2208 DG Enterprise and Industry

Practical methods to assess efficiency gains in the context of Article 81(3) of the EC Treaty

Final Report

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Preface

This report from Copenhagen Economics has been prepared by a team consisting of Mr. Petter Berg, Mr. Torben Thorø Pedersen, and Dr. Henrik Ballebye Olesen. The team leader has been Dr. Claus Kastberg Nielsen, CEO and co-founder of Copenhagen Economics. Dr. H. Peter Møllgaard has provided quality control.

In particular, we are grateful for extensive and detailed comments to earlier versions of this study from Ms. Isabelle van den Weghe, Ms. Alexandra Kiel, and Mr. Luigi Vitello from the European Commission, General Directorate Enterprise and Industry.

Copenhagen, 31 March 2006

Claus Kastberg Nielsen
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Chapter 1 How to analyse agreements and their economic effects

A competitive and open internal market provides the best guarantee for European firms to increase their efficiency and innovative potential. A vigorous competition policy is thus a key driver for competitiveness and economic growth to the benefit of the European consumer.

Agreements between firms are natural and important business tools increasing firms' efficiency and innovation. This is the *raison d'être* of agreements. Firms set up agreements to solve problems that cannot be solved more effectively individually. At its best, agreements allow firms to save internal production resources, solve important coordination problems on the market and to revitalise product and process development.

Despite these positive effects, some agreements may also compromise effective competition. For this reason, article 81(1) of the EC Treaty declares that all agreements, which have as their object or effect the prevention, restriction or distortion of competition within the common market, are prohibited provided they affect trade between Member States.

However, in some cases an agreement with anti-competitive effects in the above sense may be exempted from prohibition provided it fulfils four cumulative conditions lined out in Article 81(3)[1]. The key condition is that the agreement increases efficiency more than it reduces competition[2]. If an agreement is exempted according to Article 81(3), we say that the agreement has been exempted due to a successful exemption test.

The core of an exemption test is the balancing of relevant efficiency gains (e.g. price reductions) against indispensable anti-competitive effects (e.g. price increases) generated by the agreement. If the efficiency gains are larger than the anti-competitive effects, the outcome of the efficiency test is positive and the agreement will be compatible[3] with EC law. In contrast, if the anti-competitive effects are larger than the efficiency gains, the outcome of the efficiency test is negative and the agreement will not be compatible with EC law.

Since May 2004, agreements between firms are part of a self-enforcement system.[4] This implies that firms themselves need to evaluate whether a given agreement is compatible with EC law. Firms themselves have to carry out the efficiency test and, clearly, this test must follow

[1] In the remainder of the report we use the term 'Article' for 'Article of the EC Treaty'.

[2] In addition, efficiencies must be passed on to consumers, anti-competitive effects must be indispensable and competition must not be eliminated in a substantial part of the relevant market.

[3] Provided all other conditions are fulfilled as described in the footnote above.

[4] Since May 2004, firms are neither required, nor expected to notify their agreements to the Commission. The European Commission does not any longer have the exclusive power to grant individual exemptions under Article 81(3). Now it can be applied by national competition authorities, national courts and by individual firms.

the same principles as those applied by the Commission or national competition authorities. Where cases give rise to genuine uncertainty because they present novel or unresolved questions as regards the application of Article 81 it is possible to seek informal guidance from the Commission (European Commission, 2004c).

If an agreement is implemented and subsequently challenged either by a competition authority or by a third party, the relevant competition authorities will examine the agreement and determine whether the agreement is prohibited or exempted. The competition authorities have to demonstrate that the agreement has anti-competitive effects, but firms can submit evidence and explain why the agreement may generate efficiencies making it qualify for exemption.

If competition authorities find that the agreement merits exemption, the agreement will be exempted with retroactive effect from the date of entering into force. If, on the other hand, competition authorities find that the agreement is covered by Article 81 and does not merit exemption, the agreement has to be terminated *ex tunc*, i.e. with retroactive effects, the firms must bear the costs of possible reorganisation, in some cases leading to substantial administrative and commercial losses, and the firms risk being fined and having to pay damages to a third party.

Prudent commercial risk management requires firms to make prior assessment of the risk of an agreement being terminated. In other words, firms must perform an exemption test and evaluate by themselves whether the agreement has any indispensable anti-competitive effects and whether the relevant efficiency gains associated with the agreement are sufficiently large to revoke the anti-competitive effects.

In order to facilitate the practical application of the efficiency test, the Commission has asked Copenhagen Economics to carry out a study under the title '*Practical methods to assess efficiency gains in the context of Article 81(3) of the EC Treaty*'. The purpose of the study is to offer an intuitive and well-structured framework for assessing whether an agreement can be exempted according to Article 81(3), in brief; how to carry out an efficiency test.

This study supplements three official Commission guidelines dealing with horizontal agreements (European Commission, 2001), vertical agreements (European Commission, 2000), and the applicability of Article 81(3) (European Commission, 2004). These guidelines are important tools for anyone analysing agreements.

We develop a framework, which in a logical and effective manner guides the assessor through all the considerations that are needed during the assessment. The guidance is deliberately phrased in a non-technical language avoiding both excessive legal and economic technical language. Thus, the target group, broadly speaking, covers anti-trust practitioners of any professional training; e.g. senior management, in-house and external lawyers, consultants, and staff at European or national competition authorities.

We stress that the framework is a supplementary tool and cannot substitute for the assessor's exercise of prudent legal and economic judgment based on a careful analysis of the specificities of the concrete agreement.

We have constructed the framework to be comprehensive, effects-based, and cost efficient.

The framework is *comprehensive* as it covers the entire process from the moment the need arises for an assessment of an agreement according to Article 81 until it has been concluded whether the agreement is covered by Article 81(1), and whether it merits exemption according to Article 81(3). As such the framework is not limited (as indicated in the title of the study) to

the evaluation of the efficiency gains generated by the agreement according to the principles laid out in Article 81(3).

In addition, the framework is *effects-based* as the assessment is structured according to the types of economic effects (anti-competitive or efficiency gains) arising from agreements rather than according to types of agreements, for example horizontal versus vertical agreements.[5] For this reason, we provide a unified framework covering all types of agreements. The advantage is that we avoid text duplication as some anti-competitive effects and efficiency gains may arise both for vertical and horizontal agreements, and we can, in addition, straightforwardly deal with agreements having both horizontal and vertical features.

Finally, the framework is *cost efficient* as the sequencing of the various elements of the framework is carefully chosen such that the assessor is allowed to answer all the easy questions before the difficult questions and such that the assessor can exit the analysis if he judges that the costs of providing a more precise answer by continuing the assessment more than outweighs the (subjective) benefits of getting the same precise answer.

In particular, this holds for the quantitative assessment of anti-competitive effects and efficiency gains, rightly being seen as the key bottleneck of the efficiency test. The reason is that a proper quantitative assessment in principle requires significant amounts of high quality data (which may be available only at high costs, if ever) and sophisticated and time consuming analytical techniques. Our prime solution to this problem is to carefully distinguish between *substantiation*, a low cost, low precision method for quantitative assessment, and *quantification*, a high cost, high precision (in relative terms) method.

We suggest that *quantification* may be redundant whenever *substantiation* demonstrates that the size of anti-competitive effects is much larger than the size of efficiency gains or *vice versa*. Accordingly, we suggest using *quantification* only whenever *substantiation* is not able to provide a clear answer which of the effects, anti-competitive effects or efficiency gains, dominates.

In the next section we provide a brief intuitive overview of the proposed framework.

1.1. Framework for an efficiency test

The starting point is a need for assessing a co-operative agreement between two (or more) firms. Someone needs to know whether a given agreement is compatible with EC law and must accordingly assess the agreement in the light of Article 81 of the EC Treaty, cf. Box 1.1.

The need for assessment may be prompted in several ways. Senior management may need an assessment prior to signing the agreement in order to assess whether the agreement is legal. Or senior management may need to reassess an existing agreement to make sure that the agreement is still exempted under new market circumstances. Or competition authorities have decided to investigate whether the agreement really merits exemption. In the study we use the term assessor to refer to the person or institution carrying out the efficiency test.

In this context, the term '*agreement'* is interpreted quite broadly. For there to be an agreement it is sufficient that the parties have somehow expressed a joint intention for a certain conduct on the market. In principle, it is unimportant how this intention is expressed, e.g. in writing or orally. Thus, the framework presented here does not only cover traditionally written agreements but also other kinds of cooperation. However, for simplicity we continue referring to the text of the agreement irrespective of the agreement being oral or written.

[5] In the literature it is common to distinguish between horizontal agreements between firms on the same level of the value chain and vertical agreements between firms on different levels of the value chain.

Box 1.1 Article 81 of the EC Treaty

	Text of Article 81 of the EC Treaty	Position in the proposed framework
	Article 81(1) The following shall be prohibited as incompatible with the common market:	
	all agreements between undertakings, decisions by associations of undertakings and concerted practices …	
(i)	…which may affect trade between Member States and …	**Test 1: Screening**
(ii)	…which have as their object or effect the prevention, restriction or distortion of competition within the common market, …	**Test 1: Screening** **Test 2: Measuring**
(iii)	and in particular those which: (a) directly or indirectly fix purchase or selling prices or any other trading conditions; (b) limit or control production, markets, technical development, or investment; (c) share markets or sources of supply; (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.	**Test 1: Screening**
	Article 81(2) Any agreements or decisions prohibited pursuant to this Article shall be automatically void.	
	Article 81(3) The provisions of paragraph 1 may, however, be declared inapplicable in the case of:	
	- any agreement or category of agreements between undertakings; - any decision or category of decisions by associations of undertakings; - any concerted practice or category of concerted practices, …	
(iv)	…which contributes to improving the production or distribution of goods or to promoting technical or economic progress, …	**Test 2: Measuring**
(v)	…while allowing consumers a fair share of the resulting benefit, and which does not:	**Test 3: Balancing**
(vi)	(a) impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives;	**Test 3: Balancing**
(vii)	(b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question.	**Test 3: Balancing**

Source: DG Competition website and Copenhagen Economics

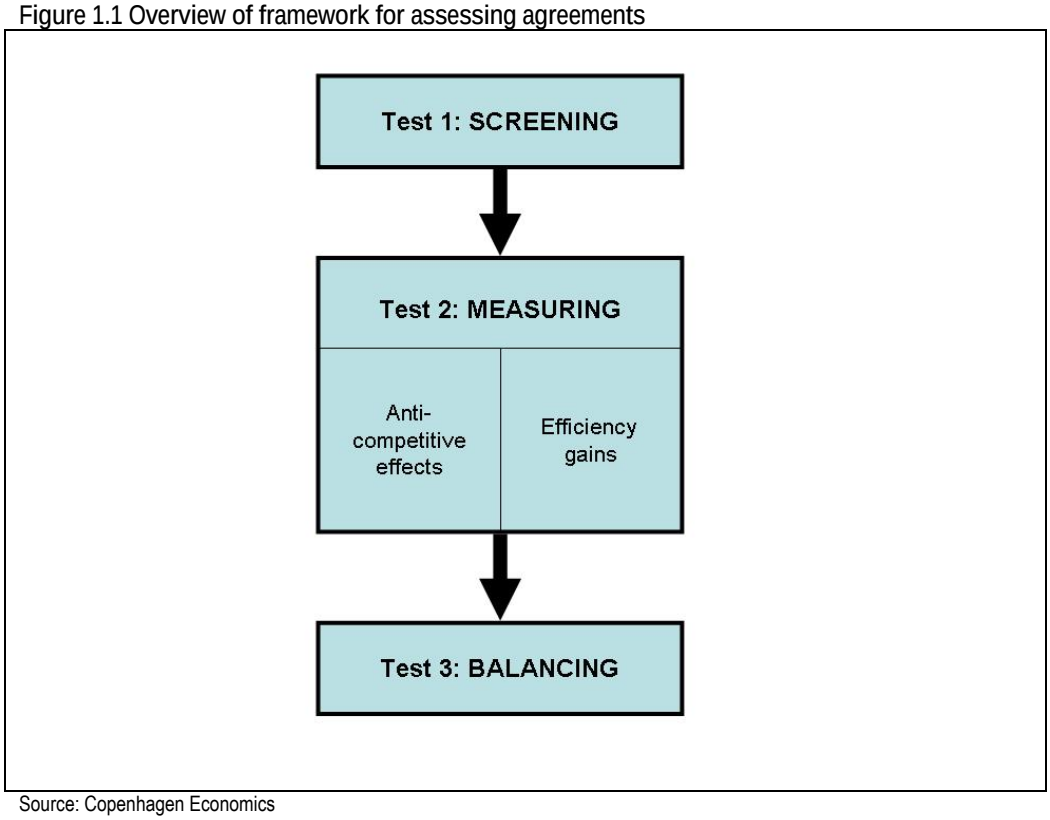
We assume that the assessor is familiar with the text of the agreement and – in addition – has identified the relevant market(s) for each of the goods or services covered by the agreement.

The relevant market is a term used to describe sets of goods (or services) linked by demand and supply patterns such that the companies producing and selling these goods are prevented from behaving independently of an effective competitive pressure.

Prior identification of the relevant markets is important for two reasons. First, market shares on the relevant markets are frequently used as thresholds for various exemption rules that play a key role in the initial screening phase of the assessment. Second, market shares on the relevant market are important indicators of the likelihood of anti-competitive effects and the likelihood of efficiency gains being passed on to consumers. Simple guidance on performing a proper definition of the relevant markets can be found in Appendix 1.

We recommend the assessor to evaluate the agreement in question following three sequential tests: *Test 1: Screening*, *Test 2: Measuring* and *Test 3: Balancing,* cf. Figure 1.1. In the next sections, we describe in more detail the procedure and sequencing of each of these tests.

Figure 1.1 Overview of framework for assessing agreements



Source: Copenhagen Economics

1.2. Test 1: Screening

The purpose of *Test 1: Screening* is to determine whether the agreement is covered by an automatic rule of exemption or non-prohibition, cf. Box 1.1 (i-ii). This can easily be verified using simple indicators of market shares, turnover or employment and there is no need to embark on complicated competition analysis. If affirmative, the agreement is compatible[6] with EC law. If not, the assessor proceeds to *Test 2: Measuring.*

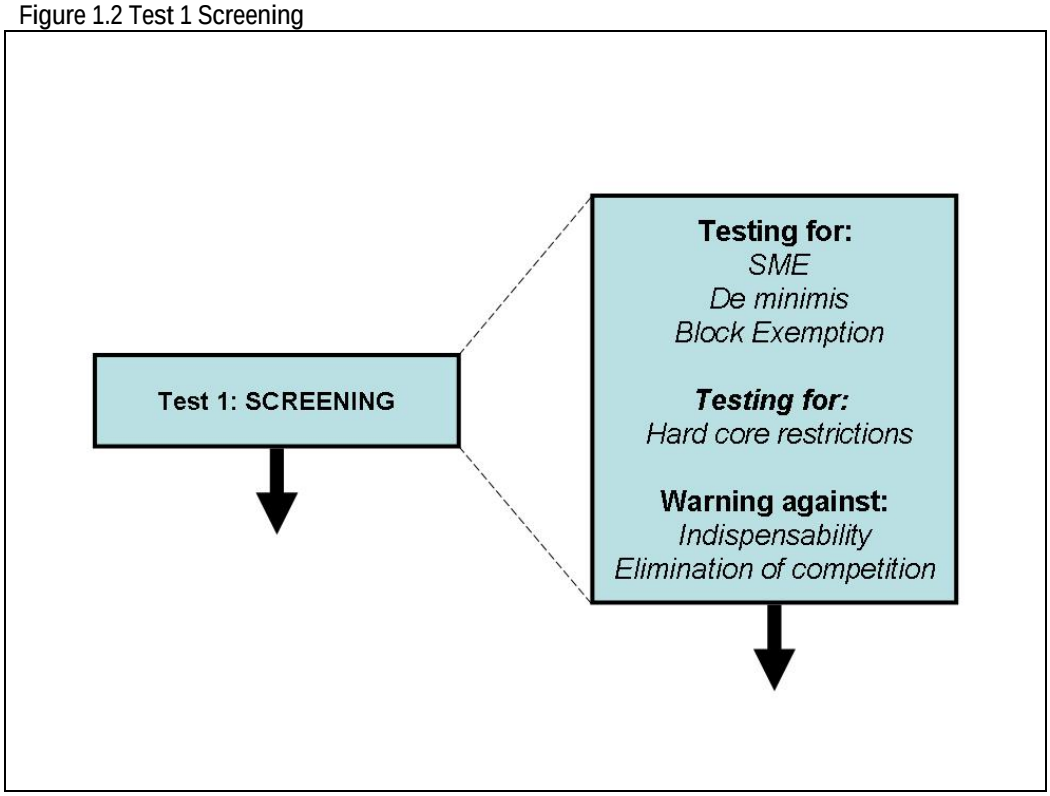
We screen all agreements according to the above criteria before knowing whether the agreement has anti-competitive effects or not. The reason is that it is more cost effective to test for well-specified market shares or turnover thresholds than testing for anti-competitive effects.

[6] At least with respect to Article 81

And the assessor commits no error: if the agreement fulfils the criteria, it is in any case not covered by Article 81, regardless of the presence of anti-competitive effects.

Test 1: Screening contains three steps, cf. Figure 1.2.

Figure 1.2 Test 1 Screening



Source: Copenhagen Economics

First, the assessor has to verify whether the agreement is compatible with any of the following conditions:

- agreements between very small firms which are assumed not to affect trade and for this reason are not covered by Article 81(1); cf. Box 1.1 (i).
- agreements between firms with limited market shares which are assumed not to affect competition and for this reason are not covered by Article 81(1); cf. Box 1.1 (ii).
- agreements which under certain additional conditions specified in Block Exemption Regulations are assumed to generate such economic benefits as required by Article 81(3) that they are automatically exempted from the prohibition in Article 81(1); cf. Box 1.1 (iv-vii).

Second, the assessor has to verify whether the agreement contains hard core restrictions, cf. Box 1.1 (iii). If this is the case, the agreement cannot be non-prohibited or exempted according to the rules specified in the previous step (with a single exception). Hard core restrictions are specific features of an agreement that are assumed to have a particularly negative impact on competition. The assessor needs a successful exemption test demonstrating that the relevant efficiency gains outweigh the large expected anti-competitive effects arising from hard-core restrictions.

Furthermore, the assessor has to realise that an agreement with hard core restrictions is always covered by Article 81(1) and an exemption according to Article 81(3) is going to be extremely difficult. For this reason, the assessor should seriously contemplate revising the

agreement and abandon the hard core restrictions rather than attempting justification by an exemption test.

Third, if the assessor has decided to move on to *Test 2: Measuring* because the criteria in the first step are not fulfilled or because the agreement contains hard core restrictions, it is relevant to raise two red warning flags to be kept in mind during the ensuing analysis.

The agreement must be indispensable in the sense that the parties to the agreement must not be able to achieve the same efficiency gains with alternative less anti-competitive means, for example by organic growth or by agreements with an alternative firm, cf. Box 1.1 (vi). If this is the case, the agreement cannot be exempted and the parties to the agreement have to explore alternative possibilities rather than insisting on the agreement.

In addition, the agreement must not be able to eliminate competition on a substantial part of the relevant markets, cf. Box 1.1 (vii). If this is the case, the agreement cannot be exempted and the parties to the agreement have to abandon the original agreement and search for alternative means to reach their goals.

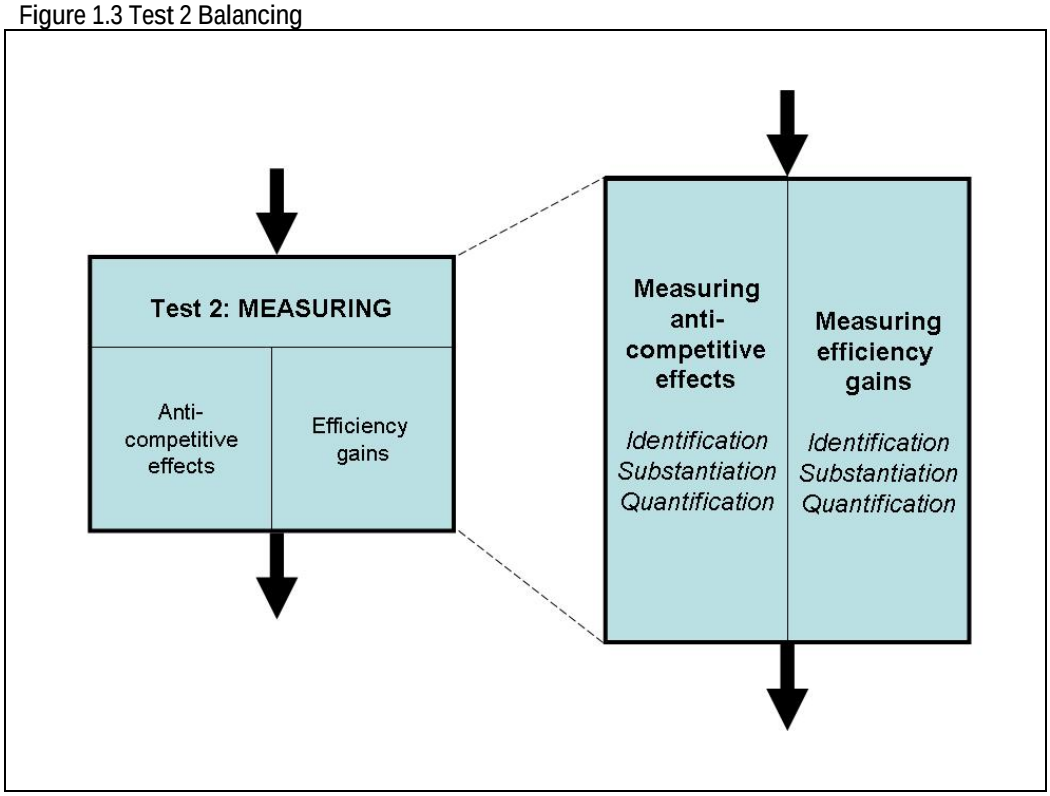
In both cases, the conceptual framework, the tools, and the information needed to test for the two conditions are most naturally presented in *Test 2: Measuring.* The proper assessment will take place in *Test 3: Balancing*. However, we find it prudent to bear these additional constraints in mind during the entire analysis enabling the assessor to opt out in case she decides that the likelihood of meeting these conditions is small.

1.3. Test 2: Measuring

The purpose of *Test 2: Measuring* is to identify and measure the magnitude of any anti-competitive effect and efficiency gain of an agreement, cf. Box 1.1 (ii & iv). In most cases, the assessor, after completing *Test 2: Measuring*, proceeds directly to *Test 3: Balancing*. However, in the particular case where no anti-competitive effects are identified, the agreement will not be covered by Article 81 and the assessor can exit the exemption test.

Test 2: Measuring covers the measurement of both anti-competitive effects and efficiency gains. It is recommended that these two processes proceed in parallel. We recommend that the assessor in each of the two processes follows a working sequence of *Identification*, *Substantiation*, and *Quantification*, cf. Figure 1.3.

Figure 1.3 Test 2 Balancing



Source: Copenhagen Economics

In *Identification* the assessor puts name on all anti-competitive effects by answering a simple yes/no questionnaire on the basis of a careful reading of the text of the agreement. For each affirmative answer, a specific anti-competitive effect is identified. In the particular case where no anti-competitive effects are identified, the agreement is not covered by Article 81 and the assessor can exit the exemption test. In all other cases, the assessor needs to proceed.

Measuring the magnitude of an anti-competitive effect is the most important bottleneck of the exemption test. Measuring economic effects may require the use of complex techniques and access to data may be hard and/or costly to obtain. For this reason we strongly recommend the assessor to distinguish between *substantiation* and *quantification*. Substantiation measures the *size order* of the anti-competitive effects, while quantification measures the *size* of the anti-competitive effects. Substantiation is less sophisticated and less precise, but also much easier and less costly than actual quantification.

The key reason for distinguishing between substantiation and quantification is to stress that in some cases there is no need to go into costly and time consuming quantification because substantiation may be sufficient. For example, this is the case when substantiation reveals small anti-competitive effects and large efficiency gains (or *vice versa*). Why worry about the exact size of these effects and gains, when the positive efficiency gains in any case are likely to be (numerically) much larger than the negative anti-competitive effects? Now, it also becomes evident why measuring anti-competitive effects and efficiency should proceed in parallel. The reason is that the decision to move on to quantification requires a prior comparison of the size of both the anti-competitive effects and the efficiency gains obtained during substantiation.

We set up a list of indicators and techniques that the assessor can employ to substantiate the size of the anti-competitive effects. And we provide an exhaustive list of more complex and

costly techniques to quantify the same anti-competitive effects, in case the assessor decides to proceed to quantification.

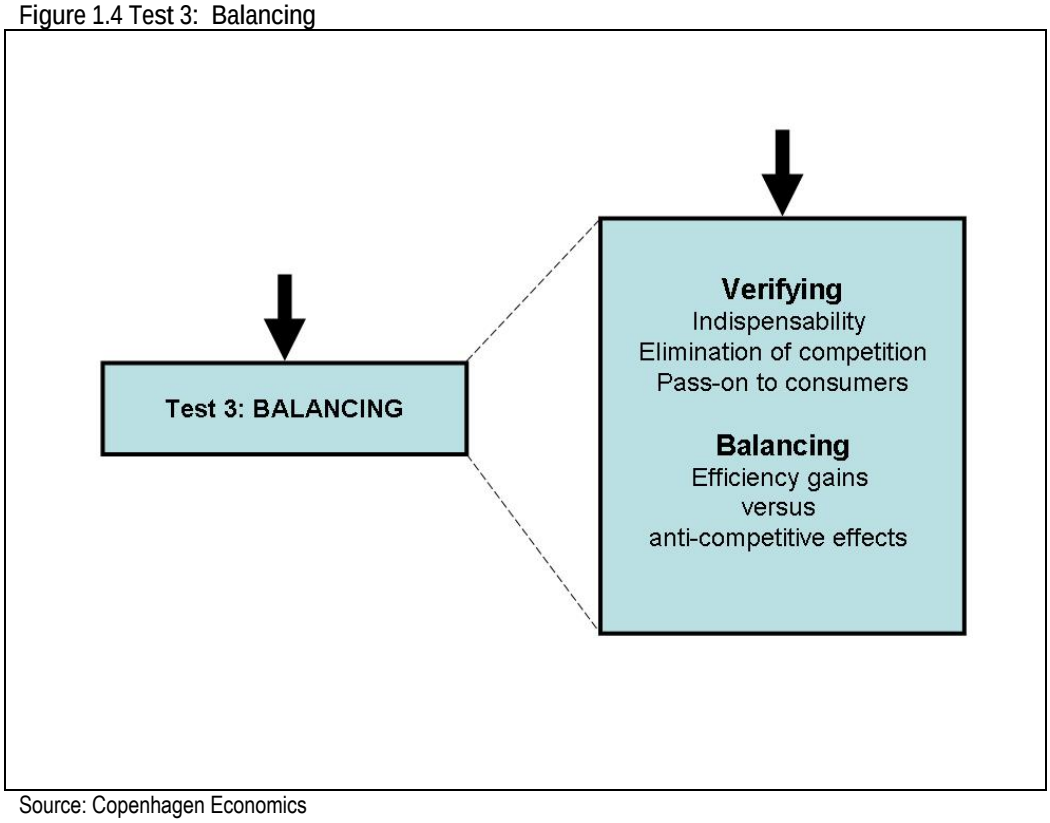
Measuring efficiency gains, follows the same logic as measuring anti-competitive effects. We recommend again that the assessor follows the same working sequence of *Identification*, *Substantiation*, and *Quantification* with exactly the same content as outlined above.

When both anti-competitive effects and efficiency gains have been substantiated, or eventually quantified, the assessor proceeds to *Test 3: Balancing*.

1.4. Test 3: Balancing

The purpose of *Test 3: Balancing* is to determine whether the *relevant* efficiency gains of the agreement are larger than the *indispensable* anti-competitive effects. If this is the case, the assessor may be able to conclude that the agreement is exempted according to Article 81(3). In all other cases, the agreement will be incompatible with EC law. We recommend that the assessor follows a working sequence of *Verifying*, *Modifying*, and *Balancing*, cf. Figure 1.4.

Figure 1.4 Test 3: Balancing



Source: Copenhagen Economics

First, we have to *verify* that the overall agreement[7] is indispensable, cf. Box 1.1 (vi), and does not eliminate competition on a substantial part of the relevant markets, cf. Box 1.1 (vii).

The agreement as such must be indispensable in the sense that the parties to the agreement must *not* be able to achieve the same efficiency gains with alternative less anti-competitive means, for example by organic growth or by an agreement with an alternative firm. If this is the case, the agreement cannot be exempted and the parties to the agreement have to exploit alternative possibilities rather than insisting on the agreement.

[7] We distinguish between indispensability of the overall agreement and indispensability of single elements of the agreement. In the former, we test whether the agreement as such is required for achieving the efficiency gains. In the latter, we test whether the elements of the agreement is required for achieving the efficiency gains.

In addition, the agreements must not be able to eliminate competition on a substantial part of the relevant markets. If this is the case, the agreement cannot be exempted and the parties to the agreement have to abandon the original agreement and search for alternative means to reach their goals.

These two conditions are precisely the conditions we warned the assessor to bear in mind during the exemption test, cf. section 1.2. However, the information and analytical insight required to check the two conditions have only been made available during *Test 2: Measuring.*

Second, we also have to check two additional conditions: pass-on to consumers, cf. Box 1.1 (v), and the indispensability of each single element of the agreement, cf. Box 1.1 (vi). This requires us eventually to modify the economic effects measured in *Test 2: Measuring*.

We have to modify the efficiency gains such that it only includes efficiency gains passed-on to consumers, not the gains kept by the parties to the agreement. The key point is that consumers by definition bearing all negative anti-competitive effects must not be made worse off by the agreement. This requires that the efficiency gains *that are passed on to consumers* at least match the anti-competitive effects.

We also have to modify the agreement and the estimates of anti-competitive effects to make sure that each single element of the agreement is indispensable in the sense that the presence of any element causing anti-competitive effects must at the same time be instrumental for obtaining the efficiency gains. If not, the agreement and the estimate of anti-competitive gains have to be modified.

Third and finally, the assessor can compare the modified estimates of *relevant* efficiency gains with the *indispensable* anti-competitive effects.

If the anti-competitive effects are larger than the efficiency gains, the assessor can conclude[8] that the agreement is prohibited according to Article 81(1).

If, on the other hand, efficiency gains are larger than anti-competitive effects (and the conditions of indispensability and elimination of competition are also fulfilled), the assessor can conclude that the agreement is exempted according to Article 81(39 due to a successful exemption test.

The assessor, however, must bear in mind that the final conclusion depends heavily on the current market situation. If the market situation changes, the economic effects of the agreement may change, potentially giving rise to different conclusions.

1.5. Case studies

At the end, the study presents two hypothetical case studies on a horizontal and a vertical agreement. The purpose of these case studies is partly to demonstrate the practical use of the framework developed above but also to give ideas on how to verify whether specific anti-competitive effects or efficiencies are present or not.

The two agreements chosen for the case studies are a horizontal production agreement and a vertical selective distribution agreement. These agreements are chosen because they are the most common agreements historically notified to the Commission and because they include a very broad selection of the potential anti-competitive effects and, in particular, efficiency gains.

Both cases are hypothetical but based on two real Commission decisions. The set up of the cases has been modified and all firm specific data has been replaced by fabricated data.

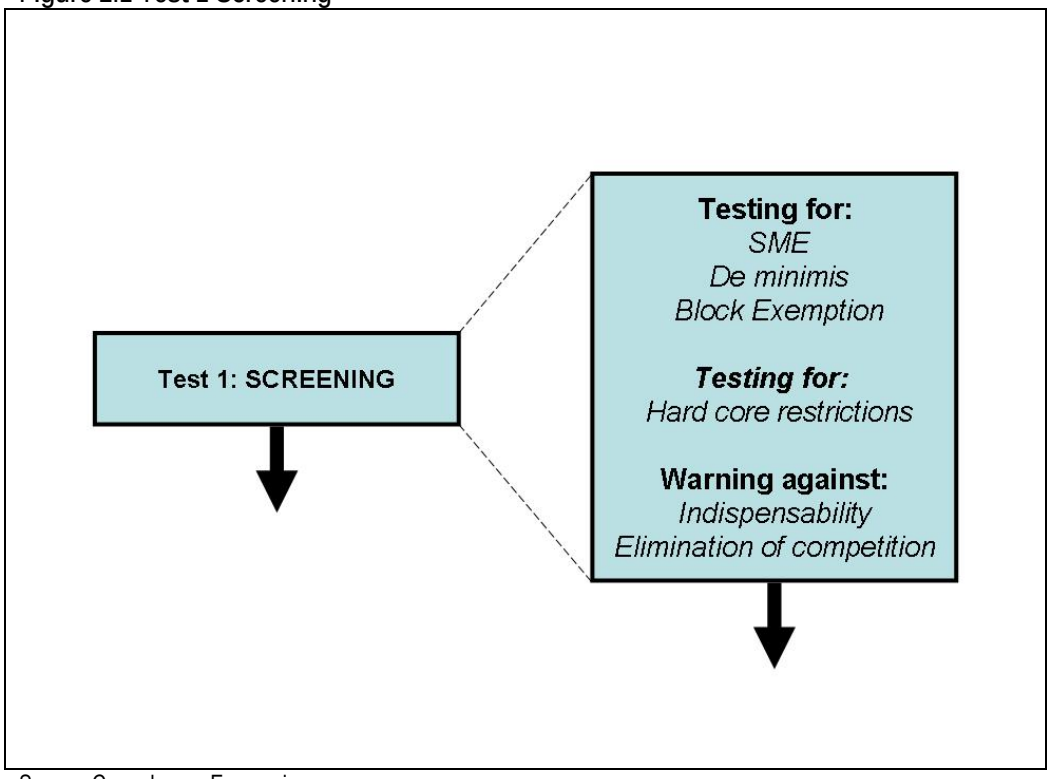
Test 1: Screening

Chapter 2 Screening the agreement

A natural starting point for an exemption test is to clarify whether an exemption test is required at all. In some cases Commission regulation specifies conditions under which Article 81(1) is not applicable or under which the agreement is automatically exempted due to Article 81(3). These conditions are mostly specified in terms of thresholds for market shares, turnover or employment. The key goal of *Test 1: Screening* is to clarify whether these conditions hold for the agreement under scrutiny.

Screening contains three steps, cf. Figure 2.1.

Figure 2.1 Test 1 Screening



Source: Copenhagen Economics

First, the assessor has to verify whether the agreement fulfils a number of simple and objective conditions allowing the assessor to decide whether the agreement affects trade or competition or whether it is automatically exempted.

Second, the assessor has to verify whether the agreement contains hard core restrictions, cf. cf. box 1.1 (iv). If this is the case, the agreement cannot be 'exempted' according to most of the

rules specified in the previous step. Hard core restrictions are specific features of an agreement that are assumed to have a particular negative impact on competition. Furthermore, the assessor has to realise that an agreement with hard core restrictions is always covered by Article 81(1) and an exemption according to Article 81(3) is going to be difficult. For this reason, the assessor should seriously contemplate revising the agreement and abandon the hard core restrictions rather than attempting justification by an exemption test.

Third, if the assessor has decided to move on to *Test 2: Balancing* because the criteria in the first step are not fulfilled or because the agreement contains hard core restrictions it is relevant to raise two red warning flags to be kept in mind during the ensuing analysis.

The agreement must be indispensable in the sense that the parties to the agreement must not be able to achieve the same efficiency gains with alternative less anti-competitive means, for example by organic growth or by agreements with an alternative firm. If this is the case, the agreement cannot be exempted and the parties to the agreement have to exploit alternative possibilities rather than insisting on the agreement.

In addition, the agreement must not be able to eliminate competition on a substantial part of the relevant markets. If this is the case, the agreement cannot be exempted and the parties to the agreement have to abandon the original agreement and search for alternative means to reach their goals.

In both cases; the conceptual framework, the tools, and the information needed to test for the two conditions are most naturally presented in *Test 2: Balancing* and the proper assessment will take place in *Test 3: Verifying*. However, we find it prudent to bear these additional constraints in mind during the entire analysis enabling the assessor to opt out in case she decides that the likelihood of meeting these conditions is small.

2.1. Is the agreement covered by Article 81(1) at all?

In some cases agreements are assumed not to be prohibited or automatically exempted. Theses cases are defined by various Commission Notices, Recommendations or Regulations. In some cases, agreements are assumed not to affect trade. In other cases, agreements are assumed not to restrict competition. In both cases, agreements are not covered by Article 81(1). In other cases, agreements are under certain conditions assumed to generate such efficiency gains that they automatically are assumed to outweigh any anti-competitive effects. In these cases, exemption according to Article 81(3) automatically applies.

Effect on trade

Article 81(1) requires that the agreement affects trade between Member States. An agreement that does not affect trade is thus not prohibited by Article 81(1). However, there might be similar legislation on national level.

According to the Commission, cf. Box 2.1, agreements are not capable of affecting trade if the joint market share of the parties is smaller than 5 percent *and* if the relevant Community turnover of the products concerned exceeds €40 million. For horizontal agreements the relevant turnover is the combined turnover, for vertical agreement the supplier's turnover only.

Also according to the Commission, cf. Box 2.1, small and medium sized firms being party to an agreement[9] are also not capable of affecting trade between Member States. The Commission defines small and medium size firms as firms with employment fewer than 250 persons, annual turnover not exceeding €50 million, and/or an annual balance sheet total not exceeding €43 million.

[9] Conditional of not containing hard core restrictions, cf. section 2.2.

Box 2.1 No effect on trade between Member States

Commission Notice - Guidelines on the effect on trade concept contained in Articles 81 and 82 of the Treaty, OJ 2004/C 101/07(Effect on trade Notice)

Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized firms, OJ 2003/361/EC (SME-recommendation)

De minimis

Article 81(1) requires that the agreement restricts competition. An agreement that does not restrict competition is thus not prohibited.

According to the Commission, cf. Box 2.2, agreements are not able to appreciably restrict competition if the parties to the agreement[10] have small market shares (*de minimis* Notice). For horizontal agreements the relevant threshold is a combined market share not larger than 10 percent, for vertical agreements a supplier market share not larger than 15 percent.

Box 2.2 De minimis

Commission Notice on agreements of minor importance which do not appreciably restrict competition under Article 81(1) of the Treaty establishing the European Community (de minimis), OJ 2001/C 368/07

Block Exemption Regulations

Article 81(3) exempt an agreement from the prohibition in Article 81(1) if it fulfils a set of criteria. According to the Commission, certain types of agreements[11] are likely automatically to fulfil these criteria provided a number of less restrictive criteria are fulfilled, typically market share thresholds. These agreements and criteria are defined in Block Exemption Regulations cf. Box 2.3. Thus, firms need not examine their agreement individually but have only to prove that it qualifies for one of the Block Exemption Regulations (BERs).

The Commission has issued three 'large' Block Exemption Regulations for specialisation agreements, R&D agreements, and vertical agreements and three 'small' Block Exemption Regulations for technology transfer agreements, agreements in the motor vehicle sector, and agreements in the insurance sector, cf. Box 2.3.

The large Block Exemption Regulations automatically exempts vertical agreements if the market share of the supplier is smaller than 30 percent; specialisation agreements if the combined market share is below 20 percent; and R&D agreements if the combined market share is below 25 percent.

[10] Conditional of not containing hard core restrictions, cf. section 2.2.
[11] Conditional of not containing hard core restrictions, cf. section 2.2.

Box 2.3: General Block Exemption Regulations

Specialisation agreements

Commission Regulation No 2658/2000 of 29 November 2000 on the application of Article 81(3) of the Treaty to categories of specialisation agreements

Block exemption regulation applies for unilateral specialisation agreements, reciprocal specialisation agreements and joint production agreements between competing parties, provided that that the combined market share of the participating undertakings does not exceed 20 % of the relevant market.

R&D agreements

Commission Regulation No 2659/2000 of 29 November 2000 on the application of Article 81(3) of the Treaty to categories of research and development agreements

Block exemption regulation applies for agreements concerning joint research and development and joint or individual exploitation of the results are covered may be covered by the block exemption if;

- all the parties must have access to the results of the joint research and development for the purposes of further research or exploitation and are free independently to exploit the results,
- the joint exploitation relates to results which are protected by intellectual property rights or constitute know-how,
- the undertakings specialised in production are required to fulfil orders for supplies from all the parties and,
- the combined market share of competing participating undertakings does not exceed 25 % of the relevant market.

Vertical agreements

Commission Regulation No 2790/1999 of 22 December 1999 on the application of Article 81(3) of the Treaty to categories of vertical agreements and concerted practices

Block exemption regulation applies for agreements between undertakings that, for the purposes of the agreement, at a different level of the production or distribution chain, and relating to the conditions under which the parties may purchase, sell or resell certain goods or services (vertical agreements) provided that the suppliers market share does not exceed 30 % of the relevant market.

Technology transfer agreements

Commission Regulation No 772/2004 of 27 April 2004 on the application of Article 81(3) of the Treaty to categories of technology transfer agreements

Block exemption regulation applies for technology transfer agreements that permit production of contract products. The exemption applies as long as the intellectual property right in the licensed technology has not expired, lapsed or been declared invalid or, in the case of know-how, as long as the know-how remains secret. It applies on the condition that the combined market share of the parties does not exceed 20 % on the affected relevant technology and product market.

Motor vehicle sector

Commission Regulation No 1400/2002 of 31 July 2002 on the application of Article 81(3) of the Treaty to categories of vertical agreements and concerted practices in the motor vehicle sector

Block exemption regulation applies for vertical agreements that relate to the conditions under which the parties may purchase, sell or resell new motor vehicles, spare parts for motor vehicles or repair and maintenance services for motor vehicles. The exemption does not apply to vertical agreements entered into between competing undertakings or where the supplier's market share on the relevant market exceeds 30 %.

Insurance sector

Commission Regulation No 358/2003 of 27 February 2003 on the application of Article 81(3) of the Treaty to certain categories of agreements, decisions and concerted practices in the insurance sector

Block exemption regulation applies for agreements in the insurance sector which seek co-operation with respect to issues such as:

- joint calculations, tables and studies of risks,

- standard policy conditions and models,
- common coverage of certain types of risks and,
- security devices.

The arrangements may not cover more than 20 % of the relevant market to be covered by the exemption.

2.2. Does the agreement contain hard core restrictions?

Article 81(1) prohibits agreements which restrain competition, in particular agreements with five specific types of restrictions including for example price fixing and market sharing, cf. Table 2.1. These restrictions are called hard core restrictions. Hard core restrictions are assumed to generate such anti-competitive concerns that even substantial efficiency gains are not likely to let the agreement qualify for exemption

Table 2.1: Hard core restrictions unlikely to be exempted by Article 81(3)

Horizontal agreements

- Agreements that have the object of restricting competition by means of price fixing, output limitation or sharing of markets or customers. These restrictions are considered to be the most harmful, because they directly interfere with the outcome of the competitive process.
- Price fixing and output limitation directly lead to customers paying higher prices or not receiving the desired quantities.
- Sharing of markets or customers reduces the choice available to customers and therefore also leads to higher prices or reduced output.

