GLOBALISATION AND THE DEFINITION OF THE RELEVANT GEOGRAPHIC MARKET IN ANTITRUST PRACTICE

L. SLEUWAEGEN
e-mail: leo.sleuwaegen@vlerick.be

I. DE VOLDERE
e-mail: isabelle.devoldere@vlerick.be

GLOBALISATION AND THE DEFINITION OF THE RELEVANT GEOGRAPHIC MARKET IN ANTITRUST PRACTICE

L. SLEUWAEGEN

e-mail: leo.sleuwaegen@vlerick.be

I. DE VOLDERE

e-mail: isabelle.devoldere@vlerick.be

ABSTRACT

This paper starts from the antitrust practices in the European Community and the US with respect to the delineation of the relevant geographic market in dealing with concentrations and shows that regulations and guidelines at this moment focus almost exclusively on demand substitution. However, the process of globalisation involves essentially global supply conditions and competition. A methodology is presented for delineating the relevant geographic market, that better takes this globalisation trend into account and brings both demand and supply substitution better in balance. The practical use of the methodology is illustrated for the Volvo-Scania merger case that was blocked by the European Commission in 1999.

The globalisation of markets and production structures make it increasingly difficult to define antitrust markets to identify possible dominant positions. With FDI becoming more important than trade in terms of servicing foreign markets, markets are becoming increasingly globalised and national production systems more and more integrated through the activities of transnational corporations.

Considering the actual antitrust practices in the European Community and the US with respect to the delineation of the relevant geographic market, regulations and guidelines at this moment almost exclusively focus on demand substitution. However, the process of globalisation involves essentially global supply conditions and competition, and makes the interactions between global competitors a crucial element in defining the relevant market. Moreover, the actual practices lack to consider various market delineation criteria in a structured, hierarchical way, which sometimes leads to unclear outcomes in cases where unequivocal evidence is considered.

This paper suggests a methodology for delineating the relevant geographic market, which brings both demand and supply substitution better in balance and puts weights on the different market delineation criteria.

The paper is structured as follows. Section 2 discusses the actual regulation and methods used in antitrust analysis for delineating the relevant market. It examines to what extent actual merger regulations are suitable for dealing with the globalisation phenomenon. Section 3 suggests a methodology to define the relevant geographic market, combining both macro- and micro-level data. Section 4 applies the new methodology to the proposed Volvo-Scania merger that was blocked by the European Commission in 2000.

GLOBALISATION AND THE DEFINITION OF THE RELEVANT (GEOGRAPHIC) MARKET IN EC AND US ANTITRUST PRACTICE

Both in the EC[1] and US[2] antitrust law system dealing with concentrations, the delineation of the relevant antitrust market is based on the abstract concept of the exercise of monopoly power by a *hypothetical monopolist*. A relevant market is the smallest grouping of sales for which the elasticity of demand and supply are sufficiently low that a firm with 100% of that grouping, the hypothetical monopolist, could profitably reduce output and increase price substantially above marginal cost or the prevailing price. This approach focuses on the ability of companies (if acting together) to exercise monopoly power over a well-defined product and geographic space. A candidate market is called the relevant antitrust market if the hypothetical monopolist can set a price in that market which is significantly higher than the prevailing price (in the range of 5% to 10%), without major loss of sales (so-called 5 per cent or SSNIP-test (i.e. "small but significant non-transitory increase in price")).

The concept of the hypothetical monopolist appears rather abstract and does not lend itself to easy use in practice. Less abstract methods are used in the economic literature to delineate relevant markets. Unfortunately, all suffer from major shortcomings[3]. Many of these tests are actually based on the principle of an economic market and arbitrage by buyers rather than on the principle of a relevant antitrust market focusing on the exercise of market power.

EC and US practice

[1] See EC Communication 97/C 372/03, point 17
[2] See Section 1.21 MG

The definition of the relevant geographic market used in the European antitrust regulation, originates from the United Brands case (case 27/76, ECR 1978). In 1997, the most recent guidelines for defining the relevant market in EC competition law were published (Notice on the Definition of Relevant Market for the Purposes of Community Competition Law, EC Communication 97/C 372/03). In the Notice the Commission recognises that firms are subject to three sources of competitive constrains: demand substitutability, supply substitutability and potential competition. However, the Notice further indicates that demand substitutability is seen as the most important disciplinary force and therefore stresses its importance in the delineation of the relevant market. Supply-side substitutability may only be taken into account in defining markets in those situations where its effects are equivalent to those of demand substitution in terms of effectiveness and immediacy[4]. In other words, the Commission's approach in deciding whether different products or regions should be included in the same relevant market depends almost exclusively on their substitutability from the perspective of the consumer[5].

In the US Merger Guidelines, Section 7 of the Clayton Act forms the basis for the requirement that a merger be evaluated within the relevant geographic market. In its original form, it prevents the elimination or lessening of competition between the merging parties, and the creation of a monopoly in any line of trade in any section or community. In the Brown Shoe case (Brown Shoe vs. US (370 U.S. 294)) the

[3] We refer to Sleuwaegen et al. (1999) for an extensive overview and a discussion of the methods.
[4] See EC Communication 97/C 372/03, par. 20
[5] Practically, the Commission commonly takes several factors into account in its analysis of the definition of the relevant geographic market, which can be grouped in two categories: sources of globalisation (e.g. language, consumer preferences/brand loyalty, transportation costs), and so called 'revealed measures' of globalisation (e.g. price differences, cross-border import), i.e. indicators that may point in the direction of globalisation/segmentation. Nevertheless, the Commission exercises considerable discretion in deciding which factors are influential in any particular case, and rarely highlights any single characteristic as determining the relevant geographic market. It is therefore no guaranty whatsoever to assume that because, for example, a particular level of trade was taken to

Supreme Court set out the basis for definition of the relevant antitrust market. The 1997 US Merger Guidelines further describe how this definition is to be applied in the context of geographic market analysis of a merger. As in the EC merger regulation, the definition of the relevant market in the US Merger Guidelines is based first and foremost on demand substitution factors, i.e. possible consumer responses. But, whereas the EU Merger Regulation takes supply-side substitutability into account in a second stage, the US Merger Guidelines explicitly mention that market definition focuses solely on demand substitution factors. Supply substitution factors are considered elsewhere in the Guidelines in the identification of firms that participate in the relevant market and the analysis of entry[6].

In minimising the role of supply substitution and potential entry both the US and EC guidelines largely ignore the role of corporate globalisation. The phenomenon of globalisation involves essentially global competition and its effect on business and company organisation focuses mainly on supply substitution (Dicken, 1998). Already in 1996 the US Federal Trade Commission recognised this trend in a report on the implications of globalisation for competition policy. Among other things the report concluded that "relevant geographic markets should be defined to include foreign supply response as appropriate, giving due regard both to actual barriers to trade and to the increasing trend towards the globalisation of trade and services". However, so far it has not been amended in the Merger Guidelines.

