under which the Crowding-Out Effect takes place. Section IV looks at Crowding Effects in the particular domain of taxation. Section V considers Spill-Over Effects to related areas. Conclusions are drawn in section VI: both economic theory and policy are strongly affected by the existence of Crowding Effects. More care should be taken when applying incentive payments in firms, or in the public sector (for example when following New Public Management ideas), or when using incentive instruments in economic policy (for example with respect to the environment).

Crowding Theory

Psychological Background

Social psychologists have empirically identified that external intervention, in the form of a reward, reduces individuals’ intrinsic incentives. This relationship has been termed alternatively ‘undermining effect’, ‘overjustification effect’, ‘the hidden cost of reward’ (Lepper and Greene 1978), ‘corruption effect’ (Kruglanski 1978) or ‘cognitive evaluation theory’ (Deci and Ryan 1985, Deci with Flaste 1995) by the psychological scholars involved.

The hidden costs of rewards rest on the distinction between internal and external motivation:

‘One is said to be intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself’ (Deci 1971, p. 105).

The distinction between intrinsic and extrinsic motivation is not clear-cut. Indeed, it might be claimed that, in the last instance, all motivation comes from outside. On the other hand, what matters, after all, is the inner satisfaction one derives from one’s behaviour. While the precise distinction might be important in psychology to explain behaviour that is economically and socially relevant, it suffices to distinguish between activities that people mainly do simply because they like to do them and activities which they mainly do because of monetary payment, or because they are ordered to do them. In many cases, the two kinds of motivation go together. What matters in our context is that an identifiable relationship exists between intrinsic and extrinsic motivation.

Three psychological processes have been identified to account for the ‘hidden costs of rewards’:

- (a) The *loss of self-determination* shifts the locus of control from the inside to the outside of the person affected. When individuals perceive the external intervention to be controlling, in the sense of reducing the extent to which they can determine actions themselves, intrinsic motivation is replaced by extrinsic control. Individuals, who are forced to behave in a specific way through outside intervention, would feel ‘overjustified’ if they maintained their intrinsic motivation. They thus behave rationally when they reduce the motivational factor under their control, that is, intrinsic motivation.
- (b) Outside intervention undermines the actor’s intrinsic motivation, if it carries the notion that the actor’s intrinsic motivation is not acknowledged. The person affected feels that his or her competence is not appreciated, which leads to *impaired self-esteem*, resulting in reduced effort. Self-esteem is of central importance for human beings.
- (c) A person acting on the basis of his or her intrinsic motivation is deprived of the chance to exhibit this intrinsic motivation to other persons. Thus, when a host is paid by her guests, the host no longer has the possibility of showing them that she values their

company as such. As a reaction, the persons affected exhibit ‘altruistic anger’, and will in turn relinquish the inner motivation and behave according to external motives.

Social psychology itself knows a theory competing with the hidden cost of reward. Equity literature has repeatedly found that increasing pay *increases* productivity and, presumably, intrinsic motivation. In contrast, cognitive evaluation literature has found that increasing pay *decreases* intrinsic motivation and hence, presumably, productivity. It follows, and has been empirically supported that, depending on the conditions, increased rewards raise or lower intrinsic motivation and productivity accordingly. The reverse also holds: when inadequate rewards are provided, intrinsic motivation may sometimes *decrease*, and at other times *increase*.

Conditions

Whether rewards affect intrinsic motivation negatively or positively is determined by the following conditions:

- (a) External intervention *crowds out* intrinsic motivation if the individuals affected perceive the intervening individuals to be *controlling*. Self-determination, self-esteem, and the possibility for expression suffer, and the individuals react by reducing their intrinsic motivation in the activity controlled.
- (b) External intervention *crowds in* intrinsic motivation if the individuals concerned perceive it as *supportive* (or informative in a positive way). Self-esteem is fostered, and individuals feel that their self-determination is increased which, in turn, raises intrinsic motivation.

Both conditions are formulated in terms of subjective perceptions. Psychologists, however, have gone further, and have identified conditions applying more generally. Thus, the undermining effect is found to be the stronger,

- the more the rewards are expected. Unexpected rewards do not, or do so only weakly, crowd out intrinsic motivation;
- the more salient the reward is;

- the more contingent the reward is on the task or on performance;
- the more deadlines and threats are used;
- the more intensive surveillance is;
- the more routine the rewarded work is.

