Comparing in-market and cross-market mergers

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Overview

- What is the problem?
- Approach
- Applying the HMT
- Merger analysis
- Tentative conclusions

What is the problem?

- Antitrust laws make a merger illegal if it substantially lessens competition in a market.
- market definition is usually based on the hypothetical monopolist test (HMT).
- But can a cross-market merger be as bad as (or worse) than an in-market merger and, if so, when?

Motivation: the Heinz - Rafferty's garden merger

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ACCC decision:

- Blocked merger
- Single differentiated market
- But "market definition was not determinative".

Approach

Hotelling line of unit length with a uniform distribution of a unit mass of consumers. Distance cost is t.

At $x = 0$ there are $m + 1$ firms that produce a product A that each consumer values at v_A.

At $x = 1$ there are $n + 1$ firms that produce a product B that each consumer values at v_B.

Marginal cost is c

v_A and v_B high enough to get full market coverage, but $v_A - v_B = \Delta$.

Producers of A compete Cournot given p_B. Producers of B compete Cournot given p_A.

Other assumptions

A1: If $\Delta > 0$ then $\Delta < \frac{(m+3)t}{m+1}$ and

A2: If $\Delta < 0$ then $\Delta > -\frac{(n+3)t}{n+1}$.

Inverse demand curves

Given prices, the indifferent consumer is located at:

$$\tilde{x} = \frac{1}{2t}\left(\Delta + p_B - p_A + t\right)$$

Total demand for products A and B are given by

$$Q_A = \frac{1}{2t}\left(\Delta + p_B - p_A + t\right) \quad \text{and} \quad Q_B = \frac{1}{2t}\left(p_A - \Delta - p_B + t\right)$$

The inverse demand curves for each product are:

$$p_A = p_B + \Delta + t - 2tQ_A \quad \text{and} \quad p_B = p_A - \Delta + t - 2tQ_B$$

Equilibrium prices and quantities

A firm F_j^A located at $x = 0$ will set its output to maximize

$$\pi_j^A = \left(p_B^e + \Delta + t - 2tq_j^A - 2t \sum_{k \neq j} (q_k^A)^e - c \right) q_j^A$$

The first order condition is given by:

$$p_B^e + \Delta + t - 4tq_j^A - 2t \sum_{k \neq j} (q_k^A)^e - c = 0$$

Equilibrium prices and quantities

$$p_A^* = c + \frac{(n+3)t + (n+1)\Delta}{3+2n+2m+mn} \qquad p_B^* = c + \frac{(m+3)t - (m+1)\Delta}{3+2n+2m+mn}$$

$$Q_A^* = \frac{(m+1)((n+3)t + (n+1)\Delta)}{2t(3+2n+2m+mn)}$$

$$Q_B^* = \frac{(n+1)((m+3)t - (m+1)\Delta)}{2t(3+2n+2m+mn)}$$

HMT preliminaries

We are interested in a merger involving one producer of product B. So are the product B firms in a separate market to the product A firms?

Fix p_A and suppose a monopoly producer of product B maximises its profits. Does the price of product B increase by more than a fraction γ?

Applying the HMT

Let $\Gamma(p_B) = \left(p_B^m - p_B^*\right)/p_B^*$. Then the HMT test is:

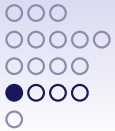
$$\Gamma(p_B) = \frac{n((m+3)t - \Delta(m+1))}{2c(3+2n+(n+2)m) + 2(m+3)t - 2\Delta(m+1)} > \gamma$$

Applying the HMT

Proposition: Suppose that for specific values of m, n, Δ, c and γ, the hypothetical monopolist test is satisfied in the sense that $\Gamma(p_B) > \gamma$ so that products A and B are in separate antitrust markets. Then, holding m, n, Δ and γ fixed, there exists a value $\bar{c}$ such that for all $c > \bar{c}$, $\Gamma(p_B) < \gamma$ and the hypothetical monopolist test fails so that products A and B are in the same antitrust market.

Applying the HMT

Corollary: Consider any $\gamma \in (0, 0.5)$. For any $n \geq 1$ there will exist a cost level c_γ^n such that for $c < c_\gamma^n$ products A and B will be in separate antitrust markets, while for any $c > c_\gamma^n$ products A and B will be in the same antitrust market.



In market merger

Trivial - just change n to $n-1$. as it is Cournot, the merger just closes down one producer of product B.[1]

[1] Yes, we are just ignoring the Cournot incentives issue at present.

Cross market merger

Suppose that firm F_0^A merges with firm F_0^B. It will maximise:

$$\pi_0 = (p_B^e + \Delta + t - 2tq_0^A - 2t\sum_{j=1}^{m}(q_j^A) - c)q_0^A$$

$$+(p_A^e - \Delta + t - 2tq_0^B - 2t\sum_{j=1}^{n}(q_j^B) - c)q_0^B$$

Cross market merger

Proposition: The merged firm will only produce positive quantities of both products A and B if both $\frac{1+m-n}{1+m+n} - \frac{\Delta}{t} > 0$ and $\frac{1+n-m}{1+m+n} + \frac{\Delta}{t} > 0$. If $\frac{1+m-n}{1+m+n} - \frac{\Delta}{t} \leq 0$ then $q_0^B = 0$. If $\frac{1+n-m}{1+m+n} + \frac{\Delta}{t} \leq 0$ then $q_0^A = 0$.

Comparing in-market and cross-market mergers

Suppose that $n \geq \frac{(m+1)(t-\Delta)}{(t+\Delta)}$. Then the post merger prices in both markets will be the same under either an in market or a cross market merger.

Tentative conclusions

1. Cross market mergers can be as anti-competitive as an in-market merger.
2. This is more likely when market A is less competitive or has a higher value product than market B.
3. But we think a cross-market merger cannot lead to a higher price of product B than an in-market merger.