

COMMUNICATION FROM THE COMMISSION

Guidelines for national courts on how to estimate the share of overcharge which was passed on to the indirect purchaser

(2019/C 267/07)

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1. INTRODUCTION

1.1. Purpose, scope and structure of these guidelines

- (1) These guidelines intend to provide national courts, judges and other stakeholders in damages actions for infringements of Articles 101 and 102 of the Treaty on the Functioning of the European Union ('TFEU') with practical guidance on how to estimate the passing-on of overcharges. In particular, they set out the economic principles, methods and terminology concerning passing-on *inter alia* by reference to a number of examples. Further, these guidelines are designed to help determine the sources of relevant evidence, whether a disclosure request is proportionate, and assessing the statements of the parties on passing-on and any economic expert opinion that may be presented to the court.
- (2) The legal basis for the guidelines is Article 16 of the Damages Directive⁽¹⁾. They are non-binding and do not alter existing rules under EU law or the laws of the Member States. Accordingly, there is no obligation on a national court to follow them. The guidelines are also without prejudice to the jurisprudence of the Court of Justice of the European Union ('CJEU'). They refer to the harmonised rules set out in the Damages Directive noting that in practice national courts will apply national rules, including those transposing the Damages Directive.
- (3) As a reference source for good practices, the guidelines give indications on the relevant parameters that can be taken into account when dealing with economic evidence relevant for assessing the passing-on of overcharges. They build upon relevant economic studies gathered by the Commission and complement the Practical Guide on quantifying harm in actions for damages based on breaches of Article 101 or 102 TFEU ('Practical Guide')⁽²⁾ accompanying the Communication from the Commission on quantifying antitrust harm in a damages action⁽³⁾. While the Practical Guide focuses on the overcharge, these guidelines specifically address in more detail the passing-on of such overcharges⁽⁴⁾. The Practical Guide and these guidelines should be read together⁽⁵⁾.
- (4) As explained in paragraphs 17-19 below, these guidelines may be useful when an infringer invokes passing-on in its defence against a damages claim ('shield') or when an indirect purchaser claims damages from the infringer alleging passing-on of an overcharge ('sword'). However, as in any damages action, the degree to which the court has to consider the facts of a case will depend on the way the action is brought by the claimant and the nature of the defence raised by the defendant. For example, in some cases a claimant may not claim for loss of profit as a result of the volume effect because of the additional complexity this may involve⁽⁶⁾. However, a claim by an indirect purchaser against an infringer will typically involve consideration of passing-on, since that is essential to the claim.
- (5) Similarly, the manner in which a national court would wish to approach the assessment and estimation of passing-on is likely to be influenced by the nature and size of the claim, the merits of the submission and the availability of data. When assessing the proportionality of an order to disclose information, such a court could take into account the choice of economic method and approach from among the different options explained in the guidelines. What may be appropriate in terms of the scope of data required and cost of expert analysis for a claim of EUR 20 million may not be proportionate for a claim of EUR 200 000.

⁽¹⁾ Directive 2014/104/EU of the European Parliament and of the Council of 26 November 2014 on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and of the European Union (OJ L 349, 5.12.2014, p. 1).

⁽²⁾ Commission, Staff Working Document — Practical Guide on Quantifying Harm in Actions for damages based on breaches of Article 101 or 102 of the Treaty on the Functioning of the European Union, 11.6.2013, SWD(2013) 205.

⁽³⁾ Communication from the Commission on quantifying harm in actions for damages based on breaches of Article 101 or 102 of the Treaty on the Functioning of the European Union (OJ C 167, 13.6.2013, p. 19).

⁽⁴⁾ The Practical Guide only briefly deals with passing-on, namely in its paragraphs 161-171.

⁽⁵⁾ These guidelines focus on passing-on of overcharges in the context of infringements of Article 101 TFEU, in particular cartels within the meaning of Article 2(14) Damages Directive and other horizontal restraints. However, they may also be a reference source for good practices in damages actions before national courts for vertical restraints, e.g. resale price maintenance, and infringements of Article 102 TFEU, i.e. an abuse of dominance, such as excessive pricing, provided the specificities of the applicable EU rules are sufficiently taken into account.

⁽⁶⁾ The volume effect is briefly explained in paragraph 10 below. Chapter 6 describes methods for the quantification and estimation of this effect.

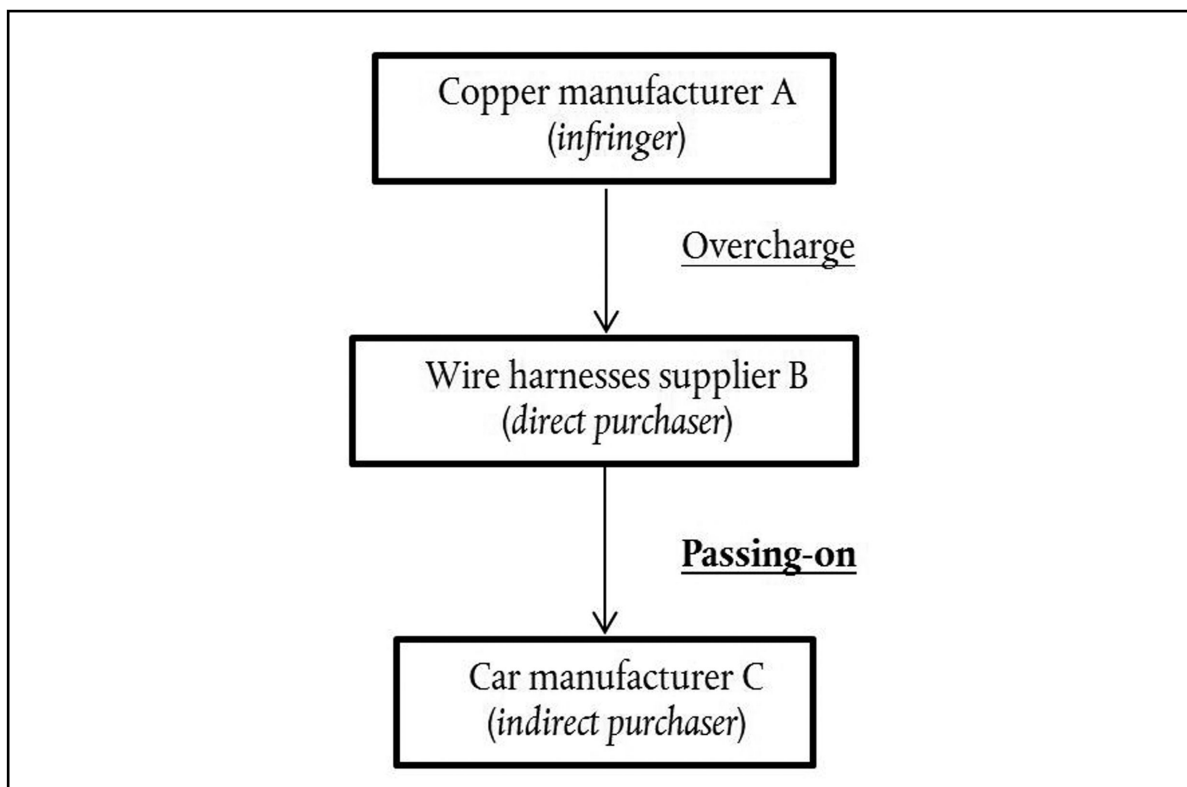
- (6) By reference to legal principles, established jurisprudence and the provisions in the Damages Directive, these guidelines set out the legal context of passing-on. A short legal section summarises the procedural rules and instruments according to which national courts may take into account the passing-on of overcharges in damages actions. The legal context relates to EU law, national law and the respective practice. In this context, judges need to pay particular attention to the principles of effectiveness and equivalence ⁽⁷⁾. Firstly, this means that they must apply national rules in such a way that the application does not render practically impossible or excessively difficult the exercise of the right to full compensation for harm caused by an infringement of EU competition law (principle of effectiveness) ⁽⁸⁾. Secondly, judges must bear in mind that national rules and procedures relating to actions for damages resulting from infringements of Article 101 or 102 TFEU must not be less favourable to the alleged injured parties than those governing similar actions for damages resulting from infringements of national competition law (principle of equivalence).
- (7) The main section of these guidelines deals with the economics of passing-on, namely the economic theory and quantification methods relevant for the purpose of estimating passing-on. The part on the economic theory focuses on the theoretical concepts underlying passing-on and sets out factors that can have an impact on it. In the part on economic quantification, different approaches and methods to quantify the passing-on effects are presented.

1.2. What is passing-on of overcharges?

- (8) The passing-on of overcharges may occur at different levels of the supply chain. It is illustrated in Box 1 below by reference to a hypothetical example. For illustration purposes, and as a starting point for variations to further explain passing-on, the example in Box 1 sets out a relatively simple case of fixed prices for copper and the passing-on of the respective price increase in the automotive industry. In practice, passing-on can occur in even more complex supply chains, the cartelised product or service may constitute an even smaller input and the end product could be affected by more than one anti-competitive practice.

Box 1

Passing-on of a price increase for copper (hypothetical example)



⁽⁷⁾ See Article 4 Damages Directive.

⁽⁸⁾ For the right to full compensation see paragraphs 12 et seq. below.

Undertaking A is a manufacturer of copper and formed a cartel by agreeing with its competitors to fix sales prices for copper in violation of Article 101 TFEU. The agreement allowed A to charge its customers, including undertaking B, higher prices for copper.

The price difference between the price actually paid and the price that would otherwise have prevailed in the absence of the infringement of EU competition law is referred to as the overcharge ⁽⁹⁾.

Undertaking B is a supplier of automotive parts and used the copper it purchased from A to produce wire harnesses which it sold to car manufacturer C. After the cartel-related price increase for copper, B also increased its sales price for the wire harnesses it supplied to C. This behaviour constitutes passing-on of overcharges, in this case from B to C. Based on the definitions in the Damages Directive, A can be referred to as *infringer*, B as *direct purchaser* and C as *indirect purchaser* ⁽¹⁰⁾.

- (9) Again, there are more complicated examples of passing-on. Some of them are referred to in additional boxes below. The purpose of these boxes is to highlight certain aspects of passing-on and how national courts have previously approached estimating the share of overcharge which was passed on to the indirect purchaser.
- (10) When the direct purchaser, fully or partially, passes on the overcharge to the indirect purchaser, the latter will not only face a price effect but in many cases also reduce its demand, so that the direct purchaser sells less. The value of the sale that is lost can be referred to as the volume effect of passing-on. Its legal and economic implications are discussed in more detail below.
- (11) An overcharge may be passed on down an entire supply chain and can concern products or services. For example, following the example in Box 1 above, the car manufacturer C may have similarly increased the prices it charged its customer, the independent car retailer D. Subsequently, D may have also increased its end consumer price for the car in which the cartelised copper can be found. C, D and the end consumers are all indirect purchasers within the meaning of the definition of the Damages Directive ⁽¹¹⁾.

2. THE LEGAL CONTEXT

2.1. Passing-on of overcharges and the right to full compensation

- (12) Both the CJEU jurisprudence and the Damages Directive are important for the assessment of passing-on. Firstly, it is important to recall that according to established CJEU jurisprudence '[a]ny person' is entitled to claim compensation for the harm suffered where there is a causal relationship between that harm and an infringement of Article 101 or 102 TFEU ⁽¹²⁾. In particular Articles 1(1) and 3(1) and (2) of the Damages Directive make clear that any person having suffered harm caused by an infringement of Article 101 or 102 must be able to effectively exercise the right to claim full compensation ⁽¹³⁾. Secondly, the Damages Directive's rules on the passing-on of overcharges are rooted in the compensatory principle, which underlies the entire Damages Directive and must be understood as requiring that a person entitled to claim compensation for the harm suffered must be placed in the position in which that person would have been had the infringement not been committed.

⁽⁹⁾ See Article 2(20) Damages Directive.

⁽¹⁰⁾ See Article 2(2), (23) and (24) Damages Directive.

⁽¹¹⁾ According to Article 2(24) Damages Directive "indirect" purchaser means a natural or legal person who acquired, not directly from an infringer, but from a direct purchaser or a subsequent purchaser, products or services that were the object of an infringement of competition law, or products or services containing them or derived therefrom."

⁽¹²⁾ CJEU, judgment of 14 March 2019, case C-724/17 (*Skanska*) ECLI:EU:C:2019:204, paragraph 26 and CJEU, judgment of 28 March 2019, case C-637/17 (*Cogeco*) ECLI:EU:C:2019:263, paragraph 40, both with references to CJEU, judgment of 5 June 2014, case C-557/12 (*Kone*) ECLI:EU:C:2014:1317, paragraph 22 and the jurisprudence mentioned therein, namely CJEU, judgment of 13 July 2006, case C-295/04 (*Manfredi*) ECLI:EU:C:2006:461, paragraph 61 and CJEU, judgment of 6 November 2012, case C-199/11 (*Otis and Others*) ECLI:EU:C:2012:684, paragraph 43.

⁽¹³⁾ In the absence of EU rules governing the matter, it is for the domestic legal system of each Member State to lay down the detailed rules governing the exercise of the right to claim compensation for the harm resulting from an agreement or practice prohibited under Article 101 TFEU, including those on the application of the concept of 'causal relationship', provided that the principles of equivalence and effectiveness are observed (CJEU, judgment of 5 June 2014, case C-557/12 (*Kone*) ECLI:EU:C:2014:1317, paragraph 24; CJEU, judgment of 13 July 2006, case C-295/04 (*Manfredi*) ECLI:EU:C:2006:461, paragraph 64).

- (13) In the context of the passing-on of overcharges, Article 12(1) of the Damages Directive specifies that ‘any person’ includes direct and indirect purchasers. This means, in the example in Box 1 above, the wire harnesses producer B, as direct purchaser, and the car manufacturer C, as indirect purchaser, may also claim compensation from the copper manufacturer A, as the infringer. Other indirect purchasers further down the supply chain are also entitled to obtain damages from the infringer. As mentioned above in paragraph 11, this would be the independent car retailer D and end consumers in the example in Box 1 above.
- (14) It should be noted that the elements of the compensatory principle, i.e. a person's right to claim full compensation for harm causally linked to an infringement of EU competition law, apply also to direct and indirect *suppliers* of an infringer. The Damages Directive refers to the situation of a buyer's cartel as an example in which harm could result from a lower price paid by infringers to their suppliers ⁽¹⁴⁾.
- (15) Full compensation covers compensation for actual loss (*damnum emergens*) and for loss of profit (*lucrum cessans*), plus the payment of interest ⁽¹⁵⁾. Generally, actual loss refers to a reduction in a person's assets and loss of profit refers to an increase in those assets which would have occurred if the harmful act had not taken place ⁽¹⁶⁾. In the context of passing-on, the distinction plays a particular role with regard to the characteristic economic effects and their legal classification. The general rule is set out below.

— The price effect relates to the overcharge as an increase in the price that a direct or an indirect purchaser had to pay for a product or services due to the infringement of EU competition law ⁽¹⁷⁾. It includes umbrella pricing ⁽¹⁸⁾. The price effect may be reflected in a direct or indirect purchaser's claim for compensation of actual loss. It is the part of the harm which is referred to as overcharge harm in the Damages Directive ⁽¹⁹⁾. However, the direct or indirect purchaser may be able to pass on the overcharge further down the supply chain, either partially or fully. Thus, when national courts estimate the partial or full passing-on of an overcharge in a damages action, they will need to identify the overcharge harm which remains at a given level of the supply chain. Depending on the legal system, the national court may consider such passing-on as a reduction of the actual loss or by reference to other rules or principles, such as *compensatio lucri cum damno* ⁽²⁰⁾.

— The volume effect can be described, more generally, as the harm that is caused by the fact that fewer of the products or services are purchased as a result of the overcharge ⁽²¹⁾. However, the focus of these guidelines is on the volume effect understood as the profit loss due to reduced sales resulting from passing-on. As mentioned in the Damages Directive, it can be recoverable as loss of profit ⁽²²⁾.

⁽¹⁴⁾ See Recital 43 Damages Directive. In the situation of a *buyers' cartel*, the lower price paid by the infringers can be referred to as ‘undercharge’ and there could also be related upstream volume effects. However, it should be noted that suppliers can also be adversely affected in the situation of a *seller's cartel*. This can be the case if they supply less to the infringers because of the volume effect, i.e. a loss of profit due to the reduction in demand at the direct or even indirect purchaser level down the supply chain. The reduction in demand in relation to the cartelised input may also cause a reduction in demand of other inputs. The suppliers of such other inputs may also claim damages, provided they can show a causal link between their harm and the infringement of EU competition law.

⁽¹⁵⁾ See the second sentence of Article 3(2) Damages Directive.

⁽¹⁶⁾ Opinion of Advocate General Capotorti delivered on 12 September 1979 in case 238/78 (*Ireks-Arkady v Council and Commission*) ECLI:EU:C:1979:203, paragraph 9.

⁽¹⁷⁾ Recital 39 Damages Directive.

⁽¹⁸⁾ Umbrella pricing refers to a situation in which ‘undertakings that are not themselves party to a cartel, benefiting from the protection of the cartel's practices (operating “under the cartel's umbrella”, so to speak), knowingly or unknowingly set their own prices higher than they would otherwise have been able to under competitive conditions’, Opinion of Advocate General Kokott delivered on 30 January 2014 in case C-557/12 (*Kone*) ECLI:EU:C:2014:45, paragraph 2.

⁽¹⁹⁾ Article 12(2) Damages Directive.

⁽²⁰⁾ In other words, these guidelines are without prejudice to the consideration of passing-on under national law, provided such law complies with the principle of equivalence and effectiveness, see paragraph 6 above. When they refer to passing-on as a reduction of the actual loss, this includes a consideration of passing-on by reference to other rules and principles, such as *compensatio lucri cum damno*.

⁽²¹⁾ Practical Guide, paragraph 128.

⁽²²⁾ See Article 12(3) Damages Directive.

