

## **WORKING PAPER SERIES**

2013-ECO-16

# Towards a European Directive on Damages Actions

Frank MAIER-RIGAUD
IESEG School of Management (LEM-CNRS)

IESEG School of Management Lille Catholic University 3, rue de la Digue F-59000 Lille www.ieseg.fr

Tel: 33(0)3 20 54 58 92 Fax: 33(0)3 20 57 48 55

### Towards a European Directive on Damages Actions\*

by

Frank P. Maier-Rigaud\*

forthcoming in: Journal of Competition Law and Economics

#### **Abstract**

This paper critically reviews the European Commission's proposed Directive on future rules concerning actions for damages for competition law infringements under national law. It is argued that the proposal underestimates the importance of loss of profits induced by increased prices and does little in ensuring that such effects will receive an equal treatment to price effects in damage claims. The paper suggests that the importance of such effects could have been emphasized by introducing a rebuttable presumption on lucrum cessans based on pass-on considerations - paralleling the presumption on overcharge. Furthermore, the decision to leave questions of causality to national tort laws is criticized as a harmonized regulation of claims based on the merits of the evidence presented would have been a superior tool, in line with a more economic approach and better suited for achieving the goal of compensation for any victim due to its intrinsic flexibility. Finally the notion that legally relevant damages only accrue within a vertical value chain is challenged.

JEL Codes: K21, K40, L40.

Keywords: quantification of damages, pass-on, passing-on defence, overcharge, unjust enrichment, private enforcement, lucrum cessans, quantity effect, damnum emergens, price effect, burden of proof, standard of proof, tort law, compensation, presumption.

Email: f.maier-rigaud@ieseg.fr

<sup>\*</sup> The author would like to thank David Ashton, Eddy de Smijter, Dan Sokol, Mel Marquis, Gero Meeßen, Ulrich Schwalbe, Andreas Seip, Christian Vollrath and an anonymous referee for comments on an earlier draft. Disclaimer: The author was involved in the damages actions project of the European Commission in its early stages. He was responsible for the Ashurst study (European Commission (2004)) and the economic parts of the Green Paper (European Commission (2005a)). The views expressed are his own and not necessarily those of the European Commission.

<sup>\*</sup> Department of Economics & Quantitative Methods, IÉSEG School of Management (LEM-CNRS) and NERA Economic Consulting.

#### 1. Introduction

Damage claims for breaches of Article 101 and 102 Treaty on the Functioning of the European Union (TFEU) are an important private enforcement complement to the public enforcement of competition law by the European Commission and National Competition Authorities (NCA's) in the EU.<sup>1</sup> At least since *Courage and Crehan*<sup>2</sup> and *Manfredi*<sup>3</sup> it is generally accepted that *any* individual can claim compensation for harm suffered from an infringement of EU competition rules and that compensation for that harm comprises both, price and quantity effects plus interest.<sup>4</sup> In the absence of community rules governing this field and provided that the principles of *equivalence* and *effectiveness* are observed<sup>5</sup>, the Court so far deferred to the legal systems of EU Member States for determining the extent of the damages and harm caused. Among others, National Courts have faced the difficulty of quantifying damages, which is perceived as one of the major reasons restricting injured parties from obtaining effective redress from harm suffered by competition law infringements by way of damages awards. This may soon change as the European Commission proposed a Directive to be passed by the European Parliament and the Council that would provide for a common framework within which damage claims should be treated by National Courts with the aim of facilitating such claims.<sup>6</sup>

The motivation for this common framework is the optimization of the interaction between private and public enforcement and, following the case law, ensuring that *any* victim of EU competition law infringements can obtain full compensation for harm suffered.<sup>7</sup>

In the following the Commission proposal is critically analysed. This critical analysis spans terminological questions, the limited role of *loss of profits* in the proposal, the limitation of the rebuttable presumption to price effects, the conception of damages as occurring exclusively within a vertical value chain and whether indeed the proposal is apt to form the basis for a framework that

<sup>&</sup>lt;sup>1</sup> See Ashton and Henry (2013) for a legal overview. Overviews dealing with the economic aspects of damages actions are found in Maier-Rigaud and Schwalbe (2013) and Inderst *et al.* (2013). The relevant Commission documents are European Commission (2004), (2005a), (2005b), (2007), (2008a), (2008b), (2009), (2011) and (2013).

<sup>&</sup>lt;sup>2</sup> See case C-453/99, Courage ad Crehan, [2001] ECR I-6297.

<sup>&</sup>lt;sup>3</sup> See joined cases C-295/04 to C-298/04, *Manfredi*, [2006] ECR I-6619.

<sup>&</sup>lt;sup>4</sup> The terms used by the Court and the Commission are actual loss suffered (*damnum emergens*) and loss of profit (*lucrum cessans*). These terms are at least partially influenced by considerations concerning the burden of proof and may not be identical to the economic concept of damages. Only if *damnum emergens* is interpreted as overcharge net of pass-on does it correspond to what economically could be called the price effect. *Lucrum cessans*, in turn, corresponds to the quantity effect, that is the loss of profits on those units that are no longer sold due to a higher price. Both price and quantity effects combined make up the harm that conceptually is nothing else than the difference in profits (or utility if final consumers are concerned) between the situation that would have prevailed in the absence of the infringement and the actual situation with the infringement. From an economic perspective, price effects concern the redistribution of wealth from consumers or purchasers to cartelists and quantity effects concern the allocative inefficiency generated by the cartel.

<sup>&</sup>lt;sup>5</sup> See joined cases C-295/04 to C-298/04, *Manfredi*, [2006] ECR I-6619, [at 98].

<sup>&</sup>lt;sup>6</sup> See European Commission (2013) of July 11<sup>th</sup> 2013.

<sup>&</sup>lt;sup>7</sup> See European Commission (2013:3).

allows compensation for *any* person harmed by anticompetitive conduct in particular in light of the lack of a proposal concerning causality<sup>8</sup> (foreseeability and remoteness).

While the proposed Directive is quite distinct from the private enforcement practice in the United States and already goes a long way in adopting economic insights into the quantification of damages, it remains short of truly emancipating itself from misleading conceptual notions not necessarily adapted to the underlying goals of the proposed Directive. As the remainder of this article will be decidedly critical of the Commission, it is important to emphasize that overall the proposal goes in the right direction of embracing a more economic approach also in this area of competition law. This is particularly noteworthy as there is a stark contrast between the economically speaking very rudimentary US law on damages and the Commission proposal. In light of the fact that the economic and legal literature on damages remains predominantly influenced by US policy, this is no small feat. While important issues remain - this article attempts to point out at least the most important economic ones - the proposal contains some very sensible propositions in terms of overcoming some of the likely practical difficulties including for instance the proposition of a rebuttable presumption concerning price effects.<sup>9</sup>

#### 2. Why cast the debate in unsuitable terminology?

Before delving into the details of the proposed Directive it is both necessary and instructive to review some basic concepts. While one has become accustomed to the discussion of pass-on and the passing-on defence in the EU debate on damages, it remains astonishing why pass-on considerations are mentioned at all, let alone why they take on so much room given the decidedly compensatory goal of the proposal.