Obviously, the hidden costs of rewards are only relevant if the persons concerned do have some amount of intrinsic motivation. Indeed, intrinsic motivation has been observed to be undermined particularly strongly for those who previously felt highly committed.

With respect to external intervention, psychologists have found that monetary rewards are more undermining than other material rewards. Praise and social approval are more likely to be interpreted as supportive rather than as controlling.

Integration into Economics

Crowding Effects *generalize* the ‘hidden costs of reward’ in three important ways (Frey 1997):

1. Intrinsic motivation is potentially affected by *all kinds of intervention* coming from outside the person considered. Thus, not only rewards, but also *commands*, may crowd out intrinsic motivation;
2. Intrinsic motivation may be *reduced* or *raised* (Crowding-Out and Crowding-In). Thus, there may not only be hidden ‘costs’ but also hidden ‘gains’;
3. External intervention affects the *internally held values* of individuals. Hence, they do not only affect narrowly defined intrinsic motivation, but also *norms* internalized by individuals. Moreover, external intervention may induce a shift from other-regarding or group regarding to *more selfish* preferences and behaviour.

These three generalizations greatly increase the scope and applicability of Crowding Theory.

To successfully apply Crowding Theory to issues pertaining to economics, it is necessary to simultaneously take into account the *Price Effect* normally considered in economics. Here, attention is focussed on Crowding-Out, because it affects behaviour contrary to the Price Effect.

Supply falls. Consider a normal, positively inclined supply function (S in Figure 1) for an activity. At zero price, the individuals considered are prepared to supply the quantity q^{IM} that means individuals are assumed to undertake the activity for its own sake, or be intrinsically motivated. Such behaviour is perfectly consistent with economic theory. Following the Price Effect, conventional economic theory predicts that a price rise (from O to p_1) raises supply from q^{IM} to q_1 , moving along the supply curve.

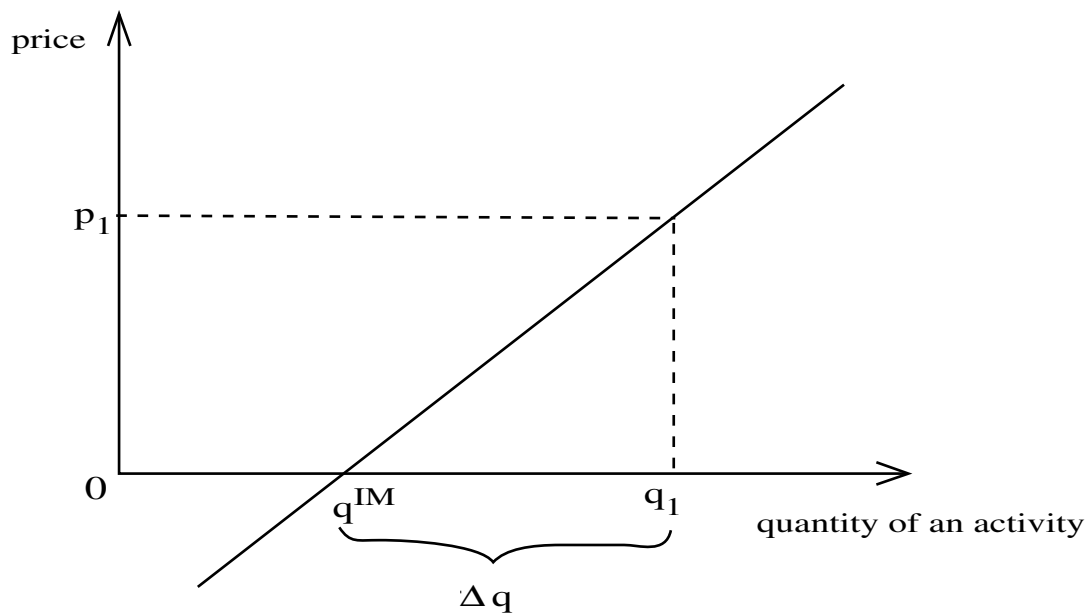


Figure 1: Conventional supply theory.

