

Crowding Theory and Executive Compensation

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Abstract

Payment for performance is widely embraced as a key component of any well-designed executive compensation package. There is a price to be paid however, from the heavy reliance on incentives as a way to control agent behavior. In particular, evidence exists demonstrating that incentives can crowd out an agent's social preferences towards her principal. Social preferences are pro-social tendencies of people to do things for others for reasons such as fairness, reciprocity, altruism, and ethical or moral beliefs. The use of incentives in compensation can result in self-interested agents. When crowding out occurs, in order to elicit the desired level of performance, principals may need to increase the level of incentive employed. Crowding out therefore provides an additional account for rising levels of executive compensation.

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1. INTRODUCTION

Incentives work. There is a large literature in economics, both theoretical and empirical, documenting the effectiveness of incentives in changing target subjects' behavior.¹ As a consequence, corporate law theorists concerned with agency costs have focused on the way incentives can best be utilized. Pay for performance, stock options, bonuses, retention contracts and corporate law sanctions are all designed to elicit certain behavior from corporate executives – namely to induce self-interested managers to act in the best interests of the corporation.

The heavy reliance on incentives as a way to control agent behavior may, however, come at a price. Evidence exists demonstrating that incentives can change an agent's relationship with her principal. In particular, incentives can have negative impacts on agents' pro-social feelings about their principal. These social preferences reflect agents' sense of fairness, the importance of acting reciprocally, or simply the holding of ethical or moral beliefs. For example, frequently agents will work harder than is justified by their compensation. Agents may be willing to voluntarily contribute their labor in this way because they believe that working hard is fair or warranted or simply the right thing to do. Without pro-social feelings about their principals, agents would be purely self-interested, only doing things that ultimately are of benefit to themselves.

Traditional economic models either assume that agents don't have social preferences towards their principals, or that if they do, they are unaffected by incentives. In contrast, recent theoretical models² and experiments in both

¹ For comprehensive surveys of the economic literature on agency costs see Robert Gibbons, *Incentives in Organizations*, JOURNAL OF ECONOMIC PERSPECTIVES 12, 115-132 (1998) and Canice Prendergrast, *The Provision of Incentives in Firms*, JOURNAL OF ECONOMIC LITERATURE 37, 7-63 (1999).

² See Oren Bar-Gill and Chaim Fershtman, *The limit of public policy: Endogenous preferences*, JOURNAL OF PUBLIC ECONOMICS 7, 841-857 (2005); Samuel Bowles and Sung-Ha S.Hwang, *Social Preferences and Public Economics: Mechanism design when preferences depend on incentives*, JOURNAL OF PUBLIC ECONOMICS 92, 1811-1820 (2008); and Samuel Bowles and Sung-Ha Hwang, *Are Incentives overused in cases where they crowd out pro-social motivations*, Working Paper (2010).

economics and psychology (discussed further below) confirm that social preferences can and do in fact change following the imposition of an external incentive designed to elicit certain behavior. “Crowding out” of social preferences occurs when incentives substitute for social preferences – that is, once an incentive contract is introduced, an agent’s social preferences towards the principal declines, and the agent is less likely to contribute voluntarily effort benefiting the principal. “Crowding in” of social preferences can also occur, although its occurrence is far less common than crowding out. Crowding in of social preferences takes place when an incentive complements the pre-existing social preference, amplifying an agent’s tendency to act in a certain pro-social way.

In this paper, I consider how the use of incentives might impact the social preferences of corporate actors, and how large executive compensation packages, far from being a product of self-dealing behavior, might be explained by crowding theory. I argue that the widespread use of incentives appealing to an individual’s self-interest has created self-interested individuals. New incentives must be designed with these changes in the attitude of agents towards principals in mind. In particular, incentives must take into account the diminished concern agents have for their principals. This means that incentives may need to be more high-powered in the presence of crowding out, than if social preferences were unaffected by the presence of the incentive (as is usually assumed).

Crowding theory has implications for contracts written with corporate actors. If crowding out has taken place – more likely in firms that rely significantly on incentive contracts - in order to elicit the desired level of effort, firms may need to increase the amount of the incentive. Pay packages will by necessity be bigger when crowding out has taken place. Self-interested employees will need additional inducements to continue working in their jobs effectively relative to those employees who have social preferences towards their employers. Principals will be willing to grant large incentives because they understand that the previous use of incentives has severely dampened feelings such as loyalty, fairness, and reciprocity.

The paper proceeds as follows. In Section 2, I discuss the mainstream economic literature on how and why incentives work. Section 3 then reviews the less mainstream and more recent theories and experiments in behavioral economics demonstrating that external incentives can change underlying social preferences and other-regarding behavior in the context of a principal-agent relationship. In Section 4, I discuss how crowding theory can provide an additional explanation for the rise in executive compensation over the past few decades. Section 5 concludes.

2. AGENCY THEORY

Economists have long-recognized the potential for agency costs in principal-agent relationships, and have made ingenious suggestions about ways to minimize these costs. Agency costs arise when principals and agents have diverging interests, and agents, in pursuit of their interests, act in ways detrimental to principals. When agents bear only a portion of the cost but receive all of the benefit from self-serving behavior, it is thought that agents will prefer to engage in this behavior in spite of the ensuing harm to the principal.³ One solution to this problem is to increase an agent's ownership stake over the final output in order to ensure that she bears more of the costs of her activities. Another solution is for the principal to more intensely monitor an agent to ensure that the agent behaves appropriately.⁴

³ Michael Jensen and William Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, JOURNAL OF FINANCIAL ECONOMICS 3, 305-360 (1976).

⁴ Theories of the firm also use as their rationale the existence of self-serving behavior among workers. Free riding or shirking can take place among agents when goods or output are produced through team production, so the contributions of any single worker cannot be singled out (see Armen Alchian and Harold Demsetz, *Production Information Costs and Economic Organization*, AMERICAN ECONOMIC REVIEW 62, 777-795 (1972)). To solve the ensuing collective action problem (all workers will shirk), workers in a team production model can contract with the owners of the firm, who also have a strong incentive to monitor their activities. Similarly, opportunistic behavior by a party to a contract can arise when their counterparty has made a specific investment, of little worth to outsiders not party to the contract. Long-term employment contracts increase the willingness of agents and principals to invest in these kinds of relationships (Armen Alchian, Robert Crawford and Benjamin Klein, *Vertical Integration, Appropriable Rents and the Competitive Contracting Process*, JOURNAL OF LAW AND ECONOMICS 21, 297-326 (1978)).