RELEVANT GEOGRAPHIC MARKET DELINEATION IN A GLOBAL ECONOMY: A NEW METHODOLOGY

indicate a Community-wide market in one case, a similar level of trade could lead to the same conclusion in another case (Cook and Kerse, 2000).

Starting from the problems set out in the previous section, this section proposes an integrating methodology to delineate the geographic scope of the relevant market that brings both demand and supply substitution better in balance. First, price data and shipments data are used in connection with border effects to define the economic market, based on buyer arbitrage principles. Next, the analysis is extended to consider possible supply responses and define the relevant competitive arena. Micro-economic data are used to get an indication of how firms actually perceive the relevant market by analysing their strategic market behaviour. In combination both sources of information provide a reliable indication of the 'global' scope of the relevant antitrust market.

Price Data, Shipments Data and Geographic Market Delineation

Price differences between two regions are a first good way to delineate economic markets. A considerable price difference between two geographic areas is assumed to be a good indication of the impossibility of buyers to arbitrate price differences away. Mostly a price difference of about 10% or more is considered a significant threshold to separate markets. These price differences should be observed for a specific period of time, say minimum 2 years. Prices to compare should also be actual transaction prices, which may differ significantly from listed prices. Several market delineation tests are based on price tests[7]. Price differences between regions, however, do not imply that firms do not consider competitors' reactions from the other region in setting prices.

[6] See Section 1.0, 1.3 and 3 MG

[7] e.g. price correlations test (Stigler & Sherwin, 1985), price equality test (Shrieves, 1978), speed of adjustment test (Mathis et al., 1978), Granger causality (Klein et al., 1985), cointegration series (Engle & Granger, 1987)

Elzinga and Hogarty (1973, 1978) suggest a method to delineate geographic markets, based on interregional shipments. They argue that the presence of shipments between two geographic areas is an indication of the fact that the areas should actually be regarded as one single market. The method is constructed by the application of two tests: the LOFI ("Little Out From Inside") and the LIFO ("Little In From Outside") test. If both 75% (or alternatively 90%) of the consumption of a product is produced within a specific area, and 75% (or 90%) of the production within this area is consumed within this area, then a distinct geographic market has been identified.

Shrieves (1978) extends this shipments test by calculating two criteria: the similarity measure and the significance measure. The *similarity measure* considers whether the patterns of shipments into the two areas under consideration are similar, while the *significance measure* measures the importance of the two areas for total consumption of the product concerned. Because of several difficulties in the actual application of the test, the Shrieves-test is not widely used.

Criticism. The approach of Elzinga and Hogarty (and also Shrieves (1978)) to delineate the relevant geographic market has received a lot of criticism in the economic literature.

Werden (1981) identifies two important situations in which the proposed test will produce erroneous results.

Firstly, if there are no cross shipments between the regions at a particular point in time, both Elzinga and Hogarty and Shrieves conclude that the two are distinct geographic markets. However, if the cross-price-elasticities of demand are very high, a cartel in one of these regions would not be able to profitably raise price and the two regions are not in fact, distinct markets. In other words, potential shipments and competition from firms

outside the region is not taken into account. However, potential competition from producers outside the region may threaten producers in this region to such an extent that they will keep prices down. The fundamental dependence of the patterns of shipments and the size of the relevant geographic market on price settings behaviour has been illustrated in Scherer and Ross (1990).

The second major error that the proposed shipments tests make, involves failing to delineate important markets within markets. They fail because they do not really consider what the firms could do after the possible merger. The test is not suited to determine whether producers in any region could raise prices significantly through collective action, because it is entirely based on actual shipments data and it does not indicate what will happen in case of a price increase. Therefore, in some situations markets will be defined too broadly, and potential anti-competitive mergers will not be detected.

Werden (1981) concludes however that, despite the shortcomings of the tests, shipments data can be very useful. Firstly, they can be used to establish a first cut from which to work in delineating relevant geographic markets. Secondly, they establish an understanding of product flow patterns, which is the quintessence of the geographic market delineation process. In using trade data, the focus should be on trade between independent parties. Intra-firm trade does not necessarily respond to demand conditions, but basically reflects the international integration of supply activities of firms.

Also Stigler and Sherwin (1985) state that the physical movement of goods (or buyers) is a potential source of information on the geographic size of the market. However, they argue that no volume of physical movement of goods can actually insure that two areas are in the same market. For instance, competition from mobile buyers can bring about price equality without a movement of the good in question in its primary form.

Moreover, the fact that a substantial amount of a product is shipped from one area to another is not sufficient to guarantee that both areas should be in the same market. They are separate economic markets if price discrimination is causing the price in one region to be lower than in the other region.

The different points of criticism cannot be overlooked. Consequently, the shipments method can never provide a definitive answer in its own to the geographic market delineation problem. However, they can provide a first indication of whether certain geographic areas should be grouped as one economic market.

Price tests can best be combined with a "trade exposure measure", in line with the shipments test, to come to a first indication of the economic market. The idea of using trade level data to get an indication of intercountry links can also be found in the literature about the definition of global industries (Porter, 1986; Yip, 1995; Makhija et al, 1997). In line with the arguments of Elzinga and Hogarty (1973,1978), it is essential to take both the LIFO test and the LOFI test into consideration. The trade exposure measure, as discussed in Sleuwaegen (1994), appears as a good indicator in this context. This trade exposure measure XM divides the sum of the exports and imports by the sum of all shipments (i.e. domestic sales+export+imports).

In order to refine this economic market definition and to meet the basic criticisms on the use of price difference and shipments data in the relevant market delineation process, the next step is to learn more about the economics that produce the observed shipments patterns, i.e. transportation costs, regulations, … which as a result may lead to the identification of border effects separating markets.

Border Effects

Extensive research has been done to measure and explain sources of market fragmentation. In this literature, the formation of the European Union and the Single Market Program formed an interesting real-life case study. Neven and Roller (1991) estimated the impact of non-tariff barriers on the share of EU imports in apparent consumption of the four major European countries for the years 1975-1985, making use of Buigues et al. (1990) to measure non-tariff barriers. Fontagné et al. (1998) studied the impact of the Single Market Programme (SMP) on intra-European trade. They estimate in particular whether the removal of remaining barriers to trade changed the proportion of inter-industry, horizontally differentiated and vertically differentiated trade. In more recent work, Head and Mayer (1998) empirically examined how non-tariff barriers affect consumption of foreign goods relative to consumption of domestic goods, making use of the empirical construct of border effect.

Border effects measure the extent to which domestic geographic subunits trade more with each other than with foreign units of identical size and distance. Borders matter when firms have greater access to domestic consumers than to consumers in other nations. Border effects are measured as the average deviation between actual trade and the 'normal trade' that would be expected in an integrated economy without border-related barriers.