Vertical agreements

- Resale price maintenance (RPM); that is agreements having as their direct or indirect object the establishment of a fixed or minimum resale price or fixed or minimum price level to be observed by the buyer. Recommended resale prices are however not considered to be a hard-core restriction.
- Territorial sales restrictions; that is agreements that have as their direct or indirect object the restriction of sales by the buyer, in as far as those restrictions relate to the territory into which or the customers to whom the buyer may sell the contract goods or services.
- Selective distribution network sales restrictions; that is agreements restricting active or passive sales to end-users, whether end-users or final consumers, by members of a selective distribution network.
- Selective distribution network cross-supply restrictions; that is, agreements restricting cross-supplies between appointed distributors within a selective distribution system.
- Spare part restrictions; i.e. agreements preventing or restricting end-users, independent repairers and service providers from obtaining spare parts directly from the manufacturer of these spare parts.

Source: European Commission (2000a and 2001a).

For horizontal agreements, hard core restrictions embrace price fixing, output limitation or sharing of markets or customers. These restrictions are considered to be most harmful because they directly interfere with the outcome of the competitive process.

For vertical agreements, hard core restrictions embrace particular types of resale-price maintenance, territorial sales restrictions, selective distribution network restrictions and restrictions on the sale of spare-parts. Some of these hard core restrictions have such a character that they nullify the entire agreement. Others only nullify the relevant parts of the agreement.

The presence of hard core restrictions in an agreement has two consequences. *First*, none of the exemption clauses in the previous section are valid if the agreement contains hard core restrictions. An agreement with hard core restrictions is assumed to affect trade and restrict competition to such a degree that the prohibition in Article 81(1) automatically applies

irrespective of the market shares, turnover or employment of the parties to the agreement. See for a complete overview, cf. Table 2.2.

Table 2.2 Overview of market share, turnover and employee thresholds for non-applicability of Article 81(1) or automatic exemption according to Article 81(3)

	Horizontal agreements	Vertical agreements
Article 81(1) not applicable		
No effect on trade		
Trade notice	≤5% combined market share *and* ≤€40 million combined turnover	≤10% supplier market share *and* ≤€40 million supplier turnover
SME recommendation	≤250 employees *and* ≤€50 million turnover *or* ≤€43 million balance sheet for each party	≤250 employees *and* ≤€50 million turnover *or* ≤€43 million balance sheet for each party
No effect on competition		
De minimis	≤10% combined market share	≤15% supplier market share
Article 81(3) is automatically applicable		
BER Specialisation	≤20% combined market share	
BER R&D	≤25% combined market share	
BER Technology transfer	≤20% combined market share	≤30% market share of each party
BER Insurance	≤20% combined market share	
BER Vertical		≤30% supplier market share
BER car distribution		≤30% supplier market share
Hardcore restrictions		
Article 81(1)	• Price fixing • Output limitation • Market sharing	• Resale price maintenance • Market partitioning • Sales restrictions • Cross-supply restrictions • Spare part restrictions

Note: Other qualitative criteria may apply. BER = Block Exemption Regulation
Source: Copenhagen Economics

If the agreement indeed contains hard core restrictions, the assessor has to conduct an individual exemption test going through Test 1: Screening, Test 2: Balancing to Test 3: Verifying.

Second, agreements with hard core restrictions can in principle be exempted provided they satisfy the four conditions of Article 81(3). Agreements with hard core restrictions are not excluded from the scope of exemption.

However, the assessor needs to know that performing a successful exemption test on an agreement containing hardcore restrictions is going to be extremely difficult. Hard core restrictions have a high potential for restricting competition on the market and they generally produce low objective economic benefits. And even if efficiencies are generated it is not likely that they will be passed on to the consumers. And they also often fail to demonstrate that the hard core restriction is indispensable.

For this reason, parties to an agreement with hard core restrictions are strongly advised to consider whether modifying the agreement may not be a better option than trying to perform a full exemption test on an agreement with hard core restrictions.

2.3. Be aware

When the assessor initiates the analysis there are a few signs that he should be observant to. We refer to these as early warning signals. Central issues that might hinder the agreement from enjoying an exemption are if the agreement, or an individual restriction therein, is not indispensable for attaining the efficiencies, or if the agreement will eliminate the competition on a substantial part of the market.

It is normally not possible to tackle these issues before the markets have been analysed and the anti-competitive effects and efficiency gains assessed. However, there may be cases when the problems are evident from the start and the assessor should then be aware of the difficulties laying ahead in the analysis.

Indispensability

Article 81(3) requires that both the agreement as such and all the individual anti-competitive restrictions are indispensable. This is a manifestation of the Community principle of proportionality. The condition basically implies that it should not be possible for the firms to achieve the same efficiency gains with less anti-competitive restrictions. In most cases, this requirement cannot be checked until the markets have been analysed and the anti-competitive effects and efficiencies stemming from the agreement have been identified and substantiated.

However, in some cases there can be obvious problems with indispensability. If this is the case the assessor may consider dealing with the indispensability problems before performing the full analysis of anti-competitive effects and efficiency gains. As indicated in section 2.2 hard core restrictions normally fail the indispensability test as the potential efficiencies they generate normally could be achieved through less restrictive means.

No elimination of competition

Article 81(3) also requires that the agreement must not lead to the elimination of competition on a substantial part of the market. The condition aims at preserving the competitive process on the market. In most cases, this requirement cannot be checked until the markets have been analysed and the anti-competitive effects and efficiencies stemming from the agreement have been identified and substantiated.

However, in some cases there can be obvious problems with elimination of competition. If this is the case, the assessor may consider checking for elimination before turning to the full analysis of anti-competitive effects and efficiency gains.

Test 2: Measuring

Chapter 3 Identification of anti-competitive effects

An important part of the exemption test is to measure the anti-competitive effects and the efficiencies that the agreement generates. If there are no significant anti-competitive effects the agreement is not covered by Article 81(1) and if there are no significant efficiencies the agreement cannot be exempted according to Article 81(3).

When starting to measure the effects the assessor already knows from *Test 1: Screening* that the agreement is not automatically excluded and that the agreement affects trade and competition. The output from the test is information about what anti-competitive effects and efficiencies are generated from the agreement and the size order or absolute size of these effects.

Test 2: Measuring consists of three levels of analysis: identification, substantiation and quantification; cf. the figure below. The purpose is to allow the assessor to choose a level of analytical complexity and costs at least corresponding to the benefits generated from a more precise analytical answer.

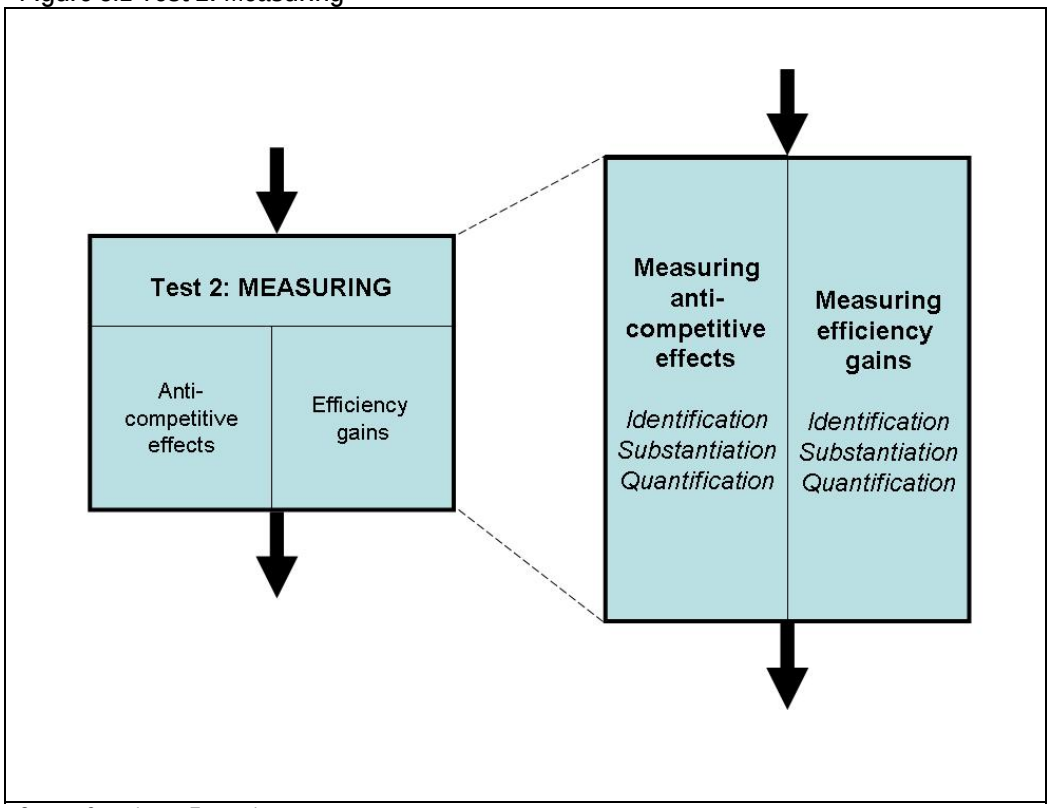
In the most rudimentary level, *Identification*, the assessor determines the identity of potential anti-competitive effects and efficiencies that the agreement may generate by answering two questionnaires, one for anti-competitive effects and one for efficiencies.

If the identification indicates both anti-competitive effects and efficiencies from the agreement the assessor should proceed to the second level, *Substantiation*. Substantiation implies that the assessor measures the size order of the effects from the agreement. The analysis is primarily undertaken by assessing whether specific indicators are present or not. These can normally be identified with immediately available information. Research literature and case law also provide good data for this assessment.

If the substantiation does not allow the assessor to determine whether the anti-competitive effects or efficiencies are the dominant effect from the agreement, she should move to *quantification* using sophisticated economic tools to assess the absolute size of the effects. Data availability can sometimes be a bottleneck for these types of assessments; however reasonable estimations of the effects can be performed.

Before proceeding to quantification the assessor should carefully balance the potential rewards from the quantification to the effort and associated costs in quantifying the effects.

Figure 3.1 Test 2: Measuring



Source: Copenhagen Economics

Chapter 4 Identification of anti-competitive effects

This chapter describes the main anti-competitive effects of an agreement, cf. Box 4.1, and presents simple tools to identify these effects on the basis of a reading of the agreement.

Box 4.1 Anti-competitive effects

Agreements between undertakings are caught by the prohibition rule of Article 81(1) when they are likely to have an appreciable adverse impact on the parameters of competition on the market, such as price, output, product quality, product variety and innovation. Agreements can have this effect by appreciably reducing rivalry between the parties to the agreement or between them and third parties.

Source: European Commission (2004a).

After identification, the assessor can proceed to substantiation of the identified anti-competitive effects in chapter 4 or can turn to identification of the efficiency gains in chapter 6. If identification cannot reveal any anti-competitive effects, the agreement is not likely to have any anti-competitive effects. In this special case, the agreement is not likely to be covered by Article 81(1) and the analysis can terminate.

We first present the main types of anti-competitive effects, cf. section 4.1; then the main types of agreements and their most common anti-competitive effects; cf. section 4.2, and finally set up a questionnaire for identifying the anti-competitive effects of a given agreement, cf. section 4.3.

4.1. Types of anti-competitive effects

Agreements have two types of anti-competitive effects: effects on *between-brand competition* and effects on *within-brand competition*[12]. Anti-competitive effects on between-brand competition imply reduced competition between producers of different brands of the same product, for example competition between Nokia and Ericsson on the market for mobile phones. Anti-competitive effects on within-brand competition imply reduced competition between distributors of the same brand, for example competition between electronic superstores and specialised dealers of mobile phones, both selling Nokia phones; cf. Table 4.1.

[12]This distinction is relevant for both retail markets and wholesale markets, even though the word 'brand' gives more associations to retail markets.

Table 4.1 Main types of anti-competitive effects

	Between-brand competition	Within-brand competition
Competition between	producers of different brands of the same product	distributors of the same brands
Examples	Nokia versus Ericsson Adidas versus Nike McDonald's versus Burger King	Electronic superstores versus specialised dealers (selling Nokia) Foot Locker versus Intersport (selling Adidas)

Source: Copenhagen Economics based on European Commission (2001a).

Changes in between-brand competition are typically considered more problematic than changes in within-brand competition. The reason is that between-brand competition can substitute within-brand competition, but not the other way round.

Between-brand competition

Agreements can reduce between-brand competition in three ways, by coordination, foreclosure and in some cases also by tacit collusion.

First, coordination arises when firms coordinate their behaviour after signing the agreement, while behaving independently before. Coordination is more likely the more similar are the interests of the firms are. This is the case when the scope of the agreement is broad, that is when a large part of their activities is covered by the agreement such that the agreement resembles a merger. Coordination is also likely if the agreement leads to a direct *or* indirect exchange of information about marketing strategies, pricing, or sales volumes. This may be the case if the parties distribute each others' products.

Second, foreclosure arises if the agreement raises entry barriers on the market or limits access to supplies or distribution channels. This is, in particular, a problem if the agreement involves upstream or downstream exclusivity and if the agreement makes it difficult to switch to another supplier or distributor.

Third, tacit collusion arises if the agreement makes it easier for firms on the market to reach a common understanding of desirable market outcomes without any direct communication between them. This situation can arise if it becomes more difficult to switch between buyers and sellers, if market shares become more stable, or if firms become more similar, or if the agreement increases the price transparency, e.g. through recommended retail prices.

Within-brand competition

Agreements can also reduce *within-brand competition (*competition between distributors of the same brand). This can happen if a producer restricts sales to few selected distributors, if the agreement implies market partitioning, or if it becomes easier for distributors to collude and foreclosure.

4.2. Types of agreements and their anti-competitive effects

Different types of agreements give rise different anti-competitive effects. Horizontal agreements include production agreements, sales and purchasing agreements and other agreements, and primarily raise concern about between-brand competition. Vertical agreements include single branding, limited distribution, resale price maintenance, and market partitioning, and primarily raise concern about within-brand competition, cf. Table 4.2. This distinction goes to the root of the general assumption that vertical agreements raise less competitive concern than horizontal agreements.

Table 4.2 Anti-competitive effects from different types of agreements

	Between-brand Competition	Within-brand Competition
Horizontal agreements		
Production	●	
Sales and purchasing	●	
Other agreements	●	
Vertical agreements		
Single branding	○	●
Limited distribution	○	●
Resale price maintenance	○	●
Partition	○	●

Note: ● indicates a strong effect, ○ indicates a weaker effect
Source: Copenhagen Economics based on European Commission (2001a, 2000a)

Production agreements reduce between-brand competition by coordinating firms' market behaviour. Anti-competitive effects are larger the more firms compete initially and the higher market shares. Agreements limiting output, sharing markets and customers or setting prices are considered highly restrictive. The same goes for reciprocal specialisation agreements. Production agreements may also lead to foreclosure, primarily in joint production and subcontracting agreements.

Sales and purchasing agreements reduce between-brand competition by exploiting buyer power, by foreclosure of competitors, and by facilitating coordination between competitors.

Other agreements primarily reduce between-brand competition by restricting innovation, by facilitating coordination between competitors, by foreclosure and by restricting competition on product characteristics. Agreements reducing output, sharing markets or customers or excluding rivals are, in particular, restrictive.

Single brand agreements primarily reduce within-brand competition as distributors are required to stock single brands or by foreclosure on the upstream market if buyers can no longer buy from a particular supplier. Tying agreements make buyers pay a higher price for the tied good than they would otherwise do, and can lead to foreclosure of other suppliers and reduced between-brand competition in the market of the tied good.

Limited distribution agreements primarily reduce within-brand competition if fewer distributors offer the product to the consumers. Restrictions such as exclusive territorial or customer allocation may result in total elimination of intra-brand competition and are thus often more problematic than selective distribution agreements.

Limited distribution agreements can also reduce between-brand competition on the market. This may be an effect from reduced intra-brand competition but also as from foreclosure where specific buyers are excluded from the purchasing market. The agreements can also increase the risk for collusion when most of the suppliers use limited distribution agreements. All these effects are stronger for exclusive agreements than for other types of restrictions.

Resale-price-maintenance agreements mainly reduce within-brand price competition. Fixed or minimum RPM arrangements may eliminate competition on price. Maximum or recommended prices may lead to more uniform prices and less competition. However, the latter are considered less restrictive than the former, because the former allows for downward price flexibility.

Resale-price-maintenance agreements can also lead to less between-brand competition as price transparency increases on the market facilitating horizontal collusion between manufacturers and distributors, at least on concentrated markets.

Partitioning agreements primarily reduce within-brand competition. They help producers to partition the market and hinder market integration. Agreements with exclusivity clauses covering for example purchasing or resale provisions are normally more restrictive than other types of partitioning restrictions.

Partitioning agreements can also lead to reduced between-brand competition in the form of collusion when most competing suppliers limit the access to goods or their buyers' resale possibilities.

4.3. Identifying anti-competitive effects

To identify the anti-competitive effects of an agreement, we have set up a questionnaire with 15 simple 'true' or 'false' questions, Table 4.3. If the reply is 'false', it is unlikely that the anti-competitive effect associated with the question is present. But if the reply is 'true', it is likely that the agreement gives rise to the specific effect. Most of the effects are cumulative, i.e. they tend to reinforce each other.

It is important to remember that the questionnaire describes the by far most common anti-competitive effects. It is however not necessarily an exhaustive list, and in specific cases we cannot rule out the presence of other anti-competitive effects.

Once the questionnaire has been completed the assessor can proceed to a substantiation of the 'true' anti-competitive effects in chapter 4.

Table 4.3 Identification of anti-competitive effects

Statement	True	False	Potential anti-competitive effect
The agreement covers a significant part of the firms' activities or costs	☐	☐	Coordination
The parties exchange information on marketing strategy or pricing	☐	☐	Coordination
The parties distribute each others products	☐	☐	Coordination
The firms in the market become more similar in terms of cost, technologies, or market shares	☐	☐	Tacit collusion
Price transparency increases	☐	☐	Tacit collusion
The parties cooperate on important R&D-activities	☐	☐	Tacit collusion
It is not commercially justifiable to enter a new market without agreement	☐	☐	Tacit collusion
Other suppliers cannot sell to particular buyers	☐	☐	Foreclosure
Other buyers cannot buy from particular distributors	☐	☐	Foreclosure
Buyers cannot switch easily and without significant cost to other suppliers	☐	☐	Foreclosure
The agreement involves tying	☐	☐	Foreclosure
Distributors sell one brand only	☐	☐	Foreclosure
The number of distributors declines	☐	☐	Less within-brand competition
The agreement contains exclusive customer allocation	☐	☐	Less within-brand competition
The agreement contains recommended or maximum resale prices	☐	☐	Less within-brand competition

Source: Copenhagen Economics based on European Commission (2000a, 2001a, 2004c).

Chapter 5 Substantiation of anti-competitive effects

This chapter provides tools for measuring the size of any of the anti-competitive effects identified in the previous chapter, using readily available information from the parties to the agreement, public literature on similar cases in similar industries and simple analytical techniques. Thus, the chapter makes it possible to state whether the anti-competitive effects of an agreement are *small or large,* but it refrains from actual quantification.

The overall anti-competitive effect of an agreement depends on the latent effects of each of the individual anti-competitive effects pertaining to the agreement, on the market power of the parties to the agreement, and on the sensitivity of the market to anti-competitive effects. If the market is sensitive to anti-competitive effects, even agreements with moderate anti-competitive effects may turn out to have a substantial overall effect on competition.

First, we show how to substantiate four different types of anti-competitive effects, cf. sections 4.1-4.4. Second, we assess the market power of the parties to the agreement, cf. section 4.5. Third and finally, we present tools to measure the sensitivity of the market to agreements with anti-competitive effects, cf. section 4.6.

5.1. Coordination

Coordination arises when firms coordinate their behaviour after signing the agreement, while behaving independently before. Coordination and reduced between-brand competition is a characteristic of horizontal agreements such as production, R&D, distribution or sales agreements and of certain vertical agreements involving exclusive or selective distribution or resale price maintenance.

The degree of coordination depends to a large extent on the scope of the agreement. The scope is the share of the firms' activities covered by the agreement. The scope is complete or full if all activities make part of the agreement in reality resembling a merger. The scope is trivial if only a very limited share of the firms' activities is covered by the agreement. The broader the scope, the higher the risk that coordination leads to significant anti-competitive effects *per se*.

Scope is multi-dimensional distinguishing between four main types of scope: product, cost, strategy and duration.

The *product scope* is large if the agreement covers a large (value) share of all products produced by the parties to the agreement on the relevant market. An agreement covering only a small share of total sales (small product scope) is more unlikely to induce coordination than an agreement covering a large share.

The product scope also depends on whether the parties to the agreement are competitors on other markets not covered by the agreement. If this is true, there might be a risk that coordination on one market by means of the agreement could lessen competition on other markets.

The *cost scope* is large if the agreement covers a large share of all costs incurred by the parties. In some cases, we also say that cost commonality is high, cf. Box 5.1. The parties' cost structure is important for the cost scope. Firms with similar cost structures find it easier to agree as changes in the market e.g. changes in input prices and demand, affect them in similar ways. A qualitative description of the production technology and costs per unit applied by the parties can document similarities and dissimilarities in cost structure.

Box 5.1 Cost commonality

The Commission states that if the commonality in costs is significant, the parties may more easily coordinate market prices and output. A significant degree of commonality in costs can only be achieved under certain conditions:

First, the area of cooperation, e.g. production and purchasing, has to account for a high proportion of the total costs in a given market.

Secondly, the parties need to combine their activities in the area of cooperation to a significant extent. This is, for instance, the case, where they jointly manufacture or purchase an important intermediate product or a high proportion of their total output of a final product

Source: European Commission (2001a).

The *strategic scope* is large if products or activities covered by the agreement are of specific strategic importance to the parties and to market development. Strategic products can be products anticipated to be important in the future and vital for the survival of the firms. Strategic activities are activities that for some reason are important, difficult, scarce or costly. They can vary from industry to industry, but cooperation in R&D, service, advertising and sales often leads to strong coordination between the parties.

*A*greements typically have limited *duration (time scope)*, implying that potential coordination problems may only be temporary. In contrast, mergers are permanent. The longer the duration of an agreement, the more likely it is that anti-competitive effects are similar to a merger. In the US, the anti-trust authorities consider ten years as a general threshold such that all (horizontal) agreements with duration longer than ten years are treated as a merger. The duration may vary, however, depending on industry-specific circumstances such as the life span of the technology (Federal Trade Commission and U.S. Department of Justice, 2000).

Sharing of important information is to a certain extent irreversible as shared information cannot be taken back. This implies that information sharing agreements such as an R&D agreement has a longer duration than the duration formally stated in agreement. In some cases, the anti-competitive effects of the agreement may prevail until a new technological leap has been made.

In principle, knowing the scope of an agreement makes it possible to roughly calculate the share of the market affected by the agreement. Take for example, a distribution agreement where the parties have a joint market share of 40 percent on the relevant market. If distribution costs only make up 20 percent of total unit costs, the share of the relevant market affected by the agreement is roughly estimated to 8 percent. Clearly, the smaller the share of the market affected by the agreement, the smaller is the anti-competitive effect.

5.2. Foreclosure

Foreclosure arises if the agreement raises entry barriers on the market or limits access to supplies or distribution channels. Agreements leading to foreclosure tend to be exclusionary, preventing entry to or forcing exit out of the market, but foreclosure can be found even if rivals are on the market. It is sufficient that the rivals are disadvantaged and therefore compete less aggressively (European Commission 2005b).

Vertical agreements, such as exclusive or selective distribution agreements, are more likely to lead to foreclosure than horizontal agreements. However, also horizontal agreements, in particular distribution and production agreements, may have foreclosure effects.

Foreclosure takes two distinct forms. Agreements raising competitors costs, e.g. by increasing entry costs, lead to direct foreclosure while agreements reducing demand for competitors' products, e.g. through exclusivity agreements, lead to indirect foreclosure.

A number of indicators are available to measure the importance of foreclosure effects: share of relevant market open to competition, typical contract duration, churn in the market, and countervailing power.

A good starting point is to measure the *share of the (relevant) market open to competition*. A supplier with a market share of less than 5 % is in general not considered to significantly contribute to a cumulative effect. The Commission has defined market share thresholds under which anti-competitive effects are not likely to occur. Anti-competitive effects are unlikely to arise when the share of the market covered by selective distribution is below 50 %. Neither if the share of the market covered exceeds 50 %, but the aggregate market share of the five largest suppliers (CR5) is below 50 percent, cf. Table 5.1.

Table 5.1 Anti-competitive effects from foreclosure

Conditions	Risk of anti-competitive effects
CR5 < 50 %	No effect likely
CR5 > 50 % and Share of market covered < 50 %	No effect likely
CR5 > 50 % and Share of market covered > 50 %	Depends on which firms use foreclosing agreements

Note: CR5 is the aggregate market share of the five largest suppliers.
Source: European Commission (2000a)

The existence of strong competitors has an ambiguous impact. On the one hand, strong competitors are not likely to be foreclosed from the market as they have access to significant resources of their own. On the other hand, if competitors have agreements foreclosing the market, such as limited distribution agreements, further introduction of these types of agreements can have negative cumulative effects on competition.

The stronger the position of the competitors not applying foreclosing agreements, the less likely is foreclosure of other distributors. If the five largest suppliers apply e.g. selective distribution, competition concerns may in particular arise with respect to those agreements that apply quantitative selection criteria by directly limiting the number of authorised dealers.

The conditions of Article 81(3) are in general unlikely to be fulfilled if the selective distribution systems at issue prevent access to the market by new distributors capable of adequately selling the products in question, especially price discounters, thereby limiting distribution to the advantage of certain existing channels and to the detriment of final consumers (European Commission, 2000a).

Even where foreclosing agreements, such as limited distribution, are not combined with non-compete obligations, foreclosure of the market to competing suppliers may still be a problem when the leading suppliers apply not only purely qualitative selection criteria, but impose on their dealers certain additional obligations such as the obligation to reserve a minimum shelf space for their products or to ensure that the sales of their products by the dealer achieve a minimum percentage of the dealer's total turnover. The thresholds in the table also hold for these risks (European Commission 2000a).

If the *duration of typical contracts* on the market is short, foreclosure is less likely as more opportunities will arise where parties can switch to another supplier or another buyer. Also the terminal conditions defining how to end an on-going contract provide good clues.

A high *churn in the market,* such that a large number of contracts have been negotiated or renegotiated during a given time period, also indicates that foreclosure may be a limited problem. Information about the duration of typical contracts and the level of churn can be obtained from market research, market surveys and sales databases or by contacting sales representatives.

The presence of *countervailing power* may reduce the risk of foreclosure. The impact on foreclosure arises as strong suppliers or buyers will not easily accept being cut off from supply or demand. If the potential anti-competitive problem is foreclosure of competing manufacturers, the size of the dealers has to be analysed. Strong dealers have little interest in reducing competition in their inputs. Countervailing power thus reduces the risk of foreclosure. The countervailing power can be assessed by measuring the market shares of the distributors (or suppliers) and the concentration measured by the Herfindahl-Hirschman Index, cf. section 5.5.

5.3. Tacit collusion

Tacit collusion arises if the agreement makes it easier for firms on the market to reach a common understanding of desirable market outcomes without any direct communication between them. Tacit collusion is normally analysed in merger assessments but has a bearing also on agreements.

The risk of tacit collusion is often higher for horizontal agreements than for vertical agreements, in particular for contracts close to consumers such as sales or distribution agreements, and for production agreements leading to more similar cost structures. However, also vertical agreements such as resale price maintenance or exclusive or selective distribution agreements carry risks of tacit collusion.

Tacit collusion is only likely under specific market circumstances. From the economics of tacit collusion, we know that the incentive to collude depends on homogeneity of firms, retaliation potential, market stability, and absence of short-term incentives to cheat (Ivaldi et al., 2003b).

This insight can be used to develop a set of simple indicators showing whether collusion in this market is likely or not.

First, collusion is easier to sustain among homogeneous firms because it is easier to agree on a common price. Market shares and cost structures are good indicators of the homogeneity of firms in the market.

Second, collusion is easier to sustain if cheating can lead to fast and severe retaliation. This is the case if the market is transparent and interaction is frequent such that spotting cheating is easy and can lead to a fast response. This is also the case if the rate of interest (the discount

rate) is low and demand inelastic such that retaliation can be severe even though it is deferred relative to the time of cheating.

Third, collusion is easier to sustain in stable markets. Market maturity and the presence of entry barriers can be used as indicators of market stability.

Fourth, collusion is easier to sustain if short term gains from undercutting the collusive price are small. This is the case if capacity constraints or demand patterns imply that a firm can gain only a small profit by undercutting the collusive price. All insights are summarised in Table 5.2

Table 5.2 Indicators of market conditions facilitating collusion

Homogeneity of firms	
Similar cost structure	Similar cost structures support collusion, as it is easier to agree on a common price policy. With uneven cost structures, low cost firms will always have more to gain from cheating.
Similar market shares	Market share similarity tends to make collusion easier to sustain as firms have similar incentives to cheat. With uneven market shares, firms with low market shares have more to gain from cheating.
Fast and severe retaliation	
Transparency	Transparency of prices and quantities on the supply side allow companies to monitor each other's behaviour. Deviating from collusion becomes more complicated and retaliation is more likely.
Frequent market interaction	Repeated interaction makes it easier to sustain collusion as firms can react more quickly to deviation.
Low interest rate	Low interest rates (in reality discount rates) make collusion easier to sustain because costs of retaliation in the future are not discounted relative to the gains of cheating
Inelastic demand	With inelastic demand, prices can increase without fear of offsetting volume losses. This makes collusion more profitable.
Market stability	
Maturity	A low rate of innovation and technological change tends to support acquired market positions making collusion easier to sustain.
High barriers to entry	Collusion is easier to sustain with high entry barriers, as the risk of maverick entrants are lower
Few firms	Coordination is easier the fewer firms in the market.
Small gains of cheating	
Small gains from cheating	Small gains from cheating reduces the incentive to cheat and makes collusion easier to sustain

Source: Ivaldi et al. (2003b).

But the agreement must also by itself increase the likelihood of tacit collusion. If the agreement changes some of the indicators listed above; cf. Table 5.2, this can by itself increase the likelihood of collusion. We will briefly review some of these potential changes.

First, collusion becomes more likely if firms obtain more similar cost structures and less likely if firms obtain more different cost structures. The latter can occur if the parties start using a more efficient technology than other firms in the market as a consequence of the agreement. More similar cost structures can be the result of joint purchasing agreements or far-reaching cooperation in costly activities such as production or distribution.

Second, collusion becomes more likely if market shares become more similar and less likely if market shares become more dissimilar. More similar markets shares can be the result of an extensive cooperation between smaller firms on the market.

Third, sharing of information between firms increases market transparency. This facilitates monitoring and increases the risk for collusion.

Fourth, collusion becomes less likely if the likelihood of survival goes down for some firms because these firms will be much more interested in current profits than in future profits that they may never achieve (Cabral, 2000).

Fifth, collusion becomes more likely if entry barriers are increased. Standardization agreements often increase entry barriers.

Sixth, collusion becomes more likely if the gains from undercutting the collusive price go down. The gains are reduced if the agreement reduces the capacity to meet higher demand, and vice versa if the capacity is increased. Agreements restricting capacity may have these effects.

5.4. Within-brand competition

Agreements can also reduce *within-brand competition (*competition between distributors of the same brand). This can happen if a producer restricts sales to few selected distributors, if the agreement implies market partitioning, or if it becomes easier for distributors to collude.

Normally, reduced within-brand competition is an effect of vertical agreements. Agreements such as selective or exclusive distribution agreements or other types of similar arrangements hindering parallel trade often results in reduced within-brand competition.

Substantiation of within-brand competition should focus on two main elements: limiting the number of distributors and the risk of collusion.

Agreements limiting the number of *distributors* may lead to a reduction in within-brand competition. For example, a limited distribution agreement precludes other distributors from selling the product. However, the anti-competitive effect of a reduction in the number of distributors depends on two specific market conditions.

First, real exclusivity may be limited if a large share of distributors can distribute the product in question. Indicators such as the share of distributors covered by the agreement, in terms of numbers or sales, can be used to document this. Similarly, the number of distributors who fulfil the criteria for selective distribution but do not have a license at the moment provides useful information as these distributors can enter the market at will.

Second, remaining within-brand competition may be sufficient to prevent anti-competitive effects. The key question is how easy it is for the buyers to switch to another distributor. If the product is an intermediate product, the buyers are professional and can easily compare prices and find the best offer. Thus, the risk of reduced within-brand competition is less severe for intermediate products than for final products. But even for final products, there may still be sufficient within-brand competition in the presence of limited distribution agreements. Indicators such as the number of distributors per city (or per country, depending on the product) or the average distance to the two closest distributors will provide useful information about the remaining within-brand competition.

The agreement may also affect the possibility of *collusion between distributors*. This can also lead to reduced within-brand competition depending on three issues.

First, collusion is only a problem if market conditions facilitate collusion. We have provided a list of indicators that can be used to assess whether this is the case, cf. Table 5.2.

Second, collusion may be a problem if it becomes easier for distributors to reach common understanding. This is the case if the agreement provides a focal point for a collusive price, e.g. through recommended or maximum resale prices. A reading of the agreement will reveal whether or not this is the case. It will also be easier to reach a common understanding if the distributors become more similar due to the agreement, e.g. if they obtain more similar market shares. Comparing market shares before and after the introduction of an agreement will reveal whether the agreement aligns the interest of the distributors.

Third, collusion may be problem if it becomes easier for distributors to maintain collusion. This can happen if the agreement increases transparency in the market e.g. by exchange of information about prices and quantities sold. It is also easier to maintain collusion if the distributors cannot capture market shares from each other due to market partitioning.

5.5. The parties' market power

An agreement is more likely to cause anti-competitive effects if the parties to the agreement have significant market power. The most important indicator of market power is for horizontal agreements the combined market share of the parties to the agreement and for vertical agreements the suppliers market share, in the relevant markets covered by the agreement.

If the parties' combined market share is low, the agreement is unlikely to lead to significant anti-competitive effects. This is formalised by the *de-minimis* regulation saying that agreements covering less than 10 percent of the market have no significant anti-competitive effects. Even if the combined market share is higher, anti-competitive effects are unlikely to be significant if one of parties has an insignificant market share and does not control key resources (European Commission, 2001c).

Another relevant benchmark is the European Commission's guidelines on assessment of horizontal mergers (European Commission, 2004c) stating that mergers with market shares below 25 percent are unlikely to impede competition. Given that the scope of agreements typically is more limited, cf. section 5.1, a similar conclusion should as a minimum hold for horizontal agreements.

The appropriate method for calculating market shares depends on the case in hand. Usually sales data by value and by volume are both informative and it is recommended to calculate both types of market shares. Value shares are often more relevant for heterogeneous goods, whereas both volume and value shares can be used if goods are homogeneous. In some cases, e.g. on tender markets, market shares become misleading. In tender markets, competitors may exercise strong competitive pressure even though they rarely win a contract and only have a limited market share. In such cases, other indicators as diversion ratios, cross elasticities, or bidding studies should be used. These types of quantitative methods are introduced in Chapter 6.

The development of market shares across time is often more informative than market shares at a single point in time, because the snapshot does not reveal the dynamic nature of a market. For example, volatile market shares might indicate that firms constantly innovate to get ahead of each other, which is consistent with effective competition. Evidence showing that firms with small market shares have grown rapidly might suggest that barriers to expansion are low, particularly when such growth is observed for recent entrants (OFT 2004).

When products covered by the agreement have a long lifespan, e.g. cars or refrigerators, it is important to use average market shares calculated across several years. In such markets, a successful marketing campaign may affect sales in both the current and the following years. In a successful campaign, some consumers may decide to make the purchase earlier rather than later. Sales will increase significantly in the current year, but it is also likely that the same producer will experience lower sales in the following years.

There are a number of practical issues arising when calculating market shares, cf. Box 5.2.

Box 5.2 Calculating market shares

Production, sales and capacity - Market shares are usually determined by a firm's sales to customers in the relevant market. They are normally measured using sales to direct customers in the relevant market rather than a firm's total production (which can vary when stocks increase or decrease). Sometimes market shares will be measured by a firm's capacity to supply the relevant market, for example, where capacity is an important feature in a firm's ability to compete or in some instances where the market is defined taking into account supply side considerations.

Sales values – When considering market shares on a value basis, market share is valued at the price charged to a firm's direct customers. For example, when a manufacturer's direct customers are retailers, it is more informative to consider the value of its sales to retailers as opposed to the prices at which the retailers sell that manufacturer's product to final consumers.

Choice of exchange rates – Where the relevant geographic market is international, this may complicate the calculation of market shares by value, as exchange rates vary over time. It may then be appropriate to consider a range of exchange rates over time, including an assessment of the sensitivity of the analysis to the use of different exchange rates.

Imports – If the relevant geographic market is domestic, it is possible that imports will account for a share of that market. If so the sales of each importing firm should be considered, rather than aggregating shares as if they were those of a single competitor.

Internal production – In some cases, a supplier may be using some of its capacity or production to meet its own internal needs. In the event of a rise in price on the open market, the supplier may decide to divert some or all of its 'captive' capacity or production to the open market if it is profitable to do so.

Source: OFT (2004)

In some cases, parties to an agreement can possess significantly more or less market power than indicated by market shares. Examples are first mover advantages, holding of essential patents, superior technology or brand leadership.

Technological advantages – in growing markets it is especially important to assess whether a firm has a technological advantage that permits it to retain or increase its position on the market. The advantage can be measured by studying the firms' ability to release new products relative to its competitors. The most important sign of technological advantage is the possession of important immaterial assets, such as patents. Strong technological advantage can lead to a persistent high market share from successful innovation and not from ineffective competition.

Product differentiation – In markets with high product differentiation, market shares may be a poor indicator of market power (Ivaldi et al., 2003a) as two firms selling rather imperfect substitutes on the same relevant market in reality only compete little. On these markets, the diversion ratio or cross-elasticity between the different products may be a better indicator of market power. In highly differentiated markets also firms with a relatively low market share may have a certain degree of market power as the competing products on the market are not close

substitutes. The market power may also vary when different customer groups have different possibilities to switch to alternative suppliers.

Data on market shares may be collected from a number of sources; cf. Box 5.3:

Box 5.3 Data on market shares

- information provided by the firms themselves. Firms are usually asked for data on their own market shares and to estimate the shares of their competitors,
- trade associations, customers or suppliers who may be able to provide estimates of market shares,
- national and European statistical authorities,
- customs data on imports,
- private market research companies, and
- market research reports.

Source: Copenhagen Economics

5.6. Competitive constraints

Competitive restraints are those features of a market that reduces the sensitivity of the market to agreements with anti-competitive effects. In this section, we will analyse competitive constraints and assess under which conditions the market is sensitive to agreements with anti-competitive effects. Inspired by European Commission, 2000a) we focus on competitors' market power, market concentration, market maturity, entry barriers and product characteristics.

Competitor's market power

Strong competitors with large market shares reduce anti-competitive concerns of an agreement; e.g. the risk of coordination and foreclosure. Attempts by the parties to increase prices above competitive levels would not be profitable because customers would switch their purchases to existing competitors. However, when the presence of strong competitors is associated with a small number of competitors, the risk of tacit collusion is larger because collusion is more likely if the number of firms on the market is low. Competitors' market power should be assessed in the same way as the market power of the parties to the agreement, cf. section 4.5.

Market concentration

Small agreements – e.g. as measured by market shares – may cause competition concerns in highly concentrated markets, while large agreements may cause limited concern in markets with low concentration. On concentrated markets competition is already week and many of the competitive constraints are absent. Normally, the Herfindahl-Hirschman Index (HHI) measures market concentration. The HHI is calculated by summing the squares of individual market shares of all firms in the market. Other concentration ratios, such as CR-4, can also be used.[13]

Agreements are unlikely to raise anti-competitive concerns in markets with low concentration, that is, HHI below 1000. In moderately concentrated markets (HHI between 1000 and 1800) and highly concentrated markets (HHI above 1800), agreements may have significant anti-competitive effects, cf. Table 4.3.

[13] HHI, unlike the four-firm concentration ratio (CR-4), reflects both the distribution of the market shares of the top four firms and the composition of the market outside the top four firms. It also gives proportionately greater weight to the market shares of the larger firms in accord with their relative importance in competitive interactions.

Table 5.3 Market concentration and anti-competitive effects of horizontal agreements

	HHI<1000	1000<HHI<1800	HHI>1800
Risk of anti-competitive effects	Low	Moderate	High
Threshold change in HHI for further analysis	-	250	150

Note: The European Commission's guidelines on horizontal agreements do not specify threshold changes. The level of market concentration needed for a market to be highly concentrated is lower for agreements (HHI above 1800) than for mergers (HHI above 2000).
Source: European Commission (2001a and 2004c).

The change in market concentration due to an agreement is also important. A given reduction in market concentration causes more concern in highly concentrated markets than in less concentrated markets. This is reflected in the Commission's threshold limits for agreements to raise competitive concern. In highly concentrated markets, agreements cause concern if they increase market concentration by more than 150 units; in moderately concentrated markets, by more than 250 units.

The HHI index and the threshold changes must not be used mechanically. In particular, the threshold limits are stricter under special circumstances, for instance (European Commission, 2001a):

- The agreement involves a potential or recent entrant with a small market share.
- One of the parties is an important innovator in ways not reflected in market shares.
- There are significant cross-shareholdings in the market.
- One of the parties is a maverick firm who is likely to disrupt coordinated conduct.
- There are indications or risk of coordination.
- One of the parties has a market share above 50 percent.

Market maturity

Mature markets increase predictability. This has several implications for competition. *First,* entry is unlikely in mature markets and can make coordinated behaviour more profitable than competition. It is also easier to agree on a certain price level. *Second,* predictability leads to transparent markets where deviations from collusive behaviour are easy to detect making collusion easier to maintain. *Third,* there is little incentive to defect from coordinated behaviour for short-term gains.

Indicators such as fluctuations in sales from year to year, development in market shares from year to year, changes in market positions and the number of new entrants can be used to describe market maturity.

Entry barriers

Large barriers to entry increase the risk of anti-competitive effects of a given agreement. Collusion and foreclosure becomes easier to sustain with high entry barriers. Low barriers to entry make potential competition more likely and constrain the parties' behaviour. Here, we describe the most relevant entry barriers.

Regulation can be an important entry barrier, e.g. laws imposing certain conditions on entry into the markets. National legislation has hindered access to a number of markets such as the railway industry, telephone network services and the energy sector. National standards and environmental concerns are also examples of regulatory entry barriers. Industry standards, e.g. in the construction sector, are good examples of non-governmental regulations that constitute barriers to entry.

High entry costs imply less entry into the market. An analysis of entry barriers must consider all types of costs, but especially sunk costs, i.e. costs that cannot be recovered once the investment has been done. Sunk costs may give an incumbent a strategic advantage over potential entrants.

Economies of scale may be an entry barrier. In such cases, large, established firms producing high volumes have lower production costs than small firms considering entry. The reason is that an entrant often begins with a small-scale production that may not be profitable in such markets. As a result, entry is more risky in markets with economies of scale or scope. However, the resources of potential entrants must be taken into account. If the potential entrant has access to large economic and technological resources, economies of scale are not likely to be an important entry barrier.

