MARKET DEFINITION

Standard Industrial Classification

Products divided up so that each establishment can be allocated to a relevant classification on the basis of its principal activity (but establishment/firm may produce more that one product). Based on supply side definition.

Economic Approach

Based on the principle of one price; " a market for a commodity is the area within which the price tends to uniformity, allowance being made for transportation costs." (Marshall)
The set of actual or potential buyers of sellers of a good or service who, through their interaction determine the equilibrium price or quantity of that good or service being bought or sold.

The law of one price may work OK for homogeneous products (e.g., sugar), but what about differentiated products? There the definition is a market of degree. Take for example the automobile market. Is Rolls Royce in the same market with Skoda, or is the definition too broad? Is Skoda a monopolist in the supply of the Skoda Fabia LX Estates, or is the latter too narrow a definition of a market in the first place?!

Regulation (antitrust) definition of the market

> "The set of suppliers and demanders whose trading establishes the price of a good." (Stigler & Sherwin)

Two firms are in the same market if they can constraint each other's ability to raise price.

> "An antitrust market is the smallest geographical or product area with substitution efficiently limited to enable the exercise of market power." (1982 Merger Guidelines, US Department of Justice)

Market definition is essential in antitrust analysis to establish whether a firm has market power. The cornerstone of this approach is the degree of substitutability, in other words the constraints in the pricing behaviour of firms as measured by the magnitude of cross price elasticities but these are:

- They are likely to be asymmetric (e.g. MS Word vs. sales of rival software supplier), i.e. existing size matters
- Observable only ex post not ex ante
- Dependent on the magnitude of the price cuts (e.g. deep price cuts by the Times in the early nineties severely affected the market share of The Daily Express, which is usually classified in the mid-market range, rather that the market comprising of the Guardian, Telegraph or Independent), hence the ex post definition of the market may defer from the ex ante.

- For N products in the market you will have to calculate N^2 elasticities, not a trivial task if N is large.

SSNIP Test (Small but Significant and Non-transitory Increase in the Price)

Test: Choose the narrowest definition of the market. Suppose that all firms in this candidate market were to set prices collectively so as to maximise their joint profits (JPM). Would they choose to impose a SSNIP (usually in the range of 5-10%)?

If the answer is yes, they there must be few firms outside the candidate market to constraint the pricing behaviour of the firms within it, and the market is well defined.

If the answer is no, out of fear of loosing customers to rival firms, then we can conclude that close substitutes exist, and we need to expand the relevant market (in product or geographical terms) to include the closest substitutes. Then we can ask again the now enlarged market the same hypothetical question. We will repeat this procedure until the answer to the question is yes. Cross elasticities of demand are core in this approach.

Cross Elasticities of Demand

Hypothetical monopolist (firm i) has substitutes j, so faces a demand curve $D_i = q_i(p_i, p_j)$.

FOC

$$\frac{d\Pi_i}{dq_i} = p_i + \frac{\partial p_i}{\partial q_i} q_i + \frac{\partial p_i}{\partial p_j} \frac{\partial p_j}{\partial q_i} q_i - c'(q_i) = 0$$

The mark up on the marginal cost can be found be rearranging the FOC to obtain:

$$\frac{p_i - c'(q_i)}{p_i} = -\frac{\partial p_i}{\partial q_i} \frac{q_i}{p_i} - \frac{\partial p_i}{\partial p_j} \frac{\partial p_j}{\partial q_i} \frac{q_i}{p_i} \frac{p_j}{p_j} = \frac{1}{\varepsilon_c} = \frac{1}{\varepsilon_{ii}} - \frac{\omega_{ij}}{\varepsilon_{ij}}$$

$$\varepsilon_{ii} = -\frac{\partial q_i}{\partial p_i} \frac{p_i}{q_i}$$

$$\varepsilon_{ij} = \frac{\partial q_i}{\partial p_j} \frac{p_j}{q_i}$$

$$\omega_{ij} = -\frac{\partial p_i}{\partial p_j} \frac{p_j}{p_i}$$

There are difficulties with the SSNIP approach, especially if this is used as a test for dominance rather than for merger enquiries, as the test was initially derived as tool for merger investigations, in the sense that *existing* price differentials (θ) and *existing* cost differentials (φ) are also relevant and this is in some cases neglected in the dominance investigations, i.e. the firms mark up on existing price (m_c).

1. The monopolist in question is hypothetical and making a hypothetical change in price. We have to second guess whether the firm would make such a price change. This means that we have to estimate the likely effect of a price change using past price data or using survey data. There may be considerable scope for subjective judgement.

2. Cellophane fallacy (so called because of the US court case against du Pont the makers of cellophane). If the relevant market is already monopolised a "hypothetical monopolist" will not choose to increase price above the *existing* monopoly price even if there are no close substitutes. If θ is high m_c will be low.

3. A related but distinct problem that has been labelled the 'reverse cellophane fallacy' is that typically demand is more inelastic at pre merger prices than at post merger price (assuming that prices rise post merger) therefore there may be a tendency in merger cases to find a too narrow relevant market. This is really only a second order problem depending on how responsive the elasticity of demand is to changes in price.