Agency theory then takes as its starting point an assumption that individuals will act opportunistically, regardless of the harm caused to others. In summarizing the contributions of agency theory, Eugene Fama writes: "The striking insight of Alchian and Demsetz (1972) and Jensen and Meckling (1976) is in viewing the firm as a set of contracts among factors of production. In effect, the firm is viewed as a team *whose members act from self-interest* but realize that their destinies depend to some extent on the survival of the team in its competition with other teams."⁵ It is from this view of agents as primarily self-serving individuals who wish to maximize their wealth, that explicit economic incentives derive their appeal. Economic incentives work by either increasing the financial benefit to an agent from acting in a certain way (for example, by awarding a monetary bonus to the agent), or by increasing the financial costs of acting in ways detrimental to the principal's interests (for example, the imposition of a fine). It is thought that through the adjustment of cost-benefit levels, principals can change the behavior of agents.

The theory of incentives is quite simple in its most basic form, and is appealing because of its promise of an easy solution to principal-agent problems.⁶ As a result incentives are widely embraced both as a theoretical proposition within academia, and as a practical tool outside of academia. Incentive contracts in firms are widespread. Pay for performance is viewed as a critical component in almost all executive compensation packages, and criticisms of compensation packages tend to

⁵ Italics mine. Eugene Fama, *Agency Problems and the Theory of the Firm*, JOURNAL OF POLITICAL ECONOMY 88, 288-307 (1980).

⁶ Although the theory itself is simple, the crafting of incentives has proven to be anything but. Difficulties in designing incentives derive from a well-known trade-off between risk-bearing and incentives when agents are risk-averse; the use of objective measures of performance to determine compensation which may lead workers to neglect other unobservable but important parts of their job (George Baker, *Incentive Contracts and Performance Measurement*, JOURNAL OF POLITICAL ECONOMY 100, 613-24 (1992); Bengt Holmström and Paul Milgrom, *Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership and Job Design*, JOURNAL OF LAW, ECONOMICS AND ORGANIZATION 7, 24-52 (1991)); and the use of strong incentives which encourage destructive and counterproductive behavior: for example, in tournament models of employment, sabotage of other employees can be as effective as increased effort (Edward Lazear, *Pay Equality and Industrial Politics*, JOURNAL OF POLITICAL ECONOMY 97, 561-80 (1989)).

be focused on the existence of badly designed incentives that award windfall gains to executives rather than on the fact that pay is contingent on performance⁷.

The effectiveness of incentives is generally taken as a given, and there is much evidence to suggest that incentives do work in some circumstances as conventional agency theory predicts. For example, researchers have found increased performance among Tunisian sharecroppers when their share of output is higher⁸, and increased output among American windshield installers and Canadian tree planters when paid by piece rate rather than a fixed salary.⁹ Experiments have also confirmed that the use of incentives can increase output in a monotonic way. For example, Falkinger et al (2000) find that when bonuses are used, bigger bonuses lead to better performance.¹⁰

In spite of the widespread theoretical acceptance of the importance of incentives, among firms, and even within firms, there is significant diversity in the utilization of incentives to compensate employees. Some firms make use of explicit contracts that link compensation of workers to an observable measure of performance. For example, salespeople tend to get paid on a commission basis. However, there are many compensation arrangements that make little, or even more surprising, no use whatsoever of incentive schemes. Baker, Jensen and Murphy (1988) note that practical anomalies largely unexplained by economic theory include “pay systems that are largely independent of performance, the overwhelming use of promotion-based incentive systems, egalitarian pay systems apparently motivated by

⁷ See for example, Lucian Bebchuk and Jesse Fried, *Executive Compensation as an Agency Problem*, JOURNAL OF ECONOMIC PERSPECTIVES 17, 71-92 (2003); and LUCIAN BEBCHUK AND JESSE. FRIED, PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION, (2004).

⁸ Jean-Jacques Laffont and Mohamed Matoussi, *Moral Hazard, Financial Constraints and Share Cropping in El Oulja*, REVIEW OF ECONOMIC STUDY 62, 381-99 (1995).

⁹ Edward Lazear, *Performance Pay and Productivity*, AMERICAN ECONOMIC REVIEW 90, 1346-61 (2000); Harry Paarsch and Bruce Shearer, *Fixed Wages, Piece Rates and Incentive Effects*, Unpublished Manuscript, U. Laval, (1996).

¹⁰ Josef Falkinger, Ernst Fehr, Simon Gächter, Rudolf Winter-Ebmer, *A Simple Mechanism for the Efficient Provision of Public Goods: Experimental Evidence*, AMERICAN ECONOMIC REVIEW 90, 247-264 (2000).

horizontal equity considerations, the asymmetric effects of rewards and punishments, tenure and up-or-out promotion systems, survey-based and seniority-based pay systems, profit sharing, holiday bonuses, the generally rare observation of bonding and up-front entry fees for jobs, “efficiency wages” , and the general reluctance of employers to fire, penalize, or give poor performance evaluations to employees.”¹¹

3. CROWDING THEORY

The fact that firms choose not to reward employees using traditional monetary incentives should alert us to the possibility that there may be some costs from doing so. Experiments carried out in the field and in university laboratories have shown that indeed, there can be a price to be paid from the use of incentives. Researchers have demonstrated the general ineffectiveness of incentives in several different contexts. For example, paying students for matriculating or for test performance does not lead to improved results¹²; fines imposed on hospital administrators designed to reduce the length of time patients stayed in hospitals had the opposite of its intended effect¹³; and more parents were late picking up their children from a daycare facility once monetary penalties were introduced.¹⁴

This observed phenomenon – namely, that incentives can have counterproductive effects – is known generally as “crowding out”. Crowding out theory takes as its basis the idea that in the absence of incentives, individuals are not purely self-

¹¹ George Baker, Michael Jensen and Kevin Murphy, *Compensation and Incentives: Practices vs. Theory*, JOURNAL OF FINANCE 43, 593-616 (1988).

