

Economics 431
Homework 6
Due Wed, Aug 8

Part I. Horizontal mergers

1) Mergers and economies of scale

When marginal cost is constant and there are no fixed costs, no two firms have a profit incentive to merge unless it is a merger from duopoly to monopoly. The situation is different when marginal costs are increasing: when two firms merge, the new firm can achieve better cost minimization by allocating its output across multiple plants. Then a multi-plant firm has a cost advantage over its one-plant competitors, and this may provide a profit incentive to merge.

The example illustrates this motive for merger: a merged firm will operate multiple plants and will be able produce output at lower average cost than a one-plant firm.

An industry consists of $N = 3$ firms with identical costs . Market demand is

$$p = A - BQ = 150 - Q$$

a) Show that if the total cost function is linear (marginal cost is constant), then it will never pay for two firms to merge if the resulting two firms are again Cournot competitors.

b) Now let the cost function be

$$C(q) = cq + q^2 = 18q + q^2.$$

Suppose that two firms (2 and 3) merge, assume the name of firm 2 and play Cournot against the remaining firm 1. Will there be a profit incentive to merge? Will the merger benefit consumers? (Hint: carefully consider if the merged firm would produce using both original firms' plants or just those of one firm.)

Winter 2002 final, question 2

2) Mergers, cost synergies and welfare

Let the industry initially consist of 4 firms that operate on a market with linear demand given by

$$p = 25 - Q.$$

In order to operate, each firm has to pay a fixed cost $F = 15$ Marginal cost is constant and equals $c = 5$ for every firm Assume that the firms engage in Cournot competition.

a) Show that any two firms in this industry will have a profit incentive to merge.

b) Compute welfare (the sum of all profits net of fixed costs plus consumer surplus) pre-merger (when $N = 4$) and post-merger (when $N = 3$). Does this merger make consumers better off? Does this merger make firms and consumers jointly better off? Why?

3) Capacity motive for merger and market price

Let the industry initially consist of 4 firms that operate on a market with linear demand given by

$$p = 25 - Q.$$

There are no fixed costs. Marginal cost is constant and equals $c = 5$ for every firm. Assume that initially the firms engage in Cournot competition.

a) Suppose that if two firms merge, they become a Stackelberg leader, and the other two firms are followers. Show that this merger leads to a price drop. Also show that the two firms have a profit incentive to merge.

b) Demonstrate that further mergers in this industry are not in the public interest.

Part II Vertical mergers

Winter 2002 final, question 3

Part III Vertical relations

Winter 2002 final, question 4, Fall 2003 final, question 3