PRACTICAL GUIDELINES ON MARKET DEFINITION
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A. Introduction

QR-1. A market is commonly understood to consist in both buyers and sellers of a product in a specific geographic area. A **relevant market**, a notion specific to competition law, is the smallest portion of trade on which one or more undertakings can effectively exert a significant level of market power for a non-transitory period of time.

QR-2. The definition of the relevant market is a key instrument the Authority adopts to identify and define the boundaries of competition between firms i.e. what market players can be considered direct competitors insofar they produce – or are able to produce – products that are regarded as substitutes so that they limit each other’s ability to raise prices.

QR-3. The key task, when delineating a market’s boundaries, is to identify the **competitive constraints** that undertakings face, i.e. those factors that limit their ability to exert market power for a prolonged period of time. Competitive constraints can arise either from the demand-side or from the supply-side. There is general consensus that demand substitution is the most immediate and effective disciplinary force.

QR-4. The market definition process implies the collection and the assessment of relevant evidence. The Authority shall define a relevant antitrust market only when it is necessary to make an informed decision, and shall stop the market definition process as soon as a reliable conclusion on the competitive issue under scrutiny can be reached. Indeed, the scope of the market definition process depends on cost-efficiency considerations, and, in some cases, it is not necessary to possess complete information to reach reliable conclusions.

QR-5. Market definition is an **iterative process**. The Authority shall start its analysis moving from working hypotheses identified basing on previous experience, the submission of the parties involved, other preliminary information and an intuitive understanding of the specificities of the case. These working hypotheses shall be tested against relevant evidence, both qualitative and quantitative, in an attempt to identify – as accurately as needed for the specific case at hand – the competitive constraints firm faces.

B. A multiple-step procedure

QR-6. The market definition processes can be decomposed in three phases and a series of distinct steps targeting a specific question.

**Phase 1: Preliminary Phase (see Par. 21 - 32 of the Guidelines)**

QR-7. The preliminary phase is concerned with the correct identification of the specific object of the investigation: competitive issue; focal product(s) and focal area(s).

QR-8. A **focal product** is the product under investigation. A **focal area** is an area under investigation in which the focal product is sold. In identifying the focal product and area, the Authority starts from the statements of the involved parties, a preliminary understanding of
the functioning of the specific economic activities under investigation, and previous experience in similar cases.

QR-9. At the end of the preliminary phase, it may become apparent that there is no need to apply the market definition process to the specific case under scrutiny (i.e. because no competitive risk or change in market structure can be identified). If this is the case, the Authority shall stop the market definition process.

PHASE 2: FIRST SCREENING (SEE PAR. 33 - 50 OF THE GUIDELINES)

QR-10. The second step entails a first screening of the major competitive constraints the undertakings under scrutiny face. First screening is usually centered on one or more candidate (or tentative) market definitions, i.e. plausible descriptions of a possible relevant antitrust markets, including both a product\textsuperscript{1} and a geographic dimension.

QR-11. Tentative definitions serve as working hypotheses to quickly assess the case and help fostering an incremental approach to the analysis of the relevant issues. The Authority will usually define the candidate product market first, starting from demand side substitutability and subsequently checking for supply-side substitution. The candidate geographic market is analyzed later.

QR-12. Candidate markets can be identified starting from focal products and geographic areas basing on a preliminary understanding of the product(s) concerned, ready available qualitative evidence about products’ characteristics, and previous decisions of the Authority or best practices.

QR-13. Once appropriate candidate markets have been identified, the Authority shall ask whether it is possible to take an informed decision on the competitive issue under scrutiny without an exact definition for the relevant market.

QR-14. If reliable conclusions can be reached, than it is appropriate to stop the market definition process and leave the exact definition of the relevant market open; otherwise the Authority shall identify the key aspects to be further investigated in the subsequent phase.

PHASE 3: IN DEPTH ANALYSIS (SEE PAR. 51- 78 OF THE GUIDELINES)

QR-15. When key issues and unsolved questions prevent the Authority from basing its decision on tentative definition(s) alone, the market definition process provides a framework to organize the collection and assessment of relevant evidence. The process entails the iterative refinement of the tentative definition(s) through the application of the hypothetical monopolist test until reliable conclusion for the case under scrutiny can be drawn.

QR-16. When the Authority decides to carry out an in-depth analysis, it can rely on the tentative conclusions reached in the first screening phase. Therefore, at this stage the question it faces

\textsuperscript{1} The product dimension accounts for consumer segmentation and temporal/seasonal markets whenever appropriate.
is not “what are the boundaries of the relevant market”, as when it starts the analysis from scratch. Rather it will be confronted with more focused questions such as: “does product A constitute a good substitute for product B so that they must be included in the same relevant market?”; “are firms located in area A able to serve consumers located in area B so that A and B form a single market?”; “how far consumers in A are willing to travel to buy a certain product?”. These more focused questions will allow the Authority to further restrict the hypotheses that have been formulated in the first screening phase and, when necessary, arrive to a firm and unique definition of the relevant market.

QR-17. The **Hypothetical Monopolist test** (HM test) is the conceptual framework underpinning market definition. The HM test entails gathering evidence in order to answer the question: “Would it be profitable for the hypothetical monopolist to raise the price of the relevant product by a small but significant amount above the competitive level for a prolonged period of time?”

QR-18. The logic of the HM test is applied sequentially starting from the smallest set of products and areas in which it might be hypothesized that effective competition can be distorted or eliminated. The candidate (i.e. tentative) definitions identified during the second phase are an appropriate starting point for the analysis.

QR-19. The aim of the HM test is to find the smallest portion of trade where a hypothetical monopolist could profitably sustain a Small but Significant and Non-transitory Increase in Price (identified by the acronym SSNIP). Hence, if the answer to the previous question is positive, the portion of trade delimited by the product and the geographic areas considered form the relevant market. If the answer is negative, it means that the competitive constraints stemming from demand and supply substitutability are such to prevent the hypothetical monopolist to raise the price by a small but significant amount for a non-transitory period of time. Hence, in the portion of trade initially considered it is not possible that competition can be effectively distorted or eliminated and that one or more undertakings can exert a substantial and durable market power. In this case, one needs to add to the initial set of products or geographic areas the products or the geographic areas that are more likely to be the source of the identified competitive constraints. On the new portion of trade, the HM test is applied again. The procedure is iterated until a set of products that satisfies the HM test is identified.

QR-20. In the in-depth analysis phase the Authority will usually follow the same line of inquire outlined for the first screening phase. The product market is analyzed first, starting from demand side substitutability and subsequently checking for supply-side substitution. The geographic market is analyzed later. The Authority will focus on simpler analyses first and undertake more complex analyses only when the need arise.

QR-21. In practice it might be appropriate to depart from the schema above. Some evidence might be ready available where others might be not, or it may be appropriate to move between different sources of evidence in order to complement the analyses. Furthermore, many different types of evidences may shed light on multiple aspects (e.g. consumers’ preferences are central to the assessment of demand-side substitutability both from a product market perspective and from a geographic market perspective).
QR-22. The following picture summarizes the three phases of the market definition process as described in the previous sections and reports the questions to be addressed in each phase.

**Market definition process: phases and key questions**

- **Preliminary phase**
  - What is the specific problem under scrutiny?
  - What are the focal product(s) and area(s)?
  - Is defining relevant antitrust market(s) warranted?

- **First screening**
  - What candidate market definitions are appropriate?
  - Can reliable conclusions be drawn basing on candidate (or tentative) definitions? i.e. is it possible to leave the exact market definition open?
  - If not, what are the key aspects that need to be further investigated?

- **In-depth analysis**
  - Frame the analysis within the Hypothetical monopolist test
  - What types of evidence could be relevant to the case under scrutiny?
  - What does collected evidence suggest with respect to demand-side and supply-side substitutability?
  - How tentative market definitions (both for product and geographic market) shall be adjusted to account for new evidence?
  - Is it possible to draw reliable conclusions or the market definition needs to be further refined?

**C. Collecting and assessing evidence**

QR-23. The **assessment of substitutability** is central to the market definition process. In order to determine the scope of the relevant market, the Authority identifies information and data explaining substitutability. Data availability and cost-efficiency considerations should be accounted for when selecting the analyses to be undertaken. The Authority shall assess on a case by case basis the most appropriate line of enquire.

QR-24. In the first screening, the Authority will usually focus on ready available qualitative evidence; in the in-depth phase of the analysis, the Authority limits its focus on the hypotheses that are in dispute or that might significantly affects the competitive assessment.

QR-25. Evidence of substitutability can be **direct** or **indirect**. No rigid hierarchy of different sources of information or types of evidence exists. However, direct evidence of substitution should be regarded as especially valuable to the Authority.
QR-26. Qualitative and quantitative evidence must be used together. In particular, it is appropriate to use multiple techniques to complement the analysis and to cross check similar evidence from different sources.

**C.1. Product market: assessing demand-side substitutability (see Par. 92-139 of the Guidelines)**

QR-27. The analysis of demand-side substitutability is aimed at identifying the set of alternative products (if any), or alternative suppliers (if any), consumers would switch to, should the price of the product in question increase by a small but significant amount for a prolonged period of time.

**Product characteristics and intended use (see Par. 93-103 of the Guidelines)**

QR-28. Preferences are the key factor influencing perceived product substitutability. Consumer express preferences over products’ characteristics and fitness for a particular purpose, hence the analysis of product characteristics and intended use is usually the appropriate starting point for the assessment of consumers’ preferences. It may be very informative especially when dealing with intermediate products that are purchased by other firms as input in their production process. The Authority is not concerned with the difference in physical characteristics and intended use per se, but with the impact of those properties on substitution behavior.

**Price-related evidence (see Par. 104-125 of the Guidelines)**

QR-29. Prices often provide indirect evidence of substitutability, or lack thereof. Relevant evidence can be as simple as documents attesting price monitoring activities, or involve quantitative test.

QR-30. **Price correlation analysis** is an often used test. The intuitive idea is that a strong positive correlation (or a similarity in movements over time) between the prices of two products suggests that the two products belong to the same market. Price correlation analysis may be useful as a first screening device, particularly in detecting products or areas that do not belong to the same market (i.e. it is an asymmetric test).

QR-31. Unexpected events may provide useful information on substitution patterns between different products. **Shock analysis** is a simple but often very informative means to roughly capture the strategic interaction between different products, producers, or geographic areas. Shock analysis looks at the reaction of the prices of other products following an exogenous shock (e.g. strikes, the introduction of specific product regulation, plant outages, etc.) on the price of the focal product.

**Demand-related evidence (see Par. 126-139 of the Guidelines)**

QR-32. Compared to price-related analyses, demand analysis provides a more direct answer to the question of whether consumers would switch product or supplier in case of a price increase. Both direct and indirect evidence may be available.

QR-33. **Purchase behavior and habits** may influence substitutability; hence their analysis provides relevant (indirect) evidence to the market definition process. Switching costs may be
relevant too, as their incidence on the value of the products under scrutiny may have an impact on the incentive to switch suppliers or products.

QR-34. In some cases, the Authority is able to gather **direct evidence of substitutability** due to events in the recent past or in neighboring geographic areas that reveal actual substitutability between two or more products. It is important to check that this evidence is relevant to the specific case under scrutiny.

QR-35. **Shock analysis** can be applied to demand-related evidence too, in order to gather relevant evidence on how consumers reacted to changes in the price of the focal product. Both a qualitative analysis of the responses to the shock (anecdotal or factual evidence) and more rigorous econometric analyses can be undertaken (econometric techniques are a vast array of statistical instruments that allow measuring the relation between two or more variables, e.g. to carefully assess the intensity of the response to the shock).

C.2. **Product market: assessing supply-side substitutability** (see Par. 140 - 149 of the Guidelines)

QR-36. The analysis of supply-side substitution is aimed at establishing whether alternative undertakings that do not offer products that are perceived as substitutes of the products offered by the undertaking(s) under scrutiny, would profitably switch their production to the relevant product, should the price of the product in question increase by a small but significant amount for a prolonged period of time.

QR-37. To broaden the scope of the market, supply-side substitution must be: quick, effective and profitable. Relevant evidence to assess supply-side substitutability includes the **analysis of sunk costs, time to switch** and **perceived substitutability from the consumers’ view**.

QR-38. In practice, relevant evidence on the viability and the economic incentive to switch production can be obtained directly from potential suppliers and from the undertaking under scrutiny, either through surveys and interviews, or by accessing internal documents.

C.3. **Geographic market** (see Par. 150 - 162 of the Guidelines)

QR-39. The relevant geographic market is the smallest set or areas where, with respect to a given set of products, it is possible to exert a significant and lasting market power and therefore a competitive concern may arise. The relevant geographic markets shall include those areas where consumers can find demand-side substitutes for the products of the firm under scrutiny and where there are suppliers who can readily shift production to the areas where the firms whose commercial practices are investigated operate. However, in assessing the scope of the geographic market, distinguishing between demand-side and supply-side substitution is less of an issue.

QR-40. Many sources of evidence previously explored can convey relevant information also on the geographic market definition. **Price correlation** and stationarity tests, can provide indirect evidence of substitutability between areas, whereas **demand analysis** can provide direct evidence. Other factors that may limit scope of substitutability between different areas are trade bans, **legal barriers** and **cultural preferences**. Among these, consumers’ preferences for local products, due also to linguistic reasons, may be important and restrict the market to the
national boundaries. There may be further elements specific to the sector that may limit substitutability and that can be identified in individual cases.

QR-41. There are two elements that are specific to the definition of the geographic market. They are: transport costs; and the analysis of actual trade flows.

QR-42. The absolute value of transport costs is not determinative in itself. Rather, one has to consider the incidence of transport costs over the value of the product. Transport costs should include all monetary expenses (e.g. trade tariffs) and non-monetary elements such as, for instance transportation time or the risk of deterioration during transportation.

QR-43. The analysis of trade flows may provide indirect evidence on geographic market definition. A widely used test on actual trade flows is the Elzinga-Hogarty test, which is based on two measures: the “little input from the outside” (LiFO) and “little output from the inside” test (LoFI). The results of the Elzinga-Hogarty test and similar measures only provide prima facie evidence. The Authority, however, shall be primarily concerned with the assessment of the economic factors that can explain the existence of trade flows or the lack of them.

D. Other practical considerations (see Par. 163 - 203 of the Guidelines)

QR-44. Interviews and surveys to undertaking and stakeholders are the most basic and most effective means to gain a quick understanding of the market. Relevant evidence can be collected from a number of sources: industry consulting studies, trade journal, news and trade association publications, previous enforcement agency investigation and court cases. Pre-existing documents by the parties or other stakeholders may be useful too (internal presentations to top managers or board of directors, pricing formulas, financial plans, marketing studies, reports on competitors’ activities). The Authority, however, shall be ultimately concerned with the assessment of consumer preferences.

QR-45. Good practice suggests starting from qualitative reasoning and check if quantitative data support the initial intuition. Care should be used in interpreting evidence. Ultimately, the Authority shall use its judgment in assessing available evidence.

QR-46. Once the relevant market has been defined, it is possible to calculate markets shares as meaningful proxies for market power. Market shares represent what portion of the total business volume has been conducted by each of the undertakings in the market.

QR-47. The degree of concentration in the market can be examined with appropriate synthetic measures. The most commonly used indicators are Concentration Ratios (CRs) and the Herfindahl-Hirschman Index (HHI).

QR-48. Some specific issue in market definition in market definition may arise: chain of substitution, cluster markets, asymmetric markets, aftermarket or two-sided markets. In all of these cases, the general principles and the methodology outlined above remain valid. An appropriate market definition will be determined by focusing on the key element of substitutability and by taking into account all the relevant competitive constraints.

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1. Introduction

1. The purpose of these Guidelines is to clarify, to all involved parties, the rationale of the relevant market definition process, to outline a structured and practitioner-oriented approach to the analysis and to present a brief overview of the techniques commonly used to gather and evaluate relevant evidence and inform the Authority’s decisions.

2. The definition of the relevant market is a key instrument the Authority adopts to identify and define the boundaries of competition between firms i.e. what market players can be considered direct competitors insofar they produce – or are able to produce – products that are regarded as substitutes so that they limit each other’s ability to raise prices.

3. The main aim of market definition is to assess the existence, creation or strengthening of market power, i.e. the ability to raise the price above the competitive level. Market power is limited or eliminated when firms are constrained from other market participants (either a group of competing firms or consumers\(^2\)) that might shield consumers from the risk of a price increase. The notion of market power is central to competition issues, as the distortion or elimination of competition leads to the creation or the strengthening of market power that may be exercised at the expenses of consumers.