4. 100% market share problem. The SSNIP test requires that the market is the *smallest* set of products for which a hypothetical monopolist would impose a SSNIP. It may be thought that the *minimum* market share necessary to act in an abusive manner in this market is therefore 100%, since a firm with smaller market share in this market will not find it profitable to increase its prices. This does not necessarily follow because of the complexity of interactions between products but the general point is still valid

5. Circularity of abuse and dominance. In order to define the market properly and therefore establish dominance one needs to know *ex ante* whether the *existing* price is a competitive price or a price that is artificially high because one firm is abusing its dominance (θ is high).

6. Chains of substitution - in defining a geographical market we may find that a retail outlet is a substitute for the one in the nearest town and that is a substitute for an outlet in the next town and therefore we define all three in the same market even though the first and third outlet are not substitutes. If we follow the chain of substitutes argument we may end up with a national market even though consumers are not willing to travel more than a few miles in order to make a purchase. There may be no gap in the chain of substitution.

2.2 Supply substitution

In defining the relevant market for a bus company any consumer cannot typically substitute from one route to another but a bus company can redirect a bus to an alternative route. Therefore the ability to behave in a dominant manner in a market depends upon the entry possibilities. This is logically separate from the process of market definition however frequently the two have been analysed jointly e.g. in the EC and the UK. The reason for this lumping together has been the idea that the true measure of market power is the ability to raise price and that is influenced by the elasticity of supply. Therefore there has been a number of attempts to combine the two is using the residual demand curve rather than the 'market' demand curve for the evaluation of the SSNIP test.

Note however that the estimation of the supply elasticity is more difficult than the demand elasticity because of the unknown potential for entry. In the 1997 revision of the US Merger Guidelines there is a clear separation of the two with supply substitution being considered with the conditions of entry at a separate stage of an investigation to the definition of the market.

The UK competition guidelines make the distinction between the speed with which supply can be diverted by existing firms and the speed of entry hence combine the supply substitution with demand substitution and consider barriers to entry at an alternative point.

2.3 Empirical methods of market definition

There are a variety of methods that have been used to help to define the market. The three most important have been

- Shipments Tests
- Price Correlations
- (Residual) demand analysis

2.3.1 Shipments Tests

The logic of shipments test is that if there is a substantial amount of trade between locations then they should be classified into the same market. Two specific standards have been applied

- LIFO - Little In From Outside

- LOFI - Little Out From Inside

However shipments test while providing some information have some flaws and should certainly not be relied upon exclusively. The basic problem is that substantial shipments may imply that locations are in the same *economic* market but that is not the same as an antitrust market. Even if there are currently substantial shipments into an area from outside if there is a low supply elasticity then this may imply that we have a separate *antitrust* market. For example there may be 50% of sales in a country that are from imports. However if there is an import quota or capacity constraint then an increase in the domestic price will not lead to an increase in imports.Alternatively there may be zero shipments in and out of a location and this may be the result of competitive pricing in the relevant markets making imports and exports unattractive.

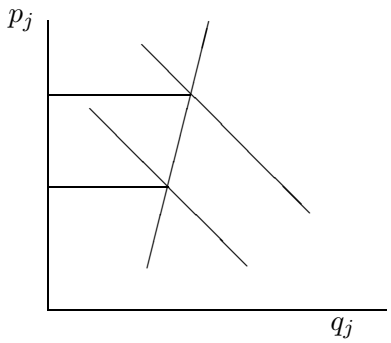
2.3.2 Price Correlations

If products are in the same economic market their prices should be correlated in both levels and differences. Therefore by calculating the correlation coefficient between the two prices in either level or differences we should be able to isolate which products are in the same market and which are not. This approach has been used in a number of competition cases.

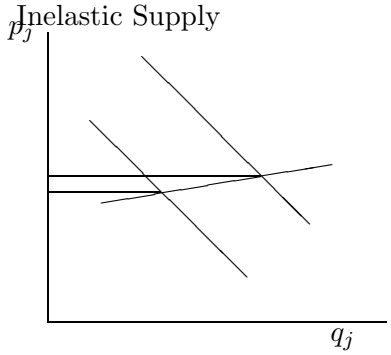
$$\rho = \frac{\sigma_{ij}}{\sigma_i \sigma_j}$$

There are a number of problems with this approach, in part due to inherent difficulties in the correlation coefficient and in part due to the implication of high correlation with an antitrust market rather than an economic market..

- **Spurious correlation:** p_X and p_Y may both determined by third factor Z. This problem could be solved by purging the data of common effects however this requires observation of the common effects.
- **High correlation is not equivalent to substitutability:**



Inelastic Supply



Elastic Supply

A change in p_i induces a shift in the demand curve for good j. If there is a low elasticity of supply of firm j this will lead to high markup for firm i but also high correlation between price of i and j.

2.3.3 (Residual) Demand Analysis

We have a residual demand curve for a good with market demand $q = D(p)$

$$D^r(p) = D(p) - S_o(p)$$

- $S_o(p)$ is the supply of the other firms (in other locations)
- Elasticity of the residual demand curve is the true measure of the ability to raise price.
- Estimation of this system is not a trivial process.