¹² Joshua Angrist and Victor Lavy, *The effects of high stakes high school achievement rewards: Evidence from a randomized trial*, AMERICAN ECONOMIC REVIEW 99, 1384-1414 (2009).; Roland Fryer, *Financial incentives and student achievement: evidence from randomized trials*, NBER Working Paper 15898 (2010).

¹³ Tor Helge Holmås, Egil Kjerstad, Hilde Lurås and Odd Rune Straume, *Does monetary punishment crowd out pro-social motivation? A natural experiment on hospital length of stay*, JOURNAL OF ECONOMIC BEHAVIOR AND ORGANIZATION 75, 261-67 (2010).

¹⁴ Uri Gneezy and Aldo Rustichini, *A Fine is a Price*, JOURNAL OF LEGAL STUDIES 29, 1-18 (2000).

interested beings. Rather, in addition to concern about their own well being, individuals have social preferences leading them to care about other parties and how they are treated by those parties. Examples of social preferences include motives such as altruism, reciprocity, intrinsic pleasure in performing a task or in helping another, maintaining ethical commitments and holding moral concerns.¹⁵

There is much evidence that social preferences play an important role in people's behavior.¹⁶ For example, it has been amply demonstrated that experimental subjects in an ultimatum game rarely behave as economic theory would predict. In an ultimatum game, one player, designated the proposer has the opportunity to propose a division of a sum of money between herself and another player, designated as the responder. If the responder accepts the proposed division, the sum is divided and distributed between the players. If the responder rejects the proposal, neither player receives anything. Traditional economic theory predicts that the proposer will propose a division giving the responder a token amount and keeping the rest for herself. The responder will accept this proposal because receiving a small amount is better than receiving nothing – the result if he rejects. Unfortunately for game theory, this result almost never materializes in the laboratory.¹⁷ Proposers rarely make token offers, and if they do, the proposals are usually rejected by responders. The most frequent proposal is one where the money is divided in half, and the responder accepts the equal split. Fairness, rather than

¹⁵ Samuel Bowles and Sandra Polania, *Economic incentives and social preferences as complements or substitutes*, Working paper (2010).

¹⁶ TRUMAN BEWLEY, *WHY WAGES DON'T FALL DURING A RECESSION* (1999); Colin Camerer and Ernst Fehr, *Measuring Social Norms and Preferences using Experimental Games: A guide for social scientists* in *FOUNDATIONS OF HUMAN SOCIALITY: ECONOMIC EXPERIMENTS AND ETHNOGRAPHIC EVIDENCE FROM FIFTEEN SMALL SCALE SOCIETIES* (Henrich, Bowles, Boyd, Camerer, Fehr and Gintis eds., 2004); Ernst Fehr and Armin Falk, *Psychological Foundations of Incentives*, *EUROPEAN ECONOMIC REVIEW* 46, 687-724 (2002); Ernst Fehr and Simon Gächter, *Cooperation and Punishment in Public Goods Games*, *AMERICAN ECONOMIC REVIEW* 90, 980-94 (2000); Ernst Fehr, Alexander Klein and Klaus Schmidt, *Fairness and Contract Design*, *ECONOMETRICA* 75, 121-54 (2007).

¹⁷ Colin Camerer and Richard Thaler, *Ultimatums, Dictators and Manners*, *JOURNAL OF ECONOMIC PERSPECTIVES* 9, 209-19 (1995).

self-interest seems to be more important to both proposers and responders in guiding their actions.

Agency theory accepts that individuals may have social preferences, however it makes a key assumption that these social preferences will be unaffected by the imposition of an incentive. Technically, it assumes that effect of incentives is strictly additive onto underlying social preferences: that is, it assumes that individuals will respond to incentives in a rational and self-interested way, *leaving pre-existing social preferences intact*. The following simple example illustrates how the assumption of additivity operates. Suppose that an individual is willing to work for an hour a week volunteering at a homeless shelter due to her concern for the homeless (this is an example of altruistic social preferences). If the homeless shelter receives a grant allowing it to pay the individual an hourly wage, additivity means that the individual would still be willing to work an hour a week for free, even while she may be incentivized to work for more hours per week for pay.

Crowding out theory poses a direct challenge to the assumption that incentives are simply layered onto social preferences. Rather than assuming that incentives leave underlying preferences unchanged, it argues that incentives can and frequently do substitute for social preferences. Substitution means that the introduction of the incentive diminishes the individual's pre-existing social preferences. In the example above, if crowding out exists, once the hourly wage is introduced, the individual will only work if paid, or will work less than an hour for free.

Richard Titmuss in his book, *The Gift Relationship* (1971)¹⁸ was the first to raise the theoretical possibility of crowding out. He argued that blood donors might be less willing to donate blood if they were paid rather than deciding to do it voluntarily.

¹⁸ RICHARD TITMUSS, *THE GIFT RELATIONSHIP: FROM HUMAN BLOOD TO SOCIAL POLICY* (1971).

Titmuss's claim at this time was a mere conjecture, and many economists were puzzled by the notion that incentives could have counterproductive effects.^{19,20}

Since Titmuss's conjecture, a small group of economists (although increasing in number) have become intrigued by the idea that incentives could have counterproductive effects, or would not work exactly as predicted by theory. There now exists a significant body of scholarship demonstrating the unexpected impacts of the introduction of an incentive on social preferences in principal-agent settings, confirming the existence of crowding out. Experiments have demonstrated that the introduction of incentives can actually reduce an agent's effort levels.²¹ The changes in social preferences towards the principal can persist once the incentive is removed.²² Incentives can also change social preferences in environments outside the context of the incentive.²³

¹⁹ Kenneth Arrow, *Gifts and Exchanges*, PHILOSOPHY AND PUBLIC AFFAIRS 1, 343-362 (1972); Christopher Bliss, *Review of R.M. Titmuss, The Gift Relationship: from human blood to social policy*, JOURNAL OF PUBLIC ECONOMICS 1, 99-135 (1972); Robert Solow, *Blood and Thunder: Review of the Gift Relationship: from human blood to social policy by Richard M. Titmuss*, YALE LAW JOURNAL 80, 1696-711 (1971).