4. Market definition is a crucial stage in most, but not all, of the Authority investigations. The Authority shall assess on a case by case basis:
   - whether it is appropriate to identify a relevant market;
   - whether the exact definition of the relevant market can be left open;
   - the amount of resources to be devoted to the analysis and, consequently, the specific methodologies to be applied in order to collect and evaluate relevant evidence;
   - how to draw conclusions when confronted with conflicting evidence.

5. It is a good practice to inform decisions on all available qualitative and quantitative information. However, since market definition is a tool aimed at solving a specific competition problem, not an end in itself, cost-efficiency considerations will be accounted for when collecting evidence.

6. Coherently with the cost-efficiency principle, in selecting the methodologies to be applied and the analyses to be undertaken, the Authority will favor methods that are intuitive and relatively easy. More complex analyses shall be introduced only when appropriate.

7. These Guidelines further elaborate on these principles in order to strike the right balance between flexibility and legal certainty.

\(^2\) The term “consumers” here refers both to final consumers and downstream buyers in general. It should be noted that “consumer” is a role defined with respect to a specific economic transaction (i.e. a distributor is a consumer in its interaction with producers, whereas he is the seller in its interaction with downstream retailers, who are its consumers).
Key ideas

- Market definition is a tool, not an aim
- The assessment of potential competitive concerns is the true final objective
- The scope of the market definition process depends on cost-efficiency considerations
2. The general framework for market definition

8. A market is commonly understood to consist in both buyers and sellers of a product in a specific geographic area.

9. A relevant market is the smallest portion of trade on which one or more undertakings can effectively exert a significant level of market power for a non-transitory period of time.

10. The authority considers the so-called ‘smallest market principle’ (SMP) to be a workable analysis framework in order to limit the portion of trade to be considered in the assessment of practices that may have an adverse impact on competition. The smallest market principle shall guide the Authority when evaluating between similarly plausible alternatives, not as a per se objective, as too narrow market may as well prevent the correct assessment of competitive risks.

Suppose the Authority has received a notification of a proposed merger between a large manufacturer of cheap, industrially produced mountain bikes and a smaller producer of high quality aluminum-fiber bikes that can tailor his products to the specific requirement of its customers. As a starting point of the analysis, it might be appropriate to tentatively identify two smaller candidate product markets: cheap mountain bikes and high quality aluminum-fiber bikes (and, maybe, a third market for tailored bikes) instead of a single market encompassing all kinds of bikes. Conversely, a market definition for black mountain bikes, white mountain bikes, black aluminum-fiber bikes, etc. is definitely too narrow.

11. The key task, when delineating a market’s boundaries, is to identify the competitive constraints that undertakings face, i.e. those factors that limit their ability to exert market power for a prolonged period of time. Factors that limit market power can be of two types: there can be constraints from the demand-side, and constraints from the supply-side.

12. Market definition is an analytical tool. It guides the Authority, and the other parties involved, in laying bare key assumptions (starting points for the analysis), in developing reasoning steps and in structuring the collection and assessment of evidence.

13. Market definition serves three main purposes:

- It allows to focus the analysis to the type of trade and the geographic areas in which a competitive concern may arise;
- It allows to identify market participants and measure market shares and market concentration, which are commonly used for a preliminary assessment of market power;
- It allows understanding the existing mode of competition among the market participants, its likely evolution, and the existence of barriers to entry.
14. The **Hypothetical Monopolist test** (HM test) is the conceptual framework underpinning market definition (See section 6.1). It entails gathering direct and indirect evidence in order to answer the question of whether it would be profitable for a hypothetical monopolist of some products is a defined area to raise the price of the relevant product by a small but significant amount above the competitive level for a prolonged period of time.

15. Market definition is an iterative process. The Authority shall start its analysis moving from working hypotheses identified basing on previous experience, the submission of the parties involved, other preliminary information and an intuitive understanding of the specificities of the case. These working hypotheses shall be tested against relevant evidence, both qualitative and quantitative, in an attempt to identify – as accurately as needed for the specific case at hand – the competitive constraints firm faces. The present Guidelines extensively describe and exemplify this process.

16. The **Authority** acknowledges that it will rarely have access to the full range of information that might be relevant to an investigation, nor it needs to. Conclusions, instead, are usually based on the best available information, accounting for cost considerations. Indeed, the ultimate objective of market definition is to allow an informed decision on the specific competitive issue under scrutiny.

### Key ideas
- ‘Relevant market’ is a notion specific to competition law
- Competitive constraints limit firms’ market power and determine the boundaries of the relevant market
- The market definition process informs collection and assessment of relevant evidence
- The hypothetical monopolist test (HMT) and the smallest market principle (SMP) are cornerstones of the market definition process
- Incomplete information may nonetheless suffice in informing reliable conclusions
3. A multiple-step procedure

17. The market definition processes can be decomposed in three phases and a series of distinct steps targeting a specific question. The market definition process starts with a low level of sophistication in the analysis that slowly increases as key questions are identified and relevant evidence is collected. Depending on the specific circumstances of the case, it might be appropriate to step through all three phases, or just a subset. Each step will be detailed and complemented with extensive examples in the following sections. Below, the general procedure is sketched.

18. The first step, or preliminary phase, is aimed at assessing whether it is necessary, for the specific case under scrutiny, to identify a relevant antitrust market. This requires the exact identification of the specific object of the investigation, i.e. the competitive issue; focal product(s) and focal area(s) (see section 4).

19. The second step entails a first screening of the major competitive constraints the undertakings under scrutiny face. The aim is to understand whether it is possible to take an informed decision without an exact definition for the relevant market. First screening (see section 5) is usually centered on one or more candidate (i.e. tentative) market definitions, including both a product and a geographic dimension. Candidate markets can be identified basing on a preliminary understanding of the product(s) concerned, ready available qualitative evidence about products’ characteristics, and previous decisions of the Authority or best practices at international level. Most of the times, tentative candidate markets (i.e. tentative definitions) suffice in supporting reliable conclusions on the competitive issue under scrutiny. In these cases, the Authority shall not invest time and resources in an attempt to reach an exact definition of the relevant antitrust market.

20. When key issues and unsolved questions prevent the Authority from basing its decision on tentative definition(s) alone, the market definition process provides a framework to organize the collection and assessment of relevant evidence. The third step, deals with the iterative refinement of the tentative definition through the application of the hypothetical monopolist test (see section 6).

Key ideas

- The Authority shall define a relevant antitrust market only when it is necessary to make an informed decision
- The Authority shall stop the market definition process as soon as a reliable conclusion on the competitive issue under scrutiny can be reached
Figure 1 – The relevant market definition process

**Preliminary phase:** shall we undertake the market definition process?

- **yes**
  - **First screening:** with respect to the specific investigation, can reliable conclusions be drawn based on candidate markets (i.e. tentative definitions)?
    - **yes**
    - STOP
    - **no**
      - **In depth analysis**
        - Apply the hypothetical monopolist test logic to refine the tentative definition
          - **no**
          - Can reliable conclusion can be drawn basing on the new market definition?
            - **no**
            - **STOP**
            - **yes**
4. Preliminary phase

21. The preliminary phase is concerned with the correct identification of the competitive problem under scrutiny in order to orient the subsequent phases of the analysis. The Authority shall answer three questions specific to the current investigation:

(1) What is the specific problem (i.e. competitive risk) to be examined?
(2) What are the focal product(s) and area(s)?
(3) Is defining relevant antitrust market(s) warranted?

4.1 What is the specific problem to be examined?

22. A preliminary step in market definition is to clearly identify the specific competitive risk under scrutiny. Most of the time, the answer emerges clearly from the submissions of the undertakings involved or the complaint received. Nonetheless, this is an important step insofar subsequent analyses need to be specifically tailored to the problem at hand.

------------------- Identifying the specific problem in practice

Market definition is a prerequisite for market shares (MS) calculation. In hard-core cartel investigations, MS may provide information on the extent of the risk of an actual damage to the affected market. In these cases, however, MS are usually inessential to establish an infringement, and a cursory market definition might suffice in conveying a broad idea of the dimension of the undertakings involved.

When market shares are to be calculated for exemption thresholds’ purposes, it may be apparent from the submissions of the parties that the inclusion or the exclusion of some products (areas) in the relevant market may alter the outcome of the investigation. In such cases, a in-depth market definition analysis is appropriate.

Key ideas

- Clearly define the problem at hand and the final aim of the analysis

4.2 What are the focal product(s) and area(s)?

23. Along with the specific competitive issue under scrutiny, the Authority shall identify one or more focal product(s) and focal area(s).
24. A focal product is the product under investigation. For example it could be: the product(s) which two parties to an agreement both produce; the product whose price might have been fixed in violation of market mechanism; the product whose distribution is constrained by the parties involved.

25. A focal area is an area under investigation in which the focal product is sold. When the product is sold in multiple areas, but risk might arise for one area only, than this area is the focal area (i.e. in mergers, the area where both parties are active). Conversely, in some situations, it may be appropriate to identify many different focal areas, for example when the market has been divided by geographical areas or distribution centers.

26. The identification of focal product and focal area amounts to a practical means the Authority uses to ensure adherence to the smallest market principle in the subsequent phases.

27. In identifying the focal product and area, the Authority starts from the statements of the involved parties, a preliminary understanding of the functioning of the specific economic activities under investigation, and previous experience in similar cases (including consolidated practice at international level). When examining relevant submissions, the Authority will focus its attention on the parts containing the factual description of the activities of the parties, the literal reproduction of the agreement, or objective description of the allegedly illicit practice as reported in a complaint submitted by a third party or in any other source of information.

--- Focal product(s) and focal area(s): an example ---

A chain of quick-service restaurants notifies the intention to acquire control over an independent restaurant. The focal product is the set of services offered by the soon to be acquired outlet, and the focal area is the catchment areas of that outlet (i.e. the area and population that is served – or could in principle be served – by that restaurant).

In the hypothesis of a price fixing agreement concerning "standard" steel borehole pipes (commonly known as "oil country tubular goods", or OCTG) and "project" transportation pipes (commonly known as "line pipe"), each different type of pipe shall be considered a focal product for the analysis. 4

Suppose one producer of colas, fruit flavored drinks, and sugared juices (firm A), wishes to establish a merger with a producer of colas (firm B). In its submission A suggests that the merger should be assessed within the “refreshing drink relevant market”, which includes colas, juices, carbonated drinks, as well as bottled and tap water. As a second option, firm A suggests that the relevant market cannot be narrower than “soft drinks in general”. However, as firm B focuses its production on colas alone (produced by firm A too), the focal product is colas. This does not

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1 When the investigation concerns more than one product each of them will be normally considered a focal product.

4 See Case IV/E-1/35.860 Seamless steel tube producers of the European Commission.
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prevent the Authority from considering – if appropriate – whether soft drinks in general may be good enough demand- or supply-side substitutes to colas. However, the starting point of the analysis shall be colas.

Key ideas

- Basing on factual elements define one or more focal products and areas (i.e. the specific products and areas under investigation pursuant to relevant legislation)

4.3 Is defining relevant antitrust market(s) warranted?

28. Market definition is a crucial stage in most, but not all of the Authority’s investigations. In some situations there is no need to define a relevant market.

29. There is no need to define a relevant antitrust market when preliminary considerations on focal products and areas clearly indicate the absence of any competitive risk. For example:

   a. When one firms acquires majority shares in a different firm that sells a completely unrelated product.

   b. In the event that the proposed operation has no impact on the market structure (i.e. the number of firms active and their relative dimension).

30. Similarly, there is no need to define a relevant market when the assessment of the conduct under scrutiny does not depend on its definition, for example when it is clear that the parties colluded in the presenting of offers or proposals in an auction.

   -------------------------- No need to define a relevant market

   For example, there is no need to proceed to the second step of the market definition phase in the event of a bank buying majority shares in a production firm, or in the event an ice cream producer merging with a tomato sauce producer, or in the event of real estate developer acquiring majority shares in a software house.

   Similarly, there is no need to define a relevant market if rights of ownership over firm A are completely alienated from one person and passed to another person who has no control over any other economic activity so that the number of firm and their relative dimension remains the same as a result of the transfer of ownership rights.

31. Conversely the market definition process is usually necessary when, among the others:

   - there is some preliminary evidence of a competitive risk, but it is unclear the amount of market power the firms under scrutiny already enjoy or may acquire. In these cases, investigating the boundaries of the market can help better assessing the risk;
Guidelines on Market Definition

- measuring market shares and market concentration is important for the specific case at hand (e.g. when assessing the rate of control over the market, when checking if safe harbor exemptions apply);
- a more in depth understanding of the existing mode of competition among the market participants, its likely evolution, and the existence of barriers to entry is important to make an informed decision on the competition issue under exam.

------------------------------------------- Relevant market definition warranted -------------------------------------------

Suppose the fourth and fifth biggest ice cream distributors are merging. Basing on this information alone it is unclear whether the merged entity will have a significant degree of market power.

For example, pursuant to Article 5 of Law No. 10 of 2007, the Authority may, upon a request, allow certain practices that might in principle restrict competition, provided that these practices achieve specific and clear benefits for the consumer that offset the negative effects of restricting the freedom of competition. An in-depth market definition process might lead to the identification of relevant elements, such as the existence of potential competitors and low switching costs (two factors that might help discipline the power of the firm to whom the exception is granted).

Key ideas

- Assess whether it is appropriate to apply the market definition process to the specific case under scrutiny

***

32. Even if the market definition may have an impact on the current investigation, cost-efficiency considerations as well as good work practice suggest avoiding complex and costly economic analyses if they are not necessary. A more pragmatic and incremental approach allows to frame the relevant issues and to focus the analysis on the key aspects. This is the object of the second phase of the market definition process, which is described in the next section.
5. First screening

33. Once the Authority has assessed that market definition is an appropriate tool for the specific investigation, a first screening shall be conducted basing on candidate market definitions.

34. A candidate (or tentative) market definition is a preliminary but plausible descriptions of a possible relevant antitrust markets, including both a product and a geographic dimension. It is generally appropriate to define multiple candidate market definitions.

35. A tentative market definition is not substantially different from properly defined relevant market (i.e. all the general principles outlined in Section 2 apply to candidate markets definitions, from the smallest market principle, to the key role of substitutability). However, a candidate market is defined before extensive evidence has been collected or analyzed. At the end of the in depth analysis (phase 3), the relevant market definition might coincide with one of the candidate definitions.

36. Tentative definitions are important as they:
   a. serve as a work hypotheses that allow to assess whether further inquire is appropriate;
   b. represent the starting point for the practical implementation of the HM test and the SSNIP test (see Section 6);
   c. orient the design of appropriate in depth analyses, including the collection of relevant evidence and the construction of quantitative tests (explored in more detail in Section 7).

37. During this second phase, the Authority shall answer three questions:

   (1) What are the candidate market(s)?
   (2) Can reliable conclusions be drawn basing on candidate (or tentative) definitions alone? I.e. is it possible to leave the exact market definition open?
   (3) If not, what are the key aspects that need to be further investigated?

5.1 How to identify candidate market definitions?

38. Candidate markets definitions are usually formulated starting from the focal product(s) and the focal area(s) identified during the preliminary phase and including the most obvious and immediate substitutes only, in accordance with the smallest market principle.

39. An intuitive understanding of the functioning of the specific economic activities under investigation, preliminary evidence collected by interviewing managers of the parties and other stakeholders, and previous decisions are the most appropriate sources at this stage of the analysis. It is often practical to identify the candidate product market first, and only then to define the geographic market.
Product market dimension

40. The starting point is the focal products previously identified and their immediate and prima-facie substitutes.

41. Demand-side substitutability usually has a prominent role. Substitute products do not need to be identical in order to be included in the same market. Indeed, when evaluating demand-side substitutability, the Authority accounts for both product characteristics and intended use.

Candidate market definition and demand-side substitutability

Apple and pears have peculiar taste and characteristics. However, depending on the case under scrutiny, it may be appropriate to include them in a single relevant market, because – intuitively – a significant proportion of consumers would be willing to switch consumption in the event of a change in relative prices.

Conversely, it might be appropriate to tentatively define a separate market for bananas basing on the consideration that they are soft and easy to peal. Intuitively, pineapples are an imperfect substitute as they are much more difficult to peal. Later on in the analysis the Authority will, if relevant to the decision, check whether a significant portion of bananas consumers would switch to pineapples in the event of a SSNIP (i.e. if the candidate market definition needs to be enlarged to include pineapples).

