

THE BEST OF BOTH WORLDS: COMPENSATION VIA PRICE-CAPS FOR PASSED-ON OVERCHARGES

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ABSTRACT

We present a market-based compensation approach to antitrust litigation and other cases of price overcharges. Instead of lump-sum compensation, paid either directly or through coupons, defendants are required to lower their prices for a certain designated period, i.e. price-cap compensation (PCC). We show why previous criticism of PCC was misguided. And, in sharp contrast to the common view in the literature, implementing PCC may have many substantive and procedural advantages. Importantly, although PCC is implemented vis-à-vis direct purchasers only, it reconciles the U.S. and European Union legal approaches and solves the challenge of passed-on damages to indirect purchasers.

1. INTRODUCTION

Antitrust litigation produces much compensation, but actual end consumers enjoy merely a sliver of the funds. The average compensation generated by a federal antitrust class action is roughly \$60 million (Fitzpatrick 2010). The largest forty antitrust reported cases from 1990 to 2008, generated a total compensation of approximately \$20 billion in cash alone (Lande & Davis 2008a). However, out of the total amount, the vast majority of the relief, \$13 billion, was recovered by direct purchasers and not indirect ones or final consumers. Merely 10 percent of the pot went to end consumers (with the balance recovered by competitors). Thus, the surprising reality is that although antitrust law

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is intended and designed to protect consumers, the consumer population is often excluded from collecting any damages in antitrust litigations.

At the heart of much antitrust litigation lies the argument that defendant's anticompetitive or exploitive behavior led to overcharged prices. Overcharge claims also arise in other types of cases, in which the defendant breached a regulation imposing price limits. Plaintiffs then sue in court for damages to recover the resulting overcharges. However, in modern economies, most products are not purchased directly by end-users. Rather, they are sold to intermediaries such as distributors or wholesalers. Consumers are therefore overcharged by an intermediary, who in turn was overcharged by the defendant, and there may even be more than one intermediary in the chain. Alas, under prevailing U.S. federal law, real consumers are considered "indirect purchasers" and consequently cannot recover any passed-on damages.

The issue of passed-on damages is, until this very day, one of the most debatable questions in antitrust law. Consider the recent Supreme Court's decision in *Apple Inc. vs. Pepper*,¹ where the court reversed the judgment of the circuit court and allowed a multi-billion dollar suit against Apple to proceed. The plaintiffs, consumers of Apple's App Store, alleged that Apple exploited monopolistic power since Apple's apps can only be bought from Apple's App Store, and abused its power to collect overpriced charges. In Response, Apple argued that consumers of Apple's App Store are *not* entitled to bring suit against Apple, because they do not pay Apple's commission (while commission is charged from the developers of the Apps). Thus, so goes Apple's argument, consumers' alleged damages were passed-on to them by the developers, and therefore the consumers cannot sue Apple.

Although the case was allowed to proceed, the Supreme Court was divided regarding the application of the indirect purchaser doctrine to the facts of the case, and whether, under the App Store model, Apple is indeed merely an indirect seller. In any case, the recent decision in *Apple Inc. vs. Pepper* multi-billion suit is but an example of the importance of a long debate between two opposite approaches to the passed-on damages problem: The first approach, by and large adopted by US federal law,² determines that indirect purchasers are not allowed to sue for passed-on damages, while the direct purchasers are entitled to sue for the full recoupment of defendant's overcharges (even if part of the charges were passed-on down the supply chain). The reverse approach,

1 *Apple Inc. v. Pepper*, 139 S. Ct. 1514 (2019).

2 *Hanover Shoe v. United Shoe Machinery* 392 U.S. 481 (1968); *Illinois Brick Co v. Illinois* 431 U.S. 720 (1977). See discussion in Section 4 below.

adopted by European Union (EU) law,³ determines that each layer of the distribution chain, including end consumers, can sue for the damages that were passed-on to it.

In this article, we offer a novel approach to resolve this dispute. One that allows the court to intervene only in the direct relationship between the defendants and their direct purchasers, yet it fully compensates all layers in the supply chain, and especially end consumers. We set forth and advocate the use of an alternative compensation technique, price-cap compensation (PCC), which is a *mandatory discounted price-cap*. PCC is a market-based solution to the problem of passed-on overcharges, as well as many other weaknesses of current compensation techniques.

The proposed PCC remedy grants direct purchasers (and them alone) the right to recover compensation in the form of a discounted price-cap, for a certain designated period. Such remedy, however, also de-facto compensates indirect purchasers and end-consumers. As we show in our model, under reasonable assumptions, just as unlawful overcharges were passed-on to indirect purchasers (in whole or in part), so do the corresponding benefits of the mandated discounted price pass-on to the benefit of indirect purchasers. In addition, would-be consumers, who did not purchase the products because of their illegally elevated price (and therefore usually left uncompensated under all current compensation techniques), would now receive compensation that flows from the discounted price. Finally, the administration of the proposed market-based remedy would be swift, evading inter alia the severe problems of the current compensation techniques, such as the high costs of allocation of small amounts of cash to many consumers, poor redemption rates of coupons (as well as collusive coupons settlements), and the criticism of charitable donations as a form of compensation.

More so, the PCC remedy is not just a simple monetary transfer, but a welfare-enhancing remedy. The intuitive reason for this is that the defendant's discounted prices allow more consumers to purchase and enjoy defendant's products. As we show in our model, while the PCC approach creates viable deterrence, plaintiffs and defendants alike would prefer a PCC remedy over a lump-sum compensation.