²⁰ Note that it has been pointed out that incentives can have counterproductive effects for reasons other than non-separability from preferences. For example, very high levels of compensation can lead to worse performance due to an increased likelihood of choking (see Dan Ariely, Uri Gneezy, George Loewenstein and Nina Mazar, *Large Stakes and Big Mistakes*, REVIEW OF ECONOMIC STUDIES 76, 451-469 (2009)); and for subjects with an earnings target, higher compensation can lead to less hours worked (Colin Camerer, Linda Babcock, George Loewenstein and Richard Thaler, *Labor Supply of New York City Cab Drivers: One Day at a Time*, QUARTERLY JOURNAL OF ECONOMICS, 112: 407-441 (1997).

²¹ Ernst Fehr and Simon Gächter, *Do Incentive Contracts Crowd Out Voluntary Cooperation?*, Institute for Empirical Research in Economics, University of Zurich, Working Paper (2002); Ernst Fehr and Bettina Rockenbach, *Detrimental Effects of Sanctions on Human Altruism*, NATURE 422, 137-40 (2003); Bernd Irlenbusch and Dirk Sliwka, *Incentives, Decision Frames and Motivation Crowding Out: An experimental investigation*, IZA Discussion Paper No 1758 (2005).

²² Falkinger et al, *supra* note 10; Simon Gächter, Esther Kessler and Manfred Konigstein, *Performance Incentives and the Dynamics of Voluntary Cooperation*, Working Paper, University of Nottingham (2009); Gneezy and Rustichini, *supra* note 14; Stephan Meier, *Do Subsidies Increase Charitable Giving in the Long Run? Matching Donations in a Field Experiment*, JOURNAL OF THE EUROPEAN ECONOMIC ASSOCIATION 5, 1203-22 (2007); Andrew Reeson and John Tisdell, *Institutions, motivations and public goods: An experimental test of motivational crowding*, JOURNAL OF ECONOMIC BEHAVIOR AND ORGANIZATION 68, 273-81 (2008).

²³ Stephen Burks, Jeffrey Carpenter and Lorenz Goette, *Performance Pay and Worker Cooperation: Evidence from an Artefactual Field Experiment*, JOURNAL OF ECONOMIC BEHAVIOR AND ORGANIZATION 70, 458-69 (2009).

In contrast to crowding out effects, some incentives can enhance pre-existing social preferences. For example, hospital stays in England dropped dramatically following the introduction of a policy designed to evoke shame and pride in hospital administrators.²⁴ Incentives that increase an individual's willingness to do something voluntarily are said to "crowd in" social preferences. The incentive is thus a complement to pre-existing social preferences. Again, using the simple example above of the volunteer in the homeless shelter, crowding in occurs if, after the introduction of the paid work, the individual would be willing to volunteer on an unpaid basis for more than one hour per week.

Crowding in effects seem to be much less common than crowding out, and tend to be associated with incentives that invite moral approval or disapprobation from a subject's peers. Incentives designed to shame or publicize an individual's self-interested behavior can be quite effective (although quite tricky to carry off) in changing behavior in the desired direction. For example, Fehr and Gächter (2000)²⁵ ran a public goods experiment where one subject could fine another for their failure to contribute to a public good. They found that a fine leveled on a subject by an altruistic peer increased that subject's contributions in subsequent rounds of play. Their explanation for the increase is that the fine activates a sense of shame or embarrassment in the subject. Shaming does not require that a financial incentive even be present. Purely verbal messages of disapproval can also lead to pro-social changes in behavior.²⁶ Some have suggested that shaming or signals of disapproval can work as an incentive because they activate the sense of what kind of a person

²⁴ Timothy Besley, Gwen Bevan and Konrad Burchandi, *Naming and Shaming: The impacts of different regimes on hospital waiting times in England and Wales*, CEPR Discussion Paper no. 7306, Center for Economic Policy Research, London (2009).

²⁵ Fehr and Gächter, *supra* note 16.

²⁶ Abigail Barr, *Social dilemmas, shame based sanctions and shamelessness: experimental results from rural Zimbabwe*, Center for the Study of African Economies Working Paper WPS/2001.11, Oxford University (2001); David Masclet, Charles Noussair, Steven Tucker and Marie-Claire Villeval, *Monetary and non-monetary punishment in the voluntary contributions mechanism*, AMERICAN ECONOMIC REVIEW 93, 366-80 (2003).

one wishes to be, or how that person wants to be perceived by others.²⁷ In general, people want to be viewed in a positive light by others, rather than as selfish or ungenerous.

Why does crowding occur? While many experiments have documented the existence of incentives crowding out social preferences with fewer cases of crowding in, developing an understanding of the causes of crowding has proven more challenging. In a recent paper, Bowles and Polania (2010)²⁸ suggest four main reasons why incentives may be non-separable from social preferences. First, incentives convey information either about the principal, or what the principal thinks of the agent, or about the nature of the task to be carried out.²⁹ If the incentive indicates that the principal does not trust the agent, then the agent may reciprocate by acting in a self-interested way.

Second, incentives may give cues or provide framing around how agents should act.³⁰ For example, labeling an incentive a bonus leads to different actions on behalf of agents than labeling an incentive a fine, even though the payoffs under each are identical.³¹

The third posited cause, much discussed in the psychology literature, is the idea that incentives can “overjustify” an activity³², crowding out an agent’s intrinsic

²⁷ GEORGE AKERLOF AND RACHEL KRANTON *IDENTITY ECONOMICS: HOW OUR IDENTITIES SHAPE OUR WORK, WAGES AND WELL BEING* (2010); Bowles and Polania, *supra* note 15.

²⁸ Bowles and Polania, *supra* note 15.

²⁹ Roland Benabou and Jean Tirole, *Intrinsic and Extrinsic Motivation*, *REVIEW OF ECONOMIC STUDIES* 70, 489-520 (2003); Fehr and Rockenbach, *supra* note 21.