The extrinsically induced supply increase Δq is perfectly *additive* to the intrinsically supplied quantity q^{IM} , thus $q_1 = q^{IM} + \Delta q$.

In contrast, the Crowding-Out Effect induces a shift in the supply curve to the left (Figure 2).

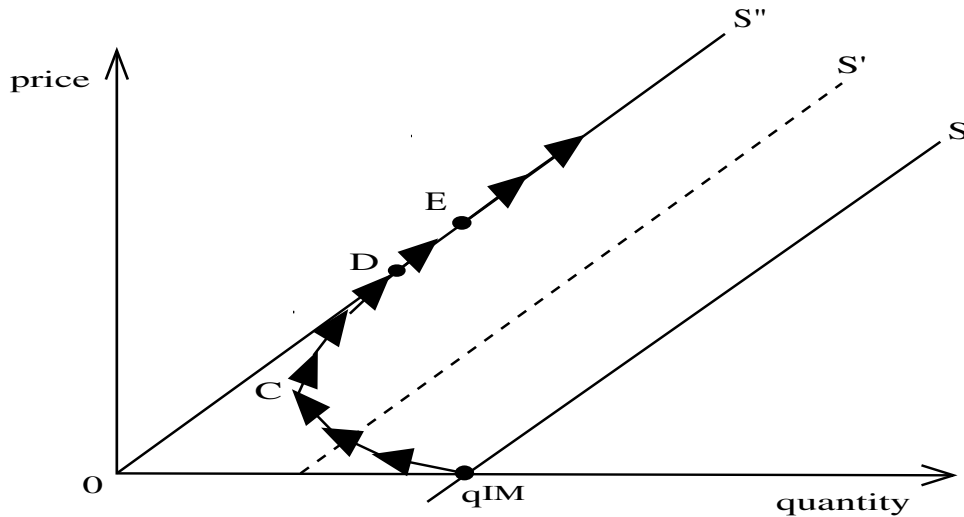


Figure 2: Supply including crowding-out effect

The supply curve moves to the left (from S to S'), until intrinsic motivation is completely crowded out (at S'') when a positive price is offered. More precisely, each supply curve is associated with a given *stock* of capital of intrinsic motivation. Once this capital stock is exhausted, or at most constant, supply only moves along S'' as the Price Effect exists.

The supply response moves quite differently than is suggested by conventional economic theory. In the figure, it is assumed at first that the Crowding-Out Effect prevails over the Price Effect, and supply *falls*: the individuals concerned reduce the extent of their activity. Beginning at point C , the Price Effect dominates. Only when point D is reached does the quantity supplied exceed the amount previously intrinsically supplied. At point D on supply curve S'' , the stock of intrinsic capital is constant (and possibly exhausted), so that the Price Effect determines supply behaviour exclusively.

In stark contrast to the additivity assumption held in conventional economics, intrinsic and extrinsic motivation are *non-additive*. The figures serve merely as illustrations. They refer to only part of the Crowding Theory. What they do show is that Crowding-Out is not presented as an alternative to conventional economics, but rather as an *extension* of it. Moreover, it

should be kept in mind that the Crowding-Out Effect depends on particular conditions. The following propositions on the size of the Crowding Effect can be formulated, based on insights gained by psychologists. The Crowding-Out Effect is the more pronounced,

- the more personal the relationship between a principal, and his or her agent;
- the larger the agent's participation possibilities;
- the more uniform the external intervention, that is the less individual differences in intrinsic motivation are acknowledged by the principal; and
- the more the external intervention (in particular the rewards extended) is contingent on specific performance, instead of being directed at general behaviour.

Obviously, the Crowding Effect also has important consequences for policy. Thus, many seemingly 'modern' compensation systems have to be reconsidered. Pay-for-performance schemes negatively affect performance, in so far as they negatively affect work morale, a specific kind of intrinsic motivation. Under certain conditions, for example with volunteers who are essentially intrinsically motivated to work, it may be a mistake to introduce monetary compensation at all.