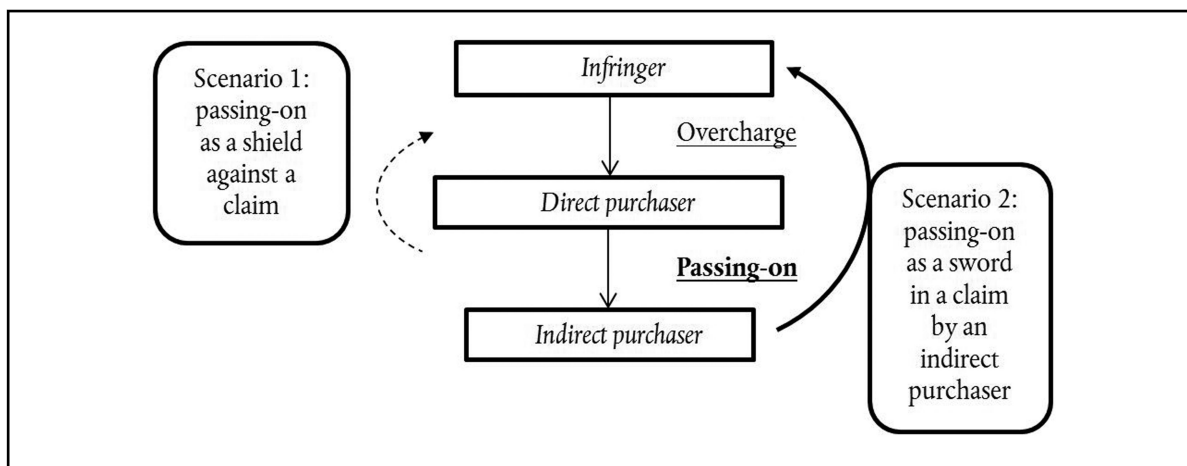
- (16) While, on the basis of the Damages Directive, one may distinguish between actual loss because of the overcharge, on the one hand, and loss of profit due to reduced sales, on the other hand, there is an inherent link between the underlying price effect and volume effect ⁽²³⁾. Therefore, if passing-on becomes relevant, both effects and their interaction should be taken into account. The economic methods to do so are set out further below.

2.2. Scenarios in which national courts may face passing-on issues

- (17) In actions for damages based on EU competition law infringements national courts typically deal with the passing-on of overcharges in two scenarios.
- (18) Firstly, an infringer may invoke the passing-on of overcharges in its defence against damages claims, i.e. arguing that the direct or indirect purchaser has passed on the overcharge, entirely or in part, to its own purchasers ⁽²⁴⁾. This situation, in which passing-on can be described as a shield, is illustrated in Box 2 below by reference to a direct purchaser's claim. It has to be noted that the passing-on defence may also be invoked against claims of indirect purchasers further down the supply chain.
- (19) Secondly, indirect purchasers may base their damages actions on the argument that the direct purchasers of the infringers have passed on (parts of) the overcharge to them and that they have therefore suffered harm. In such a scenario passing-on can be described as a sword. This scenario is also illustrated in Box 2 below.

Box 2

The two typical scenarios of passing-on



- (20) At the outset, it should be noted that Article 17(2) of the Damages Directive establishes the general presumption that cartel infringements cause harm. In addition, Articles 13 and 14 of the Damages Directive include specific rules on the burden of proof in the context of passing-on.
- (21) In the first scenario, i.e. when the passing-on of overcharges is used as a defence against an action based on an infringement of EU competition law, the defendant needs to prove that the claimant has passed on the overcharge ⁽²⁵⁾. This burden of proof relates to the existence and extent of the passing-on of the overcharge. If the passing-on defence is fully or partially successful, Article 12(3) of the Damages Directive requires that, according to national procedural law, taking into account the principle of effectiveness and equivalence, the claimant may still claim compensation for loss of profit ⁽²⁶⁾. In this case, the burden of proving such passing-on related volume effect is on the claimant.

⁽²³⁾ The intuitive link between the price effect and the volume effect is explained in further detail in Annex 1.

⁽²⁴⁾ See Recital 39 Damages Directive.

⁽²⁵⁾ See the second sentence of Article 13 Damages Directive.

⁽²⁶⁾ Article 12(3) Damages Directive stipulates that the rules on passing-on shall be without prejudice to the right of an injured party to claim and obtain compensation for loss of profits due to a full or partial passing-on of the overcharge.

- (22) The Damages Directive also includes rules applicable in the second scenario, i.e. when an indirect purchaser claims that it suffered harm due to the passing-on of overcharges. In this scenario, the burden of proving the existence and scope of such passing-on rests with the indirect purchaser seeking damages from the infringer.
- (23) However, the Damages Directive specifically addresses the difficulties that indirect purchasers face when they seek compensation for the harm resulting from the passing-on of an overcharge⁽²⁷⁾. Firstly, Article 14(1) of the Damages Directive and Recital 41 of the Damages Directive refer to the fact that it can be a commercial practice to pass on price increases down the supply chain. If such a commercial practice has been identified, national courts may rely on *prima facie* proof of passing-on. Building upon this reference, Article 14(2) of the Damages Directive stipulates a rebuttable presumption pursuant to which a claimant (i.e. the indirect purchaser) is deemed to have proved that a passing-on from the direct purchaser to the indirect purchaser occurred, provided that the claimant can show that the following conditions are fulfilled:
- (a) the defendant has committed an infringement of EU competition law⁽²⁸⁾;
 - (b) the infringement of EU competition law has resulted in an overcharge for the direct purchaser of the defendant; and
 - (c) the indirect purchaser has purchased the goods or services that were the object of the infringement of EU competition law, or has purchased goods or services derived from or containing them.
- (24) This presumption does not apply if the infringer can credibly demonstrate to the satisfaction of the court that the overcharge was not, or was not entirely, passed on to the indirect purchaser⁽²⁹⁾.
- (25) As a result of (i) the compensatory principle, (ii) the practice of passing-on of overcharges and (iii) the presumptions, mentioned above, it is possible that there are parallel claims from purchasers at different levels in the supply chain. In such situations, national courts should seek to avoid both over-compensation and under-compensation⁽³⁰⁾. This can be achieved *inter alia* by taking due account, as far as this is possible, of any actions for damages that are related to the same infringement of EU competition law, judgments resulting from such damages actions and relevant information in the public domain resulting from the public enforcement of EU competition law in the case at hand⁽³¹⁾. It is in the interest of the parties to a damages action to make the national court aware of such actions, judgments or information and explain why they are relevant in the case at hand.
- (26) Further, where related actions are pending in the courts of different Member States, national courts may apply Article 30 of Regulation (EU) No 1215/2012 of the European Parliament and of the Council⁽³²⁾ to which the Damages Directive makes reference⁽³³⁾. This article stipulates that national courts other than that first seized may stay proceedings or, under certain circumstances, may decline jurisdiction. The court of a Member State may also use national rules on stays, if they are available under national law.

⁽²⁷⁾ Recital 41 Damages Directive.

⁽²⁸⁾ In particular, the indirect purchaser may show that this first condition is fulfilled by reference to the binding effects that a decision of the Commission or a national competition authority has. As regards decisions of the Commission, Article 16(1) of Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules of competition laid down in Articles 81 and 82 of the Treaty (OJ L 1, 4.1.2003, p. 1) stipulates that national courts, when they rule on agreements, decisions or practices under Article 101 TFEU which are already the subject of a Commission decision, cannot take decisions running counter to the decision adopted by the Commission. As regards final infringement decisions of national competition authorities, purchasers may benefit from Article 9 Damages Directive. This Article differentiates according to which national competition authority has issued the relevant infringement decision. According to Article 9(1) Damages Directive a final decision of the national competition authority of a Member State is deemed to establish irrefutably an infringement of competition law before the courts of that particular Member State whereas Article 9(2) Damages Directive stipulates that national courts are required to consider a final decision of another Member State's national competition authority at least as *prima facie* evidence of the existence of an infringement.

⁽²⁹⁾ See last sentence of Article 14(2) Damages Directive.

⁽³⁰⁾ See Articles 12(1), 12(2) and 15 Damages Directive.

⁽³¹⁾ See Article 15(1) Damages Directive.

⁽³²⁾ Regulation (EU) No 1215/2012 of the European Parliament and of the Council of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (OJ L 351, 20.12.2012, p. 1).

⁽³³⁾ See Recital 44 and Article 15(2) Damages Directive.

- (27) In the interest of consistency between judgments resulting from related proceedings, national courts should also consider and allow for the use of appropriate procedural means that are at their disposal under national law. By way of example, the Damages Directive refers to the joinder of claims⁽³⁴⁾. It also refers to the possibility that a person may acquire the claim of another person⁽³⁵⁾. The goal of such acquisition may be to bring a joint action which may contribute to ensuring consistency between damages actions that are related to the same competition law infringement⁽³⁶⁾.
- (28) Depending on the national legal system, other instruments may be applied, such as collective redress mechanisms, third-party notices or interventions and rules on stays. For example, a direct purchaser may intervene in the damages action of an indirect purchaser against the infringer. In such a case, both the direct purchaser (the intervening party) and the infringer (defendant) may argue that the overcharge was not, or was not entirely, passed on to the indirect purchaser (claimant).
- (29) The availability of such procedural means may also become relevant when a national court rules on the proportionality of a disclosure request. For example, the joinder of a number of smaller claims may increase the total value of the claims pending before a court to an extent that this court considers the amount of data requested for a more costly expert analysis to be proportionate.

2.3. The court's power to estimate passing-on

- (30) Article 12(5) Damages Directive specifically requires Member States to ensure that national courts have the power to estimate, in accordance with national procedures, the share of any overcharge that was passed on. Such power must cover all passing-on effects, i.e. price and volume effect. This also follows from Article 17(1) of the Damages Directive which applies more generally to the quantification of harm.
- (31) When national courts make use of this power to estimate, they must take into account the rules and principles set out in the Damages Directive and the underlying CJEU jurisprudence. This means that even when courts estimate the harm that is causally linked to an infringement of Article 101 or 102 TFEU, this must be done on the basis of the principle of compensation. In other words, the respective award of damages must nevertheless aim at placing the victim in the position in which it would have been absent the infringement (see paragraph 12 above). To this end, national courts must also use their procedural instruments accordingly. In particular, they must apply the applicable rules on the burden and standard of proof so that the full effectiveness of Article 101 TFEU is not put at risk.
- (32) For example, the CJEU held in *Kone* that the victims of umbrella pricing may obtain compensation for the loss caused by an infringement of EU competition law, stating that the full effectiveness of Article 101 TFEU would be put at risk if national law categorically and regardless of the particular circumstances of the case excluded their right to claim compensation for harm suffered. Further, *Kone* highlights that in damages actions for infringements of EU competition law factual and legal questions of causation may arise. Such questions also arise in the context of passing-on⁽³⁷⁾.
- (33) Similarly, when national courts estimate, in accordance with national procedures, the amount of harm and share of any overcharge that was passed on, as foreseen in the Damages Directive, they must observe the abovementioned principles of equivalence and effectiveness. As regards the power to estimate, this means that national courts cannot reject submissions on passing-on merely because a party is unable to precisely quantify the passing-on effects.

⁽³⁴⁾ Recital 44 Damages Directive.

⁽³⁵⁾ See Article 2(4) Damages Directive at the end.

⁽³⁶⁾ See COMMISSION STAFF WORKING PAPER accompanying the WHITE PAPER on Damages actions for breach of the EC antitrust rules, COM(2008) 165 final, paragraphs 223-224.

⁽³⁷⁾ The potential tension between economic and legal causation in the context of passing-on has become apparent in judgments of national courts limiting the use of passing-on as a shield by reference to national law, in particular in the UK (see Competition Appeal Tribunal, judgment of 14 July 2016, [2016] CAT 23 (*Sainsbury's Supermarkets Ltd v MasterCard Inc*), in particular paragraph 484, and the Court of Appeal, judgment of 4 July 2018, [2018] EWCA 1536 (Civ) (*Sainsbury's Supermarkets Ltd v Mastercard Inc*), in particular at paragraphs 332 and 340) and in the Netherlands (*Hoge Raad* (Supreme Court, Netherlands), judgment of 8 July 2016, case 15/00167 (*TenneT v ABB*), paragraphs 4.4.1-4.4.5).

- (34) Furthermore, the power to estimate, as stipulated in Article 12(5) of the Damages Directive and Article 17(1) of the Damages Directive, requires national courts to, firstly, base their assessment on the information reasonably available and, secondly, strive for an approximation of the amount or share of passing-on which is plausible. This follows from the Damages Directive which stresses the existence of information asymmetries and acknowledges that harm can hardly be quantified with perfect accuracy⁽³⁸⁾. The exercise of estimation is subject to national law. In fact, a number of Member States already had rules in place which correspond to the power to estimate, as foreseen in the Damages Directive⁽³⁹⁾.
- (35) In practice, national courts will often have to rely on assumptions, e.g. in relation to hypothetical prices, sales volumes or profit. They may have broad discretion as to both the figures and the statistical data to be chosen and, above all, as to the way in which they are to be used for the calculation and the assessment of damages⁽⁴⁰⁾. Moreover, assumptions are typically important when building a counterfactual for the purpose of quantifying passing-on and volume effects, as described in section 4 below. Due to this importance, it may be advisable to ask that in any type of submission to the court the assumptions are carefully laid out and the sensitivity of predictions to changes to the assumptions are made explicit, as the Directorate-General for Competition of the Commission requires in its 'Best practices for the submission of economic evidence and data collection in cases concerning the application of Article 101 and 102 TFEU and in merger cases' ('Best Practices')⁽⁴¹⁾.

2.4. The role of evidence

- (36) The legal assessment of passing-on typically requires a complex factual and economic analysis. While the taking of necessary evidence generally forms an important element in every action for damages resulting from infringements of Article 101 or 102 TFEU, the role of evidence on passing-on varies depending on the two scenarios mentioned above and the extent to which a presumption applies⁽⁴²⁾. In any case, the facts that are actually relevant and available may determine the taking of evidence and ultimately the assessment of passing-on.
- (37) The type of evidence necessary to show and quantify passing-on will depend on which of the economic methods, described in sections 5 and 6 below, is used. Evidence may be categorised in different ways but it is typically divided into qualitative and quantitative evidence. The Damages Directive itself makes clear that 'evidence' means all types of means of proof admissible before the national court⁽⁴³⁾. This could include the following:
- qualitative evidence to understand a firm's business behaviour or pricing strategies comprising e.g. (i) contracts, (ii) internal documents, (iii) financial and accounting reports, (iv) witness statements, (v) expert opinions as well as (vi) industry reports and market studies; or
 - quantitative evidence relating particularly to data for the use of econometric techniques⁽⁴⁴⁾, such as (i) sales prices, retail and end consumer prices of the product or service in question, and of comparable products or services, (ii) financial reports, (iii) expert opinions (iv) prices set by regulation, (v) volume sales, (vi) rebates as well as (vii) other input costs and cost elements.

⁽³⁸⁾ See Recital 46 Damages Directive. To address such issues the Damages Directive includes *inter alia* rules on disclosure (see paragraphs 40 et seq. below), the possibility to request assistance from national competition authorities in accordance with Article 17(3) Damages Directive and the obligation to take into account other proceedings relating to the same infringement (see paragraph 25 above).

⁽³⁹⁾ E.g., in the UK national courts may quantify harm 'by the exercise of a sound imagination and the practice of the broad axe' (established in *Watson Laidlaw & Co Ltd v Pott Cassels & Williamson* [1914] S.C. (H.L.) 18 at paragraphs 29-30 and later applied also in the context of damages actions for competition law infringements, see e.g. Court of Appeal, judgment of 14 October 2008, [2008] EWCA Civ 1086 (*Devenish Nutrition Ltd v Sanofi-Aventis SA*) at paragraph 110), in the Netherlands the national court awarding damages may quantify the amount of the harm to the extent that this is possible (see Article 612 Wetboek van Burgerlijke Rechtsvordering) and estimate it in the manner that is the best fit for the characteristics of the harm (see Article 6:97 Burgerlijk Wetboek).

⁽⁴⁰⁾ Practical Guide, paragraph 16 and footnote 15 with reference to CJEU, judgment of 27 January 2000, joined cases C-104/89 and C-37/90 (*Mulder and others v Council and Commission*) ECLI:EU:C:2000:38, paragraph 79. The general approach to quantifying harm in competition cases is also set out in paragraphs 11-20 of the Practical Guide.

⁽⁴¹⁾ Available at http://ec.europa.eu/competition/antitrust/legislation/best_practices_submission_en.pdf.

⁽⁴²⁾ See paragraphs 17 et seq. above.

⁽⁴³⁾ See Article 2(13) Damages Directive which explicitly clarifies that 'evidence' includes documents and all other objects containing information, irrespective of the medium on which the information is stored.

⁽⁴⁴⁾ Econometric techniques are explained in section 5 below and in Annex 2.

As can be drawn from the non-exhaustive lists immediately above, certain types of evidence may qualify as both qualitative and quantitative evidence, e.g. financial reports and expert opinions.