³⁰ Elizabeth Hoffman, Kevin McCabe, Keith Shachat and Vernon Smith, *Preferences, Property Rights and Anonymity in Bargaining Games*, *GAMES AND ECONOMIC BEHAVIOR* 7, 346-80 (1994); Andrew Schotter, Avi Weiss and Inigo Zapater, *Fairness and Survival in Ultimatum and Dictatorship Games*, *JOURNAL OF ECONOMIC BEHAVIOR AND ORGANIZATION* 31, 37-56 (1996).

³¹ For example, Fehr and Gächter, *supra* note 21.

³² EDWARD DECI AND RICHARD RYAN, *INTRINSIC MOTIVATION AND SELF-DETERMINATION IN HUMAN BEHAVIOR* (1985); Edward Deci, Richard Koestner and Richard Ryan, *A Meta-Analytic Review of Experiments Analyzing the Effects of Extrinsic Reward on Intrinsic Motivation*, *PSYCHOLOGICAL BULLETIN* 125, 627-68 (1999); Bruno Frey and Reto Jegan, *Motivation Crowding Theory: A Survey of Empirical Evidence*, *JOURNAL OF ECONOMIC SURVEYS* 15, 598-611 (2001).

motivation to complete that task. When an action is pleasurable, or would be undertaken in the absence of external incentives, introducing an incentive can diminish one's sense of self-determination, in turn leading to lower performance levels. The action is overjustified because the agent would have completed the task even if no external incentive were available.

Finally, incentives can change preferences by altering the very environment in which preferences are acquired. That is, the imposition of incentives can lead to enduring preference change that lasts beyond the life of the incentive. Through exposure to the incentive (and perhaps limited exposure to alternative viewpoints) subjects learn about how to behave and which strategies will lead to success. The incentive environment changes long-term preferences due to continued exposure through parenting, education, and cultural norms.³³

Part of the difficulty in parsing out these different causes is that although it is possible for a single cause to be explanatory, more likely multiple causes are at work. For example, an incentive may provide information that the principal does not trust the agent, at the same time as it frames the context in addition to altering the environment in which social preferences are learned, resulting in long-term preference change. Disentangling these explanations may well be impossible.

An acceptance that crowding out and crowding in exists should not lead one to conclude that incentives are useless. Rather, crowding theory simply challenges the assumption that incentives are strictly separable from pre-existing social preferences. Bowles and Polania (2010)³⁴ make a useful distinction between incentives with categorical effects and incentives with marginal effects. An

³³ Samuel Bowles, *Endogenous Preferences: The Cultural Consequences of Markets and Other Institutions*, JOURNAL OF ECONOMIC LITERATURE 36, 75-111 (1998); Joseph Heinrich, Rob Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, Herbert Gintis, Richard McElreath, Michael Alvard, Abigail Barr, Jean Ensminger, Natalie Smith Henrich, Kim Hill, Francisco Gil-White, Michael Gurven, Frank Marlowe, John Patton and David Tracer, *Economic Man in Cross-Cultural Perspective: Behavioral Experiments in 15 small scale societies*, BEHAVIORAL AND BRAIN SCIENCES 28, 795-855 (2005).

³⁴ Bowles and Polania, *supra* note 15.

incentive has a categorical effect when the mere presence of the incentive, regardless of the size, changes behavior. On the other hand, an incentive has a marginal effect when the incentive is simply less effective than predicted under an assumption of additivity. With marginal crowding out, it is still possible for the incentive to have a positive linear relationship with performance, although the slope will be lower than initially predicted if assuming that preferences were strictly exogenous. Finally, it is possible for both categorical and marginal crowding effects to take hold.³⁵

Strong crowding out occurs when the incentive has a counterproductive effect: its use leads to worse outcomes than in the absence of the incentive. There is strong crowding out in many of the experiments described above. If the cause is marginal crowding out, the relationship between the incentive and performance is negative. If categorical crowding out is the cause, then the change in behavior due to the reduction in social preferences outweighs the positive effect of the incentive. It is important to recognize however, that incentives need not have counterproductive effects for crowding out to exist. Crowding out occurs whenever the incentive has a negative impact on a subject's social preferences. Depending on its size, the incentive can still be effective even though there is a substitution effect between the incentive and social preferences.³⁶

³⁵ See for example, Bernd Irlenbusch and Gabriele Ruchala, *Relative Rewards within Team-Based Compensation*, *LABOR ECONOMICS* 15, 141-67 (2008).

³⁶ The fact that incentives can have positive effects even in the presence of crowding out poses a problem for those seeking to identify the existence of crowding effects. One would be wrong to assume that there is no crowding out if performance improves upon the introduction of an incentive. In order to identify the existence and extent of crowding out, one must first establish a baseline result (behavior in the absence of the incentive), calculate the predicted impact of the incentive under an assumption of additivity, and then observe the actual behavior in the presence of the incentive. The difference between the calculated impact of the incentive and the observed performance is the extent of crowding out. If this difference is negative (the expected performance is higher than the observed performance) then crowding out exists. If the difference is positive, then crowding in is taking place. If there is no difference, then additivity holds. See Bowles and Polania, *supra* note 15, for a discussion of this important but frequently overlooked point.

Crowding theory raises several issues for designers of incentives: whether to use an incentive at all; and if so, how to properly design it. While one might be concerned about the negative effects on behavior from the introduction of an incentive (as would be the case with categorical crowding out), also of importance is consideration of the type of incentive to use (for example, a bonus or a fine, approval or shame) and the size of the incentive. As soon as one recognizes that preferences can be affected by the existence, type and size of incentive, the design of incentives becomes complicated: one needs not only to consider the impact of the incentive on ultimate performance, but also the impact of the incentive on pre-existing social preferences, and then tailor the incentive accordingly.

If there is crowding out that is either categorical or marginal, an incentive that treats preferences as additive could be either *too high or too low* relative to the optimal level.³⁷ Incentives will be over-used when their effect is to diminish social preferences to the point that outcomes are worse than if no incentive was used. On the other hand, incentives will be under-used when crowding out exists, a given level of performance is desired, the pre-existing social preferences are inadequate to attain that level of performance and the marginal effects of the incentive are still positive.