Supply is transformed. External intervention, in the form of a monetary reward, affects not only the quantity, but also the *nature* and *quality* of the supply forthcoming. Quite generally, laboratory research indicates that quality tends to be replaced by quantity. Equally well-established is the negative effect on incidental learning that people acquire in complex tasks, because attention is focussed on the central task that is rewarded. For tasks that are not well understood, monetary incentives can be disadvantageous, that is lead to lower performance. Finally, external rewards have been found to decrease artistic and verbal creativity. These results, gained by psychologists, must be seen in perspective; they only show how intrinsic motivation is affected and do not, or insufficiently, consider the more direct incentive effects of monetary compensation on performance. Thus, it has been well established in cultural economics that artists who are motivated by monetary gain are also able to create masterpieces.

In important cases, external intervention through monetary means can transform the nature of a good or relationship even more fundamentally. Sometimes, the offer of a monetary reward completely destroys the existing commodity in question. At the beginning of this

chapter, the example of paying a friend for his dinner invitation was given. Romantic love is an equally weighty case: it simply cannot be bought, and if an attempt were made to buy it, the good can no longer be called unselfish love but, taken to the extreme, prostitution. The same is true for trust, admiration or friendliness, which change their intrinsic nature when they are bought. This is the problem of the millionaire girl, who can never know whether her suitors love her, admire her, and are friendly to her because of herself or because of her money. As long as money is involved, the suitors have no means of revealing ‘sincere’, that is intrinsic, love and admiration. Rulers essentially face the same problem. Literature is full of accounts of how such ‘unfortunate’ persons undertake experiments to try to distinguish between sincerity and deception, usually by faking to be poor and powerless – sometimes even with success, but (revealingly so) mostly only in fables.

‘Commercialization Effect’ describes the transformative effect of money on human relationships. It can vary greatly between historical periods. Thus, for example, from the 16th to the 19th century, the prevailing view in Europe was that the use of prices *improves* or, in other words, crowds-in intrinsic motivation. Montesquieu, for example, believed that ‘commerce ... polishes and softens ways of behaviour, as we can see every day’. Thus, the Crowding Effects have a considerably long history.

Empirical Evidence on Motivation Crowding Effects

Experiments

The hidden costs of reward have been extensively studied in the laboratory by social psychologists. The number of laboratory experiments on the Crowding Effect is so large that it is impossible to summarize the results. Fortunately, there already have been done no less than five formal meta-analytical studies of Crowding Theory. The first meta-analyses undertaken essentially supported the findings that intrinsic motivation is undermined if the recipients perceived the externally applied rewards as controlling. That view was challenged by a meta-analytical study referring to the period 1971-1991. This study concluded that the undermining effect was largely ‘a myth’ (Cameron and Pierce 1994). The study attracted a great deal of attention, and many scholars seemed to conclude, based on the study, that no such thing as a Crowding-Out Effect existed.

The most extensive and recent study by Deci, Koestner and Ryan (1999) shows that these conclusions were unwarranted: the Crowding-Out Effect is indeed a robust phenomenon of significant size under the specified conditions. Deci, Koestner and Ryan identify a number of significant shortcomings and misinterpretations of the Cameron and Pierce study. One is that Cameron and Pierce omitted nearly 20 per cent of the relevant studies and dismissed them as outliers, they used incorrect control groups, and misclassified some of the studies. Another shortcoming is that Cameron and Pierce used dull and boring tasks for their experiments. For such tasks a Crowding-Out Effect cannot occur, as the participants had no intrinsic motivation to begin with. In order to correct these shortcomings, an extensive meta-analysis, that included all the previous studies, as well as several studies, which had been published since then, was undertaken. The 128 studies analysed span the period 1971-1997. And it was shown that tangible rewards indeed undermine intrinsic motivation for interesting tasks (that is tasks for which the experimental subjects show an intrinsic interest) in a highly significant and very reliable way, and that the effect is moderately large. This holds in particular for monetary compensation, which is perceived as controlling by the subjects in an experiment, and therefore tends to crowd out intrinsic motivation. The Crowding-Out Effect is more prevalent when monetary rewards are used and less prevalent when symbolic or unexpected rewards are offered. When the problems at issue are complicated, the negative relationship between reward and performance is stronger than when the problems are simple. In all these cases, it is a requirement that the behaviour was initially perceived to be interesting, and therefore intrinsically rewarding. As a consequence, a bonus system usually, but not always, makes employees lose intrinsic interest in the immediate goal, such as serving the customer.