In the most simplistic scenario, damages accrue because cartelists<sup>10</sup> are selling products at a cartel mark-up to final consumers.<sup>11</sup> In this case, the cartelization of the market leads to two distinct effects: a transfer of wealth (price effect) and inefficiencies (quantity effect), both of which together

\_

<sup>&</sup>lt;sup>8</sup> That expectations on the national level are different seems indicated by the recent request for a preliminary ruling from the Oberster Gerichtshof (Austria) lodged on 3 December 2012 - See case C-557/12, KONE AG, Otis GmbH, Schindler Aufzüge und Fahrtreppen GmbH, Schindler Liegenschaftsverwaltung GmbH, ThyssenKrupp Aufzüge GmbH v ÖBB-Infrastruktur AG. This case raises the question of causality in the context of umbrella effects. For an economic treatment of umbrella effects, see Inderst et. al (2013a).

<sup>&</sup>lt;sup>9</sup> The issues concerning access to file raised in Case C-360/09 *Pfleiderer AG v Bundeskartellamt*, [2011] ECR I-5161 and recently in Case C-536/11 *Bundeswettbewerbsbehörde v Donau Chemie AG and others*, 6th of June 2013, will not be tackled here. Generally speaking, the impact of discovery on leniency applications seem somewhat overstated and renitence may rather be motivated be the substantial burden such discovery would impose on the competition authorities. Even if such discovery were to have an impact on the leniency programs currently in place, the often dubious quality of leniency cases would not seem to imply much harm to enforcement. See Friederiszick and Maier-Rigaud (2007) and (2008) on this aspect.

<sup>&</sup>lt;sup>10</sup> Damages due to price and quantity effects principally emerge in all competition law infringements and are therefore not restricted to cartels.

<sup>&</sup>lt;sup>11</sup> Note that the term mark-up is preferred to indicate the difference between the pre-cartel and the cartel price, where the pre-cartel price will generally not be the price under perfect competition but the price that would have been observed under effective competition, i.e. in the absence of the infringement. The term overcharge is used here for the monetary amount resulting from a multiplication of this mark-up with the quantity that continues to be bought at cartel prices. In the proposal the term overcharge is defined in Article 4.16 of the proposal as "the difference between the price actually paid and the price that would have prevailed in the absence of an infringement". It seems preferable to stick to the well-established term of "mark-up" for price differences and use the term overcharge for the total sum of money due to the mark-up.

make up the damages. Due to the higher price induced by the cartel there is a transfer of economic rent from consumers to producers. This is the overcharge (damnum emergens), i.e. the amount that final consumers overpay for the quantity they continue to buy (price effect). Concerning the allocation of resources, the cartel leads to a welfare loss due to non-exhausted gains from trade in form of lost utility for final consumers. This is called loss of profits (lucrum cessans) or quantity effect and represents an economic or allocative inefficiency also known as dead weight loss (DWL). Both effects are shown in Figure 1 that depicts (inverse) consumer demand for a cartelized product, the pre-cartel price of p and the cartel price of  $p_c$ , where c stands for cartel. The quantities sold in the counterfactual scenario and under the cartel are denoted by q and  $q_c$  respectively.

This simplistic setting is probably responsible for the notion that overcharges are to be legally construed as damages. <sup>12</sup> Clearly, in this simple set-up, overcharges are part of the damages together with the quantity effect but as soon as indirect purchasers are considered, the notion of overcharges as damages (potentially) requires an adjustment. If in the resale of the product, the direct purchaser can pass-on part of the overcharge by charging higher retail prices to its customers, any compensation based on the overcharge would represent overcompensation. In light of the compensatory goal, this would require a downward adjustment of damages. Legally this *ex post* adjustment of the "damages" is conceptualized under the notion of "unjust enrichment".

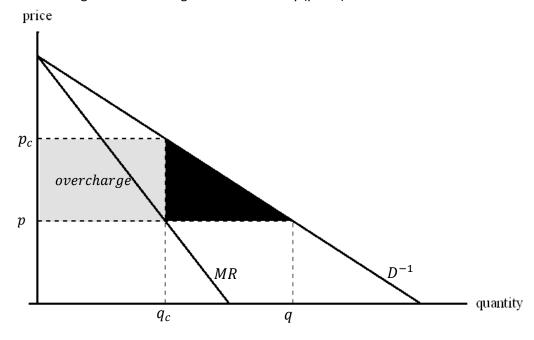


Figure 1: Overcharge and loss of utility (profit) due to cartelization<sup>13</sup>

As a result two aspects have to be borne in mind when considering damages. The first aspect concerns the notion that if the overcharge is considered damage, adjustments to avoid unjust enrichment will in almost all relevant cases be required.<sup>14</sup> Notable exceptions are cartels directly

<sup>&</sup>lt;sup>12</sup> To be fair, general tort law evolved in a setting where such a definition of damages was apparently useful. Indeed, the fact that an illegally increased price that has been paid by the victim does not immediately imply an economic damage seems restricted to situations involving companies.

<sup>&</sup>lt;sup>13</sup> The Figure is taken from Maier-Rigaud and Schwalbe (2013).

<sup>&</sup>lt;sup>14</sup> The question of whether the ultimate goal of allowing damage claims is compensatory or whether overcompensation, possibly in the name of deterrence, should be envisioned is not the subject of this paper.

selling to final consumers or instances where the cartelized products are fixed cost for the purchasers. In order to avoid overcompensating damages based on overcharges, pass-on calculations are required. Pass-on being nothing else than the overcharge avoided by a purchaser and passed down within a vertical value chain to the next downstream purchaser. As should be evident by now, overcompensation will only be avoided if the true price-based damage is calculated, i.e. the price effect or *damnum emergens*. If the mark-up on the wholesale price is for instance 2 Euros and the direct purchaser therefore increases its retail price by 1.50 Euro implying a reduction in sales to a new sales quantity of 100 units, the price effect is equal to 50.<sup>15</sup> While one could directly calculate the price effect, it is clear that a pass-on adjustment is required if one starts at the overcharge. Starting with the overcharge and with full compensation as ultimate goal, this *necessarily* implies a pass-on defence. This would also suggest that classifying overcharges as damages is incorrect even if such a mistake is later on corrected via an unjust enrichment clause that would effectively deduct the pass-on.<sup>16</sup>

The second aspect concerns quantity effects (loss of profit). If the mark-up of the wholesale price by 2 Euros triggered a reduction in sales from 180 to 100, the quantity effect or lost profit is simply the margin the retailer would have made on each of the 80 units it no longer sells. If that margin was 2 Euros, the quantity effect is 160 Euros.

