

Horizontal mergers

Industrial organization – lecture 4

Horizontal mergers

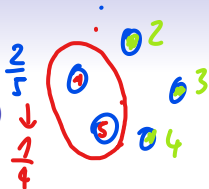
What is the main motivation for horizontal mergers? What are the welfare effects of horizontal mergers?

What are the unilateral and coordinated effects?

Should competition policy be concerned?

Merger paradox

Pepall et al. (2010, pp. 287–290)



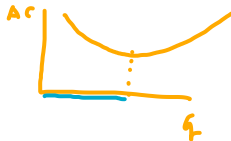
Cournot model prediction: Only a merger of two duopolists creating a monopolist is profitable

- Merger reduces number of firms
- Non-merging firm increase their output
- Post-merger profit is less than the sum of pre-merger profits



The problem is that the merged firm is *just like any one of the other firms in the industry*. What to add into the model?

- Economies of scale and scope
- Shared capacity makes merging firm a leader
- Product differentiation



Model of product differentiation $\gamma = 1$

Pepall et al. (2010, p. 301-304)

N firms each producing single product.

Demand for product i is $q_i = V - p_i - \gamma \left(p_i - \frac{1}{N} \sum_{j=1}^N p_j \right)$.

Parameter γ measures the degree of product differentiation

Marginal costs c are normalized to zero. $C = 0$

Profit of each firm is $\Pi_i = p_i \left(V - p_i - \gamma \left(p_i - \frac{1}{N} \sum_{j=1}^N p_j \right) \right)$.

$$\frac{\partial \Pi}{\partial p_i} = V - 2p_i - 2\gamma p_i \left(1 - \frac{1}{N} \right) + \frac{\gamma}{N} \sum_{j \neq i} p_j = 0$$

$$\begin{aligned} q_i &= 100 - p_i - \gamma \left(p_i - \frac{1}{N} \sum_{j=1}^N p_j \right) \\ p_i &= 10 \\ \text{avg } p &= 9 \\ &= 100 - 10 - 1 \cdot (10 - 9) \\ &= 100 - 10 - 1 \\ &= 89 \end{aligned}$$

$\gamma = 0$ ↑
 slope = 0



Model of product differentiation

Pepall et al. (2010, p. 301-304)

First order condition

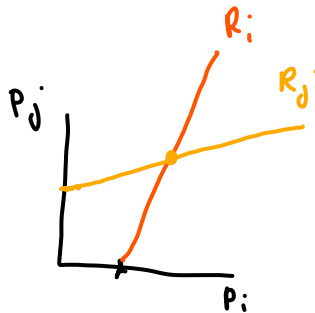
$$V - 2p_i - 2\gamma p_i \left(1 - \frac{1}{N}\right) + \frac{\gamma}{N} \sum_{j \in \{-i\}} p_j = 0$$

$$p_i = p_j = p$$

Symmetric Nash equilibrium

$$p = \frac{NV}{2N + \gamma(N-1)}$$

$$RF: p_i = \frac{V + \frac{\gamma}{N} \sum p_j}{2 + 2\gamma(1 - \frac{1}{N})}$$



Model of product differentiation

Pepall et al. (2010, p. 301-304)

Firms 1, ..., M merge. There is no reason to remove any of the M products.

The newly merged firm maximizes aggregate profit $\sum_{j=1}^M \Pi_j$

The first order condition is

$$\frac{\partial \sum_{j=1}^M \Pi_j}{\partial p_i} = \underbrace{\frac{\partial \Pi_i}{\partial p_i}} + \underbrace{\sum_{j=1, j \neq i}^M \frac{\partial \Pi_j}{\partial p_i}} = 0$$

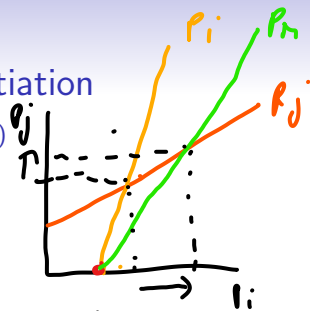
The second term captures the price effect on profits of other merging firms. It can be seen from the profit function that

$$K F_i^p = \frac{V + \frac{\gamma}{N} \cdot \epsilon p_i + \frac{\gamma p_i}{N}}{2 + 2\gamma \left(1 - \frac{1}{N}\right)}$$

$$\frac{\partial \Pi_j}{\partial p_i} = \underbrace{\frac{\gamma p_j}{N}}$$

Model of product differentiation

Pepall et al. (2010, p. 301-304)



What does it mean for the equilibrium price?

- The reaction curves of the merged firms moves upward.
- The price of non-merged firms increases because reaction curves are upward-sloping.
- These two effects cause that the prices of the merged firms increase.

The main conclusion of the model: *Mergers are profitable and of potential concern to antitrust authorities unless accompanied by cost reduction*

Merger policy

Anti-trust authority (AA) has to approve some mergers. How to make a decision?

What effects should the AA take into account?

- Loss of consumer surplus due to higher prices
- Cost efficiency
- Failing firm defence

Can we compare these effects quantitatively? Sometimes yes.

Imagine you have all relevant data available and you know the structure of the market game. How would you proceed?

Merger policy: Remedies

An AA might approve a merger only if certain remedies were adopted by merging firms.

- Structural remedies modify the allocation of property rights.
- Behavioral remedies set constraints on merged firms' behavior.

Can you think of some pros and cons of structural and behavioral remedies?

Structural remedies (particularly divestiture) are applied much more likely than behavioral remedies.

Which assets should the merging firm sell?

Merger policy: remedies

Consider our model with differentiated product and suppose that the parameter γ might be different for different pairs of products.

Demand for product i is $q_i = V - p_i - \frac{1}{N} \sum_{j=1}^N \gamma_{ij} (p_i - p_j)$.

Firms $1, \dots, M$ merge. AA can order them to sell some of products $1, \dots, M$ to a new entrant. Which products should AA choose?

high γ

Coordinated effects Pepall et al. (2010, p. 315-316)

Unilateral — ↑ p because of ↑ market power

Merger generates more favourable conditions for collusion (In EU this is referred as *joint dominance*)

The analysis of coordinated effects is ambiguous. One may take into account factors such entry barriers, information exchange and so on.

Do mergers have any impact on collusive behavior at all? Ganslandt and Norback (2004) study retail gasoline market in Sweden.

The main idea follows from Cournot relationship $\epsilon LI = HHI$

$$LI = \frac{p - mc}{p}$$

They estimate the equation $\ln(\epsilon LI) = \alpha + \beta HHI$

They do not find any evidence that mergers have impact on collusion.

$$\begin{aligned} \beta > 1 \\ \beta = 1 \end{aligned}$$