PCC is also expected to be highly efficient procedurally. It enables the court to handle the problem of passed-on damages without having to perform extremely complicated economic calculations and evaluations. Typically, passed-

3 Articles 12–16 of 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, *Official Journal L 349/1* [2014]. See discussion in Section 4.

on damages calculations require knowledge about the cost functions, the form of the demand functions, the structure of competition, etc. PCC does not necessitate such burdensome calculations and estimates. To implement the PCC remedy, courts need only the minimal data required in any overcharge case, and specifically the price and quantity expected in the relevant market with and without the overcharge. In addition, the court will have to set the remedy so that the price-cap is lower than the normative price that would be set without the court's interference, yet above the defendant's marginal costs.⁴

The length of the period for which the price-cap is imposed depends on the extent of the mandated discount. There is a tradeoff between the length of the period and the size of the discount, and in theory full compensation could be achieved by a short period of substantial discounts as well as a longer period of smaller discounts. Nevertheless, as we discuss in Section 7.3, implementation of PCC for prolonged periods raise several practical concerns.

The PCC remedy is a simple and easy market mechanism to compensate indirect purchasers and end consumers. To clarify, the currently used compensation method of a lump-sum payment to direct purchasers is *not* expected to carry much benefits to indirect ones. A direct purchaser that receives a one-time compensation payment is not expected to lower her future prices as a result. The reason for this is that such a lump-sum payment does not affect its costs at the margin, and therefore irrelevant to pricing.⁵ In contrast, the PCC method grants compensation through a continuous discount in variable costs, which does affect pricing and would induce the direct purchaser to pass-on some of the said discount to the indirect purchasers.⁶ Another benefit of the PCC method is that it directs compensation to indirect customers without having to identify them and have each of them prove their damages. Rather, it requires litigation by direct purchasers only as plaintiffs—as is done today under U.S. law—yet it compensates everyone who incurred damages, including indirect customers—as is done under EU law in a much more complicated fashion. Our analysis is the first to identify and formally analyze this advantage.

Interestingly, other than the academic discussion of coupons (which we analyze at some length in Section 2 of the article), compensating through general discounts, sometimes referred to as “fluid fund,” “fluid recovery,” or “price

4 Note that the defendants themselves would not want the price to be set below their marginal costs, to avoid being pushed out of the market. See further discussion in Section 7.2.

5 See further discussion in Section 4.5.

6 See further discussion in Section 5.

rollback,”⁷ has received surprisingly little attention in academic writing. In sharp contrast to our argument here, the scarce academic literature that discusses them, considers price-cap remedies problematic,⁸ impractical, and economically inefficient.

The origin of this misconception can be traced to [Durand \(1981\)](#),⁹ who claimed that fluid fund recoveries create deadweight economic losses and are harmful to competitors. Durand’s conclusions are based on the naïve theoretical assumption that regular market prices equal marginal costs. Under this assumption, any temporary discount must set a price below marginal costs, thus leading to overconsumption and economic loss. However, in practice, prices above marginal costs are all but a rare phenomenon, as shown, for instance, in [Hall \(2018\)](#). Hence, PCC could be often implemented without violating the principle that prices must not fall below marginal costs.

PCC, as mentioned earlier, is a “fluid” remedy, as general discounts also benefit nonplaintiffs. This is a major reason why courts in the USA and elsewhere are generally hesitant and skeptical of “fluid” discounts as a legitimate remedy in consumer class-action suits. The common conception is that because nonplaintiffs are benefiting from it, the litigating parties (or the plaintiff class) must be financially hurt. Hence, in practice, courts are unlikely to mandate discounts in ordinary cases, and some courts have even ruled them illegitimate for compensating plaintiffs ([Moore 2013](#)).¹⁰ In Sections 7.8 and 7.9, we address these concerns and show why they are often exaggerated, given the frequent scenario of repeated transactions by a relatively fixed consumer body. We also explain (in Section 5.2) the distributional concern that PCC raises about a possible transfer of compensation between real consumers and would-be consumers.

In any case, although courts are hesitant and reluctant to use “fluid” discounts remedy, a few examples of such use can be traced. A prominent example of an early use of PCC is the settlement reached in the case of *Daar v. Yellow Cab*,¹¹ where the defendant was a taxicab company that illegally adjusted its meters and overcharged its customers. The California court authorized a

7 For the origin of the term “fluid recovery,” see [Malina \(1972\)](#).

8 See [Malina \(1972\)](#); [Shepherd \(1972\)](#), pp. 458–463; [Mandig \(1976\)](#), pp. 958–960; [Durand \(1981\)](#); [Barnett \(1987\)](#), pp. 1598–1599; [Dejarlais \(1987\)](#), pp. 753–755; [Davis et al., 2014 \(2014\)](#), pp. 877–888).

9 See discussion in Section 7.4.

10 See, e.g. *Eisen v. Carlisle & Jacquelin*, 479 F.2d 1005, 1018 (2d Cir. 1973) (holding fluid recovery to be “illegal, inadmissible as a solution of the manageability problems of class actions and wholly improper”), *vacated on other grounds*, 417 U.S. 156 (1974). For a listing of cases, see [Moore \(2013, §23.46\[2\]\[e\], \(23\)284 - 286\)](#).

11 *Daar v. Yellow Cab Co.*, 433 P.2d 732 (Cal. 1967). The settlement itself is not discussed in the court’s opinion. For a description of the settlement, see [Berk \(1976\)](#).

settlement where the taxicab company's rates were lowered to all future customers until the full sum of the overcharges was returned. A more recent example of discounts as compensation, is the El-Paso antitrust case, which generated a recovery of \$1,427 million in monetary transfers, as well as \$125 million in gas rate reductions (Lande & Davis 2008a, Lande and Davis, 2008b). We advocate the proliferation of such remedies.

