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Contracting with endogenous entry ☆

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ABSTRACT

We analyze entry in markets where a principal contracts with a privately informed agent. Before learning his production cost, the agent knows his probability of having a low cost – his ex ante "type" – and decides whether to pay an entry fee to contract with the principal. There are two cut-off equilibria that determine the possible types of an agent who actually enters the market, and neither equilibrium can be discarded by standard selection criteria. Contrasting with standard intuition, in the equilibrium with the highest cut-off an increase in the entry fee reduces the marginal type of the agent who enters, thus increasing entry and the expected cost of an entrant. This equilibrium is selected by a criterion based on "robustness to equilibrium risk," even though the equilibrium with the lowest cut-off is Pareto dominant for the agent. Public policies that increase entry barriers may be welfare improving.
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1. Introduction

Entry costs affect entry and the characteristics of firms in a market. But although barriers to entry (like minimum capital or advertising intensity, and concession or license

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fees) are high in many industries, there is also evidence of high entry rates in markets with high barriers to entry (see, e.g., Geroski, 1995 and Kessides, 1986, for evidence on decentralized markets). Even in markets based on contracting relations (like labour markets, procurement and retailing), participation by agents is not costless, since they often pay substantial entry or search costs in order to be able to contract with a principal. This suggests that the characteristics of agents who contract in a market may not be exogenous, but may be determined by their entry decisions.

In order to analyze how entry costs and barriers to entry affect entry decisions and the characteristics of the agents and firms that enter a market, we study a simple model in which a privately informed agent (e.g., a downstream firm) first chooses whether to enter, and then contracts with a principal in the market (e.g., an upstream firm). Before entering and learning his actual production cost, the agent privately observes his *ex ante type*, which is the probability of being efficient and having a low production cost once hired by the principal. We assume that there is a fixed entry cost that determines the mass of agents (i.e., the ex ante types) that enters the market in equilibrium, because they expect to obtain positive net profit. After entry, the principal offers a direct revelation mechanism to the agent to maximize interim expected profit, given his expectation of the agent's ex ante type.

We show that the entry game has two different cut-off equilibria, in which the agent enters if and only if his type is sufficiently high. In one equilibrium the mass of agents entering the market is decreasing in the entry cost, a feature that is common to many standard IO models (see, e.g., Mankiw and Whinston, 1986). In the equilibrium with the highest cut-off for the agent's types, by contrast, the mass of agents entering the market is lower and an increase in the entry cost reduces the marginal type that enters and increases the mass of agents in the market.

The intuition for this counterintuitive result is that, if the entry cost increases, the information rent of the marginal agent type that enters the market has to increase in order to make entry profitable. In the equilibrium with the highest cut-off, this extra information rent arises through a reduction in the expected probability that an agent who enters has a low cost, which reduces the distortion that the principal imposes on the quantity produced by a high-cost agent.[1] In other words, an expansion in the set of ex ante types of agents who enter the market generates a positive externality on agents in the market, since it relaxes the rent-extraction/efficiency trade-off faced by the principal and allows him to increase production. Hence, contrasting with standard intuition, in the equilibrium with the highest cut-off an increase in the entry cost, or higher barriers to entry, induces neither a reduction in the mass of agents who enter, nor an increase in the quality (i.e., in the expected probability of being efficient) of those agents who enter.

[1] By contrast, in the equilibrium with the lowest cut-off the extra information rent that the marginal agent type obtains when the entry cost increases arises through an increase in the probability that this agent has a low cost.

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