As the Commission and the Court has rightly emphasized for years, only price and quantity effects *combined*, together with appropriate interest payments constitute total harm. For damages occurring within a vertical value chain, it ultimately does not matter if one starts with an overcharge and deducts the pass-on to arrive at the price effect or if one directly calculates the price effect or even the change in profits that would contain both, price and quantity effect.

It does, however, make a difference if one considers damages outside a vertical chain. As damages cannot be conceived of as an old maid card<sup>17</sup> that is passed around, the simplistic notions associated with conceptualizing damages in a vertical supply chain bear the risk of neglecting important damages that cannot be pressed into the categories of overcharge and pass-on. By changing relative prices, competition law infringements trigger responses throughout the economy and neither all competition law infringements nor all repercussions of competition law infringements occur within a vertical chain. In addition to the risk of neglecting quantity effects, a risk that appears to be real even for damage cases that fit the simplistic vertical value chain scenario, it is not clear how to approach other damage cases.

The debate in the EU has been heavily influenced (how could it be otherwise?) by damage cases in the US, where the focus is mainly on price effects and on the vertical value chain (downstream) of the cartel. In addition, damages claims on the federal level are restricted to direct purchasers who consequently are allowed to claim the total downstream damages based on price effects, i.e. the overcharge. As in some US states also indirect purchasers are allowed to claim damages, the concept

<sup>&</sup>lt;sup>15</sup> The overcharge is equal to 200 and the pass-on to 150.

<sup>&</sup>lt;sup>16</sup> The argument here is about conceptual clarity. That the price effect can be decomposed into an overcharge and a pass-on part, as for instance done by Kosicki and Cahill (2006), van Dijk and Verboven (2008) and Verboven and van Dijk (2009) may be legally justified if the passing-on defence is not allowed or in order to allocate the burden of proof, but the fact remains that the overcharge is generally not an economic damage.

<sup>&</sup>lt;sup>17</sup> The Old Maid card game, Schwarzer Peter (black Peter) in German, or Vieux Garçon (bachelor) in French is played either with a queen or a jack card. The player who holds this card at the end of the game loses.

of pass-on is introduced in addition to overcharges. This allows the retrospective calculation of price effects on different levels of the value chain starting from the overcharge. <sup>18</sup>

These concepts of overcharge and pass-on derive their meaning from very specific (controversial) policy choices made in the US and are therefore ill-suited in an EU context where *full* compensation for *any* victim is the stated policy goal.<sup>19</sup> The same applies of course to the equally controversial US policy question on whether the pass-on defence should be allowed. If all victims have standing, the answer to this question is obvious and no explicit pass-on defence needs to be invoked. The Commission proposal concerning Article 12 "Passing-on defence" could therefore be viewed as a relic of a naïve overcharge approach. Such a defence is redundant (see section 4.1) with the idea of *full* compensation for *any* person harmed.

#### 3. Why should damnum emergens trump lucrum cessans?

Despite the terminological baggage, the Commission proposal goes beyond a simplistic overcharge oriented notion of damages in two important respects. First of all, following the case law, it explicitly allows for loss of profits (quantity effects). Article 14.1 of the proposal states:

"The rules laid down in this Chapter shall be without prejudice to the right of an injured party to claim compensation for loss of profits."

This is in line with the observation repeatedly made by the Court that:

"Total exclusion of loss of profit as a head of damage for which compensation may be awarded cannot be accepted in the case of a breach of Community law since, especially in the context of economic or commercial litigation, such a total exclusion of loss of profit would be such as to make reparation of damage practically impossible."<sup>20</sup>

Unfortunately the treatment of loss of profits remains underdeveloped in the proposal. In order to reinvigorate this head of damage, the Commission could have for instance linked pass-on with a rebuttable presumption on loss of profits – something that is economically conclusive. If the passing-on defence of an infringer is successful, this implies that it was possible to properly quantify the pass-on from the direct purchaser to the indirect purchaser. This typically also implies that there is a quantity effect.

There are two relevant economic properties of the overcharge. The first property is that the pass-on adjusted overcharges along the vertical value chain add up to the original cartel overcharge (the pass-on unadjusted overcharge). The Commission draws on this effect when it talks about apportionment across the value chain for instance in case of different damage claims concerning

<sup>&</sup>lt;sup>18</sup> A decomposition of damages into an overcharge, a pass-on and a quantity effect may be justified in a jurisdiction where quantity effects are considered irrelevant. If in addition only direct purchasers have standing and the passing-on defence is not allowed, it is sufficient to calculate the overcharge and disregard both, the quantity effect and the price effect that would require adjusting the overcharge by subtracting pass-on.

The economic problems associated with the US approach from a compensatory perspective have been clearly recognized for example by Harrison (1980).

<sup>&</sup>lt;sup>20</sup> See joined cases C-295/04 to C-298/04 *Manfredi* [2006] ECR I-6619, [at 96] and joined cases C-46/93 and C-48/93 *Brasserie du Pêcheur* and *Factortame* [1996] ECR I-1029, [at 87] and joined cases C-397/98 and C-410/98 *Metallgesellschaft and Others* [2001] ECR I-1727, [at 91].

different levels of the value chain.<sup>21</sup> The second property relates to loss of profits (quantity effect). If there is no pass-on, there can also be no quantity effect but if there is pass-on, there generally will also be a quantity effect.

As the Commission accepts the overcharge as a rebuttable presumption of damage suffered by a direct purchaser and allows the infringer to use the passing-on defence to demonstrate pass-on in an effort to lower the compensation due (reduce the overcharge), this implies that it indirectly acknowledges the presence of a quantity effect. Consider for example a case where the infringer successfully demonstrates that part of the overcharge was passed on and that therefore only half of the overcharge accrued as damage to the direct purchaser. This implies that it was preferable for the direct purchaser to increase its price by an amount equal to half the mark-up of the cartelists and sell a reduced quantity rather than to continue selling the pre-cartel quantity at the pre-cartel price absorbing the overcharge (i.e. sell at a price that does not pass-on any of the overcharge). This of course implies the standard assumption of a negatively sloped (derived) demand function.

A (direct) purchaser should therefore also benefit from a presumption that this pass-on implied a quantity effect of at least the size of the pass-on. This would require the infringer to show first that part of the overcharge was passed on, reducing its liability on overcharge damages and to then show that the loss of profits is below the amount passed on. If only the former is shown, the presumption would imply that loss of profits just offsets the pass-on which is similarly accurate to the rebuttable presumption that overcharges are equal to the price-effect.<sup>22</sup> In contrast to the rebuttable presumption on the overcharge, the infringer could also benefit from such a presumption. If the victim can demonstrate a quantity effect, this should be taken as evidence that part of the overcharge was passed-on.