The literature on border effects was established by McCallum (1995) who analysed trade between Canadian provinces and between US states and Canadian provinces. In his analysis he made use of gravity-type equations to examine the determinants of international trade patterns, including the impact of preferential trade blocs. McCallum (1995) and Helliwell (1996) showed that the border effect on US-Canadian trade for the period 1988-1990 was extremely large. Trade between Canadian provinces was

estimated to be more than 20 times larger than trade between Canadian provinces and US states.

For the European Union, Head and Mayer (1998) were the first to estimate industry-level border effects at the industry level. The methodology they use is the monopolistic competition model of trade introduced by Krugman (1980). That model establishes a relation between the relative amounts consumers spend on foreign and domestic goods and their relative prices net of transport costs. The border effect measures divergence from the predicted consumption ratios. Table 1 presents the border coefficients for 98 industries across European Union countries before the implementation of the Single Market Programme[8].

Insert Table 1 about here

Starting from the border coefficients in table 1, there are several ways to express the magnitude of border effects. First, the ratio of imports from self to imports from others, holding other things equal, can be used (McCallum, 1995). For example, when the border coefficient for pharmaceuticals is 3.66, the magnitude of the border effect is exp(3.66) = 38.86. This means that trade in the pharmaceutical industry within an EU country is 38.86 times larger than trade between countries of the EU. A second way to quantify border effects is to convert them to distance equivalents. This approach can be found in Helliwell (1996) a.o. Given that the 'normal' distance coefficient in the gravity-equation is equal to - 0.95, crossing a border in the pharmaceutical industry is equivalent to multiplying distance by exp(-3.66/-0.95) = 46.99. Since the average internal distance in the EU is 135 miles, this implies a border "width" in the pharmaceutical industry of

6344 miles. Head and Mayer (1998) found that, on average across industries, for the period 1984-1986 crossing a border was equal to bridging a distance of 3206 miles.

In table 1 the industries are ordered in terms of increasing magnitude of border effects. It seems noteworthy that ingestible products, i.e. food, beverages, tobacco and drugs, figure heavily among those with large border effects.

When examining the evolution of border effects over time (period 1976 to 1995), Head and Mayer found that border effects within Europe[9] have declined substantially until 1986, but that border effects remained stable since then.

In another article, Head and Mayer (2000) compare industry-level border effects between Europe, the US and Japan on average for the period 1981-1994. The results show some interesting elements about the level of integration within Europe, as compared to trade with Japan or the US (see table 2).

Insert Table 2 about here

As a first element Head and Mayer found that in general trade between the EU and Japan or the US in the 80's suffered much more from domestic preferences than intra-EU trade. The border effects can give a good indication of the level of trans-regional globalisation (i.e. a level of globalisation that goes beyond the borders of the EU) of a specific industry.

Combining Border Effects with Shipments and Price Difference Data

[8] In the study Head and Mayer (1998) pooled the years 1984, 1985 and 1986.

[9] Given the period of investigation, the authors consider Europe equal to EU9 (Belgium and Luxembourg are aggregated), to avoid problems of countries that joint the EU entering the sample during the period of investigation.

The border effects technique provides an additional instrument to further refine the delineation of economic markets based on shipments and price data. Combining price data, shipments data and border effects, the following elements can be concluded:

- The non-existence of price differences between regions suggests an integrated economic market.
- If in a specific industry shipments between regions are taking place on a regular basis, no border effects are present but prices differ between regions, this is an indication that firms are able to segment the market following the geographical regions.
- If shipments are taking place between regions, but border effects do exist, then the market may be considered to be separated by these border effects. The likelihood is high that prices will differ between regions in this case.
- If there are no shipments between regions and no border effects are present for a specific industry, then the market for that industry can be considered as local.
- If no shipments are taking place, but if border effects exist for that industry, then the market is closed and firms are most likely organised following a local or multidomestic structure.

Schematically:

Insert Figure 1 about here

In all the cases discussed above, it is not possible to simply conclude that the relevant antitrust markets correspond to the economic markets, delineated thus far. Surprisingly,

actual antitrust practices within the EU and the US suggest that relevant market analysis often stops here. However, accounting for the fact that information and communication technology and new production technology has led to a great flexibility in geographical production structures (Dicken, 1998), transnational firms can easily penetrate regions and exercise a disciplinary effect on the behaviour of firms in economically fragmented markets. Additional information about the geographical pattern of supply and competition should therefore be used to come to conclusions about the relevant "antitrust" market.

Global Supply Response and Global versus Multimarket Competition

If there is one central characteristic of globalisation of firms and industries, it is the effective response in supplying goods and services to customers scattered around the world. This not merely happens by means of trade but increasingly by setting up production and distribution units in various parts of the world. This global flexibility in supply response should be explicitly considered in delineating relevant antitrust markets. Hence, in assessing the scope of the market and arena of relevant competitors, measures should be developed that are able to take this supply flexibility into account. Logically, intra-firm trade could give a good indication of the global flexibility within a company. However, data on intra-firm trade are rarely available.

Davies and Lyons (1996) present a useful alternative measure. They define a globally integrated industry as an industry in which corporate strategies are integrated. They suggest that whilst a market may only be integrated given the absence of price differences or significant trade flows, the industry or relevant competitive arena may be integrated by multinational production as well as sales, the latter two being taken as

evidence of integrated corporate strategies. The degree of multinationality of supply at the level of the industry is defined as:

$$M_j = \Sigma (M_{ij} * v_{ij})$$

where M_{ij} = the individual firm i's multinationality in industry j

$= 1 - \Sigma (x^2_{ijk}/x^2_{ij})$, with x_{ijk} = share of output or sales of firm i in industry j in country k

$v_{ij} = x^2_{ij}/\Sigma x^2_{ij}$ (1 = 1, ..., N)

In its number-equivalent form this becomes:

$$NM_j = (1 - M_j)^{-1}$$

An industry characterised by integrated corporate strategies will show a high NM and thus a high degree of multinationality in sales as well as in production.

The idea behind this measure is that the more firms are multinational within an industry, the more likely that firms can easily shift production from one country to another and that competitive reactions will occur across markets. The multinationality measure captures not only the impact of trade on competitive conditions through the multinationality of sales, but also supply flexibility through foreign direct investment is captured through the multinationality of production. Such foreign direct investments are as much a source of potential supply response in a global economy as is trade. This is recognised in the 1997 UN World Investment Report, but has yet not been explicitly taken into account in either EC or US competition laws.

