Economics Letters 159 (2017) 96–99

Contents lists available at ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

Asymmetric information and the property rights approach to the theory of the firm

Patrick W. Schmitz *

University of Cologne, Germany
CEPR, London, UK

HIGHLIGHTS

- In the Grossman–Hart–Moore theory, it is assumed that information is symmetric.
- In their model, ownership matters when investments are partly relationship-specific.
- We study the case of completely relationship-specific investments.
- If there is asymmetric information, then ownership matters.
- Ownership by party B can be optimal, even when only party A invests.

ARTICLE INFO

Article history:
Received 7 June 2017
Accepted 21 July 2017
Available online 29 July 2017

JEL classification:
D23
D82
D86
L23
L24

Keywords:
Property rights
Relationship specificity
Investment incentives
Private information
Incomplete contracts

ABSTRACT

In the Grossman–Hart–Moore property rights approach to the theory of the firm, it is usually assumed that information is symmetric. Ownership matters for investment incentives, provided that investments are *partly* relationship-specific. We study the case of *completely* relationship-specific investments (i.e., the disagreement payoffs do not depend on the investments). It turns out that if there is asymmetric information, then ownership matters for investment incentives and for the expected total surplus. Specifically, giving ownership to party *B* can be optimal, even when only party *A* has to make an investment decision and even when the owner's expected disagreement payoff is larger under *A*-ownership.

1. Introduction

It is by now widely appreciated that the property rights approach to the theory of the firm and the underlying incomplete contracts paradigm, which were developed by Grossman and Hart (1986), Hart and Moore (1990), and Hart (1995), are among the most important advances in microeconomics in the past three decades.[1]

Consider two parties, *A* and *B*. According to the property rights approach, ownership of a physical asset can foster a party's investment incentives. When contracts are incomplete, the parties will divide the investments' returns in future negotiations. Ownership matters, because it improves a party's disagreement payoff (i.e., the payoff that it could realize on its own) and hence its future bargaining position. However, a crucial assumption of the property rights approach is that investments are *partly* relationship-specific. The positive effect that investments have on the surplus that the parties can generate together is assumed to be larger than the effect that

* Correspondence to: University of Cologne, Staatswissenschaftliches Seminar, Albertus-Magnus-Platz, 50923 Köln, Germany.
E-mail address: patrick.schmitz@uni-koeln.de.

[1] The incomplete contracts approach is the centerpiece of Oliver Hart's work, who has recently been awarded the Nobel Prize in Economic Sciences together with Bengt Holmström (cf. Nobel Prize Committee, 2016). Andrei Shleifer has emphasized that the "Grossman-Hart incomplete contracts approach represents perhaps the most influential advance in economic theory in the last thirty years" (see the back cover of Aghion et al., 2016).

http://dx.doi.org/10.1016/j.econlet.2017.07.026

the investments have on the disagreement payoffs; yet, the latter effect must not be zero.

In contrast, in the present paper we focus on *completely* relationship-specific investments; i.e., the investments' returns can be realized only within the relationship between A and B. Since the investments do not affect the disagreement payoffs, ownership would not matter in the standard property rights setup, where information is assumed to be symmetric.

However, in contrast to the standard model, we assume that after the investment stage the owner of the asset privately learns his disagreement payoff; i.e., we allow for *asymmetric information*.[2] We show that in this case ownership matters, even when investments are completely relationship-specific. In particular, we focus on a model in which only party A has an investment decision. We show that nevertheless there are circumstances under which the parties strictly prefer B-ownership, which may be the case even when the expected disagreement payoff is larger under A-ownership.

Related literature. To my knowledge, completely relationship-specific investments have not yet been investigated in the literature on the property rights approach to the theory of the firm. There are only a few papers that study the role of asymmetric information in the property rights approach.[3] In Schmitz (2006), a party may gather private information about the fraction of the collaboration surplus that it can realize on its own; hence, in contrast to the present paper the disagreement payoff depends on the investment. In a recent contribution by Su (2017), there is asymmetric information already before the ownership structure is chosen, while in Goldlücke and Schmitz (2014) asymmetric information is learnt before the investment stage but after the allocation of ownership. In contrast, in the present paper the owner learns his private information after the investment stage.[4]

2. The model

Consider two risk-neutral parties, A and B. At some future date $t = 2$, the parties can by collaboration generate a surplus $V + i \geq 0$. For instance, party A may be the seller of an intermediate good that can be used by party B in order to produce a final good. Producing the intermediate good requires access to a unique physical asset.[5] At date $t = 0$, the parties agree on an ownership structure $o \in \{A, B\}$. If there is integration ($o = A$), then party A controls the asset, so it can use the asset without party B's consent. If there is non-integration ($o = B$), then party B has control over the asset. At date $t = 1$, party A can make an observable but non-contractible investment $i \geq 0$ in its human capital; the investment costs are given by $\frac{1}{2}i^2$. Finally, at date $t = 2$ the parties bargain over whether or not to cooperate.

