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Relational contracts, limited liability, and employment dynamics ☆

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Abstract

This paper studies a relational contracting model in which the agent is protected by a limited liability constraint. The agent's effort is his private information and affects output stochastically. We characterize the optimal relational contract and compare the dynamics of the relationship with that under the optimal long-term contract. Under the optimal relational contract, the relationship is less likely to survive, and the surviving relationship is less efficient. In addition, relationships always converge to a steady state under the optimal long-term contract, but they can cycle among different phases under the optimal relational contract.

JEL classification: C61; C73; J33; L24

Keywords: Relational contracts; Limited liability; Efficiency wages

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1. Introduction

Many business relationships have three salient features. First, the relationships are ongoing, and the business parties interact repeatedly. Second, some party in the relationship has a moral hazard problem, and can take an action that is privately observed. Third, the party with the moral hazard problem also has limited liability, and he can only be punished to a degree. Examples with these features include banks lending to entrepreneurs, manufacturers outsourcing to suppliers, and firms hiring workers. In these examples, the relationships are typically repeated; the entrepreneurs, suppliers, and workers often take private actions to advance their own interests; they are protected by limited liability: entrepreneurs and suppliers can declare bankruptcy, and workers are protected by minimum wages.

The literature on dynamic contracting with limited liability has captured these features, and has been successful in providing insights into the dynamics of the relationship, with applications, for example, in corporate finance; see Sannikov (2013a) for a survey. A key assumption in this literature is that there are formal long-term agreements for the relationships, and specifically, the principal can commit to these agreements.

However, in many situations—employment relationships in particular, the costs of drafting and enforcing long-term agreements can be prohibitively high. Consequently, the principal cannot be expected to commit to formal long-term agreements. The relationships depend, instead, on relational contracts in which the parties keep their agreement because of their concerns for their future loss. The main purpose of the paper is to investigate how the lack of commitment affects the dynamics of the relationship.

Specifically, we study a model of relational contracts with imperfect monitoring—an infinitely repeated principal–agent model where output is publicly observable but not contractible.[1] The agent privately chooses to work or shirk, and by working the agent increases the probability of high output. The production environment is similar to models of financial contracting—DeMarzo and Fishman (2007), Biais et al. (2004), Biais et al. (2013) (hereafter Biais et al. (2004, 2013)), but importantly, the principal cannot commit to long-term contracts. We model the limited liability constraint by requiring that the agent's pay each period does not fall below an exogenously given wage floor $\underline{w}$. Following Levin (2003), we define a relational contract as a Perfect Public Equilibrium (PPE) of the game. The optimal relational contract is the PPE that maximizes the principal's payoff.

We characterize the set of PPE payoffs and derive properties of the optimal relational contract. The PPE payoff frontier consists of a punishment region in the left, a reward region in the right, and a probationary region in the middle. The agent's payoff in the optimal relational contract starts in the probationary region, where the agent puts in effort and receives wages equal to $\underline{w}$. If the output history has been sufficiently favorable, the agent's continuation payoff moves to the reward region, which pays wages above $\underline{w}$. If the output history has been sufficiently unfavorable, the agent's continuation payoff moves to the punishment region, where the agent is either asked to shirk for some periods of time, or the relationship is terminated. The three regions of the PPE payoff frontier—and the structure of the optimal relational contract they induce—reflect the general lesson that rewards (and punishments) should be backloaded in repeated interactions, and are also featured in dynamic contracting models.

[1] For a definitive treatment of relational contracts with observable actions, see MacLeod and Malcomson (1988).