This article continues as follows: In Section 2, we discuss the popular coupons compensation and compare them to our proposed PCC remedy. In Section 3, we show how a basic market-based PCC compensation mechanism would work. Based on this basic model, we discuss two benefits of the PCC approach: the social surplus created by using PCC and the compensation received by potential consumers who were forced out of the market. In Section 4, we discuss the challenge of passed-on damages. We present the ongoing debate over the two contrary approaches to this problem and show how our PCC mechanism enjoys the benefits of both approaches. Section 5 presents our formal model of the PCC mechanism. The model formally analyzes how the market-based PCC approach can compensate indirect purchasers by passing on litigation benefits, while also providing sufficient deterrence. Section 6 discusses possible extensions of the model. Section 7 discusses several possible limitations and potential criticism. Section 8 briefly concludes.

2. A COMPARISON OF COUPONS AND GENERAL DISCOUNTS AS REMEDIES

2.1 The Use and Limitations of Coupons as a Remedy

Coupons are a popular method for allocating low-scale compensation to numerous plaintiffs, especially in the USA. Estimations are that between 6 and 9 percent of all class actions (Willging & Wheatman 2005) and around 30 percent of consumer class-actions in the USA, result in coupon settlements (Fitzpatrick 2010). Coupons' settlements are also very frequent in antitrust cases (Gramlich 1986, 2003).

Despite their popularity, coupon settlements have drawn harsh criticism from many commentators. (Polinsky and Rubinfeld, 2007) A major drawback of a coupon settlement is that it is difficult to assess and appreciate their true value *ex ante* (Peppet 1996; Miller & Singer 1997). As a result, coupon settlements often allow defendants to discreetly erode the value of the coupons they distribute, and thus lower compensation and dilute deterrence. As we explain below, class action plaintiffs and their lawyers have an incentive to collude with defendants in a settlement to achieve this inimical outcome.

The literature point to various ways in which defendants can discreetly lower the value of a coupon settlement¹²: (i) Defendants can devise coupons which offer little or no actual discount to plaintiffs; (ii) After a settlement, defendants can sometimes raise their products' prices for everyone or selectively for the coupon holders; (iii) After a settlement, defendants can lower the quality of the products they sell to everyone or selectively to the coupon holders; (iv) Defendants can set preconditions for the use of coupons in ways that will limit plaintiffs' ability to redeem them, limit their transferability, or raise hurdles for coupons' exercise in practice; (v) Defendants can incorporate the settlement's coupons into an existing discount plan or use the coupons as an advertising tool. Given all these avenues for manipulation, the true economic value of coupons is often unobservable, and a coupons' settlement creates "[t]he illusion of sizable compensation" (Gramlich 1986, p. 265).

Moreover and relatedly, coupons suffer in practice from amazingly low redemption rates.¹³ Past estimates found that for private consumers, the average redemption rate of coupons is 13.1 percent (Gramlich 1986). Low redemption rates of coupons mean that plaintiffs are probably undercompensated and defendants are most likely underdeterred.

Importantly, defendants and plaintiffs' lawyer in a class action have a mutual incentive to collude, and reach an inferior settlement that will overstate the true value of the coupons. Given the agency cost of the relationship between the class action lawyer and the class itself, defendant's costs reduction may be channeled in part to enhance plaintiffs' lawyer's legal fees to the detriment of the class (Gramlich 1986, p. 266; Miller & Singer 1997, pp. 107–112; Leslie, 2001, pp. 1004–1052).¹⁴

In addition, when the exercise price of a coupon is lower than the marginal cost of the product, consumers might use the coupons to buy products in excessive amounts and create a deadweight economic loss (Polinsky & Rubinfeld 2008). Furthermore, during the coupons' redemption period, plaintiffs might have a particularly low demand for defendant's products, given that the members of the plaintiffs' group already purchased products from the defendant (the purchase that gave rise to the legal proceedings). Therefore, plaintiffs' demand curve for the defendant's products might be distorted (Polinsky &

12 See Gramlich (1986) and Borenstein (1996).

13 Accurate data on redemption rates is scarce, as defendants choose not to disclose this information. Further anecdotal evidence also suggests that redemption rates are very low, see (Hillebrand and Torrence, 1988); Tharin and Blockovich, 2005.

14 But see The Class Action Fairness Act of 2004, S. 2062, 108th Cong. § 1712 (2004), which tied attorneys' contingency fees to the actual coupon redemption rates.

Rubinfeld 2008). Another concern is that defendants can use coupons as a means of price discrimination, whenever only a certain type of consumer is expected to use them (Borenstein 1996). Finally, coupons settlements create substantial administrative costs, as these settlements require identifying the members of the plaintiffs' group, transferring the coupons to their hands, and administering the coupons upon purchase. Monitoring of the coupon's settlement is also far from trivial, allowing more room for manipulation and creating additional cost.

2.2 PCC vs. Coupons Compensation

In the face of these many difficulties and criticism concerning the prevalent use of coupons' settlements, it is important to compare them to our proposed PCC remedy. After all, both coupons and PCC are discounts that are offered as remedies. There are important similarities but also important differences between the two. We argue that in many circumstances the proposed PCC remedy may be superior and preferable to the popular coupon settlement.