- (38) As explained more generally in the Practical Guide, normally, the specificities of the case at hand and the evidence provided are the starting point for establishing if the infringement has in fact harmed the claimant, and, if this is the case, for determining the quantum of that harm ⁽⁴⁵⁾. The relevant evidence may include direct evidence which, at least in the context of passing-on, can be understood as covering documents produced by the direct or indirect purchaser as well as witness statements on whether the overcharge has been passed on. The availability of such evidence may play an important role when a court decides whether any, and if so which, of the methods described below can be used by a party to meet the required standard of proof under the applicable law.
- (39) Further, when it comes to the assessment of passing-on, national courts often face economic expert opinions. Depending on the means available under national law, these opinions may be submitted by party-appointed experts, by an expert that the court itself has appointed for the purpose of assistance, or by both party and court-appointed experts. To the extent possible, the national court may wish to guide any of these economic experts, potentially at an early stage of the proceedings when parties request the disclosure of evidence, and ask more concrete questions in relation to the quantification method to be used and the data needed. Such guidance and questions can be relevant for case management purposes but also for the substantive assessment. In particular, as mentioned above, when national courts estimate passing-on effects they may consider whether an economic expert opinion complies with best practices, e.g. whether it carefully lays out the relevant assumptions and the sensitivity of predictions to changes to these assumptions. In the same vein and again subject to national law, national courts may ask economic experts to address alternative explanations for their findings, ensure replicability and let the parties comment.
- (40) The Damages Directive aims to ensure the effective exercise of rights and equality of arms by stipulating rules to request the disclosure of evidence. Such rules apply in both passing-on scenarios mentioned above. As regards the scenario in which passing-on is used as a defence, Article 13 of the Damages Directive specifically mentions that the defendant may reasonably require disclosure from the claimant or from third parties. In a scenario in which an indirect purchaser seeks compensation, Article 14(1) of the Damages Directive stipulates that this indirect purchaser may reasonably require disclosure from the defendant or third parties.
- (41) These rules of the Damages Directive limit disclosure of evidence in the sense that the party bearing the burden of proving the existence and scope of passing-on may only reasonably require disclosure. In line with the general rules on disclosure stipulated in Article 5 Damages Directive, the national court may require that the requesting party has made a plausible assertion that the overcharge harm has been passed on by the direct purchaser onto the indirect purchaser. The requesting party must also use the facts which are already reasonably available to it. In the context of passing-on, this may include information gathered during the course of business with the other party or information reasonably available from third parties, such as market intelligence providers.
- (42) The first sentence of Article 5(3) of the Damages Directive establishes a general principle of proportionality in the sense that it requires national courts to 'limit the disclosure of evidence to that which is proportionate'. This principle is important for case management in damages actions resulting from infringements of Article 101 or 102 TFEU. As mentioned above, judges apply national procedural rules and must pay particular attention to the principles of effectiveness and equivalence. However, within the scope of these legal rules, national courts may take into account the costs and benefits of ordering the requested disclosure. For example, this means that national courts may come to the conclusion that the evidence presented by the parties already allows them to estimate the share of the overcharge that was passed on instead of gathering further data.

⁽⁴⁵⁾ See also paragraphs 13 et seq. of the Practical Guide.

- (43) Evidence may be requested from the other party or third parties through and under the strict control of the national court. The request must concern specific items or categories of evidence⁽⁴⁶⁾. Provided that the national court considers the general principles of proportionality and the protection of legitimate interests, it may even order the disclosure of evidence containing confidential information to the party bearing the burden of proving passing-on effects. For example, this information may include documents or data on revenues, prices or margins. However, when ordering the disclosure of such evidence, it is crucial for the national court to have measures in place to protect the confidential information⁽⁴⁷⁾. By way of example, the Damages Directive refers to a few measures, such as the possibility of redacting sensitive passages in documents, conducting hearings in camera, restricting the persons allowed to see the evidence, and instructing experts to produce summaries of the information in an aggregated or otherwise non-confidential form⁽⁴⁸⁾. In accordance with national law, national courts may also consider the measures referred to in the Best Practices, such as a data room procedure⁽⁴⁹⁾, and in Article 9(2) of the Trade Secrets Directive⁽⁵⁰⁾.
- (44) Disclosure of evidence included in the file of a competition authority could potentially be relevant for the quantification of the overcharge but is generally less relevant in the context of passing-on (in particular because the passing-on of overcharges deals with the pricing behaviour of the purchasers on which the file of a competition authority typically does not include any information). Further, the public version of the infringement decision may include more general information that can be relevant, such as information on which products or services were subject to the anti-competitive conduct. As Article 6(10) of the Damages Directive provides, disclosure of evidence from a competition authority is only a measure of last resort.
- (45) Finally, as indicated in Article 15(1) of the Damages Directive, actions for damages related to the same infringement of EU competition law and related judgments may also form a source of information relevant for the quantification of passing-on.

3. THE ECONOMIC THEORY OF PASSING-ON

3.1. Overview

- (46) The passing-on of overcharges and the associated price and volume effects arise because of a firm's incentives to respond to increases in its costs by raising prices⁽⁵¹⁾. The initial overcharge may be understood as an increase in the input costs for the direct purchaser. To estimate the passing-on effects, the court would typically need to consider how such a cost increase would affect 1) prices set by the direct purchaser in the downstream market and 2) the value of the lost sales supplied by the direct purchaser.
- (47) National courts estimate passing-on based on the circumstances of the specific case. However, a general understanding of the economic theory of passing-on and the associated effects may be important for the court for several reasons. Firstly, predictions from economic theory may serve as one of several factors relevant for assessing whether the required standard of proof is met in a specific case. For instance, economic theory provides the court with a framework within which quantitative and qualitative evidence could be evaluated⁽⁵²⁾. Secondly, particularly at an early stage of the litigation, economic theory may assist judges when making decisions in relation to the disclosure of data or information by assessing its relevance. Finally, theoretical or conceptual considerations can also form a basis for discerning the credibility and reliability of different economic explanations underpinning the link between overcharge and passing-on put forward by the parties.

⁽⁴⁶⁾ Recital 16 Damages Directive clarifies that a category of evidence should be identified by reference to common features of its constitutive elements such as the nature, object or content of the documents the disclosure of which is requested, the time during which they were drawn up, or other criteria.

⁽⁴⁷⁾ See Article 5(4) Damages Directive.

⁽⁴⁸⁾ Recital 18 Damages Directive.

⁽⁴⁹⁾ See Best Practices, paragraph 45.

⁽⁵⁰⁾ Directive (EU) 2016/943 of the European Parliament and of the Council of 8 June 2016 on the protection of undisclosed know how and business information (trade secrets) against their acquisition, use and disclosure (OJ L 157, 15.6.2016, p. 1).

⁽⁵¹⁾ These incentives are explained in more detail in Annex 1.

⁽⁵²⁾ Such evidence is further explained in section 4.1.

- (48) The Damages Directive does not distinguish between harm resulting from 1) increased prices (price effects) and the passing-on of overcharges including the volume effect and 2) other effects, such as reduced quality of products or hampered innovation (non-price effects) which may arise. These guidelines focus on the passing-on of price increases and the related volume effects ⁽⁵³⁾.
- (49) According to economic theory, the existence and the magnitude of the passing-on effects, i.e. the associated price and volume effects, are determined by a range of factors ⁽⁵⁴⁾. These factors affect the outcome of a passing-on scenario simultaneously, and their interdependency should be taken into account.
- (50) Further, the relative importance of each factor might vary from case to case. Thus, it may be relevant for the judge to understand which factors are likely to affect the degree of passing-on in a particular case. For this, depending on national law, the judge may refer to explanations from the parties' economic experts or its own court-appointed economic expert. Moreover, in practice, a firm may not always take pricing decisions that are entirely consistent with the predictions on the basis of economic theory. It is therefore important to also assess the insights from economic theory in the light of the factual evidence available in the case at hand. Such evidence may be of both qualitative and quantitative nature, such as internal documents describing the degree of passing-on and the quantitative methods explained in section 4 below.
- (51) As set out in further detail in Annex 1, according to economic theory, the most important factors affecting the existence and magnitude of the passing-on effects include:
- (i) the nature of input costs ⁽⁵⁵⁾ subject to an overcharge (whether these costs are fixed or variable, whether the infringement leads to increases of these costs only to one customer or to all or the vast majority of customers on a given market);
 - (ii) the nature of the product demand that the direct or indirect customers face (in particular, the link between the demand and price level);
 - (iii) the strength and intensity of competition in the markets where the direct or indirect customers are active; and
 - (iv) other elements, such as price adjustment costs, the proportion of a firm's costs affected by the overcharge, buyer power, vertical integration of direct and indirect customers, price regulation or the timing of the pricing decisions undertaken at the various levels of the supply chain.
- (52) Firstly, the nature of the input costs subject to an overcharge affects whether and to what extent this overcharge can be passed on. When the overcharge impacts the direct purchaser's costs which do not vary according to the input quantity (i.e. fixed costs), it is less likely to be passed on because such costs typically do not affect the direct purchaser's price setting, at least not in the short run. However, in the long run, fixed costs may affect a firm's strategic decision analysis, too, e.g. the production capacity, which, in turn, might impact the subsequent (short run) price formation mechanism. In such a scenario, fixed costs may also be passed on. By contrast, when the overcharge impacts the direct purchaser's costs which actually vary according to the input quantity (i.e. variable costs), it will generally be more likely to be passed on, at least to some extent. This is because marginal costs (a subcategory of variable costs that can be defined as the cost increment incurred when purchasing one additional input) ⁽⁵⁶⁾ typically affect the direct purchaser's price-setting decisions ⁽⁵⁷⁾.

⁽⁵³⁾ It cannot be excluded, however, that the methods and techniques described in these guidelines may be applied in damages actions concerning other types of harm, i.e. non-price effects.

⁽⁵⁴⁾ The reasons why the factors listed in paragraph 51 might be important in determining the existence and the degree of the passing-on related price effect and the passing-on related volume effect are explained in this section. A more detailed explanation of the impact of each factor is provided in Annex 1, together with an explanation of the standard price formation mechanism.

⁽⁵⁵⁾ This is further explained in Annex 1.

⁽⁵⁶⁾ See paragraph 159 below.

⁽⁵⁷⁾ See also Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (OJ C 31, 5.2.2004, p. 5, paragraph 80). However, it is possible that in certain cases, fixed costs may also be taken into account by an undertaking when determining its prices. If this is the case, it should be demonstrated by the party that supports such a view, for instance by using the methods for estimation explained in section 4.

- (53) Secondly, the product demand that the direct customer faces affects the level of passing-on. A standard price formation mechanism builds on the fact that the demand a firm faces (i.e. the quantity it sells) decreases when it raises its price. The extent to which a direct purchaser raises its own price when facing an overcharge depends on whether the demand reacts strongly to such a price change or not. For instance, if the direct purchaser is a monopolist and the demand that it faces is equally sensitive to a change in prices for all price levels and the direct purchaser is facing constant marginal costs, economic theory suggests that half of the overcharge will be passed on. If the demand the monopolist faces drops 'more and more' (i.e. at an increasing rate) when price increases, it is less likely that the overcharge will be passed on as compared to a situation in which the demand that such a monopolist faces drops 'less and less' (i.e. at a decreasing rate) as the price increases, all else being equal ⁽⁵⁸⁾.
- (54) Thirdly, the nature and intensity of the competitive interaction between the firms on the market on which the direct purchasers are active also affects the level of passing-on. It is important to keep in mind that the effect that increased competition can have on the degree of passing-on depends on whether the initial overcharge affects only the direct customer (i.e. firm-specific overcharge) or also the competitors of the direct customer (i.e. industry-wide overcharge). If the overcharge affects only one direct purchaser, fiercely competing with other direct purchasers, passing-on is less likely compared to a situation where the only affected direct purchaser faces weak competition. However, if there is an industry-wide overcharge, a large number of fiercely competing direct purchasers will generally favour a higher passing-on of that overcharge compared to a situation where there is weaker competition among these direct purchasers ⁽⁵⁹⁾.
- (55) A number of judgments from national courts in damages actions have underlined the importance of considering how demand reacts to changes in prices, the intensity of competition and whether or not the direct purchaser's competitors are affected by the overcharge ⁽⁶⁰⁾.
- (56) Fourthly, as mentioned in paragraph 51 and in Annex 1, other elements may, under certain circumstances, play a crucial role in the direct purchaser's price formation mechanism, and, hence, for passing-on of the overcharge by the direct purchaser. For instance, one element which might be important in order to quantify passing-on is whether the input affected by the overcharge represents a large or small share of the direct purchaser's variable costs. A direct purchaser may face costs when changing its prices, so-called 'price adjustment costs'. If the overcharge only represents a small share of the variable costs, the direct purchaser may not find it profitable to pass on such overcharge due to the price adjustment costs. Further, other aspects that may also affect the degree of passing-on are the degree of buyer power or the timing of the pricing decisions undertaken at the various levels of the supply chain, for instance. Some of the factors mentioned in paragraph 51 have also been considered by national courts in cases involving passing-on ⁽⁶¹⁾.
- (57) The existence and extent of passing-on are linked to the loss of sales that generally will accompany any increase in prices. As described above, this loss of sales may be characterised as the volume effect, which a purchaser may claim for as loss of profit. The volume effect arises because the purchaser usually faces a downward sloping demand curve. If the initial overcharge is passed on down the supply chain, a volume effect will arise at all levels of the vertical chain. Hence, when the claim includes damages for volume effects, courts may have to estimate such an effect as well.

⁽⁵⁸⁾ The importance of the shape of the product demand is further explained in Example 3 in chapter 3.2 and in Annex 1.

⁽⁵⁹⁾ These predictions from economic theory are further illustrated and explained in Example 2 in chapter 3.2.

⁽⁶⁰⁾ For examples of judgments dealing with the importance of market dynamics and how demand reacts to changes in prices, see for instance the German judgments *Bundesgerichtshof* (Federal Court of Justice, Germany), judgment of 28 June 2011, case KZR 75/10 (ORWI) paragraphs 59 and 69 and *Landgericht Düsseldorf* (Regional Court, Düsseldorf), judgment of 19 November 2015, case 14d O 4/14 (*German Car Glass*), paragraph 221. The importance of the degree of competition and whether the initial overcharge is firm-specific or industry-wide is also dealt within a number of judgments from national courts, see for example a Danish judgment, *Sø-og Handelsretten* (Maritime and Commercial High Court, Denmark) judgment of 3 October 2002, case V 15/01 (UfR2004.2600S) (*EKKO v Brandt Group Norden et al*), and a Spanish judgment, *Tribunal Supremo de España* (Supreme Court, Spain), judgment of 7 November 2013, case 5819/2013 (*Nestle et al v Ebro Puleva*).

⁽⁶¹⁾ For an example of a case considering whether passing-on is likely when the input affected by the overcharge represents a small share of the direct purchaser's variable costs, see for instance a French judgment, *Cour d'Appel de Paris* (Court of Appeal, Paris), judgment of 27 February 2014, case 10/18285 (*SNC Doux Aliments Bretagne et al v Société Ajinomoto Eurolysine*), this judgment is also further explained in Box 10 below.

- (58) As mentioned above, any victim of an infringement of EU competition law has the right to seek full compensation for the harm suffered causally linked to the infringement. When passing-on is invoked, an assessment of the volume effect may become important to quantify the overcharge harm in a damages action. In such a case, however, it should be noted that an estimation of the total harm by simply subtracting the passing-on related price effect from the overcharge effect would lead to an underestimation of the harm suffered by the direct or indirect customer if the volume effect is not taken into account.
- (59) The lost volume stemming from an overcharge is influenced by the sensitivity of demand that the purchaser faces and how the purchaser's competitors react to the overcharge. For example, if the purchaser faces an inelastic demand, i.e. its customers are only to a small extent sensitive to increases in price, the price increase leads to a relatively small decrease in the volume sold. This will, everything else being equal, lead to a smaller volume effect than in the case of a more elastic demand. At the same time, if the purchaser's competitors also increase their prices after an overcharge, this might also reduce the impact of the purchaser's own price increase on its sales ⁽⁶²⁾.

3.2. Examples

- (60) The hypothetical examples below intend to illustrate the relevance of the insights from economic theory explained in this section and in Annex 1.
- (61) Example 1 describes firm-specific overcharges in a market with strong competition.

Example 1

Situation: There are 10 producers of apple juice in the same relevant market. One of the producers sources apples from a supplier involved in a price fixing cartel. This apple juice producer claims damages as compensation for an overcharge. However, the defendant (the supplier of apples) raises the passing-on defence and argues that the apple juice producer has passed on the entire overcharge to the indirect purchasers.

Analysis: The apple juice producer facing the overcharge is in strong competition with nine other companies for the production and supply of apple juice. All products sold by the ten companies are rather homogeneous to consumers. In so far as the other producers do not obtain apples from the cartel members, but are able to buy them at a lower price elsewhere, the producer having to buy from the cartel is placed at a competitive disadvantage vis-à-vis its competitors. The apple juice producer's ability to pass on the cost increase would hence be constrained due to the fact that it would lose sale (and profit) to its competitors to a very large extent if it passed on the overcharge, even only partially. The stronger the competition between the 10 apple juice producers, the greater the constraint on the ability to pass on the cost increase. Hence, in this scenario, the direct customer will normally not be able to pass on the increase in cost (the overcharge).

- (62) Example 2 sets out a situation of industry-wide overcharges and the intensity of competition.

Example 2

Situation: All of the 10 producers of apple juice in Example 1 source apples from suppliers involved in a price fixing cartel. The members of the cartel claim that any overcharge is passed on to the indirect purchasers.

Analysis: The producers of apple juice are similarly exposed to the overcharge and the market is characterised as competitive. Since all of the producers are faced with the overcharge, one firm will not have a competitive disadvantage compared to the other firms. It is therefore more likely that each apple juice producer to a large extent will pass on the overcharge, in contrast to the case detailed in Example 1 (where the overcharge is firm-specific). As an illustration, in a perfectly competitive market, the price equals marginal costs and a rise in the cost of an input will therefore directly lead to an equal rise in the price.

⁽⁶²⁾ If only the purchaser increases its price, its customers might switch to buying from the competitors. If, however, the competitors also raise their prices to some extent, the switch might be less attractive for the customers, so the overall sales of the first purchaser might be reduced less. It should be noted though that if some or all customers respond to a market wide price increase by stopping to buy the product altogether, the volume effect might even be larger than in the single purchaser price increase case.

- (63) Example 3 describes the issue of the passing-on rate of monopolists facing different demand.

Example 3

Situation: Apple juice producer A is a monopolist in the market for the production of apple juice in Member State 1, while apple juice producer B is a monopolist in the same product market in Member State 2. The cost of producing one additional batch of apple juice is constant and similar for A and B.

The two apple juice producers sourced apples from C, a supplier involved in a price fixing cartel. As a consequence, both A and B faced an overcharge of EUR 6 per box of apples because they bought apples from C.

A and B faced different demands from the grocery retail chains in each Member State. In Member State 1, demand was equally sensitive to a change in prices for all price levels (the demand was linear, see Box 15). In Member State 2, this was not the case. There, demand dropped 'less and less' (at a decreasing rate) when price increased (the demand was convex, see also Box 15).