Following the incomplete contracting literature, at date $t = 0$ the parties agree on an ownership structure that maximizes their expected total surplus.[6] The ownership structure determines the parties' date-2 disagreement payoffs (i.e., their payoffs when they do not cooperate). Departing from the standard property rights model, we assume that the investment is *completely* relationship-specific; i.e., the investment is lost when the parties fail to collaborate at date $t = 2$.

Suppose first that party A is the owner of the asset ($o = A$). If the parties do not collaborate at date $t = 2$, party A gets only $v_A \in \{0, V\}$, where $p_A = \Pr\{v_A = V\} \in (0, 1)$, while party B gets zero (since it has no access to the essential asset). Hence, party A might be able to produce a final good without party B's human capital, but it is ex ante uncertain whether or not it can do so.

Next, suppose that party B is the owner ($o = B$). Then at date $t = 2$ party A's disagreement payoff is zero, since it cannot access the asset that is essential to produce the intermediate good. Party B's disagreement payoff is $v_B \in \{0, V\}$, where $p_B = \Pr\{v_B = V\} \in (0, 1)$. Thus, party B might be able to produce an intermediate good without party A, but it is initially uncertain whether or not party B can do so.

Under symmetric information, according to the Coase theorem the parties would always agree to collaborate at date $t = 2$, which is ex post efficient. Yet, in contrast to the standard property rights model, we assume that there may be *asymmetric information*. In particular, v_A and v_B are random variables, which are realized at date $t = 1.5$. When there is asymmetric information, then at date $t = 1.5$ only party A learns the realization of v_A under A-ownership, while only party B learns the realization of v_B under B-ownership.[7]

We consider the following date-2 bargaining game. With probability $\pi \in (0, 1)$ party A can make a take-it-or-leave-it offer to party B, while otherwise party B can make a take-it-or-leave-it offer to party A.[8]

The first-best solution. In a first-best world, at date $t = 2$ the parties always collaborate. Moreover, at date $t = 1$ party A chooses the investment level $i^{FB} = 1$, which maximizes the total surplus $V + i - \frac{1}{2}i^2$.

3. Symmetric information

Suppose the parties are symmetrically (un)informed; i.e., either both parties learn the realization of the owner's disagreement payoff at date $t = 1.5$, or no one does.

Consider A-ownership. At date $t = 2$, with probability π party A can make a take-it-or-leave it offer. Party A then offers to collaborate and to keep the whole date-2 surplus $V + i$, which will be accepted by party B since its disagreement payoff is zero. When party B can make the offer, it proposes to collaborate if party A accepts to get v_A (if both parties know the realization of v_A) or $p_A V$ (if no party knows the realization of v_A). The offer will be accepted by party A, because it gets its (expected) disagreement payoff. In any case, party A's expected date-1 payoff reads

$$\pi(V + i) + (1 - \pi)p_A V - \frac{1}{2}i^2.$$

Thus, party A will invest $i^A = \pi$ and the total surplus is

$$S^A = V + \pi - \frac{1}{2}\pi^2.$$

[2] Holmström (1999) already pointed out that the usual assumption according to which both parties observe the disagreement payoffs deserves more scrutiny. The fact that in the standard model of the property rights approach bargaining is always ex post efficient has also been criticized by Williamson (2002). In the present paper, ex post inefficiencies may occur since bargaining takes place under asymmetric information, which moves the property rights approach closer to transaction cost economics. For a model of ex post haggling, see also the recent work by Mori (2017).

[3] In addition, there are some papers that analyze how ownership rights should be allocated in adverse selection models building on Myerson and Satterthwaite (1983); see e.g. Samuelson (1985), McKelvey and Page (2002), and Matouschek (2004). Yet, these papers do not consider investments and hence are less related to the property rights approach developed by Grossman and Hart (1986) and Hart and Moore (1990).

[4] Note that there are also several papers on asymmetric information in hold-up problems that do not study the role of property rights, see Goltsman (2011) and the literature discussed there.

[5] The asset may be a specific machine or a building (cf. Hart, 1995). For simplicity, we do not model any assets that might be needed to produce the final good.

[6] See Hart (1995). The parties can divide the expected total surplus with a suitable lump-sum payment. Apart from that, no other contractual arrangements can be made at date $t = 0$.

[7] Apart from the realizations of the random variables, all elements of the model are common knowledge.

[8] This simple bargaining game has often been used in the related literature, see e.g. Hart and Moore (1999, p. 135). In fact, it is the simplest non-cooperative bargaining game consistent with the standard property rights model. To see this, note that if the parties are symmetrically informed, the game leads to the generalized Nash bargaining solution, where π is party A's bargaining power.