With respect to the restaurant mock case in Section 4.2, both restaurants and eat-in quick service restaurants serve food. However, the former might not be a good substitute for mid-day meals during office hours (both because of price and because of time needed to have the meal served). Depending on the specific case under scrutiny, it might be appropriate to tentatively define a market for quick service restaurants.

With respect to the colas mock case in Section 4.2, it seems appropriate to tentatively define a market for colas. This market might too narrow as a significant proportion of consumers might be willing to switch to other sugared drinks in the event of a price rise of colas. Therefore a wider candidate market for soft drinks can be hypothesized. Both definitions are operational in the sense that they allow a preliminary assessment of the competitive risk.

5 This example is loosely based on the often quoted Case 27/76 United Brands Company and United Brands Continentaal BV v Commission of the European Communities. - Chiquita Bananas.
42. Sometimes it might be a sensible choice to consider supply substitutability too. This might reinforce the plausibility of some tentative definitions defined basing on demand-side considerations, or it might suggest new candidate markets definitions to be later assessed.

<table>
<thead>
<tr>
<th>Candidate market definition and supply-side substitutability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppose the automotive glass repair sector is under scrutiny. From a demand point of view, there is no substitutability: each car needs a specific glass. However, undertakings face no additional costs in repairing glasses for different auto-vehicle brands and models. Hence, notwithstanding the smallest market principle, it would be unwise to start with a candidate market for each and every different auto-vehicle.</td>
</tr>
<tr>
<td>With respect to the cola case above, supply side considerations might further reinforce the working hypothesis that both colas and other sweat flavored drinks belong to the same relevant market. Intuitively, the key ingredients (water, sugar, carbonates) can be sources from the same sellers; production processes should not differ too much and the same distribution network can be used for both products.</td>
</tr>
<tr>
<td>No conclusive evidence can be drawn on the exact definition without a more thorough assessment of consumers’ preferences, and of the role of brands and marketing investments, such as advertising.</td>
</tr>
<tr>
<td>With respect to the cartel agreement between pipe producers mentioned in Section 4.2, it can be noted that the steel tube and pipe sector comprises a variety of pipes and tubes, which are manufactured by different processes for many different uses. Suppose preliminary information suggests that an important difference exists in the manufacturing process between seamless steel pipes and welded steel pipes. Basing on this information, it is appropriate to start the analysis considering two distinct focal products: seamless steel pipes and welded steel pipes. Conversely, it might be inappropriate at this stage of the analysis to further segment seamless steel pipes according to other characteristics (e.g. plain end vs. joined by threading) if it is apparent that the producers of one of the two types of pipes can produce also the other type of pipes immediately and without incurring switching costs.</td>
</tr>
</tbody>
</table>

**Geographic market dimension**

43. The same considerations expressed with respect to the product dimension hold true for the geographic market dimension: the focal area(s) identified before represent the ideal starting point for a candidate market definition; demand-side substitutability has a prominent role but supply side substitutability may be relevant too. The incidence of transport cost on the value of the product is a primary factor limiting substitutability from other areas. Fiscal, technical, cultural and legal barriers may also play an important role and may substantially limit the geographic areas in which undertakings can effectively compete.
Candidate market definition: the geographic dimension

With respect to merger cases in the grocery retail sector, economic literature and international practice have consistently led to the definition of local geographic markets. An appropriate tentative market definition would build on this practice and identify candidate markets basing on transportation time, distance or topographic feature of the area depending on the specific case.

Other dimensions

44. There are other extensions to the product market dimension that may be relevant to the market definition process: consumer segmentation and temporal/seasonal markets. The Authority shall explore, as early as in the candidate market definition phase, if these dimensions are relevant to the specific case at hand. In both cases, the key conditions to conjecture distinct candidate markets are: (i) it is possible to clearly sort between groups; and (ii) no trade between groups or arbitrage is possible.

45. More industry-specific dimensions that lead to a narrower definition may be identified by the Authority on a case-by-case basis. No comprehensive list can be provided, but the key principle of demand- and supply-side substitutability shall guide the Authority in their assessment.

Candidate market definition: other dimensions

Consumer segmentation – In a number of market investigations, consumers and travel agents have confirmed that certain travelers (mainly business passengers) consider very important the possibility to modify their tickets and return as soon as possible to their point of origin, preferably within the day if a short-haul route. Time-sensitive passengers have therefore different requirements than non-sensitive ones and normally will only choose to fly airlines offering a high number of frequencies in a given O&D pair and the possibility to use unrestricted tickets. This circumstance leads to the identification of separate markets for time-sensitive and non-sensitive travelers.\(^6\)

Temporal markets – as a slight variation to the restaurant mock case in Section 4.2, in some circumstances it might be appropriate to define a market for mid-day meals separate from evening meals, even though (at least part) of the producers are the same.

Other industry specific dimensions – Food served in airports after the security check

\(^6\) See for example Case COMP/M.3280 - AIR FRANCE / KLM of the European Commission.
is identical to food served elsewhere. However, due to specific security clearance for personnel operating inside airports and high rental costs, it might be appropriate to tentatively define a separate market for food servicing inside airports.

Key ideas

- Starting from focal products and geographic areas, identify one or more candidate definition(s) for the relevant market (including both a product and a geographic dimension)
- Candidate (i.e. tentative) definitions serve as working hypothesis to quickly assess the case or to orient further analyses
- Candidate markets definitions shall be tailored to the specific case under scrutiny

5.2 When the exact definition can be left open?

46. The second and third question underpinning the first screening phase (i.e. whether it is possible to reach reliable conclusions basing on candidate definitions and what are the key aspects that need to be further investigated) are closely related.

47. Defining an antitrust market requires balancing various types of evidence and the exercise of judgment. When there is strong evidence that the relevant market is one of a few plausible market definitions, and the competitive assessment is shown to be largely unaltered by which of these market definitions is adopted, it is not necessary to define the market uniquely, and the exact market definition can be left open.

48. Vice versa, if the adoption of a product market definition encompassing the hypothetical products A, B, C leads to a different assessment compared to a market definition where A and B belong to a single market while C does not (i.e. low market shares under A+B+C vs. high market shares in A+B), than it is appropriate to further investigate this specific issue.

49. Similar considerations hold for the geographic market. For example, it might be the case that “how local” a market is becomes a key element to assess the competitive risk in practice. In this situation, the Authority shall focus its attention on the specific issue and attempt to identify and collect evidence that might shed light on whether it is more appropriate a definition based on transportation time, or kilometers, or topographical obstacles.

50. Leaving the definition open amounts to accepting a degree of uncertainty about the boundaries of competition, either on the product dimension or on the geographic dimension or both of them. If this uncertainty has no practical impact on the decision, cost efficiency considerations suggest avoiding investigating the issue further.
Open market definition

In examining the proposed merger between Citigroup and Schroders, two investment banks, the European Commission left open the question whether the geographic market for investment banking is EEA-wide or national, “given that the concentration will not give rise to any competition concerns under any possible market delineation”.  

Key ideas

- Assess whether reliable conclusion can be drawn basing on the candidate definition(s)
- If reliable conclusions can be reached, leave open the exact definition of the relevant market, otherwise identify the key aspects to be further investigated

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7 See Case COMP/ M.1856 - Citigroup/Schroders of the European Commission.
6. In depth analysis

51. If it is not possible to reach reliable conclusions on the basis of candidate (i.e. tentative) definition(s), the Authority shall move to the third phase of the market definition process: the in-depth analysis. In these cases the Authority shall carefully assess the extent of competition between different products and areas, i.e. to define the set of products that impose constraints on each other’s pricing or other dimension of competition (such as quality, service, and innovation).

52. The same general cost-efficiency considerations apply during this phase. The Authority shall focus on the specific key questions that need to be addressed in order to be able to understand and solve the competitive issue under scrutiny (see Section 4.1) and stop as soon as sufficient elements to make an informed decision are available.

53. During the in-depth analysis the Authority iteratively refines the candidate definitions attempting to answer the specific questions and key issues identified during the second phase (see Section 5.2), and addressing any further relevant issue that will emerge once more relevant evidence becomes available (see Section 7 for types of evidence).

54. Compared to previous phases, during the in-depth analysis many different issues can in principle be addressed with increasing level of sophistication. As a practical means, to maintain the attention focused on the core elements and limit the scope of the analysis, the Authority acknowledges that the in-depth analysis is aimed at refining the answer to the question: “what are the main competitive constraints undertakings faces?”

55. There are two main sources of competitive constraints: demand substitution and supply substitution. There is general consensus that demand substitution is the most immediate and effective disciplinary force.

56. The hypothetical monopolist test (See Section 6.1) and the related critical loss analysis (See section 6.2) provide a useful framework to organize the collection and assessment of relevant evidence on the extent of demand and supply substitution. The description of the different types of evidence that can help identify the boundaries of the market is postponed to Section 7. Although the tools described in Section 7 will be mostly relevant to the third phase (the in-depth analysis), the same logic underpins the second phase of the market definition (the first screening) and the same evidence, whenever readily available, can be used by the Authority in the first two phases too.

57. Hence, the key elements of the third phase can be sketched as follows:

   (1) Frame the analysis within the HMT conceptual framework

   (2) Accounting for data availability and cost-efficiency considerations, define the appropriate analyses to be performed and collect the required evidence.

   (3) Assess the degree of substitutability (i) on the demand side; (ii) on the supply side, both for the product and the geographic market

   (4) Enlarge (or narrow) the relevant market accordingly.
Key ideas

- The in-depth analysis is concerned with the identification of the main competitive constraints undertaking face, i.e. sources of demand- and supply-side substitutability.
- Candidate market definition are iteratively refined until reliable conclusion for the case under scrutiny can be drawn.

6.1 The hypothetical monopolist test

58. The Hypothetical Monopolist test (HM test) is the conceptual framework underpinning market definition. It is intended as a logical path that guides the Authority gathering evidence on the market boundaries.

59. The HM test is applied sequentially starting from the smallest set of products and areas in which it might be hypothesized that effective competition can be distorted or eliminated. The candidate (i.e. tentative) definitions identified during the second phase are an appropriate starting point for the analysis.8

60. The test entails gathering evidence in order to answer the following question:

“Would it be profitable for the hypothetical monopolist to raise the price of the relevant product by a small but significant amount above the competitive level for a prolonged period of time?”

61. The aim of the HM test is to find the smallest portion of trade where a hypothetical monopolist could profitably sustain a Small but Significant and Non-transitory Increase in Price (identified by the acronym SSNIP). Hence, if the answer to the previous question is positive, the portion of trade delimited by the product and the geographic areas considered form the relevant market. If the answer is negative, it means that the competitive constraints stemming from demand and supply substitutability are such to prevent the hypothetical monopolist to raise the price by a small but significant amount for a non-transitory period of time. Hence, in the portion of trade initially considered it is not possible that competition can be effectively distorted or eliminated and that one or more undertakings can exert a substantial and durable market power. In this case, one needs to add to the initial set of products or geographic areas the products or the geographic areas that are more likely to be the source of the identified competitive constraints. On the new portion of trade, the HM test

8 The reason for applying the smallest market principle can be explained as follows. If an undertaking that is the sole supplier of some products in a given area is able to exert market power on the sale of these products in that area, it is logically in the position of exerting market power if it is the sole supplier of a larger set of products or in a wider area. The reverse statement is not true: A hypothetical monopolist of a large set of products may have the power to profitably raise the price of these products, but may be effectively constrained by the demand or supply-side substitution phenomena if it is the sole supplier of a narrower set of products. Hence, if one finds that the hypothetical monopolist can profitably charge a supra-competitive price for a large set of products (or areas) this finding does not allow to decide whether a relevant competitive concern may arise for a smaller set of products or areas. The application of the smallest market principle permits to avoid this problem and to address the market definition issue properly.
is applied again. The procedure is iterated until a set of products that satisfies the HM test is identified.

62. Some practical considerations shall be added to the description above. First of all, there is no need to iterate the procedure until all substitute products have been included in the market so that the answer to the HMT is positive. As clarified before, the Authority shall account for cost efficiency considerations when gathering evidence to identify the boundaries of the market. The Authority will stop as soon as reliable conclusion on the competitive issue under scrutiny can be drawn.

63. Second, which products or geographic areas are more likely to be the source of important competitive constraints is an empirical problem that needs to be assessed on the basis of the available evidence (methods and techniques to assess substitutability are extensively described in Section 7).

64. Third, the HM test should be adapted to the case at hand, especially with respect to what should be considered a ‘small but significant amount’ or what is to be intended as ‘a prolonged period of time’.

65. Fourth, the HM test asks whether a hypothetical monopolist would find profitable to raise the price above the competitive price. Normally the competitive can be equated with the price currently prevailing in the market. In some cases, however, there are reasons to believe that the current price is already the result of one or more undertakings exerting significant market power. In these situations it might be that a further increase in price above the current level would be unprofitable because a sufficient number of customers would switch to alternative products. In practice, the HM test would fail suggesting a wider market definition than the appropriate one, with the effect of disguising, instead of uncovering, the existence of a significant market power. This problem with the HM test is known as the cellophane fallacy, after the US case where it was firstly noted. In such circumstances, the Authority shall carefully consider the available evidence on actual substitution and on switching patterns, as such evidence may not be a reliable indication of what would occur in normal competitive conditions.

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The cellophane fallacy illustrated

In the du Pont case, the fact that many customers were willing to switch between cellophane (a patented du Pont product) and other flexible wrapping materials (e.g. paper bag) called for a wide definition of the market to include all possible wrapping materials. Further investigations uncovered evidence that du Pont was setting the price of cellophane so high that consumers of the product would have considered replacing it with inferior substitutes.

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10 ibidem
In the assessment of the concentration between two rail freight operators, it became apparent the risk that the observed price was higher than the competitive price. In fact, evidence from transport markets suggests that railway firms set their prices such that they are just able to beat competing offers from road freight transport, especially when there is little competition between different railway operators. In this situation, prices are quite possibly increased up to the level where rail customers consider road freight transport a viable alternative, even though they would not do so if there was more competition from other railway undertakings.\(^\text{11}\)

66. The decision tree of the hypothetical monopolist test is pictured in the figure below.

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\(^\text{11}\) See Case COMP/M.5096 - RCA / MAV CARGO of the European Commission.
Key ideas

- The HMT is the conceptual framework underpinning market definition
- The HMT entails gathering evidence in order to answer the question: “Would it be profitable for the hypothetical monopolist to raise the price of the relevant product by a small but significant amount above the competitive level for a prolonged period of time?”

### 6.2 Critical loss analysis

67. A direct application of the HM test is the so called “critical loss analysis”. Critical loss analysis uses information about demand price elasticity (i.e. how strong is the change in demand for one product following a change in its price) and on firms’ costs to answer the question of the HM test. This approach is described here to further clarify the role that substitutability plays in the exercise of defining a relevant market. If sufficient data about the substitution behavior of consumers and also on profit margins is available, the HMT can be implemented by a critical loss analysis. Critical loss analysis uses information about demand and own price elasticity of demand (i.e. how strong is the change in demand for one product following a change in its price) to make inference about the price constraint exerted by substitute products.

68. In order to grasp the logic of the critical loss analysis, it is essential two understand the consequences that a price increase has on a firm’s profit. An increase in price has two effects: (1) it drives demand down, and this has a negative impact on profits; (2) increases the margin earned on each unit sold with a positive impact on profits. Which of the two effects prevails depends on how consumers react to the price increase.

69. The critical loss analysis proceeds as follows. First answer the following questions:

*Question (1): If a firm thinks of raising the price of product A by x% how much do sales need to drop in order to make the firm indifferent between raising and not raising the price?*

*Question (2): If the same firm raised the price of product A by x% how much sales would actually drop?*

70. The answer to question 1 defines the “critical loss”. The answer to question 2 defines the “actual loss”. If the actual loss is larger than the critical loss, then increasing the price by x% would be unprofitable, because the sales that the firm would lose if it raised the price by x%...
are more than what would make it indifferent between raising and not raising the price. On the contrary, if the actual loss is lower than the critical loss, then raising the price would be profitable.