As a result, it would be clear that damages resulting from a cartel mark-up are either the overcharge (if no pass-on occurred), implying that there is no loss of profits as downstream prices of direct purchasers remain unchanged, or, in case of a partial pass-on (an adjustment of downstream prices of the direct purchaser) the pass-on adjusted overcharge plus the loss of profits due to the reduction in sales as indirect purchasers will purchase less at higher prices. If one allows the infringer to rebut the presumption that no overcharge was passed-on, i.e. the passing-on defence, such a rebuttal should only lead to lower compensation payments if both, the magnitude of the pass-on can be demonstrated and if it can be shown that losses of profits are lower than pass-on.<sup>23</sup>

In order to see why it is essential to bring quantity effects back into the picture in a situation where they play almost no role in actual damage claims, consider the following simple model depicted in Figure 2. This model remains within the simplistic notions that are typically used in the discussion on

<sup>&</sup>lt;sup>21</sup> This is also behind the logic of allowing direct purchasers to claim the entire overcharge if indirect purchasers are denied standing in the US.

<sup>&</sup>lt;sup>22</sup> On this aspect see Figures 4a and 4b below.

<sup>&</sup>lt;sup>23</sup> Note in this context the possible legal inconsistency between Article 12.1 and Article 13.2 of the proposal, as, if pass-on cannot be demonstrated by the infringer, the infringer is liable for the entire overcharge vis-à-vis the direct purchaser, whereas the indirect purchaser would at the same time nevertheless benefit from the presumption that a pass-on occurred but would presumably have the same difficulties in establishing this part of the harm. Economically this can of course be reconciled by the fact that a presumption of such effects is reasonable and detached from the question of quantification that is a matter of the standard of proof. The tension between Article 12.1 and 13.2 of the proposal could further be softened by linking pass-on with quantity effects and *vice versa* as suggested.

damages, namely that the infringing conduct is a cartel and that effects only accrue within a vertical value chain.

The model is based on a three level value chain where m producers sell products to n retailers who sell to final consumers. Both wholesale and retail competition is modelled as homogenous product Cournot markets. Final consumers are characterized by a standard linear demand. The underlying factual scenario is characterized by a cartel of producers, i.e. m=1, which is simply the monopoly solution.

producer

wholesale price

retailer

retail price

consumers

Figure 2: Value chain with 3 levels

Instead of going through the mathematics of the model, consider Figures 3a and 3b that each present the relevant results for different parameter constellations. The m values in the Figures depict different possible counterfactual scenarios depending on the number of firms in the market prior to cartelization. The same applies to the number of firms on the retail market denoted by n representing different assumptions concerning both, the factual and the counterfactual scenario as no changes concerning the number of firms are assumed on the retail level. Figure 3a depicts the individual retailer damages due to price and to quantity effects separately. As the quantity effect supersedes the price effect, the graph depicting the price effect is visible only on the left edge for lower amounts of damages. Both effects added together represent the total individual damages suffered by a representative retailer for different values of m and n.

<sup>&</sup>lt;sup>24</sup> Note that the relative magnitude of the quantity effect depends on the curvature of the demand function. As even non-linear demand functions may be linearly approximated between the relevant price/quantity combinations, a linear demand function would seem to be a natural choice, at least in a context where the purpose of the model is simply to demonstrate that such effects may be non-trivial.

Figure 3a: Damages due to the quantity and the price effect (barely visible) of a representative retailer depending on different producer counterfactuals and retail markets<sup>25</sup>

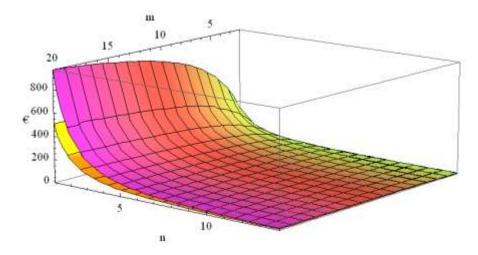
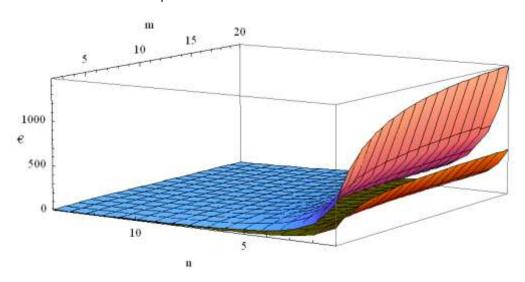


Figure 3b depicts total damages (price and quantity effect added together) and damages due to the price effect only. The difference between the two non-linear graphs being of course the damages due to the quantity effect. The relative importance of the quantity effect is particularly noteworthy for higher ranges of m, implying that the higher the degree of competition in the counterfactual, the more pronounced the effect will be. This is not surprising as effects cannot be very pronounced if the counterfactual is already characterized by limited competition.<sup>26</sup>

Figure 3b: Total damages and price effect damages of a representative retailer depending on different producer counterfactuals and retail markets



<sup>&</sup>lt;sup>25</sup> The Figure is based on a vertical value chain consisting of m producers under homogenous product Cournot competition with constant marginal cost c=5 selling to n homogenous product Cournot retailers with constant marginal cost of 0 who sell to final consumers. The linear inverse demand of final consumers is given by p=a-bQ, where p is the price and  $Q=\sum_{i=1}^n q_i^*$  is the aggregate quantity produced, a=100 and b=1. In the factual scenario the producer market is assumed to be cartelized with m=1 and  $n\geq 1$ . The counterfactuals are based on combinations of m and n, where m>1 and  $n\geq 1$ . The Figure shows the damage to a representative retailer resulting from the price and the quantity effect for different combinations of m and n in two separate non-linear three-dimensional graphs.

<sup>&</sup>lt;sup>26</sup> This is of course indicated by and directly related to the Lerner index.