Experimental economic research has also identified various Crowding Effects on motivation in the economic setting (for a survey see Frey and Jegen 2000). An increasing number of studies have been published on the subject. Several experiments demonstrate a Crowding-Out Effect on intrinsic motivation in the form of a reduced tendency for reciprocity that is a tendency towards more narrowly conceived selfish behaviour.

Some experiments have been able to find a clear connection between pay and performance, as displayed in Figure 1 above (see Frey and Osterloh 2005). Whenever money was offered, the standard price-effect was observed, that is a larger amount of money resulted in higher

performance. The mere action of payment, however, even lowered performance in many cases. In these experiments, with everyone performing the same task, only those groups that received a considerable amount of pay did as well as the groups that worked for free. The evidence suggests that the type of contract, and the (monetary vs. non-monetary) work environment, evoke different responses from the agents.

The Crowding Effects have also been studied in contract enforcement, with respect to the trustworthiness of the participants (Bohnet, Frey and Huck 2000). In an evolutionary game experiment, a first mover relies, to a certain degree, on the trustworthiness of a second mover, because the legal system allows only incomplete contracts. The first mover can either offer a contract, or not play at all, while the second mover has the choice to either fulfil or break the contract. The degree of contract enforcement is established by the capacity to bear the resulting costs of non-compliance. It was found that low levels of legal enforcement tend to crowd in trustworthiness: the first movers must carefully decide with whom to enter a contract, as they cannot fall back on the legal system. As a consequence, the second mover is motivated to behave in a trustworthy way. In contrast, when contracts are near-perfectly enforced, there is no observable Crowding Effect taking place. First movers enter the contracts because they know that the second movers are deterred from breaching the contract. Personal trust is replaced by institutional trust. With intermediate levels of law enforcement, however, trust is crowded out, as the first movers can neither rely on the second movers' reciprocal behaviour nor on the legal system, resulting in a non-monotonic relation between trust and the degree of contract enforcement.

Crowding Effects have not only been identified in experiments, but also are of great importance for practical, real world problems.

Case Studies

Day-care centres provide a striking example of how monetary intervention can achieve the opposite of what would be expected on the basis of the Price Effect. Such institutions are confronted with the problem that parents sometimes arrive late to pick up their children, which forces the employees to stay after the official closing time. To remedy the situation, economists would typically suggest imposing a monetary fine for collecting children late. Such punishment is expected to compel parents to be on time. A study on a day-care centre

in Israel revealed a completely different outcome (Gneezy and Rusticchini 2000a, 2000b). After the introduction of a rather hefty fine, the number of parents arriving late *increased* substantially, which is in line with the Crowding-Out Effect. Introducing a monetary fine transforms the relationship between parents and day-care employees from a mostly personal to a more monetary relationship. As a result, the parents' intrinsic motivation to keep to the time schedule was reduced or crowded out altogether, the perception being that the employees were now 'paid' for the inconvenience of having to stay longer. Being late to pick up the children was no longer associated with any feeling of guilt.

A Crowding Effect was also identified in the performance measurement of the airline industry (Austin and Hoffer Gittell 1999, see also Frey and Osterloh 2002). The specific issue was how airline carriers deal with delays and the responsible persons or determining factors. Ascribe a single delay as exactly as possible to its source (as suggested by the principal agent theory) turned out to be negatively correlated with the achieved end, namely the airline's on-time flight performance. The most successful company was the one that used the general term 'team delay' for of a delay caused by personnel. The company thereby crowded in the intrinsic motivation to help out other units and groups, instead of provoking disagreements, finger-pointing and cover-up activities.

Econometric Studies

Work motivation is an area where Crowding Theory is particularly relevant (Frey and Osterloh 2002, 2005, Osterloh and Frey 2000, 2004, 2006, Osterloh 2007, Osterloh, Frey and Frost 2001, 2002). An econometric study (Barkema 1995) looks at firms and the intensity of the personal relationship between principals and agents depending on the form of *supervision*. In the case of managers as agents of a certain firm, three major types can be distinguished:

- (a) The managers are controlled by the parent company. This corresponds to a rather impersonal relationship so that, following our proposition above, a positive influence of monitoring the managers' performance is expected, because intrinsic motivation is little affected or not at all.