First, as we explained, coupons are a poor manner to offer discounts, and often result in low redemption rates and little value to consumers. Our proposed PCC remedy takes advantage of the fact that in overcharge cases the court is required to determine the market price of the product or service. Hence, in sharp contrast to coupons, our proposed PCC remedy, is a "plain vanilla" discount on what the court considers to be the market price. The discount is unlimited and unconditional, granted in every purchase of defendant's products for the predefined period (or number of transactions). It is harder to circumvent and manipulate such compensation scheme and much easier to police its implementation. Because the true economic value of a PCC remedy is more observable and can be more easily calculated, defendant's ability to dilute the benefits of a PCC remedy are more limited, and a collusion with plaintiffs' lawyer will be harder.

Second, in a coupons' settlement, and unlike the PCC remedy, defendant's discounts are only received by the members of the plaintiffs' group. In some cases, it is extremely difficult to individually prove past purchases—say in cases of overcharge of grocery products. In these cases, distributing the coupons to whoever incurred the damage is a very difficult and expensive task. This problem is exacerbated by the fact the coupons are highly susceptible to misuse and manipulation by defendants, as it is very hard for the court to monitor bona fide implementation of coupon settlements. The PCC remedy, in contrast, does not suffer from such difficulty: defendant's discounts are "fluid" and flow

to the entire consumer population. As we further discuss in the article, antitrust cases often relate to situations of repeated transaction, which to a large extent involve the same body of consumers.¹⁵ Hence, there is a high level of similarity between the plaintiffs' class and the ones that enjoy future general discounts.

More so, this attribute of benefiting the entire consumer population is an advantage as it enhances social welfare, and it also enables to compensate would-be consumers who decreased their purchases because of defendants' inflated prices. We address these aspects of the PCC remedy, as well as some distributional effects of compensating would-be consumers in Sections 3.2, 3.3, 5.2, 7.8, and 7.9 of the article.

Finally, while both PCC and coupons are price discounts for future transactions, coupons are designed to be used by end-consumers. Therefore, the economic literature that analyzed the use of coupons never discussed the major advantage that PCC has in a vertical market structure (which this article highlights): discounts granted to direct purchasers are bound to pass-on to consumers, compensating both direct and indirect buyers for the damages they incurred. This difference is, therefore, critical to our discussion.

3. A SIMPLE EXPOSITION OF PCC IN OVERCHARGE CASES

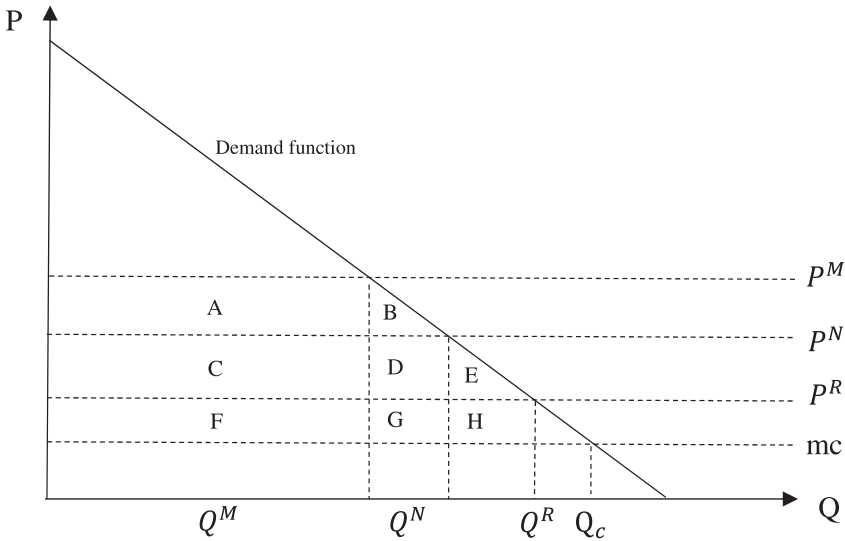
We start with a simple exposition of PCC, which shows how this market mechanism works. In this basic framework, the defendants sell directly to consumers, so the pass-on problem does not arise. However, even this basic framework illustrates two other benefits of the PCC approach: the social surplus created by using PCC and the additional compensation for potential consumers who were forced out of the market.

3.1 The Basic Framework

Suppose that the normative or the acceptable price defendants can legally charge is P^N , which corresponds to a quantity Q^N . This is the market price without the overcharge, which could be the competitive outcome, or some other exogenic price as decided by the court or by a regulator. Suppose that due to the violation of the law, say because of cartelistic behavior by the defendants, the price was set at a higher level, P^M , which corresponds to a lower quantity, Q^M . The following figure illustrates the price overcharge and the possible price for implementing PCC:

15 We do acknowledge that there are other cases, in which repeated transactions by the same consumers are uncommon (such as a purchase of a car). We, therefore, do not argue that the PCC remedy should be used without careful discretion.

An illustration of the damage from overcharge and PCC



3.2 Compensation to Current and Potential Consumers

Let us now consider the damages to consumers caused by the defendants' overcharge. The obvious damage, which the court typically concentrates on, is the overcharges the defendants collected from the units sold, Q^M . These direct damages are denoted by the A area in the diagram:

$$A = Q^M (P^M - P^N) \tag{1}$$

However, there are additional damages that were incurred by current or potential customers. Due to the unlawfully high prices of the defendants, some of the consumers may decrease their consumption, and some may choose to refrain from buying altogether. This additional damage derived from these unsold units, which should have been sold under normative prices, is denoted by the B area in the diagram. If the demand function is linear, then it amounts to:

$$B = 0.5(Q^N - Q^M)(P^M - P^N) \tag{2}$$

Naturally, it would be hard to prove and allocate these damages due to a reduction in the quantity bought by consumers, especially for those who opted to refrain from buying the product due to the overcharge. Nevertheless, in order to fully compensate all consumers harmed and adequately deter potential defendants, courts should impose damages denoted by both areas: $A + B$ areas:

$$A + B = 0.5(Q^N + Q^M)(P^M - P^N) \tag{3}$$

Note that the minimal data required by the court in order to calculate these damages are the quantities and prices with and without the overcharge, namely P^N , P^M , Q^N , and Q^M .

