ENTRY DETERRENCE: 
THE CASE OF A BUYER WITH MARKET POWER
by
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ABSTRACT

The model considers a seller operating under the threat of an arbitrarily large number of unknown potential entrants and facing a strategic buyer. It is shown that the seller's Nash best response function slopes downward in price-output space, while that of the buyer slopes upward. The Nash equilibrium may be associated with a lower probability of entry than the equilibrium at which the buyer behaves non-strategically. With the buyer as the Stackelberg leader, the price is shown to decrease relative to that at the Nash equilibrium, but the probability of entry may rise or fall.

1. Introduction

The probability of an incumbent firm facing entry into its market has received considerable attention in the industrial economics literature. Many recent papers have considered the case where the incumbent seller and the aspiring entrant are both rational decision-makers playing against each other. Examples of this game-theoretic approach include work by Rosenthal (1981), Kreps and Wilson (1982), Milgrom and Roberts (1982a, 1982b) and Saloner (1984).

In such models, the demand function for output is considered parametric. I contend that such a formulation remains realistic only where the number of buyers remains relatively large, as is the case in many markets, notably those for consumer products. However, if the good in question is, for example, an intermediate good used as an input in another industry, it is possible that the implicit assumption of the number of buyers being large may cease to be valid.

With a small number of buyers, whose interests diverge from those of the sellers, the assumption of a parametric output demand function ignores the fact that the buyers have an incentive to play strategically. In such an environment, buyers may not find it in their interest to reveal their demand functions.

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(i.e., their marginal revenue product functions). A particularly interesting case in which demand revelation is unlikely to be in the buyers' best interests is that where there is the likelihood of entry on the sellers' side of the market.

A buyer's demand function emerges from the solution to its utility (or profit) maximization problem. The existence of such a function implies at least a certain measure of price-taking behavior. The passive revelation of this function (even if it is subject to stochastic disturbances) is unlikely to be optimal when the number of buyers is small.

When there is the possibility of entry on the sellers' side of the market, buyers take on two roles. In their conventional role, they provide the market for the sellers' output. However, in their strategic role, they are the opponents that the sellers must play against in their attempts to forestall entry. Note the implicit assumption that entry on the sellers' side of the market is advantageous to the buyers and deleterious to the sellers. This may be justified on the grounds that additional sellers squeeze the incumbent sellers' profits, and that increased competition among sellers leads to lower costs for the buyers.

In seeking to incorporate the behavior of the rational buyer (or buyers), it is useful to simplify the problem in a manner analogous to that adopted in some earlier studies of entry, such as those by Gaskins (1971), Baron (1973) and Kamien and Schwartz (1975). In this paper, entry is modelled as a sort of "move by nature" rather than as an action taken by a rational agent. Since I am interested in examining the effect of strategic behavior by buyers, rather than entrants, the analysis deals with a "probability of entry" rather than the explicit strategy set of the potential entrant. Ideally, both the seller and the buyer would like to be able to partition their joint strategy space into two disjoint sets, with elements of one ensuring entry and those of the other ensuring no entry. This would be possible if they knew the cost functions and strategy sets available to all potential entrants. However, if this information is not available, then the above simplification may be justified. The justification is further strengthened in cases where even the identity of potential entrants is subject to doubt. In such cases, an entry probability may well represent the perceptions of the buyer and seller about the unknown entrant(s).

As a further simplification, I restrict the analysis to the case of one buyer and one seller. This enables me to abstract from the effects of competition among players on each side of the market and concentrate on their opposing interests vis-à-vis entry into the industry. The results obtained here persist in a model with many sellers and many buyers, albeit in a less sharp form.