4. EXECUTIVE COMPENSATION AND CROWDING OUT

One of the most studied types of incentives is that of compensation in general, and executive compensation in particular. There has been much attention paid by scholars and the media to executive compensation due to its exponential growth rate over the past few decades.³⁸ Several theories have been put forth to explain this increase.

³⁷ Hwang and Bowles (2008), *supra* note 1; Hwang and Bowles (2010), *supra* note 1.

³⁸ Carola Frydman and Raven Saks, *Executive Compensation: A New View from a Long-Run Perspective, 1936-2005*, REVIEW OF FINANCIAL STUDIES 23, 2099-2138 (2010); Kevin Murphy, *Executive Compensation*, in HANDBOOK OF LABOR ECONOMICS (O. Ashenfelter and D. Card eds.,1999).

Traditional agency theorists argue that the increase in compensation is warranted if pay is truly for performance. If principals want agents to act in the interests of principals, then agents should be compensated for performance, mainly in stock and stock options. As stock prices rose in the 1990s and 2000s because of better performance by managers, so too then did managers' wealth.³⁹ Further, as incentive contracts have become dominant, executives have assumed more risk in their compensation packages. If executives are risk-averse, they need to be compensated for this additional risk. The assumption of risk in the presence of risk-aversion means that incentive contracts will have a higher expected value than will guaranteed payments.

A separate theory argues that compensation rises as managerial talent becomes scarce.⁴⁰ As companies compete for managerial talent, salaries for talented managers will start to rise. In particular, managerial talent will be most scarce in large complex companies that are difficult to manage.⁴¹ Since companies have grown significantly in both size and scope over the past few decades, the demand for managerial talent has risen more than the supply of talented managers. Compensation of these talented managers has therefore increased because of larger companies competing for their services.

In contrast to economists who mainly assume that the increase in executive compensation is efficient, legal scholars have proposed a theory claiming that executive compensation is in fact excessive because managers have a strong incentive to control how their own pay is set.⁴² Excessive managerial power (through effective control of the board of directors) has led to rent-seeking behavior

³⁹ Murphy, *id.*

⁴⁰ Sherwin Rosen, *The Economics of Superstars*, AMERICAN ECONOMIC REVIEW 71, 845-58 (1981); Marko Tervio, *The Difference That CEOs Make: An Assignment Model Approach*, AMERICAN ECONOMIC REVIEW 98, 642-68 (2008).

⁴¹ Xavier Gabaix and Augustin Landier, *Why Has CEO Pay Increased So Much?*, QUARTERLY JOURNAL OF ECONOMICS 123, 49-100 (2008).

⁴² Bebchuk and Fried (2003), *supra* note 7; Bebchuk and Fried (2004), *supra* note 7.

by managers in their negotiations with a captured board, resulting in non-optimal levels of executive compensation. Advocates of the managerial power hypothesis agree though with agency theorists that incentives work because they appeal to agents' self-serving characters. In fact, it is precisely because agents are self-interested that they have the incentive to distort their incentives in the first place!

I believe that crowding out theory provides an additional explanation for the high levels of executive pay we see in the United States. This explanation does not rule out any of the theories above, and in fact, is complementary to both agency theory and managerial power theory. By highlighting the existence of crowding out, I am merely pointing to a different dimension of the contracting problem that has thus far been neglected by scholars working in this area.

The explanation under a theory of crowding out for high levels of executive compensation is straightforward. In the absence of explicit incentive contracts (where the agent is paid a fixed wage), agents will usually exert an effort level greater than that predicted under an assumption of pure rationality. Experiments have shown that agents are willing to put in more effort than is rational under a fixed but generous wage. This could be because of feelings of reciprocity: the principal trusts the agent to do a good job (trust arises since the wage is not conditioned on output), and so the agent responds in kind. As Fehr and Gächter (2000)⁴³ comment, "Fair wages are rewarded with fair effort levels".⁴⁴ The agent might also cooperate with the principal voluntarily because of their intrinsic enjoyment of their job.⁴⁵

⁴³ Fehr and Gächter, *supra* note 16.

⁴⁴ For experimental evidence on the propensity of agents to voluntarily cooperate in the absence of external incentives see also Armin Falk and Michael Kosfeld, *The Hidden Costs of Control*, *AMERICAN ECONOMIC REVIEW* 96, 1611-30 (2006), Irlenbusch and Sliwka, *supra* note 35; Ernst Fehr, Georg Kirchsteiger and Amo Riedl, *Does Fairness Prevent Market Clearing? An Experimental Investigation*, *QUARTERLY JOURNAL OF ECONOMICS* 108, 437-59 (1993); and Ernst Fehr, Simon Gächter and Georg Kirchsteiger, *Reciprocity as a Contract Enforcement Device: Experimental Evidence*, *ECONOMETRICA* 65, 833-860 (1997).

⁴⁵ Margit Osterloh and Bruno Frey, *Motivation, Knowledge Transfer and Organizational Forms*, *ORGANIZATION SCIENCE* 11, 538-550 (2000).

Once an incentive is introduced, for example pay for performance, the agent's relationship to the principal or perhaps to the task at hand changes. Experimental evidence demonstrates that at this point crowding out can occur. Crowding out could be due to a number of reasons: the incentive contract might be interpreted by the agent as a signal of distrust by the principal⁴⁶; the incentive contract might crowd out an agent's intrinsic motivation to complete a task⁴⁷; or the incentive contract might provide information to the agent about how she is supposed to behave.⁴⁸

This altered relationship between the agent and the principal or the task makes the design of an incentive tricky. In some circumstances, the principal might be better off not having the incentive at all. For example, Fehr and Gächter (2002) conduct an experiment where voluntary cooperation almost completely disappears when principals are able to fine agents. They find that contracts that do not offer incentives are more efficient than those that do.⁴⁹

However, in other situations it may be simply be necessary for the principal to amplify the incentive, by either increasing the reward to the agent from acting in the desired manner (bigger bonus) or by increasing the punishment from not so acting (bigger fine). For example, a field experiment demonstrated that while the performance of school children given monetary compensation for collecting donations, which they had previously done on a voluntary basis, suffered under low levels of compensation relative to the no-incentive treatment, once the incentive payment became large enough, the amount of money collected increased.⁵⁰ The

⁴⁶ Falk and Kosfeld, *supra* note 44.