3.3 Additional Welfare-enhancing Transactions

Assume that each consumer's demand is constant over time, and so are the market structure and cost functions of the firms. Suppose now that the court or a regulator would want to compensate customers by forcing a price-cap: the defendants must price their product at some price no higher than P^R , which is lower than the normative price, P^N , but higher than the marginal cost of producing the product, mc . As already mentioned, prices above marginal costs are all but a rare phenomenon, as shown, for instance, in Hall (2018). Therefore, such method of compensation will create a social surplus denoted by $E + H$ areas. This positive surplus is created due to an increase in economically efficient transactions as a result of the lower price charged in the market.

3.4 Compensating by a Price-cap

PCC can be used to compensate consumers for the damages caused to them by the defendants' overcharge. Note that courts are usually reluctant to directly intervene in pricing. Overcharge cases nonetheless require the court to directly address the normative price, the overcharge, and the costs. Hence, in such cases, the court's intervention in pricing is much more natural. The gains to consumers from lowering the price to P^R is denoted by areas C, D, and E. Consumers' gains can be calculated as follows:

$$\begin{aligned} C + D + E &= Q^M(P^N - P^R) + \\ &+ (Q^N - Q^M)(P^N - P^R) + 0.5(Q^R - Q^N)(P^N - P^R) = \\ &= 0.5(Q^R + Q^N)(P^N - P^R) \end{aligned} \quad (4)$$

This is the total sum of compensation paid to consumers, under the assumption of a one-time period. The court, however, can extend or shorten the time period and accordingly the amount of compensation required. The compensation period should be set according to the following formula:

$$\tau = \frac{A + B}{C + D} = \frac{(Q^N + Q^M)(P^M - P^N)}{2Q^N(P^N - P^R)} \quad (5)$$

Note that in addition to the price-cap set by the court, P^R , in order to implement PCC the court only needs to know the prices and quantities with and

without the overcharge—which is the minimum data required in any overcharge case. The compensation period, τ , is a very simple term, since it is calculated in a naïve manner, not taking into account the fact the lower price imposed by the court is bound to increase the demand by customers, hence increasing their welfare. This method results in a higher than necessary compensation, since the low price facilitates additional welfare-increasing transactions. In the following sections, we prove that such a compensation period results in several desired properties, such as deterrence and full compensation, even in a more complex setup, in which there are both direct and indirect customers.

3.5 Deterring Defendants

PCC can help in deterring defendants from overcharging prices.¹⁶ The defendants' gain from their overcharge, or a price P^M , can be denoted by A area minus D area. Defendants' losses from lowering the price to P^R , for a single period, can be denoted by areas C + D – H. In Section 5, we prove, more generally, that setting the above compensation period, τ , results in deterrence, so that the net gains for the defendants, as a result of their unlawful act, are negative.

4. THE DEBATE OVER PASSED-ON DAMAGES

4.1 The Problem of Passed-on Damages

Quite often in civil litigation on anticompetitive behavior, plaintiffs sue defendants for a breach of law that resulted in overcharged prices. Potential plaintiffs can be categorized into two distinct types: direct and indirect purchasers. The *direct* purchasers are clients of the defendants who bought products directly from them. The *indirect* purchasers bought the defendants' products from third parties, such as distributors, wholesalers, or any other intermediary, but not directly from the defendants. Most often, the final consumers are indirect purchasers. The harms caused to the indirect purchasers are the overcharged prices they paid to intermediaries, which do not necessarily equal the overcharges paid by the intermediaries themselves.

When defendants sell products to direct purchasers and illegally overcharge them, the direct purchasers might in response raise their own prices and pass

¹⁶ This analysis does not take into account the fact that the probability of getting caught is lower than 100 percent. Fines and punitive damages, which will be discussed below, help to cope with that.

on the overcharges to indirect purchasers down the supply chain. The direct purchasers might manage to pass on part or even the entire overcharge they incurred. Consequently, a substantial part of the damages caused by the defendants may be borne by indirect purchasers.

Two legal questions arise here: First, when a direct purchaser sues a defendant for overcharged prices, can the defendant raise a *defense argument*, claiming that the plaintiff managed to pass on his losses to others down the supply chain, so that the plaintiff himself was unharmed (or his harms mitigated) and therefore is not entitled to any legal compensation. The other legal question, a mirror image of the first, is whether indirect purchasers, such as final consumers, can raise an *offense argument* and sue the defendant, claiming that although they did not purchase items from the defendant, the defendant's illegal actions and overcharged prices were passed on to them by others. These two legal questions are obviously connected.

The USA and the EU have adopted two opposite approaches to the pass-on problem. EU law has chosen to allow for both offensive and defensive pass-on arguments: both direct and indirect purchasers can sue in European courts for overcharged prices, and defendants can raise a defense by showing that plaintiffs passed on their damages to others.¹⁷ In other words, in the EU each “layer” in the supply chain can file suit against the defendant, and the courts must determine, for each “layer” of plaintiffs, the amount of overcharges passed on to them and the amount of overcharges they managed to pass on to others.