Not all markets in which multinationals operate are globally integrated or characterised by global competitors that may operate in fragmented economic markets. Therefore, a

high degree of multinationality requires additional insight in the geographical presence and profiles of the different competitors in the industry. If the same sellers are present in more than one economic market, this should be explicitly considered in the application of the market-delineation principle. Given multimarket presence of the same firms, i.e. the same firms meet in different markets, their competitive actions are not taken in isolation across markets. A firm's action most probably implies reactions from other actors in that market or another economic market where they meet. The interdependence of firms across product markets has first been hypothesised by Edwards (1964):

"When one large conglomerate enterprise competes with another, the two are likely to encounter each other in a considerable number of markets. The multiplicity of their contacts may blunt the edge of competition. A prospect of advantage from vigorous competition in one market may be weighed against the danger of retaliatory forays by the competitor in other markets. Each conglomerate competitor may adopt a live-and-let-live policy designed to stabilise the whole structure of the competitive relationship. Like nation states, the great conglomerates may come to have recognised spheres of influence and may hesitate to fight local wars vigorously because the prospect of local gain are not worth the risk of general warfare."

Multimarket competition involves rivalry among the same group of firms in a set of related (product or geographic) markets. Since firms often compete in different economic markets with costs that are interrelated across these markets (e.g. through the use of joint input), the actions taken in one market may provoke important direct and indirect (strategic) adjustment effects in the other markets. One central result of the multimarket theory implies that firms that are more equal competitors across products

or geographic markets will refrain from taking unbalanced aggressive competitive actions (Van Wegberg, 1993). When the same firms meet in different markets, this facilitates multimarket collusion (Bernheim and Whinston; 1990, Fenley, 1985). The result of multimarket competition may after some time be a reduction in competition (Caves, 1982), if the payoff of the co-operative outcome across markets exceeds individual competitive profits (Kantarelis and Veendorp, 1988). This interrelatedness has important implications for relevant antitrust market delineation. In such cases the relevant market is larger than the different economic markets and includes all markets subject to co-ordinated actions by multimarket competitors (Sleuwaegen, 1994).

In empirical studies about multimarket competition (Scott, 1982, 1991; Hughes and Oughton, 1993) two more refined measures for multimarket competition have been used. Scott (1982, 1991) focuses on the probability that given the observation that two firms are already rivals in one market, that they will also meet up in other spheres of activity. Given that firms do follow some sort of strategy when diversifying in order to exploit e.g. economies of scope from production or marketing, it seems likely that firms will meet in several of their markets, but whether they do this 'purposively' to increase multimarket contact is another matter. Scott's hypothesis regarding the level of multimarket competition is that the lower the number of industries in which the two companies meet relative to their total number of operations, the smaller the likelihood that they will recognise their mutual interdependence. More formally, he measures the probability distribution over the number of ways a 'representative' pair of firms can meet in their other markets, given that they were initially observed to be operating in the same market.

Hughes and Oughton (1993) measure the degree of multimarket contact through the calculation of the pair wise contact of the leading 5 firms in each country. If the

multimarket measure spans the world and reaches high values, multimarket competition becomes global competition.

However, both measures of multimarket competition have limitations[10] and both measures require a lot of specific data.

A more crude measure of multimarket contact can be found in Sleuwaegen and De Voldere (1999). Based on the market shares and rankings of the different competitors in the EU Member States, the relative positions of the competitors are determined. When these relative positions do not differ strongly across the different Member States, it can be concluded that the relevant competition arena is the European Union (or larger). If on the other hand these relative positions do differ significantly, this can be interpreted as different markets from a competition point of view.

A Comprehensive Framework for Delineating the Relevant Geographic Market

Bringing together the different building blocks set out in the previous paragraphs, the following stepwise method appears useful to measure whether the scope of an antitrust market is global, regional, national or local. Figure 2 shows how the different steps are linked together to arrive at the delineation of the relevant geographic antitrust market.

Insert Figure 2 about here

In a first step the economic market can be defined combining price data, shipment data and border effects. If no price differences are found, the markets are integrated and should be treated also as global antitrust markets. For fragmented economic markets, the information should be complemented with information about the scope of possible supply and competitive reactions to correct the definition of the relevant market for

competition. Therefore, in the next step data about the multinational presence of firms should be examined to determine the "competition arena".

As the framework set out above contains all essential ingredients to delineate antitrust markets, the collection and processing of the necessary data at the level of products of individual firms may appear cumbersome. However, we believe that the value of the framework lies in the systematic approach it provides to process the information provided by the parties in merger cases. In unravelling the underlying causalities, the framework does not merely assemble information, but also builds up cumulative evidence to arrive at a more solid market delineation outcome.

VOLVO–SCANIA

The Volvo–Scania merger, which was blocked by the EU Commission in early 2000, provides a nice illustration of the applicability of the new methodology to delineate the relevant geographic market. The first paragraph introduces the case and discusses the final decision by the European Commission. In the second paragraph the case is discussed against the background of the methodology developed in the paper.

Volvo-Scania Merger: EU Commission Decision

In autumn 1999 the EU Commission received notification of a concentration by which Volvo proposed to acquire control of Scania. Volvo and Scania are both Swedish companies, mainly active in the manufacture and sales of trucks, buses, marine and industrial engines. Through the proposed operation the new group was about to

[10] For a discussion of these limitations we refer to Lund (1993).

acquire a substantial share of the market for heavy trucks in the EEA[11]. During its investigation, the Commission came to the conclusion that the proposed operation would be incompatible with the common market. The Commission concluded that Sweden, Norway, Finland and Ireland constituted separate relevant geographic markets for heavy trucks and that in these geographic markets the operation would create dominant positions, which would result in competition being significantly impeded in the common market within the meaning of Article 2(3) of the Merger Regulation and Article 57 of the EEA Agreement.

To delineate the relevant geographic market, the Commission cumulated different elements of evidence pointing in that direction. However, the decision was not taken without any discussion. The evidence in the Volvo-Scania merger case was anything but clear-cut. For almost each argument against the merger, an argument in favour was advanced. Moreover, as no real hierarchy exists among the criteria that the Commission used in its investigation, for the elements where conflicting or divergent evidence was presented, the Commission's approach appears as arbitrary.

Assessment of the Volvo-Scania Case using the New Methodology

Although also the new methodology is based on cumulating different kinds of evidence to come to a conclusion on the delineation of the geographic market, it also brings more structure and a clear hierarchy in the different elements taken into account by the Commission. Additionally, the methodology looks for the reasons of possible market fragmentation. Based on the methodology a ranking can be suggested of the criteria taken into account by the EU Commission for delineating the geographic market. It suggests to first look at the following 'revealed measures' of

[11] The Commission also investigated the competitive position of the Volvo-Scania group in the EEA buses market. However, in this case study only the heavy trucks market will be discussed.

globalisation: price differences and trade flows. In a second step regulatory barriers to market interpenetration (analogously with border effects) should be examined, to come to a meaningful definition of the economic market. In the last step, multinationality of production, competitors' information and market share differences should be analysed to define the relevant antitrust market. In the next paragraphs this stepwise procedure will be used in discussing the Volvo-Scania case.

