

Introduction to Industrial Organization

Professor: Caixia Shen Fall 2014

Lecture Note 16

1. Strategic pricing behavior 1: entry deterrence (or limit pricing)

In predatory pricing firm behaves in such a way to drive other firms out of the market. Firm can use similar strategies to prevent firms from entering the market begin with: entry deterrence or limit pricing – occurs when firms get prices and output levels so that there is not enough demand left for another firm to enter the market profitably.

In this case we will see that successfully pursuing limit pricing depends on factors similar to those necessary for predatory pricing to be successful. Potential entrants need to believe incumbents' strategies are credible in order for them to be kept out of the market.

First, we will study limit pricing under the assumption that the potential entrant believes the incumbent's threats. We will ask when it makes sense for the incumbent to ever attempt limit pricing. Then we will ask when incumbents' threats are credible.

In model below:

- 1) Firm 1 (the incumbent) chooses and commits to producing q_1 units of output
- 2) Firm 2 observes q_1 . Chooses best response $q_2^*(q_1)$ (like Stackelberg). If profits from q_2^* are positive, 2 enters.
- 3) If 2 doesn't enter, 1 earns monopoly profits $\pi_1^M(q_1)$. If 2 does enter, 1 earns duopoly profits $\pi_1^D(q_1)$.

Consider different choices of q_1 :

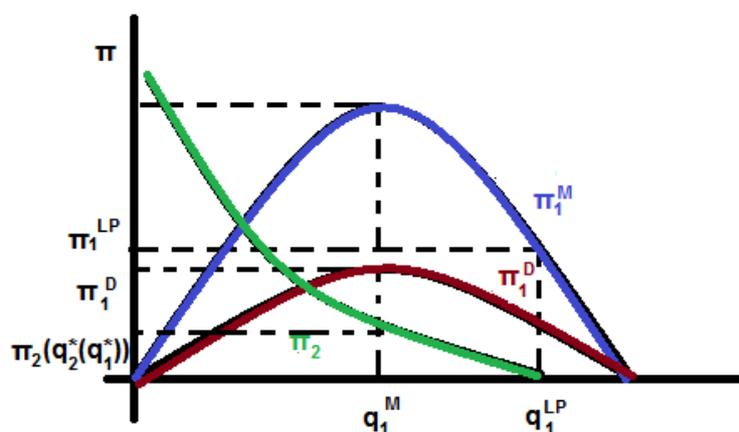


Figure 5: Enter deterrence-profits curves

Notice that q_2 never explicitly shows up on this graph. All the curves are constructed under the assumption that 2 is best responding to 1.

In figure 5:

- If firm 1 know it was a monopolist, it would produce q_1^M , the level of output that maximizes monopoly profits.
- But if firm 1 produces q_1^M , then firm 2 will enter the market since $\pi_2(q_2^*(q_1^M)) > 0$, in which case firm 1 will only earn $\pi_1^d < \pi_1^M(q_1^M)$.
- So what levels of output can firm 1 produce which will keep 2 out of the market? If firm 1 convinces firm 2 that it will produce $q_1 > q_1^{LP}$, then firm 2 will not enter the market since $\pi_2(q_2^*(q)) < 0$ if $q > q_1^{LP}$.
- Should firm 1 try to convince firm 2 that it will produce q_1^{LP} ? Yes. Because if firm 1 produce q_1^{LP} and remains a monopolist, it will earn π_1^{LP} profits, which is greater than the maximum profits it can earn (the max of $\pi_1^D(q)$) if 2 enters the market.

The previous analysis described a scenario under which it made sense for firm 1 to expand output beyond q_1^M in order to maintain its monopoly status. Whether it makes sense for firm 1 to do this depends on the costs of entry.

Recall that $\pi_2 = p(q_1 + q_2)q_2 - FC - VC(q_2)$.

Fixed costs of entry is FC. Firm 2 takes these into account before making its entry decision since fixed costs are not sunk until entry occurs.

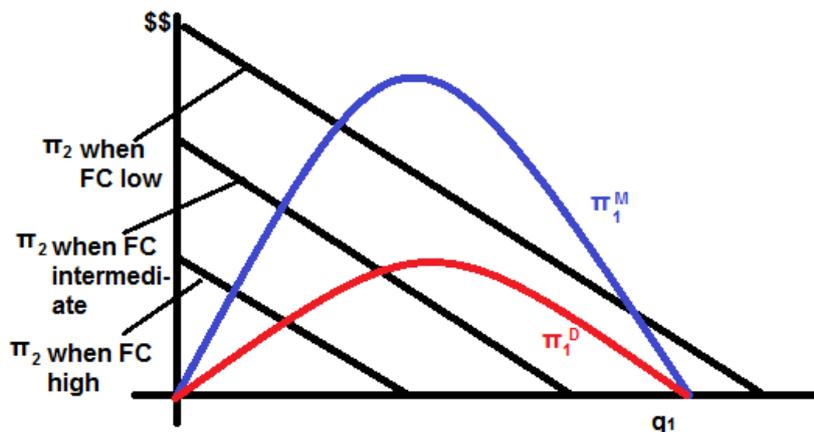


Figure 6: costs of entry

We will see that it is easier for firm 1 to prevent from 2 from entering the market when the costs of entry are very high.

Case1: high FC (Black entry)