Both Figures clearly suggest the importance of the quantity effect for lower values of n (and to a lesser extent also for higher values of m). In the following, a numerical example is presented that uses a parameterization for which one might suspect that the difference between price and quantity effects is less pronounced. Consider a counterfactual with m=4 and n=20. Given these parameters and the assumption on final (inverse) demand introduced in Footnote 24 above, the individual wholesaler output is given by  $q_w^* = \frac{380}{21} \cong 18$  corresponding to an equilibrium price of  $p_w^*=24$ . Individual reseller output is given by  $q_r^*=\frac{76}{21}\cong 4$  corresponding to an equilibrium price of  $p_r^* = \frac{580}{21} \cong 28^{27}$  If the m firms on the wholesale level now form a perfect cartel, the cartelists will reduce their output to the aggregate monopoly quantity  $\sum_{i=1}^m q_i^{cartel} =$  $^{950}/_{21}\cong 45$  implying individual quantities of  $q^*_{cartel}=\,^{950}/_{84}\cong 11$  corresponding to an equilibrium price of  $p_{cartel}^*={}^{105}\!/_2\cong 53$ . Individual reseller output is reduced to  $q_r^*={}^{95}\!/_{42}\cong 2$ corresponding to an equilibrium price of  $p_r^* = {1150}/{21} \cong 55$ . Based on these equilibrium outcomes, the mark-up on the wholesale and the retail price are respectively  $\sim 119\%$  and  $\sim 98\%$ . The pass-on rate is  $\sim$ 95%, which is not surprising in light of the relatively high degree of competition in the retail market with 20 firms. In this example, every retailer is damaged by  $\sim 10\%$  of his precartel profits, where  $\sim 63\%$  of this damage is due to the quantity effect and  $\sim 37\%$  to the price effect. As a result, while less visible in Figures 3a and 3b, the quantity effect continues to dominate the price effect and the magnitude of total damage remains important relative to profit also for less competitive counterfactuals (smaller values of m) and more competitive retail markets (higher values of n).

Figure 3a and 3b can be considered the most realistic scenario within the model approach used here as cartelization typically does not occur in highly competitive industries and as damage claims by dispersed direct purchasers are less likely.<sup>28</sup> As can be seen, this effect is further strengthened if the retail market is less competitive, i.e. the relative importance of the quantity effect (and total damages) decreases in n. The more competitive the wholesale market in the counterfactual, the bigger the effect as the relative importance of the quantity effect increases in m.

Both Figures highlight the fact that over the relevant range of parameters, i.e. the number of firms in the wholesale and retail market under Cournot competition, there is not a single instance where the price effect is more substantial than the quantity effect. While this is trivial in some sense, the fact that this has not been properly recognised in the policy debate so far is probably due to the fact that most authors consider only the situation depicted in Figure 1 seemingly suggesting that quantity effects will be smaller than price effects.<sup>29</sup>

Note that  $n\frac{76}{21}=m\frac{380}{21}$  for n=20 and m=4, which is due to the assumption that one wholesale unit is needed to produce one unit of the retail product, so that aggregate quantities are identical. This will of course remain true also under the cartel.

<sup>&</sup>lt;sup>28</sup> The number of firms in an industry is an accepted proxy for the degree of competition and also dispersion seems reasonably approximated by the number of firms active in the market. Most discussions of these effects rely on the boundary assumption of this general model, i.e. consider a perfectly competitive industry as counterfactual for the cartel. In the general homogenous product Cournot model underlying Figure 3a and 3b, the perfectly competitive equilibrium is reached when  $n,m \to \infty$  with monopoly solutions for n,m=1.

<sup>&</sup>lt;sup>29</sup> If one were to add an indirect purchaser level in Figure 1 under the assumption of pass-on, one would see that the quantity effect is no longer characterized by a triangular shape but turns into a rectangle. The quantity

Based on this model, it is also possible to consider the impact of a rebuttable presumption concerning the overcharge and the quantity effect. Figure 4a shows the relationship between the overcharge and the actual price effect that is derived from a pass-on adjustment. As can be seen in the Figure, for the model used here, the overcharge will always be a substantial overestimation of the actual damages due to a cartel mark-up.

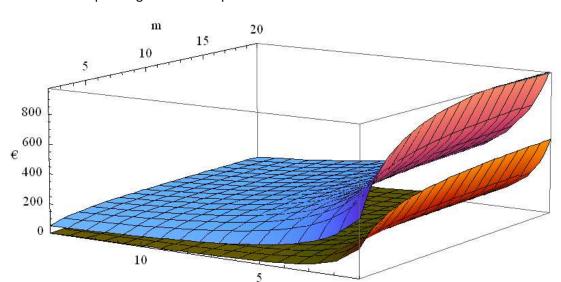


Figure 4a: Overcharge (on top) and price effect (below) damages of a representative retailer depending on different producer counterfactuals and retail markets

Consider now the relationship between the quantity effect and pass-on. This relationship is relevant if one were to consider a rebuttable presumption in the context of the quantity effect. It could for instance be imagined that pass-on is demonstrated by the infringing wholesalers implying a reduction of damage payments from the overcharge to the price effect. The very nature of pass-on, however, will typically imply a quantity effect. It could therefore be considered to introduce a rebuttable presumption that the quantity effect is equal to the pass-on. As has been argued before and as can now be visually gauged at least for this model, the error margin of such an approximation is lower than with respect to the rebuttable presumption concerning the overcharge. Figure 4b depicts the quantity effect and pass-on. Except for retail markets characterized by monopoly, the pass-on will always be larger than the quantity effect. In addition, both effects increase in m and decrease in n.

effect is identical to the dead weight loss only if the direct purchasers do not resell the product or use it as a variable input in their production process.

<sup>&</sup>lt;sup>30</sup> One may actually envision allowing such a presumption to work both ways, i.e. to allow a claimant to present the rebuttable presumption that the quantity effect is equal to the pass-on demonstrated by the infringer or to allow the infringer to claim a pass-on based on a substantiated quantity effect by the claimant.

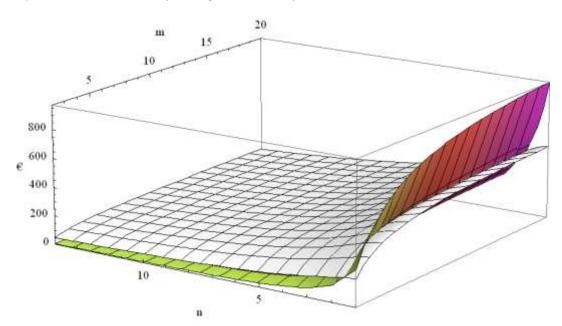


Figure 4b: Pass-on (on top for  $n \ge 2$ ) and quantity effect (below except for n < 2) damages of a representative retailer depending on different producer counterfactuals and retail markets

Of course, Cournot competition is not the only model that could be used to shed light on these relationships but other models and (derived) demand systems are beyond the scope of this paper. Already from the results presented here for what could be called the standard workhorse model in competition, it is clear that the Commission proposal, when emphasizing price effects, risks focussing on the lesser of the two evils. This risk is exacerbated by the fact that no rebuttable presumption was proposed that would bring quantity effects out of their shadowy existence on an equal footing with price effects in actual damage cases. It is therefore not unlikely that quantity effects will continue to play only a marginal role in actual damage cases despite their potential magnitude.