In the Volvo-Scania case, for heavy trucks significant price differences have been observed among the different EU Member States, even after correction of prices for differences in model specifications differing by country (Commission calculations, see Commission Decision case n° COMP M.1672-Volvo/Scania par. 38-49).

Secondly, shipments between the Member States are limited (COMP M.1672-Volvo/Scania). In this context a distinction should be made between intra-firm trade and inter-firm trade. While total trade (i.e. intra- and inter-firm trade) is significant, most trade in the transportation industry is intra-firm trade. When looking only at cross-country inter-firm shipments, these amounts are minor, thus pointing in the direction of more national than European markets.

The observations that prices differ strongly across the Member States and that there are few shipments provide a first indication of fragmented economic markets. In observing the limited volume of shipments, the question arises whether external factors, i.e. border effects, cause the market to be fragmented or whether markets are just local in nature. When regulatory barriers are high, border effects will be high, thus indicating a closed market. If, on the other hand, border effects are low, the market is local.

In the heavy trucks industry border effects are high, due to regulatory barriers. Despite some harmonisation at the European level, regulatory barriers still fragment the

market. For example, in the UK and Ireland all vehicles must be adapted for right-hand drive. This heavily weights on the possibility to import vehicles from other countries. Also across Member States different regulations still apply as concerns permitted total transported tonnage and maximum length of trucks. In Sweden, the truck industry law requires a specific homologation –called "cab crash test". This last regulation constitutes a severe regulatory barrier to enter this industry.

The third step of the methodology explicitly pays attention to supply substitution and the way the production structure is globally or European wide organised by examining the production and sales structure. Next, by examining competitors' presence, the degree of multimarket competition can be established. In the heavy trucks industry multinationality in production is very limited, with production on average concentrated in 1,5 countries, thus insufficient for efficient European wide supply flexibility (table 3). Multinationality in sales is significantly higher. In the EU, the largest truck manufacturers are on average active in 4,6 countries, with Volvo and Scania having the highest degree of multinationality in sales (table 4). When looking at the patterns of multinationality (multimarket presence), it can be seen from table 5 that for heavy trucks the arena of competition is still dominated by national players that do meet in several countries, but not as equal competitors. The most remarkable examples are Volvo and Scania in Sweden, Daimler in Germany and Iveco in Italy. In most other countries market presence of the largest truck manufacturers seems to be more balanced.

Insert Table 3 about here

Insert Table 4 about here

Insert Table 5 about here

Combining all the elements, it can be concluded that the geographic antitrust market in the truck industry is at this moment certainly not the EU or the European Area. Despite some harmonisation over the years, the market for heavy trucks appears still fragmented at the national level. This fragmentation in the truck industry is mainly due to regulatory barriers. Although no global/European supply flexibility exists, most large truck manufacturers are active with sales in all EU Member states - although with substantial variations in market shares, especially in the Nordic countries. On a European level, this suggests a tendency towards a multimarket competition outcome with strategic interaction over the different national markets, rather than one integrated European market. With competitors present in different markets. Competition emerges across European Member States, albeit that some Nordic countries appear isolated. All in all and in line with the decision of the Commission, the new methodology would suggest to block the merger based on the different criteria. However, as the methodology has identified a fragmentation mainly caused by government regulation, it would strongly advice for a further harmonisation of regulations at the EU level to come to one integrated European market.

REFERENCES

Baker, J.B. & Bresnahan, T.F. 1985. The gains from merger or collusion in product-differentiated industries. Journal of Industrial Economics, 33: 427-44.

Baker, J.B. & Bresnahan, T.F. 1988. Estimating the residual demand curve facing a single firm. International Journal of Industrial Organization, 6: 283-300.

Bernheim, B.D. & Whinston, M.D. 1990. Multimarket contact and collusive behaviour. Rand Journal of Economics, 21: 1-26.

Bishop, S. & Walker, M. 1999. The economics of EC competition law. London: Sweet&Maxwell.

Buigues, P., Ilkovitz, F. & Lebrun, J.F. 1990. The impact of the internal market by industrial sector: the challenge for Member States. European Economy, special edition.

Caves, R.E. 1982. Multinational enterprise and economic analysis. Cambridge: Cambridge University Press.

Cook, C.J. & Kerse, C.S. 2000. EC Merger Control (3rd edition). London: Sweet&Maxwell.

Davies, S. & Lyons, B. 1996. Industrial organization in the European Union. Oxford: Clarendon Press.

Dicken, P. 1998. Global shift: transforming the world economy. London: Paul Chapman Publishing.

Edwards, C.D. 1955. Conglomerate bigness as a source of power, in National Bureau of Economic Research Conference Report, Business concentration and price policy. Princeton, NJ : Princeton University Press.

Edwards, C.D. 1964. Hearing before the Subcommittee on Antitrust and Monopoly of the Committee of the Judiciary of the US Senate – Congress 88, Session 2 and Congress 89, Session 1 (Washington).

Elzinga, K.G. & Hogarty, T.F. 1973. The problem of geographic market delineation in antimerger suits. The Antitrust Bulletin, 18: 45-81.

Elzinga, K.G. & Hogarty, T.F. 1978. The problem of geographic market delineation revisited: the case of coal. The Antitrust Bulletin, 23: 1-18.

Engle, R.F. & Granger, C.W.J. 1987. Co-integration and error correction: representation, estimation and testing. Econometrica, 55: 251-276.

Feinberg, R.M. 1985. Sales-at-risk: a test of the mutual forebearance theory of conglomerate behavior. Journal of Business, 58: 225-241.

Fontagné, L., Freudenberg, M. & Péridy, N. 1998. Intra-industry trade and the single market: quality matters, Centre for Economic Policy Research Discussion Paper, n° 1952.

Head, K. & Mayer, T. 1998. Non-Europe: the magnitude and causes of market fragmentation in the EU. unpublished working paper.

Head, K. & Mayer, T. 2000. Effet frontière, integration économique et "Fortresse Europe. unpublished working paper.

Helliwell, J. 1996. National borders, trade and migration. NBER Working Paper, n° 6027.

Horowitz, I. 1981. Market definition in antitrust analysis: a regression-based approach. Southern Economic Journal, 48: 1-16.

Hughes, K. & Oughton, C. 1993. Diversification, multi-market contact and profitability, Economica, 60: 203-224.

Kantarelis, D. & Veendorp, E.C.H. 1988. Live and let live type behavior in a multimarket setting with demand fluctuations, Journal of Economic Behavior and Organization, 10: 235-244.

Klein, C., Rifkin, E.J. & Uri, N.D. 1985. A note on defining geographic markets, Regional Science and Urban Economics, 15: 109-119.

Krugman, P. 1980. Scale economies, product differentiation and the pattern of trade, American Economic Review, 70: 950-959.

Lund, M. 1993. Multimarket contact and economic performance. Unpublished working paper.

Makhija, M.V., Kim, K. & Williamson, S.D. 1997. Measurung globalization of industries using a nationaal industry approach: empirical evidence across five countries over time. Journal of International Business Studies, fourth quarter: 679-710.

