

Abstract
Productivity Under Group Incentives: An Experimental Study

Although the United States still leads the world in worker productivity, there is some concern that the rate of productivity growth we have experienced over the past two decades may not be sufficient to maintain our leading position as we enter the next century. One possible avenue through which productivity can be increased is through the design and implementation of carefully crafted incentive compensation systems, which will induce workers to work both harder and smarter.

In this paper we take a first, experimental examination of this possibility. We report on a set of 13 experiments run using 588 paid human volunteers, the purpose of which was to investigate the problem of group moral hazard and the performance characteristics of a variety of group and individual incentive schemes. The specific schemes we investigate range from simple Revenue Sharing (egalitarian partnerships) to more sophisticated, target-based systems such as Profit Sharing or so-called Productivity Gainsharing. These are prototypical real-world incarnations of what economists call "forcing contracts." We also examined the properties of team-based tournaments, denoted here as "Competitive Teams" in which intra-firm competition, say between profit centers, is created so that relative performance becomes the basis of incentive awards. The performance of all these group incentive systems is then compared to that of individual incentive systems characterized by probabilistic monitoring and efficiency wages. Our conclusions are straight forward and can be summarized by five simple observations.

Observation 1: Shirking Happens

When experimental subjects are placed under an incentive plan which provides strong incentives to shirk, their effort levels do approach the shirking equilibrium as they near the end of the experiment.

Observation 2 History Matters

The performance of an experimental group using any particular group incentive formula depends on the effort norm established by this group in its previous experience with other incentive schemes.

Observation 3: A Little Competition goes a Long Long Way

Tournament-based group incentive mechanisms that create competition between sub-groups in the organization for a fixed set of prizes (i.e. which create internal tournaments) determine higher mean outputs than all target based mechanisms examined and smaller variances in those outputs than many of them.

Observation 4: Vulnerability Matters

The output of groups functioning under incentive plans which implement Pareto-optimal effort levels as Nash equilibria will be greater the less "vulnerable" (i.e. risky) are those equilibria to deviations or mistakes by the group agents.

Observation 5: Monitoring Works But is Costly

When monitoring is possible but not perfect, high levels of effort can be elicited from workers. However, unless the probability of detection is great (and therefore costly to maintain), such monitoring schemes are likely to fail.