#### 4. Does the proposal really imply compensation for *any* person harmed?

While the proposal emphasizes the precedent of the Court cases regarding the entitlement of *any* victim of a competition law infringement to be *fully* compensated, there are doubts as to whether the proposal in fact allows this.

The first element that potentially stands in the way of *full* compensation for *any* person is a legal one and touches on general tort law precedents. The lack of a clear framework concerning causality (including rules on foreseeability and remoteness) in the proposal bears the risk of inconsistencies throughout Europe and may also lead to bad decision-making by national courts.<sup>31</sup> In that context, the Commission also seems to deviate from the idea that private enforcement is about *compensation* and not, or at least not primarily, about deterrence and extrication of illegal gain.<sup>32</sup> The second, economic, element possibly linked to causality, concerns the mistaken belief that damages only occur within a vertical value chain.

<sup>&</sup>lt;sup>31</sup> European Commission (2013:17).

<sup>&</sup>lt;sup>32</sup> As this is not always properly understood it should be clear that the overcharge is an overestimation of the illegal gain. This follows directly from the fact that any price increase by cartelists will typically result in reductions in quantities sold (otherwise there would be no reason not to increase prices even more) and that operating a cartel is typically far from costless.

As will be argued below, both elements represent a direct hindrance to a proper consideration of damages ensuing from competition law infringements.

#### 4.1. Why should foreseeability and remoteness be relevant criteria?

The compensatory orientation of private enforcement under EU law is one of the key distinguishing features to private enforcement in the US and the Commission emphasizes *full* compensation as one of the building blocks of its proposed framework. From that point of view it is surprising to find that the Commission actually envisages deviating from this by allowing overcompensation when indirect purchasers cannot claim. Article 12.2 of the proposal specifies:

"Insofar as the overcharge has been passed on to persons at the next level of the supply chain for whom it is legally impossible to claim compensation for their harm, the defendant shall not be able to invoke the defence referred to in the preceding paragraph."

This implies that the overcharge can be claimed without pass-on adjustment and creates tension with the Court judgements stipulating compensation but not more than compensation.<sup>33</sup> While this deviation from the goal of *compensation* by itself would be sufficient to find the approach questionable, one is left wondering what the Commission means by "for whom it is legally impossible to claim" as this implies that the Commission acknowledges that there are certain victims that may not be compensated:

"..in a situation where the overcharge was passed on to persons who are legally unable to claim compensation, it is not appropriate to allow the infringing undertaking to invoke the passing-on defence, as this would render it free of liability for the harm which it has caused."<sup>34</sup>

The legally untrained reader suspects that this legal impossibility<sup>35</sup> must certainly be related to difficulties in overcoming the burden of proof of convincingly demonstrating such damages, but the Commission justifies this with an entirely different argument derived from tort law:

"While indirect purchasers are entitled to claim compensation, national rules of causality (including rules on foreseeability and remoteness), applied in accordance with principles of Union law, may entail that certain persons (for instance at a level of the supply chain

<sup>&</sup>lt;sup>33</sup> Restitutio ad integrum, i.e. restoration to original condition, is the essence of the award of compensatory damages, that is, to put the successful claimant in the position he or she would have been in had the tortious action not been committed. The compensatory aim of allowing the award of damages is emphasized in Brasserie du Pêcheur and Factortame:

<sup>&</sup>quot;Accordingly, .. reparation .. of loss or damage .. caused to individuals as a result of breaches of Community law must be commensurate with the loss or damage sustained."

See joined cases C-46/93 and C-48/93 Brasserie du Pêcheur and Factortame [1996] ECR I-1029, [at 90].

<sup>&</sup>lt;sup>34</sup> European Commission (2013) para. 30. Note that the Commission speaks of "persons who are legally unable to claim compensation". If this is only meant to mean that some persons, although legally entitled, factually do not or cannot claim compensation it would have been preferable to say so.

<sup>&</sup>lt;sup>35</sup> Note that the point is explicitly not about dispersed victims who may be unwilling to claim as their individual harm is negligible.

which is remote from the infringement) are legally unable to claim compensation in a given case."<sup>36</sup>

In particular the emphasis on "in accordance with principles of Union law" is striking. How could a particular damage that has already been properly quantified in the context of a passing-on defence, as otherwise the provision would be mute, be incurred by a party that is "legally unable to claim compensation"? And how could this then be conceived of as "in accordance with principles of Union law"?

It is certainly possible to imagine a situation where damages suffered are "sufficiently remote" so that they cannot be proven up to a required standard, but how could this ever be the case for an already properly quantified damage?

The Commission obviously begs to differ and suggests that there may be cases where damages (or at least the overcharge which may not be identical to damages if there is pass-on and quantity effects) can properly be calculated but where standing is denied to the indirect purchasers based on national tort law principles. While there exists no economic justification for such an approach it should also be highly doubtful from a legal perspective whether it is possible to argue causality problems based on national law in such cases.<sup>37</sup> Doing so would seem to be directly opposed to the overarching policy goal of *compensation*, Article 2.3 of the proposal stating that "Member States shall ensure that injured parties can effectively exercise their claims for damages", Article 3 setting out the principles of effectiveness and equivalence, and also that, in the words of Article 1.1, the "...Directive sets out certain rules necessary to ensure that anyone who has suffered harm caused by an infringement of Article 101 or 102 of the Treaty or of national competition law, can effectively exercise the right to full compensation for that harm", repeated in Article 2.1 of the proposal:

"Anyone who has suffered harm caused by an infringement of Union or national competition law shall be able to claim full compensation for that harm". 38

Whatever the legal arguments that one may be willing to advance, the approach seems to break with the compensatory aim, as the only reason to allow direct purchasers (or possibly indirect purchasers) to claim more than their actual harm is, as the Commission writes, the fact that otherwise the infringing firm(s) would be free of liability for that damage. This, however, overlooks other, much more appealing options. The proper solution to this problem does not consist in allowing direct purchasers to claim what the "insufficiently close" indirect purchasers were not legally entitled to claim but to discard the economically artificial notion of remoteness as a way of regulating and controlling standing *ex ante*. In particular in cases as the one set out in the

<sup>&</sup>lt;sup>36</sup> European Commission (2013) para. 30.

<sup>&</sup>lt;sup>37</sup> The fundamental legal question is whether general tort law procedures are suitable in a competition law context. With most cases involving large companies it seems reasonable to assume that procedural efficiency is maintained even if causality rules are dispensed of in favor of a regulation of claims via standards of proof. In any case, no procedural efficiency justification that would be tailored to the specific competition law context has been proposed that could justify an economically arbitrary denial of standing.

<sup>&</sup>lt;sup>38</sup> See also Article 2.2 of the proposal:

<sup>&</sup>quot;Full compensation shall place anyone who has suffered harm in the position in which that person would have been had the infringement not been committed. It shall therefore include compensation for actual loss and for loss of profit, and payment of interest from the time the harm occurred until the compensation in respect of that harm has actually been paid."