A and B claim compensation from C (the member of the cartel) for the harm resulting from the overcharge. C raises the passing-on defence, claiming that A and B have passed on half of the overcharge.

Analysis: The monopolists in Member State 1 and Member State 2 faced different demand from the retail grocery chains in each Member State. Their costs when producing one additional batch of apple juice were constant. The overcharge of EUR 6 per box of apples was considered as an increase in the marginal costs for each of them. Following such a cost increase, the scope to adjust the prices upwards would have depended on how much output each would have had to sacrifice to pass on a certain amount of the cost change, i.e. to have increased prices.

This is because, if the volume lost when increasing prices is relatively low, the price increase will be more attractive compared to the situation where the loss of volume is high. The loss of volume when increasing prices is related to the curvature of the demand that a monopolist faces, i.e. whether the demand is linear, convex or concave. This is also further explained in Box 15 below.

Regarding the monopolist A in Member State 1, on the basis of economic theory it may be possible to argue that the monopolist has passed on half of the overcharge, i.e. EUR 3. However, as the monopolist B faced a convex demand, the remaining demand would have become less price sensitive as the price went up. Compared to A, who faces a linear demand, B would have lost less volume when increasing prices by EUR 3. This implies that B has had an incentive to pass on more than EUR 3.

- (64) Example 4 describes the issue of price adjustment costs and variable vs. fixed costs in the short and long run.

Example 4

Situation: Firms A and B are the only firms owning and leasing out tower cranes in Member State 1. From 2005 to 2015 firms A and B participated in a cartel, agreeing to increase the leasing-price of tower cranes by 80 percent. Firm C is a construction firm operating in cities throughout Member State 1. The company designs, constructs and sells residential apartments in skyscrapers to final customers. The prices of the apartments are advertised in a range of different media and locations, including on the internet, in newspapers and on street-posters. The national competition authority in Member State 1 has found the agreement on prices in the construction sector to be a violation of competition law, and their decision imposing fines on the cartel members was not appealed by firm A or B.

Firm C is a direct customer of the cartel. It claims damages from the cartel members A and B. However, firms A and B have raised the passing-on defence, claiming that firm C has passed on the entire overcharge to the indirect purchasers, i.e. the final customers buying apartments in skyscrapers.

Analysis: Leasing of tower cranes is one of many input costs that firm C faces when designing and constructing skyscrapers. Examples of other input costs are raw materials such as steel and concrete, labour and financial costs. Hence, it is likely that the leasing of tower cranes only constitutes a small portion of the total costs. Since the prices of the apartments are advertised broadly, firm C may incur significant price adjustment costs. However, since the cartel had a duration of 10 years, the price adjustment costs may be negligible compared to the overcharge after a certain period, eventually giving firm C the incentive to take into account the overcharge when setting prices on apartments. Hence, it may be the case that, due to the price adjustment costs, firm C may not have the incentive to pass on the overcharge in the short run. However, the incentive to pass on the overcharge may change during the infringement period. In order to assess the actual passing-on during the relevant period, the court should therefore estimate the passing-on effect based on the evidence available, for instance by using one of the methods set out in section 4.

4. THE QUANTIFICATION OF PASSING-ON AND VOLUME EFFECTS — GENERAL ASPECTS

- (65) Compensation for harm suffered aims at placing the injured party in the position in which it would have been had the infringement not occurred. In order to be able to assess this position, one needs to compare the observed situation, i.e. the situation in which the infringement took place, with a hypothetical situation, i.e. the situation in which the infringement did not take place. This hypothetical situation is referred to as the ‘counterfactual scenario’.
- (66) The purpose of building a counterfactual scenario is to isolate the effect of the infringement from other factors affecting the price of a product or service, which would have affected such a price even if the infringement had not taken place⁽⁶³⁾. For instance, an increase in demand would typically lead to a price increase even absent a cartel. Direct or indirect purchasers should not be compensated for that effect. Hence, when constructing a counterfactual scenario, it is necessary to control for factors that are not related to the infringement⁽⁶⁴⁾.
- (67) As the counterfactual scenario is hypothetical, it cannot be directly observed. As described below, different methods and techniques have been developed in economics and legal practice to establish the counterfactual. These vary in terms of the underlying assumptions and the variety of data needed.
- (68) While these methods seek to construct how the market would have evolved absent the infringement, direct evidence available to the parties and the court (e.g. internal documents describing how the direct purchaser has passed on the initial overcharge in a specific situation) may also provide, under applicable national legal rules, important information for assessing damages in a specific case⁽⁶⁵⁾.
- (69) When dealing with passing-on in a damages action for an infringement of competition law, national courts may have to consider three components that relate to the harm for which a direct or indirect purchaser may claim compensation, namely the overcharge, the passing-on related price effect and the passing-on related volume effect⁽⁶⁶⁾. National courts and economic experts may choose to estimate these three components sequentially, i.e. in a three-step procedure set out below.
- (70) In a first step, the overcharge may be quantified or estimated. A number of different methods can be employed to do this. However, the methods most widely used by parties and courts to estimate the initial overcharge are the so-called comparator-based methods. The different methods for estimating the overcharge are considered in detail in the Practical Guide.

⁽⁶³⁾ It should be noted that the need to construct a counterfactual when assessing passing-on is in line with the jurisprudence of the CJEU on passing-on in the context of reimbursement of unlawful levies and custom duties charged by Member States, see CJEU, judgment of 4 October 1979, case C-238/78 (*Ireks-Arkady v Council and Commission*) ECLI:EU:C:1979:226, paragraph 14; CJEU, judgment of 21 December 2000, case C-441/98 (*Michailidis*) ECLI:EU:C:2000:479, paragraphs 33 et seq.; CJEU, judgment of 6 September 2011, case C-398/09 (*Lady & Kid and Others*) ECLI:EU:C:2011:540. Further, in the Opinion of Advocate General Geelhoed delivered 3 June 2003 in case C-129/00 (*Commission v Italian Republic*) ECLI:EU:C:2003:319, paragraph 78, the Advocate General pointed to the fact that a counterfactual would be required to show what would have occurred to prices in the downstream market in the absence of the initial overcharge.

⁽⁶⁴⁾ See the related discussion in paragraph 77.

⁽⁶⁵⁾ See also the Practical Guide, paragraphs 14 and 30.

⁽⁶⁶⁾ See Box 16 in Annex 1.

- (71) A second step involves estimating the magnitude of the passing-on related price effect. The extent of this effect may be estimated directly by employing the comparator-based methods, i.e. similar methods as when quantifying the overcharge. If certain assumptions are fulfilled, the extent of this effect may also be estimated indirectly by obtaining an estimate of the rate at which the increase in the affected input cost should have been passed on and combining this estimate with information on the overcharge and sales. Sections 5.1 to 5.2 provide an overview of different approaches for the quantification of these effects.
- (72) In a third step the passing-on related volume effect is estimated. Similar to the estimation of the passing-on related price effect, the volume effect may be estimated directly or indirectly. Different approaches for quantifying these effects are considered in Sections 6.2 and 6.3.
- (73) Other approaches, such as a simulation approach, accounting simultaneously for passing-on related price and volume effects, may also be used to quantify the harm in damages actions before national courts for the infringement of EU competition law. The simulation approach is briefly explained in section 5.2.

4.1. Data and information needed when quantifying the passing-on effects

- (74) As explained in section 2.2, the Damages Directive includes rules governing the disclosure of evidence. Data and information in the hands of the parties or third parties are important factors in order to carry out a sound economic analysis of the passing-on effects. Hence, a useful first step when quantifying the passing-on related price effect may be to identify the need for and the availability of data for building the counterfactual.
- (75) When deciding which type of data and information is relevant in a specific case, it may be helpful for the judge to take into account the general insights from economic theory explained in section 3. These insights may also be relevant if the judge needs to assess conflicting views of economic experts⁽⁶⁷⁾. Furthermore, the type of data needed for estimating the passing-on will usually require good knowledge of the industry in question and the prevailing market characteristics in the case at hand. Therefore, it may be useful to initially consider documents which indicate the plausibility of passing-on in the first place, such as existing court decisions, parallel civil proceedings at the same or a different level of the supply chain in the same market, market studies or decisions from competition authorities describing the relevant market dynamics⁽⁶⁸⁾.
- (76) The court may have to consider evidence of both qualitative and quantitative nature⁽⁶⁹⁾. Qualitative evidence, such as internal documents on pricing, strategy, contracts and financial reporting, may be analysed in the context of economic theory. They may also give information on whether there is evidence of a link between the downstream pricing and the upstream overcharge that results from the infringement.
- (77) However, in order to construct a counterfactual and control for different factors affecting passing-on, quantitative evidence may also be useful in many cases. Such evidence may include data on actual prices, costs or margins as well as external indicators which would influence pricing decisions of firms, e.g. aggregated measures of economic activity (such as GDP growth, inflation and employment rates). In some cases, regional variables of economic activity might be useful to control for different regional tendencies which are not related to the infringement.
- (78) The court may also take into account more industry or firm-specific factors influencing the price formation. For instance, in the example in Box 1 above, if plastic had also been an essential input for the production of wire harness during the infringement period when copper manufacturer A had agreed with its competitors to fix prices for copper as the other essential input for the wire harness supplier B, it is likely that B would have passed on to its customer also an increase in prices for plastic which was not subject to an infringement of EU competition law. In this case, an estimation of passing-on which fails to take into account the effects related to the increase in prices for plastic could materially overestimate the passing-on of the overcharge by wrongly attributing the entire price increase to the infringement. Similar reasoning applies to potential decreases in other input costs which, if not accounted for and passed on down the supply chain, would artificially decrease the estimated passing-on of the cartel overcharge.

⁽⁶⁷⁾ See paragraph 39 above.

⁽⁶⁸⁾ See paragraph 25 above.

⁽⁶⁹⁾ See paragraph 37 above and the examples in Box 9 and Box 10 below.

- (79) In the examples that follow, the application of the methods focuses on the price. Depending on the availability of data and the circumstances of a given case, the court may also consider the same methods to estimate other economic variables, such as profit margins or the level of costs of an undertaking. The data used to compare the affected market with the counterfactual may relate to the entire market (e.g. the average of the price of wire harnesses for all customers in other product markets or geographic markets) or to certain customers or customer groups.

4.2. The use of economic experts

- (80) In many cases where passing-on of overcharges is assessed, economic experts may be involved in damages actions before national courts. The rules on expert evidence vary significantly between the Member States ⁽⁷⁰⁾. In any case, national courts may find it helpful to have guidance on general principles and tools relevant for the involvement of economic experts.
- (81) Early in the proceedings, the court may, if the national legislation allows it, facilitate a discussion between experts representing the parties involved. Such discussions may aim at narrowing down areas of agreement and disagreement on issues relevant to the case, including issues related to disclosure requirements. An example of such an approach is provided in Box 3 below.

Box 3

Example of a case involving evidence provided by economic experts ⁽⁷¹⁾

In a case before a UK court, economic experts representing each side (the infringer and the claimant) had proposed their own distinct method for estimating passing-on. The judge expressed concerns about the potential complexity of the expert evidence and requested the parties' experts' to reach an agreement on the proposed approach to economic evidence on passing-on before any disclosure was ordered. If the experts failed to reach an agreement on the approach, the judge would hear submissions on the respective approaches, including an explanation of what each expert proposed, the information required and the cost of the exercise, and then decide which method should be applied.

- (82) In some jurisdictions national courts may appoint economic experts who assist the judge when estimating passing-on and they have traditionally taken this approach to estimate the initial overcharge. The court may employ a similar approach when estimating passing-on, e.g. by using the so-called comparator-based methods. The experience from using court-appointed experts when estimating the overcharge may, therefore, also be relevant for the estimation of passing-on. An example of an approach where the court has appointed an economic expert is provided in Box 4 below.

Box 4

Example of a case in which the court appoints an economic expert ⁽⁷²⁾

In a case before a German court, an economic expert was appointed by the court. The expert's task was to propose a methodology and subsequently quantify the overcharge. As a first step, the expert proposed an empirical method for estimation of the overcharges. The approach suggested by the expert was discussed in written format and in oral hearings before the court decided on which approach to take.

In the next step, the chosen method was applied and overcharges were calculated. The underlying data used for the calculations was submitted to the court and to the parties.

The third step was a robustness check according to which the parties were given the opportunity to give comments and ask questions. These comments were taken into account in a final assessment delivered to the court. The final assessment also considered the plausibility of the estimated results, the robustness of the estimated effects and the quality of the underlying data.

⁽⁷⁰⁾ For instance, courts in France, the Netherlands and the United Kingdom to a large extent deal directly with economic experts appointed by the parties. In other Member States, such as Belgium, Denmark, Germany, Hungary and Italy, courts have in many cases sought to seek advice from court-appointed experts. There are also variations in national legislation with regard to whom the expert owes a duty. In some Member States, such as the United Kingdom and Ireland, the expert owes a duty to the court, even if their fees are paid by the parties. In Spain, experts appointed by the parties have a duty of objectiveness and independence, while in some Member States, such as Germany and Italy, there is no such explicit requirement.

⁽⁷¹⁾ *High Court of Justice of England and Wales*, judgment of 4 October 2017, [2017] EWHC 2420 (Ch) (*Emerald Supplies v British Airways Plc*).

⁽⁷²⁾ *Oberlandesgericht Düsseldorf* (Higher Regional Court, Düsseldorf), judgment of 26 June 2009, case VI-2a Kart 2 — 06/08 (*Zement*).

- (83) In a case in which the economic experts representing the parties have conflicting views on which approach to employ in order to estimate passing-on, the national court may also seek advice from the national competition authority on which method to employ ⁽⁷³⁾. Moreover, to assess the degree of passing-on, a national court may in principle also rely on information included in a decision issued by a competition authority, e.g. regarding the initial overcharge ⁽⁷⁴⁾.

5. THE QUANTIFICATION AND ESTIMATION OF PASSING-ON RELATED PRICE EFFECTS

- (84) When estimating the passing-on related price effect national courts may rely on different types of economic approaches to quantification, particularly the comparator-based approaches, but also the passing-on rate approach ⁽⁷⁵⁾ or the simulation approach. These approaches, as described in this chapter, build on quantitative data to estimate the passing-on effect. In many cases, the court may find it useful to also assess qualitative evidence, such as internal documents or oral evidence from witnesses, when estimating the passing-on effect. The availability of such qualitative evidence may play an important role when deciding whether any, and if so which, of the techniques can be used by a party to meet the required standard of proof under the applicable law ⁽⁷⁶⁾.

5.1. Comparator-based methods

- (85) The passing-on related price effect at various stages in the supply chain may be computed by estimating directly the increase in prices or change in margins that has resulted from the impact of the initial overcharge. When assessing whether an overcharge is passed on from the direct purchaser, this method compares the price set by the direct purchaser during the infringement period with the price set in the comparator market(s).
- (86) When estimating the passing-on related price effect, the court may estimate the differences between the observed and the counterfactual prices or margins ⁽⁷⁷⁾ using the same comparator-based methods as used to compute the initial overcharge. While the underlying concept of these methods are described in detail in the Practical Guide, further guidance on the implementation of such methods in the context of passing-on is provided in the sections below.
- (87) Comparator-based methods have the advantage that they use real-life data observed on the same or a similar market ⁽⁷⁸⁾. They rely on the fact that the comparator scenario can be considered representative of the non-infringement scenario. These methods have also been recognised and employed by competition authorities in Europe in order to undertake analyses of similar character as the estimation of passing-on, e.g. when performing ex-post evaluation of competition policy ⁽⁷⁹⁾.
- (88) When employing the comparator-based method, one would ideally compare the price or margin during the infringement period with the exact same market absent the infringement. However, it is naturally not possible to know exactly how a market would have evolved in the absence of an infringement. For instance, it may be the case that important factors affecting the prices set by the direct purchaser, such as changes in demand or prices of other inputs, will not have a similar impact on prices during the infringement period and in the counterfactual scenario.

⁽⁷³⁾ It follows from Article 17(3) Damages Directive that a national competition authority may, upon request of a national court, assist that national court with respect to the determination of the quantum of damages where that national competition authority considers such assistance to be appropriate.

⁽⁷⁴⁾ See e.g. *Oberlandesgericht Düsseldorf* (Higher Regional Court, Düsseldorf), judgment of 15 April 2013, case VI-4 Kart 2 — 6/10 (OWi), and subsequently the *Bundesgerichtshof* (Federal Court of Justice, Germany), judgment of 9 October 2018, case KRB 51/16 (*Flüssiggas I*) on *Bundeskartellamt* (German national competition authority) decisions of 14.12.2007, 26.2.2008, 12.2.2009 and 9.4.2009, case B11-20/50 (*Flüssiggas*) in which the *Bundeskartellamt* took into account the additional revenues gained through the infringement (*kartellbedingter Mehrerlös*) and the discussions on different methods to calculate the overcharge.

⁽⁷⁵⁾ The passing-on rate approach relies *inter alia* on the assumption that changes in input costs are passed on at an identical rate irrespective of the relevance of the input costs and the extent of the change in such input costs. This assumption may go too far. As further explained below in paragraphs 120 et seq., the passing-on rate approach should normally only be considered if the assumption is plausible based on the facts of the case.

⁽⁷⁶⁾ See also the Practical Guide, paragraph 14.

⁽⁷⁷⁾ The approach using margin data is explained in more detail in the section 6.3 on the estimation of the volume effect below.

⁽⁷⁸⁾ This fact is emphasised in the Practical Guide, paragraph 37 and the jurisprudence on the estimation of overcharges cited there. A German court, also in the context of the estimation of overcharges, holds the view that comparable methods can be preferable compared to other approaches, see *Oberlandesgericht Düsseldorf* (Higher Regional Court, Düsseldorf), judgment of 26 June 2009, case VI-2a Kart 2 — 06/08 (*Zement*), paragraphs 469 et seq.

⁽⁷⁹⁾ See for instance 'Reference guide on ex-post evaluation of competition agencies' enforcement decisions', OECD 2016.