71. A numerical example can further clarify the logic of the critical loss analysis. Suppose that the current price for product A is 1 €, that firms bear a cost of 0.8 € to produce each unit of A and that at the current price they sell 1,000 units of A. Firms earn a margin of 0.2 € on each unit sold and a total profit of 200 €. Now suppose that the hypothetical monopolist of A considers the possibility of raising the price of A by 5%, i.e. from 1 € to 1.05 €. The margin on each unit sold becomes 0.25 € (1.05 € minus 0.8 €). However, some consumers would stop purchasing product A and switch to some substitutes. How many units of A should consumers continue to buy to leave the hypothetical monopolist with a total profit of 200 €? The answer is simple: if the monopolist is earning a margin of 0.25 € on each unit sold, it earns a total profit of 200 if it sells 800 units of A. Hence, if its sales diminish by 200 units, it is indifferent between raising or not raising the price of A by 5%. We can make the same statement in percentage terms: if the hypothetical monopolist loses 20% of its sales, it is indifferent between raising or not raising the price of A by 5%. The figure of 20% is the critical loss. Once defined the critical loss, one can try to predict empirically what would actually happen in the market if the price of A was raised from 1 € to 1.05 €. This is called the actual loss. If the actual loss is above 20%, then the hypothetical monopolist could not raise the price of A by 5%, as this would entail a loss of profits. This indicates that A is not a relevant market, because there exist competitive constraints that would impede the exercise of market power. If instead the actual loss is below 20%, the hypothetical monopolist could profitably raise the price by 5% and A would form a relevant market.

72. More formally, the critical loss is defined as the percentage reduction in the output (sales) such that the profits before and after a hypothetical pre-determined price increase remain the same:

$$CL = \frac{x}{x + m}$$

73. where: $x$ is the price increase in percentage terms, and $m$ is the initial price-cost margin measured as the ratio between the unitary margin and the price.\(^{15}\)

74. The actual loss needs to be empirically assessed. The elasticity of demand measures the response of consumers to a change in price and, therefore, provides information on the amount of sales lost as a result of a small but significant and non-transitory increase in price of X per cent.

\(^{14}\) It must be clarified that these are the constant marginal costs of producing one unit of A. The presence and the size of fixed costs do not enter into the logic of the critical loss analysis and therefore do not affect its conclusions.

\(^{15}\) In the numerical example the price increase is $x = 0.05$; the unitary margin is 0.2 € per unit, the price is 1 € and therefore the price-cost margin is $m = 0.2$. Applying the formula in the text one obtains $CL = 0.2$; i.e. the critical loss is 20% as already found. The formula points out that the higher the initial margin, the lower the critical loss: when margins are high, a reduction in volume has a large negative impact on profits.
75. A high elasticity indicates that consumers are very responsive to price changes and, consequently, that the loss in sales resulting from the price increase is large. Hence, the higher the elasticity of demand of the products in the candidate market, the greater the actual loss in sales associated with a price increase.

76. Once the information on the critical loss and the actual loss (or an estimate) the two figure need to be compared. If the price increase leads to a loss in actual sales lower than the critical loss, the overall effect on profits is positive and the price increase is profitable. If that is the case, the tentatively defined market constitutes a properly defined relevant market (i.e. a market that can be profitably monopolized). If, instead, the price increase leads to a loss in sales that exceeds the critical loss, then the candidate market does not constitute a relevant market. The candidate market needs to be enlarged including those products which attracted consumers from the products in the candidate market following the price increase.

77. The critical loss analysis has been proposed to perform directly the HM test. However, here it has been presented to further clarify why substitutability is the driving factor in market definition. Thanks to the critical loss analysis we can immediately understand that the force that constraints the ability of a firm to exert market power is the possibility that, as a consequence of a price increase, the firm will lose sales. There are various concrete economic phenomena that may affect the magnitude and the timeliness of this consequence. They include: 1) the decision of some consumers to stop buying the product; 2) the decision of some consumers to reduce the number of units they purchase or the frequency with which they make their purchases of the product; 3) the decision of some consumers to reduce their consumption of other products for which the product under exam is a complement; 4) the decision of firms located in other areas to offer their products to the consumers located in the same area of the firm that raised the price; 5) the decisions of firms that are already in the same area but that produce different products to change their production activity and start offering the product that has become more expensive; and others.

78. The aim of the following section is to illustrate the evidence, methods and techniques that can help establishing if these phenomena are present, to what extent they can effectively discipline firms’ market behavior, and the time they require to actually occur and produce their effects.

**Key ideas**

- Critical loss analysis is an approach proposed to implement the HM test
- Critical loss analysis entails gathering evidence in order to answer the question: “How much do sales need to drop in order to render an x% price increase unprofitable?”
- Critical loss analysis further clarifies why substitutability is the central issue in the exercise of market definition
7. Evidence, methods and techniques to assess substitutability

79. The following picture summarizes the three phases of the market definition process as described in the previous sections and report the questions to be addressed in each phase.

Preliminary phase
- What is the specific problem under scrutiny?
- What are the focal product(s) and area(s)?
- Is defining relevant antitrust market(s) warranted?

First screening
- What candidate market definitions are appropriate?
- Can reliable conclusions be drawn basing on candidate (or tentative) definitions? i.e. is it possible to leave the exact market definition open?
- If not, what are the key aspects that need to be further investigated?

In-depth analysis
- Frame the analysis within the Hypothetical monopolist test
- What types of evidence could be relevant to the case under scrutiny?
- What does collected evidence suggest with respect to demand-side and supply-side substitutability?
- How tentative market definitions (both for product and geographic market) shall be adjusted to account for new evidence?
- Is it possible to draw reliable conclusions or the market definition needs to be further refined?

Figure 3 - Market definition process: phases and key questions

80. This section introduces the type of evidence that can be used to answer the questions that can help identifying the boundaries of the market. Not all types of evidence and analyses will be available or relevant for each and any specific investigation. The Authority shall assess on a case by case basis the most appropriate line of enquire.

81. The assessment of substitutability is central to the market definition process. In order to determine the scope of the relevant market, the Authority identifies information and data explaining substitutability.

82. Evidence of substitutability can be **direct** or **indirect**. For example, in some circumstance the Authority can see directly how consumer reacted to changes in prices or to the introduction of new products. In other situations, the Authority will need to indirectly assess consumer preferences, for example considering how product features differ and inferring how consumers value those characteristics (See section 0 for further clarifications).

83. Many different types of evidence can be relevant to the Authority: from simple qualitative information (i.e. the list of close competitors in a power point presentation prepared by the
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marketing director for the board committee) to the results of complex quantitative analyses (i.e. the coefficient estimated by means of a regression analysis).

84. Qualitative and quantitative evidence must be used together. The latter is useful in testing intuitions and complementing analyses based on qualitative tools. Quantitative evidence, especially when it is of the indirect type, rarely suffices in pinpointing definite answers.

85. Different techniques are characterized by different levels of complexity, data requirements and reliability. Each technique may be more effective in shedding light on a particular aspect, while missing other possibly important elements. It is appropriate to use multiple techniques to complement the analysis and to cross check similar evidence from different sources.

86. No rigid hierarchy of different sources of information or types of evidence exists. However, direct evidence of substitution should be regarded as especially valuable to the Authority.

87. Data availability and cost-efficiency should be accounted for when selecting the analyses to be undertaken. In the in-depth phase of the analysis, the Authority limits its focus on the hypotheses that are in dispute or that might significantly affects the competitive assessment.

88. It is important to point out that when the Authority decides to carry out an in-depth analysis, it can rely on the tentative conclusions reached in the first screening phase. Therefore, at this stage the question it faces is not “what are the boundaries of the relevant market”, as when it starts the analysis from scratch. Rather it will be confronted with more focused questions such as: “does product A constitute a good substitute for product B so that they must be included in the same relevant market?”; “are firms located in area A able to serve consumers located in area B so that A and B form a single market?”; “how far consumers in A are willing to travel to buy a certain product?”. These more focused questions will allow the Authority to further restrict the hypotheses that have been formulated in the first screening phase and, when necessary, arrive to a firm and unique definition of the relevant market.

89. In the next subsections, evidence and techniques are presented starting from the product market. The assessment of demand side-substitutability is described first (Section 7.1), as it tends to be the most relevant to the market definition process, whereas supply-side substitutability can be effective only when some stringent conditions are met (Section 7.2). Subsequently, the definition of the boundaries of the geographic market is described (Section 7.3). Within each section, evidence and techniques are presented starting from the most simple to the more complex.

90. In the in-depth analysis phase the Authority will usually follow the same line of inquire outlined above. The product market is defined first, starting from demand side substitutability and subsequently checking for supply-side substitution. The geographic market is analyzed later. The Authority will focus on simpler analyses first and undertake more complex analyses only when the need arise.

91. In practice it might be appropriate to depart from the schema above. Some evidence might be ready available where others might be not, or it may be appropriate to move between different sources of evidence in order to complement the analyses. Furthermore, many different types of evidences may shed light on multiple aspects. For example, consumers’ preferences are central to the assessment of demand-side substitutability both from a product market perspective and from a geographic market perspective.
7.1 Product market: assessing demand-side substitutability

92. The analysis of demand-side substitutability is aimed at identifying the set of alternative products (if any), or alternative suppliers (if any), consumers would switch to, should the price of the product in question increase by a small but significant amount for a prolonged period of time.

**Demand side substitutability - How much substitution is enough substitution?**

In general, the questions of whether product B is a substitute for product A rarely gives a straight yes/no answer. Most of the times, it is a matter of degree. The underlying reason is that substitutability is not an intrinsic characteristic of the products; instead it originates from consumer preferences, which may vary widely between individuals.

In practice, it is not necessary for all consumers, or even a majority, to switch actively to substitute products for the products still to be regarded as substitutes and, consequently, belonging to the same market. A minority willing to change supplier can be enough to constrain firms’ pricing behavior. Indeed, this is exactly the idea captured by the critical loss analysis framework: *when the decrease in sales following a price increase offsets the increase in profits per unit sold?*

From a theoretical perspective, two categories of consumers can be identified: marginal and infra-marginal. *Marginal consumers* are those who would stop buying a product after a price increase. Conversely, *infra-marginal consumers* continue to purchase the product a price increase. In other words, marginal consumers are those that are just willing to pay the prevailing price for the product and that would change their purchasing behavior in case of a price increase; infra-marginal consumers would be willing to pay more than the currently prevailing price and therefore would continue to buy the product also at a higher price.\(^{16}\)

When there are enough marginal consumers, infra-marginal ones are protected from a price increase: the increase in prices would determine a high drop in the quantity sold so that, in total, the reduction in profits stemming from this second effect would dominate the increase in revenue per unit sold. The higher the proportion of marginal customers, the less likely the probability that a SSNIP would be profitable.

As a consequence, the Authority shall focus its attention on the preferences of those consumers who are more likely to switch in the event of a price increase.

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\(^{16}\) The usual distinction is that made between marginal and infra-marginal *consumers*. However, from the text it is clear that each consumer will be in one position in some cases and in the other situation in others. For instance, a consumer may need to make a phone call either to chat with a friend or for an emergency reason and the first type of call might be marginal as it is influenced by the price that the consumer has to pay, whereas the emergency call is of the infra-marginal type because the same consumer is willing to pay a higher price to make it. Hence the proper distinction is between marginal and infra-marginal *consumption*. However we will stick to the widespread terminology to avoid any unnecessary confusion.
7.1.1 Product characteristics and intended use

93. The analysis of product characteristics and their intended use is usually a starting point both for the candidate market definition and for the subsequent refinement of tentative definitions. The rational is the following.

94. The degree of substitutability between different products is determined by individuals' preferences, i.e. preferences over the characteristics of the products and their fitness for a particular function or purpose. Preferences, however, are rarely observable, especially for final consumers. Analyzing products' characteristics (and how they differ) may help the Authority identify why consumers choose one product over another.

95. In some cases the analysis of products characteristics may suffice to establish whether two products belong to the same market or not. For instance, this may be the case when the products under exam are intermediate products that are purchased by other firms to be used in their production processes and therefore must meet some technical requirements to fulfill the purpose for which they are bought.

<table>
<thead>
<tr>
<th>Intermediate product characteristics and technical requirements</th>
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Two merging parties offer coatings (a synonym for paints) for a wide variety of products. Coatings are applied to industrial products in order to improve their surface properties, such as appearance, adhesion, corrosion resistance, wear resistance and scratch resistance. There are two main types of coating: liquid and powder. The notifying party submits that for most applications powder coatings can be substituted by liquid coatings and that the reverse is also true so that the two types of coatings belong to the same relevant market. The competition authority runs a market investigation to explore whether customers have the technical ability to switch from powder coating to liquid coating and vice versa. It sends a questionnaire to a large sample of firms that use powder and liquid coatings in their productive activities. The responses received confirm that liquid and powder coatings may be theoretical substitutes in terms of their technical performance in a wide range of metal coating applications. However, the respondents also indicate that the ability of customers to switch between powder and liquid coatings is limited by the fact that the same equipment cannot be used to apply the two types of coating. The competition authority, through the questionnaire, also finds that a large majority of powder coating customers only possess the equipment to apply powder coatings.

The market investigation shows that there is little if any substitutability between liquid and powder coatings also from the supply side perspective. Although certain large coating manufacturers (including one of the merging parties) produce both liquid and powder coatings, this is typically carried out at separate facilities and/or
on separate production lines. On the basis of this evidence the competition authority concludes that the relevant market that it has to take into account for the competitive assessment of the merger is that of powder coatings which are distinct from liquid coatings.\(^{17}\)

96. Even if two intermediate products have very different characteristics they may still be in the same relevant market if for sufficient number of customers those characteristics do not affect their ability to switch from one product to the other.

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**Intermediate product with different characteristics that are nonetheless in the same market**

Steel and non-metallic strapping is used to secure, to close, to unitize or to strengthen packages or to reduce package volumes; it is applied under tension by hand tools or automatic machines. There are four different types of strapping for industrial packaging applications: high-strength steel strapping, regular duty steel strapping, polyester plastic (PET) strapping and polypropylene plastic (PP) strapping. Steel strapping has a sensibly higher tensile strength (i.e. a higher strength is needed to brake it) than PET and especially PP strapping. Furthermore, steel strapping, PET strapping and PP strapping show significant differences in the reduction of the initial applied tension over time (relaxation effect). Finally steel strapping resist much higher temperatures than PET and again especially PP strapping.

Given these different physical and mechanical product characteristics, there are applications for which only steel strapping can be used. The customers that buy steel strapping for these applications can be considered infra-marginal consumers, because they would be willing to pay a higher price to continue purchasing steel strapping. However, a survey among customers reveals that there exist a significant number of customers for which the peculiar properties of steel strapping are not essentials. These are marginal consumers that would switch to PET strapping (and possibly to PP strapping) in case of a price increase of 5-10%.

Since price discrimination between different groups of individual customers generally seems not to be feasible, a wider product market for steel strapping including PET and PP plastic strapping has to be considered.\(^{18}\)

97. Technical interchangeability does not suffice to conclude that two intermediate products are in the same relevant market because they may have very different prices and therefore may not be considered substitutes from an economic point of view. Moreover a product may have

\(^{17}\) This example is drawn from the case Case No. COMP/M.5745 – Akzo Nobel/Rohm and Haas Powder Coating Business of the European Commission.

\(^{18}\) See Case IV/M.970 - TKS/ITW Signode/Titan of the European Commission.
additional properties that limit the customers’ willingness to substitute it with another product even if the two products have the same intended use.

<table>
<thead>
<tr>
<th>Intermediate product characteristics and additional properties</th>
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<tbody>
<tr>
<td>Strobilurin active substances are fungicide active substances used on a wide range of crops world-wide. Moreover strobilurin-based fungicides are reported to be the only products that have, when used on cereals, important yield increasing activities. Farmers recognize these benefits as they are prepared to pay a considerable price premium of between 50% and 150% for strobilurin products compared to non-strobilurin products. Hence, a hypothetical monopolist of strobilurin-based cereal fungicides could profitably raise prices by 5-10% in a non-transitory way for these products. The 5-10% price increase would still allow a higher margin for the farmer compared to the use of a non-strobilurin fungicide program and could thus, for the hypothetical monopolist of strobilurins, be a profitable course of action.</td>
</tr>
</tbody>
</table>

98. Some strong conclusions on the boundaries of the market can also be reached when the products in question are bought by end consumers. For instance in the pharmaceutical sector it is a widespread practice to identify the boundaries of the relevant product market using the ATC (Anatomical Therapeutic Chemical) classification. The third level of the ATC classification groups prescription drugs according to their therapeutic indications. Hence, a sensible hypothesis is that those drugs that belong to the same group according to this classification are good substitutes for one another. However, it is appropriate to carry out analyses also at other ATC levels if the circumstances of a case show that sufficiently strong competitive constraints faced by the undertakings involved in the investigation are situated at another level. In other cases, it may be necessary to narrow down the market. For instance, a very strong competitive relationship exists between branded drugs and their generic equivalents and the latter might be the only products that effectively constraint the pricing decision of the manufacturer of the branded drug.

