

Chapter F – Market Definition

Competition Policy and Strategy - German title: Wettbewerbspolitik und -strategie

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English version of my 2020 lecture

Market Definition

- Measurement of market power (Chapter E):
 - Lerner Index $LI = \frac{p-c}{p}$.
 - Market shares $m_i = \frac{q_i}{Q}$.
 - Concentration rates $CR_x = \sum_{i=1}^x m_i$.
 - Herfindahl-Index $HHI = \sum_{i \in \mathcal{N}} m_i^2$.
- Measurement of market particularly relevant when it comes to mergers and abuse of dominance.
- What market is actually relevant? Market definition!
- Suppose distance between two supermarkets A and B is 1km, distance between A , B and Supermarket C is 30km. Are A , B and C active in the same (relevant) market?
- Product and geographic market (“sachlich”, “geographisch”)
- Identify relevant market forces:
 - Demand substitutability
 - Supply substitutability
 - Potential competition

Market Definition

- EU: Commission Notice on the definition of relevant market for the purposes of Community competition law, (97/C 372 /03)
- Relevant product market (par. 7):
A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use
- Relevant geographic market (par. 8):
The relevant geographic market comprises the area in which the undertakings concerned are involved in the supply and Demand of products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring areas because the conditions of competition are appreciably different in those area

Market Definition

- Demand substitutability (par. 13):
 - Most effective disciplinary force
 - If consumers have close substitutes available, firms can only affect conditions of sale (e.g., price) to limited extent.
 - Important to determine consumers' actual substitutes, demand elasticity.
- Supply substitutability (par. 20):
 - Suppliers can react to small, permanent changes in prices by switching production to relevant products without incurring significant additional costs or risks
 - Can discipline suppliers as well
- Potential competition (par 24):
 - Entry barriers and contestability (Chapter E).
 - Not part of market definition in EU, potentially on subsequent stages.

Market Definition – SSNIP Test

- Formal test for market definition: *Small but Significant Non-transitory Increase in Price (SSNIP)*
- Relevant market: Smallest group of goods for which a hypothetical monopolist is able to increase prices permanently and profitably (!) by a small percentage.
- Concept of the test
 - Consider goods supplied by merging firms
 - From the viewpoint of a monopolist (=merged entity), would a 5-10% increase in prices be profitable?
 - If price increase is profitable, relevant market is found.
 - If price increase is not profitable, relevant market is not (yet) found. Add close substitutes and increase prices by 5-10%, again.
 - Repeat until price increase is profitable (=relevant market is found).
 - Geographic market definition: include products of firms in close proximity to merging firms.

Market Definition – SSNIP Test

- Formal analysis
 - *Critical Sales Loss* ΔQ_{krit} : upper bound on lost sales such that monopolist's 5-10% price increase is still profitable.
 - *Actual Loss* ΔQ : actual loss in sales due to 5-10% price increase.
 - If $\Delta Q < \Delta Q_{krit}$ ($\Delta Q > \Delta Q_{krit}$), price increase is profitable and relevant market is found (not profitable such that close substitutes have to be added).
 - Equivalent: if critical (own-price) elasticity η_{krit} is higher (lower) than actual elasticity η , price increase is profitable and relevant market is found (not profitable such that close substitutes have to be added).
- Downsides
 - *Cellophane Fallacy*: if there is monopoly in the starting position, market definition will be too wide as price increases in beyond monopoly price are not profitable.
 - *Toothless Fallacy*: bananas are own relevant market because kids and old people cannot switch to other fruits.
 - Robust SSNIP-test requires relatively detailed data on prices, quantities and other demand characteristics (structural demand estimation!).

Market Definition – UPP

- Concentration-based measurements of market power are difficult to apply for mergers in differentiated goods markets because adding or excluding substitutes may have a pronounced effect on market definition (p. 4 in Farrell und Shapiro, 2010 BEJTE):
Product differentiation can make defining the relevant market problematic, notably because products must be ruled “in” or “out”, creating a risk that the outcome of a merger investigation or case may turn on an inevitably artificial line-drawing exercise.
- Alternative approach: does a merger generate *net upward pricing pressure (net UPP)*?
- merger of two firms c. p. leads to
 1. price increase due to lessening of competition
 2. price decreases due to lowering of marginal costs (efficiency effects)
- If first effect dominates, merger leads to *net UPP*.
- In what follows, approach of Farrel und Shapiro (2010, BEJTE) is presented.