- (89) These factors are crucial to have in mind when considering whether a given comparator market is suitable as the counterfactual scenario. As further explained in section 5.1.1, various techniques are available to account for differences between the market affected by the infringement and the comparator markets. Whether the level of similarity between the market on which the infringement took place and the comparator markets is considered to be sufficient in order for the results of such comparison to be used to estimate passing-on depends on the national legal systems ⁽⁸⁰⁾.

5.1.1. Approaches

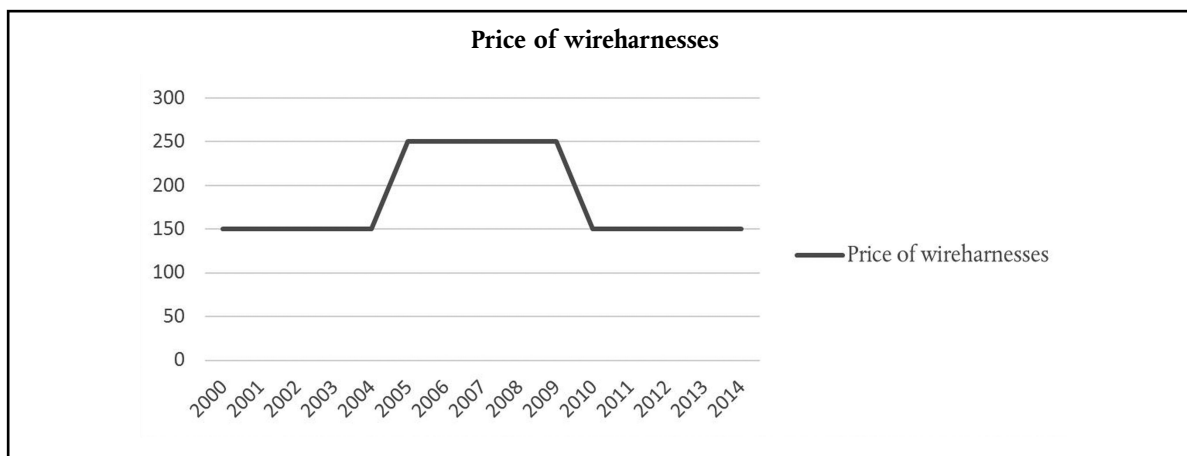
- (90) When the comparator-based method is used to estimate the passing-on effect, the price set by the direct or indirect purchaser during the infringement period is compared to the non-infringement, or counterfactual, scenario. The counterfactual scenario can be established on the basis of ⁽⁸¹⁾:
- price or margin data concerning this market before and/or after the infringement, usually referred to as the before-during-after approach;
 - data concerning the same (product) market but in a different geographical area, or another product market that is considered to evolve in a similar manner to the market where the direct or indirect purchaser operates, usually referred to as the cross-sectional approach; or
 - a combination of comparisons over time and comparisons across markets, usually referred to as the difference-in-differences approach.

5.1.1.1. The before-during-after approach

- (91) An approach frequently used when estimating initial overcharges is to compare prices over time on the same market, i.e. before-during-after comparison (illustrated in Box 5 below) ⁽⁸²⁾. When applying this approach to estimate passing-on, the comparator market is the exact same product market as the market on which the direct or indirect purchaser was active when the infringement took place, but analysed at different points in time. Hence, the underlying assumption is that the product market in question in the non-infringement period provides a good approximation of the counterfactual, i.e. the situation that would have prevailed on the product market if no infringement had happened during the period of infringement. This assumption may be wrong because, in a practical sense, there is no comparator market irrespective of geography or product to account for an additional element of isolation in relation to the effect stemming from the infringement.

Box 5

Illustrated example of a before-during-after approach ⁽⁸³⁾



⁽⁸⁰⁾ The Practical Guide deals with this issue in the context of assessment of overcharges, see for example paragraphs 37 and 59-95.

⁽⁸¹⁾ If for a counterfactual scenario comparator markets in foreign countries are taken into consideration, the national court should also keep in mind possible differences in legislation. This is particularly important when dealing with regulated markets, e.g. pharmaceuticals or energy.

⁽⁸²⁾ See Practical Guide, paragraphs 38-48.

⁽⁸³⁾ For the sake of simplicity, this graph only illustrates the effect on price stemming from the infringement. In a real-world scenario prices will also be affected by other factors than the passing-on rate, such as inflation and other cost shocks.

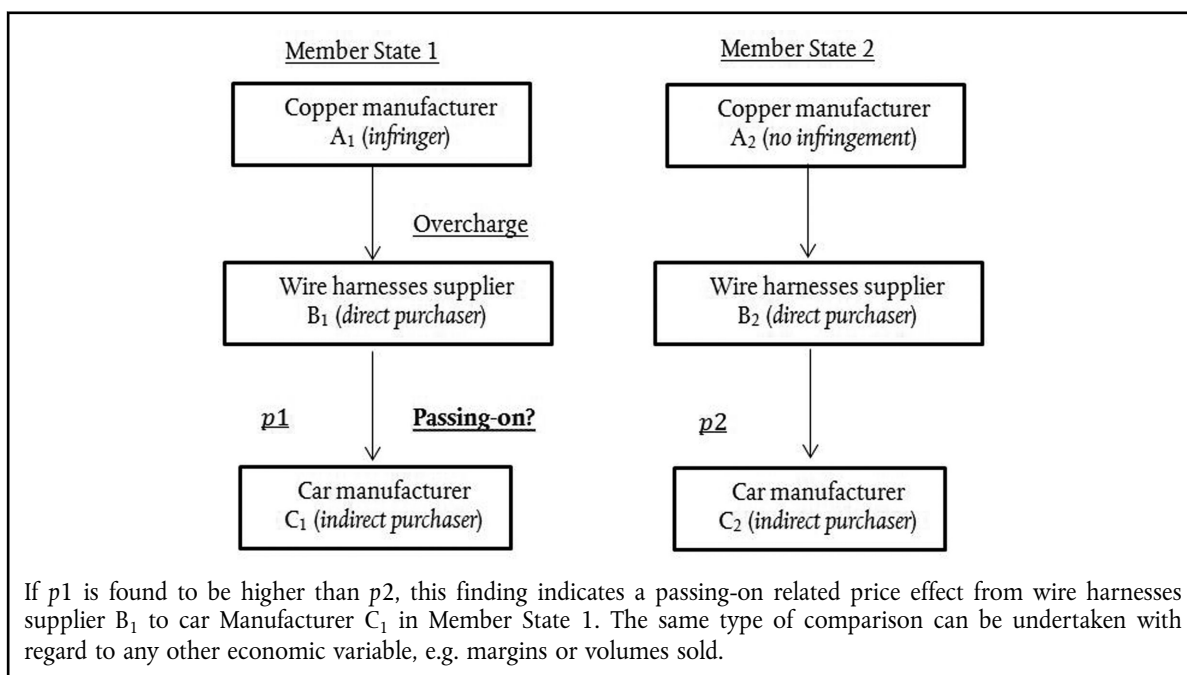
- (92) In the example illustrated in Box 5 above, it is assumed that the illegal price fixing in the copper-industry had a duration of five years from 2005 to 2010. In this period ⁽⁸⁴⁾ the initial overcharge was passed on to the car manufacturer C. When applying this method the price paid by the car manufacturer during the infringement period is compared to the price paid by the car manufacturer in a period not affected by the infringement and the passing-on, e.g. in 2003 and 2004. An example of a case where a claimant applied this approach is given in Box 8 below.

5.1.1.2. The cross-sectional approach

- (93) In some cases, it may be challenging to observe price developments over time in the comparator or infringement markets. If this is the case, another comparator-based method could be employed, namely a method which compares different geographical markets. The underlying assumption of this approach is that the other geographical market is similar to the infringement market in all aspects but for the infringement event. Again, this assumption may go too far.
- (94) For example, as shown in Box 6 below, a national court may consider the comparison of prices paid by the car manufacturer C₁ during the infringement period in Member State 1 (p1), with the average price paid by similar car manufacturers in Member State 2, i.e. on a separate geographical market which is unaffected by the infringement (p2). This method is referred to as cross-market comparison ⁽⁸⁵⁾.

Box 6

Illustrated example of a cross-sectional approach



5.1.1.3. The difference-in-differences approach

- (95) From an economic point of view, the most accurate method of the comparator-based methods is the one that combines the before-during-after approach and the cross-sectional approach. This method is the difference-in-differences approach ⁽⁸⁶⁾. It focuses on the development of the relevant economic variable in the market affected by the passing-on during a certain period (difference over time in the passing-on market) and compares it to the development of the same variable during the same time period in an unaffected comparator market (for instance in another geographical market).

⁽⁸⁴⁾ Note however that the issue of delayed passing-on, mentioned in Annex 1, may be of importance when comparing prices during the infringement with price before and after.

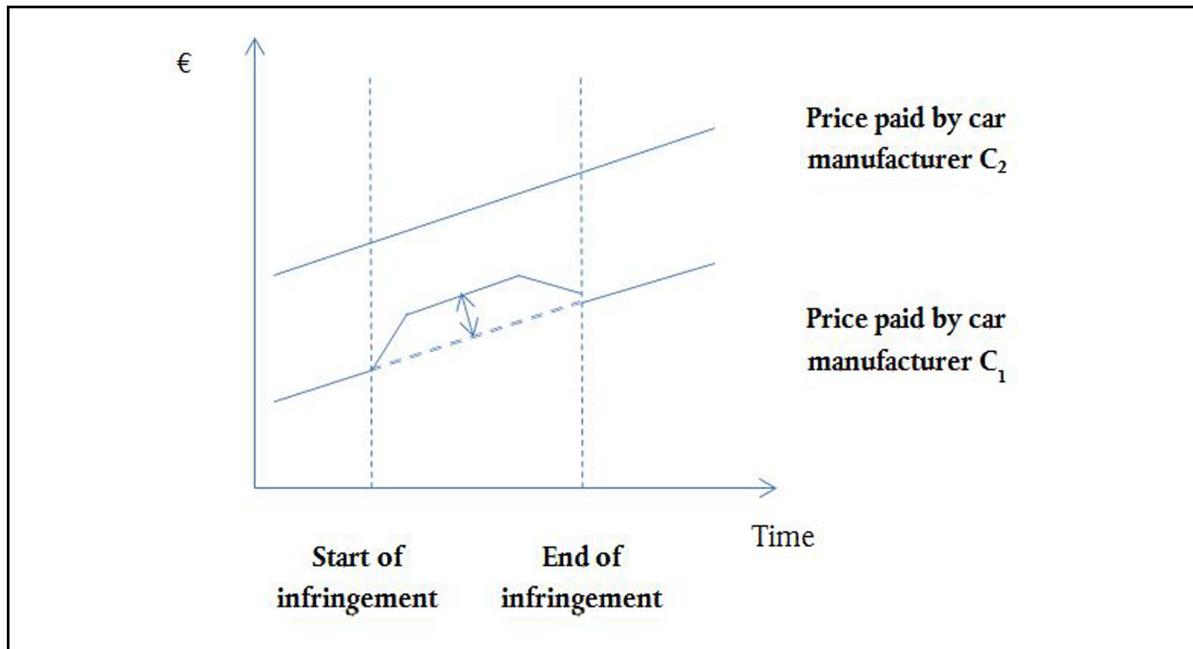
⁽⁸⁵⁾ This method has been employed frequently to assess the initial overcharge in actions for damages, see for instance the cases cited in footnote 45 of the Practical Guide.

⁽⁸⁶⁾ See also paragraph 112 below.

- (96) Box 7 illustrates the difference-in-differences approach.

Box 7

Illustration of the difference-in-differences approach



- (97) Assuming, in a case on which Box 5 and Box 6 are based, car manufacturer C_1 in Member State 1 (the indirect purchaser) claims damages from the copper manufacturer A_1 (the infringer). As explained in paragraph 8, any harm that C_1 suffers stems from the passing-on of overcharges from the wire harnesses supplier B_1 . Using a difference-in-differences approach would involve an assessment of the development of the price paid by the car manufacturer C_1 in Member State 1 (the market with a passing-on related price effect) during a certain period, and comparing it to the development of the price paid by the car manufacturer C_2 in Member State 2 (unaffected by the infringement and hence with no passing-on related price effects) in the same time period. The comparison shows the difference between these two differences over time. This provides an estimate of the change in the price paid by the car manufacturer, excluding all those factors that affected the markets both in Member State 1 and Member State 2 in the same way. Hence, the method isolates the passing-on related price effect from other influences on the price of wire harnesses common to both markets.
- (98) Another variation of the case, which Box 6 and Box 7 are based on, may illustrate the method. Assuming that a before-during-after comparison reveals an increase in the unit price of wire harnesses of EUR 100 in the Member State 1 (where the infringement and passing-on occurred) between 2005 and 2010. An analysis of the unaffected market in Member State 2 over the same period may show that the unit price of wire harnesses has increased by only EUR 10, due to an increase in another input cost, e.g. plastic. Assuming that the higher input cost (of plastic) also concerned Member State 1, and provided that all other conditions are the same, a comparison of the different development of prices on wire harnesses in Member States 1 and 2 would indicate the price increase caused by the passing-on effect. In the example, this would be EUR 90.
- (99) Therefore, a significant strength of the difference-in-differences approach is that it can filter out changes unrelated to the passing-on related price effect that occurred during the same period as the passing-on. However, it rests on the assumption that other factors, in the example above the price of plastic, affect the markets similarly. If this is not the case, an econometric implementation of the difference-in-differences technique may be necessary. Implementations of such techniques are described in more detail in section 5.1.2 below.

5.1.2. Implementing comparator-based approaches in practice

- (100) Various techniques are available for estimating passing-on related price effects based on the comparator-approach. Certain factors, such as an increase in the raw material costs in the example above, may influence only the comparator market or only the market affected by the passing-on. As explained above, adjustments should be made to the observed data in order to account for such influences. These could be simple adjustments to the data in cases where the influencing factor and the magnitude of its effects can relatively easily be accounted for.
- (101) In certain cases, when the availability and quality of the data permit, adjustments of comparator data can be made on the basis of econometric techniques, in particular through the use of regression analysis. Regression analysis is a statistical technique which helps to analyse patterns in the relationship between economic variables.
- (102) In a regression analysis, a number of data observations for the variable under consideration and the likely influencing variables are examined. The relationship identified is usually expressed in the form of an equation. This equation makes it possible to estimate the effects of influencing variables on the variable under consideration and to isolate them from the effects of the infringement. Based on a regression analysis, it is possible to estimate how closely the relevant variables are correlated with each other, which may in some instances be suggestive of a causal influence of one variable on the other⁽⁸⁷⁾.
- (103) The different techniques available for adjustments of comparator data are described in more detail in the Practical Guide⁽⁸⁸⁾. By reference to examples and illustrations, the Practical Guide provides guidance on the concepts, approaches and conditions for the application of the different techniques. It should serve as the basis for dealing with issues regarding the approaches available to implement the comparator-based methods.
- (104) The court should be aware that the use of regression analyses can increase the degree of accuracy of a damages estimate and may thus help in meeting the required standard of proof⁽⁸⁹⁾. National courts have dealt with the probative value of statistical evidence, such as regression analyses, in cases where damages have been awarded⁽⁹⁰⁾.
- (105) In general, the probative value of statistical evidence depends on its ability to avoid the risk of so-called type 1 errors, i.e. finding a passing-on effect when none actually exists, and so-called type 2 errors, i.e. failing to find a passing-on effect where there actually is one. In order to deal with these risks, a statistical model may apply the concepts of statistical significance and statistical power. The concept of statistical significance involves setting a high bar for a passing-on effect to be considered existing. An approach widely used is to set a five percent risk for a type 1 error, using a so-called 95 percent confidence interval⁽⁹¹⁾. However, regression models may also reduce the risk of type 2 errors⁽⁹²⁾. In a specific case where passing-on is estimated, it is for the court to decide whether a regression-model, that has been presented to it, avoids the risks of type 1 and type 2 errors to such an extent that the model has probative value.
- (106) The potential importance of adjusting the comparator data by using quantitative techniques such as regression analyses can be exemplified by reference to a judgment from a German court, illustrated in Box 8.

Box 8

The German car glass case⁽⁹³⁾

The claimant in this damages action was an indirect purchaser from the members of a car glass cartel. The members of the cartel infringed Article 101 TFEU and were fined by the European Commission in 2008.

The claimants' experts carried out an analysis of the price developments before, during and after the cartel period. No regression or correlation analyses were run, rather, the experts aimed at establishing a link between the price of car glass (the cartelised product) and replacement car glass purely by observing the price patterns.

⁽⁸⁷⁾ Regression analyses are explained in detail in the Practical Guide, paragraphs 69 et seq.

⁽⁸⁸⁾ Ibid, chapter II B.

⁽⁸⁹⁾ See also the Practical Guide, paragraph 92.

⁽⁹⁰⁾ See for instance a case from the UK: High Court of Justice of England and Wales, judgment of 9 October 2018, [2018] EWHC 2616 (Ch) (*Britned v ABB*), permission to appeal given.

⁽⁹¹⁾ The use of confidence intervals when estimating damages is also explained in the Practical Guide, paragraphs 86 et seq.

⁽⁹²⁾ There is a certain trade-off between the two error types in the following sense; for a given data sample size, further reducing the risk of type 1 errors (e.g., using a tighter, 99 percent confidence interval instead of the 95 percent interval) generally increases the risk of type 2 errors. In general, limiting both types of errors is only possible through increasing the sample size. Hence, in practice, it is important to assess whether the methods are applied on a sufficiently large dataset.

⁽⁹³⁾ *Landgericht Düsseldorf* (Regional Court, Düsseldorf), judgment of 19 November 2015, case 14d O 4/14 (*German Car Glass*).

The court however considered that this analysis failed to show any sufficiently direct causal link between the pricing of the two products mentioned above. This was particularly because of the data used in the claimants' expert analysis and the fact that it did not take due account of other effects on prices as well as market trends. The court also took into account the market conditions in the case at hand to dismiss the passing-on arguments.