99. It is important to emphasize that the analysis of products’ characteristics is aimed at guiding and simplifying the direct or indirect assessment of consumer preferences; it and cannot be regarded as a substitute for the latter. Two products exhibiting different characteristics need not belong to different relevant markets. It is important to assess the weight consumers assign to those characteristics and how the observed differences would impact consumer choices and substitutability.

19 See Case COMP/M.1806 - Astra Zeneca/Novartis of the European Commission.
Fresh milk and UHT have different organoleptic properties. These differences, however, may not prevent a significant minority of consumers from switching to UHT milk from fresh milk in the event of a SSNIP of the latter. If this is the case, the two products shall be included in the same relevant market.

100. Similarly, it is important to note that there is no need for two products to be entirely functionally interchangeable to impose competitive constraints upon each other, nor they must exhibit the same physical characteristics. Two clearly different products may belong to the same market if they satisfy the same need. Functional interchangeability shall be assessed in the context of the specific investigation.

Airplanes and high speed trains, although physically different, may satisfy the same consumers’ need: travelling medium-long distances. However, there are clear differences between the two means of transportation. For medium distances the lowest speed of the train might be unnoticeable. For longer ranges, however, this difference may become apparent and heavily influence consumers’ choices.

101. Products’ complexity can vary widely: from something as simple as bottled water, to complex services, such as, for instance, grocery retailing or financial consulting services. When complex products are involved, decomposing product characteristics may allow to more easily rank available alternatives in terms of substitutability, or to organize the collection of relevant evidence. The Authority, however, shall ultimately focus on the characteristics that matter the most to consumers.
### Decomposing products’ characteristics and assessing substitutability

**↓ Explore ↓**

<table>
<thead>
<tr>
<th><strong>What is the “grocery retail offering”?</strong></th>
<th><strong>What “restaurants’ offering”?</strong></th>
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</thead>
<tbody>
<tr>
<td>o Range of products and formats:</td>
<td>o Cuisine</td>
</tr>
<tr>
<td>- availability of greens, fruits...</td>
<td>(local/international/Italian/</td>
</tr>
<tr>
<td>- availability of meat, fish, ...</td>
<td>French/ethnic/...)</td>
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<td>- availability of frozen food, ...</td>
<td>o opening hours</td>
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<td>- ...</td>
<td>o waiting time</td>
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<tr>
<td>o Range of quality and brands</td>
<td>o reservation only/free entry</td>
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<tr>
<td>o Position</td>
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<td>o Opening hours</td>
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<td>o Number of checkouts</td>
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<tr>
<td>o Other facilities:</td>
<td></td>
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<tr>
<td>- parking spaces</td>
<td></td>
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<tr>
<td>- oil stations</td>
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<tr>
<td>o ... what else?</td>
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</tbody>
</table>

**↓ Focus ↓**

Which characteristics influence consumers’ choice the most? Which are indispensable? Which are ancillary? How do they impact on consumers’ choices? Do different groups of consumers have different ranking over them?

102. In some cases the products’ characteristics limit substitutability not because of consumers’ preferences or for strictly technical reasons, but because there are legal or regulatory measure that impose the employment of products with certain specific characteristics for a certain purpose. For instance, there might be rules that impose certain safety or environmental standards such that a certain type of coating cannot be substituted with another type of coating when used on cans that will contain food or beverages. Legal and regulatory restraint can also affect supply-side substitutability if they impose qualification processes that a new supplier must undergo before starting the production of a new good or service. Finally they may impact the geographic market definition as they may limit the area in which firms can supply their products or if they create obstacles to the import or export of goods or services.

103. Relevant information on product characteristics and intended use can be already available (e.g. there might exist marketing studies by specialized subjects) or can be asked to parties and other stakeholders through interviews, questionnaire, surveys, etc. (see Section 8 on how to collect relevant evidence).
Key ideas

- Preferences are the key factor influencing perceived product substitutability
- Consumer express preferences over products’ characteristics and fitness for a particular purpose
- The analysis of product characteristics and intended is usually a good starting point for the assessment of consumers’ preferences
- The Authority is not concerned with the difference in physical characteristics and intended use per se, but with the impact of those properties on substitution behavior
- Substitutability shall be assess in the context of the specific investigation
- Legal and cultural barriers, when present, can be determining in defining the boundaries of the market

7.1.2 Price-related evidence

104. Prices are often key evidence in the Authority’s competitive assessment. Price data is usually easy to observe and to collect.

105. Sometimes, without resorting to quantitative price tests, conclusion can be drawn on the basis of firms’ price monitoring activities. When firms are monitoring each other prices, this is usually an indicator that the monitored firm is constraining the monitoring firm behaviors to some extent, and that the two products (or areas) may belong to the same relevant market. This type of evidence can often be found in undertakings internal documents (See Section 8).

106. Very often, products are priced relative to something else. It might be production costs, prices of other products, the price of the same product by another producer, internationally quoted commodities prices (i.e. bitumen price can be linked to other petroleum products). Pricing formulas may convey important information about the structure of the market, the strategic relation between the undertakings active, and, ultimately, help the Authority assess the degree of substitutability.

---Pricing formulas

Pricing formulas can help better understand the functioning of a market: a high markup over costs might signal that the price of products under scrutiny can act as are not effectively constrained by other products.

When one product’s price is tied to another, it might be appropriate to check if the two products can be regarded as substitutes. For example, undertaking A might be monitoring the price of undertaking B even if the latter’s product is of higher/lower quality. This might signal that B’s and A’ product might belong to the same market (however, this conclusion usually cannot be drawn basing on the pricing formula alone).

107. When no direct evidence of competitive pressure is available, price data time series can provide indirect evidence of the extent to which two products (or areas) belong to the same
market. Various simple price tests are based on the intuitive idea that two products in the same market will tend to have prices that exhibit similar movements. The two most common analyses are: price correlations and stationarity analysis.

108. It should be noted that price level comparisons generally are not informative for market definition purposes. Two products may have very different prices and still be part of the same relevant product market if consumers are willing to substitute between them in the presence of a price rise of one of them. Attention should be focused instead on price differentials and variations in price differentials.

109. For example, in markets characterized by highly differentiated products, consumers might consider switching from high quality products to lower quality one (or vice versa) if, following a price increase of the high (low) quality product, the price differential is perceived to be too wide to be justified by the difference in quality (or too narrow to maintain the attractiveness of the low quality product).

110. Sometimes identical products are sold at sensibly different prices depending on the format of the unit sold, the so called SKU (i.e. tomato sauce sold in 1kg bottles vs. single portion cans). The difference in unit price, however, is not sufficient evidence to place the two products in distinct relevant markets.

7.1.2.1. Price correlation tests

111. Price correlation analysis involves comparing two price series, either across time (time series analysis) or across space (cross-sectional analysis). Different price series can be considered (prices, logarithms of prices, first differences of logarithms of prices). In all cases, the higher the correlation, the more likely two goods (regions) are within the same product market (geographic market).

112. Price correlation tests are based on the correlation coefficient\(^\text{20}\); however, a preliminary visual inspection of the plotted series can usually convey useful information. The intuitive idea is that a strong positive correlation between the prices of two products suggests that the two products belong to the same market. Similarly, if two products (areas) belong to the same market, the observed prices will likely show the same movements over time.

113. The economic rationale is that when two products are regarded as substitutes, an increase in the price of one of them, leads to an increase in the price of the others, due to consumers adjusting their demand from one product to the other.

114. The same rationale can be applied to the geographic market definition. A strong positive correlation between the prices of products sold in regions outside the candidate market may indicate that consumers locate in the candidate market can easily purchase the product in

\(^{20}\text{In statistics, the correlation coefficient } (\rho) \text{ is a measure of the linear dependence between two variables (X) and (Y) and is defined as the covariance between X and Y divided by the product of the variance of X and the variance of Y. In formula: } \rho = \frac{\text{cov}(X,Y)}{\sigma_X \sigma_Y} \text{; } \rho \text{ varies between } +1 \text{ and } -1, \text{ where } 1 \text{ is total positive correlation, } 0 \text{ is no correlation, and } -1 \text{ is total negative correlation.}\)
regions outside of it, or that suppliers outside the candidate market do not face obstacles to shipping their products into the candidate market.

115. Two main problems affect this test. First, there is no clear benchmark to assess whether the correlation measured is high enough to include two products or areas in the same relevant market. Second, spurious correlation may arise: products clearly belonging on different industries may exhibit high levels of correlations due to common cost or demand factors, or to common shocks (e.g. inflation, increase in labor costs, temporary spikes in energy prices).

116. The first problem can sometimes be addressed by choosing an appropriate comparator (see the example below). The second, instead, can be addressed by checking if there are alternative explanations for the observed correlation.

117. In general, great care should be used in interpreting the results of correlations analysis. Both frequency of data and changes in product qualities or specifications over time tend to impact the results.

118. Given these potential problems, price correlation analysis is useful as a first screening device, particularly in detecting products or areas that do not belong to the same market, because their prices show very little or even negative correlation. Strong positive correlation cannot be taken as a decisive proof that two products or areas belong to the same relevant market, but may form a piece of evidence to be assessed together other information.

<table>
<thead>
<tr>
<th>Price tests: correlation</th>
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| In Nestlé-Perrier, a key question was whether the relevant market was the market for still water, the market for water, or the market for soft drinks. By comparing values measured for each couple of product, it emerged that price correlation between brand of still water and sparkling water was high and of similar magnitude to the correlation of brands within the group of still waters (close to one). In contrast, correlations between the prices of water and soft drinks were low (close to zero). This evidence supplemented the thesis of a relevant market for bottled water, both still and sparkling.

In Du Pont/ICI, low correlation over time between the average prices of nylon fibers and polypropylene fibers suggested that these two products were not in the same market.

However, separate markets can be identified even when high correlation is

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21 In general, “spurious correlation” refers to a mathematical relationship in which two variables have no direct causal connection, yet it may be wrongly inferred that they do due common unseen factors (“confounding factor”) or to coincidence.


23 See Case IV/M.984 - DUPONT / ICI of the European Commission.
observed. For example, in groceries market, many supermarket chains operate a “national” pricing strategy. As a consequence, prices are highly correlated across the country. However, the lack of evidence of demand substitutability and little evidence of supply substitutability suggest that sub-national markets exist. Furthermore, chains could quickly discontinue a national pricing policy if adopting a local pricing policy becomes a profitable strategy.\(^{24}\)

### 7.1.2.2. Stationarity tests

119. Stationarity tests represent a further refinement on price tests as they rely on econometric techniques\(^ {25}\) that allow controlling for the risk of spurious correlation.\(^ {26}\)

120. The intuition behind stationarity test is that if two products or geographic areas belong to the same market, their prices will not move indefinitely far from each other in the long run due to possible arbitrage on the demand or on the supply side.

121. A series is stationary when, eventually, shocks to the series no longer affect the value of the series, i.e., when supply or demand substitutability ensure that the two prices are never too different from one another for long period of times.\(^ {27}\) Stationarity tests, similarly to correlation, have a stronger evidential value to prove that two products or two areas are not in the same market. When the result of the test shows that the two series form a price series that is stationary (i.e. the test is satisfied) this cannot be taken as a decisive indication that two products belong to the same relevant market. A more appropriate approach is to consider this result as a piece of evidence that needs to be corroborated by other information to actually prove substitutability between the two products.

122. Further, it must be noted that econometric techniques are as reliable as the data on which they are based. Sufficiently long and complete price series are needed to allow for the application of accurate stationarity tests.

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\(^{25}\) Econometric techniques are a vast array of statistical instruments that allow measuring the relation between two or more variables (usually a dependent variable and several explanatory variables). An important topic closely related to the application of econometric techniques is statistical significance testing. The description of both econometric techniques and statistical significance testing is beyond the scope of these Guidelines. For an introduction refer, among the others, to Stock, J. H. and Mark W. Watson, 2003, “Introduction to Econometrics”; Verbeek, M., 2004. “A Guide to Modern Econometrics”; Wooldridge, J. M., 2003, “Introductory Econometrics: A Modern Approach”.

\(^{26}\) See footnote 21 for a definition of spurious correlation.

\(^{27}\) One implementation of the test amounts to checking, with appropriate statistical techniques (the KPSS or the ADF test) if the series of the log of the price ratio between two products (or the same product in two areas) is stationary. For more details, and an application to geographic definition of the market for fresh milk in Italy, see Forni, M., 2004. Using Stationarity Tests in Antitrust Market Definition. American Law and Economics Review, 6(2), pp.441–464.
To assess whether Scottish and Norwegian salmon belong to the same product market one could study the delivered price of the former in a specific geographic area relative to the price of the latter. If an econometric test for stationarity confirms that the relative price of Scottish salmon to Norwegian salmon tends to return to a constant value after any temporary deviations (i.e. is stationary), one could conclude that both belong to the same relevant product market. The economic rationale is that stationarity suggests there is direct competitive interaction; hence both products are within the same relevant market.  

**Key ideas**

- Price often provide indirect evidence of substitutability, or lack thereof
- Relevant evidence can be as simple as documents attesting price monitoring activities
- Price correlation and price stationarity tests can be informative, especially in order to exclude that two products or two areas are in the same market

### 7.1.2.3. Natural experiments and shock analysis

123. Unexpected events may provide useful information on substitution patterns between different products. Shock analysis looks at the reaction of the prices of other products following an exogenous shock on the price of the focal product. Many different events can determine an exogenous shock, among the others: strikes affecting the seller of the focal product, the introduction of specific product regulation leading to an increase in production cost, plant outages.

124. Shock analysis is a simple but often very informative means to roughly capture the strategic interaction between different products, producers, or geographic areas. A qualitative analysis of the responses to the shock (anecdotal or factual evidence) often suffices in supporting the Authority’s assessment. A more rigorous analysis can be undertaken applying appropriate statistical and econometric techniques in order to more carefully assess the magnitude of the responses and to control for confounding factors.

125. It is very important to ensure that the “shock” causing the initial price shift is genuinely exogenous and not determined by market conditions affecting consumers or competitors.

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28 See Case Nutreco Holding NV and Hydro Seafood GSP Ltd, of the UK Competition Commission.
29 i.e. how strong is the change in demand for one product following a change in its price
30 See footnote 25 for an introductory reference to econometric techniques.
Suppose a sudden and unexpected increase in the price of liquid gas pushes lighters’ prices up. If matches are direct substitutes for lighters one should expect their price to rise too.

Suppose a cinema is facing a hefty fine for breach of workplace security legislation. Suppose that in order to pay this fine the cinema (maybe it is in financial distress) raises ticket prices by a significant amount. If cinemas in neighboring areas are substitutes, one should expect their ticket prices to rise too.

### 7.1.3 Demand evidence and analyses

126. Compared to price-related analyses, demand analysis provides a more direct answer to the question of whether a consumer would switch product or supplier in case of a price increase. When direct evidence is not available, indirect assessment of consumers’ purchase behaviors and habit may be nonetheless be used. In the next subsections, different sources of indirect and direct evidence relating to the demand are presented.

#### 7.1.3.1. Purchase behaviors and habits

127. Purchase behavior and habits may influence substitutability, i.e. they may render some characteristics of the product more relevant, or they may influence the number of suppliers consumers are willing to consider when shopping. As a consequence, the analysis of purchase behaviors and habits may provide indirect evidence relevant to the assessment of actual demand-side substitutability. Purchase habits may also allow the identification of subgroups of consumers and may allow to better distinguish between marginal and infra-marginal consumers.\(^{31}\)

128. It is important to note that the Authority is not concerned with purchase behaviors and habits per se, but with the impact they have on substitutability and, ultimately, on how they can influence the product and geographic market definition.

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### Purchase behavior and market definition

Some people may prefer to do their grocery shopping as rarely as possible, for instance once per week. Those people will usually buy a lot of food at once and use their cars for transporting it. Hence, parking space availability will be essential to them. This may limit substitutability between stores with dedicated parking lots and

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\(^{31}\) As defined in the Box at page 21, marginal consumers are those who would stop buying a product after a price increase. Infra-marginal consumers are those who would continue to purchase the product after a price increase.
guidelines on market definition

39.

stores without them.

Consumers who are systematically commuting between cities, A and B, may be indifferent between shopping in one city or the other. When a sufficient minority of consumers is indifferent between shopping in two different areas (and would actually switch to B in the event of a SSNIP in A), then the geographic market definition shall be enlarged to include both city A and B.

129. Relevant information on purchase patterns and behaviors can be already available (personal experience, marketing studies by specialized subjects) or can be asked to parties and other stakeholders (see Section 6 on how to collect relevant evidence). Below a list of guidance questions in presented. The Authority shall adapt those questions to the specific case and addressee (either consumers, producers, resellers).