The *market maturity* and *technological change* in the market should also be considered in an analysis of entry barriers. It is easier to enter new and growing markets than mature and declining markets. Likewise, it is easier to enter markets with shifting technologies than it is to enter markets with stationary technologies.

Poor access to key inputs and distribution outlets may create entry barriers as entrants have problems attaining access to sales and distribution systems or to scare inputs. Incumbent firms may have advantages in the form of privileged access (or special rights) to those inputs or outlets.

Nature of the product

The competitive concern of a given agreement also depends on the nature of the products covered by the agreement.

The degree of *product differentiation* matters. Anti-competitive effects are less likely for homogeneous products than for heterogeneous or differentiated products, e.g. branded products. Qualitative information about differences in product characteristics and differences in use can be used to assess the homogeneity of products. Similarly, quantitative data such as price differences and perhaps even cross-price elasticities can be used to assess product differentiation.

Anti-competitive effects are less likely if the product takes up a large share of the consumers' budget. The reason is that consumers are more focused on the prices of products capturing a large share of their budget. Consumer surveys can document these indicators.

Chapter 6 Quantification of anti-competitive effects

This chapter provides tools for measuring the size of any of the anti-competitive effects identified in chapter 3, typically using data collected specifically for the purpose and employing sophisticated analytical techniques. We ask how *large* the anti-competitive effects of the agreement are (e.g. how much prices are likely to increase) in order to directly compare the size of the anti-competitive effects with the size of the efficiency gains to be quantified in chapter 8.

Before starting to quantify the agreement we strongly advise the assessor to consider whether the more sophisticated and costly assessment in this chapter is likely to provide answers with an expected value matching the costs of quantification.

As in the previous chapter, the overall anti-competitive effect of an agreement depends on the latent effects of each of the individual anti-competitive effects pertaining to the agreement, on the market power of the parties to the agreement, and on the sensitivity of the market to anti-competitive effects. The discussions of market power and competitive restraints remain equally relevant in the context of quantification and will not be repeated. We focus on the (latent) effects of the anti-competitive effects.

We consider each of the four types of anti-competitive concerns in turn: Coordination, tacit collusion, foreclosure and within-brand competition, cf. sections 5.1-5.4

6.1. Coordination

Coordination arises when firms coordinate their behaviour after signing the agreement, while behaving independently before. This section is relevant if the agreement includes features leading to more coordination between the parties to the agreement such that competition between the parties may be reduced or eliminated.

The tools in this section have initially been developed to assess the anti-competitive effects of mergers. As the anti-competitive effects of agreements are similar to mergers, we propose to use tools from merger analysis for the analysis of agreements. However, there is one important distinction between a merger and an agreement. An agreement typically preserves some kind of competition between the parties of the agreement whereas a merger typically completely eliminates competition between the parties of the merger. We say that the scope of an agreement typically is smaller than the scope of a merger between the same parties, cf. section 5.1.

When the scope of the agreement is large, the anti-competitive effect of the agreement will be akin to the effects of a merger between the same parties. In this case, the tools described in this section provide a good upper bound measure of the anti-competitive effects of agreements. However, when the scope of the agreement is small, the merger tools may

produce exaggerated estimates of the anti-competitive effects. In these cases, it may be recommendable to refrain from using some of the tools described.

We propose to consider three different tools to assess the anti-competitive effects of an agreement. All tools try in different ways to measure the degree of substitutability between the products covered by the agreement and other products on the market. The idea is that if the products covered by the agreement have strong substitutes in other parts of the (same relevant) market, then it is less likely that coordination between the parties in the agreement can lead to significant price increases. If they coordinate higher price, customers can easily switch to other products available on the market.

Diversion ratios

Diversion ratios measure the share of sales lost (diverted) if the price increases. They express either the proportion of customers diverting or the proportion of revenue diverting. The revenue diversion ratio will normally be the appropriate measure, as firms typically will be concerned about loss of revenue, not loss of customers. High diversion ratios suggest that products outside the agreement put strong competitive pressure on products inside the agreement and reduce the incentive for the parties of the agreement to coordinate a price increase.

Diversion ratios can be calculated using different methods. It can be estimated with a high degree of accuracy using own-and and cross-price elasticity estimates. However, diversion rations can me measured on much less sophisticated ways using for example marketing data or survey evidence. Normally results are more reliable if the analysis is based on data on actual purchases instead of questions regarding hypothetical questions. Uncomplicated questions such as "what product would you buy if you could not buy your preferred product?" can also be useful for the analysis.

One example of using a simple method is the use marketing information from next-best choice studies. If the choice studies show that a product outside the agreement is the next-best choice for a large share of the consumers whose preferred product is inside the agreement, this implies that the diversion ratio to products outside the agreement is high and that the risk of anti-competitive effects is low.

A recent use of diversion ratios estimated from market surveys is the Somerfield-Morrison's merger in the UK, cf. Box 6.1.

Box 6.1 The Somerfield – Morrison's case

In 2005 the Competition Commission investigated the acquisition by Somerfield of 115 grocery retail stores from Morrison's. The Competition Commission used diversion ratios as a measure of the degree of rivalry prior to the merger between the stores owned by Somerfield and stores owned by Morrison's or Safeway.

The authority conducted a survey that could capture the extent to which, if the acquired stores were not available, shoppers would divert to an alternative Somerfield or Kwik Save store, or to another store, and the effects on revenue of their doing so. It concluded that the acquisition was expected to result in a substantially lessened competition in each of the local markets served by 12 stores, resulting in higher prices, or reduction in quality, range or service. In addition, would there be the adverse effects on customers in those markets from a reduction of choice between competing stores, for example between different prices available for particular products, or between different quality or range of goods on offer or service provided.

The Competition Commission considered a number of behavioural remedies but concluded they would not be effective in addressing the reduced competition and adverse effects identified. Somerfield had to divest 12 stores.

Source: Competition Commission (2005).

A more complex method is based on the definition of the diversion ratio as the ratio between the cross-elasticities and the own-price elasticity. In this context a diversion ratio from product A to product B at 3 implies that a 10 percent price increase of product A will result in product A loosing 30 percent of total sales to product B. Using diversion ratios in this way requires estimations of both cross and own-price elasticities for all major products on the market. This requires a large data set containing prices and quantities sold during a number of periods, cf. Box 6.2.

Box 6.2 Data requirements – Diversion ratios

The data required to conduct a diversion analysis varies depending if a simpler or more sophisticated model is used. In a simple model this type of data could be relevant;

Type of data	*Potential source*
Consumer purchasing patterns	Private market research firms
Consumer surveys on hypothetical purchases	Marketing department
Marketing data on brand preferences	Marketing department

In the more sophisticate model cross and own-price elasticities are needed for all the products covered by the agreement. See Box 6.8 for a more thorough description of this data.

Diversion ratios played a significant role in the European Commission's decision In the Volvo - Renault merger case from 2000, cf. Box 6.3.

Box 6.3: The Volvo – Renault case

In 2000, the merger between truck producers Volvo and Renault was cleared with conditions in phase I even though both brands held relatively high market shares within the relevant markets. In the analysis that led to this decision, the European Commission, among other things, considered evidence on the diversion ratios.

The market share analysis revealed that the parties would hold a post-merger market share of about 50 percent on the market for trucks in France. However, diversion ratio analysis showed that relatively few truck customers switched between Volvo and Renault. Most customers of both Volvo and Renault tended to switch to other truck manufacturers, such as Scania and DAF. The conclusion from the analysis of the diversion ratios was supported by evidence that showed that there was little reaction from rival manufacturers when Volvo increased its price level in the French market.

Based on this evidence, the European Commission concluded that Volvo and Renault trucks were not close substitutes. As a consequence, the merger would only to a limited extent reduce the competition in the French market for truck sales.

Source: European Commission (case COMP/M1980)

Critical elasticities

The critical elasticities methodology is built on the critical loss analysis that was initially developed for defining the relevant market. Slightly revised, the method, however, can also be used to assess whether coordination between parties in an agreement is likely to lead to higher prices (Coate and Williams, 2005; O'Brien and Wickelgren, 2003). The idea in critical elasticities is to calculate the maximum price sensitivity (the critical price elasticity) a product can have on the market while still allowing price increases to be profitable.

The price elasticity of a product measures how much demand goes down when the price of the (same) product goes up. A large elasticity means that the product is very price sensitive such that even small price increases are costly due to lost sales. As prices increase, profit per unit sold is higher due to larger margins, but the number of units sold is lower. The critical elasticities methodology attempts to assess when these two effects balance. The data requirements for calculating critical elasticities are moderate, but the required data may be

confidential. The only data needed is financial information regarding the contribution margin (or profit rate).

In its simplest form, the critical elasticity is calculated in the following formula:

$$\text{critical elasticity} = \frac{1}{Y + CM} * 100$$

where Y is a hypothetical price increase and CM is the contribution margin defined as the difference between the original price and the share of average variable cost in the original price. If the critical elasticity is very low for all products covered by the agreement, the parties are not likely to have significant incentives to increase prices for those goods. If this is the case, it can be argued that anti-competitive effects due to coordination are not likely to occur.

However, if the critical elasticity is high for a specific product, it may be worthwhile to estimate directly the actual own price elasticity of the product in an econometric study as mentioned above. If the actual own price elasticity turns out to be smaller than the critical elasticity, the parties have no incentives to increase prices for those goods. This also indicates that coordination between the parties is unlikely to lead to anti-competitive effects.

The above analysis assumes that consumers can switch to substitute products if prices of the products covered by the agreement go up. Whether this is a correct assumption, depends – among other things – on the amount of excess capacity available to other firms in the industry.

To estimate the expected expansion by the firms outside the agreement as a response to a price increase, data on prices, production, and excess capacity of the competitive firms are required (International Competition Network, 2005), cf. Box 6.4.

Box 6.4 Data requirements – Critical elasticity

For the calculation of Critical elasticity only the products contribution margin is needed. This data is available internally. The data required to calculate actual own price elasticity is presented in Box 6.8.

Market simulation

A market simulation model is a mathematical representation of the real markets under scrutiny, where the anti-competitive effects of various changes in the market structure can be simulated and calculated. Market simulation models are often model oligopoly markets and are generally used to quantify the price effect of horizontal mergers. They can also be used to assess the effects of an agreement if the agreement has effects similar to those of a merger. Given a set of pre-merger market conditions and assumptions about the nature of the competition in the market, a market simulation model estimates the effect of the merger or agreement on prices and quantities[14].

Models for market simulation are complicated to build and interpret, and often have demanding data requirements. However, they can be constructed at different levels of complexity.

A market simulation typically includes three stages: estimating elasticities, constructing the model, and simulating the merger/agreement.

The first stage is to *estimate the elasticities*. Elasticities measure the change in sales as a response to a price change. The elasticities are a key input into the simulation model. Ideally, the demand elasticities should be estimated from a rich data source making it possible to

[14] See, for instance, Nederlandse Mededingsautoriteit (2004) or Epstein and Rubinfeld (2001, 2004).

estimate all relevant own and cross elasticities of demand. Ultimately, these estimates determine the outcome of the simulation (Werden and Froeb, 2002).

The number of elasticities needed in a simulation model increases in the square of the number of products included in the simulation. In some cases, data availability limits the possibility to estimate all relevant elasticities. However, data requirements may be simplified by imposing restrictions on the substitution patterns. The risk is unrealistic assumptions about substitution patterns.

The second stage is the construction of the model. The goal is that the model reflects the competitive situation before the agreement in the best possible way. If the model is not adapted to the circumstances of the specific market the model is not likely to achieve credibility. The model relies on a number of assumptions. The three most important one will be described below.

The first assumption requires that actual competition in the market must correspond to the *nature of competition* assumed in the model. A Bertrand model with differentiated products is generally considered to be a good representation of most consumer product markets. In these markets competition is based on prices, not on quantity. The model assumes that the competing products are substitutes and that the demand for a product decreases if the price of it increases.

In other markets different types of models should be used. If the competing products are not perceived as different and price is the main competitive instrument e.g. a Bertrand model with homogeneous products could be used. Models for homogenous products normally require less data as they do not need to take under consideration differences between the products, i.e. the cross-elasticities.

Another string of models should be used when capacity is a main issue, and firms first set their capacity and then compete in price. This is normally the case for intermediate products as electricity, agricultural products, oil and other raw materials. In markets with this kind of competition, Cournot models are often used. Cournot models are normally less complicated than the Bertrand models and the products in these markets are often homogenous.

In contract markets, i.e. markets where the trade takes place through a tender system a new strand of market simulation models, auction models, are considered to be the best representation, cf. Box 6.5.

Box 6.5: Market simulation models in contract markets

In contract markets, pricing works differently than in other product markets. Typically, each project is priced separately, there is no single market clearing and the price oligopoly models do not apply.

As a consequence a new strand of market simulation models – auctions models – have been developed in recent years. Auction models are a modern variation of Bertrand models. They yield Nash-equilibrium in prices given some sort of uncertainty about costs and values.

The effects of mergers in these models have not been explicitly analysed, but a general result is that equilibrium price is decreasing in number of competitors (bidders). In the Oracle/Peoplesoft cases in the EU and the US an auction model was used for simulation purposes.

Source: Nederlandse Mededingsautoriteit, 2004 and Froeb and Tschantz, 2002.

The assumption made about the nature of competition must be empirically documented. For example, if Bertrand competition between differentiated products is assumed, evidence must show that price is the key strategic variable in this particular market.

The second assumption is the choice of *demand function*. Hence, it is necessary to argue for the choice of demand function in the specific case. If constant elasticities are not a real world feature, blindly using the log-linear demand function can substantially overstate the likely price effects. The reason is that the log-linear demand function assumes constant elasticities. The linear demand function normally gives the lowest and most conservative price effects (Crooke et al., 1999).

The third assumption is the choice of *cost functions*. The most typical assumption is that the production involves constant marginal costs or alternatively a step function in which the marginal cost are constant in certain intervals but increase stepwise as supply increases.

In the third stage, the effect of the agreement is simulated in the model. Given the estimated demand elasticities, the assumptions about the nature of competition, post-agreement prices and outputs are calculated. Coordination between firms will typically lead to higher prices. [15] The two main reasons for this are that some consumers who would respond to a price increase by switching to the other parties' products are still caught by the price increase after the agreement. Thus, overall the parties would lose fewer customers. Competitors will normally respond to the parties' price increases by also raising their own prices, which in turn create scope for a larger initial price change by the parties. The magnitude of the different price effects depends on degree of product differentiation in the market.

The European Commission and several member states' competition authorities have used market simulation models in actual merger cases. The Volvo/Scania-case is a recent case where the European Commission used a market simulation model, cf. Box 6.6.

Box 6.6: Using market simulation models in the EU: The Volvo/Scania case

An early example of the use of merger simulation in Europe was in the proposed merger between Volvo and Scania, two Scandinavian producers of heavy trucks. The European Commission ultimately rejected the merger.

The proposed merger would have led to significant increases in combined market shares of the parties in several EU countries. Particularly in the Scandinavian countries, the combined markets shares of the parties would have become very high.

The European Commission hired external analysts to estimate demand elasticities for the main heavy truck brands in each of the EU countries. These elasticities were used to simulate the price increases that could be expected from the merger. The estimated elasticities confirmed that Volvo and Scania heavy trucks were relatively close substitutes. In addition, the estimated elasticities showed that the trucks from rival suppliers were less close substitutes for both heavy trucks produced by Volvo and by Scania.

The merger simulation model suggested that the merger would have substantial unilateral effects. The model predicted a price increase for both Volvo and Scania trucks of about 5 percent in many EU countries. In the Scandinavian countries, the estimated price increase was as high as 10 percent. Furthermore, the market simulation model showed that the prices of heavy trucks from rival suppliers would remain largely unaffected by the merger.

As in most cases where merger simulation has been used, the European Commission's merger simulation analysis was strongly contested by the parties. In particular, they claimed that both the model and the data had serious limitations.

Source: European Commission (case COMP/M.1672)

[15] In a Cournot model, the output of all firms is typically reduced by a merger between two competing firms.

The US competition authorities used a market simulation model in the Interstate Bakeries/Continental Bakeries, cf. Box 6.7.

Box 6.7: Using market simulation models in the US: The Interstate Bakeries/Continental Bakeries case

This proposed merger would have brought together the leading bakers of branded white pan bread in several geographic markets in the US. The US Department of Justice (DoJ) was concerned that following the merger, the merging parties would be able to raise the prices of some of their white bread brands.

As part of its investigation, the DoJ used retail price data to estimate demand elasticities for the main brands of white bread in two geographic markets, and used these estimates to simulate the effects of the merger. The results of the simulation showed that the proposed merger would have allowed the parties to substantially increase the prices of their brands.

On the basis of this evidence, along with other evidence which suggested that the merger would significantly reduce competition, the DoJ filed a case against the merger. This led the merging parties to offer substantial divestments to allay the DoJ's concerns.

Source: United States v. Interstate Bakeries Corp. (No 95C-4194) and Lexecon, (2003.

Data requirements are typically rather strict, cf. Box 6.8

Box 6.8 Data requirements – simulation models

The data requirements are high in simulation models and often place heavy restrictions on the analysis. The data needed for the analysis varies with the model chosen e.g. models of homogenous product markets require less data than models of differentiated products. As the technical specifications of simulation modelling goes beyond the scope of this guidance, generally, we will describe the data issues.

The basic data requirements for simulation models are the current market shares and prices for all products in the market. As described in section 5.5, this data is often accessible.

As indicated above market simulations require estimation of elasticities. The most common ones used in marker simulation purposes are own price elasticity of demand and cross price elasticity of demand.

The own price elasticity of demand measures the rate of response of quantity demanded due to a price change, i.e. how sensitive consumers are to price changes. It is needed to be estimated for every product in the simulation. For many products is it possible to find recent research estimations of the price elasticity of demand.

The cross price elasticity of demand measures the rate of response of quantity demanded of one good, due to a price change of another good. The estimation of cross price elasticities can become a severe problem due to the high number of cross price elasticities needed if there are many competing brands/products in the market.

The data required to estimate the elasticities depends on the choice of estimation model used. Normal requirements are however:

- At least 30 observations of prices for each product
- At least 30 observations of quantities for each product

The higher the quality of data, i.e. high frequency and number of observations, the more reliable is generally the estimations.

Type of data	*Potential source*
Previous estimations of own price elasticity	Research literature
Data on own prices and sold quantities	Sales department
Data on competitors prices and sold quantities	Official statistics, industry organisations, private market research companies and the marketing department

6.2. Foreclosure

Foreclosure arises if the agreement raises entry barriers on the market or limits access to supplies or distribution channels. This section is relevant if the agreement contains features leading to foreclosure such that entry barriers are increased or access to suppliers or distributors become more limited.

It is difficult to quantify the anti-competitive effects of foreclosure. There have been very few studies of the empirical impact of foreclosure (Rey and Tirole, 2003). However, we briefly mention two methods that – at least in principle - can be used to estimate the magnitude of the foreclosure effect.

Event studies

The basic idea with the event study methodology is as follows: if the rivals in the foreclosed market are publicly traded, then the stock price for the rival goes down when an agreement with foreclosure effect is announced (Rey and Tirole, 2003).

Event studies reveal the magnitude of foreclosure problems, cf. Box 6.9. They do, however, not give a direct estimate of the anti-competitive effects of the agreement. The reason is that the change in stock prices is a private cost, which may differ from society's cost. Clearly, the

methodology cannot be used to assess the effects before the agreement is signed, but *ex. post* to verify its effect. This is useful in the continuous monitoring of the legality of the agreement.

Box 6.9: Example of event study of foreclosure effect

Snyder (1994) conducts event studies looking at downstream rivals' stock market price reaction to various public announcements of a merger or of an antitrust authority's steps to undo existing mergers.

His study of the vertical integration of beer manufacturers and pubs in the UK looks at the reaction of the stock price of Guinness (then the only publicly listed non-integrated major beer producer) to the Monopolies and Mergers Commission's successive moves during its investigation of foreclosure in the brewing industry.

He documents a positive reaction of Guinness's stock price to the Monopolies and Mergers Commission's and the government's anti-integration moves.

Source: Snyder (1994).

The event study methodology can be used to analyse the effects of an agreement on the parties, their competitors or their customers. The consequences of each technique will be discussed in the description of event studies in section 9.1. Data requirements are modest, cf. Box 6.10.

Box 6.10 Data requirements – event studies

The event study methodology requires data on share prices for the firms entering the agreement and normally a share price index for a group of firms in order to isolate the effect of the agreement. It also requires information on when announcements of the agreement is made. All this data is easily available.

Simulation models

Simulation models can be used to quantify the anti-competitive effects of foreclosure. If, for example, a single branding agreement leads to foreclosure in the upstream market, the anti-competitive effect in the upstream market will be similar to the effects of a horizontal merger in the upstream market. The effect of a purchasing agreement which raises rivals costs can also be quantified using simulation models. Technically, this can be done by raising the marginal costs of the rivals in the simulation model. The simulation models have been described in detail in section 6.1.

6.3. Tacit collusion

Tacit collusion arises if the agreement makes it easier for firms on the market to reach a common understanding of desirable market outcomes without any direct communication between them. This section is relevant if the agreement contains features leading to tacit collusion on the market. Tacit collusion reduces between-brand competition on the market.

The anti-competitive effects of collusion can be severe if a significant part of the market is covered by the collusion. However, it is difficult to prove that a specific agreement will generate collusion, i.e. to document *ex ante* that an agreement leads to collusion with other competitors.

Nevertheless, there are some new models attempting to estimate the risk of collusion in the market due to the concentration caused by a merger or an agreement with wide scope, cf. Davis (2005) and Sabbatini (2005). A key feature of these models is the firms' possibility to punish firms deviating from the agreement. The main result coincides with the general models of collusion e.g. agreements with a large scope may enhance the likelihood of collusion but also sometimes make collusion more difficult to sustain, in particularly when they create asymmetric market structures. These theories and models are to a large extent relevant also to

analysis of collective dominance under Article 82, as it is the same factors influencing collusion under article 81(1) and Article 82.

6.4. Within-brand competition

Agreements reduce *within-brand competition (*competition between distributors of the same brand) when a producer restricts sales to few selected distributors, if the agreement implies market partitioning, or if it becomes easier for distributors to collude. This section is relevant if the agreement contains features leading to foreclosure such that entry barriers are increased or access to suppliers or distributors become more limited.

The anti-competitive effect of less within-brand competition can be quantified in two ways.

Econometric price studies

The methodology attempts to quantify the price effects of having several businesses selling the same product in a region. If prices are lower where there are several retailers it is likely that a reduction of the number of competitors though a merger or a highly restrictive agreement will increase prices.

The first step in an econometric price study is to collect price data from different geographical areas with different degrees of within-brand competition, e.g. measured by the number of retailers per city. The second step is to use econometrical methods to estimate how the degree of within-brand competition affects the price. The estimation has to be controlled for other factors that may affect prices. In a US Merger case, the FTC used this method, cf. Box 6.11. Data requirements are rather strict, cf. Box 6.12.

Box 6.11: Example of econometric price study

In the proposed Staples and Office Depot merger, the Federal Trade Commission conducted an econometric price study. The econometric analysis essentially examined 'natural experiments' as price effects were estimated as a function of the number of office supply superstores selling into a local region. One interpretation of the data is to observe that higher prices are associated with fewer competitors.

The Federal Trade Commission analysis concluded, for example, that Staples charged prices as much as by 13 percent increases in markets where it had no superstore competition compared to areas where there are three competing superstores.

Source: Coate and Willams, (2005) and Shefferman and Silvia (2002).

Box 6.12 Data requirements for econometric price studies

Econometric price studies normally require high quality price data. With this we mean long time series with frequent observations of prices. As the price studies are often conducted as benchmark studies where one region or market is compared to another with or without a specific feature, comparable price series are also needed for the benchmark region or market. In order to isolate the price effect from other effects such as the size of the population or market, control variables can be introduced.

Type of data	*Potential source*
Time series data on prices	Parties themselves, Private market research firms
Control variables	Official statistics, industry organisations

Simulation models

The simulation models described in section 6.1 can also be used to quantify the anti-competitive effects of less between-brand competition. Simulation models have been used to quantify the effect of less within-brand competition in the European car market, cf. Box 6.13.

Box 6.13: Example of simulation of the effect of less within-brand competition

Brenkers and Verboven (2002) use a simulation model to quantify the competitive effects of the selective and exclusive distribution system in the European car market. The selective and exclusive distribution system limits the international within-brand competition.

They estimate a demand system for cars in the European countries, and then use these results in a simulation models. They quantify the anti-competitive effects of the selective and exclusive distribution system under different assumptions about the current competitive regime (collusion or not).

Their main finding is that the existing system reduces international within-brand competition, and reduces total welfare by €1.6-2 billion per year.

Source: Brenkers, R. & F. Verboven (2002).

Chapter 7 Identification of efficiency gains

This chapter describes the main efficiency gains that can follow from an agreement between firms, and presents simple tools to identify these effects on the basis of a text reading of the agreement. By efficiency gains we mean, for example, a reduction in costs allowing for lower prices on the market or the introduction of a new product or product variety on the market.

The Commission has listed four features of agreements that have to be described and verified for any claimed efficiency; cf. Table 7.1.

Table 7.1 Important issues in an efficiency analysis

(a) The nature of the claimed efficiencies;	Identification
(b) The link between the agreement and the efficiencies;	Indispensability
(c) The likelihood and magnitude of each claimed efficiency; and	Substantiation and Quantification
(d) How and when each claimed efficiency would be achieved.	Pass-on and balancing

Source: European Commission (2004a)

After identification, the assessor can proceed to a substantiation of the identified gains in chapter 7. However, if no efficiency gains have been identified and if the agreement contains anti-competitive effects, it is unlikely that the agreement will be exempted.

We first present the main types of efficiency gains, cf. section 7.1; then the main types of agreements and their most common efficiency gains; cf. section 7.2, and finally set up a questionnaire for identifying efficiency gains of a given agreement, cf. section 0.

7.1. Types of efficiency gains

Agreements can give rise to three types of efficiency gains: *Within-firm efficiency gains*, *between-firm efficiency gains* and *innovation benefits*. The latter type, innovation benefits, is some times called dynamic gains.

Within-firm efficiency gains; cf. Table 7.2, arise due to a more efficient use of resources *within* the firms who are parties to the agreement. For example, this can be two producers of television sets who agree on joint production leading to significant economies of scale as the larger volume drives down unit costs.

Between-firm efficiency gains arise due to more efficient transactions *between* the firms who are parties to the agreement. This can, for example, be an agreement solving a hold-up or a free-rider problem between brewers and distributors of draught beer.

Innovation benefits arise if an agreement increases the capability of bringing out new and improved products or less costly production techniques, in particular in the long run.

Table 7.2: Main types of efficiency gains

	Within-firm efficiency gains	Between-firm efficiency gains	Innovation Benefits
Description	More efficient use of resources within firms	More efficient transactions between firms	New improved production techniques and products
Examples	Economies of scale if larger production runs can bring down unit costs.	Increased market size if hold-up and free-rider problems are eliminated	Long run benefits from new processes and products.

Source: Copenhagen Economics based on European Commission (2001b).

Within-firm efficiency gains

Within-firm efficiency gains typically enable the participating firms to produce at lower costs than they otherwise would have been able to. Within-firm efficiency gains are typically tangible, easy to identify, they can be precisely estimated and they materialise within a short time period. We distinguish between four types of within-firm efficiencies: economies of scale, economies of scope, bargaining power, and duplication savings, cf. Box 6.1.

Box 7.1 Within-firm efficiencies

The Commission refers to this type of efficiencies as cost efficiencies. Apart from economies of scale and scope, the Commission also recognises efficiencies from synergies, i.e. combination of existing assets that reduces the costs, and cost reductions due to better production planning, reduced inventory or improved capacity utilisation.

Source: European Commission (2004a).

Economies of scale arise when larger production volume makes it possible to reduce unit production costs. For example, large scale production may allow better use of existing capacity or utilisation of labour. This will lead to lower average costs as production volumes increase. In particular, economies of scale are frequent in industries with high fixed costs, e.g. network and process industries.

Economies of scope arise when firms can reduce unit costs when they utilise the same production facilities, for example staff or logistical structure, for different types of products. The concept of economies-of-scope was developed to complement economies of scale in the situation where firms are active on different markets.

(Countervailing) bargaining power can under some circumstances generate real efficiency gains. When there is insufficient competition in the supply markets, customers may be forced to purchase their inputs at prices above marginal costs. In this case, joint purchasing agreements may increase parties bargaining power and enable them to pressure upstream suppliers giving rise to lower prices and margins.

Duplication savings arise when parties share major production facilities and thereby reduce the costs of providing additional value to the consumers. The efficiency gain arises from the divestment of excess resources or from abstaining to invest in parallel facilities. This type of efficiency is, in particular, important in network industries.

Between-firm efficiency gains

Between-firm efficiency gains arise when agreements make it possible to increase the number (and quality) of transactions between firms. It occurs when agreements are able to eliminate or reduce inefficiencies on the market unresolved reducing the size of the market, cf. Box 6.2.

Often these efficiency gains arise from vertical agreements. We distinguish between free-riding, hold-up, and double marginalization.

Box 7.2 Between-firm efficiencies

The Commission has acknowledged that solving free-rider and hold up problems can lead to efficiencies. It also discusses specific types if this problems such as sale of high quality goods and transfer of know-how. The Commission also refers to solving capital market imperfections, uniformity and quality standardisation as efficiency inducing.

Source: European Commission (2000a).

Free-riding occurs when firms cannot reap the full benefits of an investment once the investment has been made. An example is a distributor undertaking a promotion campaign. Rival distributors in the same area, not participating in the advertising campaign, may free ride on this campaign not allowing the promoting distributor to fully appropriate the benefits from his investment. The result may be that the all distributors are inclined to make too little promotion. Agreements solving the free-rider problem may increase investment (in advertising) to a more appropriate level.

Hold-up occurs when the balance of power between the parties to an agreement becomes uneven once a specific investment has been made. This may arise if one firm undertakes specific (in particular sunk) investments for business partners to facilitate cooperation, such as investments in specific equipment or training. Once investments have taken place, the business partner can threaten to stop cooperating, tilting the balance of power, unless risk-sharing vertical contracts can be arranged.

Double marginalisation occurs when both a manufacturer and a retailer have some degree of market power in their respective markets and both set their prices above marginal cost. The result may be a final market price even exceeding the monopoly price that an integrated company would charge. This problem can be solved by an agreement between the manufacturer and the retailer giving rise to lower margins and a efficiency gain..

Innovation benefits

Innovation benefits arise from both horizontal and vertical agreements. In horizontal agreements, they can show up as new or improved products being placed on the markets sooner than they otherwise would have been. In vertical agreements, they can show up in information sharing agreements ensuring better functionality or compatibility between products. In the economics literature innovation benefits are sometimes referred to as dynamic efficiencies, cf. Box 7.3 We distinguish between benefits arising from technological diffusion, new products or new processes.

Box 7.3 Innovation benefits

The Commission refers to this type of efficiency as qualitative efficiencies. Among the efficiencies acknowledged by the Commission are technological advances, introduction of products with improved quality or new features, and faster or cheaper introduction of the products to the market. The efficiencies from development of new production technologies and methods are also emphasized and are dealt with as cost efficiencies

Source: European Commission (2004a).

Technology diffusion increases the efficiency of an entire industry by spreading known technology from firms possessing this technology to firms not possessing it. There are several sources of technological diffusion. For example, one firm may have a superior know-how and an agreement allows a partner firm to learn and potentially adopt the skills of the firm with superior know-how. Or firms may have complementary skills or assets and an agreement allows firms to develop new products, or improve old products. These efficiency gains initially arise from the parties' own production; but as the techniques diffuse to competitors, the entire market is likely to become more efficient.

New products introduced to the market can lead to higher product quality and an extended range of choices for consumers. It also increases competition between the existing products in the market.

New processes similarly introduce novel ways of manufacturing and production such that *production* costs go down, in particular marginal costs, gradually leading to lower prices on the market to the benefit of the consumer.

7.2. Types of agreements and their efficiency gains

Different types of agreements give rise to different types of efficiency gains. Horizontal agreements are most likely to create within-firm efficiency gains, while vertical agreements are most likely to give rise to between-firm efficiencies; cf. Table 7.3.

Table 7.3: Efficiency gains from different types of agreements

	Within-firm efficiency gains	Between-firm efficiency gains	Innovation benefits
Horizontal agreements			
Production	●		●
Buying and selling	●	●	
Other	●		●
Vertical agreements			
Single branding		●	●
Limited distribution	●	●	●
RPM	○	●	●
Partition		●	●

Note: ● indicates a strong effect, ○ indicates a weaker effect
Source: Copenhagen Economics based on European Commission (2001a, 2000a).

Production agreements often give rise to within-firm efficiency gains in the form of economies of scale or scope or more efficient use of existing facilities. In some cases, they can also lead to innovation benefits due to new products or more efficient production processes.

Buying and selling agreements primarily generate cost savings within-firms normally stemming from economies of scale, but also from countervailing bargaining power can also play a role. They can also reduce market inefficiencies such as the free-rider problem.

Other agreements primarily generate efficiencies in the form of innovation benefits. Pooling of resources allows for faster development of new or better products. Standard setting agreements can have cost reducing effects as they may reduce the size of the warehouse or the number of different spare parts needed.

Single brand agreements typically lead to between-firm efficiencies. When the link between firms is formalised, for example in specific rebate schemes, business risk is reduced for both parts. More intense information exchange between parties in order to improve the products or their compatibility can also lead to innovation benefits.

Limited distribution agreements typically may give rise to all types efficiency gains. Limited distribution agreements are often needed to improve the transaction volume between parties, for example by eliminating free-rider and hold-up problems. They can also generate within-firm efficiency gains such as cost savings.

Resale price maintenance agreements normally generate efficiencies in the relation between the firms. For example, they can reduce market inefficiencies such as the free-rider and hold-

up problems. Resale price maintenance agreements can also generate efficiencies from reducing double marginalisation.

Partitioning agreements are similar to single branding agreements. In particular, they affect the relationship between firms and solve market inefficiencies.

7.3. Identifying efficiency gains

To identify the specific pro-competitive effects, we have set up a questionnaire with 10 simple statements to be answered by 'true' or 'false', cf. Table 7.4. If the answer is 'false', it is unlikely that the specific efficiency associated with the question is part of the agreement. But if the answer is 'true', it is likely that the agreement gives rise to the specific efficiency gain.

The screening questionnaire deals with the most common and important factors that will generate efficiency gains. It is however possible that there are individual cases where other factors may give rise to some of the efficiencies listed below and also to other types of efficiencies.

Once the questionnaire has been completed, the assessor may proceed to a substantiation of the 'true' efficiency gains in chapter 7.

Table 7.4: Screening questionnaire for efficiencies

Statement	True	False	Efficiency
Production volume increases in at least one production facility	☐	☐	Economies of scale
Other products will be produced at the same production facilities	☐	☐	Economies of scope
Purchasing is to be coordinated or rationalized	☐	☐	Bargaining power
Parties have parallel production facilities and they will share these	☐	☐	Duplication
Parties increase their sales efforts	☐	☐	Free-riding
Parties increase their investments	☐	☐	Hold-up
The agreement is vertical and pricing or production will be coordinated	☐	☐	Double marginalisation
Significant technological knowledge will be shared between parties	☐	☐	Technology diffusion
New products or products of higher quality will be introduced to the market	☐	☐	New products
More cost efficient production technique will be developed	☐	☐	New processes

Source: Copenhagen Economics based on European Commission (2000a, 2001a, 2001b, 2004a, 2004c).

Chapter 8 Substantiation of efficiency gains

This chapter provides tools for measuring the size order of any of the efficiency gains identified in the previous chapter, using readily available information from the parties to the agreement, public literature on similar cases in similar industries and simple analytical techniques. Thus, the chapter makes it possible to state whether the efficiency gains of an agreement are *small or large,* but it refrains from actual quantification.

The assessor should be aware that tax savings will not be accepted as an efficiency gain even though they may reduce prices and come to the benefit of consumers. The reason is that they also imply a transfer from the tax-paying consumer to the firm and are in this way no real saving. For the same reasons, the assessor must expect that cost savings resulting from the mere exercise of market power will be rejected as an efficiency gain.

First, we show how to substantiate the four different types of within-firm efficiencies: Economies of scale, economies of scope, bargaining power, and duplication savings, cf. section 7.1. Second, we substantiate the three different types of between-firm efficiencies: Free riding, hold up, and double marginalization, cf. section 7.2. Third and finally, we end up substantiating three different types of innovation benefits: Technology diffusion, new products or processes, and long run cost savings, cf. section 7.3.

8.1. Within-firm efficiencies

It is relatively straightforward to substantiate within-firm efficiencies, in particular economies of scale. Firms themselves often have detailed information of these efficiencies and they are often quite tangible because they generally arise in the short term.

Economies of scale

Output expansion may be associated with *economies of scale* if and only if the larger production volume reduces unit costs of production. If unit costs are not likely, no economies of scale can be reaped from the agreement. Economies of scale can be generated in several parts of the value chain such as R&D, production, marketing and distribution. In particular, economies of scale are frequent in horizontal agreements such as production/specialisation arrangements and joint buying and selling agreements.

There are several ways to render probable that larger production leads to lower unit costs.
First, firms should gather information about the historical relationship between changes in production volumes and costs, that is, the *cost function*. Making a simple plot of production volumes and the associated unit costs should generate a downward bending curve generating the first evidence of economies of scale.

Second, if the cost function cannot easily be traced, firms should document the relationship between fixed and variable costs in the activities covered by the agreement, that is, the *cost*

structure. If the proportion of fixed to variable costs is high and the marginal costs are not increasing, higher production volumes should lead to lower unit costs.

Third, a large *degree of specialisation* increases the likelihood of scale economies. If the labour force is more specialised, it normally becomes more efficient and the specialised equipment is also more productive than standard equipment. The assessor should quantify and explain how efficiency gains can arise from more specialisation in the industry. Case specific evidence or anecdotes often play an important role.

Fourth, the degree of indivisibility is important, that is, the possibilities to scale down production below a certain minimum size. For example, starting up a new production line requires resources for setting up and testing. These costs typically do not change with the number of units produced on the production line. If firms have to undertake the same investments they could save costs by performing some tasks jointly if they have excess capacity.

Fifth, learning by doing can result in economies of scale. Often, increased production volume leads to more efficient production as the labour force in the process improves skills and production facilities become better calibrated. This effect is normally referred to as the learning curve.

The Commission found that the agreement to share networks between British Airways, Iberia and GB Airways created sizable economies of scale and avoided duplication of costs, cf. Box 8.1. In this specific case indicators such as cost structure, specialisation and indivisibility were used to substantiate economies of scale.

Box 8.1: Within-firm efficiencies – Airlines alliance

In 2003, BA, Iberia and GB Airways decided to set up a fully-fledged tripartite alliance. Their intention was to co-ordinate and to integrate their commercial and marketing strategies, distribution methods and practices world-wide. Although the parties would remain independent carriers and retain their own corporate identity, the co-operation was intended to achieve the benefits associated with a merger.

The main efficiencies presented by the parties were cost savings. The key cost saving was that with the agreement they did not need to develop parallel networks but could use each others'. Other efficiencies envisaged were more efficient use of resources, improved connectivity, new on-line connections, better support and coverage on thin routes, development of new products and promotions etc.

Given the far reaching scope of the co-operation and the strong market position of the parties on most of the affected routes there was no doubt that the co-operation fell within the scope of Article 81(1) of the Treaty.

However, the European Commission accepted the arguments of the parties that the co-operation lead to efficiency gains to the direct benefit of the overall consumers and accepted the agreement with conditions for the routes were the parties held high combined market shares and the shortage of slots made entry difficult.

Source: European Commission (case COMP/D2/38.479).

There is vast literature on economies of scale that can be used to support claims of economies of scale. These studies can also provide guidance on how to quantify the efficiencies, see for example Henriksen et al (2001).

Economies of scope

Economies-of-scope arises when agreement assures that products will be co-produced using the same production facilities. Co-production will be associated with economies of scope if and only if it reduces unit costs for at least one of the products relative to a situation without an agreement. If reductions in unit costs are not likely, no economies of scope can be reaped from

the agreement. Economies of scope are common in distribution and buying and selling agreements. Production agreements may also yield economies of scope provided there is sufficient free capacity.

There are several ways to render probable that co-production leads to lower unit costs.

First, firms can argue that existing machinery, distribution networks, or labour easily can be *adapted* to production of the new goods. They should carefully document the production process of all products associated with economies-of-scope. If adaptation and investment costs are needed to re-configure production facilities, these costs should be subtracted from the expected cost savings.

Second, firms can argue that there is sufficient *spare capacity* to produce the additional products. If there is no spare capacity, new investments will have to be made and economies-of-scope become less evident. The parties have to prepare support for their claims with respect to average spare capacity, spare capacity during peak production, and possible bottlenecks that can restrain full capacity utilization.

Third, *low incremental costs* indicate a possibility for economies of scope. In some cases, purchasing or co-production of other products can be undertaken with surprisingly low extra costs. For example, timber can be sawn to produce planks but in the production process by-products are generated. These by-products can be important input in the production of particle boards and there may be significant cost savings by co-producing particle boards with planks. Similarly, some tasks will generate no extra costs if they are used also for other purposes. For example, credit control conducted by a bank when assessing a loan application could also be used for insurance purposes without incurring additional costs.

Fourth, economies of scope often occur in *network industries*. The main reason is that these types of industries typically involve high fixed costs that can be used for producing other goods. For example, in the telecoms industry the technology, networks, customer base, marketing, payment routines etc. for providing fixed telephone calls can also be used to provide broadband access.

There are also other specificities for network industries. Take the example of the airline industry where the cost for providing a seat on a large plane is much lower than on a small plane. Joint organisation of air traffic, such as code sharing, where the most efficient airline covering specific city-pair runs, enables the firms to cover many destinations to the lowest cost without having to incur the full investment costs (European Economy 2001).

Countervailing bargaining power

This section is relevant if the agreement implies co-ordinated purchases or sales in purchasing or distribution agreements. The key is to decide whether joint purchasing leads to lower costs for the parties to the agreement. The analysis follows a series of logical steps.

First, the agreement must strengthen firms' *bargaining power*. The most important indicator is the parties combined purchases relative to total purchases from the supplier. If the share of total purchases becomes large, it is likely that bargaining power increases. However, the possibility for the supplier to cease selling to the parties is also important. If the supplier can easily find other customers, bargaining power remains low.

Bargaining power often translates into discounts from suppliers and special contractual obligations imposed on suppliers. These can take a number of forms such as listing charges, where buyers require payment of a fee before goods are purchased from the listed supplier; slotting allowances, where fees are charged for store shelf-space allocation; retroactive

discounts on goods already sold; buyer forced application of most favoured nation clauses with contractual obligations for the supplier not to sell to another retailer at a lower price; high contribution to retailer promotional expenses; and insistence on exclusive supply (Dobson 1999).

