Contractual signaling, relationship-specific investment and exclusive agreements ☆

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A R T I C L E   I N F O

A B S T R A C T

I analyze a model of hold-up with asymmetric information at the contracting stage. The asymmetry of information concerns the value of trade with external parties. I show that contractual signaling and efficiency of investment can conflict if only quantity is contractible. This conflict generates inefficient equilibria in terms of investment. Contracting on exclusivity in addition to quantity resolves the conflict and consequently eliminates the inefficiency of investment.

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1. Introduction

Many relationships are formed under asymmetric information. When two or more parties meet to agree the terms of a relationship, some may have private information on the value of the relationship. For example, in vertical relationships, a final good producer contracting with a specific supplier may have private information regarding potential trade with an alternative supplier. Similarly, in labor market relationships, an employer offering a job to a worker may have private information about the fit of the worker to the job position, or about the possibility of subsequently finding a worker that fits better. As was emphasized by Myerson (1983) and Maskin and Tirole (1992), if the parties with private information participate in the design of the contract (or the terms of the relationship if established in an informal way), the contract's terms may reveal some of their private information to the other parties. Because of this information transmission effect, the design of the contract assumes a strategic role not present when contracting parties have symmetric information. When investment in the relationship is important, this role is in addition to that of providing the parties with the right incentives to invest that is typical to the hold-up problem literature.

This paper considers a model of hold-up with asymmetric information at the (ex-ante) contracting stage, where traders may (ex-post) renegotiate the terms of trade. It identifies how exclusivity agreements may improve efficiency. In particular

there is a buyer (the principal) and a supplier (the agent) where the supplier makes an own-investment which is unverifiable and match specific.[1] An important feature of the analysis is the buyer might instead trade with an external supplier (e.g., buy a generic version of the good) where the value of such trade is stochastic. With symmetric information on the potential value of external trade, as in standard models, the hold-up problem is solved by carefully setting the quantity in a contract whose terms specify only a transfer and the quantity traded. With asymmetric information, however, where the principal is better informed on the value of this outside option, such contracts are no longer efficient in that the agent does not invest the socially optimal level. Instead efficiency is achieved by introducing an exclusivity clause, a clause which restricts the principal to trade only with the agent. Of course it may occur that the ex-post realized value of outside trade is sufficiently high that it is more efficient for the principal to trade with the external supplier. What is essential, however, is that the exclusivity clause implies the principal must first negotiate with the agent to trade with the external supplier.

The efficiency-enhancing effect of exclusivity identified here rationalizes the use of contracts that specify both quantity and exclusivity. Furthermore, it is important for the following two reasons. First, in contrast to Segal and Whinston (2000), it rationalizes the use of exclusive contracts in situations of hold-up with pure relationship-specific investments. Motivated by informal discussions (in anti-trust and exclusive contracts) on whether exclusive provisions foster relationship-specific investments, Segal and Whinston (2000) show that exclusivity does not affect investments that are fully relationship-specific, when information is symmetric at the contracting stage.[2] Second, it contributes to the unsettled debate on whether exclusive agreements should be contractually allowed by courts or not. In this specific matter, a long-standing concern of courts is that exclusive contracts serve anticompetitive purposes, and consequently prevent efficiency.

The emergence of equilibria with inefficient investment when only quantity is contractible is due to a conflict between using the contract to provide the agent with the right incentives to invest and using it to signal information to extract surplus. In particular, I show that when the principal expects a low value of trade with the external party, she may initially commit to trade an excessively high quantity with the agent. The principal does so to signal an expected low outside option and, consequently, to convince the agent to accept a contract that allows her to appropriate more of the surplus generated by the relationship with the agent. Such a commitment successfully signals a low outside option because it is less costly to a principal with a low outside option to do it than it is to a principal with a high outside option. The problem of committing to trade such a high quantity with the agent is that it leads the agent to overinvest in the relationship. The agent does so to protect his disagreement payoff (i.e., the payoff if the initial contract is enforced) in the event of a contract renegotiation.

If the parties can contract also on an exclusive-dealing provision, the conflict between signaling information to extract surplus and investment incentives can be resolved. This is for two reasons. First, because contracted exclusivity serves as a signal of the principal's information about the value of her outside option. This is because it is more costly to a principal who expects a high value of trade with an external party to initially commit to trade exclusively with the agent than it is to a principal who expects that value of trade to be low. Second, because in contrast to contracted quantity, exclusivity does not directly affect the agent's investment decision. Thus, when both quantity and exclusivity are contractible, the principal can set contracted quantity to induce optimal investment by the agent, and adjust contracted exclusivity, without affecting the agent's investment decision, to signal information and extract surplus. Consider again the case of the principal who expects a low value of trade with the external party. Efficiency of investment can be achieved by proposing a contract that prescribes simultaneously a quantity that induces efficient investment by the agent and full exclusivity. Since exclusivity signals a low outside option for the principal, the principal has no need to distort contracted quantity upward to signal this information.

Both the contractual distortions and the effect of contractibility of exclusivity on relationship-specific investment highlighted here are novel in the literature. This is because the existing literature on the hold-up problem (e.g., Grossman and Hart, 1986; Hart and Moore, 1990; Chung, 1991; Rogerson, 1992; Macleod and Malcomson, 1993; Aghion et al., 1994; Edlin and Reichelstein, 1996; Che and Hausch, 1999; Schmitz 2002a, 2002b; Hori, 2006; Watson, 2007; Zhao, 2008; and Buzard and Watson, 2012), and in particular that on the interaction between exclusivity and relationship-specific investment (e.g., Segal and Whinston, 2000; and De Meza and Selvaggi, 2007), has focused on situations where parties' information is symmetric at the initial contracting stage. This paper extends the literature on the hold-up problem to the case in which there is asymmetric information at the contracting stage. In the hold-up problem literature (with symmetric information at the contracting stage), the contract is typically designed with one goal: to provide the right incentives to invest. The presence of asymmetric information at the contracting stage introduces a new role for the contract: signaling information to extract surplus.

This paper is also related to the literature on contract design by an informed party. This literature can be divided into two groups. The first group focuses on the characterization (in a general way) of the equilibrium contract proposal by an

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[1] Focusing on own-investment by the agent (also called selfish investment) which affects only the agent's value of trade, as opposed to investment that affects both the principal and the agent's valuations of trade (often called cooperative investment), allows us to better assess the effect of asymmetry of information at the contracting stage on efficiency of investment. In contrast with the case of selfish investment, a contract ensuring efficient cooperative investment may not exist even when information is symmetric at the contracting stage (see for example Che and Hausch, 1999).

[2] Segal and Whinston (2000) concerns mainly the case where parties cannot contractually specify a quantity in advance. The case where parties can specify both a quantity and an exclusivity level is studied only in Section 6 of that paper. In De Meza and Selvaggi (2007), the authors show that exclusivity may affect relationship-specific investments. Their result differs from that in Segal and Whinston (2000) because they consider a different bargaining game. Our effect is totally different from that in De Meza and Selvaggi (2007), as it stems from the existence of asymmetric information at the contracting stage.