⁴⁷ Osterloh and Frey, *supra* note 45.

⁴⁸ Bowles and Polania, *supra* note 15.

⁴⁹ Fehr and Gächter, *supra* note 21.

⁵⁰ Uri Gneezy and Aldo Rustichini, *Pay enough or don't pay at all*, *QUARTERLY JOURNAL OF ECONOMICS* 115, 791-810 (2000).

problem of diminished performance due to crowding out then may not be because the incentive is counterproductive per se. Rather than assuming that the incentive is the cause of the problem, it may simply be that the incentive is not high-powered enough.

Gneezy (2003) makes this argument elegantly in his description of the expected and unexpected ways in which incentives can operate. He writes, "...once external incentives are present, people react to them in a monotone way: higher incentives result in more effort. However, in some cases, this reaction is not monotonic: when moving from no incentives to small incentives, performance goes down, and only when incentives are increased, does it go up (in some cases we observe discontinuity at zero: the mere introduction of extrinsic incentives destroys the intrinsic motivation). While small incentives are not necessarily better than no incentives, once the extrinsic motivation is large enough, it results in a better performance than the no-incentive case."⁵¹

The non-monotonic effect of incentives provides an additional explanation for the large size of executive compensation contracts that make strong use of performance-based incentives, such as stock, stock options and bonuses. Corporations choose to utilize incentives because voluntary cooperation under a fixed (albeit perhaps generous) salary is inadequate to attain the level of performance desired. In order to ensure higher levels of performance than would be expected under conditions of voluntary cooperation, the corporation introduces an incentive contract under which the executive is paid for performance. The increased emphasis on incentive-based compensation has the effect of simultaneously activating an executive's self-interest and diminishing an executive's social preferences towards the corporation. So in addition to the decision to use an incentive based compensation scheme, the company must then design the incentive to account for the lower levels of voluntary contribution that arise due to the

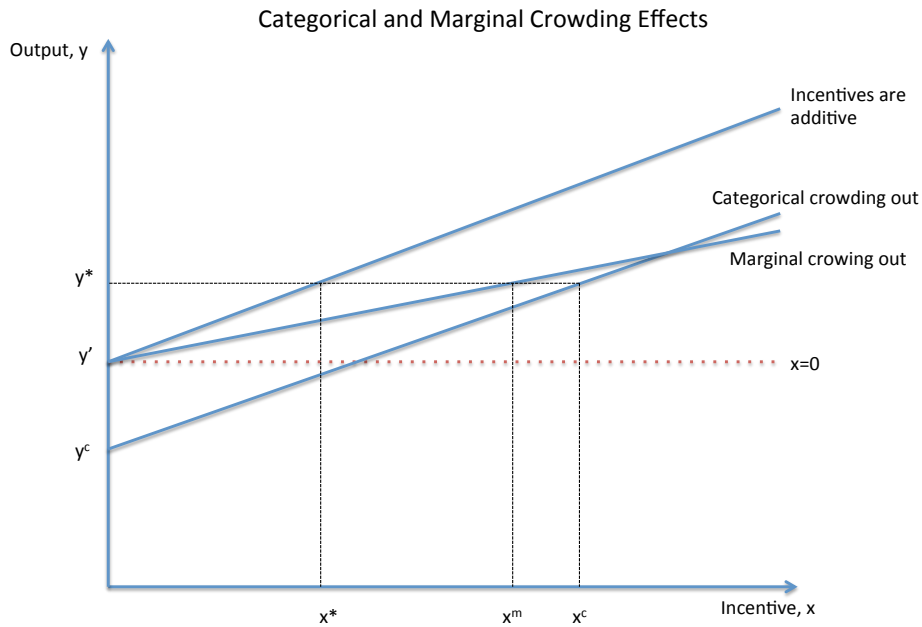
⁵¹ Uri Gneezy, *The W effect of incentives*, Unpublished manuscript, University of Chicago Graduate School of Business (2003).

presence of the incentive. The result is that the executive must be paid *more* in the presence of crowding out than they would if incentives were additive onto pre-existing preferences.⁵²

Figure 1 below illustrates the operation of categorical and marginal crowding effects, and how in the presence of crowding out, incentives must be increased to attain a given level of output. In the absence of the incentive (when $x = 0$), the agent exerts effort level y' . Assume that $y^* > y'$ is the desired level of output and so there is a need for the principal to make use of incentives. If incentives were separable from preferences, then no crowding would occur. The incentive x^* would achieve the desired output. If there is crowding out however, it is simple to see that x^* will be too small. For categorical crowding out, the mere presence of the incentive lowers the output levels relative to the case where there is no incentive. In order to achieve y^* , the principal needs to employ an incentive the size of x^c which is strictly greater than x^* . Similarly, when there is marginal crowding out, the incentive is simply less effective and so more needs to be used (here, x^m) to achieve y^* . Obviously when there is both marginal and categorical crowding out, an even greater level of the incentive needs to be employed

⁵² Others who have noted that higher levels of incentives can generate desired behavior include Bowles and Hwang (2008, 2010), *supra* note 1 and Iris Bohnet, Bruno Frey and Steffen Huck, *More Order with Less Law: On Contractual Enforcement, Trust and Crowding*, AMERICAN POLITICAL SCIENCE REVIEW 95, 131-44 (2001).

Figure 1



If social preferences diminish according to the level of incentive employed, the interaction between crowding out and compensation will be dynamic and self-fulfilling. As more of the executive's social preferences towards the corporation are crowded out because of the incentive contracts, the more the company must pay to generate the desired level of performance. As the company pays the executive more for performance, self-interest is further pushed to the fore. Eventually the process will reach a limit where crowding out is complete and the executive is solely self-interested. At this point, compensation packages will clearly be bigger than they would be under an assumption that social preferences are exogenous and unchanged by incentives. In the process of writing contracts that appeal to an individual's self-interest, we create self-interested individuals. Those contracts then must take into account the diminution of social preferences towards the principal.