Second, bargaining power must be *countervailing* such that the gain in bargaining power on the purchasers' side is used to counteract an already existing bargaining power on the supplier side. The *supply side* market must initially be concentrated and suppliers must have significant mark-ups. Significant mark-ups are needed for countervailing market power to have positive effects.

In some cases, it is possible to provide direct evidence of the efficiency gains arising countervailing bargaining power, e.g. where rebate schemes are available. Large rebates granted due to larger quantities purchased and not explicitly related to changes in costs can in particular circumstances be used as an estimate of efficiency gains.

In the proposed joint venture between Akzo Nobel and Monsanto, the European Commission found all indicators mentioned above of countervailing bargaining power, i.e. increased bargaining power from the purchasers, a highly concentrated supply market and significantly reduced prices to the purchasers, cf. Box 8.2.

Box 8.2 Bargaining power case - Rubber chemicals

In 1994, Akzo Nobel and Monsanto notified the creation of a joint venture for rubber chemicals. The parties would transfer their entire activities in rubber chemicals to a JV controlled equally by the parties. The JV would on several distinct chemical markets become the largest supplier in the EU with a high market share on already highly concentrated markets. The Commission concluded that the already existing bargaining power from tyre manufacturers, accounting for a large share of the sales of rubber chemicals, would be eroded reducing many anti-competitive concerns.

Competition in the auto industry had forced tyre manufacturers to a process of consolidation and rationalisation which resulted in only six major tyre manufacturers remaining as global operators. This process led to a strengthening of their bargaining power vis-à-vis suppliers.

A sudden decline in demand for rubber and rubber chemicals gave rise to substantial over capacity for rubber chemicals in Europe. This development further strengthened the bargaining power of the tyre manufacturers. The global bargaining power of the major tyre manufacturers showed up in the fact that the suppliers of rubber chemicals where compelled to substantially lower prices and offer favourable contracts.

Source: European Commission (case IV/M.523).

Food manufacturing is a sector where joint purchasing agreements are common. As the industry structure has changed rapidly during recent years the effects and legality of these agreements have been questioned, cf. Box 8.3.

Box 8.3 Buyer power in the food retail sector

A study about buyer power in the food retail sector for the European Commission recognised that retail concentration, particularly in the grocery sector, has risen sharply and argued that it may be socially beneficial where buyer power is used to counter the market power of manufacturers.

The exercise of this power prevents manufacturers from exploiting their position as fully as they could if they were faced with a less concentrated retail sector. If buyer power could exist among retailers without those retailers having significant market power of their own, it is possible that buyer power could lead to lower wholesale prices which, as a result of effective retailer competition, would be passed on to consumers in lower final prices. Lower final prices would mean higher output and higher welfare.

Nevertheless, the continued consolidation of the retailing sector has brought a growing

concern that the buying power of retailers may have adverse economic effects on the viability and efficiency of suppliers and also, as noted above, that such power may go hand in hand with increased selling power and thus potentially have adverse effects on consumer welfare.

Source: Dobson (1999).

Duplication savings

This section is relevant if the parties to the agreement share major production facilities and thereby reduce current or future costs of providing additional value to the consumers. This may be the case if parties can divest excess capital equipment or avoid investing in parallel facilities as a consequence of the agreement. Duplication savings normally arise in horizontal agreements such as production and specialisation arrangements. It can however also be the result of vertical agreements such as resale price maintenance agreements.

The assessor can substantiate duplication savings by giving affirmative answers to the following two questions.

First, are the facilities *compatible*? To answer this question, the parties have to document the shared facilities (e.g. production, distribution). If the facilities are not compatible or require significant investments in order to accommodate the parties' products, duplication savings are small.

Second, is there sufficient *spare capacity*? The parties have to verify that spare capacity is sufficient to accommodate both products also during peak production.

In cases where the parties initially have no parallel resources, duplication savings are the hypothetical savings that would arise from not being required to build two separate facilities. These can be estimated either as the avoided cost of setting up parallel facilities or the avoided cost of renting the required capacity from an alternative supplier. Normally the least cost alternative is used as reference.

In the case of 3G network sharing, decided by the European Commission, it is apparent that the two conditions regarding compatibility and capacity are fulfilled, cf. Box 8.4.

Box 8.4: Reduced duplication case – 3G Network sharing

In 2002, two German mobile telecommunications companies notified the European Commission about an agreement concerning infrastructure sharing for 3G-networks. The parties argued that infrastructure sharing would enable them to reduce capital and operating expenditure by reducing their investments in network infrastructure and network operating costs. The savings needed should be seen in the context of the large license costs and the declining commercial value of 3G.

The agreement was found to imply a more intensive and therefore more efficient use of the network, especially in less densely populated areas. By allowing the parties to derive greater economic benefits from their investments in infrastructure, sharing of networks would add to the incentives to provide more comprehensive network coverage, with better quality and higher transmission rates.

Source: European Commission (case COMP/38.369).

In cases where the parties already have parallel facilities, it is necessary to analyse which facilities can be divested, at what costs and in what time perspective. This makes the analysis more complex. Generally, the smaller and the more specific facilities are, the smaller are the potential for efficiency gains as small, specific facilities are costly and time consuming to divest.

Economic studies of facility sharing can be used to render probable efficiency gains in analogous cases, cf. Box 8.5. If the agreement under scrutiny is an airlines alliance agreement,

such studies would present significant evidence on the existence of efficiency gains due to network sharing.

Box 8.5: Reduced duplication study – Airline alliances

Oum, Park and Zhang undertook a comprehensive study of the effects of airline alliances. They studied a number of aspects of airline alliances, including the impact on productivity, pricing and profitability distinguishing between the effects of major and minor alliances and the impact on quality as reflected in flight frequency and delays.

A major strategic alliance is estimated to improve Total Factor Productivity (TFP) of the partner airlines by 4.9 %. A minor strategic alliance is estimated to improve TFP by 0.9. A major strategic alliance is estimated to reduce average yields by 5.5 % and improve profitability by 1.3 %. An important aspect of airline performance is the quality of service. There are various dimensions of quality including on time arrival, frequency of service, check in and in-flight service, safety and comfort.

Oum, Park and Zhang examined 13 alliance routes for the period 1990-96. They found for both *complementary and mixed alliances* that the partner airlines linked their networks and either maintained or increased flight intensity in the wake of the alliances allowing for reductions in the scheduled delay time. In contrast, in *parallel alliances* partners rationalised their operations on code sharing routes and, although flight frequencies increased, scheduled delay time increased.

Source: Oum (2000).

8.2. Between-firm efficiency gains

Between-firm efficiency gains can arise if an agreement solves a market failure and improves the functioning of the market. Substantiation of these gains often proceeds in two stages. First, the assessor has to demonstrate that there is a market failure (or an externality) on the market that can be solved by an agreement. Second, the assessor has to render probable that proposed agreement will solve the market error.

Free-rider problem

This section is relevant if initially there is insufficient investment on the market because firms who invest cannot prevent competitors from drawing benefit (free riding) from the same investment without compensation.

For example, a free-rider problem may arise when a distributor undertakes a promotion campaign. If there are rival distributors on the same market not participating in the advertising campaign, they are able to take benefit of the campaign without incurring the costs. As a result, the promoting distributor cannot fully appropriate the benefits and the result may be that distributors are inclined to invest too little in promotion.

Various types of agreements between a producer and its distributors, e.g. selective distribution agreement, exclusive distribution agreement or resale price management agreement, may be able to solve the free-riding problem. Free-riding is common at the wholesale and retail level but can also occur between manufacturers where investments in the promotion of one brand may also attract customers for its competitors. A horizontal agreement between the manufacturers can help to overcome this free-rider problem.

The central question is to render probable the existence of a market error. For this purpose, three market criteria must be fulfilled.

First, pre- and after-sales services should be important in the industry. If sales services are unimportant, the free rider problem is likely to be small. The parties should find evidence indicating the importance of sales service. For example, demand responses to historical sales' campaigns can be used as indicators. An analysis of resources spent on sales services as a

fraction of total sales revenues provides a good simple indicator of the importance of the services. Other ways to document the importance of sales services is to study the *characteristics of the product*. Sales service is generally more important when the products are new or relatively complex (European Commission, 2001).

Second, promotion activities should be generic *in* character and not brand specific. If promotion activities are brand specific, free-riding is less likely to occur. Generic promotion is normally associated with homogeneous products and industries where the importance of supplier specific brands is low. An example is milk in the agricultural sector. On the market for milk, almost all promotion activities are organized by industry associations and not the individual farmers.

Third, products must be of a reasonably high value. If there is little or no gain from shopping around, free-riding is less likely (Hildebrand, 2005). A good indicator is to relate the product's consumer price to the costs for consumers to transport themselves between different retailers.

If the above three criteria are met, a free-rider problem may exist on the market. However, it is still not known whether there is an actual problem in the market and whether the agreement can solve the problem.

To demonstrate the free-rider problem is real, the level of sales services can be compared to other brands or other industries. A low level relative to other industries may be indicative of a free-rider problem. It may also be possible to perform a before- and after analysis of the agreement. It is also possible to perform customer surveys asking about their response to advertising and purchasing patterns. Also anecdotal evidence and specific industry knowledge provide good insights as to whether there is an actual free-rider problem.

Where the agreement has already been implemented or where similar agreements have been implemented, documentation of increases in sales services or in sales can be used to verify the likelihood and size of the efficiency gains.

In the case of distribution of mobility aid, the British High Court found that all of the above criteria were present, cf. Box 8.6. Pre-sales efforts were important for sales and promotion was to a certain extent generic. Also the products were relatively complex and expensive.

Box 8.6: Agreements reducing the free-rider problem – Mobility aid

Free-rider arguments were prominent in this English High Court case. Phisiang, a Taiwanese manufacturer of a major mobility aid brand, decided to consolidate its distribution in Europe through a single top tier distributor, DMA.

Vigorous price competition between distributors implied that none of them were prepared to make investments in brochures and trade fairs. As a consequence, Phisiang could not compete effectively with rival brands and develop sales in new territories. Even though the loss of intra-brand competition due to the agreement was clear, the agreement was found to fall outside of the scope of Article 81(1) because the restrictions were integral to the pro-competitive motivation for, and affect of, the agreement.

Source: RBB (2004) and High Court of Justice (No. 2002 Folio 178).

Hold-up problem

This section is relevant in cases where cooperation between firms requires one of the firms to undertake specific investments but with the risk of being taken hostage by the other firm. Agreements solving this problem will necessarily lead to a higher investment level. Vertical agreements are likely to reduce hold-up problems.

For a hold-up problem to be present in the market, three basic firm specific conditions must be fulfilled. *First*, the relevant investments must be *relationship specific*. An asset is relationship-specific if it cannot be used to buy or supply products from other firms and if it is not possible to sell the asset without significant economic loss. This implies that there are significant *sunk costs* associated with the investment. If this is not the case, the firm could use the investment also for other purposes and there would be less risk in the investment.

In the economic literature, there are four main sources of relationship-specific investments (Williamson, 1985), cf. Table 8.1

Table 8.1: Four sources of asset specificity

Asset specificity	Logic	Indicators
Site	High transportation costs implies that there are only a limited number of relevant trading partners	Distance to closest competitor Relation cost/weight
Physical	The asset, e.g. a production plant, cannot be used without considerable costs for any other purposes	Can be used for other purposes Market for used assets
Human asset	Specialised training or learning-by-doing is less valuable in other relationships	Length of training Number of training days Cost of training
Dedicated	It is unlikely that the firm would have done the investment without this particular transaction	Branded products

Source: Williamson (1985).

Second, the asset must be relatively large and have a *long lifespan* making it impossible to recoup the investment in the short run. The value of the asset could be documented by an investment analysis. The longer the lifespan, the less likely is it that it can be recouped in the short run. Another indicator is to relate the costs for the investment to the operating profits.

Third, the investment must be *asymmetric*. This is the case when one of the parties invests significantly more than the other party of the agreement. If both parties invest in the asset, the risk of changes in bargaining power is low. Thus, it is not sufficient to demonstrate that only one of the parties undertake the investment, but also that it risks offsetting the balance of power between the parties, cf. Box 8.7.

Box 8.7 Agreement reducing the hold-up problem – Hydrogen cyanide

In 2002 Lucite and BASF notified an agreement made between them to the OFT. The agreement concerned the sale of hydrogen cyanide (HCN) by BASF to Lucite and the construction of a plant to convert HCN to acetone cyanohydrin. The OFT found the agreement to appreciably affect competition.

The parties claimed benefits from the agreement in the form of improvements to safety and to the local environment. In addition, with the construction of the plant it would become economic to use most of the HCN that BASF previously incinerated. The OFT accepted these efficiencies

The OFT considered that there was inadequate incentive for Lucite to commit to financing the new plant unless the exclusive supply condition was in place, i.e. a hold-up problem. In the absence of this condition, Lucite would be vulnerable to future opportunistic behaviour by BASF, which could seek to renegotiate terms to its advantage. The efficiencies could therefore not be generated without the agreement. The agreement was therefore exempted by the British equivalence of Article 81(3).

Source: Office of Fair Trading (case CP/1288-02).

A transfer of substantial know-how may give rise to a specific hold-up problem. Once provided, know-how cannot be taken back. Therefore, providers of know-how have to make sure that their competitors cannot use the information for other purposes than agreed. If know-how is not readily available to the buyer and it is substantial and indispensable for the operation of the agreement, a transfer of know-how may justify an anti-competitive agreement that falls within Article 81(3) (European Commission (2001).

If the above conditions are fulfilled, hold-up problems are more likely to exist. However, the assessor still has to document the existence of a hold-up problem in the particular case..

The normal indication of a hold-up problem is that there are too few investments on the market. The level of investments can be benchmarked to other industries, competitors or even previous situations on the relevant market. It is also possible to ask firms for their preferred level of investments or about alternative sources of capital; cf. Box 8.8. Another source of information is case studies or business anecdotes demonstrating under what conditions important investments have been undertaken.

Box 8.8 Lending of equipment

In one case concerning a European brewery, the key anti-trust considerations concerning a number of exclusive retail contracts was whether there was a hold up problem in the Horeca-market and if lending of equipment to pubs and restaurants could solve this problem.

To support the theoretical framework, financial institutes and owners of pubs and restaurants were contacted. They confirmed that the Horeca-sector is a high-risk sector and that they had problems receiving capital in the form of bank loans for their investments. The conclusion from the survey was that sector would benefit from agreements providing the possibility for investments. The theory was thus supported with actual observations. Such claims make the theoretical statements more credible and reliable.

Source: Copenhagen Economics.

Double marginalisation

This section is relevant if the agreement is a vertical agreement, in particular purchasing and selling agreements, and if it will lead to coordinated pricing or production. The central issue is whether there is double marginalisation on the market. If affirmative, the likelihood that these margins will be reduced must be estimated.

A good starting point is to analyse current *price-cost margins*. This can be done with internal data often found in firms' financial systems. If both have high margins, it is likely that a joint pricing or production regime would lead to efficiencies, often in the form of increased sales and reduced prices. Profit margins can be found in the parties' annual reports or internal financial data.

To support the estimation of price-cost margins, the *market power* of the parties can be examined. When the parties have significant market power in each of their markets, they are able to add mark-ups on the prices charged. If they do not have strong market power in both levels of the supply chain, there is less scope for mark-ups and for efficiency gains when removing them.

The existence of *price discrimination* affects the likelihood of double marginalisation on the market, (European Commission, 2005). In the theory of double marginalisation, it is assumed that the same unit price is charged from all customers. For most goods, this is only approximately true. Most goods are offered with volume discounts, coupons, and other kinds of price discrimination devices. Under perfect price discrimination where prices are set at each consumer's willingness to pay, there is no double marginalisation. Thus, the more price discrimination is used, the smaller chances are that an agreement will reduce double

marginalisation. This implies that efficiency gains from reduction of double marginalisation are more likely to be large in industries where goods are sold for similar unit prices.

8.3. Innovation benefits

Efficiency gains from innovation benefits are difficult to substantiate even though they may be the most important gains, in particular in the long run, cf. Box 8.9. Innovations that create new and improved products should be distinguished from innovations protecting a firm's existing market power.

Box 8.9 Innovation benefits

The Commission states that cooperation in R&D often bring about economic benefits such as reductions or reducing duplicative, unnecessary costs, significant cross fertilisation of ideas and experience and thus results in products and technologies being developed more rapidly than would otherwise be the case. As a general rule, R&D cooperation tends to increase overall R&D activities.

Source: European Commission (2001a).

Diffusion of technologies

This section is relevant if the agreement leads to significant sharing of technological information between parties. The key question is whether the sharing of knowledge will make production more efficient. This type of efficiency gains may stem from many different types of agreements such as R&D agreements, production agreements, single branding and limited distribution agreements.

The gains of information sharing depend on the *degree of symmetry*. On the one hand, if one of the parties has superior knowledge regarding the activities covered by the agreement, e.g. R&D, management, distribution or marketing, the diffusion of technology is asymmetric. On the other hand, if firms have complementary technological knowledge they may learn from each other: technology diffusion is symmetric.

Symmetric and asymmetric technology diffusion may both give rise to efficiency gains, but efficiency gains are likely to be larger in the latter symmetric case, where both firms are likely to benefit from the agreement.

An asymmetric information sharing agreement can take many different forms. If the parties already have developed complementary products they can enter cross-licensing agreements in order to access each other's knowledge. The parties may also benefit from knowledge of different stages in the supply chain, e.g. one of the parties has knowledge in R&D and the other in production and distribution (Europe Economy 2001).

The gains of information sharing also depend on the *specific purpose* of the cooperation. It is easier to substantiate R&D co-operations for specific purposes. In general, the more R&D information shared between the parties, the larger the possibilities are for efficiency gains.. However, information sharing also increases the possibility for anti-competitive effects.

The location of the agreement in the *innovation value chain* is also important. Agreements covering basic R&D are more likely to have large net efficiency gains than agreements regarding products that are close to the market or already on the market. The reason is that the anti-competitive effects are much larger in the later stages of the R&D process.

There are also a number of industry specific factors affecting information sharing. In *fast growing and information rich environments*, it is necessary for firms to be aware of the external environments and to gather knowledge of e.g. customer preferences. Thus information sharing on this type of market is more likely to lead to significant efficiency gains than information

sharing on other markets. Evidence such as market growth, especially in new products on the market, can be used as an indicator of knowledge sharing leading to efficiencies.

Rapid *changes in customer preferences* also increase the gains from information sharing (Kulp et al 2004). Forecast sharing and collaboration have been found to reduce inventories and improve resource utilisation in the supply chain. The parties can thus use documentation of fluctuating consumer preference as an indicator of the information sharing being efficient. This type of information is normally available in the parties' marketing departments.

Sharing of knowledge also has different impacts depending on *where in the supply chain* it is undertaken. Studies indicate that knowledge sharing reduces order variability among upstream firms in the supply chain (i.e. between manufacturers and distributors) more than between the downstream firms (i.e. retailers and wholesalers) (Croson and Donohue, 2003). This implies that upstream firms gain more from knowledge sharing than downstream firms. Thus, it is more likely that upstream knowledge sharing leads to efficiency gains.

The European Commission did not oppose a joint venture concerning vaccine technologies, cf. Box 8.10, and used many of the indicators mentioned above. As the parties had complementary skills they would learn from each other, i.e. a symmetric diffusion. Specific purposes with the cooperation were also identified and made the effects more tangible. The industry was information rich and growing fast, increasing the potential gains from information sharing.

Box 8.10 Diffusion of technology – Development of vaccines

In 1993 the parties Pasteur Mérieux Sérums et Vaccins (PMsv) and Merck notified the setting up of a joint venture (JV). The creation of the JV between PMsv and Merck was found to restrict competition both in existing and future products, as it would limit the competitors' access to vaccines and vaccine technologies.

The parties were to cooperate on the development activities from vaccines and to pool their existing antigen and vaccine technology portfolio to allow the JV to develop new and more powerful vaccines. By avoiding R&D overlaps and benefiting of the parties' respective strengths, this would lead to a qualitative promotion of technical progress.

For example the JV would become the first vaccine producer to possess all the necessary antigens, start a development program for multivalent vaccines. Also in the field of monovalent vaccines the JV would, through the pooling of its experience and know-how, stimulate technical progress by bringing new and more powerful vaccines to the market. This development would also contribute to the entry of other vaccines.

The JV was also to bring other improvements in new technologies to be used in overall vaccine production such as the improvement or elimination of preservatives, improved vectors/new delivery systems (oral delivery), DNA/RNA-based research. Based on this information the European Commission did not oppose the JV.

Source: European Commission (case IV/34.776).

New products

This section is relevant if the agreement allows the parties to introduce new products on the market. These agreements may be horizontal or vertical. Examples are R&D cooperation agreements aiming at developing entirely new products or at producing known products of significantly higher quality. In addition, vertical single branding and limited distribution agreements may enable the parties to introduce products to new markets.

In some industries, firms are forced to continuously develop new products. The need for placing new products on the market increases the likelihood of innovation and of efficiency gains. Significant R&D efforts indicate that consumers in this market value new products or

improved product highly. Agreements that increase this kind of output are likely to make consumers better off and to induce efficiencies.

There are several indicators that can be used to assess if innovations are important in the industry.

First, a good starting point to document the *intensity of innovation* in the industry. Good indicators are the size of the R&D investments in percent of the turnover, the role of intellectual property rights and the number of patents within the industry (Lorentzen and Møllgaard 2005).

Second, another aspect is the *speed of innovation*. If there is frequent introduction of new products, the need to introduce new products based on R&D may be intense. This implies that on these markets cooperative agreements are likely to result in new products on the market. The speed of innovation can be measured by the number of new or improved products on the market per year. In this respect, the product life cycle is also important, as products with a shorter life span need to be replaced faster than more durable products.

Third, the *type of industry* may also be important. In some markets, especially those belonging to the 'new economy', innovation is generally intensive. The 'new economy' industries are generally characterised by rapid technological change and large so-called network effects. Network effects (or demand side scale economies) imply that the customer's valuation of a good increases with the number of network users. The standard example is a telephone. The more people you can reach on a given network, the more you value access to the network.

Network effects have a tendency to *winners-take-it-all competition* where the market tips in favour of one particular producer. Combined with rapid technological change, winners-take-it-all competition makes investments in innovation essential for survival in the market (Lorentzen and Møllgaard 2005).

It is often easier to measure effects from cooperation with specific development purposes than for general R&D efforts as shown by an agreement about development of new aircraft engines handled by the European Commission, cf. box 8.11. This agreement introduces several different efficiency gains that would make future markets more efficient. First, it would lead to the development of a totally new product in a shorter time frame than would otherwise have been possible. Second, it would lead to the development of a less costly and more environmental-friendly technology. Due to the fact that it was the first engine to fulfil specific environmental criteria it is probable that the technology developed would probably be diffused and become the new standard in the industry.

Box 8.11: Agreement stimulating new products – Aircraft engine

In 1996, General Electric Aircraft Engines (GEAE) and Pratt & Whitney (P & W) signed an agreement to create a joint venture to develop, manufacture, sell and support a new aircraft engine. The agreement reduced the number of realistic potential competitors to one, Rolls Royce. There was therefore no doubt that the agreement would have anti-competitive effects. However, there were significant innovation benefits to be made in the joint venture.

The design and production responsibilities would be allocated between the parties according to their technological advantages, e.g. fan blade technology for P & W and high-pressure compressors for GEAE. This would allow the parties to develop the new engine within a shorter time frame than would otherwise have been possible.

The cooperation would also enable the parties to develop an engine that was less expensive in maintenance and cost per passenger and per mile covered, had lower gas and noise emissions than the other engines offered by the parties. There was no engine fulfilling these criteria on the market.

The cooperation would lead to substantial cost savings. The investment cost of individually developing the new engine would, according to the parties, have been approximately USD 1 billion compared to approximately USD 800 million for the joint development.

Source: European Commission (case IV/36.216/F).

Other indicators are used to measure the impact of the introduction of a new product on consumers: the degree of product novelty and the change in price.

The consumer's gain from the new product depends on the substitutability between new and old products. A new product that is close to an existing product is likely to generate little extra consumer surplus, cf. Table 8.2.

The introduction of a new product can change the competitive structure of the industry and lead to either higher or lower prices on existing products. If the new product competes closely with competitors' products, or the manufacturer does not have any other products in the market, the price of a competitor's products is likely to fall.

Table 8.2 Effects from introduction of new products

Question	Yes	No
The product is perceived as significantly new and different?	High consumer gain	Low consumer gain
The closest substitutes to the product belong to competitors?	Possible price reduction	Possible price increases

Source: Hausman and Leonard (2002).

New processes

Innovation can lower the marginal production cost for existing products resulting in less costly and/or larger quantities produced. However, in this context efficiency gains are generated by the development of new technologies, not from using existing technologies more efficiently. The effect can be the result of both horizontal and vertical agreements, e.g. R&D, production and limited distribution agreements.

When a new process technology is developed it is diffused gradually into the industry. For example, if the new process is patented, licensing may diffuse it into the industry. As a consequence, the industry as such is likely to become more efficient in the long run. In many cases, these long run cost savings require significant investments in R&D in the short run and larger overall costs in the short run.

For example, the European Commission has exempted a telecommunications joint venture, cf. Box 8.12, as it was seen to generate sufficient cost savings due to process innovation. The

volume of investments needed to generate these efficiencies was seen as being beyond the capabilities of a single firm on its own.

To assess efficiencies generated by process innovation the techniques presented in the previous section can be used. However, when assessing efficiencies to be reaped in the long run it is necessary to calculate present values in order to compare them to possible eventual anti-competitive effects occurring today rather than in the future.

Box 8.12 New production processes – Telecommunications network

In 1995, the creation of the telecommunications joint venture Phoenix was notified to the Commission. The agreement entailed cooperation between France Télécom, Deutsche Telekom and Sprint that would eliminate all competition between the parties in the relevant markets.

The combination of their respective technologies would allow them to offer new services with global 'connectivity' at lower cost than they were capable of providing alone. Combining different platforms and product features would still require a considerable investment of time and money.

Phoenix would also allow for cost savings, given that the operation of single network architecture generated economies of scale and scope. The agreement could also contribute to downward pressure on infrastructure prices across the Community, for example through low cost routing.

Source: European Commission (case IV/35.617).

Chapter 9 Quantification of efficiency gains

This chapter provides tools for measuring the size of any of the efficiency gains identified in chapter 6, typically using data collected specifically for the purpose and employing sophisticated analytical techniques. We ask how *large* the efficiency gains of the agreement are (e.g. how much prices are likely to increase) in order to directly compare the size of the efficiency gains with the size of the anti-competitive effects quantified in chapter 5.

Before starting to quantify the agreement we strongly advise the assessor to consider whether the more sophisticated and costly assessment in this chapter is likely to provide answers with an expected value matching the costs of quantification.

We consider each of the three types of efficiency gains in turn: Within-firm efficiencies, between-firm efficiencies and innovation benefits.

9.1. Within-firm efficiency gains

There are a large variety of economic tools available to quantify within-firm efficiencies, typically cost savings. It is important to remember that the tools presented in this chapter are complements and not substitutes to the tools presented in previous chapters. To be credible the results from quantification should be consistent with the results of the substantiation.

In this section, we present the four most common techniques for quantifying within-firm efficiencies: engineering studies, regression analysis, DEA analysis and event studies.

Engineering studies

Often the best evidence of cost savings can be found in internal cost studies based on plant-level and firm-level accounting data and often prepared as a part of management plans or investment documents. In many cases these studies have already been carried out as part of the business process that originally generated the need for the agreement.

Engineering studies are bottom-up studies calculating how costs vary with production volume and other relevant production variables. Based on these studies, it is possible to calculate minimum efficient scale, elasticities of scale, average costs, marginal costs, variable costs, fixed costs, incremental costs and other cost concepts, in brief the cost function. Such internal studies must be expected to be crucial when it comes to the documentation of firm-specific cost savings as they embody assumptions quite similar to the ones underlying the long run average cost of the economic theory, cf. Viscusi et al (2000).

Engineering studies, in particular, can illustrate two important relations. First, they can measure how costs change with production volume. It provides information about efficiency gains associated with economies of scale. Second, they measure the minimum efficient scale plant

relative to the size of the market. This demonstrates the implications of scale economies for the industry structure (European Commission 2001b), cf. Box 9.1.

Box 9.1 Economies of scale in cheese manufacturing

A study by Keane used an engineering approach to analyse the existence of economies of scale for cheese manufacturing in Ireland. In order to determine the relationship between collection costs and distance from processing plant, detailed information in milk collection costs was obtained from Irish dairy industry sources for tanker loads that were collected in regions that ranged from very close to the processing plant to up to one hundred miles distant.

The cheese manufacturing costs were derived through interviews with cheese manufacturers and associated institutions and made it possible to itemise the costs for the various fixed and variable cost components. The information on milk collection and cheese manufacturing costs was combined to determine the optimum plant size.

Incremental and average cost curves for cheese manufacture were derived. Both curves were decreasing at a decreasing rate, indicating considerable economies of scale up to about 20,000 tonnes per year with limited further cost reductions beyond this size. These results were similar to studies undertaken in Germany. However it was noted that these results was widely at variance with the EU cheese industry structure in practice.

Source: Keane (1998).

Engineering studies can also measure the size of economies of scope through the concept of incremental costs. The incremental or additional costs for accommodating additional products can be seen as an indicator of the associated efficiency gains. The logic behind is that if incremental costs are small, there is large scope for efficiencies using the existing facilities. In contrast, where incremental costs are high there is little scope for efficiencies using the existing facilities.

Bottom-up models are information demanding, however quality requirements for data in terms of number of observations and frequency of observations are typically lower than for regression analysis. The method involves getting a good understanding of the business and the processes therein. Therefore are interviews important when conducting engineering studies, cf. Box 9.2.

Box 9.2 Data requirements – Engineering studies

Type of data	*Potential source*
Production costs	Internal accounting data and internal product calculations
Input costs	Internal purchasing data, commodity exchanges, official statistics
Costs per process	Interviews, time studies

Regression analysis

Regression analysis is an econometrical estimation of a production or cost function for the relevant industry. The underlying logic is to find an average production function for all firms in the industry. Any firm could then be compared to the industry average cost of producing a certain quantity. From this information, it is possible to deduct whether a large production volume tends to lead to lower unit costs or that firms with certain characteristics, e.g. vertical agreements, are more efficient than the industry average.

The regression model can be written as follows:

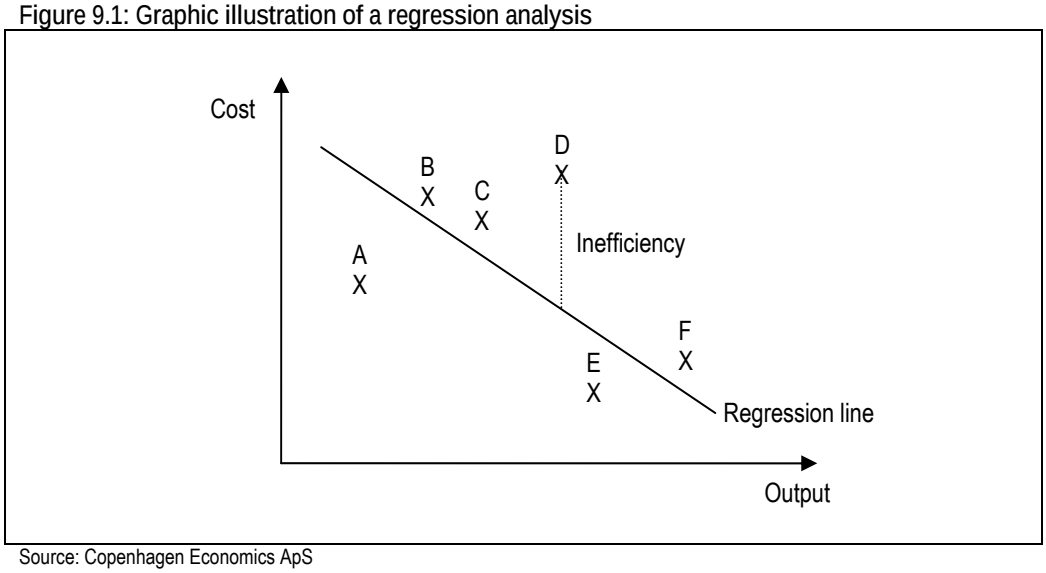
$$c_i = f(y_i; \beta) + u_i,$$

where c_i represents total cost, y_i represents a vector of outputs, β is a vector of parameters to be estimated, f is the functional form that characterises the relationship between c and y, and u_i is the error (interpreted as measuring deviation in efficiency from the industry average for firm *I)*. This method is usually termed simple regression analysis or ordinary least squares (OLS) regression.

A regression plot as in figure 9.1 indicates that the industry has increasing returns to scale: every extra unit produced reduces the average costs as indicated by the downward sloping regression line. This implies that an economy of scale argument is valid in this type of industry. The slope of the regression line measures the size of the economies of scale in the industry.

The efficiency of each firm is measured relative to this estimated industry average cost and the plot also indicates how efficient a specific firm is compared to the industry average. In the example below, firm D is more inefficient than the industry average, while firm E is more efficient. This may indicate that there are other feasible cost savings for company D than economies of scale. The regression analysis can provide an estimate of size of these cost savings and can in some cases identify where the savings can be made.

Figure 9.1: Graphic illustration of a regression analysis



Source: Copenhagen Economics ApS

For example, a US study measured economies of scale in wireless telephony, cf. Box 9.3.

Box 9.3 Economies of scale in the wireless telephone industry

Strategic positioning and potential cost savings are popular explanations for consolidation in the wireless telephone industry. Foreman and Beauvais used data from GTE Wireless, one of the large and geographically diverse providers in the US, to investigate the existence of economies of scale in the industry.

Their dependent variable, total cost, included total capital/network costs, total sales and marketing costs, total operations support costs, total general and administrative costs, and the net interest expense on working capital. Quantity of subscribers was used as main measure of output.

The estimated parameters for subscribers where significant, positive, and less than one in value. Thus, a one percent increase in subscribers corresponded to a less than proportionate increase in total cost, approximately 0.82%. Furthermore, the time trend, i.e. the number of years that a market had been in service, was negative. These results suggested that long-run total costs where declining at an annual rate of 3.5%.

From the cost function the degree of economies of scale was calculated to 1.16. There were thus scale economies in cellular telephony, but they are generally lower than the 1.3 to 1.7 that has been estimated for wired technology.

Note: A number above 1 indicates economies of scale.
Source: Foreman and Beauvais (1999).

There are more advanced extensions to the simple regression analysis, for example stochastic frontier analysis (SFA). This model estimates the production or cost function relative to the most efficient firm in the market. One improvement compared to an ordinary regression analysis is that SFA separates the efficiency and the error components so that the relative efficiency is more accurately measured.

Regression analysis requires good data. The dependent variable is often a price for a specific product and the independent, or explanatory variables, are different factors affecting the price of the product, e.g. prices of input goods, salaries and prices of competing goods. The specific factors affecting prices and thus the data requirements have to be determined on a case by case basis, cf. Box 9.4.

Box 9.4 Data requirements –regression analysis

Type of data	*Potential source*
Prices on own product	Parties themselves
Prices on competitors products	Official statistics, industry organisations, private market research companies
Input prices	Official statistics, commodity exchanges, private market research companies
Industry indices	Official statistics, industry organisations

A general assumption is that at least 30 observations are needed to conduct a regression analysis. However, this minimum number increases with the number of independent variables.

Data envelopment analysis

Data Envelopment Analysis (DEA) is a tool that can be used to conduct benchmark analysis. It is a non-parametric analysis that uses mathematical programming techniques to estimate the relative efficiency of different firms.

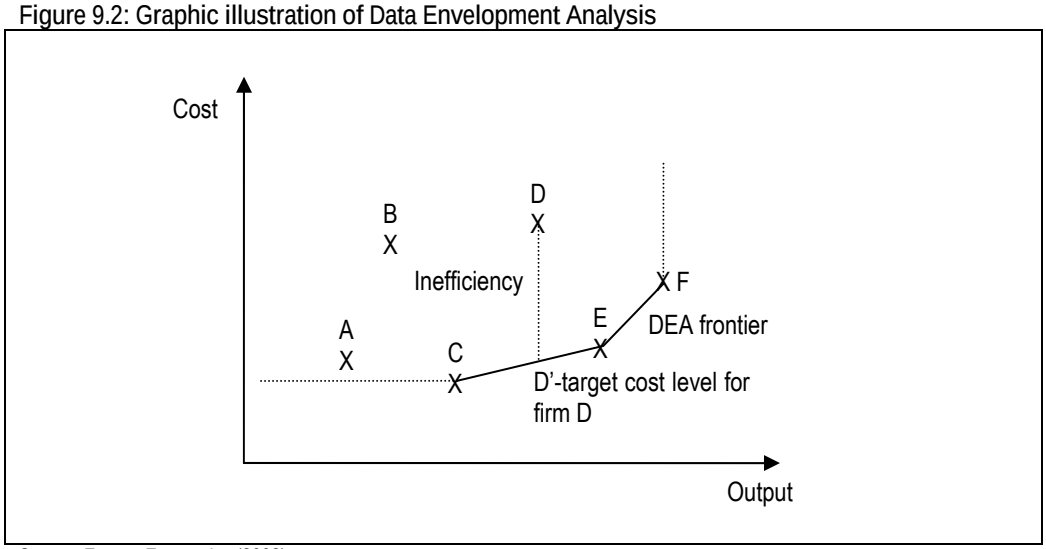
Unlike the regression analysis that compares the firms to a hypothetical industry average, the DEA compare all firms to the most efficient firms on the market. Europe Economics (2002), contains a brief discussion of the pros and cons of the methods. DEA can evaluate a number of efficiencies such as technical efficiency, i.e. how to optimise production in order to achieve a given output at lowest costs and the scale efficiency (economies of scale). The DEA can thus be used to evaluate the possibilities for a number of cost efficiencies such as economies of

scale and scope. It can also provide estimations of how efficient a firm is compared to its competitors.

The DEA-model is in essence a two-step procedure. In the first step, an index of relative performance, or efficiency score, for each firm is constructed. This efficiency score is constructed on the basis of a set of weights attached to the output of the firms. The weights must be some performance indicator, e.g. size or education level, cf. Europe Economics (2002). In the second step, an envelope is built of the firms that are the most efficient in the weights. If one firm has the same set of weight but produces less output than another firm, it is regarded as inefficient.

A DEA model with single input and variable returns to scale approximates the best-practice frontier by a piece-wise linear approximation, cf. Figure 9.2. The gap between a given firm and the frontier is interpreted as inefficiency. Firms C, E and F would be considered as efficient. In contrast, firm D is considered inefficient as it is inside the frontier. For firm D the peer group consists of organisations C and E and its target cost level is given by D'. The difference between D and D', marked by the dotted line, is the scope for efficiencies if the firm would become as efficient as its competitors.

Figure 9.2: Graphic illustration of Data Envelopment Analysis



Source: Europe Economics (2002).

If firms D and C argue that an agreement carries economies of scale, the above figure reveals that this argument is not valid. The industry described above is characterised by constant or decreasing returns to scale as (the most efficient) costs go up with larger production volume. However, if the main efficiency argument is to share technologies in order to get firm D to learn from firm C, the figure shows that there is a large scope for efficiencies as firm C is more efficient. If it were known that firms C, E and F all use a specific type of agreements, such as selective distribution, then the interpretation of the results from the analysis could be that the implementation of such an agreement would increase the efficiency.

Comparative efficiency analysis is increasingly recognised as a useful tool for benchmarking the relative efficiency of different firms. This type of analysis has already been applied to several industries, for instance, financial services, telecommunication, electricity and water supply[16]. The study of the efficiency of ATM networks conducted with a DEA-technique provide good evidence for parties claiming efficiencies for an agreement concerning sharing of ATM

[16] See for instance Europe Economics (2002), Sharma et al. (2002) or Brown (2001).

networks between a major and a minor bank., cf. Box 9.5. The analysis could also estimate the size of the potential efficiency gains due to the agreement.

Box 9.5: DEA analysis – Efficiencies from sharing ATM networks

Network effects suggest that the value customers attach to ATM services offered by a bank goes up as the size of the ATM network increases. In other words, the addition of a new bank or a new ATM to the network increases the attractiveness of all banks within the network to their customers.

Also, economies of scale imply that the cost per transaction at an ATM declines as the number of transactions increases. Therefore, by increasing the number of transactions, a shared ATM network can turn an unprofitable ATM into a profitable one. But, shared ATM networks facilitate collusion as the cooperating companies share sensitive information about prices and quantity of the payments, i.e. they have strong anti-competitive effects.

A DEA analysis of the ATMs in Turkey found that big banks are more efficient (implying efficiencies of scale) and that participation in shared ATM networks failed to increase the efficiency of small and medium size banks. The fact that most of these banks tended to share their ATMs with each other (and not with big banks) could be an important factor in their relatively lower efficiency scores.

One possible solution to this problem of low efficiency among small and medium banks would be for these banks to form sharing arrangements with bigger banks. This would allow them to truly expand the services they can offer and gain an advantage over their competitors. The analysis could be used to show the size of the efficiencies that would arise from an agreement between a big bank and a smaller one.

Source: Damar (2004).

Event study analysis

Event studies are an empirical method based on a study of the prices of an asset prior to and directly following a specific event, like the announcement of a merger or an agreement. The difference in valuation before and after event is interpreted as the efficiency gain (or cost) associated to the event. Event studies are based on the theory that, given rationality in the marketplace, effects of an event will be reflected in share prices.

For the analysis of agreements, the logic is to use changes in the parties' share value when an agreement is made public as an estimate of the gains that it will generate, given the assumption that the stock market is efficient and that share prices properly reflect the present value of all expected profit streams.

The reliability of event studies depends on the time frame and short-horizon methods are quite reliable. Even though methodology has developed, there are still serious limitations with the long horizon studies (Khotari and Warner, 2005).

There are three main types of event studies for the purpose of analysing effects from agreements. They can all be combined.

The first is the analysis of share prices of the *parties*. In theory, an agreement that is expected to create cost efficiencies should result in greater profits and a higher stock market valuation for the parties. This implies that an increase in the share value when signing an agreement provides an estimate of the present value of the efficiency gains that may be expected from the agreement.

The second type is the analysis of the *competitors'* share prices. The development of the competitors' share prices following the announcement of an agreement may indicate whether an increase in the share prices of the parties is due to expected efficiency gains or increased market power. If the competitors' share prices decrease or are constant following the

announcement of the agreement, this may indicate that the increase in the share prices of the parties is due to expected efficiency gains. In contrast, rising share prices for the competitors following the announcement may indicate that the increase in the share prices of the parties is due to an expectation that the agreements increase the market power of the parties. The latter effect is due to the fact that both the parties and their competitors will experience higher profits if the parties gain more market power.

The third type of analysis is to include *upstream or downstream firms* in the analysis, cf. Box 9.6. The methodology is strengthened when stock market reactions of upstream or downstream firms are examined in addition to the reaction of product market rivals. If a merger or an agreement is likely to have both efficiency and market power consequences, the response of downstream firms will represent the anticipated net effect of these consequences on product market prices.

Box 9.6 Event study analysis – U.S. Steel

One example of an event study using the effects on downstream firms is an analysis of the U.S. Steel dissolution suit, a legal and economic landmark case. In 1911 the US Justice Department filed suit against U.S. Steel, charging monopolization and restraint of trade. The case was resolved in 1920 when the Supreme Court affirmed the dismissal of the suit.