Mathis, S.A., Harris, D.G. & Boehlje, M. 1978. An approach to the delineation of rural banking markets. American Journal of Agricultural Economics, 60: 601-608.

McCallum, J. 1995. National borders matter: Canada-US regional trade patterns. American Economic Review, 85: 615-623.

Neven, D.J. & Roller, L.H. 1991. European integration and trade flows. European Economic Review, 35: 1295-1309.

Porter, M. E. 1986. Changing patterns of international competition. California Management Review, 28: 9-40.

Scheffman, D.T. & Spiller, P.T. 1987. Geographic market definition under the U.S. Department of Justice Merger Guidelines. Journal of Law and Economics, 30: 123-147.

Scherer, F.M. & Ross, D. 1990. Industrial market structure and economic performance (3rd ed.). Boston: Houghton Mifflin Company.

Scott, J.T. 1982. Multimarket contact and economic performance. Review of Economics and Statistics, 64: 368-375.

Scott, J.T. 1991. Multimarket contact among diversified oligopolists. International Journal of Industrial Organization, 9: 225-238.

Shapiro, C. 1995. Mergers with differentiated products. Paper prepared as address for the American Bar Association "The Merger Review Process in the U.S. and Abroad".

Shrieves, R.E. 1978. Geographic market areas and market structure in the bituminous coal industry. The Antitrust Bulletin, 23: 589-625.

Sleuwaegen, L. 1994. The relevant antitrust market. European Economy, 57: 109-129.

Sleuwaegen, L., De Voldere, I. & Schep, K. 1999. Relevant market delineation with the use of strategic business information, FETEW OR9928.

Sleuwaegen, L. & De Voldere, I. 1999. Competitive distortions and state aid to firms. How to define the relevant market?. study for the European Commission, DGIII.

Smith, A. & Venables, A. 1988. Completing the internal market in the European Community. European Economic Review, 32: 1501-1525.

Stigler, G.J. & Sherwin, R.A. 1985. The extent of the market. Journal of Law and Economics, 3: 555-585.

United Nations. 1997. World Investment Report: transnational corporations, market structure and competition policy. United Nations Publication.

Van Wegberg, M. 1993. Capacity as a commitment instrument in multimarket competition, Best Paper Proceedings of 1992 E.A.R.I.E. Conference, 1993, Boston: Kluwer Academic Publications.

Werden, G.J. 1981. The use and misuse of shipments data in defining geographic markets. The Antitrust Bulletin, 26: 719-737.

Yip, G.S. 1995. Total global strategy: managing for worldwide competitive advantage. Englewood Cliffs: Prentice Hall.

TABLE 1

Border Effects per Industry within the EU

Industry	Coefficient	Industry	Coefficient
Motor vehicles - ass and eng	-0,06	Meat	2,27
Asbestos	0,14	Machine-tools	2,33
Motor vehicles - parts	0,55	Knitting	2,40
Electrical apps. - indl.	0,62	Industrial chem. n.e.s.	2,47
Textile n.e.s.	0,62	Soap	2,47
Steel tubes	0,89	Electrical plant	2,51
Machinery - misc	0,98	Footwear - mass	2,57
Machinery - agricultural	1,01	Clocks	2,59
Office machinery	1,06	Wires	2,71
Household chem. n.e.s.	1,17	Oils and fats	2,72
Man-made fibres	1,18	Fish	2,74
Non-ferrous metals - prod.	1,24	Wooden furniture	2,81
Transmission eq.	1,27	Wood - processed	2,82
Receivers - TV and radio	1,28	Confectionery	2,89
Industrial chem.	1,35	Cork and brushes	2,97
Electrical apps. - domestic	1,36	Clothing	3,00
Machinery n.e.s.	1,37	Railway	3,03
Abrasives	1,44	Aerospace	3,04
Steel-preprocess	1,45	Printing	3,31
Optical ins.	1,47	Metals transformation	3,34
Furs	1,53	Paint and ink	3,47
Glass	1,60	Shipbuilding	3,52
Lighting eq.	1,61	Motor vehicles - bodies	3,52
Musical instr.	1,64	Graphic labs	3,59
Toys and sports	1,67	Foudries	3,61
Ceramics	1,72	Structural metal	3,63
Leather-tanning	1,74	Pharmaceuticals	3,66
Floor coverings	1,78	Dairy	3,97
Cycles	1,79	Distilling	4,04
Jewelery	1,79	Grain milling	4,08
Machinery - engineering	1,82	Used tyres	4,08
Transport eq. n.e.s.	1,82	Metal containers	4,09
Pulp and paper	1,83	Bread	4,10
Starch	1,86	Food n.e.s.	4,22
Wood n.e.s.	1,87	Pasta	4,25
Stone	1,91	Tobacco	4,32
Machinery - textile	1,94	Clay	4,34
Precision instr.	2,01	Beer	4,51
Tools etc.	2,04	Wine	4,57
Telecoms	2,06	Poultry	4,66
Vegetables	2,07	Soft drinks	4,73
Machinery - food and chem.	2,09	Concrete	4,73
Textiles-households	2,14	Cement	4,74
Iron and steel	2,15	Forging	4,86
Plastics	2,19	Wooden containers	5,38
Rubber	2,23	Wood - sawing	5,47
Leather - products	2,24	Oil refining	5,69
Medical eq.	2,26	Carpentry	5,97
Paper processing	2,27	Sugar	6,40