This distortion of other-regarding preferences may not be confined to the contract and principal at hand. That is to say, in the context of executive compensation, it is reasonable to assume that the change in preferences induced by the incentive is permanent, rather than state-dependent. When an incentive contract is replaced with a contract that makes no use of incentives, it is extremely unlikely that the agent will revert back to her pre-existing feelings of goodwill towards a principal. Rather, the change in social preferences caused by the presence and size of the incentives is likely to endure. Through the use of incentive contracts, agent performance improves, but the improvement comes at a cost: incentives teach agents to behave in self-interested ways.

Consider for instance, the introduction and repeal of fines for picking up children late from a day care center in Israel.⁵³ The introduction of the fine (perhaps because it was too small to change behavior) led to an increase in parents being late to pick up their children. When the fine was removed, the rate of latecomers did not drop back down to the pre-fine state. In another example, Meier (2007) examined the impact of a matching mechanism on the rate and size of charitable contributions. He finds that even though a matching mechanism had the effect of increasing donations in the period it was available, in subsequent periods when matching was no longer available, donors over-compensated in their drop in donations: their donations declined by more than the additional amount they contributed during the life of the matching mechanism.⁵⁴ In a principal-agent context, Irlenbusch and Sliwka (2005) find that effort declined after the introduction of a piece rate relative to a fixed wage, and that switching from a piece rate regime to a fixed rate regime resulted in even worse performance.⁵⁵ Finally, Gächter, Kessler and Königstein (2006) examined whether firms can revert back to trust and reciprocity after practicing pay for performance. They found that the voluntary cooperation of agents was much

⁵³ Gneezy and Rustichini, *supra* note 14.

⁵⁴ Meier, *supra* note 22.

⁵⁵ Irlenbusch and Sliwka, *supra* note 35.

smaller after experiencing incentive pay (although the effect was stronger for fine treatments than for bonus treatments).⁵⁶

Why is it that preference change may be enduring in the context of executive compensation? The main cause, in my view, is the sheer success of agency theory in permeating business norms. The underlying assumption in agency theory that managers will act in a self-interested way has resulted in self-interested managers. Contracts written between corporations and executives are designed to harness executive self-interest, if not in actual practice, then certainly in best practice. The fact that pay for performance is so widely accepted among investors and policy makers as best practice, and the fact that there is only a relatively small set of compensation consultants, means that there is little diversity and therefore little exposure for executives to alternative models of preferences and contracts. The lack of exposure is reinforced by competitive markets: because incentives work as predicted when high-powered enough, all firms will adopt incentive contracts or risk being left behind in terms of performance measures important to investors.

Even prior to any signing of or real exposure to an actual incentive contract, ambitious would-be executives are taught in business schools, economics departments and law schools that managers cannot be trusted unless they are given the appropriate incentives.⁵⁷ When we teach students that executives will behave opportunistically, and that such opportunistic behavior is a rational response to the rules of the game as written, is it any surprise that those students learn to disregard the impact of their self-serving actions on others? When we teach students the behavior that at first glance seems motivated by other-regarding preferences such as reciprocity or fairness, can actually be explained by self-interest (for example, reputational concerns), we convey the message that actions benefiting others are

⁵⁶ Gächter, Kessler and Königstein, *supra* note 22.

⁵⁷ Robert Frank, Thomas Gilovich and Dennis Regan, *Does Studying Economics Inhibit Cooperation?*, JOURNAL OF ECONOMIC PERSPECTIVES 7, 159-171 (1993); Sumantra Ghoshal, *Bad Management Theories are Destroying Good Management Practices*, ACADEMY OF MANAGEMENT LEARNING AND EDUCATION 4, 75-91 (2005).

only permissible if they are instrumental – not done for their own sake, but for the sake of ourselves. Market, legal, cultural, educational and social forces over the past few decades have inexorably resulted in the assumption of self-interest embedded in agency theory becoming a truism. In an environment where self-interest prevails over other-regarding norms, incentives assume even greater importance.

The crowding-out of social preferences, and the concomitant increase in self-interest provides an additional account to explain growing compensation packages. This explanation is complementary to and can enrich existing theories of executive compensation. Crowding out is an enrichment of agency theory because it argues that in order for incentives to be effective, they need to take into account the diminished concern the agent will feel for the wellbeing of the principal. High-powered incentives can help to overcome agency problems if employed by a sophisticated planner. These high-powered incentives are necessary because either they need to make up for the downward shift in performance due to the presence of the incentives (categorical crowding out) or because of their reduced marginal effectiveness (marginal crowding out). With respect to the managerial power theory, crowding out suggests a reason why managers would choose to exercise influence over their compensation packages to ensure that they are paid more than is optimal: the pre-existence of incentive contracts (perhaps properly designed) that appeal to self-interest dilute managers' feelings of fairness or goodwill towards their principal. Managers have learned to place their own interests ahead of the principal.

5. CONCLUSION

Crowding theory has implications for corporate governance and the evaluation of contracts. Incentives can diminish or amplify an employee's feelings of good will towards their employer. Understanding how an incentive is likely to affect social preferences is important because incentives could be too large or too small as a result. When crowding out of social preferences takes place, and those changes are enduring, then incentives will need to be larger to account for this diminution in

voluntary contribution by an agent. When crowding in of social preferences takes place, agents are likely to work harder than they would otherwise.

In the corporate arena we have seen significant changes in pay practices over the last few decades, and concomitantly, in the development of norms calling for pay for performance. This norm – that individuals are self-interested, and will only act if incentivized properly to do so – is reinforced through educational and cultural transmission of ideas. The fact that individuals are more self-interested than previously means that crowding out has occurred.

In response to this recognition that incentives can cause problems, some have called for the rollback of pay for performance.⁵⁸ However, it is unlikely that we can return to the world that existed prior to the introduction of incentive contracts, and nor would we necessarily want to. The use of incentives has resulted in better performance on behalf of employees - but at a cost of creating self-interested employees. In particular the previous use of financial incentives that have crowded out social preferences means that those designing current and future incentives need to take the fact of crowding out into account. Retention bonuses – however distasteful – may be the only way corporations can induce employees to remain in their jobs. Large compensation packages (well-designed) may be the most effective way for principals to align agent’s interests with their own.

⁵⁸ See for example, Osterloh and Frey, *supra* note 45.