- (b) The managers are controlled by their firm's chief executive officer. This represents a personalized relationship. According to our proposition, monitoring in this case tends to reduce the agents' effort, as external intervention shifts the locus of control towards external preferences, and the agents perceive that their competence is not acknowledged by their superior.
- (c) The managers' behaviour is regulated by the board of directors. The Crowding-Out Effect is, according to Crowding Theory, expected to be greater than in case (a) but lesser than in case (b).

The data set refers to 116 managers working in medium-sized Dutch firms in 1985. These firms employ from between less than 100 to more than 30 000 employees and cover a wide variety of industries. The managers' individual effort is operationalized as the number of hours invested. Three aspects capture the intensity of regulating: 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. The results are consistent with the 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 (a) of impersonal control. In case (b) 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 counter-productive. In the intermediate case (c) of somewhat personalized control, the estimated parameter does not deviate from zero in a statistically significant way.

Another econometric study looks at the voluntary sector, which is of substantial size in developed economies. Several studies have established that intrinsic motivation is important when it comes to volunteering. A unique data set from Switzerland is used to evaluate how financial rewards for volunteers affect their intrinsic motivation. The incidence of rewards is found to reduce volunteering. While the size of the rewards induces individuals to provide more volunteer work, the mere fact that they receive a payment significantly reduces their work efforts by approximately four hours. The significance of these effects is considerable. Evaluated at the median reward paid, volunteers indeed work *less*. These findings have important implications for policy towards volunteer work. Direct incentives may backfire,

leading to less volunteering. Even individuals reacting to changes in relative prices, as they are in our data set, may be subject to motivational Crowding-Out.

Motivational Transfer Effect

Remember the example of the boy willingly mowing the lawn presented at the beginning of this chapter? A contingent pay by his father does not only crowd out his intrinsic motivation to cut the grass, but also to do any other housework.

External intervention may thus have an *indirect* damaging effect on intrinsic motivation. The Crowding-Out Effect may spread to other areas, even into such areas where no external intervention has been applied. If intrinsic motivation is crowded out in areas where it is a major (or even the only) behavioural incentive, the overall outcome of an external intervention tends to be even more strongly against the principal's interest. There may thus be an indirect '*Motivational Transfer Effect*', which has to be added to the direct Crowding-Out Effect. Policy instruments, such as effluent charges or tradable permits, provide an additional example. They work efficiently where they are applied, but an induced substitution of environmental ethics by monetary incentives may then lead people to protect the environment less in areas for which no external incentives exist. This undesired motivation transfer effect not only takes place when monetary incentives are used, but also when rules and regulations are applied.

That intrinsic motivation (in the broadest sense) may be linked across the board has been observed in several instances. Thus, norms may spread by analogy. If a similarity is perceived between an area in which a norm is valid, and another area where the norm is not yet applied, its validity can expand to the latter area too. The concept of 'attitudinal spillover' and 'reputational spillovers' has been employed in economic contexts. Neurological research suggests that the molecular construction of the brain limits the power to differentiate between varying circumstances, in our case between those areas where external interventions produce overjustification, and areas where a similar type of intrinsic motivation applies, but no external intervention takes place. This is known as the 'spread effect'.

Psychologists have collected considerable direct and indirect empirical evidence for the Motivation Transfer Effect. Intrinsic motivation is taken to transcend areas when the following conditions are met:

- individuals strive to be consistent in their commitment to a moral principle;
- people are used to returning a favour with a favour, that is to say, to acting according to the principle of reciprocity. When this attitude is destroyed by a monetary reward, the resulting decrease in intrinsic motivation tends to spread to related areas;
- individuals frequently use the beliefs, attitudes, and actions of others, in particular those of ‘similar others’, as a standard of comparison. The loss of intrinsic motivation, due to monetary intervention, tends to crowd out the respective intrinsic motivation of ‘similar others’. For tax evasion, for example, ‘there exists a clear, positive relationship between self-reported evasion and the tax evasion of friends and relatives – that is, “similar others”’ (Cialdini 1989, p. 215).

