



Phd Program in Economics (XXV Cycle)
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Essays on Optimal Contracts with Costly State Verification

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Chapter 1

Introduction

The present dissertation collects two essays on the theory of optimal contracts in presence of a Costly State Verification Technology.

In the first essay (Chapter 2), we extend the standard Costly State Verification framework in such a way to study how the presence of pre-contractual, non-contractible investment affects the terms of the contract between a Principal and an Agent. In particular, we will present a model in which, before the contracting stage, an agent can invest an amount of effort to generate a future surplus in a bilateral relationship with a principal who is endowed with a costly auditing technology. To induce the Principal not to walk away from this relationship, both parties sign a contract with which payments from the agent to the principal are specified. We assume that parties are asymmetrically informed: the agent is privately informed about the state of nature and tries to exploit his informational advantage in order to give the principal lower payments. On the other hand, the principal tries to avoid agent's fraudulent behaviour by using (or threatening to use) the costly audit technology.

The results that we will present share some key features of both the Costly State Verification (CSV) and the hold-up literature. In particular, we will show how our optimal

contract inherits almost all the essential characteristics of the typical optimal contract in the CSV framework. However, there is a fundamental difference. Due to our assumption of relationship-specific and non-contractible investment, if the principal is not able to credibly commit to pre-specified auditing policies, then investment can no longer be used as a commitment device. This will lead to underinvestment in effort with respect to the full commitment case. Furthermore, we will show how different allocations of bargaining power between the contracting parties may lead to the hold-up problem. In particular, we will show that if the principal has all the bargaining power, then hold-up arises in its most severe form, that is, no effort at all will be exerted at the pre-contractual stage. Finally, we will briefly discuss how the introduction of bonus payments in case of successful project's outcome may mitigate the hold-up problem.

In the second essay (Chapter 3) we depart from the canonical model of costly auditing and study the optimal contract between a lender a borrower in the case in which the verification and reporting decisions are taken simultaneously (monitoring) and not sequentially (auditing). We consider two different scenarios: one in which the Principal is able to fully commit to the verification policy announced at the contracting stage and another one where such an ability to commit is assumed away.

We will show that the optimal contract under full commitment prescribes a null expected rent to the Agent if the low state of the world realizes along with the so-called maximum punishment principle, that is, the Agent must give his entire wealth to the Principal if caught cheating. Furthermore, the Agent will be left with a positive rent (bonus) if he truthfully reports the higher state of the world. In the case without commitment, we will show that the optimal contract will inherit all the main features of the contract under full commitment but with two relevant differences. First, the expected rent for the Agent in the high state is lower. Second, the loan size acts as a commitment device and therefore turns out to be

larger in the case in which full commitment to verification policies is assumed away.