The study uses stock market reactions on railroads, for which steel was a major cost. The railroads were under a regulated regime and could not pass costs on to rates and are thus treated as final customers of steel. The pattern of stock market reactions from events of the suit on of U.S. Steel, its major competitors and downstream customers implies that the dissolution of U.S. Steel would have lowered steel prices and raised outputs.

Source: Mullin, Mullin and Mullin (1995).

It should of course be kept in mind that an increase in the share market value may be due to other factors than expected efficiency gains. Higher share prices could also result from pecuniary cost savings, market power effects, previously undervalued assets or imperfect expectations. Furthermore, if the parties are active on several markets, the stock price movements of the parties may represent the net effects of events in several markets. There are a number of other restrictions to the use of event studies of agreements. The announcement of the agreement should be made in public. The parties to the agreement should be listed at a stock exchange. It can only be used for ex post assessments of agreements and not for ex ante assessments.

Traditionally, event studies have mostly been applied to mergers, cf. Duso et al. (2002). However, several attempts have also been made at evaluating the stock market effect of agreements and partnerships between firms. For instance, Campert and Pfister (2003) studies 237 agreements in the biotechnology and pharmaceutical industry. Furthermore, Changqi and Wei (1998) investigate the stock price responses of listed firms in the US markets to announcements of R&D agreements. The authors conclude that R&D-agreements improve economic efficiency of the parties.

An event study of the British beer market indicates cost savings hardly can be a prominent argument for vertical agreements in the British beer industry, cf. Box 9.7. Parties preparing an efficiency defence would in this case need to look for other possible efficiencies from their agreement.

Box 9.7: Event study analysis – Integration in the British beer market

Throughout the twentieth century, brewers were heavily integrated into the retail segment through the ownership of pubs, a structure that was challenged in the late 1980s by the then British Monopolies and Mergers Commission (now the Competition Commission).

Announcement of policies aimed at restricting the extent of vertical integration here provide experiments for analysis using event study methods. The results demonstrate that the integrated major brewers were significantly harmed by announcements that increased the probability of a forced divestiture of pubs and benefited from announcements which decreased this probability. The announcements had the opposite effect on un-integrated major brewers that were potential victims of foreclosure from the retail market. The integrated major brewers lost nearly 11 percent of equity value as a result of the announcements covered in the study. Guinness, the un-integrated major brewer included in the study, gained nearly 15 percent equity value from the announcements.

Three hypotheses were used to explain the motives for integration in the beer industry:

- Vertical foreclosure hypothesis – integration foreclosed rival brewers from outlets for supply, reducing the overall level of entry and competition.
- Cost reduction hypothesis - integration reduced the distribution costs between the manufacturing and the retailing levels by encouraging investment in cost reduction by the integrated majors.
- Service externality hypothesis - integration improved the quality of service provided at the retail level by increasing the investments in amenities at pubs.

The event study results reject the service-externality hypotheses. The cost-efficiency hypothesis however is consistent with the event study results, but is inconsistent with data showing that wholesale price were actually higher for tied pubs than for un-integrated pubs. The vertical-foreclosure hypothesis alone is totally consistent the event study results on the data on priced, as well as with anecdotal evidence.

Source: Snyder (1994).

Even though event studies require high quality data, this does not normally pose a problem as the data is often easily and publicly available, cf. Box 9.8.

Box 9.8 Data requirements – Event studies

Type of data	*Potential source*
Share prices (parties, competitors, customers and benchmark indices)	Stock exchanges
Event data	Parties press releases, announcements from public authorities

9.2. Between-firm efficiencies

There are no standard tools for assessing between-firm efficiencies because the economic effects are very diverse. There is however a number of useful techniques such as investment calculation, optimal sales service analysis, market simulation and regression analysis that will be presented below.

Investment calculation

In cases where the free-rider and the hold-up problems are present, a standard investment analysis can be used to assess the size of the efficiencies. If the investment analysis indicates that the present value of the expected future profit flows are less than the costs of investments, it is not economically sound for the firm to undertake the investment. The important aspects are however slightly different in the two cases.

In a free-rider setting, a firm may decide not to undertake an advertising campaign, as the competitors will receive almost the same benefits. The question is thus how much is invested and how much of the increased demand generated from advertising will go to the competitors. If the investment costs cannot be recouped due to the competitors free-riding on the

advertising, the investment will not take place. The total gains from the advertising can be estimated by the increase in sale on the market due to the campaign. The size of the free-rider problem is then the difference between the investing firm's gains and the total gains on the market due to the campaign. The marketing department can normally generate estimates of likely effects from marketing campaigns.

In a hold-up setting, the focus is on uncertainty. If there is a high risk that one of the parties will defect or go bankrupt, the supplier of capital and training must make sure that the investments are recouped within this time. If this cannot be arranged by contractual means, there will be no investments due to the high risk. The hold-up problem can be estimated as the extra returns needed in order to make the investment profitable. The size of the returns will depend on the risk and on the value of the asset at the end of the period. Markets with significant hold-up problems normally need extensive contractual systems in order for investments to take place.

Box 9.9 Data requirements – Investment calculation

The analysis primarily requires investment specific information such as;

- Investment costs
- Investment period
- Value of the asset at the end of the period
- Rates
- Annual cash flow from the investment

Optimal sales service

To assess if there is a free-rider problem on the market, the difference between actual and the optimal sales expenditure for the firm can be calculated. This can be done by using the simple Dorfman-Steiner (1954) formula that was initially developed for analysing optimal advertising:

$$\frac{\text{Advertising}}{\text{Sales}} = \frac{-\varepsilon_s}{\varepsilon_p}$$

where ε_s is the advertising elasticity of demand and ε_p is the price elasticity of demand. A high advertising elasticity of demand means that advertising is effective in stimulating demand. The formula predicts that the advertising-to-sales ratio is greater the larger is the advertising elasticity of demand and the lower is the price elasticity of demand.

The price elasticity of demand is the percentage by which the quantity demanded will change if the price of the item rises by 1%, i.e. how sensitive consumers are to changes in price. The advertising elasticity measures the sensitivity of demand to changes in the sellers' advertising expenditure. By definition, the advertising elasticity of demand is the percentage by which the demand will change if the sellers' advertising expenditure rises by 1%.

The optimal level of advertising, derived from the relation between level of sale, advertising elasticity of demand and price elasticity of demand, is then compared to actual advertising. If actual advertising is smaller than optimal advertising, it is possible that there is a free-rider problem on the market. The size of the problem for the firm is given by the difference between optimal and actual spending on advertising.

This simple formula for optimal advertising could also be expanded to cover similar effects such as the optimal size of the sales force or after sales services.

Box 9.10 Data requirements – Optimal sales service

The method requires information on the advertising and sales costs before the agreement. It also requires information on the price elasticity of demand and the data requirements to estimate this are indicated in Box 6.8. This methodology can also be used to estimate the advertising elasticity of demand. The information required for this estimation is often available at the parties marketing departments.

Market simulations

The size of efficiency gains due to improved transactions between firms van be measured using market simulation techniques. The complexity of these models depends on the model chosen. They range from simple to very complicated depending on the level of detail required.

Simulation techniques could for example be used to assess the effect of reductions in marginal costs due to an elimination of double marginalisation. These models are similar to the ones used in merger simulations and predict how prices and quantities will change in the market due to the lower costs. In most cases a cost, and subsequent price, reduction of the parties' will result in also other firms on the market reducing their prices. The market simulation provides not only an analysis of the firm specific effects but also on industry wide effects.

It is also possible to construct models that can simulate the effects of free-rider problems, cf. Box 9.11. The first question is to assess the likelihood and scope of underinvestment in sales services on the market. A simulation can answer to what extent the agreement can reduce the problem and estimate the size of these effects.

There are no standard models and simulations are conducted on a case-by-case basis. The data requirements for simulation models are described in Box 6.8.

Box 9.11: Simulation of a free-rider problem – Advertising in the beef industry

In the US, there has been a mandatory collective advertising campaign for farmers called the beef check off program. After discussions about the legality of the program, a study analysed the effects on advertising if the program was removed.

The study simulated the effect on advertising if there was a voluntary advertising system for farmers. Farmers not participating in the system were, due to the homogeneity of the product (beef), modelled to be able to free-ride on the advertising efforts. The free-rider effect was measured as reduction in farm prices for beef caused by increased production from non-participating producers.

The simulations showed that the US beef industry had been under-investing in advertising and promotion. The introduction of a voluntary program would further reduce advertising. The advertising producers were, depending on various assumptions, expected to loose 27 to 86 percent of the advertising benefits. The free riding would lower market prices by 5 to 20 percent.

Source: Chung et al (2004).

Regression analysis

Econometric models enable an analyst to take numerous factors into account that are believed to affect competition and to estimate the importance of each of these factors. The regression methodology can be used for analysing a number of relationships. In this guidance it was introduced in section 9.1 to explain how the average costs depend on input factors and quantities produced, i.e. to assess the existence of economies of scale. The technique can however also be used for a variety of other purposes.

Multiple regression analysis seeks to explain how one variable is determined by a group of other variables. The technique estimates the effect of certain variables, such as price, price of competing products, advertising etc., on a specific outcome. The technique can for example be used to analyse the economic effects of different contractual setups on a market, cf. Box 9.12.

Box 9.12 Regression analysis - Exclusive beer contracts

Exclusive-dealing contracts, whereby producers prohibit their dealers from selling the products of other manufacturers, have long been a controversy in the courts and among economists. Three major theories of exclusive dealing have been proposed in the literature: exclusion of rivals, dampening of competition among manufacturers, and solving incentive conflicts between manufacturers and downstream dealers. While the former two hypotheses imply that exclusive dealing is primarily anticompetitive, the later hypothesis suggests that exclusive dealing is efficiency enhancing. Using data on U.S. beer distributors these thee theories are tested.

Exclusive dealing is according to the study more common in larger markets, where it is relatively difficult to keep rivals from achieving at least a minimum efficient scale. Further, exclusive dealing is associated with greater sales of the exclusive brand and greater total sales as well. These results, coupled with the fact that major domestic beers are universally available in the United States, suggest that exclusion is unlikely the motivating factor behind the use of exclusive dealing in the beer industry.

The beer industry would seem to fit well with the underlying assumptions of the second theory; brewers operate in an oligopolistic market and sell to a limited number of distributors operating in exclusive territories. Yet the model's implications are found to be inconsistent with observed behaviour.

The empirical results are consistent with the hypothesis that exclusive-dealing contracts are used to protect manufacturer's property rights in non-brand-specific promotional investments and that firms must be able to generate sufficient sales so that exclusive agents earn at least what they could earn as nonexclusive dealers for competing firms. In accordance with this theory exclusive dealing is found to be positively correlated with both the price charged by brewers and the quantity of beer sold by distributors. These results suggest pro competitive results from the practice.

Source: Sass (2005).

By introducing information on the extent of exclusive dealing, effects on prices and sales from the practice can be inferred. The general data requirements for regression analysis are described in Box 9.4.

9.3. Innovation benefits

Efficiency gains from innovation are the most difficult ones to quantify. The main reason for this is the high level of uncertainty involved in the process. Nevertheless, efficiency gains from innovation may be the most economically significant source of efficiency gains.

In practice, when an agreement gives rise to efficiency gains from innovation, firms should focus on producing and providing credible and convincing qualitative arguments that the agreement will result in new products or processes being placed on the market sooner than otherwise would have been the case.

Consumer surplus

In the general case, consumers are affected by new or improved products in two ways. First, they gain the surplus associated with the additional variety provided by the new product. The magnitude of this consumer surplus gain is a function of how closely substitutable consumers view the new product and existing products, i.e. how much consumers are prepared to pay for additional features or quality. Minor improvements or new products that are close to existing products will add less consumer surplus.

Second, the introduction of a new product can increase competition for existing products. The extent to which a particular product's price is affected by the introduction of the new product is a function of the closeness between the existing products and the new product, as well as of the form competition takes in the market. If the manufacturer of the new product has no existing products in the market, the new product will typically lead to lower prices for all

competing products, a result which benefits consumers. If the manufacturer of the new product has other products in the market, a possible outcome of the new product introduction is an increase in prices that would harm consumers.

The total effect on consumers of the introduction of a new brand, is caught by the compensating variation, i.e. the price a consumer would need to be paid, or the price the consumer would need to pay, to be just as well off after a change in prices of products the consumer might buy, and time to adapt to that change. The compensating variation consists of the two elements described above, the variety effect and the price effect.

The price effect can be estimated both directly using both pre- and post- introduction data and indirectly, only using post-introduction data. With the direct approach it is not needed to make assumptions about the competition in the industry. With only post-introduction data it is possible to indirectly estimate the structure of demand. However, the assumptions made of the type competition in the market become vital for the outcome. See e.g. Hausman 2002 for a further description of the estimation of price effect. The econometrically estimated price and variety effects are summed up and describe the consumers' valuation for the new product.

As the methodology requires post introduction data it cannot be used to assess the effects prior to the agreement. However, it can be used to assess the efficiency gains from the agreement in the continuous monitoring. It can also be used to study the effects on the introduction of similar products and thus as a benchmark for the value of introducing the product covered by the agreement.

Below, we present a study using this methodology and indicating that innovation often brings significant increases in value to the consumers from their increased valuation or the new product, cf. Box 9.13.

Box 9.13: Values of new product introduction – Apple Cinnamon Cheerios

When introducing a new brand on the market there is always a question of the value that the product will bring to the consumers. A study examined the value of the introduction of Apple-Cinnamon Cheerios by General Mills in 1989.

The ready to eat cereal industry was among the largest introducer of new brands among US industries. Many doubted that there was any social value of these new brands, the vast majority of which did not succeed

A three level model of demand was used where the top level was the overall demand for cereals, middle level - the demand among various cereal segments and bottom level - the choice of brand. The model indicated that the annual consumers' surplus from the introduction of the brand was approximately 78.1 million USD, a sizable consumer surplus. However, because General Mills was a multi-product firm with competing brands the normal marginal cost pricing assumption did not hold.

The introduction of a new brand would allow General Mills to also increase prices of its existing brands as some of the sales lost from increasing prices would go to the Apple Cinnamon Cheerios. These increased mark-ups decrease consumer welfare. When this imperfect competition elements where included in the model the results indicated that the consumer surplus from the introduction of the new brand was $ 66,8 million USD per year.

Source: Hausman (1994).

This type of analysis can be used to show that not only are innovations important in the industry, they also result in significant economic welfare. It can provide an indication of the welfare effects from an existing innovation or the size of the potential gains from placing new products on the market, cf. Box 9.14.

Box 9.14 Value of new product introduction - Bath tissues

Bath tissue is a typical fast moving consumer product sold through high volume retail channels such as supermarkets. In 1991, bath tissues of the Kleenex brand was launched as a premium brand in selected regions of the US. A study estimated the net benefit to consumers associated with the introduction of the Kleenex bath tissue.

Retail scanner data from before and after the introduction, was used to directly estimate the reduction in price for existing products in the bath tissue market that resulted from the introduction of the Kleenex brand, i.e. the price effect.

In the second step retail scanner data from after the introduction was used to estimate the additional consumer surplus associated with the availability of the Kleenex bath tissue.

The study concluded that the welfare effect from introducing the new brand in the 30 investigated cities was $69.2 million. This increase in welfare amounts to approximately 7 % of the bath tissue expenditures in the cities investigated and is thus a significant consumer gain. Half of the increase in consumer welfare came from the variety effect and the second half from price effects.

Source: Hausman (2002).

The methodology requires high quality data, primarily on prices, for a number of products and often also different geographical areas. A large share of the required data may be available from the parties but is generally complemented with data purchased from private market research companies and with official statistics, cf. Box 9.15.

Box 9.15 Data requirements – Consumer surplus

Type of data	*Potential source*
Prices for own products	Parties
Prices for competitors' products	Private market research companies
General data on industry and region	Official statistics

Event study analysis

Just as for measuring the efficiencies from changes in share prices, see section 9.1, event study techniques can be used to show if an agreement is likely to lead to dynamic efficiencies. The technique can also be used to estimate the size of these efficiencies.

The intuition is also in this case that the investors evaluate the probable efficiency gains from the agreement. The change of their valuation of the share reflects the expected increased future profits from the agreement, cf. Box 9.16.

The advantage with the share price analysis is that the firms have all the information needed to perform the analysis internally. But, the analysis cannot be used to assess the effects before the agreement is signed. For this purposes the effects of previous similar effects can be analysed and the estimates used as a reference. The data requirements for event studies are presented in Box 9.8.

Box 9.16: Share price analysis estimating innovation – Strategic partnerships

A study of 237 partnerships in the biotechnology/pharmaceutical industry between 1995 and 2000 find significant positive wealth effects from the formation of strategic alliances. On average, firms that enter a collaborative venture experience a 3.91 % increase in share price during the day of announcement, amounting to a gain in value of approximately $ 150million. There was no evidence of wealth transfers between the members.

The study also shows that while all alliances yielded significantly positive returns, more value accrues to the partnership when it involves the creation or the transfer of technological knowledge.

The smaller partner in the agreement appropriates most of the surplus generated through partnership formation, especially so when it sells a technology to the larger partner. The stock market value associated to the partnership increases with the profitability of the firm. These results suggest for example that alliances with pharmaceutical firms are a profitable strategy for small biotechnology start-ups, despite their organizational and strategic costs.

Source: Campert and Pfister (2003).

Test 3: Balancing

Chapter 10 Balancing

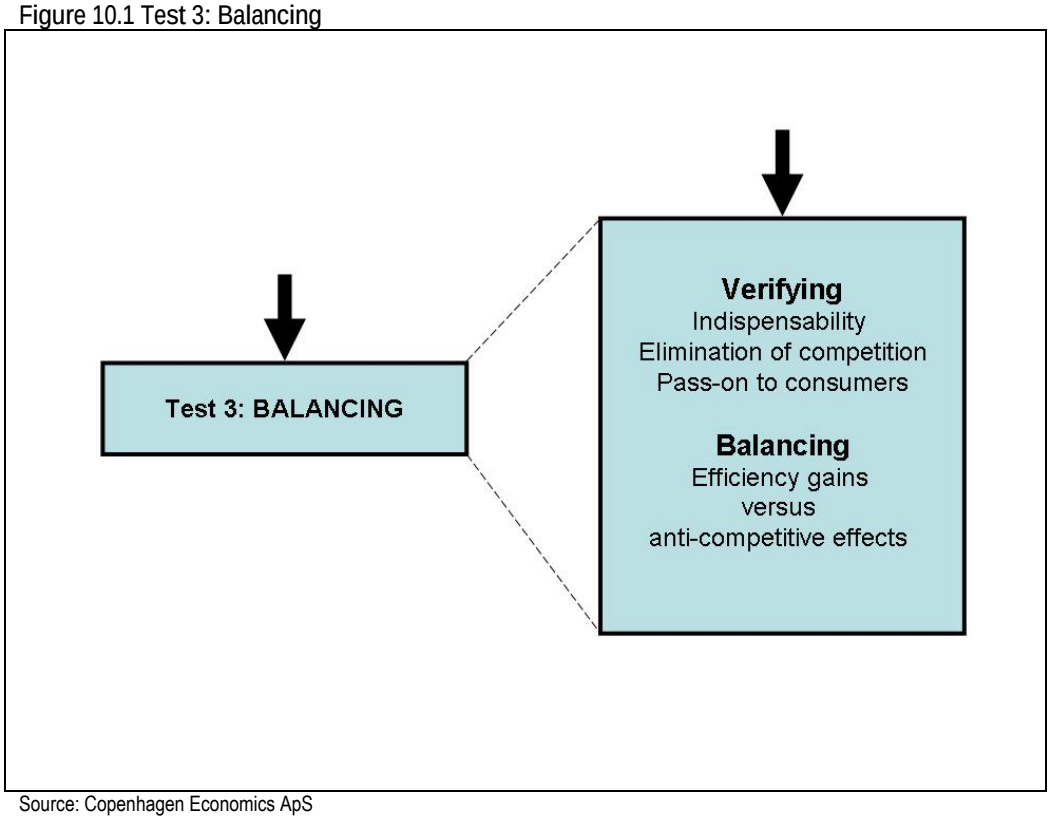
The purpose of *Test 3: Balancing* is to make the final assessment, the balancing, whether the relevant efficiency gains outweigh indispensable anti-competitive effects.

The input to *Test 3: Balancing* is *(i)* the knowledge that the agreement under scrutiny in principle is prohibited by Article 81(1) as it failed to pass the simple screening tests in *Test 1: Screening* and *(ii)* a good account of the anti-competitive effects and efficiency gains associated with the agreement as well as an estimate of the size order or the size of these effects, obtained through either substantiation or quantification in *Test 2: Measuring*.

The output of *Test 3: Balancing* is knowledge whether the agreement is prohibited by Article 81(1) or whether it is exempted according to Article 81(3).

Before making the assessment proper the assessor has to verify a number of conditions that must be fulfilled for the balancing result to be valid. She has to verify that the agreement and its elements are indispensable. She has to verify that the agreement does not eliminate competition on a substantial part of the relevant market(s), and finally she has to verify that the efficiency gains identified in *Test 2: Measuring* are actually passed-on to a sufficient degree to those consumers who ultimately experience the potential anti-competitive effects of the agreement, cf. Figure 10.1.

Figure 10.1 Test 3: Balancing



Source: Copenhagen Economics ApS

These conditions can in principle have three different consequences for the final balancing.

First, in some cases the agreement can never be exempted. In this case, the final balancing can be skipped as even the best outcome cannot compensate for failed condition. This holds in particular when the claimed efficiency gains turns out to be achievable by other less restrictive means than the agreement *per se*, that is, when the agreement turns out to be dispensable or when the agreement eliminates competition on a substantial part of the market.

Second, in other cases the agreement must be modified before exemption becomes likely. In this case, the final balancing must be postponed to after modification of the agreement (and eventually re-measuring) has taken place. This holds in particular when *some of* the claimed efficiency gains turn out to be achievable by a less restrictive version of the same agreement, that is, when some of the individual elements of the agreement turn out to be dispensable.

Third, again in other cases the efficiency gains associated with the agreement must be modified (read reduced) to include only efficiency gains passed-on to consumers before the final balancing takes place. This holds in particular when some of the efficiency gains previously identified and measured are less likely to be passed-on to consumers.

The assessor is advised to proceed in the following order. First, verify whether the agreement and its elements are indispensable, cf. section 10.1. Second, verify whether the agreement eliminates competition on a substantial part of the relevant market(s) cf. section 10.2. Finally, check to which degree the efficiency gains previously identified are passed on to consumers, cf. section 10.3, before doing the final balancing, cf. section 10.4.

10.1. Indispensability

Article 81(3) requires that the agreement and its individual parts are indispensable, that is the agreement must not:

> *..impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives;*

This is a manifestation of the Community principle of proportionality. The condition implies that it should not be possible for firms to achieve the same efficiency gains with less anti-competitive means. This requires that the assessor analyses two issues.

First, whether the agreement as such is indispensable. This is a question whether other commercial activities as organic growth or agreement s with other (smaller) firms could achieve the same efficiencies, cf. Table 10.1. *Second,* whether the individual parts of the agreement are indispensable. This is a question whether a modified, less restrictive version of the agreement could achieve the same efficiencies. An agreement with hard core restrictions is an example of agreements typically failing the indispensability test.

Table 10.1: Examples of alternatives to an agreement

Type of agreement	Realistic alternatives
Production agreement between two firms	Organic growth Production agreement with a smaller firm
Marketing and distribution agreement	Distribution agreement
Single branding agreement	Quantity forcing (minimum required sales)
Exclusive distribution agreement	Selective distribution agreement

Source: Copenhagen Economics.

The need to consider alternatives does not imply that the assessor should evaluate all conceivable alternatives to the agreement in question. This is acknowledged by the Commission stating that firms are not required to consider hypothetical or theoretical alternatives to a specific agreement (European Commission, 2004a). Only realistic alternatives to the agreement have to be identified and the Commission will only intervene where it is reasonably clear that there are realistic and attainable alternatives.

We propose to check for indispensability using two different approaches. *First,* the assessor can systematically go through each of the efficiencies associated with the agreement and check whether alternatives to the agreement could create the same efficiencies. *Second*, the assessor can systematically go through each of the anti-competitive effects associated with the agreement and check whether these effects in reality are unavoidable and indispensable.

Efficiencies and indispensability

In this section the assessor goes through each of the efficiencies associated with the agreement checking whether it is possible to attain the same efficiencies by organic growth, alternative less restrictive agreements or agreements with alternative (smaller) partners. If alternatives are not likely to achieve the same efficiency gains, it supports the claim that the agreement is indispensable. For this evaluation the assessor can use the same techniques used to identify and measure the efficiency gains of the original agreement, cf. chapters 6, 7 and 8. Below, some of the most common arguments are presented.

Economies of scale is an important source of efficiencies. The minimum efficient scale measures the output level that minimises average costs and exhausts economies of scale. The larger the minimum efficient scale is compared to the current size of the parties to the agreement, the more likely it is that the agreement is indispensable to obtain the efficiencies. Minimum efficient scale tends to be high relative to the size of the market in an industry with high fixed costs, implying that there is room for few efficient firms (European Commission, 2004a)

However, the assessor should recognize that it is possible to generate economies of scale by unilateral expansion. If economies of scale really are attractive, then it is likely that firms will try to expand even in the absence of any agreement (Farell 2000). Then, the degree to which the agreement is indispensable depends on how likely it is for firms to achieve the same economies of scale either by themselves or with a smaller business partner.

If economies of scale have already been substantiated or quantified, the information needed to measure minimum efficient scale is already available. In addition, the assessor should discuss the possibilities for organic growth and should - in particular - identify those constraints that can make unilateral growth difficult, e.g. production capacity, legislation, access to supplies, land or stores, environmental legislation or financial constraints, cf. the merger example in box 9.1.

Box 10.1: Indispensability case – wholesale of drugs

In a drug wholesale merger in the US, the merger was set to achieve rational prices by removing excess capacity from the market. The parties claimed various efficiencies such as distributional efficiencies by closing overlapping centres, better purchasing practices, and reduction in overhead and inventory costs. The efficiencies were accepted by the court.

However, based on economic evidence from the FTC, the court stated that much of the savings anticipated from the mergers could also be achieved through continued competition in the wholesale industry. The court observed that prices had been falling in recent years when competition was vigorous, and was concerned that the mergers would reduce downward pressures on price. It concluded that while it must be conceded that the mergers would likely yield the cost savings more immediately, the history of the industry over the past ten years demonstrates the power of competition to lower cost structures and gain efficiencies as well. The merger was prohibited.

Source: Scheffman (2002).

Economies-of-scope require complementarity between business partners and the assessor should document and explain how and why their assets and production technologies are complementary. The more complementary are their assets or production technologies are, the more unlikely is it that the parties would reach the same efficiencies by organic growth. If one of the parties has unique assets or assets hard to copy, it is also unlikely that the efficiencies could arise from an alternative agreement or from organic growth. Also organic growth is less likely if all parties do not have prior knowledge of the activity or market covered by the agreement.

Increased countervailing bargaining power is likely when parties do not initially possess significant market power or when they can convincingly argue that organic growth will not allow the same in the near future. It is often unlikely that alternative can generate this specific efficiency gain. To substantiate the argument, the parties could present their projected market shares for the next couple of years. If they will not independently enjoy high buyer power the agreement is likely to be indispensable for the efficiencies to occur.

With *reduced duplication* the analysis is based on the same logic as in the case of economies of scale. If the complementary assets are expensive or hard to copy, it is not likely that each party can undertake the investments needed fir unilateral growth. This can be substantiated by relating the cost of the investments to annual turnover and profit.

Between-firm efficiencies arising from solving free-rider, hold-up or double marginalisation problems normally unlikely to be solved by organic growth. Also, agreements with other smaller firms will often not lead to the same efficiencies and not be less restrictive.

I*nnovation benefits* are also in many cases hard to achieve without an agreement. This is in particular the case when efficiencies arise from information sharing. When unique assets are integrated, e.g. R&D skills or manufacturing techniques, it often generates superior production

opportunities and efficiencies that would not have been possible without the cooperation of these two specific firms. To substantiate these claims the parties should describe their complementarities and to what extent their technology is industry standard or firm specific.

Anti-competitive effects and indispensability

In this section the assessor goes through each of the anti-competitive effects associated with the agreement checking whether its absence would eliminate or significantly reduce the efficiencies that follow from the agreement or make it significantly less likely that they will materialise (European Commission 2004a).

An important part of this analysis has already been carried during made *Test 1: Screening* where the agreement was screened for hard-core restrictions. Agreements with hard-core restrictions are not ruled out from the application of Article 81(3), but they are not normally regarded as indispensable for the agreement. There are however some instances were even severe restrictions have been exempted, cf. Table 10.2.

Table 10.2 Indispensable restrictions

Agreement	**Restriction**
Distribution agreements	Territorial or customer exclusivity, banned sales outside the territory or customer group.
Specialisation agreements	Prohibition for each party to produce what the other party is to produce.
R&D agreements	Prohibition from undertaking research in the same area as the one covered by the cooperation.
Crisis cartels	Reduction of production capacity

Source: Copenhagen Economics

The assessment of indispensability of the anti-competitive restrictions is based on the assessment of anti-competitive effects identified in section 4.3. The two main elements in this assessment are the:

- nature of the restriction
- intensity of restriction

Based on the European Commission (2004a), we recommend that firms focus on the economic risk and the economic incentives in the market when they explain and demonstrate that the anti-competitive restrictions of their agreement are indispensable. Certain anti-competitive restrictions can increase the probability of achieving efficiency gains because they reduce the economic risk and align the economic incentives in the market.

An anti-competitive restriction is more likely to be indispensable if it can be shown that the efficiency gains claimed are more uncertain without the same anti-competitive restriction. This can be the case for both within-firm and between-firm efficiency gains as well as innovation benefits; cf. Table 10.3.

Table 10.3 Examples of anti-competitive effects that may have to be accepted in order to assure efficiency gains

Risk	Logic
Return of investments	Restrictions may be needed to recover the costs of large investments.
Intellectual property concerns	Transfer of strategic information between the parties increases the parties' risk form the agreement. Heavy restrictions can be needed to alleviate this risk.
Incentive problems	When some parties enjoy benefits from the other parties from defecting from the agreement high restrictions may be needed to optimize output.
Lock-in effects	A party that undertakes specific investments may be locked-in to the business relation. Restrictions may be needed to reduce these risks.

Source: Copenhagen Economics

10.2. No elimination of competition

Article 81(3) requires that an agreement must not eliminate the effective competition in the market that is the agreement must not:

> *…afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question.*

This condition implies that the firms must demonstrate that the agreement does not hinder the remaining sources of actual and potential competition to function properly in the market. When competition is eliminated the competitive process is brought to an end and efficiency gains are outweighed by losses from rent seeking of the parties, misallocation of resources, reduced innovation and higher prices (European Commission 2005b).

The key to demonstrate that an agreement satisfies the condition of not eliminating competition is to identify the important barriers and drivers of effective competition and demonstrate on a case-by-case basis that these are not significantly affected. These indicators can be divided into two groups concerning *actual competition* and *potential competition,* cf. Table 10.4. Many of these indicators have already been described in Chapter 5 and the assessor should refer to this chapter when assessing whether the agreement eliminates competition.

Table 10.4: Indicators of effective competition

Actual competition	
Sufficient capacity	Amble capacity and easy access to important inputs strengthen competition as competitors are able to respond to price increases with higher production volume.
Signs of competition	Documented competition for key customers, downward price pressure or significant investments in product specific advertising can be used as evidence of actual competition.
Response to changes in market conditions	Historic responses to market changes indicating that markets are sensitive to the market environment and suggesting that there is no collusion or coordination. This is especially the case when identified effects resulted in downward pressure on prices.
Mavericks	Continued existence of mavericks on the market making coordination or collusion less effective. A maverick is a firm that may have less to gain from coordination or is less threatened by punishments from rivals because of the kinds of products it sells or its cost structure.
No cross-ownership	Continued absence of cross and joint ownership that does not make firms concerned for the profitability of their competitor.
Low substitution	Low substitution between the parties' products indicates that there is remaining competition on the market.
Low risk of collusion	Indicators can be used to demonstrate a continued low risk for collusion on the market, cf. Table 5.2.
Potential competition	
No public regulation	Complicated or severe regulation may restrict entry into certain markets.
No industry specific regulation	Industry specific regulations, specific certification and authorisation schemes make entry less likely.
Low customer preferences	Strong cultural or regional customer preferences may reduce the possibilities for outsider entrants.
Low entry costs	Low entry costs and no sunk costs make entry more likely.
Access to important resources	Access to important resources on same conditions as incumbents makes entry more likely.
New market	New markets are often dynamic, market shares are fluctuating and entry is relatively easy.
Growing market	Entry into growing markets is more attractive
High technological change	Entry into markets with shifting technologies is easier than into markets with stationary technologies.
Small minimum efficient scale	Entry into industries with small minimum efficient scale carries no major cost disadvantage for new entrants.
Potential entrants	The existence of closely related or similar markets makes it possible to identify potential entrants.

Source: Copenhagen Economics.

Thresholds or safe harbours

It is not possible to specify specific combined market shares above which an agreement tends to eliminate effective competition in the market. The reason is that markets are different and that market shares yielding strong market power in one market are less restrictive in other markets.

However, European case law states that substantial elimination of competition in Article 81(3) is narrower than the concept of dominance, so that an agreement could be regarded as not eliminating competition within the meaning of Article 81(3), and therefore qualify for exemption, even if it established a dominant position for the benefit of its members[17].

With this in mind the market share thresholds concerning dominance could be used as a sort of safe harbour for agreements not eliminating competition on the market. In this case, a market share of 50 percent could, in the absence of exceptional circumstances, be presumed dominant.[18] The Commission has stated that dominance is likely for firms with market shares around 40-45 percent.[19] So far, only in one case has the Commission found dominance for a firm with less than 40 percent.

It is highly unlikely that anti-competitive effects could be justified where the parties have a market position approaching that of a monopoly or with a similar level of market power e.g. a market share that exceeds 75 %. It is judged that the efficiency gains would not be sufficient to counteract its actual or likely anti-competitive effects (European Commission 2005b).

Agreements effectively sealing off specific markets or regions are also unlikely to pass the elimination of competition criteria, cf. Box 10.2.

Box 10.2 Elimination of competition – production of blackpowder

In 1975 the chemical and explosives companies Bohlen Industrie and Nobel's Explosive Company notified to the European Commission, the setting up of an equally owned and controlled joint venture for the manufacture and sale of blackpowder.

The Commission concluded that the implementation of the agreement would afford the parties the possibility of eliminating competition in respect of a substantial part of the products as the agreement would result in the insulation of the United Kingdom market by precluding sales into the United Kingdom by suppliers other than the JV and by shutting out all possibilities of competition between the parties of the JV in respect of sales into the United Kingdom.

Thus the agreements failed the no elimination of competition criteria and did therefore not satisfy the tests of exemption of Article 81(3).

Source: European Commission (case IV/29.133).

Relationship to Article 82

When the combined market share is so high that it is likely that the parties obtain a single or collective dominant position in the relevant market, firms should also pay attention to Article 82 of the Treaty concerning abuse of a dominant position. According to case law, the application of Article 81(3) cannot prevent the application of Article 82, cf. box 9.2.

As a consequence, an agreement which creates a single or collective dominant position can pass the test of Article 81(3) provided that the agreement does not include restrictions which constitute an abuse of dominance according to Article 82.

[17] Cf. Case T-395/94 Atlantic container Line AB v Commission, OJ [2002] C 144/72
[18] Cf. Case C-62/86 AKZO v Commission
[19] The Commission's Xth Report on Competition Policy (1980)

Box 10.3 The relation between Article 81(3) and Article 82 of the EC Treaty

Articles 81 and 82 of the Treaty both pursue the aim of maintaining effective competition on the market and can be applied simultaneously. Consistency requires that Article 81(3) is interpreted as precluding any application of this provision to restrictive agreements that constitute an abuse of a dominant position.

In an abuse of dominance case, the accused firms held that their activities, such as loyalty rebates, were covered by an exemption under Article 81(3) and could thus not be fined for infringement of abuse of dominance until the Commission had withdrawn the exemption. However, the Court declared that an exemption under Article 81(3) does not prevent Article 82 from being applied to the same agreement. That agreements between firms operating under effective competition are exempted does not mean that the same agreements practiced by a dominant position can never constitute abuse of dominance.

However, a company holding a dominant position may benefit from an exemption under Article 81(3) when the four conditions are fulfilled. Therefore, if the conduct of a dominant company generates efficiencies and provided that all the other conditions of Article 81(3) are satisfied such conduct should not be classified as an abuse under Article 82.

Source: European Commission 2005b and European Court of Justice (case C-395/96)

10.3. Pass-on of efficiencies

Article 81(3) requires that an agreement that is in principle prohibited according to Article 81(1) could be exempted according to Article 81(3) provided it:

> … (allows) *consumers a fair share of the resulting benefit …,*

This is basically a question of how large a share of the efficiency gains which are passed on those consumers who experience the anti-competitive effects. However, it is not required that consumers receive all efficiency gains. From the consumers' perspective, it is sufficient that the agreement must be at least neutral.

It is not a trivial matter to show whether efficiency gains are passed on to consumers. Efficiency gains can be hard to measure and not all efficiency gains are likely to be passed on. In general, one can say that within-firm efficiencies are relatively easy to measure, but are in many cases least likely to be passed on while between-firm efficiencies and innovation benefits are more difficult to measure, but often more likely to be passed-on. However, at this point of the analysis, the efficiency gains from the agreement have already been identified and substantiated.

The first step is to determine who the consumers are to be compensated for the anti-competitive effects. Within the framework of Article 81(3), the consumers include all direct or indirect users of the products which are covered by the agreement. In practice, this implies that the consumers can be defined as the customers of the parties to the agreement on the relevant markets covered by the agreement. They can be other firms who use the products as input for further processing or end consumers of the products (European Commission, 2004a). It is important to note that the impact on individual consumers should generally not be considered. It is the impact on the group of consumers on each of the relevant market that counts.

Efficiency gains can be passed on to consumers in different ways: through lower prices, better products or services, or better quality. Within-firm efficiencies are most likely to result in lower prices, between-firm efficiencies primarily lead to lower prices and new or better products, while innovation benefits can lead to new or better products and lower prices in the long run, cf. Table 10.5.

Table 10.5: How different types of efficiency gains are passed on to consumers

Type of efficiency gains	Pass-on to consumers through
Within-firm efficiency	Lower prices
Between-firms efficiency	Lower prices New products, more variety, higher quality
Innovation benefits	Lower prices New products, more variety, higher quality Lower prices in the long run

Source: Copenhagen Economics.

In some cases, consumer surveys can be used to measure the pass-share, cf. Box 10.4. These surveys are normally easier to perform in intermediate goods markets with professional buyers and limited consumers. However, it is also possible to conduct this kind of surveys for consumer goods.

Box 10.4 Consumer survey of fair share – sodium circulators

In a case concerning a joint venture for development, production and sales of sodium circulators, the customers' views were central for the Commission's assessment. Regarding the condition of fair share to consumers, the Commission noted that the only customers to the parties in the UK encouraged, and had approved the cooperation in the joint venture. The customers thus knowingly and deliberately forewent the benefits of the parties competing for the compensating advantage of a technical solution from the joint venture to which the parties would contribute their complementary expertise.

Source: European Commission (case IV/29.428).

Within-firm efficiencies

Within-firm efficiencies are typically internal cost savings. The pass-on rate can be assessed by analysing a number of indicators covering the nature of the cost savings and of the market as: type of cost saving, type of pass-on, state of competition, demand condition, and supply conditions

The *type of cost saving* matters and it can be important to distinguish between cost savings lowering marginal costs and cost savings lowering fixed costs. Marginal cost is the extra cost from producing an additional extra unit and is closely related to the concept of variable costs.

Economic theory predicts that the degree of pass-on is highest for reductions in marginal than for fixed costs. The intuition follows from the principle of profit maximisation. Profit maximising firms chose their optimal combination of price and output by equalising marginal revenue and marginal cost, that is, independently of fixed costs. Marginal revenue is the change in total revenue when output goes up by one unit and is determined by demand conditions. Marginal cost only depends on internal cost variability. For this reason, lower marginal costs would therefore lead to higher output and lower prices. In contrast, lower fixed costs do not provide direct incentives for firms to lower prices. Therefore, consumers experience higher pass-on rates when cost savings give rise to lower marginal costs than when they give rise to lower fixed costs.

It is often difficult to draw a clear line between fixed and marginal costs. In practice, many firms use full cost pricing or ABC-pricing rather than marginal cost pricing. And in financial reports 'costs of goods sold' or 'product costs' often includes administrative labour costs and some capital expenses.

In addition, changes in fixed costs may sometimes impact on pricing. For example, a part of the cost accounting literature recommends long-run pricing where prices reflect long-run average costs rather than short-run marginal costs. In R&D and production agreements a

reduction of fixed costs may enable innovation and ease the introduction of new products that would not have been possible without the agreement.

The assessor also has to take into account the time horizon. Economic theory categorises decisions into short and long run decisions. Long run is generally defined as a period sufficiently long allowing all costs to be considered as variable. Therefore, the distinction between variable and fixed costs only makes sense in the short run. When long-run consumer welfare is a concern the impact of the agreement on fixed costs must be acknowledged.

The duration of long and short run varies between markets and industries. For example, the duration of long run may range from less than one year in dynamic semiconductor sectors to several years for more mature sectors as the iron and steel industry.

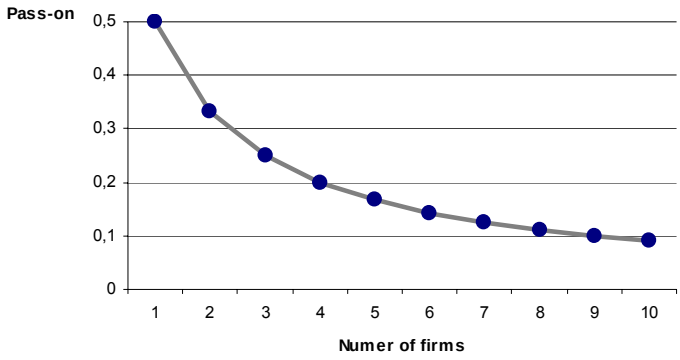
The *type of pass-on* is also important and the assessor must in particular be aware of the distinction between the direct and indirect pass-on effects. *Direct pass-on* arises from the original within-firm efficiency gain. An example is a marginal cost reduction that increases the parties' incentive to charge lower prices and expand output to the benefit of consumers. *Indirect pass-on* arises if an agreement also intensifies competition throughout the industry as a reaction to the increased competitiveness of the parties leading to an industry-wide pass-on. For example, agreements can eliminate competitive disadvantages and increase overall competition or make collusion more unlikely.

Agreements generating cost savings often result in firm-specific pass-on that will not diffuse to the rest of the industry. However, long run cost savings can lead to industry-wide pass-on due to diffusion. Industry-wide pass-on is normally substantially larger than firm-specific pass on (Stennek and Verboven, 2001).