Conclusions

Crowding Theory introduces a, so far, disregarded but crucial, and empirically well-supported, psychological effect into economics. Its integration into economics shows that it certainly does not replace the conventional price effect, but that it amends it.

Crowding Theory has important implications for economic theory. In particular, a systematic relationship between intrinsic and extrinsic motivation is established; a negative relationship designates the Crowding-Out Effect, a positive relationship the Crowding-In Effect. Both effects are well-supported by laboratory experiments under carefully controlled conditions. In order to show the relevance for current social issues, Crowding Theory has also been applied to pressing policy problems. During efforts to find sites for locally unwanted government projects it has been empirically analysed and shown that Crowding-Out takes place when monetary compensations are offered (Frey and Oberholzer-Gee 1997, Frey, Oberholzer-Gee and Eichenberger 1996). This is also true in other circumstances pertaining to social and environmental policy. Crowding-In has been identified as the effect of direct citizen participation on tax morale and, more generally, different constitutional settings on citizens’ behaviour.

It is important to correctly interpret the Crowding Theory developed here. Three crucial aspects should be taken into account when considering the relevance of this concept:

1. The Crowding-Out Effect works in the *opposite direction* of the Price Effect. The *net effect* depends on relative size. When Crowding-Out is small, the qualitative effects predicted by conventional economics hold. If, on the other hand, Crowding-Out is strong, the Price Effect may be dominated, and the unconventional effect of an external intervention is to be expected.

As far as I am aware, the Crowding-Out Effect is the only effect *systematically* working in the opposite direction of the Price Effect. The many anomalies and paradoxes borrowed from social-psychology certainly tend to weaken the effect of any given price change, but they do not reverse it. Thus, Crowding Theory makes a more far-reaching claim.

The policy consequence is straightforward: *take care not to interfere too much with what individuals want to achieve by themselves. As much as possible, leave individuals as they are, and offer the opportunity to follow their intrinsic motivation more fully.* This policy conclusion does not mean that one should exclusively rely on intrinsic motivation and disregard institutional conditions shaping external incentives. Nor should it be assumed that intrinsic motivation is 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. Robespierre and Himmler provide vivid examples that intrinsically motivated people may create great evil. Passions are often uncontrolled and hazardous.

2. Crowding Effects depend on *particular conditions*. They do not always take place, and can sometimes be neglected. In particular, when economic relationships are abstract, and when personal contacts are irrelevant, as is the case for the model of a perfectly competitive market, in it there exists no Crowding Effect. Behaviour is fully determined by relative prices, that is, by extrinsic motivation. As traditional economics has focussed on such markets (or on markets close to it) to a large extent, it was appropriate to exclusively consider the relative price effect. However, as soon as one leaves such abstract, impersonal markets, intrinsic motivation may be important. Then it becomes

necessary to carefully consider how far intrinsic motivation is affected by external intervention.

3. Crowding-Out Effects derive from people's perceptions that they are being *controlled* by external intervention. The resulting marginal shift in the locus of control from inside to outside the person tends to undermine intrinsic motivation. External intervention can come from a variety of sources, including government. Government intervention, however, need not be connected with a feeling of being controlled. There are certainly programmes that have the opposite effect, that *support* intrinsic motivation. When this is the case, morality is crowded-in, and civic virtue, tax morale and other manifestations of intrinsic motivation are strengthened.

In contrast, the price system and, in particular, monetary rewards are often perceived by individuals as a controlling external intervention, and can therefore lead to Crowding Effects. In particular, the price system is often looked at in this light. Thus, not only government programmes and intervention have the potential to negatively affect morality. The same holds, for instance, for pay-for-performance schemes. As they are defined to be contingent on a particular performance (output), they serve to strengthen external motivation and tend to crowd out work morale.

The social sciences and, in particular, economics should pay more attention to intrinsic motivation as an important incentive, and as a viable instrument for policy-making. This applies to current policy, as well as to policy at the level of the constitution. It is an essential task to establish institutions, to make constitutional choices, which support individuals' own initiatives.

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