- (107) However, techniques based on econometric analyses may in certain cases entail considerable costs. In such cases, the court may find it sufficient to estimate the passing-on by simultaneously assessing quantitative data without the use of regression analysis and by taking into consideration qualitative evidence. Moreover, the court may in most cases also find it useful to assess qualitative evidence, such as direct evidence on passing-on, also when employing the quantitative methods described in this section.
- (108) When estimating passing-on based on qualitative evidence, internal documents describing a firm's pricing policy may be of particular relevance. When assessing internal documents, the court should be aware of the fact that firms in different industries, or even within the same industry, may adopt different pricing policies. In some cases, a firm may have a clear policy or established practice which identifies the price adjustments that will result from specific changes in cost. For example, in some cases purchasers may link price adjustments to changes in certain indices which may not be affected by the infringers' anti-competitive conduct, e.g. consumer price indices. In other cases, purchasers may seek to achieve certain performance objectives, e.g. apply a specific margin to the pricing of the products they supply. In principle, the former policy may speak against the finding of passing-on whereas the latter suggests that the purchaser would pass on cost changes.
- (109) Moreover, when assessing pricing policies, the court should also take into account whether the pricing policy of the relevant firm has actually been implemented, e.g. by considering price data to determine whether these correspond to the pricing policy in question.
- (110) Examples of cases in which national courts have taken into consideration qualitative evidence are given below.

Box 9

Estimating passing-on based on qualitative evidence — *Cheminova* (2015) ⁽⁹⁴⁾

In this judgment, the court found that a producer of pesticide had passed on 50 percent of the initial overcharge to the indirect customers. This finding was based on economic theory. In this case, the court could rely on publicly available market studies characterising the market on which the direct customer was active as a monopoly market. In a report provided by the direct customer, it was argued that the market should in fact be characterised as competitive rather than a monopoly. The direct customer *inter alia* submitted that a large number of products were competing on the market and that moderate market shares indicated a competitive market. However, due to the facts of the specific case, the court disagreed with this approach.

Box 10

Estimating passing-on based on qualitative evidence — *DOUX Aliments* (2014) ⁽⁹⁵⁾

In this judgment, the court found that the claimant had demonstrated the absence of passing-on. The overcharge in this case concerned lysine, an input into the production of chickens. The court found that lysine only represented one percent of the costs of chicken production. Such a small increase in costs was not sufficient evidence to convince the court that it would also lead to an increase in prices of chicken. The court found that the prices responded to other factors, such as competition with other meat products and buyer power. When concluding that the overcharge was not passed on to the indirect retailers, the court referred to the fact that chickens were sold on an international and competitive market and that grocery retail chains had strong buyer power.

⁽⁹⁴⁾ *Sø-og Handelsretten* (Maritime and Commercial High Court, Denmark), judgment of 15 January 2015, case SH2015.U-0004-07 (*Cheminova A/S v Akzo Nobel Functional Chemicals BV et al*).

⁽⁹⁵⁾ *Cour d'Appel de Paris* (Court of Appeal, Paris), judgment of 27 February 2014, case 10/18285 (*SNC Doux Aliments Bretagne et al v Société Ajinomoto Eurolysine*).

- (111) When applying comparator-based methods for the estimation of overcharges, courts have also sometimes applied a so-called safety discount. This means they adjusted an amount that would sufficiently take account of uncertainties in the estimate from the observed data ⁽⁹⁶⁾. If the implementation of econometric analysis is not feasible, such an approach may also be applied for the estimation of passing-on. The objective of such an approach would be to exclude the effects of other possible factors on the variable under consideration, for instance the price offered by the indirect customer.

5.1.3. Challenges

- (112) When estimating the passing-on related price effect, the court may particularly consider techniques which, to the largest extent possible, control for factors other than the one stemming from the infringement. The difference-in-differences method is such a technique. It requires information or data from a comparator market (for instance another geographical market) and time-series data from the market affected by the passing-on. However, the court should be aware that there are potential challenges that may affect how valid the comparator-based methods may be.
- (113) Ideally, the comparator market is similar to the infringement market, but itself not affected by the infringement. However, the purchasers on each of the markets often use the same input. In such a case, it might be difficult to find an unaffected comparator. In particular, if the scope of the infringement covers a broad geographic area, it is likely that products, similar to the product in question and incorporating the same input, have potentially been affected, as well. This can make it difficult to find a suitable comparator market.
- (114) In other circumstances, the comparator market may be indirectly affected by the initial overcharge. In the stylised example of the copper cartel in Box 6, the wire harnesses supplier B₁ purchases copper from the infringer A₁. Even though the wire harnesses supplier B₂ in the comparator market does not purchase from the infringer A₁, the wire harnesses suppliers B₂ and B₁ may be competitors on the same geographic downstream markets. This implies that, if the wire harnesses supplier B₁ increases its prices in response to the initial infringement, its competitors may raise their prices, as well. In this case, the price that the wire harnesses supplier B₂ offers may have been indirectly affected by the infringement, and as a result may not provide a suitable comparator ⁽⁹⁷⁾.
- (115) As regards comparison over time, it may be challenging to identify with sufficient precision the period when the market was affected by a certain infringement. The parties may present a decision issued by a competition authority which mentions an infringement period, i.e. sets out dates at which the infringement started and ended. However, this period may not correspond to the period in which a market was actually affected by the infringement. It is also important to note that determining the dates of either the infringement period or the period in which the market was affected, can have a strong impact on the outcome of the analysis. In reality, the effect of the infringement may not be limited to the period provided in such decision ⁽⁹⁸⁾. On the one hand, the start date identified by the competition authority may post-date the actual start of the infringement, for instance due to lack of reliable evidence ⁽⁹⁹⁾. On the other hand, the end date provided in an infringement decision may pre-date the end of the actual infringement.
- (116) The effects of an infringement may also not be limited to the duration of the infringement. It is possible that the infringement will affect the market concerned even after the conduct prohibited under EU competition law has ceased. In particular, this may be the case in oligopolistic markets, if the information gathered during the infringement allows the suppliers of a certain product to adopt, on a sustainable basis after the infringement has ended, a course of action aimed at selling at a higher price than the competitive price, i.e. that would have been charged in the absence of the infringement, without engaging in practices prohibited by EU competition law ⁽¹⁰⁰⁾.

⁽⁹⁶⁾ See also the Practical Guide, paragraph 95.

⁽⁹⁷⁾ This effect is similar to the effects of umbrella pricing mentioned in paragraph 32 above.

⁽⁹⁸⁾ See also Practical Guide, paragraph 43.

⁽⁹⁹⁾ National courts may wish to consider that the relatively high burden of proof that competition authorities have to meet in their infringement proceedings is not *de facto* used to the detriment of the victim of a competition law infringement when these courts estimate the harm in a damages action of such victim.

⁽¹⁰⁰⁾ See also the Practical Guide, paragraph 153. For example, a case in which a national court ruled that the prices charged in the five months after the infringement ended were still influenced by the cartel, see *Oberlandesgericht Karlsruhe* (Higher Regional Court, Karlsruhe), judgment of 11 June 2010, case 6 U 118/05, also cited in the Practical Guide, paragraph 44.

- (117) The possibility that purchasers at different levels of the supply chain may delay the passing-on of an overcharge can also affect the comparison significantly ⁽¹⁰¹⁾. The example in Box 1 above may illustrate this. Suppose the car manufacturer C negotiates prices with the wire harnesses supplier B on an annual basis. The wire harnesses supplier B only adjusts prices once a year after the negotiations with the car manufacturer C have been finalised. If a price fixing cartel in the copper market is established just after the negotiations between the wire harness supplier and the car manufacturer have ended, it is only when the next year's annual negotiations take place that the wire harnesses supplier may have had an opportunity to pass on the copper-price increase in their own price.
- (118) Hence, the delay of passing-on down the supply chain may result in difficulties when deciding on the relevant period for comparing prices during and before or during and after the infringement (or both). The court may adjust the analysis by considering the nature of each case, for instance by analysing the pricing policy of the parties and, based on that, introducing a certain time lag when analysing the pricing patterns at different levels of the supply chain.
- (119) The use of regression analyses when employing the comparator-based approach may increase the accuracy of the estimated passing-on effect. A judge should be aware that, while these types of regression models offer a direct estimate of the passing-on effect, they do not quantify the extent to which each of the theoretical factors affecting the passing-on, discussed in section 3 above (e.g. nature of input costs and nature of the product demand), contributed to the effect. A strength of using regression analyses is that it is less likely to make assumptions related to economic theory that are wrong. While such a factor-by-factor quantitative breakdown of the estimated passing-on effects is usually not necessary for the estimation of the passing-on effect, it can be noted that the techniques described in section 5.2.3 below might provide a quantitative breakdown of the factors.

5.2. Other methods

5.2.1. The passing-on rate approach

- (120) The section above describes methods and techniques for comparator-based approaches to estimate the passing-on related price effect. In general, the comparator-based approach is preferable when it is feasible and proportionate to implement. This is due to the method's clear advantage of allowing for an estimation of passing-on based on the *actual* prices set by a direct or indirect purchaser during the infringement period. However, it relies *inter alia* on the availability of data on these prices, in addition to prices in one or several comparator market(s). Such information may be available in many cases. However, if information on actual prices in the infringement market and the comparator market(s) cannot be presented before the court, for instance if the court finds that disclosure of such information is disproportionate to the value of the claim in the case at hand, passing-on may be estimated on the basis of other methods, such as the passing-on rate approach.
- (121) This passing-on rate approach can be implemented by analysing how previous changes in a firm's costs have affected its prices before or after the infringement period. For instance, in the example in Box 1 above, the passing-on rate may be estimated by analysing how historical changes in the cost of copper have affected the price of wire harnesses. Put simply, if an increase in the cost of copper by EUR 10 is followed by a price increase of wire harnesses by EUR 5, the passing-on rate is estimated to be 50 percent. To estimate the passing-on during the infringement period, the court could then combine this estimated passing-on rate with information on the overcharge and sales.
- (122) However, the passing-on rate approach is not without risks and can even deliver misleading results in some cases. This is because when using this approach to estimate passing-on, the court can neither establish if the overcharge is actually passed on nor can it observe whether changes in the cost of the affected input are reflected in prices in the downstream markets. It is therefore crucial for the court to be aware that the passing-on rate approach relies on the assumption that, during the infringement period, changes in input costs are reflected in prices downstream. If this assumption is incorrect, this approach may produce estimates which are misleading in that they find a passing-on of overcharges where none has actually happened.

⁽¹⁰¹⁾ Moreover, undertakings may be aware that there is a risk of facing claims for damages, and that the scope of such a claim may be estimated based on post-infringement prices. Thus, they may have the incentives to maintain the price level after the infringement has come to an end.

- (123) When using the passing-on rate approach, the court would typically endeavour to estimate the passing-on based on how changes in the cost of the affected input have previously been reflected in prices downstream. However, if such information is not available, the court may look at the development of other components of the purchaser's marginal cost and analyse how such cost changes affect downstream prices. In the hypothetical case set out in paragraph 8 and further modified and explained in paragraph 78 and 98 above, this means that a court could consider an analysis of the relationship between the price of wire harnesses and the cost of plastic (not affected by the infringement), and estimate a passing-on rate based on the latter relationship.
- (124) In most cases the infringement at issue concerns the cost of an input which constitutes just one component of the purchaser's marginal cost. If the input affected by the infringement constitutes only a very small fraction of the marginal cost, even a significant increase in the cost of that input may hardly be detected in the purchaser's price data, even if it is passed on in full. Although an alternative approach may be to estimate the passing-on rate based on changes in costs of more significant inputs and not just the cost of the affected less significant input, such an approach comes at the price of an assumption that may go too far, namely that the marginal cost increases are being passed on at an identical rate irrespective of the source for the cost increase. Moreover, if a comparator-based method, i.e. actual price based estimation, finds no statistically significant passing-on this can be considered as evidence supporting the hypothesis that no passing-on actually happened. In other words, the finding that there was no passing-on on the basis of the comparator-based method is neither a valid nor a sufficient argument, as such, to adopt a passing-on rate method.
- (125) As explained in Annex 1, there are also good reasons why firms may not always pass on small changes in their marginal costs, at least not in the short run, even if they would pass on larger cost changes. Hence, it may not be legitimate to assume that the passing-on rate will be similar for different changes in the input cost. One explanation may be that the firm may incur so-called price adjustment costs, and thus prefer waiting until marginal cost increases accumulate beyond a certain threshold before changing its prices.
- (126) When assessing the indirect evidence of passing-on based developments of cost components that are not affected by the overcharge, it is advisable to also take into account qualitative evidence that may show that the passing-on of small cost increases is in the specific case in line with the commercial practice of the direct or indirect purchaser.
- (127) In certain cases, information on prices set by the direct purchaser during the infringement period, and only for this period, may be available. The passing-on rate approach may deliver misleading results also in such scenarios. This is because it would identify passing-on related price effects on the basis of changes in the costs of the input that has been subject to a competition law infringement. In many cases, it is not unlikely that, during the infringement period, the changes in the costs of the input that has been subject to a competition law infringement are substantially smaller than the cost increase resulting from the infringement. As explained above, small cost increases may not be passed on to the same extent as larger cost increases, and hence looking at relatively small cost and price changes during the infringement period could lead to an imprecise estimate of the passing-on effect.

5.2.2. *Implementing the passing-on rate approach in practice*

- (128) The passing-on rate approach requires information on the initial overcharge and the relevant passing-on rate. If no prior estimation of the overcharge is available, the court may consider the techniques mentioned in the Practical Guide ⁽¹⁰²⁾.
- (129) An advantage of the comparator-based method is that it allows for the construction of a counterfactual. As mentioned in paragraph 66 above, the purpose of this exercise is to isolate the effect of the infringement from other factors also affecting prices. While the passing-on rate method does not allow for such an approach, it is still important to control for factors that are not related to the infringement. One approach may be to use quantitative techniques, for instance regression analysis ⁽¹⁰³⁾. For instance, in the example in Box 1 above, a court may take into account an analysis of the relationship between the prices charged by the wire harnesses supplier and changes in the input costs of wire harnesses. However, other factors may have also affected the price at the downstream level, e.g. fluctuations in the demand of car manufacturers. If the court fails to take into account such additional factors, the estimated passing-on rate will most likely be biased.

⁽¹⁰²⁾ See Practical Guide, paragraphs 26 et seq.

⁽¹⁰³⁾ See paragraphs 101 et seq. above. The concept of regression analysis is explained in detail in the Practical Guide, chapter II (2).

- (130) A regression analysis typically requires a large amount of data on costs and prices. Thus, for the purpose of estimating the passing-on rate, the court may alternatively consider whether estimates from other sources could provide a reasonable estimate for the passing-on rate. Examples of such other sources may include passing-on rates found in other cases concerning the same industry or in other industries, academic studies relevant for the industry in the case at hand or evidence provided in witness statements. This is a particularly viable alternative when the necessary data is not available or quantitative methods fail to include relevant control factors.
- (131) However, it is crucial to be aware that estimates based on other sources bear the risk of not taking into account factors relevant for the passing-on rate in the case at hand. In particular, it may be important to consider the methodology underlying the estimate found in other sources and the sensitivity of any result to potential differences between such an estimate and the passing-on rate. To do this, the court may take into account the relevant insights from economic theory, as explained in section 2.3 above and in Annex 1, such as the degree of competition. If there is only limited information, e.g. on the different market conditions or how the passing-on rate was determined, the passing-on rate approach may not be suitable.

5.2.3. *The simulation approach*

- (132) The Practical Guide also introduces a so-called simulation approach as another way of quantifying harm of a competition law infringement ⁽¹⁰⁴⁾. This approach can also be used to estimate the passing-on related price and volume effect. It simultaneously accounts for the passing-on related price and volume effects. In order to employ this method, an economic expert will need to develop a model of competition at the stage of the distribution chain where the claimant is active, and simulate the effect of the relevant overcharge on the claimant's profit during the infringement period. For instance, the economic expert may test how different curvatures of the demand curve may affect the degree of passing-on. Based on the specifications of the demand side and the supply side, the equilibrium prices in the relevant market can be calculated. Furthermore, in a next step, it is possible to evaluate how these prices are affected by an overcharge.
- (133) It is important for a judge to be aware that this approach requires extensive data on prices and quantity in the market concerned. Furthermore, it rests on assumptions about firms' and consumers' behaviour, which may go too far and might be difficult to validate. Hence, it may in many cases be difficult to meet the required standard of proof under applicable law when applying this method.

6. THE QUANTIFICATION AND ESTIMATION OF VOLUME EFFECTS

6.1. Introduction

- (134) When there is a passing-on related price effect, this necessarily implies, at least in theory, a volume effect ⁽¹⁰⁵⁾. Therefore, if the price effect is taken into account without the volume effect, this can underestimate the true harm. Hence, in order to avoid over- or under-compensation, the estimation of the volume effect is as essential as the estimation of the passing-on related price effect, provided the purchaser claims damages for loss of profit due to the volume effect ⁽¹⁰⁶⁾.
- (135) As illustrated in Box 11 below, the volume effect refers to the loss of profit due to reduced sales that result from passing-on, i.e. less volume sold because of increased prices. In the sequential approach, mentioned above in paragraph 69, the third step of quantifying damages as a result of an overcharge is to estimate the magnitude of the volume effect.

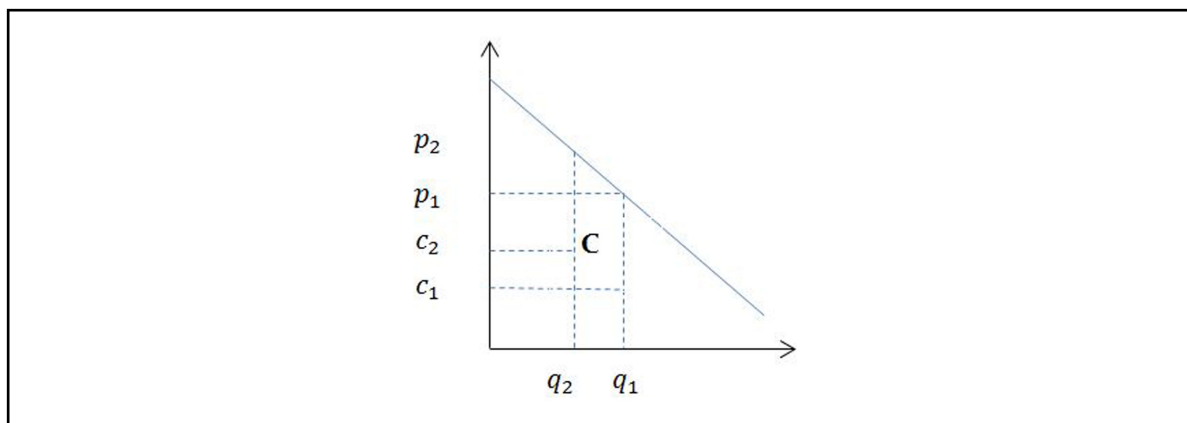
⁽¹⁰⁴⁾ Practical Guide, paragraphs 96 et seq.

