CHAPTER 30

CONTRACTING WITH A PRODUCTIVE AGENT AND A MONITOR

The preceding chapter focuses on settings in which all agents are productive. In this chapter we consider some settings in which there is an agent who is not directly productive, but is hired by the principal to monitor a productive agent. The monitor can represent a supervisor, an internal auditor, or an external auditor. A supervisor and an internal auditor are employees of the principal's firm and, hence, their compensation can vary with performance measures in much the same way as the compensation of a productive agent. Institutional restrictions typically preclude paying external auditors performance contingent compensation. Instead, their incentives come from the threat of litigation and the resulting penalties, or from reputation effects.

In general, monitoring may pertain to verifying the content of reports issued by a privately informed productive agent (which is the classical role of an auditor) or to observing the activities and consequences of productive agents (which is the classical role of a supervisor). The simple models we consider can be given either interpretation. We refer to the productive agent as the "worker" and the non-productive agent as the "monitor."

In each model considered in this chapter, we assume the worker has precontract private information (as in Chapter 23 and Section 29.4). Consequently, he has the potential to earn "information rents" that are costly to the principal and result in the principal inducing less than efficient (i.e., first-best) worker effort. In Section 29.3, those rents and inefficiency are reduced by using relative performance measures for two productive agents. In this chapter, the worker's rents and inefficiency are reduced by using information provided by the monitor.

In Section 30.1, the model is similar to Demski and Sappington (1989) (DS89). In this model, the worker knows his "state", which affects both the cost of his effort and the probability of the outcome from his effort. The monitor expends costly effort to acquire information about what the worker knows. The principal offers the worker and monitor contracts that motivate them both to work and to induce the monitor to report truthfully. The subgame issues that arose in Chapter 29 with two productive agents also arise here and indirect mechanisms are again used to deal with those subgame issues. Of course, these

mechanisms differ somewhat because they focus on inducing truthful reporting by the monitor.

In Section 30.2, the model is similar to Kofman and Lawarree (1993) (KL). In this model, the worker's information is perfect and the monitor's imperfect information is costless. The principal offers contracts to induce worker effort and to induce truthful reporting by the monitor. The monitor does not expend costly effort, so the subgame issues that arise in Section 30.1 do not occur here. However, in this model, we assume the worker and monitor can collude. In particular, the worker can bribe the monitor to lie and issue reports that avoid the imposition of penalties on the worker. We identify conditions under which the ability to collude (a) destroys the value of a collusive monitor (relative to an exogenously truthful monitor), (b) partially reduces that value, and (c) has no impact on the monitor's value.

Finally, in Section 30.4.2 we extend the prior analysis by considering the use of a costly, truthful external monitor to partially counter the negative effects of collusion between the worker and a costless internal monitor.

30.1 CONTRACTING WITH AN INFORMED WORKER AND A COSTLY MONITOR

As in DS89, the model in this section focuses on the subgame issues that arise in a setting in which a productive worker expends effort to increase the principal's payoff and the monitor expends effort to obtain information about the worker's pre-contract information.

30.1.1 The Basic Worker Model

A risk neutral principal owns a technology that will produce one of two possible outcomes, $x_g > x_b$, at date 1.[1] The probability of generating the good outcome is an increasing function of the worker's action $a_w \in A_w = [0,1]$.

The Worker

The worker is risk neutral with respect to the compensation c_w he receives from the principal, minus a cost κ_w that he incurs in providing action a_w, i.e.,

$$u_w(c_w, \kappa_w) = c_w - \kappa_w.$$

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[1] DS89 develop the outcome in their model in terms of a direct cost incurred by the principal. To maintain coherence with the analyses in Section 29.3, we represent their model using outcome x.