U.S. federal law chose the contrary approach and has rejected both defensive and offensive pass-on claims. Indirect purchasers do not have a legal right to sue for passed-on damages (the *Illinois Brick* rule).¹⁸ The direct purchasers are the only ones who can initiate litigation against defendants, and in such litigation, the defendants cannot argue that the plaintiffs passed on their damages to others.¹⁹ In a nutshell, U.S. courts award all of the overcharge damages solely to the direct purchasers, regardless of any pass-on. Such an outcome creates a windfall for direct purchasers and leaves indirect purchasers (often consumers!) with no compensation for their losses.²⁰

17 Articles 12–16 of Directive 2014/104/EU requires each Member State to lay down appropriate procedural rules for the availability of the “pass-on” defense for defendants and to ensure that both direct and indirect purchasers are entitled to sue for antitrust damages. See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.349.01.0001.01.ENG. For a detailed survey of the adoption of this Directive in the various EU member states, see (Baker, 2017).

18 *Illinois Brick Co v. Illinois* 431 U.S. 720 (1977).

19 *Hanover Shoe v. United Shoe Machinery* 392 U.S. 481 (1968).

20 It should be noted that the abovementioned *Illinois Brick* approach adopted by the U.S. federal courts has encountered substantial criticism and erosion over the years. Several bills have come before the U.S. Congress in the hope of overturning this approach, but so far to no avail (See Benston

These two contrary approaches to the problem of passed-on damages have sparked a vigorous legal debate (see Landes and Posner 1979, 1980; Harris and Sullivan 1979, 1980, 1981; Cooter 1981; Viton and Winston, 1981; Werden and Schwartz 1984). In this section, we briefly summarize this debate, in order to show how our PCC market-based approach tackles this issue and enjoys the best of both approaches.

4.2 Aggregation of Legal Claims

Landes & Posner (1979) and (Werden & Schwartz (1984)) argue that the *Illinois Brick* rule and the U.S. approach allow for an aggregation of all legal claims by allocating the right to sue to only one type of plaintiffs, the direct purchasers. Aggregating the damage claims raises the plaintiff's incentives to file suit, which produces better deterrence. Aggregating litigation is also socially desirable from an information costs perspective. If each purchaser were to be able to independently sue every supplier up the supply chain, then multiple purchasers would simultaneously search for information about the same suppliers, leading to social waste and suboptimum enforcement due to lack of coordination.

On the contrary, allocating the right to sue to only one group (direct purchasers) could be highly problematic if such a group refrains for some reason from filing suit. Typically, the direct purchasers are distributors and wholesalers who purchase their inventory from the defendant and therefore might be economically dependent on the continuing relationship with her. When the direct purchasers are reluctant to sue their suppliers, granting them the exclusive right to sue poses a real danger of underdeterrence.²¹

Our PCC market-based approach enjoys the advantages of both approaches in this debate. It delivers the benefits of a single aggregated litigation, as all indirect claims could be merged into a joint claim for the defendants' discounts.²² However, we propose that any category of plaintiffs, direct or

1986, pp. 214–215). Most U.S. states have decided to expressly reject the *Illinois Brick* federal ruling and enacted "*Illinois Brick Repealer*" statutes allowing consumers and indirect purchasers to file for damages in states' courts (See Davis 1997; Lande 2010), while other states' courts have interpreted local antitrust laws to allow for indirect purchasers' standing (see Cafferty 2006, p. 1).

21 *Illinois Brick*, p. 746. Harris & Sullivan (1979, p. 352). But compare to Landes & Posner (1979, pp. 613–614, 626), arguing that in such a scenario, direct purchasers will demand compensation from their supplier in return for their willingness to forgo antitrust litigation, and such compensation will be equal to the treble damages. Landes & Posner also claim that a risk of retaliation by the supplier is unrealistic, numerous suits have in fact been filed so far by direct purchasers, and there is no evidence of any "bashfulness" on the part of direct purchasers.

22 Our approach also solves the second problem discussed above, of two independent plaintiffs' groups collecting data on the defendant, as all purchasers will be part a single collective plaintiffs' group.

indirect, should be able to file such a suit. The benefits from such litigation are expected to pass on to direct and indirect plaintiffs alike, thus avoiding the risk of reluctance to sue on the part of plaintiffs.

4.3 Difficulty in Calculating Passed-on Damages

A strong argument for not allowing indirect purchasers to sue for passed-on damages is that gathering information, calculating, and proving passed-on damages in court is inherently difficult. Calculating and proving passed-on damages is highly complicated (Bulst 2006; Boone and Müller, 2012).²³ Among other things, the rate of passed-on overcharges depends on the ratio of the elasticities of supply and demand, which are extremely difficult to measure.²⁴ Calculating and proving passed-on overcharges to indirect purchasers is especially complicated when the distribution chain is long (i.e. when there are many tiers of distributors and intermediaries between the defendants and the final consumers) or complex (e.g. when defendants' products are used to manufacture other products, or when the direct purchasers are multi-product firms). The systematic difficulties in calculating and proving passed-on damages in court mean higher litigation costs and lower deterrence.²⁵

On the contrary, Harris & Sullivan (1979) argued that it is not that hard to calculate indirect purchasers' damages due to passed-on overcharges.²⁶ Essentially, all antitrust litigation is based on complicated economical estimates of market conduct and prices. Calculating passed-on damages is not very different and not more complicated than any other calculation needed in antitrust litigation.²⁷ They, therefore, argue that courts can and should rely on probabilities, empirical data, and long-run assumptions to calculate the passed-on damages.²⁸ In practice, firms generally use pricing methods that are based on their costs, such as markup or cost-plus pricing, and courts, so goes the argument, can rely on that calculation to identify the passing-on of overcharges to consumers.²⁹ Harris & Sullivan (1979) have even examined sixty-five price-fixing cases and showed how courts could have estimated and determined

23 This issue was also raised in *Hanover*, pp. 492–493.

24 Landes & Posner (1979, p. 619); Harris & Sullivan (1979, pp. 283–287). See also Cooter (1981) who argues that the ratio of pass-on depends also on the ability to substitute for the overpriced product.

