

# Dynamic Contracting under Career Concerns: Extended Abstract

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The literature on Dynamic Mechanism Design commonly considers a setup where the agent (he) derives no other benefit from his reports apart from what the mechanism he participates assigns. However, this is not always true. For example, consider the case of a CEO whose private information is his ability to produce profits. In the event that he gets fired his next job will depend on the history of his reports. Most importantly, this continuation value is non-contractable, as by definition it is out the CEO's current contract. The aim of this paper is to derive the optimal contract for such a setup.

Actually, the agent's incentives to misreport appear to be very similar to those identified in the vast literature of career concerns, hence the selected name for this project. The difference is that in most of those paper, the agent does not actually have private information. For example, the seminal contribution of Holmstrom[4] assumes that the agent's ability is unknown by both him and the principal, and that the agent attempts to influence the principal's learning process with his private action. A paper more relevant to the current discussion is that of Gibbons and Murphy[3]. Their model is similar to Holmstrom's, however they allow the agent to write performance based contracts. They show that as the agent approaches the end of his career his compensation becomes more performance based. In a more recent contribution, Milbourn[5] considers the case of a CEO who can potentially be replaced after his first period in power. This happens if the shareholder's posterior belief on his ability is below some exogenously set threshold. He shows that the higher is the CEO's prior reputation, the more performance based in the optimal linear contract.

This project not only aims in making this replacement decision endogenous, but most importantly in showing how this can be skewed by the fact that the principal's learning process is partially based on the agent's reports. This creates for the agent information rents of a conceptual form which, to the best of my knowledge, has not appeared before in the literature. To be more precise, the agent will make information rents both from his current contract, but also from his continuation value. Interestingly, those will not be equal, or even proportional. Actually, it is exactly this difference on their relative size which will influence the replacement decision and make it interesting.

The model will be a continuous time one. Two principals (she), one with highly efficient production function (H) and one with lowly efficient (L), get to sequentially bargaining with an agent over the contract under which he will

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produce for one of them. H moves first, if she and the agent sign a contract, then this has potentially infinite duration. However, the contract also allows for the possibility of letting the agent go, depending on the observed production and the agent's reports. If this happens, or if an agreement is not reached between them, then H irreversibly switches to some exogenously set outside option  $\Omega > 0$ . At the same time L starts bargaining with the agent over a new contract. If this is terminated, or an agreement is not reached, then both L and the agent receive their outside options, which are normalized to zero.

The agent's ability is his private information and it is assumed to follow a Geometric Brownian Motion. Additionally, his choice of instantaneous effort level is also a private one. Naturally, H will want to terminate her contractual relationship with the agent if his productivity falls below some certain level. However, this means that the agent is fired exactly when he least wants to, as this will have a negative impact on his contractual agreement with L. This incentivizes the agent to over-report his ability, and to mask this deviation by increasing his effort. As a result the optimal contract will actually be influenced by the agent's career concerns. The same will not be true when the agent signs a contract with L. This is because the outside option of both is zero, which makes this case similar to a regular Dynamic Mechanism Design problem.

The solution method which will be used relies heavily in recent contributions from Esó and Szentes [2], and Bergemann and Strack [1]. The necessary equilibrium conditions are imposed so that the outcome of both bargaining sub-games is a division of the expected surplus of the relationship between the principal and the agent, with some exogenous weights. Subsequently, the surplus maximizing contract for the case of contracting without career concerns (with L) is found. Then the same is repeated for the case of contracting under career concerns (with H). However, this is done only for the case of strictly truthful equilibria, i.e. equilibria in which the agent's type is fully revealed in any history of his first contract. First, it is shown that the choice of effort is the same as in the case without career concerns, given that the prior distribution of agent types is the same. Second, H's maximization problem is transformed to an optimal stopping problem, such that the agent is fired when the proportional change in his ability is below some threshold. This threshold is shown to be a function of the principals' prior belief on the agent's ability, in much the same way the choice of effort is. Hence, the agent's private information distorts not only the choice of effort, but also the firing decision.

## References

- [1] Dirk Bergemann and Philipp Strack. “Dynamic revenue maximization: A continuous time approach”. In: *Journal of Economic Theory* (2015).
- [2] Péter Eső and Balázs Szentes. “Dynamic Contracting: An Irrelevance Result”. In: (2013).
- [3] Robert Gibbons and Kevin Murphy. “Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence”. In: *Journal of Political Economy* 100.3 (1992), pp. 468–505.
- [4] Bengt Holmström. “Managerial incentive problems: A dynamic perspective”. In: *The Review of Economic Studies* 66.1 (1999), pp. 169–182.
- [5] Todd T Milbourn. “CEO reputation and stock-based compensation”. In: *Journal of Financial Economics* 68.2 (2003), pp. 233–262.