Source: Head and Mayer, 1998

TABLE 2

Industry-level Border Effects for EU9, Japan and USA

Industry	EU9	Japan	USA	Industry	EU9	Japan	USA
Jewellery	4,07	0,06	0,09	Rubber	11,16	62,76	102,11
Leather tanning	3,31	0,30	0,57	Railway	30,18	63,25	22,40
Ceramics	5,75	0,67	4,76	Pulp and paper	8,87	68,24	6,27
Textile n.e.s.	2,77	0,75	2,61	Clocks	8,72	73,36	318,74
Industrial chem.	3,71	0,77	1,87	Electrical plant	17,33	76,69	80,86
Shipbuilding	22,91	0,79	1,72	Machinery - engineering	12,99	82,47	61,43
Optical ins.	2,9	0,88	4,24	Steel - preprocess	8,3	87,96	78,25
Machinery - misc.	2,44	0,98	2,85	Wooden furniture	30,8	91,44	121,76
Cycles	6,23	0,99	7,72	Non-ferrous metals-prod.	7,61	94,75	25,10
Telecoms	13,37	1,04	1,73	Starch	13,84	95,35	0,58
Steel tubes	3,21	1,08	5,27	Receivers - TV and radio	12,73	108,94	217,65
Toys and sports	4,38	1,13	4,73	Clothing	25,11	109,64	196,50
Abrasives	4,32	2,32	3,15	Knitting	8,3	124,12	200,47
Asbestos	4,82	2,40	2,06	Furs	5,03	127,55	44,01
Man-made fibres	1,79	2,44	6,88	Aerospace	15,75	129,50	44,83
Musical instr.	7,1	2,61	12,45	Motor vehicles - ass and eng	11,43	140,71	3675,35
Floor coverings	4,79	2,92	4,95	Pharmaceuticals	25,28	141,07	37,64
Machinery - textile	4,33	3,33	2,64	Oil refining	109,34	167,74	4,21
Stone	11,41	3,51	6,94	Wires	62,47	193,40	91,46
Machinery n.e.s.	4,45	3,57	4,99	Plastics	20,35	209,38	74,74
Glass	8,77	4,91	10,22	Meat	9,9	220,67	6,81
Electrical apps. - domestic	5,3	4,93	14,63	Textiles - households	27,85	226,76	78,27
Electrical apps. - indl.	11,67	5,27	12,49	Metal containers	65,78	246,82	72,91
Leather - products	6,77	5,32	18,62	Poultry	66,53	298,96	39,50
Machinery - agricultural	4,41	6,75	6,07	Printing	67,42	322,11	67,42
Precision instr.	6,89	8,96	8,05	Bread	84,36	542,28	1672,74
Transmission eq.	4,84	10,62	16,86	Vegetables	14,83	609,74	65,10
Metals transformation	35,61	10,91	9,25	Forging	72,51	680,32	116,32
Iron and steel	4,81	11,06	66,20	Grain milling	55,94	690,27	17,28
Medical eq.	12,22	11,66	12,02	Pasta	51,34	715,12	2651,51
Office machinery	5,52	11,97	9,51	Sugar	101,91	863,75	270,12
Transport eq. n.e.s.	9,64	12,05	7,44	Tobacco	86,73	881,07	47,99
Household chem. n.e.s.	5,77	13,61	32,87	Structural metal	44,61	881,27	83,41
Oils and fats	23,91	14,71	2,21	Beer	127,64	1173,34	1013,31
Tools etc.	15,26	14,83	45,77	Clay	153,3	1269,59	2007,20
Paint and ink	31,37	17,18	11,43	Food n.e.s.	43,11	1838,30	697,06
Cork and brushes	19,3	17,90	21,04	Soft drinks	167,15	2097,10	1737,22
Wood n.e.s.	15,13	21,40	65,61	Wooden containers	303,62	2107,59	344,69
Lighting eq.	9,49	23,32	57,89	Motor vehicles - bodies	21,43	2160,35	287,08
Foundries	31,21	25,73	44,81	Wood - processed	29,38	2447,84	23,19
Soap	16,47	33,99	27,78	Confectionery	22,06	3232,41	712,41
Machinery - food and chem.	10,57	35,79	30,46	Wood - sawing	153,64	3881,25	33,21
Paper processing	16,51	36,23	88,37	Concrete	134,21	4124,43	300,81
Used tyres	25,68	37,89	25,68	Cement	385,06	7548,77	3188,06
Footwear - mass	7,46	41,18	17,16	Dairy	40,13	8937,64	2965,67
Fish	16,28	42,52	8,66	Motor vehicles - parts	13,14	9106,84	2895,63
Graphic labs	50,54	50,54	50,54	Carpentry	233,72	11500,94	1244,24
Machine-tools	12,95	53,15	66,10	Wine	259,29	66770,45	3986,76
Industrial chem. n.e.s.	10,68	62,21	22,63	Distilling	155,32	288681,60	1905,27

Source: Head and Mayer, 2000

TABLE 3

Multinationality in Production in the Truck Industry (1998)

Multinationality in production		
	Mij	**NMij**
Volvo	0,4283	1,7492
Scania	0,4600	1,8519
DaimlerChrysler	0,3200	1,4705
MAN	0,2188	1,2800
RVI	0,0000	1,0000
Iveco	0,4038	1,6773
Paccar/DAF	0,4800	1,9230
Industry	**Mj**	**NMj**
	0,3335	1,5003

Source: Annual reports, own calculations

TABLE 4

Multinationality in Sales in the Truck Industry (1998)

Multinationality in sales		
	Mij	**NMij**
Volvo	0,8912	9,1912
Scania	0,8957	9,5857
DaimlerChrysler	0,7208	3,5816
MAN	0,7066	3,4081
RVI	0,6290	2,6952
Iveco	0,8145	5,3914
Paccar/DAF	0,8353	6,0710
Industry	**Mj**	**NMj**
	0,7813	4,5722

Source: Annual reports, own calculations

TABLE 5

Market Share Variations in the Heavy Truck Industry (1998)

	Volvo	Scania	Daimler	MAN	RVI	Iveco	DAF
EEA average	15.2	15.6	20.5	12.6	11.9	10.6	10.5
Sweden	45	46	6	0	1	0	2
Finland	34	31	10	3	18	4	0
Denmark	29	30	18	10	3	7	4
U.K.	18	19	9	7	6	9	18
Ireland	22	27	9	6	3	8	13
Germany	8	9	42	26	2	6	5
Austria	12	16	18	34	4	6	9
France	14	9	16	5	38	8	8
Belgium	23	17	18	11	8	6	17
Luxembourg	11	15	28	14	10	8	15
Netherlands	16	23	12	9	3	3	33
Italy	12	12	16	6	9	41	4
Spain	13	16	19	8	19	20	9
Portugal	25	19	12	6	17	7	14
Greece	24	17	36	12	3	2	3
Norway	38	32	9	12	1	2	4

Source: Notification (based on official registration figures)