Market Definition – UPP – digression: the model

- Merger between firms 1 and 2, which produce differentiated good and compete á la Bertrand.
- Profits π_i , $i \in \{1, 2\}$, and marginal costs $c_1 = c_2 = c$. Each firm produces variant i .
- Pre-merger prices $p_{i,pre}$ and costs c_{pre} .
- Post-merger: formerly independent firms 1 and 2 become divisions of merged entity 1&2:
 - If Firm 1 reduces p_1 , this leads to additional demand for Product 1, $Q_1(p_1)$.
 - Price reduction is negative externality for Firm 2, which is internalized by merger as 1&2 maximizes joint profits.
- To internalize this effect, 1&2 behaves as if it would introduce a tax on Product 1:
$$T_1 = \left| \frac{d\pi_2}{dp_1} \right|.$$

Market Definition – UPP – digression: the model

- Envelope Theorem with constant p_2 : $T_1 = \frac{d\pi_2}{dQ_2} \left| \frac{dQ_2}{dQ_1} \right|$
 - $\frac{d\pi_2}{dQ_2}$: Change in Firm 2's profit for increase in 2's sales by one unit.
 - $\left| \frac{dQ_2}{dQ_1} \right|$: Change in Firm 2's sales for a strong enough decrease in p_1 such that 1's sales increase by one unit \Rightarrow *Diversion Ratio* of products 1 and 2, D_{12} .
- Given that p_2 is held constant, we have $T_1 = D_{12}(p_{2,pre} - c)$.
- Efficiency gain through merger $c = (1 - E)c_{pre}$.
- Test is less strict for $T_1 = D_{12}(p_{2,pre} - c_{pre})$. Test leads to *net UPP* if

$$D_{12}(p_{2,pre} - c_{pre}) > Ec_{pre} \Leftrightarrow UPP_1 = \underbrace{D_{12}(p_{2,pre} - c_{pre})}_{\text{Lessening of competition}} - \underbrace{Ec_{pre}}_{\text{Efficiency gain}} > 0.$$

- For symmetric case ($p_{1,pre} = p_{2,pre} = p_{pre}$ and $D_{12} = D_{21} = D$), we have *net UPP* if

$$D \frac{LI}{1 - LI} > E. \quad (1)$$

Market Definition – UPP

- For an overview, see Oldale and Padilla (2013, JECLAP):
 - *Net UPP* analyses incentive to raise prices (unilateral effects, s. Chapter G) and does not pose a full analysis of post-merger equilibrium.
 - Method can also be used for homogeneous goods.
 - Diversion Ratio D_{12} can also be interpreted as share of 2's marginal consumers (i.e., those consumer who switch the supplier if prices change marginally) who view 1's product as second-best alternative. The higher D_{12} the closer consumers perceive both goods as substitutes and the stronger the price effects of the merger (c. p.).
 - Generally, the higher the Diversion Ratio the higher the shift in sales to the “merging rival”
- The implicit tax $T_1 = D_{12}(p_{2,pre} - c)$ is called the Gross Upward Pricing Pressure Index (GUPPI). GUPPI measures the value of sales being shifted to the “merging rival”.
Example: $DR_{12} = 20\%$ and $(p_{2,pre} - c) = EUR 50$, then $GUPPI_1 = EUR 10$ (Salop S. und Moresi S. (2009). *Updating the Merger Guidelines: Comments*).

Market Definition – Practical Considerations

- UPP and GUPPI are used by EC (e.g., *Unilever/Sara Lee, Hutchison 3G Austria/Orange Austria, Hutchison 3G UK/Telefonica Ireland, Telefonica Deutschland/E-Plus*).
- Geographic market definition: Elzinga-Hogarty-Test. If product flows from areas *A* to *B* are not pronounced, firms in Region *A* are not in same relevant market as firms in Region *B*:
 - “*Little in from outside*” (LIFO): share of goods produced “abroad” must not exceed $x\%$.
 - “*Little out from inside*” (LOFI): share of goods that is produced but not consumed “locally” must not exceed $x\%$.
- Further methods: price correlations, natural experiments, SIEC-test.
- P. 148 and p. 160 in Kaplow (2015, IJIO):
 - ... *market definition suffers decisive logical infirmities that render it infeasible, unnecessary, and counterproductive ...*
 - The appropriate role of market power in competition policy poses a different sort of challenge: surprisingly little research systematically illuminates the channels by which market power is relevant.*