The initial *state of competition* matters. If competition is intense initially, the more likely it is that pass-on of cost efficiencies to consumers arises. As a general rule, we can say that the pass-on is largest under perfect competition, smallest under monopoly and somewhere in between under oligopoly. If undertakings compete mainly on price and are not subject to significant capacity constraints, pass-on may also occur relatively quickly. If competition is mainly on capacity and capacity adaptations occur with a certain time lag, pass-on will most likely be slower (European Commission, 2004a).

Many markets resemble oligopoly markets with a limited number of competitors. Assessing the pass-on of these markets is relatively difficult but some intuitive results can be found by analyzing a simple Cournot model. If there are N firms in the market, a cost saving in a single firm will be passed on to consumers with 1/(N+1) of the initial cost saving. This indicates that pass-on is *smaller* in markets with many competing firms than in industries with only a few competitors cf. Figure 10.2. The larger the number of firms on the market, the smaller is the impact a single firm can have on the market price.

Figure 10.2 Pass-on of efficiencies



Source: Copenhagen Economics

But even in a monopolistic market, some cost savings are passed on to the consumers. Monopolies set prices where the marginal revenue equals marginal cost and with a linear demand system half of the savings in marginal costs will be passed on to the consumers.

However, in some markets the traditional inverse relation between market concentration and competition is not always correct. Especially in markets with a so-called 'winner-takes-all' competitive games and a rapidly progressing technological process, the competitive pressure may be very intense even though the number of competitors is rather small. Many markets in the new economy have those characteristics. Moreover, potential competition from outside the relevant market, for instance imports or firms in adjacent markets, may stimulate firms to pass efficiency gains on to the consumers.

Demand conditions are relevant, as the pass-on rate depends on the sensitivity of the demand to changes in price level, i.e. the price elasticity of demand. The more sensitive consumers are to changes in the price level, i.e. the higher the price elasticity of demand is, the greater is the pass-on rate. The intuition is that with a high price elasticity of demand, a price reduction will result in a high increase in sales. If the increase in sales is sufficient to offset the loss of revenue due to price reductions the firms will reduce their prices.

Finally, *supply conditions* matters as the pass-on rate is larger, the larger is the ability of competitors to respond to changes in the market, in other words, the more elastic is the supply. In contrast, an inelastic supply curve, i.e. a steep supply curve, results in a smaller pass-on of cost efficiencies. The slope of the supply curve depends in the end on the capacity constraints faced by firms. The supply curve is steep and supply inelastic when firms have scarce capacity.

Between-firm efficiencies and innovation benefits

Between-firm efficiencies and innovation benefits may be a significant source of efficiency gains, but they are difficult to measure. In addition, they are often very likely to be passed on to consumers to a grater extent than within-firm efficiencies. For example, new or improved products are by definition delivered to the market and can therefore be seen as being passed-on directly to the consumers.

In reality, many of the techniques used to quantify the effects of between-firm efficiencies and innovation benefits directly assess pass-on to consumers, e.g. willingness to pay for new products, cf. section 9.3. Also techniques such as estimating the return on sales service or advertising implies that consumers will receive additional value from the agreement if the returns are high. Low returns imply that consumers will not receive significant benefits from the agreement.

Quantification of pass-on from within-firm efficiencies

In this section, we will describe three quantitative techniques which may be employed to estimate the pass-on rate. They are both primarily relevant for within-firm efficiencies giving rise to cost savings. It should, however, be noted that estimates of pass-on rates to consumers are uncertain and should be used and interpreted carefully. This is one of the reasons why the European Commission only expects firms to submit estimates and other data to the extent that it is reasonably possible in the individual case (European Commission, 2004a).[20]

First, we show how to use *econometric analysis* to estimate the pass-on rate by estimating how likely a given firm is to adjust its price level in response to changes in own production costs. It should, however, be mentioned that econometric analysis have been used only in a very limited number of cases and the results obtained are not that clear-cut.

The empirical literature on pass-on of firm-specific cost savings is very limited and virtually none of the existing empirical studies has focused specifically on agreements or mergers. In contrast, there is a relatively large empirical literature on pass-on of industry-wide cost changes as taxes and intermediate goods prices and on pass-on of cost changes for sets of firms (Stennek and Verboven, 2001).

Ashenfelter et al. (1998) proposed a methodology to estimate firm-specific pass-on applying it to a specific merger case, the Staples/Office Depot merger; cf. box 9.5.

Box 10.5 Example of firm specific pass through rate - Staples/Office Depot

An analysis of the efficiencies predicted that the Staples and Office depot would achieve savings of between $4.9 and $6.5 billion over the five years following the transaction, as well as ongoing dynamic efficiencies. Staples argued that two-thirds of the savings realized by the combined company would be passed along to consumers. However, no data to support this analysis was presented.

FTC pointed out the importance of distinguishing between firm-specific and industry-wide cost shocks. They argued that pass through rate for industry-wide cost savings was likely greater than the rate for firm-specific savings; in the former case competition would force prices down. Merger-specific efficiencies should generally be viewed as firm-specific.

The FTC developed a way to empirically isolate the firm-specific pass through rate. It showed that the Staples-specific pass-through rate was only 15%, much lower than the 67% figure claimed by the merging firms. In other words, if Staples costs fell 10% but its rivals' costs did not change, Staples would lower price only 1.5%. The Court relied on this estimate and concluded that the cognizable efficiencies from the proposed merger would largely not be passed on to consumers.

Source: Baker (1998).

In essence their approach amounts to a regression of the price that an individual firm charges on both its own costs and the costs of other firms in the industry and a number of variables affecting demand and supply; cf. box 9.6.

On reason for the limited availability of pass-on studies could be that data requirements are high. Firms know their own prices and costs, but to estimate firm-specific pass-on they also need to know prices and cost of their competitors in the market. Such information is often difficult to obtain.

[20] Economic modelling can also be used for assessing pass-on. For further explanation of this method we refer to Stennek and Verboven (2001).

Box 10.6: Example of econometric estimation of pass-on

A simplified version of the regression in Ashenfelter et al. (1998) can be written as:

$$p = \alpha + \beta_1 MC_P + \beta_2 MC_I + \gamma w + u .$$

In the regression, MC_P measures the marginal cost of the parties of the agreement. MC_I measures the industry-wide marginal costs. The vector w is a control vector of cost or demand shifters. Finally, u is the disturbance term.

If the model is estimated with all variables transformed into logarithms, the estimated parameters can be interpreted as elasticities. The estimate of ß$_1$ gives us an estimate of percentage price increase in case of a one percent increase in the marginal cost of the parties after controlling for industry-wide cost changes. This implies that the estimate of the coefficient ß$_1$ can be interpreted as an estimate of the firm-specific pass-on rate.

Stennek and Verboven (2001) proposed an extension of the framework from Ashenfelter et al. (1998). Basically, the above regression equation has been extended so that it also includes the costs and prices of the other products. The framework, which they apply to the market for refrigerated juice, gives raise to higher pass-on rates than the one found by Ashenfelter et al. (1998).

The different results may be explained by at least two factors. First, they may be a result of different or poor data quality. Second, the difference may be explained by the different focuses of the two analyses. Ashenfelter et al. (1998) took into account also cost changes by competing retail chains. In contrast, the analysis Stennek and Verboven (2001) only focuses on competing brands within the same retail stores.

Source: Stennek and Verboven (2001), Ashenfelter et al. (1998).

Second, we show how firms can calculate the so-called *Minimum Required Efficiencies* (MRE). The MRE can be interpreted as an estimate of the efficiency gain which is required to compensate the consumers for a given anti-competitive effect. If principle, it provides a direct indication of whether the pass-on condition of Article 81(3) is met.

The MRE is estimated differently for markets characterised by homogeneous products (Cournot markets) and markets characterised by differentiated products (Bertrand markets). In this context we limit our attention to the Cournot model for which the intuition is relatively simple. This is not the case for the Bertrand model.

If we consider an agreement between firms A and firm B and assume that firm A has lower or equal marginal costs than firm B, the required MRE can be calculated by using the following formula (European Commission, 2004c and Röller et al., 2000):

$$\frac{C_A - C_M}{C_A} > MRE = \frac{s_B}{\varepsilon - s_A} .$$

where C_A is the marginal cost for the efficient firm A, C_M is the marginal cost for the two parties after the agreement, ε is the price elasticity of market demand and s_A and s_B are the market shares of firms A and B before the agreement.

The formula states that MRE, i.e. the minimum efficiency required, is determined by the market shares of the two firms and the price elasticity on the market. MRE increases in the market share of either firm A or firm B and decreases with the price elasticity of market demand. Higher market shares reflect more market power, while lower price elasticities reflect less consumer sensitivity to price changes (Röller et al., 2000). The formula also indicates that the MRE is very small if the market share of firm B is very small. The intuition is that such

agreement eliminates only very little competition in the market. If the combined market shares of the parties are higher than the price elasticity of market demand ($S_A + S_B > \varepsilon$), the agreement always causes a price increase, even if the marginal cost dropped to zero. In this case, the agreement is very restrictive to competition.

If we calculate MRE to e.g. 20 percent, it means that the cost saving that should be generated by the agreement in the most efficient firm A must be at least 20 percent for the agreement to fulfil the pass-on condition. For example, if firms A and B have market shares of 0,30 and 0,10 percent respectively and price elasticity of market demand equals unity, MRE is 33 percent less requiring firm A to reduce marginal cost of firm A by at least 33 percent.

10.4. Settling the balance of anti-competitive effects and efficiencies

Balancing, that is, the direct comparison of relevant efficiency gains with the indispensable anti-competitive effects is the final part of *Test 3: Balancing* and also the end of the exemption test.

Balancing requires that

- Anti-competitive effects are identified and substantiated or quantified, cf. chapter 3-5
- Efficiency gains are identified and substantiated or quantified, cf. chapter 6-8
- The agreement is tested for indispensability, cf. section 9.1
- The agreement is tested for elimination of competition, cf. section 9.2
- Efficiency gains are modified if pass-on to consumers is in complete cf. section 9.3

If relevant efficiency gains turn out to be larger than the indispensable anti-competitive effects, the conclusion must be that the agreement is likely to be exempted according to Article 81(3). On the other hand, if relevant efficiency gains turn out to be smaller than the indispensable anti-competitive effects, the conclusion must be that the agreement is likely to be prohibited according to Article 81(1).

In this last exercise two additional concerns pop up.

Some of the efficiency gains identified may be dependent on specific events expected, but not known for sure, to happen in the future. How does the assessor take account of the uncertainty inherent in any analysis dealing with the future?

Furthermore, some of the efficiency gains may be expected in the future much later than the timing of the anti-competitive effects. How does the assessor take into account of the separation in time between the different economic effects?

Uncertainty

In *Test 2: Measuring* we estimated the size order or absolute size of the efficiency gains and anti-competitive effects associated with the agreement. However, in all cases the occurrence and size of these economic effects are uncertain and a probability or likelihood can be associated to all outcomes of the agreement. This is, in particular, true for between-firm efficiencies from solving market inefficiencies such as free-rider and hold-up problems or for innovation benefits from the introduction of new products and processes.

To compare e.g. a highly probable price increase to a less probable introduction of a new product the assessor has to describe the various scenarios that may arise in the future. The assessor must create a number of scenarios where each scenario is assigned a probability of occurrence. For example, consider an agreement that for certain will make production more efficient, but the exact size of the associated cost reduction is uncertain. Assume that the probability of cost reductions equal to €1 is 10%, €2 is 40%, €3 is 30% and €4 is 20%. These

probabilities could also be associated to other uncertain consequences of an agreement, e.g. successful innovation, likely market share, and increases in investments.

All these possible outcomes can be summarized in an *expected value* taking into account the efficiencies associated to each scenario and their probabilities allowing the assessor to compare anti-competitive effects and efficiencies with different probabilities. If the outcomes are discrete variables, i.e. only takes on a finite number of values, and the probabilities add up to one, the expected value can be calculated as;

$$E(X) = \sum_i p_i x_i$$

where *p* is the probability for a scenario, *x* is the value of the scenario outcome and *i* is the specific scenario. The equation and methodology for scenarios with continuous outcomes, i.e. a variable that can be expressed by a large number of values, is similar. The expected value for the efficiencies in the example presented above would be E(X) = 0.1*1+0.4*2+0.3*3+0.2*4= 2,6. The expected value-method adjusts the output depending on the degree of uncertainty and thus makes it possible to compare it the anti-competitive effects, which also may need to be risk adjusted.

The same logic can be used also on agreements where the effects have not been precisely estimated. Medium sized efficiencies with a low probability of success are unlikely to outweigh medium sized anti-competitive effects with a high probability of occurring.

Time horizon

When the assessor compares anti-competitive effects with efficiency gains, she also has to take into account whether the anti-competitive effects and efficiency gains are generated in the same time period or not. The time horizon is important because a future gain or loss is of less value to the consumers than a present gain or loss.

The most common pattern is that anti-competitive effects occur relatively soon after the agreement has been signed but efficiency gains take longer to materialise. There is naturally also a difference between different types of efficiency gains where many within-firm efficiencies are generated soon after the agreement has been signed but where innovation benefits are not generated until many years after signing the agreement.

To compare anti-competitive effects to efficiency gains that occur in different time perspective, the value of both must be discounted. We propose using the *net present value* method (NPV) to discount the effects to the time of signing the agreement. This enables the assessor to compare efficiency gains achieved in the future to anti-competitive effects generated right after the agreement enters into force. In principle, the balancing should incorporate all future anti-competitive effects and efficiency gains. However, as it may be difficult to asses for how long the consumers will suffer the anti-competitive effects and efficiency gains the assessor may have to limit the time horizon to a foreseeable future.

The net present value is calculated on the basis of the equation below. Only if the net present value of the effects is positive, i.e. the value of the expected efficiencies is higher than the value of the anti-competitive effects do the consumers receive a fair share.

$$NPV_0 = \sum_{t=1}^{n} \frac{Efficiency_t}{(1+r)^t} - \sum_{t=1}^{n} \frac{Anti-competitive_t}{(1+r)^t}$$

where *t* is the period in which the effect occurs, *n* is the last period with the effect and *r* is the discount rate. It is clear that the discount rate and the timing of the effects are central for the present value of the effects. An increase in any of them reduces the present value of the effect.

The discounting of the effects implies that agreements speeding up the introduction of new products, processes or innovations generate additional value to the consumers. This is so because efficiency gains occurring soon after signing the agreement has a higher net present value than efficiency gains generated in the distant future.

The balancing of the effects after the two adjustments should make it clear whether the consumers will be sufficiently compensated for the anti-competitive effects they will suffer. If the consumers receive a fair share of the efficiencies, the agreement is exempted according to Article 81(3). Agreements failing the balancing are not exempted and should be revised in order not to be caught by an Article 81(1) investigation by European or national competition authorities, cf. Box 10.7.

Box 10.7 Fair share case – book sales

In 1981, the Commission decided on the resale price maintenance agreement between VBBB, an association of publishers and booksellers in the Netherlands, and VBVB, a similar organisation in Belgium. The agreement had both resale price maintenance provisions designed to prevent books published in one country from being sold in the other country at a retail price other than that set by the publisher for the original country and exclusivity clauses.

The parties argued that they maintained a broader range of titles than they would have without resale price maintenance and that that booksellers would be unable or unwilling to provide extra services such as providing full information to customers and passing on individual orders, unless there was a system of resale price maintenance.

The Commission stated that the range argument was not valid as many publishers did not publish both general-interest and less-popular books, but restricted themselves to the one or other type. The system was also seen as denying the consumer the opportunity of deciding whether to buy books at a price that includes a service charge or to buy without services at a lower price.

Further, the Commission pointed out that even if a wide range of titles and the availability of services were to be regarded as benefiting the consumer, the consumer generally cannot benefit from the advantages of any rationalization that takes place in the book trade as the booksellers were not allowed to grant discounts to good customers. The Commission considered that the consumers did not receive a fair share of any benefits resulting from the agreement.

Source: European Commission (case IV/428).

Case studies

Case study A - Joint production of cars

Two international car producers, Ford and Volkswagen, contemplate entering into a production agreement[21] setting up a joint venture for the development and production of a multi-purpose vehicle in Portugal, cf. Box A. 1. Negotiations have been going on for a while, but management in both firms is worried that the agreement may be challenged as anti-competitive by competitors or competition authorities.

Box A. 1 The agreement – production of multi-purpose vehicles

The proposed agreement is a jointly owned and controlled venture between Ford and Volkswagen. The purpose of the joint venture is the development and production of multi-purpose vehicles in Portugal. Total investments in the project are projected to be US$ 2.9 billion. This includes all developing, engineering, and manufacturing costs of the vehicle. The plant will have a capacity of 960 cars per day representing an annual production of 220.000 cars per year. The agreement will last for the life cycle of the vehicle, i.e. around 10 years.

The parties aim to achieve lower production costs, technical advances and a wider production range via the agreement. Predominantly, Ford will be responsible for product development, while Volkswagen will be responsible for manufacturing and plant engineering. The owners will purchase fixed quantities from the joint venture, normally they share production equally.

The agreement covers the development and manufacturing of multipurpose vehicles but the parties will distribute their respective vehicles separately through their own networks and under own brand names. The parties will differentiate their respective vehicles in order to preserve brand image and to make it easier for consumers to distinguish between them, notably by different engines and design.

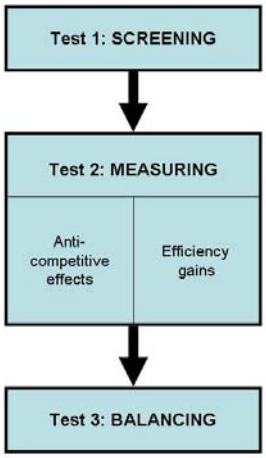
The distinctive design and specific features of the multi purpose vehicle, such as the possibility to carry up to seven persons, the low price elasticity of the customers that purchase these vehicles and the significant entry barriers in research and marketing for car manufacturers to enter the segment, imply that the multi purpose vehicle market is a distinct relevant product market. The geographical market is European-wide.

To evaluate the risk of being challenged the two car producers set up a small task force with internal and external members and ask them to assess (self-evaluate) whether the agreement is likely to be covered by Article 81(1) of the EC Treaty, and if yes, whether the agreement can be exempted according to Article 81(3).

The task force evaluates the impact on competition using a practical framework recently published by the Commission as well as all relevant Commission regulations. In this framework the task force is guided through a series of logically progressing tests, cf. Figure A. 1

[21] The case study is hypothetical but inspired by the Commission decision, IV/33.814 - Ford/Volkswagen from 1992.

Figure A. 1 The three tests – joint production of cars



In *Test 1: Screening* the task force observes that the risk of being anti-competitive cannot be easily dismissed as the agreement obviously affects trade and competition and cannot automatically be exempted by a Block Exemption Regulation. On the other hand, the agreement does not contain hard core restrictions and does not seem to be obviously indispensable or to eliminate competition on a substantial part of the market.

For this reason, the task force concludes that it has to proceed to *Test 2: Measuring*. The task force observes that the agreement is likely to have specific anti-competitive effects. For this reason, the agreement is covered by Article 81(1). However, the task force also observes that the agreement is likely to generate specific efficiency gains, in particular within-firm efficiencies and innovation benefits.

The task force argues that the anti-competitive effects are likely to be small, in particular because the market initially is very competitive and not very sensitive to small-scale cooperation between competitors as implied by the agreement in question.

The task force also argues that the efficiencies generated by the agreement are likely to be large, at a scale far exceeding the scale of the anti-competitive effects. For this reason, the task force concludes that the agreement is very likely to be exempted by Article 81(3). In addition, the task force concludes that the dominance of the positive efficiency gains is so large and certain that there is no need for a precise quantification of the efficiency gains and anti-competitive effects. However, the task force anyway carries out a preliminary quantification of the efficiency gains small confirming their previous conclusion.

Proceeding to *Test 3: Balancing*, the task force argues that the agreement in the proposed form seems to be indispensable, that the agreement does not eliminate competition on a substantial part of the market, and most importantly that the major part of the efficiency gains are likely to be passed on to consumers.

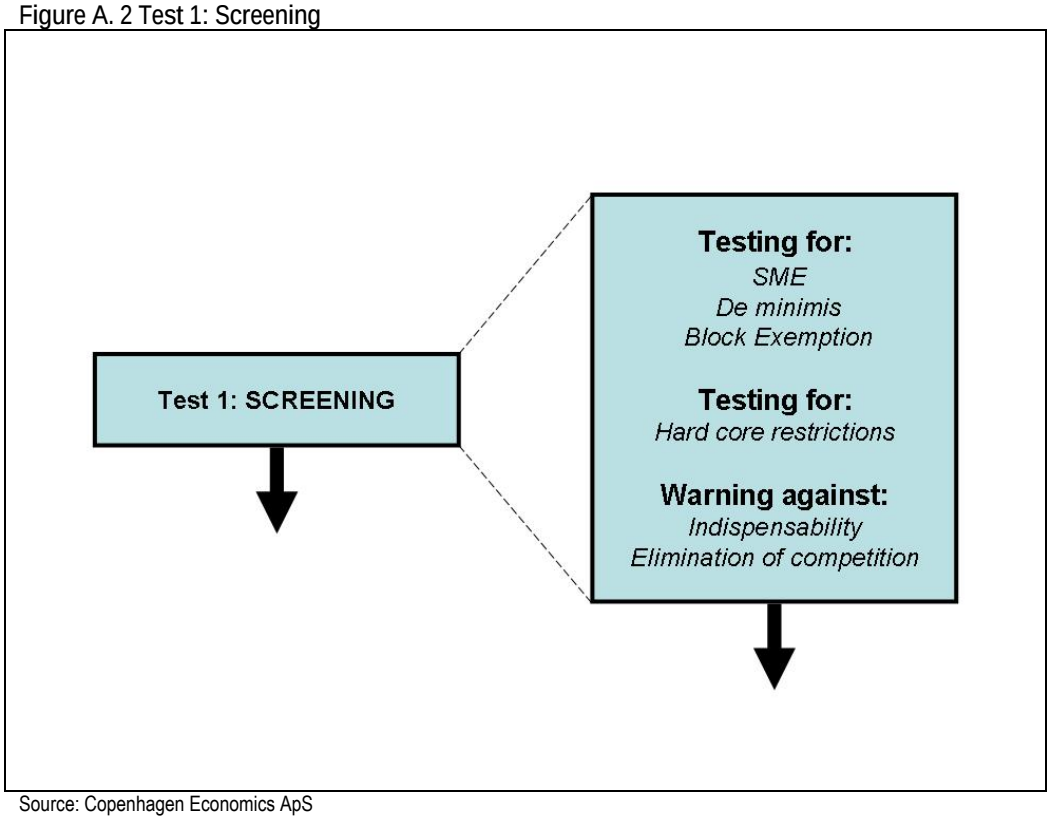
Overall, the task force concludes that the agreement is likely to generate anti-competitive effects and is covered by Article 81(1) of the EC Treaty, but that the agreement also is likely to be exempted according to Article 81(3). For this reason, the task force recommends management in both Ford and Volkswagen to proceed implementing the agreement.

Test 1: Screening

The purpose of *Test 1: Screening* is to assess whether the agreement is covered by any specific EC regulation allowing the task force to reach a clear answer immediately and terminate the assessment. This is the case if the agreement does not affect trade or competition or if it is covered by a block exemption regulation. Furthermore, screening also verifies whether the agreement contains hard core restrictions and make a preliminary check for indispensability and (non-)elimination of competition, cf. Figure A. 2.

Before screening the task force has analysed the relevant market and concluded that the relevant market is the market for multi purpose vehicles (MPV) in Europe.

Figure A. 2 Test 1: Screening



Source: Copenhagen Economics ApS

The task force screens the agreement by carefully whether a number of statements apply for the agreement in question, cf. Table A. 1.

If the agreement is small in the sense that market shares are very low or the size of participating firms are very small, the agreement is not likely to affect trade between member states or is not likely to significantly affect competition. In both cases, the agreement would not be covered by article 81(1). However, the agreement involves firms of considerable size and with relatively large market shares. For this reason, limited market shares or size cannot be used to argue that the agreement is not covered by Article 81(1). Furthermore, no block exemption regulation is relevant for the agreement.

If the agreement contains hard core restrictions, it is advisable to reconsider whether they are important as hard core restrictions can be very difficult to get exempted according to Article 81(3). However, the production agreement does not include restrictions such as price fixing or output restrictions.

Table A. 1 Screening a production agreement

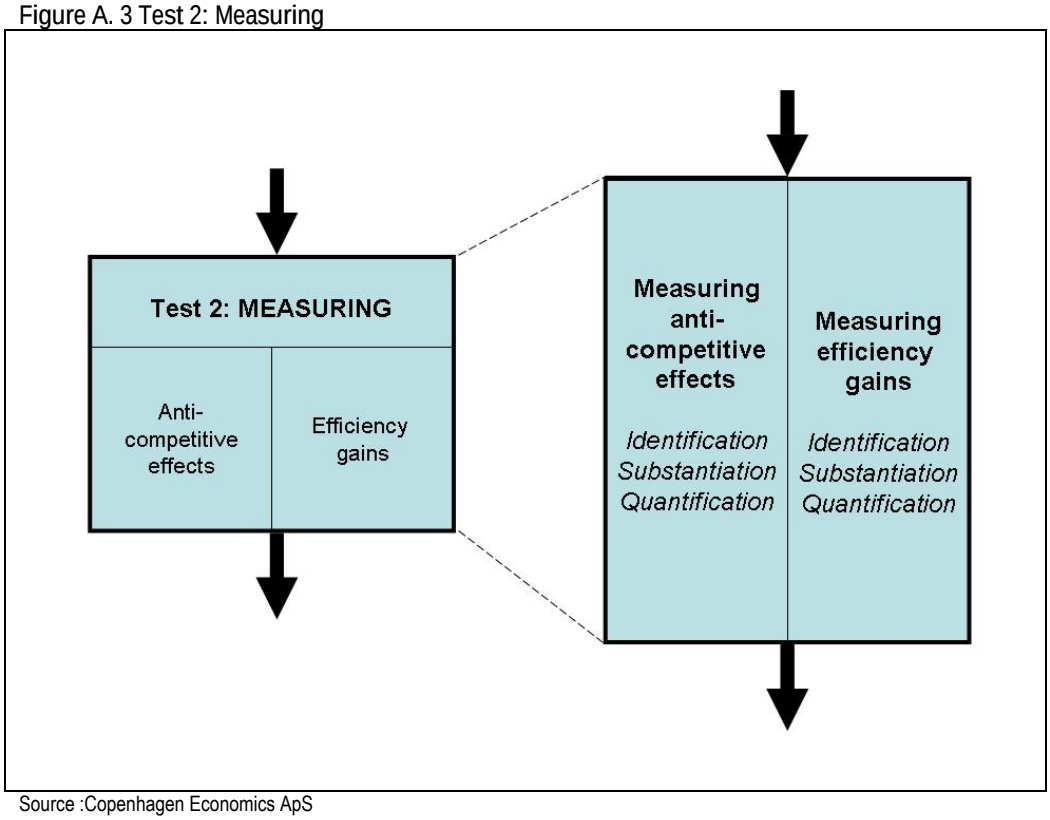
Statement	True or false	Consequence
The agreement affects trade between member states.	True - Market shares exceed 5 % and the parties' turnover from the products covered by the agreement exceeds €40 million.	EC competition legislation *is* applicable
The firms are SMEs.	False – Parties are not SMEs as their turnover >€50 million and employment >250 employees and/or their respective balance sheets >€43 million.	SME regulation *is not* applicable
The agreement does not restrict competition.	False – Parties' combined market share exceeds 10%.	De minimis regulation *is not* applicable
The agreement is covered by a block exemption regulation.	No – there is no specific block exemption for car manufacturing.	BER *is not* applicable
The agreement includes hardcore restrictions.	False – the agreement does not contain elements of e.g. price fixing.	The task force does not need to reconsider the importance of hard core restrictions

Source: Copenhagen Economics

Test 2: Measuring

The purpose of *Test 2: Measuring* is to identify whether there are any anti-competitive effects or efficiency gains associated to the agreement and to measure the size of these effects, cf. Figure A. 3. If the task force cannot identify any anti-competitive effect, the assessment stop as the agreement will not be covered by Article 81(1). If the task force identifies at least one anti-competitive effect, it has to proceed to proceed to identify also the efficiencies and to measure their size order (substantiation) or absolute size (quantification).

Figure A. 3 Test 2: Measuring



Source :Copenhagen Economics ApS

Identification

The task force identifies any anti-competitive effects and efficiency gains by filling out two questionnaires on the basis of a careful scrutiny of the agreement, cf. Error! Reference source not found. and Table 7.4.

The task force identifies some anti-competitive effects, in particular stemming from increased co-ordination between the parties as the agreement covers both development and manufacture of the new vehicles, cf. Table A. 2. But the agreement is not likely to raise anti-competitive concerns from tacit collusion, foreclosure or reduced within-brand competition.

Table A. 2 Identification questionnaire for anti-competitive effects (partial)

Statement	True	False	Potential problem (hyperlink)
The agreement covers a significant part of the firms' activities or costs of the products.	☒	☐	Co-ordination

Source: Copenhagen Economics based on Table 3.3.

As there is a risk for anti-competitive effects, the task force concludes that the agreement is covered by Article 81, and that there is a need for an efficiency analysis in order to verify whether the agreement merits an individual exemption according to Article 81(3). The task force argues that the agreement is also likely to generate efficiency gains from four main sources: economies of scale, technology diffusion, product innovation, and process innovation; cf. Table A. 3.

Table A. 3 Identification questionnaire for efficiencies (partial)

Statement	True	False	Efficiency
The production volume will be increased in the production facility	☒	☐	Economies-of-scale
Significant technological knowledge will be shared between parties	☒	☐	Technology diffusion
New products or products with higher quality will be introduced to the market.	☒	☐	Product innovation
More cost efficient production technique will be developed	☒	☐	Process innovation

Source: Copenhagen Economics based on table 6.4.

The task force now realises that the agreement has anti-competitive effects and that it is covered by Article 81(1). However, it also knows that the agreement may be eligible for an exemption according to Article 81(3) as it may generate different kinds of efficiencies. Thanks to the identification process the task force can focus the ensuing substantiation on the specific anti-competitive effects and efficiencies identified in *Test 1: Screening*.

Substantiation of anti-competitive effects

The task force now proceeds to substantiate the likely anti-competitive effects due to co-operation between the parties, that is, to measure the size order of the anti-competitive effects. The scope or coverage of the agreement is the key. A broad scope implies more anti-competitive effects than a narrow scope. However, scope is multidimensional and we analyse the four proposed dimensions one by one.

Product scope: The agreement only covers production of multi-purpose vehicles. These vehicles represent a marginal share of the parties' sales: for Ford 4%, for Volkswagen 2 % of the turnover. This indicates a very limited scope. However, the market is expected to grow. The parties are competitors on a number of other vehicle markets. Co-operation between them could dampen competition between them on other markets also. Market data reveal that they are active on similar geographic and product markets, and that consumers perceive them as relatively similar. This increases the product scope. Overall, the product scope is fairly limited, but if the market grows in importance, the scope of the agreement could become more significant.

Cost scope: The agreement covers both development and manufacturing implying that cost communality for these vehicles is high, around 85-90 percent of the total vehicle costs, cf. Table A. 6. Production techniques are anyway similar but knowledge sharing concerning product development end engineering probably leads to almost identical cost structures *ex post*. For this reason, it is easier for the parties to coordinate on prices or pricing strategies. Overall, the cost scope of the agreement is wide.

Strategic scope: The vehicles do not represent products with a specific strategic importance. The market is expected to grow, but not by a magnitude that makes it a strategically important market for survival of the firms. As both parties possess the required knowledge to produce vehicles, joint ventures to produce better cars are not likely to constitute a significant strategic scope. The agreement does not involve any joint manufacturing or sales. Overall, the strategic scope is relatively small.

Duration: The duration of the agreement is long, as long as the life cycle of the vehicle, i.e. around 10 years. To some extent, the agreement also becomes irreversible as the parties share sensitive knowledge. For this reason, the anti-competitive effects may be present even if the agreement is annulled. This implies a wide scope of the agreement. In the US, agreements with 10 years´ duration would be treated as mergers. Long and close interaction between the parties indicates that the competition between the parties may be reduced.

The analysis indicates that the scope of the agreement is not insignificant. However, as competition remains between the parties, the scope of the agreement is not wide enough to be similar to a merger. We conclude that the anti-competitive effects due to co-ordination between parties are not likely to be very large.

Market power and competitive restraints:
Even if the scope of the agreement is wide, it does not necessarily have strong anti-competitive effects. If there is a strong competitive pressure in the market initially, the effect of an agreement is less likely to be significant. To assess the competitive pressure we assess a number of indicators, such as market shares, market concentration and entry barriers.

Market shares: Cars are differentiated products. But substitutability between cars within the relevant market is high partly because the relevant market is narrowly defined. Therefore, markets shares are relevant indicators of market power.

The parties to the agreement turn out to have a strong position on the market, but not the strongest. The parties' joint market share is well above the 10 percent threshold for the agreement to be covered by the *de-minimis* notice. The combined market share balances on the threshold of 25 percent where a merger between the parties would be unlikely to impede competition, cf. Table A. 4.

Table A. 4 Market shares on the market for multi purpose vehicles in Europe

Firm	Market share	HHI	New HHI
Renault	31 %	961	961
Chrysler	16 %	256	256
Ford	15 %	225	625 (Ford and Volkswagen)
Mitsubishi	12 %	144	144
Volkswagen	10 %	100	-
Nissan	8 %	64	64
Toyota	7 %	49	49
Total	99 %	1799	2099

Source: Fabricated market shares

Strong competitors reduce the anti-competitive effects of a given co-ordination between parties. In this case, even if the parties were to cooperate as in a merger they would still only

be the second largest firm; cf. Table A. 4. Further, several competitors have entered the market during the last years and have gained market shares. For example, Toyota recently entered and has now attained a sizeable seven percent market share. This indicates intense competition and co-ordination between the parties would be hard to sustain.

Market concentration: Market concentration provides an indicator of the overall competitive situation on the market. Prior to the agreement, the market was already highly concentrated, cf. Table A. 4. This implies that all further impediments on competition such as mergers or agreements are potentially harmful to competition. The increase in HHI due to the agreement would be 300, far exceeding the threshold of 150 stated in the merger guidelines. This indicates that the agreement should be scrutinised thoroughly as it may have anti-competitive effects on the market.

Nature of the product: Anti-competitive effects are less likely if products are differentiated. The task force consulted internal marketing research undertaken recently investigating second-best choices, i.e. which brand would be the consumers' choice if they had to buy another brand, cf. Table A. 5.

Table A. 5 Consumers' second best choice

	Ford	Volkswagen	Renault	Chrysler	Mitsubishi	Nissan	Toyota
Ford	-	30 %	8 %	35 %	12 %	10 %	5 %
Volkswagen	27 %	-	30 %	11 %	12 %	11 %	9 %

Source: Fabricated data

Probably due to the narrow market definition, the vehicles within the market are all relatively substitutable to one another. Marketing data reveals that consumers are not especially brand loyal. These findings concur with previous studies, cf. Box A. 2, and the task force concludes that products are not very differentiated and consumers can easily switch between products.

Box A. 2 Study of cross-elasticities between different segments of cars

A study of the European car industry revealed that consumers are typically more homogenous regarding cars from smaller segments than larger ones. They perceive products in inexpensive market segments as closer substitutes to each other than products in more expensive segments. Consumers also perceive cars from the same country as significantly closer substitutes than cars with a different origin.

Source: Brenkers and Verboven (2002).

According to their respective customers, the parties are not each others' best alternatives (see Table A. 5). The best alternative for Ford consumers is a Chrysler and Volkswagen consumers would to a large extent buy Renault if it was not possible to buy Volkswagen. This indicates that consumers could switch to other brands if Ford and Volkswagen would collude to raise prices or reduce quality.

Barriers to entry: High entry barriers increase the risk of anti-competitive effects from an agreement as it is less likely that price increases bring new competitors to the market. There are no major regulatory barriers that hinder the construction of new manufacturing plants even though environmental concerns in some cases may need to be considered

However, entry into the multi purpose vehicle market is regarded as relatively difficult. Considerable investments are needed for both development and production of such vehicles. Another significant entry barrier is strong economies of scale in production. Industrial research available to the parties reveals that an economically viable production requires a certain minimum capacity which has been estimated to be in excess of 110,000 units per year. With the current market size this implies that to be able to price competitively, a firm needs a market share of around 25 percent.

A distinction should be made between firms that are already producing vehicles but for another market, and firms that are not producing vehicles at all. For the latter firms, the investment costs are so high and the multi purpose vehicles market still so small that entry is not profitable. For firms already producing vehicles, the story is slightly different. Often these firms have spare production capacity that can be used for the production of multi purpose vehicles. Therefore, the main costs for entering the market are R&D costs, i.e. sunk costs. These costs are still significant but there is evidence of this kind of entry, e.g. Toyota. Entry from other vehicle producers is likely to become more common when the market expands.

Substantiation of efficiency gains

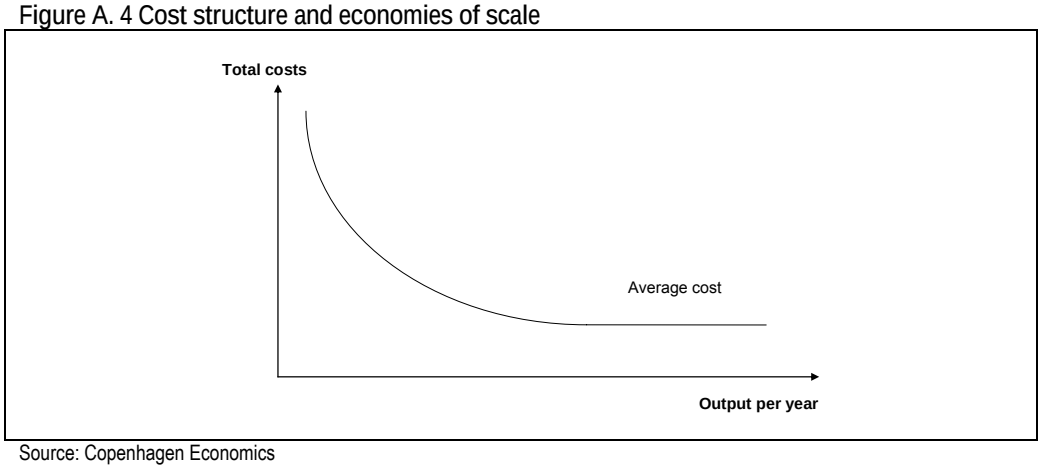
The task force now proceeds to substantiate efficiency gains identified as being associated with the agreement. The task force identified four potential sources of efficiencies: economies of scale, technology diffusion, product innovation and process innovation. We substantiate each of these effects one by one.

Economies of scale: The main motivation for the joint production agreement is the possibility to increase production leading to economies of scale. To substantiate the existence of economies of scale both internal and industry indicators were consulted.

The task force starts with the internal indicators. As both Ford and Volkswagen already produce multi-purpose vehicles as well as other vehicles they already have significant *internal documentation* of the relationship between costs and production volume. From these internal data the task force finds that average costs are reduced when the overall production of vehicles in a plant increases. Estimations of the cost function indicate that the projected increase in production due to joint production will lead to cost savings between 14 and 17 percent.

Industries with large fixed costs are often known for economies of scale. The parties estimate that their fixed costs make up about fifty percent of unit production costs. Given this *cost structure* and constant marginal costs the production function for the manufacturing of vehicles will be L-shaped and economies of scale prominent, especially when the parties initially have low production, cf. Figure A.4. If marginal costs are decreasing, economies of scale will be even greater.

Figure A. 4 Cost structure and economies of scale



Source: Copenhagen Economics

The parties' cost structures are compared to other studies within the car manufacturing industry. These studies indicate that average fixed costs are smaller than the parties' estimates, cf. Table A. 6. According to these studies, fixed costs normally constitute one third percent of total vehicle costs. The difference between the internal estimate and estimates from

external studies is explained by a more highly automated capital-intensive manufacturing plant with lower labour costs and more expensive machinery.

Table A. 6 Studies of car manufacturing cost structures

Costs	Breakdown on standard output
Variable costs (components and materials)	57 %
Warranty costs (repairs)	2 %
Variable overhead (maintenance, marketing etc)	7 %
Fixed costs (labour)	10 %
Fixed overhead (capital equipment, R&D etc)	24 %

Source: Rhys (2000).

While the optimum scale for an assembly plant may be 250,000 cars a year, a state of the art engine plant has its optimum at 750,000 units, a press line to stamp out body parts is most efficient at values in excess of one million units whilst marketing, research and development enjoys unit cost reductions at even higher volumes in excess of two million units a year (Rhys 2000). These high production volumes indicate significant economies of scale, cf. Table A. 7.

Table A. 7 Minimum efficient scale in production of cars

Activity	Output per year (cars)
Casting of engine blocks	1,000,000
Casting parts	100,000-750,000
Power train (engine, transmission etc)	600,000
Pressing panels	1,000,000-2,000,000
Paint shop	250,000
Final assembly	250,000

Source: Rhys (2000).

In practice, no such volumes are achieved anywhere, but firms try to approach the optimum by using as many common parts as possible, for example engines, across a range of vehicles. Another approach is for firms to collaborate and co-operate, so that different manufacturers use the same basic components. The task force argues that this agreement is undertaken exactly for these specific reasons. Only jointly can the firms achieve minimum efficient scale. The main driving force of the agreement thus seems to be to gain efficiencies.

Normally, *specialisation* due to increased scale in production increases the productivity of both labour and machinery. As the manufacturing of cars involves the manufacturing and putting together of 8.000-20.000 parts, there should be a large scope for specialisation.

One way to get more evidence on the existence of economies of scale in the European auto industry is to consult previous studies and reports in the sector. A brief summary of some of the findings of economies of scale are presented in Box A. 3 below. These studies all confirm the existence of economies of scale. In fact, no study rejecting economies of scale in the auto industry has been found. These studies also provide useful estimates of the size of the efficiency.

Box A. 3 Three studies of economies of scale

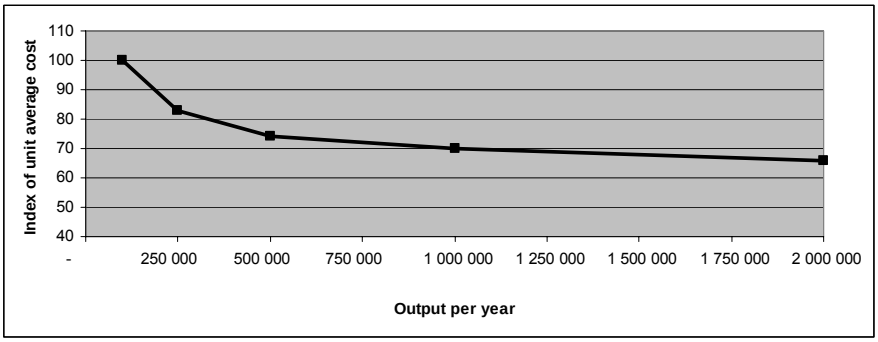
Economies of scale in European manufacturing of for motor vehicles
A study by Henriksen et al revealed significant economies of scale in vehicle manufacturing in three out of four European countries.