FIGURE 1

Economic Market: Scope

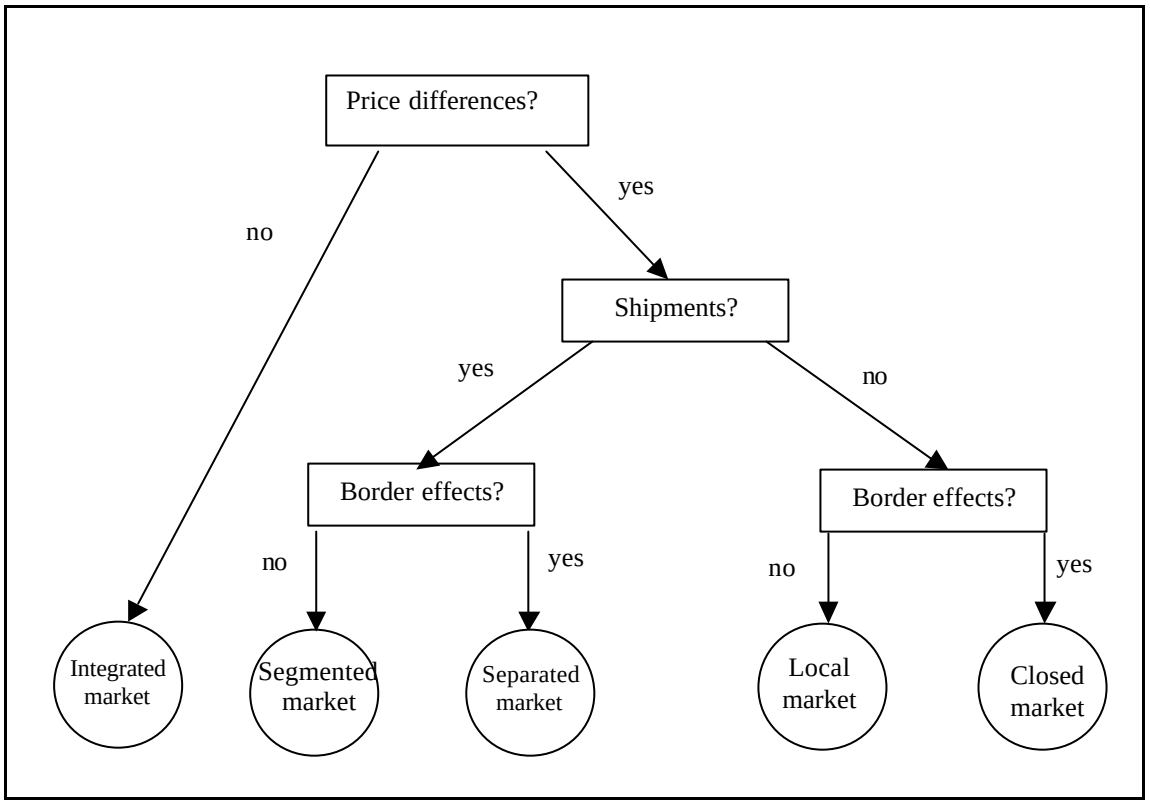
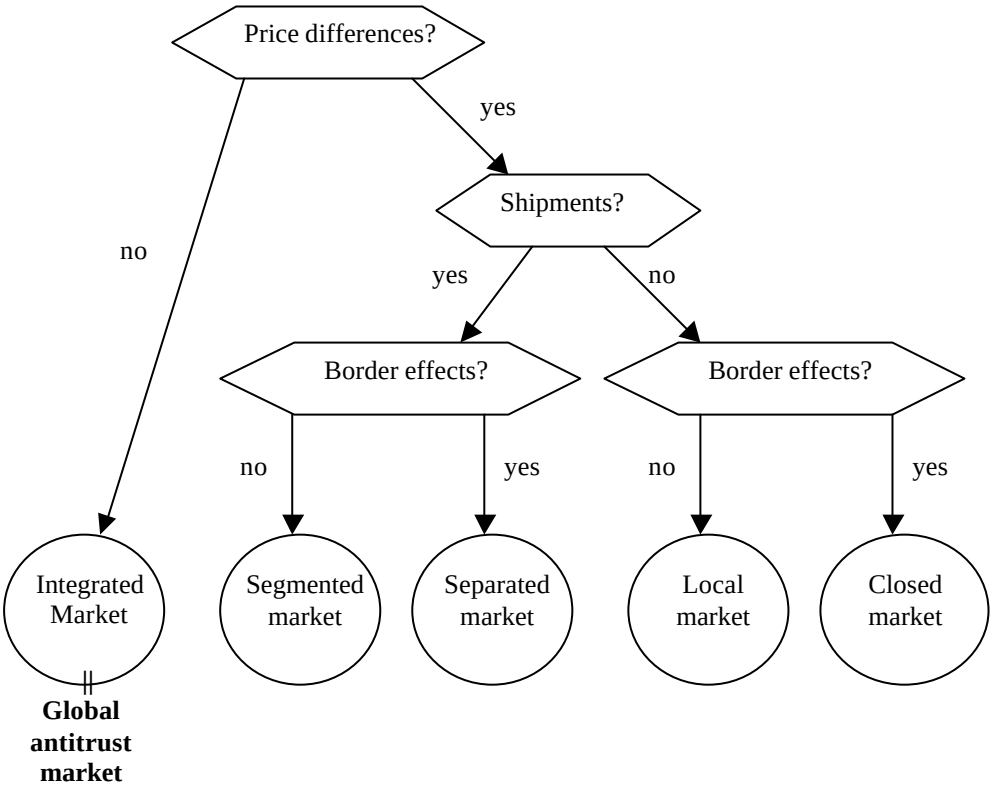


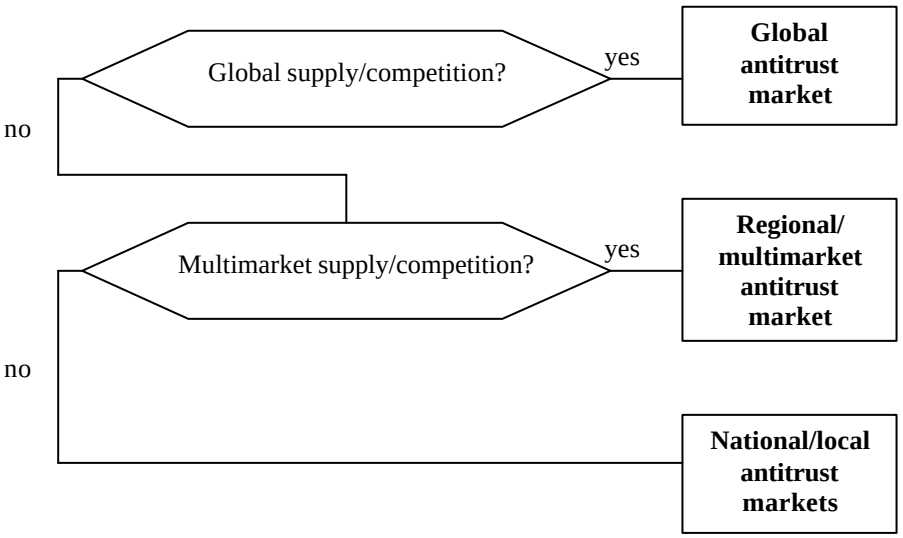
FIGURE 2

Identifying the Geographical Scope of the Relevant Antitrust Market

Step 1: Defining the economic market



Step 2: Confront economic market with supply/ competition forces



Prof Dr LEO SLEUWAEGEN obtained his Ph D in Economics from the K.U.Leuven in 1984. Currently he is Full Professor of Managerial Economics at the K.U.Leuven, and part-time professor at the Erasmus University of Rotterdam. At the moment he is the MBA director of the full-time international MBA programme of the Vlerick Leuven Gent Management School.

ISABELLE DE VOLDERE obtained a degree as Commercial Engineer from the K.U.Leuven in 1996. Currently she is Research Coordinator at the Vlerick Leuven Gent Management School. Her research focuses mainly on globalisation, strategic behaviour of firms and definition of the relevant antitrust market.