



## Performance pay and dynamic social preferences

Ola Kvaløy

University of Stavanger, 4036 Stavanger, Norway

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### ABSTRACT

This paper analyzes implications of dynamic social preferences in a simple multiagent moral hazard model. The basic assumption is that social (other-regarding) preferences, such as shame and compassion, is a function of previously offered incentive schemes. I show that it may be optimal to offer incentives based on relative performance evaluation (RPE) in both periods in the dynamic (two-period) setting, even if team incentives, i.e. joint performance evaluation (JPE) is optimal in the static setting, and vice versa. The model also suggests that dynamic preferences promote the use of JPE or RPE at the expense of independent performance evaluation (IPE) if the principal cannot use IPE to boost social preferences.

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### 1. Introduction

While an economist may say that incentive contracts induce certain type of actions, a psychologist may say that they induce certain type of preferences. For instance: an economist may say that peer pressure calls for team incentives since team incentives *exploit* peer pressure, while a psychologist may say that team incentives *create* peer pressure. This distinction has important implications. For instance, an established observation is that relative performance evaluation (RPE) may induce sabotage, and reduce cooperation (as first analyzed by Lazear (1989)). So why do firms use RPE if it induces sabotage? Well, there may be other reasons such as common noise that make RPE optimal (see Holmström, 1982; Lazear & Rosen, 1981). But an alternative explanation is that RPE and sabotage *remove* any reason for implementing joint performance evaluation (JPE). Assume that sabotage triggers revenge. Then this may curb peer pressure effects such as shame that potentially can be exploited by JPE. In other words, RPE changes the preferences of the workers. Once RPE is implemented, it is also optimal in remaining periods since any reasons for implementing team incentives are removed. Hence, sabotage may induce RPE.

There is a growing economics literature on so-called other-regarding – or social – preferences. From the plain recognition that people do not only care about their own material payoff, the profession has moved on to investigate how a rich variety of preferences affects economic outcomes.<sup>1</sup> In the literature on incentive-provision, we have seen how preferences such as

*E-mail address:* [ola.kvaloy@uis.no](mailto:ola.kvaloy@uis.no)

<sup>1</sup> There is now a large amount of evidence that people act altruistically, reciprocally, cooperatively or spitefully towards each-other, even if these actions do not affect their own material payoff. Such deviations from *homo economicus* have been termed “social preferences” or “other-regarding preferences”. See Bolton and Ockenfels (1999), Charness and Rabin (2002), Falk and Fischbacher (2006) or Fehr and Schmidt (1999) for an introduction.

**Table 1**  
Social preferences.

	Positive utility	Disutility
High relative output	<i>JPE</i>	
Low relative output	Status Malicious pleasure	Frustration, compassion Shame, guilt
High relative output	<i>RPE</i>	
Low relative output	Status, malicious pleasure Altruistic pleasure	Compassion Deprivation, envy

inequity aversion (Fehr, Klein, & Schmidt, 2000), status (Frank, 1984; Neilson & Stowe, in press), guilt and shame (Kandel & Lazear, 1992), behindness aversion (Itoh, 2004) and envy and compassion (Bandiera, Barankay, & Rasul, 2005; Grund & Sliwka, 2005) affect optimal incentive contracts. However, a common feature with this literature is that preferences are static. Although a variety of preferences are analyzed, incentive schemes do not affect the social preferences of the workers. In this paper, I assume that incentives may affect social preferences. In particular, I assume that if agents work in two-periods, the incentive regime in period 1 affects the agents' preferences in period 2.

This assumption is motivated by theories of endogenous preferences. While mainstream economics have advocated the axiom of exogenous preferences, recent economic literature (borrowing insight from historical, psychological and sociological studies) has begun to exploring the assumption that markets and other economic institutions influence the evolution of values, tastes and personalities, see Bowles (1998) for an overview. Methodologically, evolutionary game theory has been used to explain preference-survivals, see e.g. Guttman (2003), and on a more conceptual level, the emergence or decline of social preferences have been explained by the emergence of markets (see Hirsch, 1976 vs. Hirschman, 1982).

An interesting recent field experiment by Burks, Carpenter, and Gotte (2006) indicates that endogenous social preferences should also be explored in models of optimal incentives. Controlling for sorting they find that the social preferences of bicycle messengers are endogenous to their firms' choice of compensation scheme. In particular, they find that messengers that are governed by individual performance pay are more "egoistic" than messengers governed by fixed pay or group based pay (revenue sharing). This finding indicates that social preferences may develop over time and be determined endogenously by previously offered incentive schemes. A contribution of the present paper is to explore endogenous preferences in a model of optimal incentive provision.

Generally, an agent's utility from an incentive scheme is determined by the expected wage, minus effort costs, plus the utility/disutility from other-regarding preferences. With independent performance evaluation (IPE), the agents are not directly imposing externalities on their peers, neither are they directly exposed to externalities, meaning that an agent's performance will not affect the other agents' wages. I will here concentrate on direct externalities and therefore assume that the utility from IPE schemes is exclusively determined by the expected wage. However, the agents impose or are exposed to externalities from JPE and RPE. Table 1 suggests some utilities and disutilities that an agent can experience from realizing relatively high or relatively low output under JPE and RPE.

I chose two externalities to make the model tractable, namely the disutility from low relative output in JPE (shame or guilt) and the utility/disutility from high relative output in RPE (status/compassion). A question then is how these preferences will develop over time. I consider a model where it is always individually profitable for the agents to engage in sabotage when governed by RPE, such that a desire for revenge is likely to develop in a dynamic setting. The following assumptions are then quite plausible: if the parties are governed by RPE (and subject to sabotage) in period 1, then the positive utility from winning increases under RPE in period 2. Alternatively, if the agents are compassionate, the disutility from winning is lower in period 2. Moreover, if the parties switch to JPE in period 2, then the shame from low relative output is lower than if the parties are governed by JPE also in the first period (and hence did not engage in sabotage). I also assume that since IPE does create externalities, it does not change the preferences from period 1 to period 2.

The purpose of this paper is not to advocate a specific type of change in preferences. Rather, I will show that *if* preferences are endogenously determined by incentive schemes, this has some interesting implications. From the specific assumptions sketched above (which I will formalize in the next section), the following results are deduced: first, I show that the optimal incentive regime in the dynamic (two-period) setting may differ from the optimal regime in the static setting, i.e. even if JPE is optimal in the static setting, it may be optimal to offer RPE in both periods in the dynamic setting (and vice versa). Second, I show that given these assumptions, "steady-state regimes" are always optimal, i.e. it is suboptimal to offer different regimes in the two-periods. Third, I show that independent performance evaluation cannot be optimal in the dynamic setting if it is suboptimal in the static setting.

## 2. The model

Consider an economic environment consisting of one principal and two identical agents who each period produce either high,  $Q_H$ , or low,  $Q_L$ , values for the principal. Their effort level can be either high or low, where high effort has a disutility cost

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