25 *Illinois Brick* case, pp. 731–732, 741–742.

26 Harris & Sullivan (1979, pp. 315–321).

27 (Petrucci) 2008, p. 39), and the *Illinois Brick* case, *id.*, pp. 758–760.

28 Harris & Sullivan (1979, pp. 287–288, 294, 315–320).

29 Harris & Sullivan (1979, pp. 320–321).

passing-on rates in real-life antitrust cases.³⁰ However, in practice, [Bulst \(2006, p. 738\)](#) argues that: “There seems to be no reported court decision, neither in the USA, the UK, France nor Germany, in which a court calculated or estimated the amount of an overcharge passed on to an intermediate purchaser.”

Our market-based approach is clearly superior in this respect. The PCC approach provides valuable compensation to consumers and indirect buyers alike, but does so through a simple market mechanism that does not require any complicated calculations.³¹

4.4 Direct Purchasers are Better Enforcers of Antitrust Law

A second central argument in support of the U.S. approach is that the direct purchasers are better enforcers of antitrust laws.³² Therefore, allocating all litigation rights solely to the direct purchasers will provide a better and stronger deterrence against defendants.³³ Several arguments have been raised to show why direct purchasers are likely to be better enforcers of antitrust laws than indirect ones: (i) *Low incentives for indirect purchasers*—the indirect purchasers (consumers) suffer only a small economic loss, so they have only a small incentive to file suit; (ii) *Litigation costs of collective suits*—indirect purchasers typically file their suit collectively by a class action, and class-action litigation is considered costly; (iii) *Access to information and resources*—[Landes & Posner \(1979\)](#) argue that direct purchasers are better positioned to enjoy superior information about defendants’ anticompetitive acts.³⁴ [Werden & Schwartz \(1984\)](#) also argue that direct purchasers have better access to financial resources needed to fund their litigation.

However, it is unclear whether direct purchasers are systematically better enforcers of antitrust law. First, there is no empirical evidence to support such a claim. Furthermore, as discussed above, direct purchasers are too closely connected and often economically dependent on defendants, and therefore might be reluctant to sue.³⁵ [Schinkel, Tuinstra, & Rugeberg \(2008\)](#) also show that

30 [Harris & Sullivan \(1979\)](#). Harris and Sullivan do admit, however, that a passing-on inquiry will be problematic when the identity of the direct or indirect purchasers is unclear. See *id* at pp. 323–331. Harris and Sullivan also mention that in most of the cases they examined, the final consumers could not be identified as individuals, so compensating them was impossible, and therefore a *cy-près* remedy was needed.

31 We address the simplicity of PCC and the variables needed to calculate PCC in Section 5 below.

32 *Illinois Brick case, id*, at p. 735.

33 Landes & Posner (1980, p. 609).

34 Landes & Posner (1979, p. 609). But compare with [Harris & Sullivan \(1979, p. 353\)](#) and [Harris & Sullivan \(1980, pp. 1286–1288\)](#).

35 See [Harris & Sullivan \(1979\)](#) and (,) [Hovenkamp \(1990, p. 1727\)](#).

cartel participants have an incentive to “bribe” direct purchasers to refrain from bringing a suit. Lastly, even if direct purchasers are indeed better enforcers than indirect ones, it does not necessarily follow that granting litigation rights *solely* to them is preferable to granting litigation rights to both groups. Our PCC approach evades this debate altogether, different version of the PCC method may allow for any plaintiff, either direct or indirect, to file a suit against the defendants.³⁶

4.5 Compensating Indirect Purchasers

A fourth type of argument revolves around the question whether or not indirect purchasers are left uncompensated. A major criticism of the U.S. approach is that if the defendant’s overcharges are indeed passed on to others, then the indirect purchasers (including end consumers) bear most if not all of the harm, but nevertheless are left uncompensated. Moreover, the litigation process grants the direct purchasers an undeserved windfall.

The first factual question in this debate is how big the pass-on problem is, i.e. what percentage of the overcharges has passed on to indirect purchasers? [Harris & Sullivan \(1979\)](#) argue that direct purchasers manage to pass on the entire or a substantial part of the overcharge to the indirect purchasers,³⁷ while [Landes & Posner \(1979\)](#) argue that indirect purchasers face only a negligible increase in price.³⁸

The second question is whether the indirect purchasers, even though they do not sue the defendant, are indirectly compensated. [Landes & Posner \(1979\)](#) argue that indirect purchasers are still compensated indirectly. They claim that because direct purchasers are granted all (including consumers’) rights to sue for treble damages, direct purchasers’ marginal costs are reduced and they will therefore lower their prices following the trial, thus indirectly compensating

36 If direct purchasers are reluctant to sue, then we offer to consider allowing also indirect purchasers to file suit for the PCC remedy, which benefit them indirectly. Our PCC approach does not require us to solve the conundrum about the type of plaintiff who is best suited or most incentivized to lead the class-action. In our view, courts should consider and decide this issue on a case-by-case basis, as part of their decision on the appointment of the lead plaintiff.