Germany	France	Italy	UK
1,247	1,221	0,978	1,116

Note: A number above 1 indicates economies of scale

Economies of scale in the Japanese and US auto production
The study indicates significant increasing returns to scale in the production function where a 10% increase in firm size was associated with an increase of 0.9% in output per worker. Another indicator of the existence of economies of scale is that the coefficient for average output per assembly plant is negative and highly significant, implying that efficiency is higher for firms that produced more vehicles per plant.

Economies of scale in car manufacturing
In this report the gains from scale in car and truck manufacture are considerable. The estimations indicate that optimality in the motor industry is given by the minimum efficient scale on a near L-shaped long run average cost curve, rather than by a unique point on a U-shaped curve. There are thus no overall diseconomies of scale in well run companies.



Source: Henriksen et al, 2001; Lieberman, 2005; Rhys, 2000.

Technology diffusion: Both parties have extensive know-how in research and car automation. However, the agreement allows the parties to complement their respective engineering resources and technical expertise and to learn from each other. For example, Ford will learn from Volkswagen's product development and can thus use some of the techniques in the development of other models. Volkswagen will be able to explore Ford's plant engineering techniques. This implies that both parties will become more efficient in the long-run.

As described above, the multi purpose vehicles will become a technically advanced vehicle. It will set new standards in the multi purpose vehicle market in several respects compared to its competitors. This will force the competitors to copy the technology or to invent more advanced models. Thus the technological leap in both product characteristics and production technology will force the entire sector to become more efficient. Also, the parties will be able to use several of the newly developed techniques such as suspension and passenger protection system in the production of other types of vehicles.

The integrated supply system will allow suppliers to accommodate faster to the joint ventures changes in standards and production volume. As information is shared between the different firms in the supply chain, adjustment time is estimated to be reduced by 20 %.

There are also a number of external factors indicating that the diffusion of technology probably will lead to efficiencies on this market. First, *consumer preferences* are volatile. The market for multipurpose utility vehicles is relatively new and driven by demand. The brief market history available indicates that sales divert to the latest released model. The joint development and

manufacturing enables the parties to combine their information on consumer preferences from both Europe and the US and thus produce a vehicle with the preferred characteristics.

The car industry is an *information rich* environment with several opposing trends such as low fuel consumption and larger vehicles, expansion of low cost vehicles and luxury versions at the same time as the vehicles get more standardised. Also, there are a growing variety of environmental regulations concerning emissions, recycling, and safety issues. The joint development enables the parties to exchange information on both consumer trends and regulatory efforts. This enables the parties to produce products that are better adapted to the environment than what they would have done if the products were developed separately.

Product innovation: The auto industry is characterised by a relatively high level of innovation through both product differentiation and pressure to reduce the cost of components. The agreement aims at improving both these factors of competition. Vehicle manufacturers devote a large proportion of turnover (4%-6%) to new product design and innovation. It is estimated that the development and production costs of a new model are around €1.5-3 billion, while the life cycle of a model is between 6 and 7 years (EMCC 2004). This indicates significant investments for the limited projected lifetime of the product. Consumers in this segment are also sensitive to the introduction of new and improved models. These facts indicate that innovation is important in the industry.

The development of the new vehicle constitutes technological progress. It will set new standards in the multi purpose vehicle segment in several respects compared to its competitors. The innovations include a new suspension system, axle, sunroof system and comprehensive passenger safety system. It will also be improved with respect to environmental requirements with less hazardous materials, higher degree of recycling and lower emissions and fuel consumption then other models on the market.

Process innovation: The agreement also leads to the introduction of less costly production technology. The technology will reduce the average production costs for the predicted volume of sold vehicles not only from increased volume but also improved production facilities. Innovations such as an automated framing and welding line, tandem process and specialised robots will all reduce production time and thus allow for more efficient use of the machinery. The parties' engineering analysis estimates that these improvements, even though increasing fixed costs, will reduce the average costs of the vehicles produced by 6-8 percent. Also, the integrated supply system is predicted to reduce the storage costs with 16 percent.

Another example of the improved production process is the installation of a fully automated framing and welding line, an extra large 1200 tonne tandem process and specialised robots. The new supply concept will also reduce storage costs.

The substantiation of efficiencies reveals that there are several sources for tangible efficiencies arising from the agreement. These efficiencies are significant with predicted savings of 14-17 percent only from economies of scale. It will also lead to the introduction of improved and safer models. Most of these efficiencies such as lower costs, product improvement and diffusion of technology will be generated as soon as the agreement is operational.

Overall, the task force concludes that the anticipated efficiency gains are likely to be large at a size order far exceeding the size order of the anticipated anti-competitive effects. The task force concludes that for this reason it should not be necessary to proceed with quantification, but decides anyway to perform a simple quantification of some of the expected efficiency gains to further buttress its conclusions

Quantification of efficiencies

The task force decides to estimate economies of scale using a common Cobb Douglas function to represent the production technology:

$$Q = AL^{\alpha} K^{\beta}$$

where Q is the output from the plant, K is the capital input, L is the labour input. A, α and β are constants determined by the technology. If α + β > 1, there will be economies of scale as an increase in K or L would lead to lower average costs.

Putting aside some of the technical measurement problems such as the endogeneity problem, the task force estimates the production function using an Ordinary Least Square regression:

$$\ln Q = \alpha \ln L_i + \beta \ln K_i$$

The task force collects a data set of internal production data complemented with some external data on the costs of key inputs, e.g. electricity, oil and metal prices. The internal data contains information on daily production of vehicles in the parties' previous plants, the number of inputs in the form of machine hours, parts, labour hours needed per unit produced and the cost for each respective input.

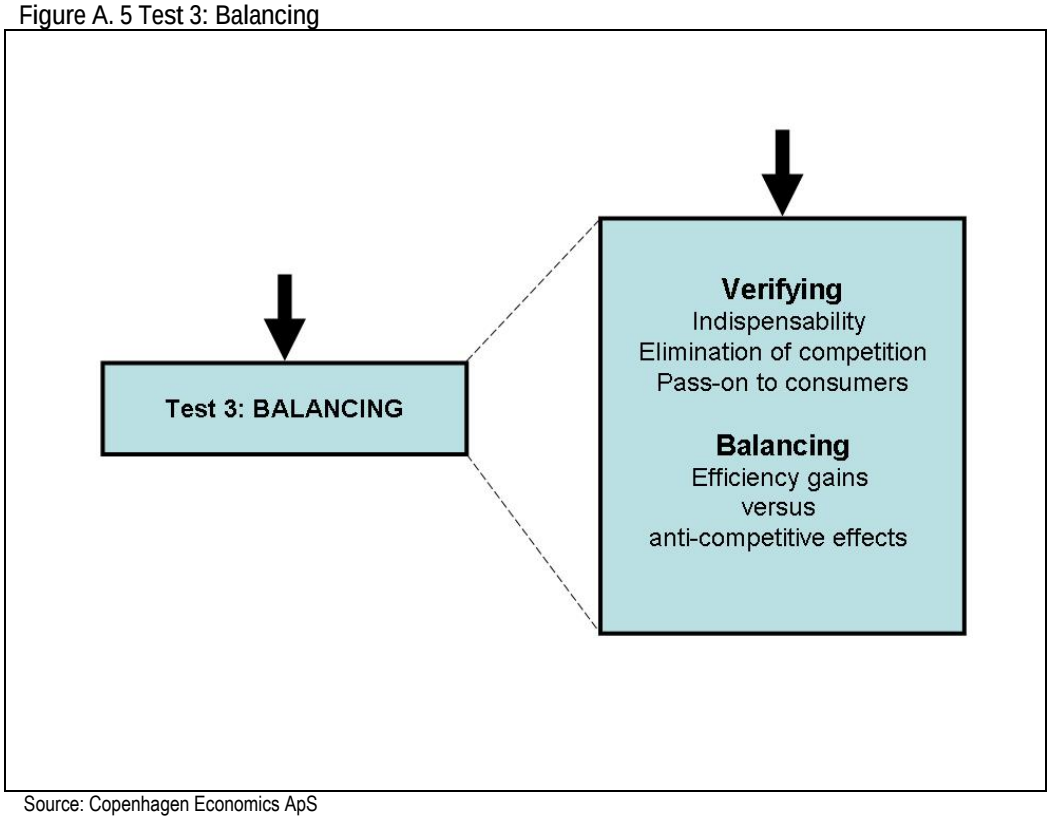
The estimation of the function yielded α + β = 1,2, i.e. increasing inputs by 10 percent means increasing output by 12 percent, indicating economies of scale at 20 percent. This is higher than what the parties envisaged but consistent with other research in the industry, cf. Error! Reference source not found..

The quantification thus provides high quality evidence confirming that there are significant efficiencies to gain from the agreement.

Test 3: Balancing the effects

It is now clear that the agreement has some anticompetitive effect but also leads to significant efficiencies. In *Test 3: Balancing* the task force finalise its analysis by verifying a number of additional conditions and performing the final balancing of efficiency gains with anti-competitive effects taking into due consideration the required pass-onto consumers, cf. Figure A. 5

Figure A. 5 Test 3: Balancing



Source: Copenhagen Economics ApS

Indispensability

The task force has to investigate whether the agreement as a whole or the individual anti-competitive restrictions go beyond what is needed to achieve the efficiencies, i.e. the agreement is indispensable.

For this purpose the task force set up a list of feasible alternatives to the agreement: organic growth, an agreement with a smaller firm or a less restrictive agreement. The size of the *economies of scale* implies that Volkswagen would need to more than double its sales to achieve the minimum efficient scale. Due to the intense competition the organic growth option did not seem to be realistic in order to achieve similar economies of scale. Further organic growth will not lead to process innovation and technology diffusion as these efficiencies only occur using the parties' complementarities. Thus the organic growth option is both unrealistic and will not lead to the same efficiencies.

The second option is an agreement with a smaller firm. This option also has significant drawbacks. The proposed joint venture will have a production volume of 110,000 cars per year. This is only just the minimum efficient scale for the industry. Agreements with smaller firms would not lead to the minimum efficient scale and thus to less efficiencies than the proposed agreement. The efficiencies from improved production process and technological diffusion are specific to the proposed agreement. Other firms operating in the market do not have the same knowledge and competitive advantage and could thus not lead to the same efficiencies.

The two parties have complimentary knowledge and will pool their resources in order to produce vehicles at a higher quality and lower price than they would have been able to do alone. If the cooperation in research and development and manufacturing was not allowed these improvements could not have been achieved. The joint development of new models and production technologies are thus indispensable for achieving the efficiencies from product and process innovation as well as technology diffusion.

The second third option is a less restrictive agreement. However, the agreement has very few explicit restrictions. Other activities such as sales, marketing, distribution, after sales and reparations are all conducted separately by the parties. The vehicles are also marketed under different brands with design variations. The parties have thus undertaken all the steps to eliminate anti-competitive effects that are not indispensable for the efficiencies.

The main remaining restriction is that the parties have committed themselves not to produce multi-purpose vehicles in any other plants than in the one covered by the agreement. This kind of restriction has been approved by the Commission in earlier cases, cf. Table 10.2. There are thus no restrictions that are not indispensable for attaining the efficiencies.

The task force concludes that the condition of indispensability is met.

No elimination of competition

The task force also has to investigate whether the agreement eliminates competition on a substantial part of the market. For this purpose the task force set up a list of indicators of actual and potential competition inspired by Table 10.4 and investigates whether one or several indicators change significantly as a consequence of the agreement.

Excess capacity in the auto industry is estimated to be as high as 20% (EMSS 2004). This indicates that competitors most likely have spare capacity to respond to an increase in price. Furthermore, the environment is highly competitive and significant resources are spent on brand specific advertising and sales campaigns. There is no cross-ownership in the business and the indicators for tacit collusion in Table 5.2 verify that this ought not to be a main concern in the industry. The competitors also have economic incentives to respond to price increases. In fact, most of the indicators reveal that there significant competition remains on the market.

A large minimum efficient scale and the extensive technological and capital investments needed to develop vehicles makes entry relatively hard for non-vehicle manufacturers. However, the growing market may attract new entrants aiming to manufacture other types of cars or vehicles. There is concrete evidence of entry, e.g. from Toyota.

The parties' joint market share of 25 percent is far below the 40 percent threshold often used to rule out dominance. As elimination of competition is a narrower concept than the concept of dominance the actual threshold for elimination of competition is higher than it would be in dominance cases.

This reveals that it is not likely that the agreement will eliminate the competition on a substantial pat of the market.

Pass-on of efficiency gains to consumers

Consumers must receive a fair share of the efficiencies so that they are compensated for the negative impact of the agreement. Thus, the task force tries to determine the pass-on rate which is the share of overall efficiency gains passed-on to consumers. Those efficiency gains that are not passed-on to consumers go to the firms themselves as higher profit margins.

The definition of consumers can vary between agreements and sectors. In this case, end consumers rather than intermediate consumers (=distributors) are considered to be the relevant consumers. One reason for this is that the distributors do not always own the vehicles they sell. Also, some distributors are fully owned by the manufacturers.

The pass-on of efficiencies depends on the type of efficiency, in this case cost savings and the introduction of new products and higher quality. The task force assesses pass-on based on several indicators inspired by the discussion in section 10.3.

The *type of cost saving* is an important factor in determining the degree of the pass-on. Cost savings due to larger economies of scale are mainly achieved by reducing marginal costs, rather than fixed costs. These kinds of savings are more likely to be passed on to consumers. For the same reasons, long run savings in average costs due to the development of new technology are likely to be passed on to consumers. In fact, these investments will increase the fixed costs but lead to reduced marginal costs.

The c*ompetitive environment:* in the auto industry is quite strong, especially when old models are phased out in order to make room for new models. Strong product differentiation and relatively few major car industry groups often create an oligopolistic market structure. However, within the narrowly defined market substitution between brands is strong. There is evidence of entry on the market.. For these reasons, the task force judges that the competitive environment is rather strong.

The *demand conditions* confirm the above conclusions. A high *price elasticity of demand* in the industry (Brenker and Verboven 2002) implies that short run price competition will increase sales and unilateral price increases will not be profitable.

The *supply conditions* also favour competition. Most firms active on the market have significant spare production capacity. The overall excess capacity in the auto industry is estimated to be as high as 20%. The existence of excess capacity coupled with substantial economies of scale suggests there are strong incentives for manufacturers to compete to increase production (EMSS 2004). This implies that output can be raised in response to a price increase without significant increases in costs.

However, as just-in-time production is implemented the stocks of raw materials, components and finished products go down. This indicates that sudden changes in demand might create bottlenecks implying a higher risk of price increases. But agreements as the one under scrutiny have reduced the adjustment time. The firms can therefore respond to price increases without too much delay.

Specialised production technology, large investments in R&D and other fixed costs also that the only potential entrants are other car or vehicle manufacturers. This restricts the flexibility of the supply side to a certain degree. But the existence of a partly substitutable second hand car market restricts the potential for price increases.

The pass-on analysis of the efficiencies from innovation is somewhat different. The innovations such as new suspension system, new axle, sunroof system and comprehensive passenger safety system will benefit consumers directly. The same goes for the reduced risk for environmental problems such as the reduction of emission, fuel consumption and use of hazardous materials. As the gains from these types of efficiencies normally are obtained in the future they have to be discounted when compared to the anticompetitive effects. However, most efficiency gains such as cost savings and product improvements will be attained as soon as the manufacturing plant becomes fully operational.

Based on this information the task force concludes that most of the efficiency gains are passed on to consumers.

Settling the balance

The task force can now summarize its findings. *First*, the agreement will lead to anticompetitive effects stemming from more coordination between the parties. The size of these effects will however be significantly smaller than a merger between the same parties and even a merger would be unlikely to significantly affect competition on the market. The anti-competitive effects are thus small.

Second, the agreement generates four types of efficiency gains: economies of scale, technological diffusion, new products, and new processes. It is well documented that economies of scale are likely in this market and the parties' quantification verified savings of up to 20%, exceeding previously assumed 14% to 17%. The efficiency gains are highly significant savings. Information sharing enables them to produce a new model variety. Furthermore, the agreement will result in a number of product innovations, such as, suspension system, axles, sunroof systems and passenger safety system. All are significant improvements likely to be passed on to the consumers. The efficiencies stemming form the agreement are strong.

After the parties quantification there is little uncertainty about the efficiencies from economies of scale. Also the other types of efficiencies are likely to be generated as they are clearly specified and needed in order to produce competitive products.

The anti-competitive effects are likely to occur as soon as the parties enter the agreement as this may change their strategic behaviour. However, the economies of scale are thought to occur as soon as the new plant is fully operational. So will some of the process innovations and diffusion of technology. Only the product innovations such as suspension and sunroof system are thought to be developed further in the future, in 3-4 years time.

The analysis shows that the agreement will lead to small anti-competitive effects but to large efficiencies that will be passed on to the consumers. The agreement is indispensable to attain the efficiencies and it does not risk eliminating competition. Further, the time and uncertainty factors will not make a difference on the balancing of anti-competitive effects and efficiencies. The efficiencies will clearly outweigh the anti-competitive effects and the agreement is thus exempted according to Article 81(3).

Finally, the task force verifies that mergers and agreements between car manufacturers are a common structural phenomena in the auto industry, cf. Table A. 8. They argue that agreements similar to the one under scrutiny are *normal business conduct* in the industry. Furthermore, they observe that similar agreements have been accepted by competition authorities. In fact, no European or US competition authority has blocked any proposed merger or agreement between car manufacturers. This strongly suggests that the efficiencies generated by agreements typically outweigh the anti-competitive effects.

Table A. 8 Examples of production co-operation in the auto industry

Firms	**Co-operation**
Peugeot Citroën – Fiat	Body panels for people carriers and vans
Peugeot Citroën – Toyota	Small cars
Peugeot Citroën – Fiat	Passenger vans
Peugeot Citroën – BMW	Engines
General Motors – Fiat	Platforms, engine and transmission

Source: EMCC (2004).

Case study B - Selective distribution of consumer electronics

SABA is a producer of a broad range of electronic equipment including radio, television, DVD, video, and hi-fi equipment. All products are distributed by sole wholesale distributors supplying specialist retailers. SABA has entered into agreements with both wholesalers and retailers, cf. Box B. 1.

SABA's distribution agreements are old and have previously been accepted by the Commission, but management is worried, that recent changes in the European brown good market might imply that what was allowed some years ago is not allowed anymore. For this reason SABA's management decides as a part of its program of competition compliance to review the agreements anew. [22]

[22] The case study is hypothetical but inspired by the Commission decision, IV/29.598 SABA's EEC distribution system from 1983.

Box B. 1 SABA's set of agreements

The SABA distribution system is regulated by a set of vertical agreements between SABA on the one side and wholesalers and retailers on the other side. All agreements run for four years.

Wholesales are obliged to:

- Carry business exclusively as a wholesaler of consumer electronics and achieve over 50 % of total turnover from this business
- Maintain a trained sales force, willing to regularly train the staff with SABA and to provide expert advice to SABA retailers
- Recognize the SABA fair service system.
- Have the necessary resources for holding stock and carrying the whole SABA range.
- Only supply to other members in the SABA network

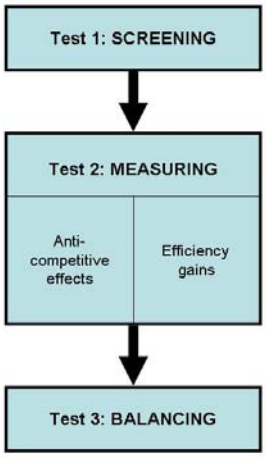
Retailers are obliged to:

- Carry a special retail business for consumer electronic equipment and achieve over 50 % of turnover from this business
- Sell in premises which are recognizable as specialized consumer electronics dealer and that has a reputable and smart appearance.
- As far as possible carry the full SABA range and display it to best advantage
- Keep sufficient stocks of products
- Offer professionally advice and service to customers
- Sell SABA products to consumers only where they carry a business

The relevant product markets are separate for all major groups of products sold, i.e. there is one market for television sets, one for DVD-players, and one for hi-fi systems and so forth. Products within a product market are differentiated with respect to quality and price, but these market segments do not constitute separate markets. There is a single geographical market for each of the European member states.

SABA's management evaluates the impact of the agreements on competition using a practical framework recently published by the Commission as well as all relevant Commission regulations. In this framework SABA is guided through a series of logically progressing tests, cf. Box B. 2.

Box B. 2 The three tests – selective distribution of consumer electronics



Source: Copenhagen Economics

In *Test 1: Screening* SABA's management observes that the risk of being anti-competitive cannot be easily dismissed as the agreement obviously affects trade and competition. But it turns out that the agreements are covered by the general Block Exemption Regulation for

vertical agreements in all Member States, but Germany where SABA has a large market share. It follows that SABA can greatly simplify its analysis only concentrating on the German geographical market. In all other markets the agreements are automatically exempted due to the Block Exemption regulation. It also turns out that the agreement does not contain hard core restrictions and does not seem to be obviously indispensable or to eliminate competition on a substantial part of the market.

For this reason, management concludes that it has to proceed to *Test 2: Measuring* for the German market only. SABA observes that the agreement is likely to have a number of anti-competitive effects. For this reason, the agreement is covered by Article 81(1). However, SABA also observes that the agreement is likely to generate several specific efficiency gains, in particular between-firm efficiencies and some innovation benefits.

SABA argues that the anti-competitive effects are potentially significant, but that the overall effect is likely to be small because the market initially is very competitive and not very sensitive to small agreements as the agreement in question. SABA also argues that the efficiencies generated by the agreement are likely to be large, at a scale far exceeding the scale of the anti-competitive effects.

For this reason, SABA concludes that the agreement is very likely to be exempted by Article 81(3). In addition, SABA concludes that the dominance of the positive efficiency gains is so large and certain that there is no need for a precise quantification of the efficiency gains and anti-competitive effects.

Proceeding to *Test 3: Balancing*, SABA argues that the agreement is indispensable for achieving the efficiencies and not likely to eliminate competition in a substantial part of the market. Furthermore, consumers are likely to receive a fair share of the benefits.

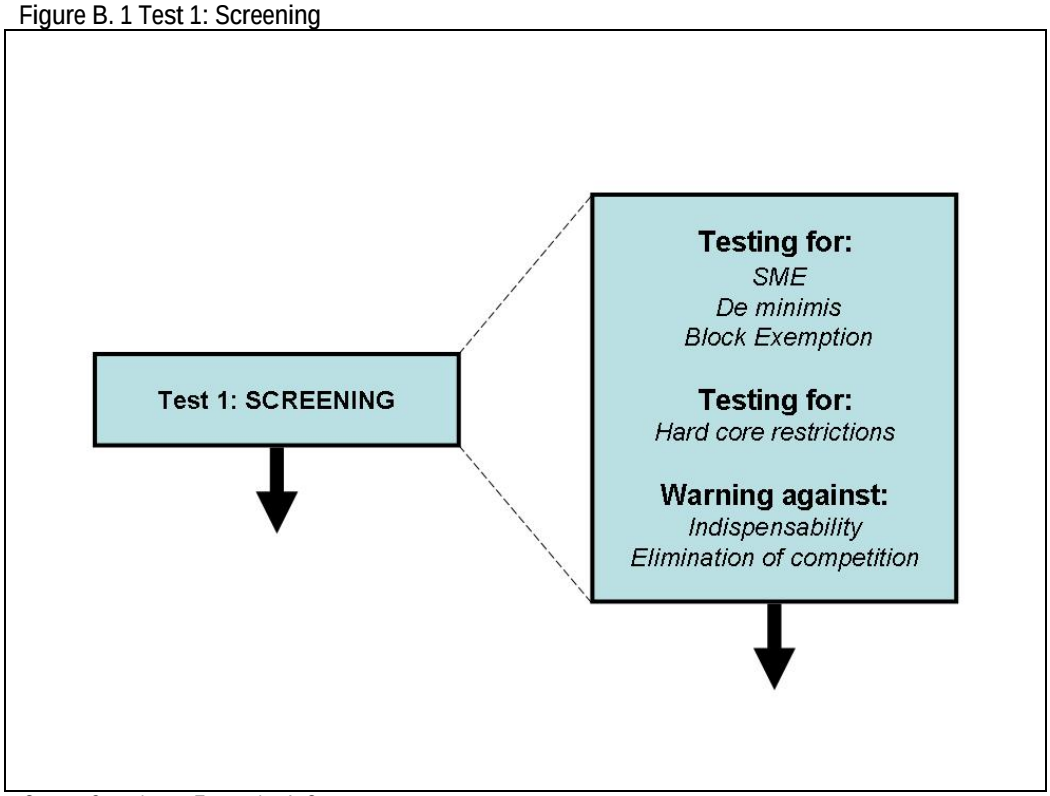
Overall, SABA concludes that the set of agreements is likely to generate anti-competitive effects and is covered by Article 81(1) of the EC Treaty, but that the set of agreements also are very likely to be exempted according to Article 81(3) as the efficiency gains more than outweighs the anti-competitive effects. For this reason, SABA decides to carry on using the same agreements as previously.

Test 1: Screening

The purpose of *Test 1: Screening* is to assess whether the agreement is covered by any specific EC regulation allowing SABA to reach a clear answer immediately and terminate the assessment. This is the case if the agreement does not affect trade or competition or if it is covered by a block exemption regulation. Furthermore, screening also verifies whether the agreement contains hard core restrictions and make a preliminary check for indispensability and (non-)elimination of competition, cf. Figure B. 1.

Before screening SABA has analysed the relevant market and concluded that the agreements covers a range of product specific markets for products with particular properties and a national market for each European member state.

Figure B. 1 Test 1: Screening



Source: Copenhagen Economics ApS

SABA screens the agreement by carefully whether a number of statements apply for the agreement in question, cf. Table B. 1.

Table B. 1 Screening of the agreement

Statement	Answer	Consequence
The agreement affects trade between member states	True – the market share exceeds 5 % and product turnover covered by the agreement exceeds €40 million.	EC competition legislation is applicable
The firms are SMEs	False – the supplier is not a SME as turnover > €50 million and it has more than 250 employees and/or their respective balance sheets <€43 million.	SME regulation is not applicable
The suppliers' market shares is less than 15 %	False – in some markets market shares held by each party exceeds 15 %.	De minimis regulation is not applicable
The supplier's market share is less than 30 %	True – in all member states but Germany	The agreement is likely to be covered by the block exemption for vertical agreements in all member states but Germany.
The agreement covers an industry with specific block exemption regulations	False – there is no specific block exemption for consumer electronics.	No sector specific BER are applicable
The agreement includes hardcore restrictions	False – the agreement does not contain elements of e.g. price fixing.	The agreement can merit from an exemption

If the agreement is small in the sense that market shares are very low or the size of participating firms are very small, the agreement is not likely to affect trade between member states or is not likely to significantly affect competition. In both cases, the agreement would not be covered by article 81(1). However, the agreement involves firms of considerable size and

with relatively large market shares. For this reason, limited market shares or size cannot be used to argue that the agreement is not covered by Article 81(1).

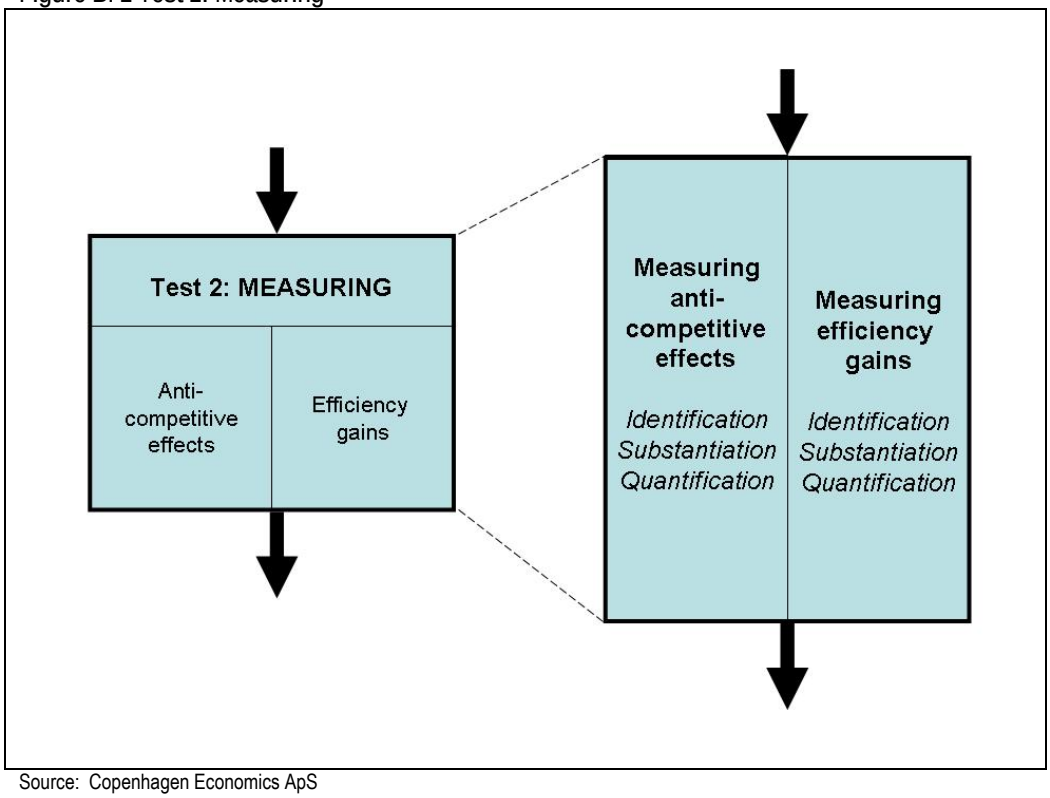
However, it turns out that the vertical agreement is covered by the Block Exemption Regulation for vertical agreements in all Member States but Germany where SABA has a large market share, cf. Table B. 1, and because the agreements contain no hard core conditions. The applicability of the Block Exemption Regulation for vertical agreements in all geographical markets but Germany significantly reduces the efforts for analysing the agreement.

Finally, SABA verifies that the agreements are not obviously indispensable and that the agreements do not risk eliminating competition on a substantial part of the market and decides to continue the analysis without making modifications to the agreements. To find out whether the agreement is covered by Article 81(1) in Germany and whether it is exempted by Article 81(3), SABA proceeds to the second test assessing whether the agreement leads to anti-competitive effects and efficiencies.

Test 2: Measuring

The purpose of *Test 2: Measuring* is to identify whether there are any anti-competitive effects or efficiency gains associated to the agreement and to measure the size of these effects, cf. Figure B. 2. If SABA cannot identify any anti-competitive effect, the assessment stops as the agreement will not be covered by Article 81(1). If SABA identifies at least one anti-competitive effect, it has to proceed to proceed to identify also the efficiencies and to measure their size order (substantiation) or absolute size (quantification).

Figure B. 2 Test 2: Measuring



Source: Copenhagen Economics ApS

Identification

SABA identifies any anti-competitive effects and efficiency gains by filling out two questionnaires on the basis of a careful scrutiny of the agreement, cf. Table 4.3 and Table 7.4.

Identification of anticompetitive effects reveals that the agreement potentially gives rise to several types of anti-competitive concern: coordination, tacit collusion, foreclosure and less within-brand competition, cf. Table B. 2.

Table B. 2 Identification of anti-competitive effects (partial

Statement	True	False	Potential problem (hyperlink)
The agreement covers a significant part of the firms' activities or costs	☒	☐	Co-ordination
The parties exchange information on marketing strategy or pricing	☒	☐	Tacit collusion
Price transparency increases	☒	☐	Tacit collusion
Other suppliers cannot sell to particular buyers	☒	☐	Foreclosure
Other buyers cannot buy from particular sellers	☒	☐	Foreclosure
The agreement contains exclusive customer allocation	☒	☐	Within-brand competition
The agreement contains recommended or maximum resale prices	☒	☐	Within-brand competition

As anti-competitive effects are found, the agreement is covered by Article 81(1). SABA now has two main options. The first option is to change the agreement so that anti-competitive effects are reduced. The second option is to conduct an exemption test find out whether the agreement merits an exemption according to Article 81(3).

As there is a risk for anti-competitive effects, SABA concludes that the agreement is covered by Article 81, and that there is a need for an efficiency analysis in order to verify whether the agreement merits an individual exemption according to Article 81(3). SABA argues that the agreement is also likely to generate efficiency gains from four main sources: free-riding, hold-up and technology diffusion; cf. Table B.3.

Table B. 3 Identification questionnaire for efficiencies (partial)

Screening question	No	Yes	Efficiency
Will the parties' level of sales efforts be increased?	☐	☒	Free-riding
Will the parties increase their investments?	☐	☒	Hold-up
Will significant information be shared between the parties?	☐	☒	Technology diffusion

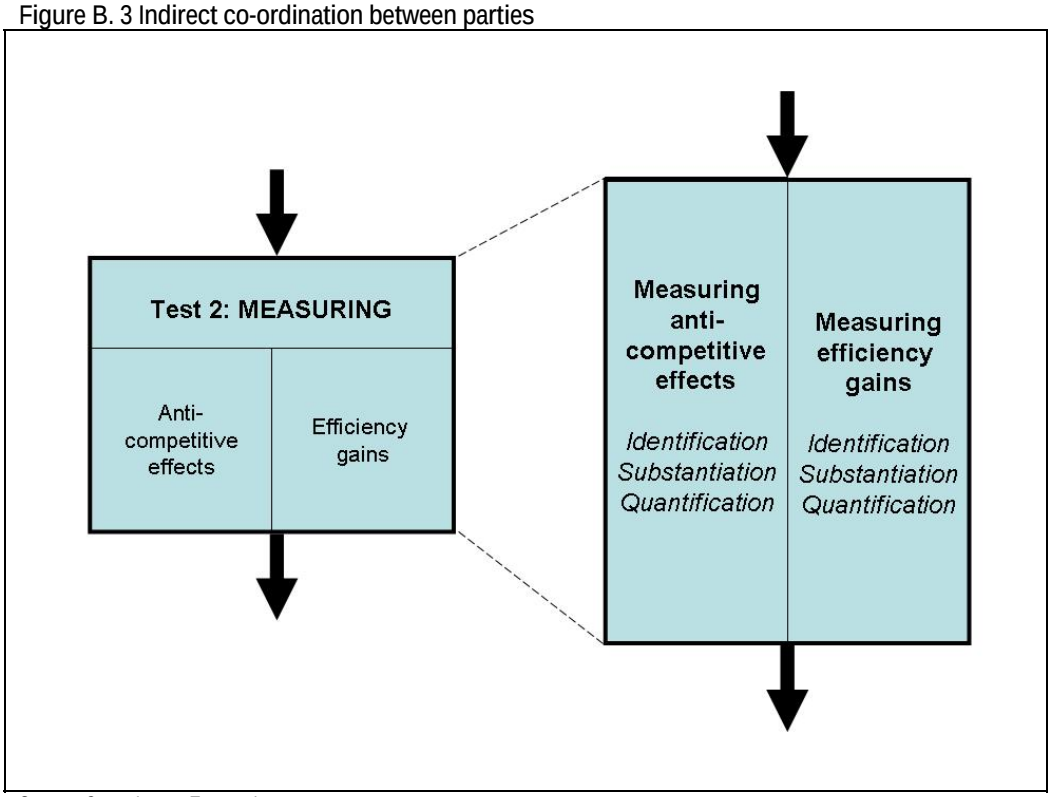
SABA realises that the agreement has anti-competitive effects and that it is covered by Article 81(1). However, it also knows that the agreement may be eligible for an exemption according to Article 81(3) as it may generate different kinds of efficiencies. Thanks to the identification process SABA can focus the ensuing substantiation on the specific anti-competitive effects and efficiencies identified in *Test 1: Screening*.

Substantiation of anti-competitive effects – coordination

SABA assesses the size of the anti-competitive effects. The smaller they are the more likely it is that the agreement will be exempted. SABA also examine whether the possible anti-competitive effects will be constrained by effective competition.

First, SABA examines the possibility that the agreement will lead to co-ordination between the parties. Unlike the case of a production agreement, the risk of coordination is indirect. The risk is not whether there is co-ordination between SABA and its wholesalers and retailers (who are all on different relevant markets), but is whether wholesalers and retailers will have an incentive to coordinate their activities, given that they have signed similar agreements with SABA, cf. Figure B. 3. Central to this analysis is in any case the scope of the agreement.

Figure B. 3 Indirect co-ordination between parties



Source: Copenhagen Economics

Product scope: The agreement covers a large part of the parties' economic activities as the agreement requires that at least 50 percent of their turnover come from sales of electronic consumer products. Furthermore, they are required to carry the whole SABA range. For the majority of the wholesalers and retailers, distribution of SABA products represents over 50 percent of their economic activity. The product scope of the agreements is thus wide.

Cost scope: Wholesalers and retailers of consumer electronics have a limited number of cost items. The most important are the purchasing price, labour costs, inventory, and rents. The agreement will ensure that the wholesalers and retailers authorised to sell SABA's products will be more homogenous and thus have similar cost structures. For example, retailers are required to sell from a store that is recognised as a specialist consumer electronics dealer and have a reputable and smart appearance. As the cost communality is high is the cost scope of the agreement is wide.

Strategic scope: The agreement requires wholesalers and retailers to commit to specific sales efforts for SABA products restricting the freedom to pursue their own sales policy. These conditions combined with the obligation to carry the whole range of SABA products limit their possibilities to take advantage of competition between different manufacturers. The pricing and sales efforts of the wholesalers and retailers will therefore be more similar under the agreement. The strategic scope is thus wide.

Duration: The duration of the agreement is four years. It is not especially long (wide).

The analysis of the scope of the agreement reveals that the scope of the agreement is large. There is a significant potential risk that wholesalers and retailers will be able to coordinate their economic activities due to the agreement.

Substantiation of anti-competitive effects - tacit collusion

For an assessment of tacit collusion, the intuitive starting point is to verify whether the relevant markets are likely to be cartelised. For this analysis there are a number of market characteristics to consult, cf. Table 5.2. Some of the most obvious result from the analysis will be presented below.

Similar cost structure: Wholesalers of consumer electronics in Germany have similar cost structure. They offer the same services and often have the same type of facilities. There is a medium risk for collusion on the wholesale market in Germany.

Retailers of consumer electronics in Germany vary both in economic activity and size. They range from premium-end speciality stores such as Bang & Olufsen to general department stores with consumer electronic sections such as Metro and stores specialising in internet sales. Different types of stores have very different types of cost associated with their sales of consumer electronics, e.g. personnel training, it-services and rents. This implies that tacit collusion is not likely on the retail market.

Transparency: If the agreement leads to coordination between wholesalers and between retailers, this will increase transparency of the market. One firm deviating form this behaviour could easily be spotted.

Maturity: Even though the market itself is not new it cannot be categorised as a mature market. There are two main reasons for this. *First*, products on the market are becoming more and more advanced and the consumers are sensitive to the technological development and competition is strong on quality aspects such as battery times, displays and functionality. The life time for many of the models is less than one year.

Second, the scope of the market is expanding as new completely products are introduced. Traditionally, the market has consisted of so called brown goods, i.e. radios, TV sets, VCRs, hi-fi systems, camcorders and car radios. These products are updated with new versions such as plasma and LCD televisions and complemented with new products such as multi-media PCs and video game consoles. The introduction of new products is especially competitive as standard setting often involves some kind of winner takes it all competition. A famous example of this is the standard struggle between Betamax and VHS, won by the latter. The growing and unpredictable market with winner takes it all competition makes collusion less likely.

Few firms: The manufacturing market has a few strong firms. The most important are Japanese Sony and Matsushita (Panasonic), South Korean Samsung and European Philips and LG. Also computer and software companies such as Microsoft and Apple are establishing themselves on the market. Also there are many smaller manufacturers.

In fact, in 2003, there where 2858 firms producing consumer electronics in the EU. Most of these are located in the UK but also Germany, France and Italy have many consumer electronics manufacturing firms according to Eurostat. Thus, there are sufficient competitors to make competition effective. In the wholesale and retail markets there are even more firms competing. A high number of competitors in the different markets make collusion harder to sustain.

Overall, the analysis indicates that tacit collusion is not likely to be sustained in either the wholesale or retail end of the consumer electronics market.

Substantiation of anti-competitive effects – foreclosure
Foreclosure arises if an agreement raises the entry barriers or restricts access to distribution channels.

SABA is not the only manufacturer with a selective distribution system. In fact, as the products have grown more complicated, many of the consumer electronics manufacturers have introduced similar types of agreements. However, only a few premium-end manufacturers have signed exclusivity contracts with their wholesalers and retailers, the rest are as SABA's selective and rely on different quantitative and qualitative criteria.

According to the European Commission (2000a), foreclosure of other suppliers is normally not a problem as long as other suppliers can use the same distributors, i.e. as long as the selective distribution system is not combined with single branding. The SABA agreements do not have single branding restrictions.

A good indicator of the foreclosing effects is the size of the market that is open to competition. The European Commission has stated specific thresholds for when the introduction of a second distribution system to the market risks having anti-competitive effects, cf. section 5.2. Only if the joint market shares of the five largest suppliers is higher than 50 % and the total market coverage of limited distribution agreements exceed 50 % are there likely anti-competitive concerns from foreclosure.

There is no independent data about the total coverage of the limited distribution systems on the German consumer electronics market. SABA estimates that 70-75 percent of the wholesalers in Germany are covered by limited distribution agreements. In the retail market, the coverage of selective distribution agreements is considerably lower, however, still above the threshold of 50 %. All main manufacturers in Germany use limited distribution systems and their joint market share is around 90 % of the market. This implies that there may be a serious foreclosing problem, primarily in the wholesale end of the market.

Another relevant indicator is the churn of the market. Most contracts are renegotiated annually. However, especially the wholesalers stick to their incumbent supplier. Changing supplier carries significant costs re-branding the wholesale business and in training of the sales staff. The retailers are less reluctant to change supplier. However, a SABA study of the retailers concluded that the higher percentage sale of SABA products the retailer offered, the less likely it was to change to an alternative supplier. There is no strong countervailing buyer power as the wholesale and retail markets contain many different firms of different sizes.

There is a risk of anti-competitive effects due to foreclosure on the market, especially on the wholesale side of the market where market concentration is higher. As a large part of the market is covered by limited distribution agreements, competing manufacturers may have problems distributing the products to the market. However, if competition between manufacturers is strong, this need not lead to significant anti-competitive effects for the consumers.

Substantiation of anti-competitive effects – within-brand competition
The agreement may foreclose wholesalers and retailers from entering the market and thus lead to reduced within-brand competition. Some obligations regarding the qualifications of the dealers laid out in the agreement goes beyond what is needed to distribute the products. Also, conditions such as the one concerning sales efforts may keep dealers out of distribution of

SABA products. There are however no reliable estimates of how many otherwise eligible dealers that will refrain from selling the products due to these clauses.

The agreement also states that SABA dealers are forbidden to supply dealers who have not been admitted to the SABA network. This also implies a reduction in the within-brand competition as the number of wholesalers and retailers with access to SABA products will be reduced.

Further, the quantitative and qualitative conditions of the agreement will exclude a number of both existing and potential wholesalers and retailers from selling SABA products on the market. SABA has estimated that in Germany the number of eligible wholesalers will be reduced by 10 percent. The main difference is however on the retail side where around 20 percent of all retailers will be excluded and 12 percent of the existing retailers will not fulfil the conditions.