Key ideas

- Purchase behavior and habits may influence substitutability, hence they are relevant evidence to the market definition process

7.1.3.2. Switching costs

130. Even if consumers would be willing, in principle, to divert their demand to other products, this ability may be limited in practice due to the presence of costs associated to the act of switching.

131. Switching costs can be defined as those factors limiting consumers’ ability and willingness to switch to alternative products or to change supplier. Switching costs can be of many different types: monetary costs, learning costs, costs in term of time spent searching for an appropriate alternative. They can be both exogenous (i.e. they are not created by the relevant producer, but can be taken as given; for example the cost of gathering information about an alternative supplier, or the cost of testing if an alternative product meets the specific technical requirements to be used as an input in a production process) or endogenous (i.e. they are influenced or determined by the strategic choice of the relevant undertaking, for example contract termination fees or customer loyalty schemes).32

132. In both cases, what matters to the Authority is the relative impact of switching costs on the value of the products under scrutiny, and how they can influence substitutability.

Switching costs and market definition

The most widely adopted operating system on consumers’ pc is Windows. Although many alternatives exist (Mac OSX, Linux, Solaris, etc.) from consumer perspective switching would require high learning costs. For this reason, it is widely acknowledged that Microsoft can behave to a large extent independently of its end customers.\textsuperscript{33}

Key ideas

- Switching costs may have an impact on the incentive to switch suppliers or products, hence they are relevant evidence in the market definition process
- In practice, the Authority is concerned with the relative impact of switching costs on the value of the products under scrutiny

7.1.3.3. Evidence of past substitution

133. In some cases, the Authority is able to gather evidence of events in the recent past or in neighboring geographic areas that reveals actual substitutability between two or more products. If consumers reacted, in the past, to changes in the prices of the undertaking(s) in question by switching to other undertakings’ products, then this could be considered as evidence of substitution.

Evidence of past substitution

In the assessment of a merger between two airlines a question arises about whether two airports should be considered close substitutes, so that the flights that have these airports as their origin and the same final destination (or the other way around) should be considered in the same relevant market. The two airports are: the main Brussels airport in Zaventem (BRU), and Antwerp (ANR) located in Brussels North. To solve this issue the Commission considers the evidence provided by two examples of past competition between ANR and BRU.

The first example is the opening of a new service between ANR and Manchester (MAN) by VLM Airlines, whereas previously the two cities (Manchester and Brussels) were served only on the route BRU-MAN by Brussels Airlines (SN). The Commission notices, among other things, that the number of SN's non-flexible economy class passengers was very similar in 2006 and 2007 although VLM transported a high

\textsuperscript{33} See, for example Case COMP C-3/37.792 Microsoft of the European Commission.
number of passengers in 2007. This evidence seems to indicate that there was no actual substitution between the services offered at the two airports.

The second analysis is based on the fact that in November 2007 there was the introduction of an improved Eurostar service connecting Brussels and London. The collected data shows that the Eurostar had an impact of the number of passengers that used BRU to fly between Brussels and London and a much more limited impact on passengers using the ANR airport. Hence Eurostar is a strong substitute for flights to London departing from BRU while it is a very weak substitute for flights to London departing from ANR. On the basis of this information, and other evidence, it is concluded that flights departing from (or arriving at) BRU and ANR are in two separate relevant markets.\(^{34}\)

134. Since preferences might change over time, or there might be local or cultural elements that set two neighboring areas apart, evidence of past substitution, when available, shall be assessed in the context of the specific investigation and accounting for other relevant information.

<table>
<thead>
<tr>
<th>Evidence of past substitution: check that is still relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td>The media sector has been characterized recently by structural changes. The advent of Internet and the subsequent change in business model (from subscription based to advertising based) may render analysis of substitutability unfeasible or unsuitable.</td>
</tr>
</tbody>
</table>

7.1.3.4. Natural experiments and exogenous shocks

135. Similar to what has been described in Section 7.1.3.1, unexpected events may provide useful information on substitution patterns between different products or areas. When applied to demand-related evidence, shock analysis looks at how consumers reacted to changes in the price of the focal product.\(^{35}\)

136. Shock analysis is a simple but often very informative means to roughly capture the magnitude of own- and cross-price elasticity of demand\(^{36}\) without resorting to complex econometric analysis.

\(^{34}\) See Case COMP/M.5335-LUFTHANSA/SN AIRHOLDING of the European Commission.

\(^{35}\) It is important to ensure that the “shock” is genuinely exogenous.

\(^{36}\) The idea of elasticity refers to how strong is the change in demand for one product following a change in its price.
Natural experiments and shock analysis (demand response)

Similar to the examples in Section 7.1.2.3, suppose a sudden and unexpected increase in the price of liquid gas pushes lighters’ prices up. If matches are direct substitutes for lighters one should expect to observe a significant amount of customers to drop purchasing lighters in favor of matches.

7.1.3.5. Econometric techniques

137. Econometrics is a conjunction of economic theory, mathematical modeling and statistics. Econometric techniques are a vast array of statistical instruments that allow measuring the relation between two or more variables (usually a dependent variable and several explanatory variables). In practice, econometrics allows the use of economic relationships derived from economic theory to assess important empirical questions in market definition, for example:

   a. What happens to the demand for A as the price of A rises?
   b. If demand substitutes away from A, to which product or products does that demand switch?

138. In practice, econometric techniques vary in the degree of complexity. A simple technique involves the regression of sales volumes against the price of each product (controlling for product characteristics, time-specific and company-specific fixed effects). In such a regression, the coefficient of the price variable would provide a direct estimate of the elasticity of demand for each product, which could then be used to calculate the actual loss associated to a price increase, which would then be compared with the critical loss value. A more sophisticated approach involves the econometric estimation of a full demand model in order to compute the loss that would result from a small but significant price increase.

139. In all cases the application of econometric techniques require the availability of detailed data, often on a large number of variables, and a specialized skills that can be acquired only through specific training and practical experience. Moreover the results of an econometric exercise should be regarded as one piece of evidence that needs to be corroborated by other available evidence that emerges from the market investigations, the analysis of internal documents and all the other sources of relevant information.

7.2 Product market: evidence of supply-side substitutability

140. The analysis of supply-side substitution is aimed at establishing whether alternative undertakings that do not offer products that are perceived as substitutes of the products offered by the undertaking(s) under scrutiny, would profitably switch their production to the relevant product, should the price of the product in question increase by a small but significant amount for a prolonged period of time.
Supply side substitutability: when it is relevant to the market definition?

Compared to demand-side substitutability, supply-side substitution is usually less effective in constraining the undertakings’ ability to exert market power.

Three conditions have to be satisfied for supply-side substitution to broaden the scope market. Substitution must be: quick, effective and profitable.

With respect to the first criterion, no blanked rule exists. How quick switching shall happen depends on the specific characteristics of the industry and of the potential competitive concern. As a general indication, one year is held to be adequate time to see the supply-side effects of a price rise.

Effectiveness refers to two different but related measures. Effective entry shall have an impact on market prices; therefore, it shall be on a sufficiently large scale. Moreover, once the switch has occurred, the undertakings shall start producing demand-side substitutes. Whether products will be seen as demand side substitutes depends on consumers’ preferences and products’ characteristics.

Profitability entails a certain degree of uncertainty about the possible development of the market. Intuitively: the undertakings shall not incur substantial sunk investment that can be covered only if it will serve a significant portion of demand.

141. In assessing the likelihood of supply-side substitution, i.e. the factual question of whether one or more undertakings on the supply side will respond to a price increase, the Authority shall be concerned with the collection of evidence showing (or disproving) that switching production would be quick, effective and profitable. The issue depends on many intertwined elements.

142. In practice supply-side switching is most likely to happen when firms produce a wide range of different qualities of a product not seen as substitute by consumers, but which are produced using the same or similar equipment and that can be effectively sold through the same distribution channels and marketing means.

Production of 4mm glass is technological identical to the production of glass of other thicknesses and a producer’s float line can be rapidly adapted without excessive cost to change from one thickness to another. Moreover both types of glasses are sold through the same distributors and do not require particular investments in the training of the sale personnel or in advertising the specific product. On the basis of
these findings one can conclude that glasses of different thickness belong to the same relevant market.  

7.2.1 Analysis of sunk cost, time to switch and perceived substitutability

Feasibility of switching production: sunk costs and time to market

143. A key element to the assessment of supply-side substitutability is sunk costs. An investment or cost is “sunk” if the undertaking cannot recoup it if it decides to terminate the production or commercial activity for which the investment was undertaken. The higher the sunk cost, the lower the probability that switching production will be profitable.

144. Furthermore, sunk costs usually arise from the need to acquire or develop specific assets, and this may require a significant amount of time, whereas effective supply-side substitution needs to happen quickly.

145. In practice, in order, to be able to quickly switch production to the focal product or a close substitute, an undertaking needs to possess (i) the required technology, know-how, facilities, technical inputs and machinery; (ii) the relevant marketing assets (i.e. the brand name); (iii) an adequate transport infrastructure or access to appropriate distribution channels. Acquiring or developing those assets tends to be expensive and time consuming. Hence, in order to broaden the scope of the market basing on supply-substitutability, the Authority shall collect evidence that show that these requirements are met.

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Supply-side substitutability: viability

All models/sizes in each group of major domestic appliances (white goods) use the same core technology and components. In addition, all the main producers produce and sell a full range of models and can switch existing capacity from the production of one model specification to another. Due to the high degree of supply-side substitutability, it is possible to include each type of major domestic appliance in the same market.  

Notwithstanding some differences in functional characteristics, rigid trucks and tractor trucks can be considered part of a single market for all heavy duty trucks, because the costs related to switching production are not substantial. Conversely, heavy trucks and trucks lighter than 16 tons belong to different markets because the technical configuration is very different as regard as the key components such as the type of engine and the number of axles in particular.

38 See Case IV/M.458 Electrolux/AEG of the European Commission.
Conversely, separate markets for heavy vehicles and car tires have to be defined on the basis that neither demand side substitution nor supply side substitution exists. In particular, heavy vehicles tires require different production technologies. For suppliers, switching production from one type of tire to the other would have required considerable time and investments.\(^{40}\)

### Economic incentives of manufacturers to switch production

146. Even if one or more undertakings were able, in principle, to switch production in a timely manner, this does not ensure they would do it in practice. In assessing supply-side substitutability the Authority is concerned with assessing that an economic incentive to switch production exists.

147. Diverting part of production facilities to the new product shall be profitable. This depends on both sunk cost (examined earlier) and the margins earned on the products that it currently sells: higher margins make the decision to divert part of production facilities to other products less likely. In addition, diverting part of production shall be feasible. Contractual ties may prevent undertakings from switching production or from switching enough production to justify the investment.

### Supply-side substitutability: lack of economic incentive

Organic dairy farmers have no economic incentive to switch to conventional raw milk production, given the price premium they obtain and the investment they have made to produce organic raw milk. On the other hand, switching to organic raw milk production is an option for a conventional dairy farmer but it requires significant investments in grasslands (more extensive use) and, on average, a 2-year transition period. Hence, from a supply-side point of view, organic and conventional raw milk productions are not substitutes.\(^{41}\)

SiC is a synthetic mineral, which is produced from washed silica sand (SiO2) and carbon (C) in the form of low-ash petroleum coke. Crystallization of SiC occurs at very high temperatures and results in the simultaneous production of crude crystallized SiC and a less crystallized SiC. The latter is sold to the steel industry as metallurgical grade SiC. Even though metallurgical SiC can in some cases be processed to refractory grade SiC by chemical treatment, it is difficult to see why there should be any significant supply-side substitutability. The process of upgrading metallurgical SiC to crude crystallized SiC involves additional costs, and the incentive in the joint production process is to reduce the production of metallurgical SiC as much as


\(\text{See Case COMP/M.5046 – Friesland Foods / Campina of the European Commission.}\)
possible. Hence, crystallized SiC and metallurgical SiC are not supply-side substituents.\textsuperscript{42}

148. Relevant evidence on the viability and the economic incentive to switch production can be obtained directly from potential suppliers and from the undertaking under scrutiny (either through surveys and interviews or by accessing internal documents, as described in Section 8).

\begin{center}
\textbf{Assessing supply-side substitutability – some hypothetical questions}
\end{center}

\textbf{Viability}

- What are the relevant assets (i.e. technology, machinery, facilities know how, technical input) needed to market product X?
  - Is technology patented? If yes, can a license be obtained cheaply and quickly?
- Is brand name an important factor too?
  - Is there any existing brand that could be leveraged?
  - Do you think consumers would be willing to try a different brand?
- How important is accessing a specific distribution channel?
  - Do potential new suppliers already use the relevant distribution channel?

\textbf{Economic incentive}

- What percentage of spare capacity do firms have?
- What percentage of current production capacity is tied by long term contractual obligations?
- In the event of a price rise in product X, would it be more profitable expanding the existing capacity or diverting the existing equipment and labor to product X?
- Are there other factors that would limit the incentive of a firm to switch its production processes?

\textbf{Consumers’ reaction}

149. In the assessment of supply-side substitutability the Authority may be seeking consumers’ views, in order to evaluate whether consumers would eventually purchase the product from the new supplier. The Authority might only consider supply side substitutability if this will entail the production of products that are clearly perceived as substitutes on the demand side\textsuperscript{43} and if switching costs would not prevent consumers from adopting the new products.\textsuperscript{44}

\textsuperscript{42} See Case IV/M.774, Saint-Gobain/Wacker-Chemie/NOM of the European Commission.
\textsuperscript{43} See Section 0 on relevant evidence.
\textsuperscript{44} See Section 7.1.3.2 on switching costs.
Flexible packaging involves the conversion and printing of plastic and cellulose films, aluminum foils and papers, which are used separately or in combination, to produce primary and secondary packaging products for a wide variety of end-uses. Looking at the supply-side substitution, on the one side it could be argued that (i) for all types of flexible packaging, production requires printing, lamination, and slitting equipment; (ii) that the required machinery and processes are established, standard and widely available and there is no "must-have" intellectual property or proprietary inventions, which could hinder supply-side substitution; (iii) that raw materials used to produce flexible packaging are also readily available.

However, various decisions identified separate markets according to end-use sectors: (i) food, (ii) medical, (iii) pharmaceuticals, (iv) household products and (v) other non-food, due to the fact that switching production between the five different end-user segments is not immediate, nor guaranteed to be effective. This is especially apparent with respect to medical and pharmaceutical flexible packaging, where specific know-how is required to produce the key packaging products used by these industries. Moreover, customers have very strict requirements concerning their suppliers and require lengthy validation procedures for switching. Another element supporting the definition of separate markets is that a number of suppliers seem to have a particular focus on certain end-use markets.45

Key ideas

- To broaden the scope market, supply-side substitution must be: quick, effective and profitable
- Relevant evidence to assess supply-side substitutability include the analysis of sunk costs, time to switch and perceived substitutability on the consumer side

7.3 Geographic market: transport costs and trade flows

The relevant geographic market is the smallest set or areas where, with respect to a given set of products, it is possible to exert a significant and lasting market power and therefore a competitive concern may arise. The relevant geographic markets shall include those areas where consumers can find demand-side substitutes for the products of the firm under scrutiny and where there are suppliers who can readily shift production to the areas where the firms whose commercial practices are investigated operate. In a nutshell: the geographic

45 See Case COMP/M.5599 - AMCOR / ALCAN of the European Commission.
market includes the competitive constraints existing on the demand and the supply-side that can effectively impede the exercise of market power for a non-transitory period of time.

151. The principles outlined for the definition of the relevant product market apply equally to the definition of the relevant geographic market. However, in assessing the scope of the geographic market, distinguishing between demand-side and supply-side substitution is less of an issue. In practice, from the point of view of the Authority, it is largely irrelevant if consumers from area A are willing to travel to area B or if undertakings from area B are willing to ship (or to move their production) to area A.

152. Many sources of evidence explored in previous sections can convey relevant information also on the geographic market definition. Therefore, there is no need here to repeat why and how the various analyses already described can be used for the purpose of delineating the geographic boundaries of a market. Just to clarify, price correlation and stationarity tests, for example, can provide indirect evidence of substitutability between areas, whereas demand analysis can provide direct evidence. Other already examined factors that may limit scope of substitutability between different areas are trade bans, legal barriers and cultural preferences. Among these, consumers’ preferences for local products, due also to linguistic reasons, may be important and restrict the market to the national boundaries. There may be further elements specific to the sector that may limit substitutability and that can be identified in individual cases.

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**Geographic market: factors limiting substitutability**

Airport ground-handling services must be supplied within each airport. On this basis, it is appropriate to limit the relevant geographic market to the local facilities only.  