Commission proposal discussed above, namely one where at least the overcharge (if not damage suffered) has been properly quantified, there simply exists no economic argument for persons to be "*legally unable to claim compensation*". Any basis for fears of procedural inefficiencies that could be associated with such an approach has neither been corroborated nor empirically explored to date.<sup>39</sup>

An additional irritation arises from the fact that the Commission explicitly does not want the difficulties of quantification to stand in the way of otherwise successful damage claims. In Article 16.2 of the proposal it says

"Member States shall ensure that the burden and the level of proof and of factpleading required for the quantification of harm does not render the exercise of the injured party's right to damages practically impossible or excessively difficult. Member States shall provide that the court be granted the power to estimate the amount of harm."

If, however, the Commission is willing to lower the burden of proof concerning quantification in order to encourage and allow claims of damages, it is not clear why it would want to (or be forced to) maintain restrictions on claims based on intransparent and arbitrary notions of causality detached from the magnitude of the damages suffered and the available evidence proving such damages. At the very least, this would require a debate as to the function and purpose of *a priori* restricting standing based on criteria unrelated to the economic quantification of damages suffered.<sup>41</sup>

As an admittedly key legal question it is surprising that these issues have not played a central role in the debates leading up to the proposal.<sup>42</sup> While it is at least understandable that the Commission prefers to remain silent on these issues in light of the lacking debate on the topic, the responsibility for such an omission clearly lies with the Commission.

#### 4.2. Why should damages only occur within a vertical value chain?

In general a wide range of economic actors will be affected by anticompetitive conduct. General equilibrium theory shows that all actors in an economy can potentially be positively or negatively affected by an antitrust infringement. Focussing again on a simple cartel infringement, increasing the price of the cartelized product, cartels change relative prices and thus cause substitution and income effects that can affect the whole economy, similarly to the spreading of waves across a small pond generated by a stone thrown into the water.<sup>43</sup>

<sup>&</sup>lt;sup>39</sup> That individual consumers or small firms will clog up the court system or that damage claims will be characterized by tedious and costly economic expert battles remains an unsubstantiated, often not even explicit, claim.

<sup>&</sup>lt;sup>40</sup> It would have been useful if the Commission had explicitly pointed out that this should extend also to quantity effects and emphasized this further by introducing a rebuttable presumption also for this category of damage.

<sup>&</sup>lt;sup>41</sup> General tort principles may in the end turn out to be preferable claims regulators than the quality of the evidence of a damage presented but this must be the conclusion of a scientific debate, not the unreflected stating assumption.

<sup>&</sup>lt;sup>42</sup> This seems explicable only by the undue focus on the overcharge approach within a vertical value chain or the fear of carving out competition law exceptions in general tort rules.

<sup>&</sup>lt;sup>43</sup> Similarly to the small pond metaphor, however, where the height of the wave is normally greatest near the point where the stone sank into the water but also depends on the depth topology of the pond, damages are

Despite this almost trivial insight, the European Commission seems to perceive damages almost exclusively in a vertical supply chain.<sup>44</sup> While it acknowledges that effects do not only occur downstream of a vertical chain, but also upstream (!), it misses the wider repercussions that antitrust infringements will typically have.

The whole proposal is geared towards damages within a vertical chain, as is obvious by the prominence given to pass-on considerations that logically only arise within a vertical supply chain. Article 14.2 of the proposed Directive explicitly allows claims of firms harmed in supplying the infringing firm(s) suggesting that "pass-up" may be of relevance as well.

Of course it is correct to include such upstream claims, but the exclusive treatment of damages upand downstream of a supply chain inevitably suggests that either damages cannot arise outside a vertical chain or that claims pertaining to such damages should somehow be discarded.<sup>45</sup> While the former is an economically abstruse idea<sup>46</sup>, the latter is clearly not in line with the Commission's own compensatory goal and the case law. Also in its explanatory part, upstream effects are explicitly mentioned<sup>47</sup> only to be discarded (?) again by statements suggesting otherwise:

"Actions for damages can be brought both by injured parties that have purchased goods or services from the infringing undertaking and by purchasers further down the supply chain." 48

not necessarily greater for direct as opposed to indirect purchasers or actors outside the relevant market within which the infringement took place or the vertical value chain. Indeed there are – empirically probably rare - constellations where direct purchasers may even benefit from the cartel to the further detriment of indirect purchasers. See Hellwig (2007) and Schinkel *et al.* (2008).

<sup>44</sup> This restrictive view also appears in the context of the discussion concerning the protection of the leniency applicant for whom joint and several liability is excluded. The Commission writes (European Commission (2013), para. 28):

"It is therefore appropriate that the immunity recipient is relieved in principle from joint and several liability for the entire harm and that its contribution does not exceed the amount of harm caused to his own direct or indirect purchasers or, in case of a buying cartel, his direct or indirect providers."

Possibly recognizing the implied restriction, the Commission then adds:

"To the extent a cartel has caused harm to others than the customers/providers of the infringing undertakings, the contribution of the immunity recipient should not exceed his relative responsibility for the harm caused by the cartel."

The question arises why one first restricts the debate to the vertical value chain to subsequently open it up again, unless the Commission only discusses the apportionment of damages within the vertical value chain between cartelists in these paragraphs.

<sup>45</sup> The defensive argument that such effects are obvious and therefore did not require any explicit mention is at best weak. While it is reassuring to hear that such effects are obvious, it remains the role of such a legal document to be comprehensive or to at least avoid giving the wrong impression. As a result, this should have and could have been made clear.

<sup>46</sup> From an economic viewpoint it is of course undesirable to compensate all victims as the cost of doing so would in all likelihood be disproportionate, so that some limits are required. What is economically undesirable, however, is the idea to use general tort law principles to determine standing as there is no guarantee that "sufficiently directly" affected victims will be the most harmed and that the aim of procedural efficiency is guaranteed with such a rigid *a prioristic* rule. As a result it seems preferable, at least in competition cases, to regulate claims by establishing and adjusting clear evidentiary standards rather than determining standing by tort law principles typically unrelated to damages suffered and ease of proof.

<sup>&</sup>lt;sup>47</sup> European Commission (2013), para. 32.

<sup>&</sup>lt;sup>48</sup> European Commission (2013), para. 33.