There is a strong risk of significant anti-competitive effects from reduced within-brand competition. This risk may however be alleviated if between-brand competition is strong.

Market power and competitive restraints

Even if the agreement gives rise to latent anti-competitive effects of the types listed previously, it is not certain that these effects will be passed on to the consumers. If initially there is strong competition in the market, the effects of an agreement is less likely to be significant. This is especially the case where the effects from low within-brand competition are countered by high between-brand competition. SABA now assesses indicators for competitive restraints.

Market shares: Consumer electronics are typically differentiated products with a wide product range from basic products to very advanced and expensive ones. In this case market shares only provide a very rough indication of market power, more important is the substitutability between the different brands. Another reason not to focus too much on the static market shares is that there is significant innovation and market growth. This implies that market shares can change rapidly due to the introduction of better products.

The analysis of market shares reveal that the lions share of the consumer electronics bought in the EU are produced by a number of large multinational firms. The markets for consumer electronics are defined as national. In Germany where the block exemption for vertical agreements was not applicable the dispersion of market shares is slightly different. SABA's best selling product line, television sets, had a market share of 45 percent in Germany. The sales of hi-fi equipment in Germany also exceeded the threshold of 30 percent laid out in the block exemption for vertical agreement, cf. Table B. 4.

Table B. 4 Market shares in Germany

Firm	TV	Hi-fi	HHI-TV	HHI – Hi-fi
SABA	**45 %**	**30 %**	**2025**	**900**
Philips	2 %	5 %	4	25
Grundig	2 %	18 %	4	324
Matashushita	14 %	13 %	196	169
Sony	23 %	1 %	529	1
Samsung	3 %	8 %	9	64
LG	2 %	25 %	4	625
Total	91 %	100 %	2771	2108

Source: Fabricated market shares

Even though one should be careful with making too strong conclusions from an analysis of market shares in this type of market with differentiated products, it is possible to conclude that there are a number of multinational firms with similar market shares competing on the market.

The strength and number of competitors make coordination between parties less likely. Furthermore, even though SABA has the highest market shares on the two relevant product markets in Germany it does not hold any exceptional market power.

Market concentration: Market concentration indicates the overall competitive situation in the market. Agreements in already concentrated markets are more likely to cause strong anti-competitive effects than the same agreement would have caused in less concentrated markets. From Table B. 4 we find that markets are rather concentrated. This implies that anti-competitive agreements are likely to have some anti-competitive effects on the market. Being a vertical agreement it does not increase market concentration.

Market stability: EU-25's production index for the manufacture of radio, television and communication equipment grew, on average, by 10.4 percent per annum between 1993 and 2000, when output peaked. The highest annual growth rate during this period was 25.2 percent in 2000, which was immediately followed by two year-on-year contractions of around 10 percent. In 2003, output stabilised with a growth of 0.9 percent (Eurostat, 2004). Thus the production of consumer electronics in Europe is highly volatile and it is thus hard for the parties to predict each others behaviour.

Overall sales of consumer electronics in Europe increased by 8.3 percent to €19.98 bn in 2004 with classic consumer electronics making up the lion's share. Sales are set to increase by a further 4.5 percent to €10 bn according to consumer research and consumer electronics experts. The demand side of the market is thus growing making anti-competitive behaviour less likely. The highly unstable market makes collusion and coordination less likely.

Entry barriers: Barriers to entry are generally low. Production can in most cases be outsourced and there are a variety of firms specialising in production of this type of products. Even though brand image is important, consumers are price sensitive, and low cost producers are gaining market share. Distribution used to be one of the most significant entry barriers. However as sales on the internet is becoming more important, especially for this type of products, this entry barrier is becoming less important.

Entry for wholesalers is also relatively easy with no specific entry barriers absent access to a location suitable for sales of consumer electronics.

Competitive environment: A couple of years ago when products did not change much and companies stuck to their core products, consumers loyally bought from the main European and American producers as those brands represented a guarantee of quality. This has changed. The geography of production has become less important and imports to the Community now constitute more than 30 percent of the consumption. Asian manufacturers have become important competitors (Eurostat, 2004).

Another factor describing the competitive environment is the development of consumer prices. In competitive markets firms will cut their prices and pass efficiencies and general cost reductions on to the consumers with declining prices as a result. In markets with significant technological development the introduction of new products, even with constant or increasing prices, is an indication of competition.

Since Eurostat began collecting price data for the industry in 1995, the prices have been falling for eight consecutive years, ranging from -2.7 % to -4.3 %. The largest reductions occurred in 2002 and 2003 (Eurostat, 2004). This is a good indicator that the market is highly competitive. The strongly competitive environment makes anti-competitive effects from the agreement less likely.

To sum up the analysis of anti-competitive effects there are some anticompetitive concerns from the agreement, notably from coordination between the wholesalers and retailers that signs the agreement, but also from the risk of foreclosure and reduced within-brand competition. The potential effects from coordination between the wholesalers and retailers on consumers are however limited as the market conditions indicates that the markets are highly competitive. The risks of foreclosure and reduced within-brand competition are limited as barriers to enter are low and the competitive environment is strong. As long as the within-brand competition is strong, there are no major risks of anti-competitive effects. Thus, the anti-competitive effects from the agreement are likely to be of limited concern.

Now SABA knows that the agreement is covered by Article 81(1). In order to be exempted from this prohibition it has to lead to efficiencies outweighing these anti-competitive effects. Previously, SABA identified a number of potential efficiencies: free-riding, hold-up and technology diffusion. The task is now to substantiate these findings.

Substantiation of efficiencies - free-riding

A free-riding problem gives rise to inadequate investments in advertising or sales service as firms cannot retain profits from its investments due to free-riding competitors. The first step is to identify the market failure creating the free-riding problem. This involves checking whether three market conditions are fulfilled, cf. section 8.2.

First, pre- and after-sales service has to be important in the industry. If not, free-riding on these activities will not cause large market inefficiencies. Case studies presented by SABA demonstrate that consumers are highly sensitive to campaigns, especially in the case for mid-range television sets and hi-fi products as well as low-end DVD players. Business studies suggest advertising elasticities around 0.2, i.e. a one percent increase in advertising would lead to 0.2 percent increase in sales. The importance of sales services is also confirmed by independent market studies, cf. Box B. 3.

Box B. 3 Study of purchasing patterns

A survey found that 35 percent of the consumers that entered a consumer electronics store, planning to purchase a specific brand, came out with another brand in the bag. A large number of the interviewed, 40 percent, claimed that the reason they bought another brand than planned, was due to in-store influences, i.e. not product features or prices. The leading factor was, according to the study, the advice of retail salespersons. 32 percent of the surveyed stated this as the reason for purchasing a different brand than planned.

MarketStar (2005).

Pre-and after-sales service are often important if the products are new or relatively complex (European Commission 2001). With an average of 10.000 innovations per year the consumers not only face the problem of choosing between different brands and models, but also different features as consumer electronics become more advanced and complicated. Without sufficient information about the products they may refrain from using these features, cf. Box B. 4.

Box B. 4 Service fatigue

Consumers around the world are suffering from “mobile service fatigue”. They are struggling to keep up with the rapid deployment of new handset features and data services as well as complex pricing structures and poor usability. These problems have lead to lower than expected usage rates for value added services such as Multi Media Messenging (MMS) and mobile content download. In fact, only 43 % of MMS-enabled handsets have ever been used to send an MMS.

SmartTrust (2005).

As a response to the information problem associated with complicated consumer goods many manufacturers of advanced consumer electronics have opened brand-specific showrooms where consumers are encouraged to try out the products. These showrooms enable

consumers to learn about the products and how they work. In fact, Philips, one of Europe's oldest consumer electronics firms, is trying to regain market share by re-branding itself around the idea of "sense and simplicity", promising that its products will be straightforward to use (Economist, 2005). It thus seems clear that both pre-and after-sales services are important for the industry.

Second, promotional activities such as advertising and sales have to be generic of nature. As consumer electronic brands are differentiated products the promotional activities are brand specific and thus not generic. However, advertising by one wholesaler or one retailer for a specific brand will increase sales also for the other dealers selling the same brand. In that sense the promotional activities are within-brand generic. This within- or intra-brand effect of promotion is for example verified for DVD-players; cf. Inceoglu and Park (2003). Due to this effect, the wholesalers and retailers may refrain from extensive promotional efforts as the competitors may be as well off without incurring the promotional investments.

Third, the product must be valuable. An inexpensive product does not normally need much sales service, further, it will not induce consumers to receive sales service in one location and purchase the product at another. The prices of consumer electronics vary widely from portable cd-players at €50 to €9000 plasma television sets. However, most consumer electronics are relatively expensive, cf. Table B. 5. There are numerous products both significantly more and less expensive than the ones illustrated, but as these are product with the highest total sales they offer a good representation of the value of a standard product.

Table B. 5 Prices of the products with highest volume sales in Germany

Product	**Average price**
32" tube television	€410
Recordable DVD player	€320
Compact Hi-fi system	€240

Source: Fabricated prices

A study carried out by SABA reveals that the average distance to the closest competing consumer electronics retailer in the ten largest cities in Germany is 500 meters. This relatively short distance is due to the fact that consumer electronic retailers tend to be clustered, often around large shopping centres. The short distance can make it profitable for a consumer to visit one retailer to attain product information and other pre-sales service and to proceed to firm with lower prices to purchase the good. The increased sales from internet stores make the problem of receiving returns on the important sales efforts even stronger.
The three indicators reveal that it is highly possible that there is a free-rider problem in the market. The question is now whether the agreement is likely to solve the free-rider problem and eliminate or reduce the market failure. There are a number of conditions that could affect the incentives of wholesalers and retailers to provide more promotional activities.

First, as the number of dealers selling similar brands will be reduced due to the criteria imposed by the agreement there are fewer competitors to free-ride on the sales efforts. *Second* and maybe even more important, the dealers will become more homogenous after the agreement. This means that they will need to follow the same guidelines regarding sales efforts, advertising, staffing and training of staff. When the firms have to undertake the same sales investments the risk of free-riding is significantly reduced.

Thus, there is thus strong evidence that the agreement will significantly reduce an existing free-rider problem. In the wholesale market the free-riding comes mainly comes from free-riding on advertising campaigns whereas the free-riding in the retail sector primarily comes from the possibility to receive pre- and after-sales service at one location and lower prices at another.

Substantiation of efficiencies - hold-up problem

The agreement may lead to the reduction of a hold-up problem in the market. A hold-up problem is a lack of investment arising because the risks of investing are not evenly shared between the manufacturer, wholesaler and the retailer. The first step is to verify whether there is an actual hold-up problem in the market. We proceed by analysing whether a few specific market conditions are fulfilled, cf. section 8.2.

First, there has to be a need for significant asset-specific investments. This is investments that cannot be used for any other purpose than the specific trading agreement, i.e. a sunk cost. Two of the most important asset specific investments in the industry have already been introduced, *staff training* and *store appearance*.

The products on the market are complicated and continuously improving with added functionalities and features, different design and specifications. For these reasons sales staff, both wholesale and retail, needs to attend main training courses and spend time learning about new technology and products. SABA estimates that the costs of staff training amounts to 15-20 percent of labour costs. As the staff is trained on specific products this training would have little value if the wholesaler or retailer were to terminate its business relation with its supplier.

Wholesalers and retailers wanting to supply high- and mid-end consumer electronics of the SABA brand must have premises that are recognisable from the outside as those of a consumer electronics specialist and inside have a reputable and smart appearance in keeping with the prestige of the SABA brand. Further, the interior has to be suited for displaying and demonstrating the major parts of the SABA range in a technically satisfactory manner. The size of these investments depends on the specific store, but SABA has estimated that in more than 60 percent of all retail stores, investments amount to more than €10.000. Due to the specific design required to supply SABA products, the investments could not likely be used in any other trading agreement and are thus relationship specific.

Second, the above investments have to be asymmetric in order for there to be a hold-up problem. This is the case when one of the parties invests more than the other party of the agreement. Even though the manufacturer supplies staff training material, the main costs of staff training is taken on by wholesalers or retailers themselves. The biggest part of these costs is the time spent on learning about the products and their compatibility with other products. As regards the design of the stores, all costs are undertaken by the retailers.

As a consequence, both types of investments are asymmetric. In addition, due to the size difference between SABA and its dealers, SABA already from the start carries less risk than its dealers.

The analysis suggests that there is a hold-up problem in the market. In the wholesale market, it is primarily due to investments in sales training. In the retail market it is primarily due to investments in store displays, but also to a certain degree in sales training.

It is sometimes possible to directly observe the hold-up problem. The three main techniques are benchmarking the relevant market to other similar markets, studying historic development or studying competing firms in the relevant market. We will here rely on the latter technique.

SABA's marketing department prepared a document covering a variety of high-end consumer electronic retailers, not selling SABA products, in Germany and Italy. The study revealed that the stores covered by exclusive supply agreements had by far the highest degree of service, defined as number of sales persons per client, technical knowledge, display of products and the interior design. This is a strong indication that restrictive supply agreement increases the

level of service. Selective distribution systems seem to be an overall important feature in the sales of consumer electronics in Europe, cf. Table B. 6.

Table B. 6 Key features of vertical relationships in consumer electronics

Vertical relationship	Relative importance
Vertical restraints	High
Long-term relationship manufacturer - retailer	High

Source: Nera (1999).

The final question in the analysis is whether the agreement is likely to solve this hold-up problem. SABA will bear the staff costs of attending the main training courses and also provide on-site training for the staff when new products are launched. This will reduce the wholesalers' and retailers' training costs by approximately 50 percent as training for the new products is the most costly for all dealers. SABA will also offer promotional investments in retailers design and contribute to the design costs needed to accommodate the SABA brand.

Technological diffusion: The agreement will also lead to the diffusion of information between the manufacturer, wholesalers and retailers. This information will help SABA to manufacture products that will be demanded by consumers at the relevant quantities.

Empirical studies have verified the importance of innovative end-user activities. Lawton/Parasuraman (1980) showed in a comparative exploration of several consumer markets that users stimulated 12.7 percent of the innovation processes. Even higher level of consumer activities was found by Utterback et al. (1976) for consumer electronics. One third of all manufacturer innovations were initiated by detailed user requests. For these reasons, it is important for SABA to increase its knowledge about consumer's preferences. Retailers are best suited to provide this information. The diffusion will benefit SABA by improving the possibilities for producing highly demanded goods, wholesalers and retailers by increasing their sales from selling popular products, and consumers by receiving new customized products.

There is evidence that innovation generally is important on the relevant markets. The market averages 10,000 innovations per year. Some of the more notable recent innovations include flat-panel TVs, as well as DVD players and DVD recorders. DVD players have been one of the major success stories of this activity in recent years and are the object of a battle to define DVD formats, reminiscent of the video cassette standards battle, won by VHS in the 1980s (Eurostat, 2004). The innovative activity is especially important in winner takes it all markets. If innovation and product development has been insufficient and the standard is lost to the rival, there is little or no demand left for your products.

The diffusion of information will also go in the other direction. The agreements restricts sale of SABA products to dealers having adequate knowledge in advising and selling to the consumers and to provide after sales service. SABA will continuously inform their dealers about improvements in their products and sales staff will be better equipped to answer customer questions.

Overall, there is strong evidence that diffusion of information between manufacturer, wholesalers and dealers will generate efficiencies in the form of new products. Furthermore, innovation is important in the market and consumers are sensitive to technological changes. The agreement will also permit consumers to receive better pre-and after sales service.

Quantification of efficiencies – free-riding

SABA has identified the free-rider problem and substantiated it. The agreement will significantly reduce the associated market inefficiency. In addition, SABA decides to quantify the efficiency gain for televisions to get a more precise estimate of the exact size.

The technique used by SABA is the optimal sales service technique described in section 9.2 and SABA makes two different calculations both advertising and sales services are important for sales. *First,* SABA measures the difference between actual sales service, defined as the ratio customer/staff, and optimal sales service. *Second,* SABA measures the difference between actual advertising and optimal advertising.

SABA uses the Dorfman-Steiner formula, where ε_s is the advertising or sales service elasticity of demand and ε_p is the price elasticity of demand:

$$\frac{\text{Advertising}}{\text{Sales}} = \frac{-\varepsilon_s}{\varepsilon_p}$$

We estimate the effect on the agreement on the retail level, i.e. close to the consumers. SABA used retail scanner data on sales and prices of a basket of the most common SABA television sets from all the stores covered by the agreement. From this data they estimated the average price elasticity of demand for SABA televisions at around -2.6, more elastic than video games with an elasticity of -2 (Clements and Ohashi, 2004). This is probably due to the fact that there are more television brands and that video games possess network effects.

The data set also included retailers' sales efforts during the last year and their customer/staff ratio. With this data SABA were able to calculate the advertising elasticity and the sales service elasticity, i.e. the percentage increase of a one percent increase in advertising and sales service. SABA found that consumers are highly sensitive to advertising campaigns and sales service. This is especially the case for mid range television sets and hi-fi products and low-end DVD players, cf. Table B. 7.

Table B. 7 Advertising elasticity of demand

	High-end	Medium-end	Low-end
Television sets	0.03	0.25	0.15
DVD players	0.08	0.15	0.25
Hi-fi products	0.1	0.25	0.2

Source: Fabricated numbers

These figures suggest that consumers are sensitive to campaigns and that advertising and sales services have a significant impact on consumer purchases and thus on firms' profits. According to the table, a 1 percent increase in advertising expenditure for medium end television increases demand by 0.25 percent

With the advertising and sales service elasticities SABA was able to calculate the Dorfman-Steiner ratios, i.e. the optimal advertising and sales service ratios for each retailer under the SABA agreement. With the retailer specific information on sales, advertising and sales service (as defined above), SABA was also able to calculate actual advertising and sales ratios.

The last step is to compare optimal sales services to actual sales services. For both advertising and sales service the actual ratios are significantly lower than the optimal level. This indicates that there are too little sales efforts and it confirms the existence of a free-rider problem on the retail market.

Below the consequences of the analysis for an average store is demonstrated. The current advertising sales ratio is around 0.065, but the optimal ratio is 0.085. This implies that the average SABA retailer should increase sales[23] with €40.000 or more than 30 percent; cf. Table B. 8.

Table B. 8 Optimal advertising for on average retailer

	Current ratio	**Optimal ratio**
Sales	€2,000,000	ε_s = 0.22
Advertising	€130,000	ε_p = -2.6
Ratio	0.065	0.085

Source: Fabricated numbers

In the case of sales services, the difference between current and optimal level of sales service is also large. Here the calculations reveal that an average retailer would need to increase sales service with more than 20 percent to be efficient, that the retailers should hire 20 percent more staff. The free-rider problem is thus tangible, real and of a significant size. Solving it would lead to substantial efficiencies for the consumers.

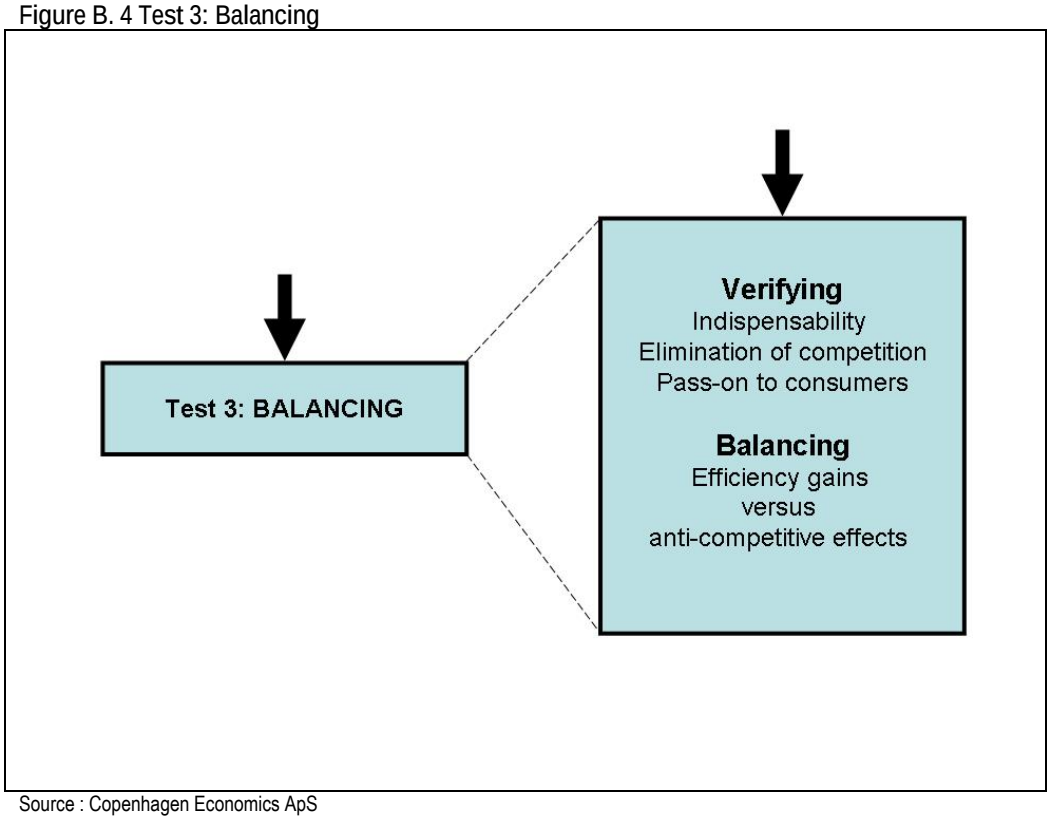
We now have evidence that the agreement will lead to significant efficiencies, both in the form of reduction of free-rider and hold-up problems and from diffusion of information. We are therefore confident that the efficiencies more that outweigh the anticompetitive effects. However, in order to be exempted under Article 81(3) the agreement also has to fulfil a number of additional conditions.

Test 3: Balancing

It is now clear that the agreement has some anticompetitive effect but also leads to significant efficiencies. In *Test 3: Balancing* SABA finalise the analysis by verifying a number of additional conditions and performing the final balancing of efficiency gains with anti-competitive effects taking into due consideration the required pass-onto consumers, cf.Figure B. 4.

[23] €2.000.000 * (0.085-0.065)

Figure B. 4 Test 3: Balancing



Source : Copenhagen Economics ApS

Indispensability

SABA has to investigate whether the agreement as a whole or the individual anti-competitive restrictions go beyond what is needed to achieve the efficiencies, i.e. the agreement is indispensable.

The *first* step is to assess whether there are less restrictive realistic alternatives to the selective distribution agreement. Internal growth is often an option. In this case it would imply that SABA integrated forward, i.e. a vertical growth where SABA developed its own wholesale and retailer network. This would however take long time to build up and not necessarily become less restrictive. The internal grown option is not realistic. An alternative option is to find less restrictive agreements. The SABA agreement is not exclusive which makes it less restrictive than other realistic alternatives generating similar efficiencies. Thus there are no realistic alternatives to the agreement.

The *second* step is to assess whether the individual conditions are indispensable for achieving the efficiencies. The restriction not allowing dealers to resell SABA products to non-authorized dealers is indispensable as, without this restriction, SABA products would be traded also by non-authorized dealers. This would eliminate the efficiencies stemming from reducing the free-rider and hold-up problem. The selective distribution system would not be sustainable due to the different conditions for authorized and un-authorized dealers. Other requirements such as carrying the full SABA range, to maintain stock and to engage in promotion are needed to guarantee reliable and fast delivery to customers. They are thus also indispensable for achieving the efficiencies.

SABA concludes that the agreement as such and all anti-competitive restrictions are indispensable for achieving the efficiencies.

Elimination of competition

SABA also has to investigate whether the agreement eliminates competition on a substantial part of the market. For this purpose SABA set up a list of indicators of actual and potential competition inspired by Table 10.4 and investigates whether one or several indicators change significantly as a consequence of the agreement.

Actual competition: Actual competition has to a large degree already been described previously. The assessment can be complemented with a study of the indicators presented on market power and competitive constraints presented in sections 5.5 and 5.6. These indicators reveal that there is strong competition on the market.

The competition in the markets is strong with several competing firms and declining prices. Competition for standards reinforces the effect and spurs innovation and technology development. There is no cross ownership and no signs of collusion in the market.

Potential competition: There are no regulatory obstacles for entering the wholesale or resale business for electronic consumer products, nor are there strong cultural preferences and industry rules. Digital convergence allows a company with a strong brand in one area to easily move into another. One good example is the walkman invented by Sony for long outside competition. When digital replacement came it was not from another consumer electronics maker, but from Apple, a computer firm, introducing the iPod. This makes it likely that related businesses may easily enter the industry. Further, it makes it likely that wholesalers and retailers of related products may enter the consumer electronics market. There is thus plenty potential competition from outside.

Market shares: SABA's market share only exceeds 40 percent in a single relevant product and geographic market, television sets in Germany. This is a good indication of that the agreement will not eliminate competition on the market.

All in all, it is not likely that the agreement eliminates competition on a substantial part of the market.

Pass-on of efficiencies

Consumers must receive a fair share of the efficiencies so that they are compensated for the negative impact of the agreement. Thus, SABA tries to determine the pass-on rate which is the share of overall efficiency gains passed-on to consumers. Those efficiency gains that are not passed-on to consumers go to the firms themselves as higher profit margins.

All efficiencies from this set of agreements are between-firm efficiencies or innovation benefits, which are often passed on directly to consumers. The reason is that the consumers benefit directly from new or improved products or from access to better service. Some relevant examples are increases in advertising and sales staff, better trained staff, smarter looking stores and products better suited to consumer needs. Consumers will also benefit from the increase in innovation and from the introduction of better suited products to the markets.

Settling the balance

SABA can now summarize its findings. *First*, the agreement can lead to anti-competitive effects stemming from coordination of wholesalers and retailers selling SABA products, foreclosure and less within-brand competition. The size of these effects are however not expected to be more than moderate as there is sufficient competition from competing brands.

Second, the agreement generates efficiency gains by solving or at least reducing a significant free-rider problem, by reducing a hold-up problem on both the wholesale and retail market, and

by increasing the likelihood of innovative output, improvements that the consumers find very valuable.

It is likely that the benefits from solving the free-rider and hold-up problem - more advertising and a larger and better trained sales staff - will occur soon after signing the agreement and do not need to be discounted for uncertainty or time horizon. The innovation benefits on the other hand are more uncertain and the parties estimate that there will not be any output on the market from the innovations during the first two years.

From the balancing it becomes clear that the efficiency gains from the agreements will clearly outweigh the anti-competitive effects for the consumers. The agreement is thus exempted according to Article 81(3).

When these findings are compared to other similar agreements on the market for consumer electronics handled by the competition authorities it is found that in all cases, even when appealed, they have been found to generate sufficient efficiencies to be exempted, cf. Table B. 9.

Table B. 9 Selective distribution for consumer electronics

Case	Year	Reference
SABA I (Metro I)	1977	Court of Justice, case 26/76
Demo-Studio Schmidt	1983	Court of Justice, case 210/81
Grundig I	1985	European Commission, case IV/33.814
SABA II (Metro II)	1986	Court of Justice, case 75/84
Kenwood Electronics	1993	European Commission, comfort letter - case 34116
Sony España	1993	European Commission, 1993
Grundig II	1994	European Commission, case IV/29.420

Source: European Commissions website

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Appendix I The relevant market

Knowledge of the relevant market(s) for an agreement is crucial for a proper assessment of an agreement for two reasons.

In the first step of the assessment, we consider whether an efficiency defence is not required because the agreement is automatically exempted. For example, this is the case if the agreement is covered by the *de minimis* regulation or any of the block exemption regulations. This is the case if the market shares in the relevant market(s) covered by the agreement are below a certain threshold. For example, the block exemption regulation for vertical restraints automatically exempts all vertical agreements in which the relevant firms have market shares below 30 percent and do not contain hard core restriction. Likewise, the block exemption regulation for specialisation agreements (almost) automatically exempts all specialisation agreements in which the relevant firms have combined market shares below 20 percent.

In the second step of the assessment we have to evaluate any anti-competitive effects of an agreement. As in any other competition analysis, the delineation of the relevant market is the first step; defining the geographical and product space in which anti-competition concerns can arise if at all.

It is beyond the scope of this report to describe the framework for definition of the relevant market in detail. In this context, it suffices to give a brief introduction to the definition of the relevant market.

The relevant market is a term used to describe a group of goods (or services) linked by demand and supply patterns such that the companies producing and selling the goods are prevented from behaving independently of an effective competitive pressure.

This is reflected in the definition of the relevant market applied by the European Commission:

> *"The objective of defining a market in both its product and geographic dimension is to identify those actual competitors of the undertakings involved that are capable of constraining their behaviour and of preventing them from behaving independently of an effective competitive pressure"*[24]

In some cases, a single good produced by a single company can be a relevant market on its own. It is possible if the company is in a position where it can increase the price of the good without loosing significant sales revenue. This could happen if customers cannot find relevant substitutes or because other companies cannot easily take up competition by starting production and sale of similar goods. However, in most cases a relevant market embraces a range of goods produced and sold by several companies within a specific region.

[24] European Commission, *Notice on the definition of the relevant market,* 1997

A relevant market typically has two dimensions; product and geography. The relevant *product* market embraces those similar products that may be substitutable for the product in question, while the relevant *geographic* market embraces the geographic area in which the substitutable products are produced and sold.

If the range of substitute goods is small, we talk about a narrow relevant product market. And if the range of substitute goods is large, we talk about a broad relevant product market. Similarly, we talk about narrow or broad relevant geographic markets depending on whether the area where competition takes place is small or large.

Market shares are defined as the sales of the company under scrutiny divided by total sales in the *relevant market,* i.e. total sales of all goods that are able to prevent the company under scrutiny from "*behaving independently of an effective competitive pressure*". It is clear from this definition that a broader relevant market reduces the market share of a given company, while a narrow relevant market typically increases the market share.

Our definition of the relevant market is based on the practice of the European Commission and proceeds in four stages:

1. Choose methodology
2. Consider types of substitution
3. Identify barriers to integration
4. Identify empirical indicators of market integration

Methodology

Our guiding framework is the so-called SSNIP-methodology. SSNIP is an acronym for Small, Significant, Non-transitory Increase in Prices. The SSNIP-methodology is not a directly applicable test, but a systematic framework for thinking about relevant markets. To our best knowledge, it is the only systematic and relevant framework for thinking about relevant markets.

Using the SSNIP-methodology means carrying out the following thought experiment: select a group of candidate goods for a relevant market. Assume that a hypothetic monopolist is the sole producer of the candidate goods and investigate whether the hypothetic monopolist is able to increase profits by raising prices of the candidate goods (*Increase in Prices*) by 5-10 percent (*Small, but Significant*) for a period not shorter than twelve months (*Non-transitory*).

If no other goods capture significant market shares on expense of the candidate goods, we will say that the candidate good constitutes its own relevant market. But if a profitable price hike is *not* possible, because some other good captures significant market shares, we will say that the relevant market should be expanded to include this other good.

Types of substitution

Next, we consider how consumers and competitors in the specific case may be able to constrain the behaviour of companies and preventing them from behaving independently of an effective competitive pressure. We distinguish between constraints on the demand and the supply side.

A company is said to be constrained from the demand side if customers in response to a price increase on the product under scrutiny are willing to and able to buy other products instead (product dimension), or buy the same good but sourced from a company in another region (geographic dimension). In the same manner, a company is said to be constrained from the

supply side[25] if other companies in other markets in response to a price increase on the goods under scrutiny are willing to and able to take up the production and sale of products related to the products under scrutiny (product dimension), or take up import of the same product from another region (geographic dimension).

We summarise the main characteristics of all combinations of the two types of substitution and dimension of the relevant market, cf. Table App I. 1.

Table App I. 1 Dimensions and substitutability in the relevant market

Dimensions	Demand substitution	Supply substitution
Product	Customers buy similar products from other companies	Other companies take up production and sales of the product in question
Geography	Customers buy the same product from companies in other regions	Companies in other regions launch sales of the product in the region in question

Barriers to market integration

Effective substitution on the demand and supply side is the key to market integration and to broader relevant markets. It follows that the definition of the relevant market can be seen as an exercise to identity and document barriers to market integration that prevent effective demand and supply side substitution. The identification of specific barriers to market integration constitutes the third step.

Barriers to market integration can be divided in three types of barriers depending on their source or origin: Natural, regulatory or barriers created by companies.

First, an example of a natural barrier is *language*. A consumer who has shopped at a supplier in country A might be prevented from turning to a lower priced supplier in country B, for the simple reason that he is unable to obtain information on the offerings of shops in country B due to a language barrier. We shall refer to this barrier as exogenous to the extent that the consumer would have to incur prohibitively large costs to removing the barrier.

Secondly, an example of a regulatory barrier is a *statutory monopoly*. A consumer in region A might be prevented from shopping around for bargain prices in region B for the simple reason that a distribution company has been given the exclusive right to sell electricity to consumers in region A. Regulatory barriers are semi-exogenous barriers that in principle could be quickly removed by policy makers, but not (directly) by market participants.

Thirdly, an example of a business created barrier is *foreclosed access* to distribution outlets. A producer in country A may have bought up the largest and most efficient distribution companies (and their portfolio of customers) in the country, and as a result a potential competitor, currently active in country B, might be at a significant competitive disadvantage vis-à-vis the consumers in country A. The barrier is endogenous since it is the result of the conscious strategic choice of the firm in country A.

[25] According to the European Commission constraints from the demand side are stronger than the constraints arising from the supply side. The European Commission states "*…demand substitution constitutes the most immediate and effective disciplinary force on suppliers of a given product…*" and "*Supply side substitutability may also be taken into account when defining markets in those situations in which its effects are equivalent to those of demand substitution in terms of effectiveness and immediacy*".

Table App I. 2 shows examples of barriers to market integration of the three different types on the demand and supply side of the market:

Table App I. 2 Examples of barriers to market integration

	Demand	Supply
Natural	Switching costs Transport costs Language Search costs	Capacity constraints Switching costs Scale economies Transport costs
Regulatory	Import and export constraints Taxes and tariffs	Product standards Environmental standards Taxes and tariffs
Business created	Long term contracts	Long term contracts Exclusive dealing Ban on resale

Once the specific barriers to market integration have been identified, it is possible to formulate a hypothesis of the extent of the relevant market, which can be put to an empirical test.

Indicators of market integration

The final step in market definition is the search for empirical indicators, which can verify the existence and importance of the barriers to market integration identified in the previous step. This is a very important step because the mere existence of a barrier to market integration is not a sufficient argument to split the market in two distinct relevant markets. It could be that the barrier existed, but that it was not sufficiently strong to qualify for market separation. For this reason it is of utmost importance to supplement the identification of barriers with a documentation of their importance and impact.

Empirical indicators can roughly be divided in three groups: Simple indicators, price indicators and advanced indicators. These groups are characterised by increasing analytical complexity, increasing relevance, but also increasing data requirements.

Simple indicators, as trade flows, comparison of price levels, comparison of market shares, market mobility, are very easy to calculate but they have questionable relevance. For example, it is not possible to argue that small cross-border trade flows are a consequence of a barrier to integration at the border. Small cross-border trade may as well be the consequence of a very competitive home market but with foreign companies ready to enter the home market should prices hike by 5-10 percent. Simple indicators are widely used and are often the only type of empirical indicators applied in European competition cases.

Price indicators are indicators of price movements calculated on the basis of, for example, correlation tests and co-integration analysis. If, for example, two products belong to the same market, we expect – on the basis of the argumentation implicit in the SSNIP-methodology - that there will be limits to how much the prices of the two products can drift from each other. In other words, the prices of the two products will be highly correlated. This feature of market integration can straightforward be tested using tests of partial correlation or co-integration. We consider a high correlation between prices in two regions as a strong indication of the absence of significant barriers to market integration, although we acknowledge that it is neither a necessary nor a sufficient condition. Data requirements are moderately high, but some econometric skills are needed to properly analyse prices.

Advanced indicators are for example indicators based on residual demand analysis. There is widespread agreement that residual demand analysis is the most correct and relevant type of analysis, but the data requirement is often prohibitively large. Both price and volume data are required for a longer period and on a very detailed company level.

Appendix II Different types of agreements

An agreement is a contractual obligation between firms to co-operate on certain areas of common interest. In contrast to mergers, an agreement is typically limited in scope and duration compared to a full-blown merger. In this sense, agreements can be interpreted as an attempt to capture significant efficiencies associated with cooperation between firms without firms giving up their commercial freedom in other areas not covered by the agreement. Traditionally, agreements are divided into two main types: horizontal agreements and vertical agreements.

Horizontal agreements

Horizontal agreements are agreements between actual or potential competitors producing identical or substitutable products at the same level of the value chain. For example, two firms with similar product portfolios who agree to make a joint production of selected products set up a horizontal agreement. The types of horizontal agreements that are relevant in this context fall into one of three main categories: production agreements, sales and purchasing agreements, and other agreements, cf. Table App II. 1. The agreements are roughly categorised according to similarity of their anti-competitive effects and efficiency gains.

Table App II. 1 Main types of horizontal agreements

Production agreements	• Joint production through a non-full functioning joint venture • Specialisation or subcontracting agreements
Sales and purchasing agreements	• Joint buying of products • Joint selling, distribution or promotion of products
Other agreements	• Outsourcing of R & D • Joint improvement of existing technologies • Joint development of new products. • Definition of technical or quality requirements • Environmental agreements

Note: Agreements with hard core restrictions are not a particular type of agreement and any of the above mentioned agreements can contain hard core restrictions.
Source: European Commission (2000a).

Production agreements are agreements between competitors with the purpose of making their joint production more efficient. For example, firms can set up a full functioning joint venture controlling joint production in selected production locations or they can make a mutual agreement where one more firm(s) specialise in the production of various intermediate inputs needed for the output from both firms.

Sales and purchasing agreements are agreements between competitors in order to make activities upstream and downstream to production more efficient. For example, firms can set up a joint venture to handle selected purchases needed in the product lines in order to achieve

larger volumes, more bargaining power and lower prices. Similarly, firms can set up an agreement to organise joint selling, distribution and marketing of their products.

Other agreements are agreements of diverse nature primarily with a potential impact on future markets and not on today's markets. They include agreements regarding R&D, standardisation of standardise technical and quality requirements and environmental agreements.

In 2003-2004, the Commission decided on 13 cases involving horizontal agreements, cf. Table App II. 2. Production agreements were by far the most common type handled. Seven out of thirteen horizontal agreements were production agreements.

Table App II. 2 Article 81-cases with horizontal agreements handled by the European Commission in 2003-2004

Agreements	Number	Name	Case no
Production agreements	7	BA/Iberia/GB Airlines	COMP/D2/38.479
		TF1/Eurosport, SA/Consortium Eurosport	COMP/C2/38.464
		SFR/Bouygues/Telecom/Orange France	COMP/38.451
		Air France/Alitalia	COMP/38.284/D2
		Telekom/QSC	COMP/38.436
		BT CELInet/One2One	COMP/38.370
		IRTS/Casino/Auchan	COMP/D3/A38.576
Sales and purchasing agreements	3	Groupement des cartes bancaires	COMP/38.606
		FAPL Sky	COMP/38.453
		DFB	COMP/37.214
Other agreements	3	Phillips / Sony	COMP/37.228
		PO/Deep sea agreement	COMP/38.653
		ARA / ARGEV	COMP/35.473

Source: website of the Competition Directorate General

Vertical agreements

Vertical agreements are agreements between firms that are located at different levels of the value chain and, as a consequence, are *not* actual competitors. For example, a producer and a number of distributors who agree to a set of rules for their co-operation set up a vertical agreement. Vertical agreements fall into one of four main categories: limited distribution, single branding, resale price maintenance and partitioning, cf. Table App II. 3. The agreements are roughly categorised according to similarity of their anti-competitive effects and efficiency gains.

Table App II. 3 Main types of vertical agreements

Limited distribution	• Selective and exclusive distribution • Exclusive customer allocation • Exclusive supply • Quantity forcing on the supplier
Single branding	• Non-compete and quantity forcing on the buyer • Tying • Full-line forcing
Resale price maintenance	• Minimum resale prices • Fixed resale prices • Maximum resale prices • Recommended resale prices
Partitioning	• Exclusive purchasing • Territorial sales restrictions • Customer sales restrictions • After-market sales restrictions • Prohibitions of resale

Note: Agreements with hard core restrictions are not a particular type of agreement and any of the above mentioned agreements can contain hard core restrictions.
Source: European Commission (2000a).

Limited distribution agreements confine producer sales to a limited number of distributors. The goal may be to restrict the number of distributors for a particular territory or group of customers or to restrict the kind of distributors. For example, these agreements include selective and exclusive distribution, exclusive customer allocation, exclusive supply, and quantity forcing on the supplier.

Single branding agreements induce buyers to concentrate orders for a particular product with a single supplier. An example is non-compete and quantity forcing on the buyer, where an incentive scheme (e.g. quantity rebates) agreed between a producer and distributor gives the latter incentives to purchase a particular good only or mainly from one producer.

Resale price maintenance agreements control the price level of distributors when they resell the products for example by minimum, fixed, maximum and recommended resale prices. Resale price maintenance is mainly relevant for the distribution of final goods.

Partitioning are vertical agreements restricting the freedom of distributors to source or resell a particular good. This category comprises exclusive purchasing, territorial sales restrictions, customer sales restrictions, after-market sales restrictions, prohibitions of resale and tying.

In 2003-2004, the Commission decided on 31 cases involving vertical agreements. Limited distribution agreements, in particular selective distribution, and resale price maintenance were by far the most common type handled. Fourteen vertical agreements were limited distribution agreements while ten agreements were resale price maintenance agreements, cf.Table App II. 4.

Table App II. 4 Article 81-cases with vertical agreements handled by the European Commission in 2003-2004

Agreements	Number	Cases	Case no.
Limited distribution	14	FA/BSkyB	COMP/38.453
		UEFA	COPM/37.398
		Audi/VW	COMP/38.554
		Sale of sports rights	COMP/37.522
		Philips/Sony CD	COMP/37.228
		AMPs	COMP/38.733
		BP Lubricants	COMP/38.730
		VISA	COMP/37.860
		Gasunie	COMP/38.308
		Gazprom/ENI	COMP/38.662
		NDC/IMS	COMP/38.004
		Yamaha	COMP/37.975
		ENEL/GDF	COMP/36.246
		Coca-Cola	COMP/39.116
Single branding	6	Interbrew	COMP/37.904
		Imax/Euromax	COMP/37.761
		Microsoft/SUN	COMP/37.792
		Telenor/Canal+/Canal Digital	COMP/38.287
		FIA/F1	COMP/37.374
		AMP	COMP/38.733
Resale price maintenance	10	PO/barge transport	COMP/38.653
		Architectes Belges	COMP/38.549
		EPDM	COMP/38.542
		Carbon black	COMP/38.359
		Coca-Cola	COMP/39.116
		Nintendo	COMP/37.980
		O2 Vodaphone	COMP/38.605
		Topps	COMP/37.980
		PO Organic peroxyde	COMP/37.857
		Industrial and medical gasses	COMP/36.700
Partitioning	1	Cannes	COMP/38.772

Source: the website of the Competition Directorate General