In some countries, contractual obligation on farmers to deliver their animals to the co-operative slaughterhouse of which they are members limit their ability to react to short term price differences: farmers in reality do not have the possibility to export live animals to neighboring areas. This limits the scope for geographic substitutability.

153. In this section we discuss two elements that are specific to the definition of the geographic market. They are: (1) transport costs; and (2) the analysis of actual trade flows.

154. Transport costs indicate either the cost that consumers must incur for reaching the supplier when consumers buy the relevant good or service at a physical store, or the cost that the supplier must incur to ship its products to its buyers. Transport costs should include all monetary expenses (e.g. trade tariffs) and non-monetary elements such as, for instance transportation time or the risk of deterioration during transportation.

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46 See, for example, Case C-82/01 P, Aéroports de Paris v Commission of the European Commission.
155. The absolute value of transport costs is not determinative in itself. Rather, one has to consider the incidence of transport costs over the value of the product. Products that have a very high value relative to their transport costs, such as, for instance, micro-chips or diamonds, tend to be sold on a global scale. On the contrary, low-value goods, such as bricks or roofing tiles, are normally traded at local level. Intuitively – absent other constraints (for example: product perishability or trade barriers) – the greater the value of the good, the farther consumers are willing to travel (or producers are willing to ship).

**Geographic market definition - How much substitution is enough substitution?**

If the incidence of transportation costs on the value of product is central to the geographic market definition, what is the maximal value consumers are willing to bear? This question does not always have a straightforward and unique answer: no blanket rule exists. Indeed, the exact amount might be a matter of individual preferences and may vary between individual customers. Moreover customers may be dispersed in various areas and not all of them have to bear the same costs to shop in another area.

The same considerations on marginal and infra-marginal consumers described with respect to the product market definition, apply with to the geographic market definition.

The Authority shall focus its attention on the preferences of those consumers who are more likely to switch in the event of a price increase, and shall assess whether a sufficient minority of consumers willing to actively switch exists and, therefore, can impede the exercise of market power in a certain area.

156. Another relevant piece of evidence in the geographic market definition, although usually not conclusive, is information on trade flows and shipment data. This type of analysis is based on the observation of the actual sales made by the current players located in various areas. If between two areas at the current pricing conditions one finds that a significant level of trade exists, this is a *prima facie* indication that there are no factors that might impede the suppliers that are located in one area to exert a competitive constraint on the supplier located in the other area.

157. The analysis of trade flows has been formalized in the so called Elzinga-Hogarty test, named after the two economists who have first proposed it.\(^47\) The Elzinga-Hogarty test is based on two measures: the “little input from the outside” (LIFO) and “little output from the inside” test (LOFI). The first measure is the proportion of sales made to the consumers located in the candidate geographic market that come from suppliers located in the same area. For instance if the candidate geographic market is Country A, the LIFO measures the proportion of consumption in Country A that is satisfied by suppliers located in Country A. The second indicator, measures the proportion of the production of the suppliers located in the candidate geographic market that is sold to consumers located in the same area. In the example, the

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LOFI measures the proportion of sales made by suppliers located in Country A that are made to consumers located in Country A. In the original contribution, it was suggested that a candidate geographic market can be considered a relevant market if both the LIFO and the LOFI take a value of at list 0.9, that is if at least 90% of the local consumption is satisfied by local suppliers and if at least 90% of the local production is sold to local consumers.

158. The Elzinga-Hogarty test has been widely used in practice. However, there it presents possible drawbacks and it has been considered only as preliminary indication that needs to be checked against other available evidence.

159. The first drawback is that the suggested threshold (0.9) does not have any theoretical or empirical foundation and is not directly or indirectly related with the HM test. This is similar to the problem already discussed in relation to price correlation tests. However, while in the price test this issue can at least partially solved by constructing a proper benchmark, this is not feasible for the Elzinga-Hogarty test.

160. The second drawback is that the Elzinga-Hogarty test gives the same weight to the two numerical measures: LIFO and LOFI. This may be inappropriate. Consider for instance that one needs to evaluate whether the supplier of a certain product in Country A can effectively raise their price for a prolonged period of time. The relevant question might be whether the suppliers located in other GCC countries can act as a competitive constraint on Country A firms. A relatively low LOFI value shows that Country A firms sell a significant portion of their production abroad. According to the standard reading of the test, this result should indicate that the geographic market is wider than Country A. However, suppose that imports in Country A are very low so that a high LIFO is obtained. This shows that consumers located in Country A are mostly served by firms located in the same area. This might depend on the fact that while there are no trade barriers that impede the Country A firm to export their goods, there are regulatory, technical or cultural factors that prevent foreigner firms from serving the Country A consumers. If so, Country A should be regarded as a distinct market discarding the indication that comes from LOFI and accepting the result of the LIFO alone.

161. The third drawback is that the measurement of the trade flaws occurring given the prevailing market conditions does not suffice to clarify how consumers and firms would react to a price increase in one area. It might as well be the case that, at the prevailing price, consumers do not find it convenient to shop outside their restricted area of residence and firms do not find profitable to sell their products in the area where they are not located. However, this does not prove that the same consumers and firms would not be willing and able to trade between them if the local firms try to raise their price. This consideration implies that the existence of significant trade flows between two areas can be regarded as clear although preliminary evidence that the two areas belong to the same market. However, the opposite proposition is much less convincing.

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Low trade between areas, yet a single geographic market

Suppose transportation costs between area A and B are low. There could be a significant group of consumers in area A willing to source the focal product from area B in the event of a SSNIP, who have had no reason to do so because the threat of imports from B to A suffices in disciplining the pricing behavior of sellers active in A.
162. In all cases the Authority shall consider the results of the Elzinga-Hogarty test and similar measures only as *prima facie* evidence. A more detailed and informative analysis should aim to pinpoint the concrete economic circumstances that explain the high or low level of trade actually observed and the factors that can affect its change in case of a modification of relative prices.

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**Low trade between areas explained by physical barriers to trade**

In the notification of a merger, the parties submit that the market for the supply of electricity is supranational. The Authority’s investigation shows that this geographic market definition is not acceptable although all the regulatory measures that in the past prevented transnational sales of electricity have been removed. This is due chiefly to the fact that the capacity of the interconnectors, i.e. the network links with neighboring countries, is limited and that therefore, for technical reasons, imports are low. Consequently, in view of the high import barriers, the markets for the sale of electricity at interconnected level are at best national.\(^48\)

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**Key ideas**

- The analysis of trade flows may provide indirect evidence on geographic market definition
- In defining the geographic boundaries of the market, the Authority, however, shall be primarily concerned with the assessment of the economic factors that can explain the existence of trade flaws or the lack of them

\(^48\) See Case COMP/M.1673 – VEBA/VIAG of the European Commission.
8. How to collect relevant evidence

163. When undertaking a new investigation, the collection of industry consulting studies, trade journal, news and trade association publications is often an inexpensive and simple method to gain a quick understanding of the sector. The parties involved will be able to suggest the most appropriate sources of information.

164. Previous enforcement agency investigations and previous court cases will help complementing the analysis, as they often contain references to the documents cited above, to additional evidence as well as the logical steps followed to solve a similar problem in the past or in other jurisdictions. In this case the Authority shall verify that the logic and conclusions expressed there are relevant to the specific case under scrutiny.

165. Interviews and surveys to undertakings’ representatives and consumers are another of the most basic and most effective means to gain a detailed understanding of the market under scrutiny, probably the most effective. The Authority shall resort to interviews both during the preliminary phases of the analysis to orient itself and later on to address specific issues.

166. Interviews can be conducted in person or over the phone. There is no need to have a detailed, predetermined and exhaustive list of questions. It is often preferable to identify a core number of topics to be explored and leave the interviewer, a trained member of the competition authority, the opportunity to adjust his questions depending on the conversation.

167. Consumers’ opinion might shed light on individual purchase behaviors, relevant product attributes, and possible functional substitutes.

168. Senior representatives of the undertakings involved (e.g. top managers or directors of marketing, sales, procurement or finance) usually provide useful insights on how competition unfolds, what the main competitors are, what are the characteristics consumers value the most, how do they price their products, whether there are any specific episode that might shed light on the market (such as abrupt changes in consumption patterns, exogenous shocks and how consumers reacted).

169. Surveys, instead, are usually submitted in written format. It is often necessary to conduct preliminary interviews with a restricted number of subjects in order to identify the list of questions to be submitted in a survey to a wider audience. It is important to notice that response rates to surveys are usually very low. In addition, it may be appropriate to allocate time to follow-up phone discussions with some participants for further clarifications.

170. As the people interviewed might misrepresent facts, either intentionally or unintentionally, great care should always be used in assessing the collected replied. A single opinion will rarely suffice in drawing conclusions.

171. Along with surveys and interviews, the collection of pre-existing documents might be valuable in identifying competitive constraints undertakings face. Internal presentations for top managers or board of directors, pricing formulas, financial plans, marketing studies, reports on competitors’ activities, may provide information on who the competitors are and
the degree of substitutability between different products (or between products from different geographic areas).

172. Preexisting documents shall be considered more informative (less biased) than similar documents prepared for the Authority after an investigation has started. However, it shall be appreciated that the former are usually prepared for purposes other than the relevant antitrust market definition and that firms’ executive do not necessarily give to expressions such as “market” or “substitutes” the same meaning that they take in competition law issues. Hence, firms’ internal documents may offer a narrow representation of firm’s competitive constraints, for example by focusing on just a subset of the actual competitors or by overemphasizing the existing differences between products. However, they may also lead to an over-inclusive definition of the market as firms tend to discuss internally also the competitive threat that may come for future potential competitors that do not have the ability to constraint their market behavior in the near future.

173. A direct assessment of individual and undertakings’ behavior and choices, although not always possible, might provide a more accurate representation of the facts. For example, consumers might state that would quickly switch to a competing product in case of a price rise and yet have failed to do it in the past by reason of inertia or switching costs, or they might be underestimating the effort needed to switch.

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**Stated preferences and actual choices**

Two different ways to find out about consumer preferences exist. One is to observe consumers’ choices and try to explain them given the customers’ characteristics and the set of possible choices (including the characteristics of available products). A second method consists of asking consumers the hypothetical question of what they would do if they were to face a specific choice in practice. The first approach entails gathering evidence on consumers’ “revealed” preferences; the second is based on stated preferences.

When directly observed behaviors are at odds with stated preferences, the former shall be given a higher weight.

174. **Quantitative data** on prices, volumes, turnover, number of customers, transportation costs, can be often obtained from to the involved parties, bought from specialized data providers\(^\text{49}\) or collected from public sources. Quantitative data is needed in order to determine the market share of the undertakings (see Section 9) and to implement a number of analyses aimed at assessing substitutability (Section 7).

175. The key difference between data obtained from the undertakings and data obtained by third parties is that the former usually only pertains to information on the undertakings themselves, hence may not correspond to market-level statistics (market level statistics are

\(^{49}\) For example ACNielsen, GfK and IRI collect extensive price and volume data in the retail sector.
needed, for example, to implement the SSNIP test in its general formulation\(^{50}\) - see Section 6.1).

176. Finally, care should be used when examining data spontaneously submitted, as it might be biased or provide only an incomplete representation. As a general principle, the Authority shall try to complement quantitative information and qualitative reasoning in order to better interpret available evidence.

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**Strive to get a sufficiently complete picture**

Loyalty card programs can be an important source of data that might become relevant to the market definition process. However, focusing on incomplete data can be misleading. For example, in defining the scope of the geographic market, one could examine where consumers subscribed to the loyalty program of a specific store live. This analysis will rarely provide meaningful results if it is not complemented with an assessment of actual volumes purchased by different customers. In principle, a significant group of customers living far away from the focal store could be subscribed to the loyalty program (maybe they use or used to travel, work or spend their holidays in the city where the store is located) and yet rarely buy anything there due to the distance.

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**Key ideas**

- Many sources of evidence exist
- Interviews and surveys to undertaking and stakeholders are the most basic and most effective means to gain a quick understanding of the market
- Care should be used in interpreting evidence: an incomplete assessment of available data may be misleading
- Ultimately, the Authority shall use its judgment in assessing available evidence
- Good practice suggests starting from qualitative reasoning and check if quantitative data support the initial intuition

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\(^{50}\) Remember that the small but significant increase in price should be relative to the competitive price or, most often, the prevailing price on the market.
9. Calculation of market shares and concentration indexes

177. Once the relevant market has been defined, it is possible to calculate markets shares as preliminary proxies for market power. Market shares represent what portion of the total business volume has been conducted by each of the undertakings in the market.

178. In most cases it is appropriate to compute market shares in terms of sales. Sales may be determined on a value basis or on a volume basis (e.g. number of units shipped or number of customers served). The two measures convey different information. For differentiated products the position of a firm is also reflected in the price it is able to charge. Therefore market shares in terms of value might be more apt at capturing the relative strength of the undertakings under investigation.

179. The output of the evaluation will be a percentage attached to each of the undertakings, representing their market share.

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**Market share calculation: a numerical example**

Suppose the estimated market size is approximately 250,000 € and five firms are active (firms A, B, C, D, E). Their total sales (in thousands) are respectively 100 €, 35 €, 15 €, 75 €, and 25 €. Hence market shares (the percentage figures) are:

<table>
<thead>
<tr>
<th>Firm</th>
<th>Sales (in thousands)</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100/250</td>
<td>40%</td>
</tr>
<tr>
<td>B</td>
<td>35/250</td>
<td>14%</td>
</tr>
<tr>
<td>C</td>
<td>15/250</td>
<td>6%</td>
</tr>
<tr>
<td>D</td>
<td>75/250</td>
<td>30%</td>
</tr>
<tr>
<td>E</td>
<td>25/250</td>
<td>10%</td>
</tr>
</tbody>
</table>

180. In some cases there could be other relevant industry-specific dimensions of the undertakings’ activity that are meaningful indicators of their competitive strength. A classic example is the mining industry, where reserves held may be more informative than sales.

181. To compute market shares, the total dimension of the relevant market is needed. Sometimes industry estimates provided by market research companies or trade bodies exist. In other cases, this information can be obtained summing up individual data provided by each undertaking. However, when this operation is not possible due to incomplete firm-level data or to efficiency considerations (the higher the number of firms active, the greater the cost of data collection), it is appropriate to infer the missing information by combining other sources or by resorting to reasonable assumption.
Total market size: proxies and rules of thumbs can be appropriate

For example, to determine the dimension of the market for the repair and substitution of auto-vehicle glasses (i.e. the total number of substitution and repair jobs) it might be impractical (for cost considerations and data quality concerns) to collect data from the vast number of players that offer this type of service (among the others: car dealers, body shops, glass specialists). If, thanks to previous studies or surveys, reliable data on the breakage rate is available (i.e. the percentage of vehicles that need to have a window repaired in a specific period of time), one could possibly obtain a rough estimate of the market dimension by multiplying this percentage by the total number of vehicles registered. Similar proxies are often used by the undertakings themselves in their day to day activities.

182. Once market shares are computed, it is possible to examine the degree of concentration in the market with appropriate synthetic measures. The most commonly used indicators are Concentration Ratios (CRs) and the Herfindahl-Hirschman Index (HHI).

183. CR is calculated summing the market shares of the largest undertakings in the market. The outcome of the analysis is the share of the market held by the two (CR2) or four (CR4) largest undertakings in the market.

Concentration ratios: a numerical example

With respect to the market situation described in the example above (paragraph 179), the market shares in decreasing order are:

<table>
<thead>
<tr>
<th>Firm</th>
<th>Market Share</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100/250</td>
<td>40%</td>
</tr>
<tr>
<td>D</td>
<td>75/250</td>
<td>30%</td>
</tr>
<tr>
<td>B</td>
<td>35/250</td>
<td>14%</td>
</tr>
<tr>
<td>E</td>
<td>25/250</td>
<td>10%</td>
</tr>
<tr>
<td>C</td>
<td>15/250</td>
<td>6%</td>
</tr>
</tbody>
</table>

Hence, CR2 amounts to 40%+30%=70% and CR4 amounts to 40%+30%+14%+10%=94%. Both measures suggest that the market is highly concentrated.

184. HHI is a more accurate measure of concentration insofar it takes into account the relative size of the undertakings, attaching more weight to undertakings with a larger share of the market compared to smaller undertakings. HHI is determined as the sum of the squared market shares of the undertakings in the market. The HHI takes the value of 10,000 in the monopoly case and decreases as the level of concentration decreases.