⁽¹⁰⁵⁾ Given the fact that the purchaser usually faces a downward sloping demand curve. The economic intuition behind this is further explained in Annex 1.

⁽¹⁰⁶⁾ National courts in the EU Member States have in several cases confirmed the importance of estimating the volume effect. For instance, a German court, *Oberlandesgericht Karlsruhe* (Higher Regional Court, Karlsruhe), judgment of 9 November 2016, case 6 U 204/15 Kart (2) (*Grauzementkartell*), found that the passing-on of an overcharge may subsequently lead to a reduction in the quantity sold by the direct purchaser.

Box 11

The volume effect



- (136) The volume effect corresponds to the difference between q_1 and q_2 . Area C represents the lost profit stemming from the loss in sales. It can be quantified by multiplying the lost volume with the profit margin ($p_1 - c_1$) that the purchaser would have achieved in the absence of the infringement without any passing-on.
- (137) The estimation of the volume effect requires an assessment of two factors, namely (i) the change in quantity due to increased prices and (ii) the counterfactual margin. To estimate these factors it is necessary to have data on parameters other than the ones necessary for the estimation of the passing-on related price effect. Depending on the data available, different methods may be employed. As for the estimation of the passing-on related price effect, the court may take into account qualitative evidence of direct nature when estimating the volume effect⁽¹⁰⁷⁾. The existence of such evidence may play an important role when a court decides which, if any, of the different methods described in more detail below are to be used in a specific case.
- (138) The volume effect has, so far, only been estimated by national courts in a limited number of cases. One example is given in Box 12 below. In this case, an economic expert appointed by the court used both qualitative and quantitative data to estimate the volume effect.

Box 12

Estimation of volume effects — *Cheminova* (2015)⁽¹⁰⁸⁾

As explained in Box 9 above, this case concerns the sales of pesticides in Denmark. The court concluded that half of the initial overcharge was passed on by the direct purchaser. Based on the assessment of a court-appointed expert, the volume effect was estimated, as well. The expert estimated the volume effect as the counterfactual margin multiplied by the number of sales that had not been made due to the passing-on.

In order to estimate the number of sales that had not been made during the infringement period, the expert used an amended version of the elasticity approach which is further explained in section 6.3 below. Since quantitative data on prices and volume was not available, the expert derived a measure of elasticity by averaging the elasticities found in 23 market studies for pesticides. Further, the expert estimated the counterfactual margin by adjusting the realised margin during the infringement period. Based on this, the court concluded that damages resulting from the volume effect were equal to 20 percent of the overcharge amount.

⁽¹⁰⁷⁾ For instance internal documents from the direct or indirect customer explaining how a price increase on the infringement product during the infringement has affected the volume supplied.

⁽¹⁰⁸⁾ *Sø-og Handelsretten* (Maritime and Commercial High Court, Denmark), judgment of 15 January 2015, case SH2015.U-0004-07 (*Cheminova A/S v Akzo Nobel Functional Chemicals BV et al*).

6.2. Comparator-based approach

6.2.1. Information needed

- (139) The comparator-based approach for the purpose of estimating the volume effect requires information on (i) the observed quantity sold by the firm affected by the overcharge, (ii) the counterfactual volume sold and (iii) the price-cost margin that would have been achieved by the purchaser in the absence of the infringement. However, it is important to note that the observed price-cost margin is not the relevant margin required to estimate the volume effect. For instance, if the purchaser passes on half of the overcharge, this will reduce its margin, implying that the observed margin will be smaller than in the counterfactual. In this case, using the observed margin would understate the size of the volume effect.
- (140) Moreover, the court should be aware that the relevant margin to estimate the volume effect does not necessarily correspond to standard measures of a firm's accounting margin, such as 'earnings before interest and taxes' (EBIT) or the net income of the firm.
- (141) The relevant margins for the assessment of the volume effects are defined by the prices of the relevant products subtracted by the avoided costs, i.e. costs that have been saved as a result of the output reduction. Hence, in addition to an assessment of which costs are considered to be avoidable, the court may order disclosure of prices of the relevant products. In this context, it may also order disclosure of internal documents providing information on the contribution margins the purchaser uses for its own pricing decisions.

6.2.2. Methods and challenges

- (142) The lost profit associated with the volume effect can be estimated comparator-based by multiplying the counterfactual margin by the reduction in sales volumes stemming from the passing-on of overcharges.
- (143) Using the relevant data from the purchaser, the court may consider the comparator-based techniques described above to estimate the counterfactual margin and the counterfactual quantity. Since the observed profit margin and quantity may be affected by other factors unrelated to the infringement, it will in many cases be necessary to control for such additional factors. Hence, it would normally be necessary to employ one of the approaches described above in order to control for factors unrelated to the infringement, for instance a regression analysis.
- (144) If the data needed to perform the difference-in-differences approach is not available, other techniques of the ones described above may be considered, namely cross-market comparison or comparison over time. However, if such techniques are employed, it is also important to construct a sound counterfactual taking into account factors varying between the different markets or time periods.
- (145) The comparator-based methods rest on the assumption that the reference period or market is sufficiently similar, in particular with respect to market characteristics that are relevant for profit margins, such as the level of competition in the market or the cost structure of the suppliers. This assumption is not easily verified, as a large number of factors and strategic decisions are likely to determine a firm's margins.

6.3. Elasticity approach

- (146) The volume effect may also be estimated by combining the price increase observed as a result of the passing-on related price effect with an estimate of the price sensitivity of the relevant demand. As mentioned above, the price sensitivity of demand determines the strength of the relationship between price and demand. For example, if a price increase of EUR 1 is associated with a significant reduction in the quantity purchased, demand is said to be more price sensitive than if the purchase quantity reduction is less important for the same price increase of EUR 1. The so-called price elasticity of demand shows the percentage change in demanded quantity associated with a one percent price increase ⁽¹⁰⁹⁾.

6.3.1. Methods and information needed

- (147) In general, the decrease in volume, illustrated by the decrease in sales from q_1 to q_2 in Box 11 above, will be affected by a firm's own price increase as well as changes in the prices of the competitors, given that firms compete on prices. Hence, the magnitude of the loss in volume will require an assessment of how the passing-on has affected prices of all competitors in the market, as well as the sensitivity of demand to those price changes. When assessing this method, the volume effect ⁽¹¹⁰⁾ is estimated by multiplying the volume loss by the counterfactual margin.

⁽¹⁰⁹⁾ See also Annex 1, paragraph 167.

⁽¹¹⁰⁾ The volume effect is illustrated by area C in Box 11 above and Box 14 below.

- (148) The data requirements when estimating the volume effect by reference to the elasticity approach will depend on whether the relevant firms are equally affected by the overcharge, i.e. whether it is an industry-wide overcharge. The volume effects of both the own-price and the cross-price elasticity could be captured by the market price elasticity. Under such circumstances the volume effect may be estimated based on the counterfactual margin, the market elasticity of demand and observed prices (p_1) and quantities (q_2).
- (149) The counterfactual margin may be estimated by employing the comparator-based approach as well. A quantitative estimation of the market elasticity of demand may require a vast amount of data on prices and quantities, which may not be available or proportionate in a specific case. Under such circumstances, the court may find it sufficient to use other sources of evidence, for instance information in previous market studies of the relevant market or internal documents providing information on the relevant elasticity⁽¹¹¹⁾.
- (150) Another simplified approach may be to use insights from economic theory to estimate the volume effect. Such an approach may be based on the price set by the direct purchaser during the infringement period (the passing-on related price effect) and the counterfactual volume. Since a firm's ability to raise prices depends on how price sensitive the demand for its product is, an inverse relationship is normally predicted between a firm's margin and the own-price elasticity of demand. Drawing on this, the own-price elasticity and the counterfactual margin can be 'cancelled out'. Since information on the price set by the direct purchaser (the passing-on related price effect) will already be available at this stage of a case, the only additional input required in order to estimate the volume effect is the counterfactual volume.

6.3.2. Challenges

- (151) When employing the elasticity approach the court may estimate the relevant elasticity parameters. One way to do this is to develop a demand model and use econometrics. However, as mentioned above, such an approach is demanding in terms of data requirements and assumptions. If data is not available and other sources are used, e.g. market studies or information from previous cases, it is important to note that such sources may not be appropriate if the market in the case at hand is different from the market described in the studies in terms of market structure. Under such circumstances, the elasticity approach might not provide an accurate estimate of the volume effect.
- (152) As mentioned in the introduction of this section on quantification, the three potential components of the harm in a damages case derive from the initial overcharge, the passing-on related price effect and the volume effect⁽¹¹²⁾. The court may choose to estimate the three components sequentially, where quantification of the overcharge would constitute the first step, estimation of the passing-on related price effect the second step and the estimation of the passing-on related volume effect the third step.

7. CHOICE OF METHOD

- (153) The choice of a method to estimate the passing-on related price and volume effects will usually depend on a range of aspects. For instance, if the claimant and the defendant rely on different methods and the application of these methods leads to contradictory results, it is normally not appropriate to consider the estimated passing-on to be the average of the two results, nor would it be appropriate to consider that the contradictory results cancel each other out in the sense that both methods should be disregarded. As mentioned in the Practical Guide, in such a scenario it would rather be appropriate to examine the reasons for the diverging results and to consider the strengths and weaknesses of each method and its implementation⁽¹¹³⁾.
- (154) The different techniques for the estimation of passing-on related price and volume effects provided in sections 5 and 6 vary in complexity and data requirements, from analyses based on qualitative evidence on the one hand to econometric techniques⁽¹¹⁴⁾ based on quantitative data on the other. Different techniques also imply different accuracies in estimating the various effects.

⁽¹¹¹⁾ See for example *Sø-og Handelsretten* (Maritime and Commercial High Court, Denmark), judgment of 15 January 2015, case SH2015.U-0004-07 (*Cheminova A/S v Akzo Nobel Functional Chemicals BV et al*).

⁽¹¹²⁾ See paragraph 69.

⁽¹¹³⁾ See also the Practical guide, paragraph 125.

⁽¹¹⁴⁾ The concept of econometric techniques is further explained in section 5 above and in Annex 2.

- (155) In this context, there is no technique that could be singled out as the one that would in all cases be more appropriate than others. The use of econometric techniques is an example of this. In most cases, the implementation of such techniques may increase the degree of accuracy of an estimate. However, such techniques usually require a significant amount of data which may not always be available. Hence, the gathering of data and their economic analyses may entail considerable costs for the parties, third parties and the court. These costs may be disproportionate to the amount of damages in question.
- (156) When estimating the passing-on effects, national courts may use pieces of direct evidence relevant for the case. For instance, internal documents or other documents of a qualitative nature produced by the direct or indirect purchaser regarding the relationship between the overcharge and changes in its own prices. If this type of evidence is available, the court may find it sufficient to estimate the passing-on related effects (price and volume effects) by taking into consideration qualitative evidence or making adjustments to the quantitative data without the use of a regression analysis. Hence, the availability of qualitative evidence may play an important role when a court decides whether any or which of the quantitative techniques set out in the sections above can be used by a party to meet the required standard of proof under the applicable law ⁽¹¹⁵⁾.

8. ANNEX 1 — ECONOMIC THEORY

8.1. Introduction

- (157) This annex explains in more detail the insights from economic theory relevant in the context of estimating the passing-on. As described in paragraph 49 et seq. above, different factors may affect the degree of passing-on, such as the nature of input costs subject to an overcharge, the nature of the product demand faced by the direct or indirect customer, the nature and intensity of competitive interaction between the firms in the market where the direct or indirect customers are active and other elements such as the share of a firm's various inputs affected by the overcharge or the time horizon of the infringement.

8.2. Input costs and their effect on pricing decisions

- (158) As explained in paragraph 46 above, the initial overcharge results in an input cost increase for purchasers of the overcharged products or services. Whether these purchasers are able and willing to pass on the overcharge to their own customers — and, if so, to what extent — depends, among other factors, on the cost structure of the purchasers.
- (159) To identify passing-on effects, it is important to determine whether the input cost incurred by a purchaser facing an overcharge varies with the input quantity it orders (i.e. variable input cost) or not (i.e. fixed input cost). Indeed, economic theory indicates that the relevant cost category for short run price formation is variable costs or more precisely, marginal cost, i.e. the cost increment incurred when purchasing one additional input (see Box 13 below). The opposite of such costs are fixed costs which, in turn, typically affect the long run strategic decisions of firms, such as market participation, product introduction and level of investment.

Box 13

Examples of marginal and fixed costs

In order to explain the concepts of marginal (variable) and fixed costs it is useful to consider the example in Box 1 above.

There, the variable costs of the wire harnesses supplier would be the costs associated with producing one additional wire harness. Such costs may include inputs needed to produce the additional wire harness, including copper and plastic, electricity and labour-costs associated with the additional production.

However, the wire harnesses supplier also incurs fixed costs in its production, such as marketing of its products and investment in new machinery. These costs are not affected by the production of one additional wire harness, and are hence considered to be fixed.

- (160) Typically, the relevant starting point for the assessment of passing-on effects would be the impact of the overcharge on the purchaser's marginal or variable costs.

⁽¹¹⁵⁾ This is also pointed out in the Practical Guide, paragraph 14.

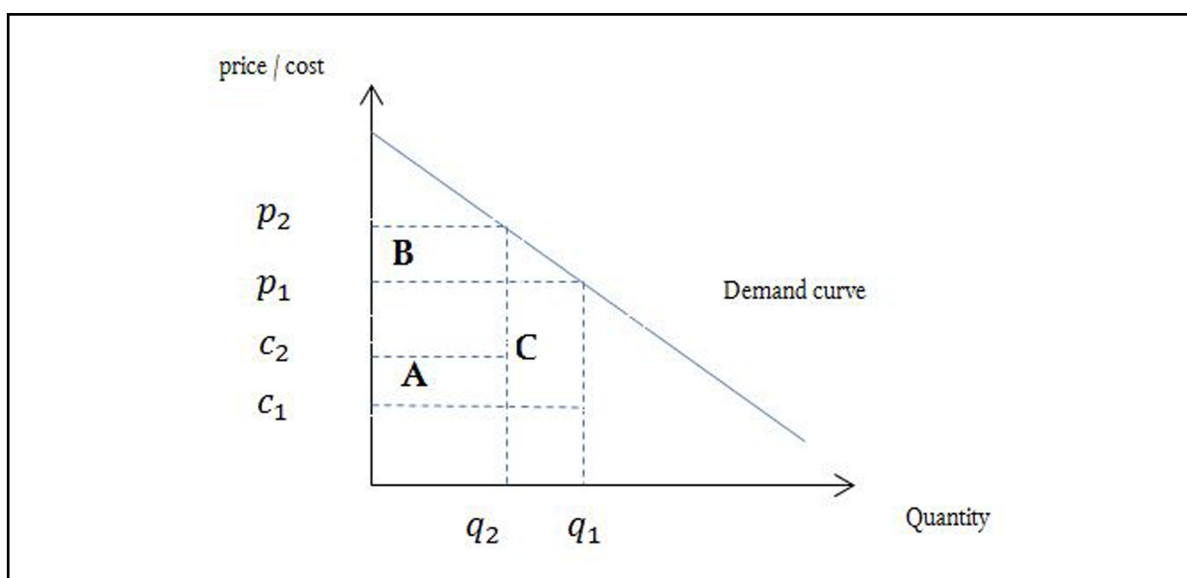
- (161) Contracts between firms at different levels of the supply chain, which set out the conditions at which firms would supply their products or services to purchasers, may concern components considered either as variable or fixed costs. For instance, often some components of the price paid by a purchaser are not dependent on the volume purchased, whereas some other components are. It follows that in a damages action involving any passing-on argument it is important to determine whether the price components affected by the infringement are fixed costs or not from the point of view of the purchaser.
- (162) The time frame over which pricing is considered will affect whether costs are categorised as variable or fixed. Generally, economic theory suggests that the longer the relevant time frame, the greater the proportion of total costs that should be considered as variable. In other words, a certain cost category which is viewed as fixed in the short run might be regarded as variable by the firm when considering a longer time frame. When assessing the relevant time frame in a specific case, the court may wish to consider information from the party's internal documents, e.g. information on the costs that the firms take into account in their own pricing decisions.
- (163) The considerations of fixed and variable costs are of particular importance when the volume effect is estimated, as the estimation of this effect requires an assessment of the margin of the firms involved in the case at hand.

8.3. Characteristics of demand and links to prices

- (164) Another factor crucial for estimating passing-on effects is the nature of demand that the direct purchasers face on the market where they are active. In economics, the relationship between demand and the price level is an important factor when describing how markets function. In any market, demand is referred to as the quantity of the good or service in question that purchasers on this market would buy at a given price level.
- (165) Most typically, the higher the price level the lower the aggregate quantity of the products that the purchasers on the market are willing to buy. The price sensitivity of demand determines the strength of the relationship between price and demand. If, for example, an increase in price of EUR 1 is associated with a significant reduction in the quantity purchased demand is said to be more price-sensitive than if the purchase quantity reduction is less important for the same EUR 1 price increase.
- (166) The standard downward sloping inverse demand curve is illustrated in Box 14 below⁽¹¹⁶⁾. In this Box, area A corresponds to the overcharge from the infringement. The price increase that harms the direct purchaser is taken into account as an increase of this purchasers' input costs. It is determined by $c_2 - c_1$. The passing-on related price effect is illustrated by area B, while its volume effect is illustrated by area C. As illustrated, a relatively high price level (p_2) correspond to a relatively low quantity supplied (q_2).