Leaving such inconsistencies aside, it is not clear how the Commission envisages damage claims in certain Article 102 TFEU cases, where competing firms in the same relevant market may be concerned.<sup>49</sup> The same applies to harm suffered from so-called umbrella effects that the Commission would seemingly consider not to cause any harm at all.<sup>50</sup>

In order to fully reveal the omission, and link it back to the discussion of remoteness above, consider a producer of complements to the products offered by a cartel. Consider further the case where the complementarity arises in some fixed or at least foreseeable or easily quantifiable proportion, as for instance between printer sales and printer cartridges or cars and car batteries. Clearly, the producers of such complements are neither upstream nor downstream of the cartel and therefore outside the vertical value chain considered by the Commission to be the locus of any potential harm resulting from competition law infringements. Furthermore, as long as consumers purchase both complements in fixed proportions, it would be relatively easy to demonstrate causality and quantify the damages suffered by the manufacturers of complements to the cartel product. As a result it should be clear that the arbitrary reduction of standing to firms within the vertical value chain, if indeed intended by the Commission, can be desirable neither from an economic nor ultimately from a legal point of view.

#### 5. Conclusion

This article has raised five questions that naturally arise from a consideration of the Commission proposal. Several of the problems identified through these questions are directly linked to the dominant conceptual framework that the Commission adopted since starting its work on the Green Paper. This framework is not capable of appropriately capturing the economics at work in the quantification of damages and more importantly also seems ill adapted to an approach foreseeing compensation to any victim harmed by a competition law infringement. While it may be too late to change tack and steer free of this terminology that has permeated the debate, it is not too late to broaden the conceptual horizon. As has been argued here, this requires foremost putting loss of profits back on the map, ideally by introducing a rebuttable presumption that would function as a practical tool to fill the damage category of *lucrum cessans* in damages quantification with life paralleling the proposed presumption on price effects. In addition, clearing the deck of causality requirements in favour of regulating claims based on the merits of the evidence presented seems the only approach consistent with the basic tenets of EU law. Competition law may be an area of law that requires exceptions from traditional tort law if it is supposed to follow a more economic approach.

#### **Bibliography**

<sup>&</sup>lt;sup>49</sup> On damage claims in the context of Article 102, see the extensive treatment in Maier-Rigaud and Schwalbe (2013), Fumagalli *et al.* (2010) and Inderst *et al.* (2013b). Of particular relevance in the context of Article 102 TFEU is the interaction between remedies and damages.

<sup>&</sup>lt;sup>50</sup> On umbrella effects see Inderst *et al.* (2013a).

<sup>&</sup>lt;sup>51</sup> This example remains rather simple as it sticks to cartels. See Maier-Rigaud and Schwalbe (2013) for a detailed discussion of effects outside the vertical value chain.

Ashton, David and David Henry (2013) *Competition Damages Actions in the EU: Law and Practice* (with an economic contribution by Frank Maier-Rigaud and Ulrich Schwalbe), Edward Elgar, forthcoming.

European Commission (2004) Study on the Conditions of Claims for Damages in Case of Infringement of EC Competition Rules, Part II, Analysis of Economic Models For the Calculation of Damages, Study prepared by Ashurst.

European Commission (2005a) Green Paper - Damages Actions for Breach of EC Antitrust Rules, COM(2005) 672 final.

European Commission (2005b) Commission Staff Working Paper: Annex to the Green Paper on Damages Actions for Breach of EC Antitrust Rules, SEC(2005) 1732.

European Commission (2007) Making Antitrust Damages Actions More Effective in the EU: Welfare Impact and Potential Scenarios, Final Report Prepared by the Center for European Policy Studies, the University of Rotterdam, and the Luiss Guido Carli.

European Commission (2008a) White Paper on Damages Actions for Breach of the EC Antitrust Rules, COM(2008) 165 final.

European Commission (2008b) Commission Staff Working Paper Accompanying the White Paper on Damages Actions for Breach of the EC Antitrust Rules, SEC(2008) 404.

European Commission (2009) Quantifying Antitrust Damages. Towards Non-Binding Guidance for Courts, Study prepared by Oxera.

European Commission (2011) Draft Guidance Paper 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, June.

European Commission (2013) Proposal for a Directive of the European Parliament and of the Council on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and the European Union, COM(2013) 404final, June.

Friederiszick, Hans W. and Frank P. Maier-Rigaud (2007) The Role of Economics in Cartel Detection in Europe, in: *The More Economic Approach in European Competition Law*, D. Schmidtchen, M. Albert and S. Voigt eds., Mohr Siebeck, 179-196.

Friederiszick, Hans W. and Frank P. Maier-Rigaud (2008) Triggering Inspections ex officio: Moving Beyond a Passive EU Cartel Policy, *Journal of Competition Law and Economics*, 2008, 4(1), 89-113.

Fumagalli, Chiara, Jorge Padilla and Michele Polo (2010) Damages for Exclusionary Practices: A Primer, in: *Competition Law and the Enforcement of Art. 102*, I. Kokkoris and F. Etro eds., Oxford University Press, 203-220.

Harrison, Jeffrey L. (1980) The Lost Profits Measure of Damages in Price Enhancement Cases, *Minnesota Law Review*, 64, 751-788.

Hellwig, Martin (2007) Private Damage Claims and the Passing-on Defense in Horizontal Price-fixing Cases: An Economist's Perspective, in: *Private Enforcement of EC Competition Law*, in: Basedow J., (Ed.), Kluwer Law International, 121-159.

Inderst, Roman, Maier-Rigaud, Frank and Schwalbe, Ulrich (2013a) Umbrella Effects, IESEG School of Management and LEM-CNRS working paper, available at: http://ssrn.com/abstract=2297399.

Inderst, Roman, Maier-Rigaud, Frank and Schwalbe, Ulrich (2013b) Quantifizierung von Schäden durch Wettbewerbsverstöße, forthcoming in: Andreas Fuchs und Andreas Weitbrecht (eds.) *Handbuch der Privaten Kartellrechtsdurchsetzung*, C.H. Beck, München.

Kosicki, G. and M.B. Cahill (2006) Economics of cost pass through and damages in indirect purchaser antitrust cases, *Antitrust Bulletin*, 51, 599–630.

Maier-Rigaud, Frank and Ulrich Schwalbe (2013) Quantification of Antitrust Damages, in: David Ashton and David Henry (eds.), *Competition Damages Actions in the EU: Law and Practice*, Edward Elgar.

Schinkel, M. P., K. Tuinstra and J. Rüggeberg (2008) Illinois Walls: How Barring Indirect Purchaser Suits Facilitates Collusion, *The Rand Journal of Economics*, 3(39), 683-698.

van Dijk, Theon and Frank Verboven (2008) Quantification of Damages, chapter 93, 2331-2348 in S. W. Waller ed. *Issues in Competition Law and Policy*, vol. 3 ABA Section of Antitrust Law.

Verboven, Frank and Theon van Dijk (2009) Cartel Damage Claims and the Passing-on Defense, *Journal of Industrial Economics*, 57(3), 457-491.