51 Other concentration measures exist, for example the Gini concentration index.
With respect to the market situation described in the example above (paragraph 179), the HHI can be computed as follows. First determine the square of market shares:

<table>
<thead>
<tr>
<th>Firm</th>
<th>Market share</th>
<th>Squared market share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm A</td>
<td>40%</td>
<td>1,600</td>
</tr>
<tr>
<td>Firm D</td>
<td>30%</td>
<td>900</td>
</tr>
<tr>
<td>Firm B</td>
<td>14%</td>
<td>196</td>
</tr>
<tr>
<td>Firm E</td>
<td>10%</td>
<td>100</td>
</tr>
<tr>
<td>Firm C</td>
<td>6%</td>
<td>36</td>
</tr>
</tbody>
</table>

Than sum all squared market shares: 1600+900+196+100+36=2,832. Hence, in this example the HHI index is equal to 2,832 and is indicative of a highly concentrated market.

It should be noted that the HHI calculation requires all market shares to be known. When the information about some market shares is missing, the Authority can nonetheless determine the HHI index basing on some reasonable assumptions. What a reasonable assumption is depends on the specific case under scrutiny. Suppose market shares of firms E and C above were unknown. Absent any information, a reasonable assumption would be that both control the same share of the market (i.e. (10%+6%)/2 implies that both have an estimated 8% market share). In most situations, however, information on relative sizes will be available (i.e. E is approximately twice as big than C) that allows further refining the estimates.

Key ideas
- Concentration indexes (CR and HHI) are synthetic measure of market power
- The calculation of concentration indexes requires that market shares are known, hence that the relevant market has been properly defined
10. Other issues in market definition

185. In this Section some specific issues that might arise during the market definition phase are discussed.

10.1 Chain of substitution

186. Some products may be part of an unbroken chain of substitutes. In certain cases, the existence of chains of substitution might lead to the definition of a relevant market where products or areas at the extremes of the market are not direct substitutes, but substitution reaches them indirectly through the ‘ripple’ generated by direct substitutability of products along the chain, which instead are adjacent one another. The same logic may apply with respect to adjacent geographic areas.

187. In order to broaden the relevant market in an individual case, the Authority shall check that actual evidence confirms the logic of the chain of substitution, for instance that there is to price interdependence at the extremes of the chains.

In an investigation concerning two types of herbicide that are not directly substitutable for each other – broadleaf weed herbicide and graminicide – it becomes apparent that a broad spectrum of herbicide that is directly substitutable for both exists. Does this create a link between the two complementary market segments?

In terms of the HM test, one could ask whether a hypothetical sole supplier of all herbicides capable of controlling grasses (i.e. graminicides and, to a lesser extent, broad spectrum herbicides) would find it profitable to increase prices for these products. It could be argued that the hypothetical monopolist lacks this power due to chain of substitution effect. The underlying logic is as follows: “given that broad spectrum herbicides are competing with broadleaf weed herbicides, an increase in the price of the first would not only lead to a drop in sales stemming from farmers no longer using the broad spectrum product for grass control, but also stemming from farmers that used to buy the product for broadleaf weed control switching to ‘pure’ broadleaf herbicides. To the extent that many buyers of broad spectrum herbicides buy the product to control both types of weeds and the value of broad spectrum products is substantial in comparison with grass weed herbicides, broadleaf weed herbicides do exercise a competitive pressure on the prices of broad spectrum herbicides and, hence, on the prices of graminicides.” This is the so-called chain of substitution effect.\(^{52}\)

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\(^{52}\) See Case COMP/M.1806 - AstraZeneca/Novartis of the European Commission.
In defining the relevant geographic market for the float glass, it could be argued that the natural geographic area of a supply from a given production plant can be represented by concentric circles with a length of radius determined by the relative transport cost. Given the dispersion of the individual float plants and the varying degrees of overlap for the natural supply areas, the effects can transmit from one circle to another. This line of reasoning is corroborated with evidence that prices for the various regions show similar levels and movements, and that a significant quota of sales in each area originates from other areas. Hence, it is appropriate to define a relevant geographic market encompassing all areas.\(^{53}\)

Conversely, a chain of substitution logic shall be rejected when there is insufficient evidence that prices of one product constrain the prices of the other. In Pirelli/BICC the parties argued that a single market for energy power cables existed based on a chain of substitution logic between low, medium and high voltage cables. However, there was no definite evidence that cable prices in high voltage ranges constrain prices in low voltage ranges. Hence, separate markets were defined for low/medium voltage power cables on one hand, and high voltage/EHV power cables on the other.\(^{54}\)

### Key ideas
- Indirect constraints (the chain of substitution logic) can be relevant in market definition
- The chain of substitution argument should be substantiated by evidence for the indirect interaction

### 10.2 Cluster markets

188. Some sectors are characterized by markets where several goods are jointly demanded and supplied, mainly because of economies of scope or consumers’ preferences. Cluster markets feature transaction complementarities between the various components of a bundle of products or services, meaning that a consumer incurs lower transaction costs if he buys several products from the same undertaking.

189. In a cluster market purchasing decisions are not made on the basis of the individual prices of each product. Instead, consumers choose suppliers on the basis of the most competitively priced cluster of products offered.

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\(^{53}\) See Case IV/M.358 - Pilkington-Techint/SIV of the European Commission.

\(^{54}\) See Case COMP/M.188 - Pirelli/BICC of the European Commission.
Traditionally, in the market definition process, bank products (various kinds of credit) and services (such as checking accounts and trust administration) have been aggregated in a single cluster market denoted by the term “commercial banking”, composing a distinct line of commerce. 55

A similar line of reasoning may apply in telecommunication markets. Final consumers usually choose a single fixed line telecom operator basing on the most competitively priced cluster of products offered (i.e. the bundle of calls to national landlines, calls to mobile phones, international calls, etc.).

Key ideas

- Cluster markets may exist when consumers incur lower transaction costs buying several products from the same undertaking
- In a cluster market, consumers choose suppliers on the basis of the most competitively priced cluster of products offered

10.3 Asymmetric markets

190. In some industries, substitution may be asymmetric. Markets can be asymmetric for various reasons. This may happen for sectors that include products at different level of the quality spectrum, or, for example, if new and old technologies coexist.

191. If two products perform the same purpose, but one is of a higher price and quality, they might be included in the same market or in distinct markets. The specific relevant market to be chosen will depend on the case at hand. It should be noted that in an asymmetric substitution situation it is important to define the focal product of the market analysis, (i.e. the main product under investigation as defined in Section 4.2). The question is whether the price of the focal product is sufficiently constrained by the price of the other.

192. Two cases are possible: the high quality version of the product may exert a considerable competitive constraint on the pricing of a low quality version, whereas the opposite might not be true. If so, the Authority defines two separate product markets: one including the low and high quality versions, and another one including the high quality version only.

193. There might be cases in which the opposite is true: the low quality version of the product exerts a competitive constraint on the high quality version, but not vice-versa, so that the

55 This cluster market approach to product market definition in the antitrust analysis of bank mergers was first outlined by the Supreme Court in United States v. Philadelphia National Bank (1963).
market includes both products if the Authority has to assess a conduct, a merger or an acquisition that affects the sale of the high quality version, but is restricted to the low quality version if the issue under exam pertains only to the sale of this version of the product.

Asymmetric markets: different qualities

For example, users of broadband services (4-10 Mb/s) may switch to ultra-broadband services (>20 Mb/s) in response to an increase in the price of broadband services, but the opposite might not be the case because end user application require an ever-increasing capacity. If the focal product of the investigation is broadband services, than it is appropriate to define a single market for both broadband and ultra-broadband services (the latter constrain the price of the formers). Conversely, if the focal product of the investigation is ultra-broadband services, than a market including ultra-broadband services only should be defined.

194. Although asymmetric substitutability is more easily explained with examples concerning differences in quality of the products, it should be noted that other sources of asymmetry may exist as well. Ultimately, consumers’ preferences are what determine asymmetric substitutability. In the next box, an example centered on the idea of “fitness for a particular purpose” is provided.

Asymmetric markets: fitness for a specific purpose

Consider the development, production and distribution of agricultural insecticides (products designed to control insects that damage cultivated plants, especially food crops). The insecticides markets have been usually defined on a crop-by-crop basis because most insecticides are designed to combat a whole range of insects infecting particular plants. It could be argued that a division should be made between soil and foliar insecticides because the major concern of the farmer, who is confronted with certain pests, is whether the respective insect problem is above ground or below ground, since this determines the kind of product required and the kind of application equipment necessary. However, evidence is available that, although the substitutability between soil and foliar insecticides is generally limited, in some culttures, seed treatment has virtually eliminated any market for control of early sucking pests by foliar application, and that some systemic soil insecticides might substitute at least one foliar application. Conversely, soil insecticides, which are used to control foliar pests, cannot be simply replaced by foliar insecticides. Hence, there is evidence of asymmetric substitution: from foliar and soil applications of insecticides to seed treatment, but not the other way around (from seed treatment to the other applications). If the focal product of the investigation is foliar insecticides, than a single relevant market for foliar and seed insecticides shall
probably be defined. Conversely, if the focal product of the investigation is seed insecticides, than a separate relevant market is appropriate.  

Key ideas

- Consumer preferences may determine asymmetric substitutability
- When there is preliminary evidence that substitution may be asymmetric, the central question is whether the price of one product sufficiently constrains the price of the other and vice versa

10.4 Aftermarkets

195. In some specific cases, consumers of a product (primary good) must subsequently purchase some complementary products (secondary goods). Aftermarkets are, hence, markets for the secondary goods that are complementary to the primary goods, for compatibility, technical specifications or intellectual property rights reasons.

196. The market definition process outlined in these Guidelines remains applicable even in the presence of aftermarkets. However, in determining the boundaries of the market (i.e. in assessing the existing competitive constraints), the Authority shall take into consideration the competitive constraint represented by competition in the foremarket, i.e. the market for the primary goods.

197. Depending on the specific case under investigation, one of the following market configurations is possible:

a. Dual markets: a market for the primary product and a separate market for all secondary products (e.g. a market for cars and a market for spare parts).

b. A single system market: a unified market for the primary product and the secondary product (e.g. a market for cars and spare parts).

c. Foremarket and a series of aftermarkets: a market for primary products and separate markets for the secondary product(s) associated with each primary product (e.g. a market for cars and a set of markets for brand-specific spare parts).

198. The Authority will look at whether secondary products are compatible with any make of the primary product; in that case, there is a market for all undertakings producing the primary products, and a separate market for all secondary products (the dual market configuration). If secondary products, instead, are brand-specific, then the Authority will test whether the price in the aftermarkets affects competition in the foremarket. If there is evidence of a link between prices in the aftermarket and competition in the foremarket, then primary and

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56 See Case COMP/M.2547- Bayer/ Aventis Crop Science of the European Commission.
secondary goods are part of the same market (single system market). Finally, the Authority will define a foremarket to be distinct from a series of aftermarkets, if secondary products are not compatible among the various primary products’ brands and prices in the foremarket are not sensitive to changes in prices in the aftermarkets (foremarket and a series of aftermarkets configuration). A schematic decision tree is pictured below:

![Figure 4 - Aftermarkets decision tree](image)

199. Some specific evidence may suggest a single system markets exists:

- enough costumers evaluates the price of both the primary and the secondary product when deciding the primary product to buy (so called whole life costing, see the example Pelikan/Kyocera in the box below)
- when reputation effects would harm an undertaking’s profits on new or repeat customers of its primary products if she set a supra competitive price for the secondary products.

A single system market – Printers (both ink-jet and laser) usually require expensive consumables; both original and compatible parts are available. Given that printers and consumables are distinct products, one could argue whether it is appropriate to define a dual market, a single system market, or a foremarket and a series of aftermarkets. In Pelikan/Kyocera the Commission noted that: (i) consumers were both able (in theory) and likely (in practice) to make an informed choice including life-cycle pricing; (ii) a sufficient number of customers would alter their purchasing behavior in the primary market in the event of an apparent policy of exploitation in the secondary market; and (iii) consumers would do so within a reasonable time. Basing on these considerations, it was concluded that competition in the printer market (the primary market) resulted in effective discipline in the consumables
market (the secondary market): a single system market was identified.⁵⁷

200. The analysis of price levels and lifetime of primary and secondary products may play an important role in understanding the configuration of the markets. In general, when primary products are characterized by a long lifetime and relative high prices, a small but significant price increase above the competitive level for the secondary products (such as spare parts and maintenance services) would be profitable for a hypothetical monopolist. Therefore, if the secondary products are compatible across the various primary products, it is normally appropriate to consider a dual market definition. If, instead, the secondary products are incompatible with all makes of the primary products, then it is generally appropriate to identify a single market for the primary good and a series of brand-specific aftermarkets.

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**Aftermarkets in practice (2)**

*Foremarket and brand-specific aftermarkets* - IBM sells mainframes, replacement parts for its mainframes and maintenance services. Hence, IBM competes in several product markets: (i) a primary market for large corporate servers, where it sells its mainframes; (ii) an aftermarket for inputs (supplied only by IBM) required for the maintenance of IBM mainframes and necessary to operate in it; (iii) another aftermarket for maintenance services themselves for IBM mainframes. One could argue whether the aftermarket for IBM’s inputs and maintenance services for mainframes constitute separate product markets or are part of a single market for “systems”. The answer depends on the likely reaction of consumers to price increases in the aftermarkets. A separate market for the primary good and brand-specific aftermarkets could exist if two conditions are both met: (a) secondary product for different brands are incompatible and not substitutable (i.e. switching to secondary products of other producers is not possible); (b) an increase in the aftermarket prices does not affect customers’ choices in the primary market (for example due to high switching costs in the market for the primary product). Both conditions are met in the present case: products from other brands are incompatible and changing the mainframe in reply to an increase in the price of replacement parts is highly anti-economical. Hence “relevant product aftermarkets might be identified for inputs needed in order to provide maintenance services to IBM mainframes which cannot be sourced outside IBM and for hardware and operating system software maintenance services for IBM mainframes”.⁵⁸

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Guidelines on Market Definition

Key ideas

- In analyzing aftermarkets, it is central to take into consideration the competitive constraint represented by competition in the foremarket (i.e. the market for the primary goods)
- Depending on the case at hand, it may be appropriate to define dual markets, a single system market or a foremarket and a series of aftermarkets
- In practice, the Authority shall be concerned with collecting evidence on the degree of compatibility between secondary products and on how the price in the aftermarket affects the price in the foremarket

10.5 Two-sided markets

201. Some markets are characterized by two groups of users with interdependent demands and indirect network effects. The HMT conceptual framework for the definition of the relevant market remains valid also in these cases. However, the central feature of two-sided markets is that, in order to be viable, undertakings must take both sides on board. Hence, an analysis limited to one of the two sides of the market does not capture the effects of the interdependence of demand on both sides and may lead to a market being defined too narrowly.

202. When facing two sided markets, it is important to remember that the market definition process is concerned with identification of the competitive constraints firm face, and, ultimately, with the assessment of potential competitive concerns. In practice in assessing the effect of an increase in the price charged to one side of the market, the analysis shall carefully consider that any phenomenon of substitution taking place on the same side market may trigger some substitution on the other side, and this, in turn, may determine further substitutions on the side where the price has been raised.

203. A SSNIP on just one side of the market will reduce demand on this side but, due to the indirect network effect, also demand on the other side and this again has an effect on the first side. Similarly, when implementing the HMT by a critical loss analysis, the profitability of a SSNIP should be assessed with respect to the critical and the actual losses on both sides of the market.

Two sided markets: an example

Real estate shopping mall developers face a problem typical of two sided platforms. On one hand, they need to attract commercial activities to rent available spaces. On the other, they need to attract shoppers willing to make their purchases in those stores. In this case, indirect network externalities work as follows: shoppers benefit from an increase in the number of other shoppers due to the indirect effect this increase has on the number of commercial activities that will find it profitable to rent a store in the shopping mall. Similarly, each commercial activity will enjoy indirect benefits from the opening of other stores due to the increased attractiveness of the shopping mall in the eyes of the customers. When implementing the HMT, the Authority shall take into account that a small price increase of the rental fees, might
lead to a reduction in the number of commercial activities in the shopping mall. This will in turn attract less final consumers (who could, for example, switch to another shopping mall offering a greater variety of stores), a circumstance that might further reduce the number commercial activities, and so on.

**Key ideas**

- In two sided markets, substitution taking place on the same side market may trigger some substitution on the other side
- An analysis limited to one side of the markets does not capture the effects of the interdependence of demand on both sides and may lead to a market being defined too narrowly
11. **List of Cases**

In order of appearance:

11. Case Nutreco Holding NV and Hydro Seafood GSP Ltd, of the UK Competition Commission.