Horizontal Agreements (part 2 : horizontal mergers)

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Horizontal mergers

- A merger : one decision instead of two or more
- Horizontal : between substitutes
- Merging firms may change :
  - pricing/output policy
  - technological choices
- Outsiders may react to the merging firms decision
- This part : a model of HM impact on the market

Horizontal mergers

- A merger affects prices and output
- Horizontal mergers are carefully scrutinized by AA
- Main question : what is the expected impact of HM on welfare ?
- AA need models to predict the merger impact on CS and TW
- In this part : basic models of HM
  - main effects of the merger
  - relevant characteristics to predict the merger impact ?
- Two main models :
  - Imp. subst. with price comp.
  - Perfect subst. with Cournot comp.

Reading list

- *"Concentration Thresholds for Horizontal Mergers", Nocke and Whinston, 2022 (mostly until section 3.1).
- Paper presentation : "Do Merger efficiencies always mitigate price increases ?"

Horizontal Merger

- Price competition model :
  - An insider before the merger : $Max_{p_i}(p_i - c)D_i(p_i, p_{-i})$
  - Insiders after the merger : $Max_{p_1,p_2}(p_1 - c)D_1(p_1, p_{-1}) + (p_2 - c)D_2(p_2, p_{-2})$
  - The best-response of outsiders : increase prices
  - Merger leads to an increase in prices
- Merger may lead to efficiency gains : $C(q) = (c - e)q < cq$
  - The insiders may decrease the price
  - The outsiders decrease the price
- Estimation of models to simulate the merger impact (see presentation of these techniques by Ph Gagnepain)

Horizontal Merger

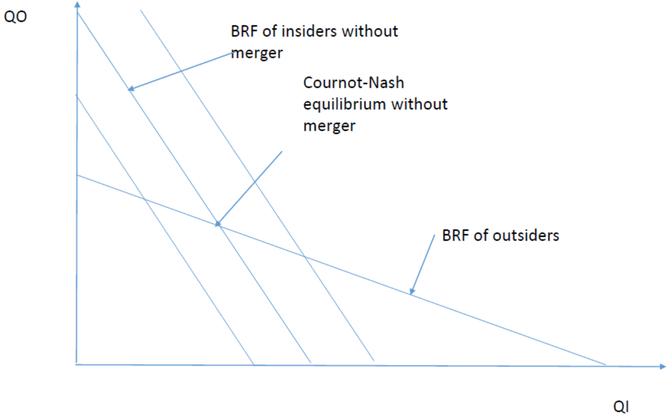
- Cournot model with n firms
- Demand : $P(Q) = a - Q$
- Firm i : c_i
- Firm i : $a - Q - q_i = c_i$
- BR of i : $-1 < \frac{dq_i}{dQ_{-i}} = -\frac{1}{2} < 0$
- Unique equilibrium with $Q^* = \frac{na - \sum_i c_i}{n+1}$

Horizontal Merger

- Two groups of firms : m non merging firms (O) and 2 merging firms (I)
- $O : Q_O = \sum_{i \in O} q_i = \frac{ma - mQ_I - \sum_{i \in O} c_i}{m+1}$
- BR of $O : -1 < \frac{dQ_O}{dQ_I} < 0$
- $I : Q_I = \sum_{i \in I} q_i = \frac{2a - Q_O - \sum_{i \in I} c_i}{3}$
- BR of $O : -1 < \frac{dQ_I}{dQ_O} < 0$

Horizontal Merger

The equilibrium



Horizontal Merger

- The merger increases output iff Q_I increases
- Pre-merger output : Q^*
- Post-merger output : Q^{**}
- Symmetric case : $c_i = c$
- $Q^{**} >< Q^*$?

Horizontal Merger

- Merger :
  - I coordinate the output policy
  - Costs may change
- The merging firms :
  - $\underset{q_i}{Max} \sum_{i \in I} q_i P(Q) - cq_i$: incentive to decrease q_i
  - Efficiency gains : $c_I = c - e$: incentive to increase q_i

Horizontal Merger

- I increase the output iff : $P(Q^*) - (q^* + q^*) - c_I > 0$
- We have q^* such that $P(Q^*) - q^* = c$
- Thus $Q^{**} > Q^*$ iff $P(Q^*) - c_I > 2\left(P(Q^*) - c\right)$
- **No efficiency gains :** $Q^{**} < Q^*$

Horizontal Merger

- Is it possible to use **pre-merger** information to predict output increase/decrease ?
- Merger control first screen uses **pre-merger** concentration index of market shares
- Theoretical question : is-it correct to use **pre-merger** information ?
- Analysis of Nocke and Whinston
- **Symmetric** case : pre-merger $c_i = c$ and post-merger : c_I
- **Non symmetric** case : pre-merger c_1 and c_2 and post-merger : c_I

Horizontal Merger

- Pre-merger Herfindahl : $(s_1)^2 + (s_2)^2 + \sum_{i \in O} (s_i)^2$
- Naive post-merger Herfindahl : $(s_I)^2 + \sum_{i \in O} (s_i)^2$ with $s_I = s_1 + s_2$
- Naive $\Delta H = 2s_1 s_2 = 2s^2 = \frac{(s_I)^2}{2}$

Horizontal Merger

- Output increases iff $\frac{c-c_I}{c} > \frac{P-c}{c}$
- We have $c = P\left[1 - \frac{s_I}{2}.\frac{1}{\varepsilon}\right]$
- We deduce that output increases iff $\frac{c-c_I}{c} > \frac{\sqrt{\frac{\Delta H}{2}}}{\varepsilon - \sqrt{\frac{\Delta H}{2}}}$
- The higher ΔH, the likelier the anticompetitive effect :
  - Pre-merger : a high s_i means an efficient firm likely to conterbalance the merger
  - Post-merger : if the efficient firms merge (high ΔH), poor outsiders' counterbalance power