Transparency of outside options in bargaining ☆

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Abstract

We study the effect of the transparency of outside options in bilateral bargaining. A seller posts prices to screen a buyer over time, and the buyer may receive an outside option at a random time. We consider two information regimes: one in which the arrival of the outside option is public and one in which the arrival is private. A public arrival of the outside option works as a commitment device that forces the buyer to opt out immediately. This effect leads to a generically unique equilibrium in which the Coase conjecture holds. In contrast, a private arrival of the outside option may lead to additional delay and equilibrium multiplicity. The Coase conjecture fails in some equilibria. The buyer's preference about transparency is time-inconsistent: she prefers to commit to making arrivals public, but she is unwilling to disclose her outside option after the arrival. Moreover, the seller benefits from having the buyer privately observe her outside option.
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1. Introduction

This paper studies the effects of the transparency of a trader's outside option on the dynamics of negotiation. More precisely, we consider a bargaining model between a seller (he) and a buyer (she), and investigate how making the buyer's outside option public affects the equilibrium outcomes. We show that the buyer is better off when the arrival of her outside option is public than when it is private. Nevertheless, the buyer has no incentive to disclose her private outside option post-arrival, even if she is allowed to do so. Moreover, the seller benefits from having the buyer privately observe her outside option.

We consider a seller and a buyer who bargain over an indivisible good. The buyer privately observes her valuation of the good—*type*, hereafter—which can be high or low. In each period, the seller announces a price and the buyer decides whether to buy the good. If the buyer rejects the offer, she receives an outside option with positive probability. Once the outside option arrives, the buyer can exercise it in any subsequent period. We study two cases of the model: one in which the arrival of the outside option is public information and one in which it is private to the buyer. When the buyer is privately informed about the arrival, she has the ability to disclose her outside option.

As a concrete example, consider a seller trying to sell a house to a buyer. The buyer informs the seller that she has an another attractive option in a different area, and she asks the seller to lower the price. What does the seller think? One might initially assume that the buyer can improve her bargaining power by disclosing her outside option, and that doing so will cause the seller to lower his price in response to the competition. However, after more thought, the seller asks himself: "If the outside offer is so attractive, why is she still bargaining with me? She must like my house very much. If so, why should I lower the price?" So when the seller is sufficiently sophisticated, the buyer may undermine her bargaining power by revealing her outside option. The buyer's disclosure behavior effectively exposes her willingness to pay a high price and thus eliminates her information rent.

Our analysis confirms the above intuition. Our first main result, Proposition 3, shows that the buyer does not disclose her outside option in any equilibrium in the private case. The key insight is that the disclosure of the outside option may also work as the disclosure of the buyer's willingness to pay. The low-type buyer exercises the outside option as soon as it arrives because she cannot obtain any information rent. Therefore, if a buyer discloses her outside option, the seller thinks she is a high-valuation buyer. Since disclosure eliminates her information rent, the high-type buyer prefers to mimic a low-type buyer who has not yet received an outside option.

As the outside option is strategically hidden, additional strategic concern emerges, complicating the equilibrium dynamics. There exist two sources of information by which the seller updates his belief about the buyer's type: The buyer's acceptance behavior and her opting-out behavior. First, the standard skimming property implies that the buyer's rejection leads the seller to believe that the buyer is more likely to be of the low type. Second, after observing that the buyer has not opted out, the seller believes that the buyer is less likely to be of low type, since a low-type buyer is more willing to exercise an outside option. The interaction between the two opposing forces leads to multiple equilibria. When the arrival probability of the outside option is sufficiently low, there is a *Coasian equilibrium* where the well-known Coase conjecture holds: As the seller's offers become arbitrarily frequent, the bargaining delay vanishes and the buyer obtains the full trade surplus. On the other hand, there exists another equilibrium, a *deadlock equilibrium*, which exhibits inefficient delay even in the limit of frequent offers. In this equilibrium, the aforementioned two belief updating forces exactly offset one another so that the seller's belief does not