

# Pushing for compliance: On the emergence of "extreme" incentives

A very interesting question that has been receiving surprisingly little attention so far is why real-world employment contracts seem to offer rather "extreme" incentives: A sizable number of employment contracts include a highly variable compensation whereas many other contracts offer no variable compensation at all. Contracts with intermediate incentives on the other hand seem to be used much less frequently. While the average size of incentives has been well-studied (e.g. Jensen & Murphy, 1990) this distribution of incentives has been looked at surprisingly little. Our model shows that if the agent has the possibility to get involved in (potentially illegal) actions that boost short-term profits but are against the interest of the principal it will indeed be optimal for the principal to give either very low / zero or very high incentives. Our results also rationalize the empirical finding that facing corruption and other kinds of white-collar crime most legislator decide to punish both, firms and individuals involved in the wrongdoings.

## **Related Literature**

Our model is most closely related to Spagnolo (2005) who studies optimal incentives in collusive industries. He finds that firms will find it optimal to cap incentives at a certain profit-level in order not to give the agent incentives to deviate from a collusive arrangement. Another paper that is very much related to our work is Laux (2001). The author shows that in a limited liability setting informational rents paid in one project can be used to relax the limited liability constraint for other projects. This effect is very similar to our setting where informational rents can be used in order to give incentives for compliance with legal requirements. In analyzing a two-dimensional decision of the agent our set-up is also related to Holmström and Milgrom (1991). However, by assuming that the two dimensions influence one common signal we deviate largely from their setting.

## Setup

Our analysis is based on a moral hazard problem where the agent is risk neutral but has limited liability (Innes, 1990). He chooses an unobservable action that increases the probability that the firm makes high profits and bears the corresponding costs that are convex in the probability of high profits. Additionally, the agent has the (costless) option to increase the probability of high profits by some illicit behaviour. The behaviour is not observable and assumed to be against the interest of the principal. One possible interpretation of this assumption is that the negative consequences of illegal actions only materialize in the distant future when the agent can no longer be punished. Given this setting, we derive the optimal employment contract.

We can think of the situation as a two-dimensional moral-hazard problem: The principal wants on the one hand to induce the agent to exert effort. But on the other hand he doesn't want him to engage in illicit behaviour. Yet, the principal may have only one signal on the agent's behaviour: the profit made in this period.

In order to examine the interaction between incentives for the two dimensions of the problem we look at a limited-liability setting where the agent chooses the probability with which a high or a low profit occurs. If a large profit materializes he is paid a bonus, otherwise he is not. If the benefit of effort is small, we get results similar to the ones of Spagnolo (2005): In this case it will be optimal to abolish incentives altogether and to pay the agent only a fixed wage. However, if the return to effort is high and there is a sufficiently large probability of detecting illicit behaviour of the agent, the principal will find it optimal to reduce the probability of any antinomial action of the agent by increasing variable compensation. This is because higher incentives increase the information rent the agent receives and act as an efficiency wage. But in contrast to conventional (that is profit-invariant) efficiency wages they have the additional virtue of inducing higher effort. Only if incentives are very high already, it will be optimal to increase the probability of compliance by paying standard efficiency wages.

We also find that for a large range of parameters a welfare-maximizing legislator should punish firms rather than agents: A decrease in the probability of illicit behaviour can either be reached by increasing the (expected) punishment of the agent or by increasing the (expected)

punishment of the firm. As long as the firm finds it optimal to increase the probability of compliance by increasing the variable compensation of the agent, punishing the firm will have the additional appeal of increasing effort and reducing the distortions caused by the unobservability of effort. It is only when variable compensation is very high already that the legislator may resort to reaching any additional increase of the probability of compliance by punishing the agent.

## **Conclusion**

Our model therefore explains why incentive contracts tend to be “extreme”: Variable compensation will either be zero or (potentially much) higher than the second-best level predicted by a standard limited-liability model. Additionally, our results help us to understand why legislators typically punish principals and agents in cases of illegal behavior. A clear testable prediction of our model would be that incentives should be much more “extreme” in industries where the danger of illicit behaviour is higher for exogenous reasons.

## **References**

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