Box 14

The standard demand curve — price and volume effects

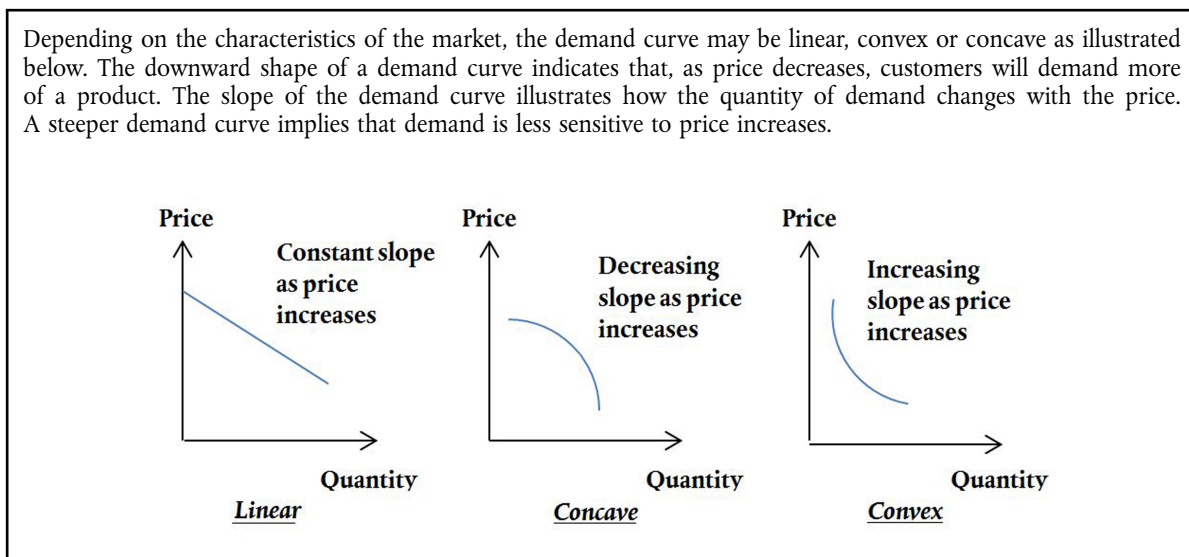


⁽¹¹⁶⁾ The figure illustrates prices (vertical axis) as a function of quantity demanded (horizontal axis). This demand curve is often referred to as the 'inverse demand curve', while a curve depicting demand on the vertical axis as a function of prices on the horizontal axis is simply referred to as 'demand curve'. In the subsequent graphical examples, inverse demand curves are shown. However, for ease of language they are referred to as 'demand curves'.

- (167) A commonly used summary of this price sensitivity is the so-called price elasticity of demand. It shows the percent change in demand quantity associated with a one percent price increase. For example, a firm's own price demand elasticity of $-0,5$ means that a one percent price increase is associated with a 0,5 percent reduction in demand. An elasticity of $-0,2$, on the other hand, implies only a 0,2 percent reduction in demand for a one percent price increase. In the latter case, demand is said to be less elastic than in the former case, that is, less price sensitive as the purchase quantity reacts less strongly to the price increase.
- (168) When assessing the passing-on of an overcharge from a direct purchaser to an indirect purchaser, the demand that the direct purchaser faces is the one of interest. The indirect purchaser might reduce its demand as a response to a price increase by the direct purchaser.
- (169) The extent of the volume effect is directly affected by the price sensitivity of the demand. This is because the price sensitivity determines the reduction of demand following a price increase. For a given price increase, the reduction of output is larger, the more price sensitive the demand is. Therefore, the volume effect, i.e. the profit lost by the infringer's customer due to the reduction of output (demand), is closely linked to the price sensitivity of demand.
- (170) The extent of the passing-on, and hence the size of the passing-on effects, is also related to the relationship between the demand and the price level. In this case, however, it is not the demand price sensitivity that is directly relevant, it is rather the change of the demand price sensitivity as the price level changes. This change of the price sensitivity with respect to the price level is referred to as the curvature of demand.
- (171) The curvature of demand is the rate at which the responsiveness of demand to price-changes varies as price or output changes. When the demand curve is linear, it has no curvature and the slope is constant. In the case of convex demand, the demand becomes less sensitive to price changes as the price increases. This may be the case if the products or services affected by the overcharge are characterised as essential goods. A hypothetical example may be the demand for drinking water in the desert, because an average customer may be decreasingly sensitive to a price increase as the quantity available is reduced. Conversely, such a customer may be increasingly sensitive to a price increase as the quantity available is increased.
- (172) If the demand curve is concave, as shown in the centre of Box 15, the demand becomes more sensitive to price changes as the price increases. This could for instance be the case if a substitute of the product affected by the overcharge is available to the customer. An example may be the demand for gasoline. At a certain price level, the customers may switch their consumption away from cars using gasoline to electrical cars. This would imply that the demand for gasoline will become more sensitive to price changes, as more customers switch their supply if the price on gasoline increases.
- (173) The curvature of the demand curve may have a significant impact on the passing-on of overcharges. For a given level of competition the passing-on of an industry-wide overcharge will increase the more convex the demand curve is. If demand is sufficiently convex, the passing-on rate may exceed 100 percent.

Box 15

Other curvatures of demand

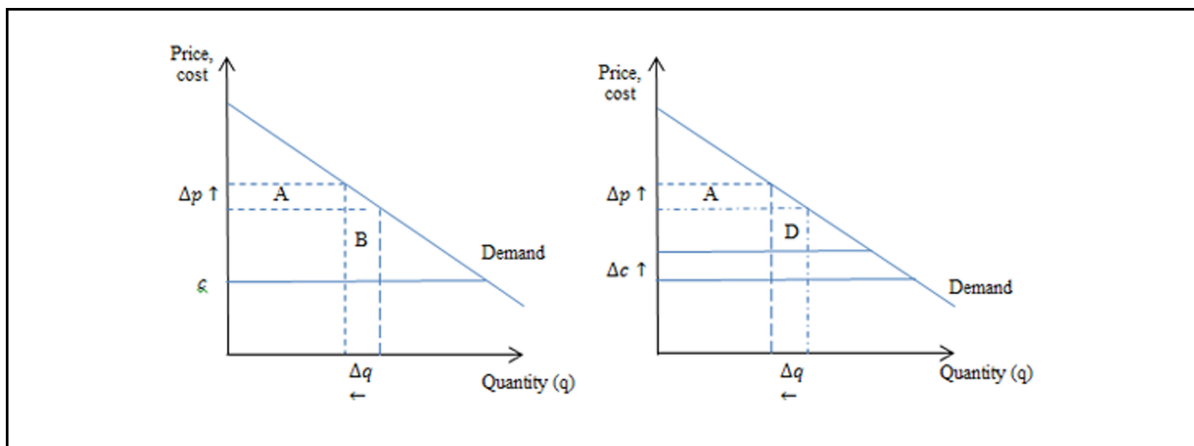


8.4. A firm's pricing decision

- (174) As explained above in paragraphs 52 and 53, a firm's incentive to pass on an overcharge to its purchasers is determined by the type of demand and costs concerned⁽¹⁷⁾. According to economic theory, a firm will adjust prices only where this will increase profits. However, in order to receive a higher price, a firm will usually have to accept reduced sales. The assessment of the trade-off between increased profit from higher prices and decreased profit from reduced sales is important to understand the extent of the passing-on effects in damages actions.
- (175) This trade-off is illustrated in Box 16 below. If a firm, for instance a direct customer of a producer of raw materials, increases prices, the effect on profit from higher prices may be illustrated by the area A in the left section of Box 16. The corresponding lost profit stemming from decreased sales is equal to the area B. When the effect of another small increase in the price is such that area A is equal to area B, there is no scope to earn additional profit through further price adjustments. If prices are increased beyond this point, the profit margin lost through the resulting reduction in sales volumes will outweigh the increased margins earned on the remaining sales.
- (176) If the direct purchaser faces higher costs of raw materials, for instance if the suppliers of raw materials increase prices in violation of Article 101 TFEU, this may alter the terms of the trade-off described in paragraph 175 above. An increase in the direct purchaser's costs will reduce the margins earned on the sales at the prevailing price. In profit terms, this makes it less costly to increase the price at the expense of losing some sales. The lost profit due to lower sales when costs have increased is represented by area D in the right section of Box 16 below. As area D is smaller than area B, the direct customer has an incentive to increase its price in response to the cost increase, i.e. to pass on the cost change, at least to some extent.

Box 16

Trade-off between price increase and lost sales



8.5. Intensity of competition and links to passing-on

8.5.1. Continuum of competitiveness of markets

- (177) At a given level of the supply chain, competition between firms can be more or less intense. At one extreme, when a firm is a monopolist at its level of the supply chain, there is no competition. At the other extreme, competition between firms can be very intense (e.g. when many firms sell rather homogeneous products in a market with low barriers to entry), such that each firm acts as a price-taker and does not influence market prices which will be at or very close to the marginal costs of production. This latter case is referred to as perfect competition. In between these two extreme cases lies a broad range of intermediary scenarios, where competition could be more or less intense, depending e.g. on the number of firms in the industry or whether products sold by different firms are close substitutes or not.

⁽¹⁷⁾ See also 'Guidelines on the application of Article 81 (3) of the Treaty' (2004/C 101/08), paragraph 98.

- (178) Such market competitiveness directly impacts passing-on. In the benchmark case of perfect competition, industry-wide cost shocks are passed on at a rate of 100 percent to direct customers. Such stylised market structure of perfect competition may function as a benchmark for the court when assessing passing-on effects (even though in real world markets it is less often observed). By contrast, in monopoly or various intermediary scenarios, the passing-on of an overcharge may not amount to a rate of 100 percent, but instead can lie above or below this threshold, including a passing-on rate of zero percent.
- (179) One example of market structures characterised by imperfect competition is a market with differentiated products. Differentiation can arise either in terms of product characteristics or geography. For instance, the direct purchasers may offer products which differ from each other in their actual quality, or the quality perceived by the customers of the product. Alternatively, due to different locations of the direct purchasers, the transportation costs of the goods offered may vary in relation to different customers (whose location might also differ). Differentiation can make products less than perfect substitutes of each other. Customers might not view all products as perfectly interchangeable.
- (180) This less than perfect substitutability might result in reduced competitive pressure on suppliers who may not face competitors offering closely interchangeable products. In other words, according to economic theory, the intensity of competition will be reduced when product differentiation increases. As explained in paragraphs 177 et seq. above, weaker competition will decrease the passing-on rate of an industry-wide overcharge, i.e. as the differentiation of the direct purchasers' products increases, and the passing-on rate of the industry-wide overcharge they were subject to will approach the rate where each direct purchaser is a monopolist. Conversely, when the product differentiation is limited, the passing-on rate of an industry-wide overcharge will be larger.

8.5.2. *Industry-wide vs. firm-specific overcharge and passing-on*

- (181) The passing-on of overcharges by a given purchaser vis-à-vis its own customers typically differs depending on whether the purchaser's competitors are also affected by the overcharge or not. When a single purchaser is impacted by the overcharge the passing-on will necessarily be firm-specific. By contrast, if all purchasers at a given level of the supply chain are impacted by the overcharge one may consider passing-on rates for each firm but also the industry-wide passing-on.
- (182) If only one purchaser is affected, i.e. the overcharge is firm-specific, the passing-on effects could be rather limited, in particular when this purchaser is not able to affect selling prices in its market due to intense pressure from its competitors.
- (183) Conversely, where all the undertakings in a market are affected by an overcharge, i.e. the overcharge is industry-wide, all of the undertakings will face higher input costs, implying that they may be able to pass on at least part of the overcharge to their own customers. However, an industry-wide overcharge may still affect competitors differently.

8.6. **Some further factors impacting passing-on**

- (184) In some markets firms sell multiple products, e.g. in grocery retail markets. In such markets products may be interrelated through their demand, for instance if a retailer sells competing brands of many product categories. If the products are substitutes, a cost shock on one product may also affect the prices of other products sold by the retailer. A change in the price of other products may also change the price of the product directly affected by the cost shock. Hence, such feedback effects from other products may increase the initial passing-on of costs in markets where firms sell multiple products.
- (185) To which extent a passing-on effect is observed may also depend on the time horizon taken into account when estimating such effect. Particularly, the passing-on of an overcharge down the supply chain may be delayed for a number of reasons. Firstly, the initial overcharge may only affect the fixed costs of the firms facing the overcharge. Even though the relevant starting point for the assessment of passing-on effects is the impact of the overcharge on the purchaser's marginal or variable costs, an increase in fixed costs could affect the strategic decisions of a firm and hence also the passing-on effects.

- (186) Moreover, as mentioned in paragraph 56, firms may incur so-called price adjustments costs, i.e. costs associated with the process of price adjustment. If this is the case, a firm will prefer to limit the number of price changes it makes and may pass on an overcharge only after some time. For instance, such firm would wait until the marginal costs increase accumulate beyond a certain threshold and adjust the price only when this threshold is reached. In certain cases, the overcharge may constitute such a small increase in the marginal costs that the affected purchaser may not find it profitable to pass on the overcharge at all. Conversely, the existence of price adjustment costs may also lead to a passing-on that is larger than the initial overcharge⁽¹¹⁸⁾. This can be the case if the direct purchaser would be on the verge of changing its prices in the absence of any overcharges. Hence, a small overcharge itself may trigger a large price increase that reflects not only the overcharge but all other cost increases accumulated after the last price adjustment. Whereas such other cost increases may not be attributable to the infringer, a national court may wish to be aware of the fact that, in such a scenario, even a relatively small overcharge may lead to a significant price increase.
- (187) Another example of how price adjustment costs may affect the degree of passing-on is related to the existence of so-called ‘psychological pricing’. In many markets, typically retail markets, prices a little less than a round number are common, e.g. EUR 99 or EUR 19 900. The consumers may perceive such prices lower than they actually are. The use of such a pricing strategy may make it more likely that a direct purchaser chooses not to pass on an overcharge, as the change in price, for instance from EUR 19 900 to EUR 20 000, would lead to a significant drop in the direct purchaser’s demand. The possible impact on the estimation of passing-on effects from the existence of price adjustment costs is further discussed in section 5.2.1.
- (188) Further in some circumstances, an indirect purchaser may be able to use its negotiating strength to limit the ability of a direct purchaser to pass on an overcharge. The indirect purchaser’s negotiating strength may be referred to as countervailing buyer power⁽¹¹⁹⁾. Buyer power is not only limited to the ability to switch to other suppliers, but also e.g. to integrate upstream.
- (189) In general, buyer power will not prevent passing-on if there is an industry-wide overcharge but it will affect the degree of passing-on. On the one hand, one can think of a scenario where strong buyer power forces the direct purchasers to accept the overcharge and thus limit passing-on. On the other hand, one could also think of a scenario where the strong bargaining power of the indirect purchaser forces direct purchasers to make a zero mark-up and to sell at a price only covering their marginal costs, thus resulting in a passing-on rate of 100 percent in case of an overcharge.
- (190) As the degree of buyer power and its implications for the passing-on effects will depend on the nature of the individual negotiations and the specific context in which they take place, the court may assess this topic on a case-by-case basis.
- (191) Further, if the direct purchaser facing an overcharge is vertically integrated into a downstream retail market, i.e. also active on the market where the indirect purchasers operate, this may affect the direct purchaser’s incentive to pass on the initial overcharge. Moreover, in such a scenario, the direct purchaser facing an overcharge may have an incentive to pass on the entire overcharge within its integrated firm. However, the passing-on rate to non-integrated indirect purchasers would generally differ from this, e.g. depending on the level of costs or profit margins of the different indirect purchasers.
- (192) In certain industries, the price offered by the direct or indirect purchaser may be subject to regulation, e.g. price regulation by governmental agencies. Price regulation may affect the extent of passing-on. For instance, if the regulated price is set independently of the specific costs of the product subject to an overcharge when setting the price, the passing-on related price effect may be limited or zero. However, as also mentioned in paragraph 48, harm stemming from a violation of EU competition law may also affect non-price factors. Conversely, if the regulator fully takes into account the cost of the product subject to an overcharge when setting the regulated price, the degree of passing-on may be substantial also in regulated markets.

⁽¹¹⁸⁾ Note that economic theory also shows that even in the absence of any price adjustments costs a passing-on could be larger than the initial overcharge. This is the case, e.g., when the demand curve is sufficiently convex (see discussion in section 8.3 above).

⁽¹¹⁹⁾ The assessment of countervailing buyer power is an important factor in the area of EU merger control. In the Commission’s guidelines for horizontal mergers, paragraph 64, countervailing buyer power is defined as the bargaining strength that the buyer has vis-à-vis the seller in commercial negotiations due to its size, its commercial significance to the seller and its ability to switch to alternative suppliers.

9. **ANNEX 2 — GLOSSARY**

(193) This annex gives an overview of economic terms used throughout the guidelines.

- Curvature of the demand: The change of the elasticity of demand as the price level changes.
 - Demand: The quantity of a good or service that purchasers on a market would buy at a given price level.
 - Demand curve: An illustration of the relationship between the quantity demanded and the price of a product.
 - Econometric technique: Also referred to as regression analysis, this technique is statistical in its nature and helps to analyse patterns in the relationship between economic variables, for instance how the development of costs affects the development of prices in a given market.
 - Elasticity of demand: Percentage change in quantity demanded in response to a one percent price increase.
 - Firm-specific overcharge: Only one single purchaser is impacted by the overcharge.
 - Fixed costs: Costs that do not vary with the quantity of output produced.
 - Industry-wide overcharge: All purchasers at a given level of the supply chain are impacted by the overcharge.
 - Marginal costs: The increase in total costs that arises from an extra unit of production.
 - Regression analysis: See econometric technique.
 - Slope of the demand: Ratio of a change in quantity to the change in prices between two points of the demand curve chosen arbitrarily close to one another.
 - Variable costs: Costs that vary with the quantity of output produced.
-