37 [Harris and Sullivan \(1979\)](#) argue that there are strong economic reasons to assume that most of the harm will be passed on to the indirect purchasers. The ability to raise prices and pass on the overcharges depends on the ratio of elasticities of demand and supply. In the short run, there are strong reasons to assume that elasticity of demand will be low, elasticity of supply high, and in the long run, that supply will be perfectly elastic. So, they conclude, the passed-on damages to the indirect purchasers are expected to be substantial in the short run and approaching 100 percent in the long run. See [Harris & Sullivan \(1979\)](#), pp. 276, 288–290.

38 [Landes & Posner \(1979\)](#), pp. 615–617).

their consumers.³⁹ Despite the above, we consider it to be highly unlikely that a direct purchaser that wins at trial and receives a one-time compensation payment would be forced to lower her prices as a result.⁴⁰ As [Harris & Sullivan \(1979\)](#) explain, damages awarded by the courts are a one-time windfall that has no effect on pricing or outputs.⁴¹ Awarding direct purchasers treble damages by a lump-sum will not make them “pass back” these damages to indirect purchasers,⁴² and it is therefore highly unlikely that the indirect purchasers will be compensated at all.

Finally, [Landes & Posner \(1979\)](#) also argue that indirect purchasers are in any case uncompensated, even when they can sue under the EU’s approach. Indirect purchasers realize their right to sue by filing a class-action suit, and more often than not this kind of a suit does not achieve any real monetary compensation for consumers.⁴³

The PCC approach resolves this issue entirely and renders both sides of the argument moot. Whether or not defendants’ overcharges were actually passed on to indirect purchasers, that question will not affect the court’s determination of a PCC scheme. When the court sets up a discount plan, it need not examine and determine the measure or extent of any passed-on damages. Nevertheless, the indirect purchasers will be compensated through the market, in case they were harmed in the first place. In Section 5, we formally show how discounts to direct purchasers will also flow and pass on to indirect purchasers.

39 [Landes & Posner \(1979\)](#), pp. 605–606).

40 An exception to that would be a situation in which during the period of the overcharge, the direct consumer already anticipates that he would win a future lawsuit on that ground, while the size of the compensation would depend on its current purchases, hence incorporating the expected compensation into its current pricing decision. We suspect that in reality such cases are extremely rare, to say the least. Overcharging is often unknown in real time to the direct purchaser, since the supplier’s costs are not common knowledge, and illegal arrangements to increase prices, such as cartels, are covert. There is also a lot of uncertainty regarding the prospects of a future lawsuit, hence it is unlikely to affect current pricing decisions.

41 See [Harris & Sullivan \(1979\)](#), pp. 298–299). But see also the responses and further discussion in [Landes & Posner \(1980\)](#) and [Harris & Sullivan \(1980\)](#).

42 It is interesting to note that [Harris & Sullivan \(1979\)](#) mention in a footnote that a compulsory price reduction, a price-cap, on the direct purchasers can cause such a “pass-back” to the indirect purchasers. However, they refer to such a method as merely an awkward *cy-près* compensation. See *id.* p. 299 at footnote 67. But compare to p. 330 where they find that in most cases a *cy-près* compensation is actually a necessity (“In most cases we examined, thought, identification of individual final purchasers was difficult. . . , redress for any overcharge passed on would have to be on a *cy pres* basis.”).

43 [Landes & Posner \(1979\)](#), pp. 605–606).

5. PCC—A MODEL OF A MARKET-BASED APPROACH TO PASSED-ON DAMAGES

We now move forward to presenting a formal economic model and its equilibrium. This framework will prove and introduce the properties of our proposed compensation mechanism.

5.1 Setup

Consider a two-tier vertical market system: One or more competing firms (the defendants), with a fixed marginal cost of $mc_u \geq 0$, sell a homogenous product to n symmetric firms (the retailers), each with a fixed marginal cost of $mc_d \geq 0$, competing with each other in a Cournot competition framework,⁴⁴ to sell their homogenous products to the final consumers.

We assume further that the final consumers are characterized by a downward-sloping linear (inverse) demand function for the final product:

$$P_d = a - bQ_d \quad (6)$$

where $a > 0$, $b > 0$.

We assume a single-period model. The subgame perfect Nash equilibrium can be calculated backward by starting with the Cournot equilibrium of the downstream-market (in which the retailers sell to the final consumers); and then endogenizing the retailers' best response function into the equilibrium of the upstream-market (in which the defendants sell to the retailers).

Given a certain price, P_u , set in the upstream-market, the Cournot equilibrium in the downstream-market will result in the following downstream price and total quantity sold:

$$Q_d(P_u) = \frac{n(a - mc_d - P_u)}{b(1 + n)} \quad (7)$$

$$P_d(P_u) = \frac{a + n(mc_d + P_u)}{1 + n} \quad (8)$$

Since all the quantity is assumed to be sold, $Q_u = Q_d$. Hence, Equation (7), which represents the relations between the quantity sold and the price in the downstream-market, can be incorporated into the profit function of the firms

44 A model of Cournot competition was chosen for three main reasons: First, it is perhaps the simplest model of competition with homogenous goods, in which prices are generally set above marginal cost. Second, it is very general, as it allows in each tier for the entire range between perfect competition (where the number of firms is infinite) and monopoly (where there is a single firm). Third, as (Kreps and Scheinkman, 1983) show, it is equivalent to a price competition model with quantity precommitment.

in the upstream-market. If the defendants could price without any restriction, the following profit-maximizing price and quantity would be set in the upstream-market:

$$Q_u^M = \frac{n(a - mc_d - mc_u)}{2b(1 + n)} \tag{9}$$

$$P_u^M = \frac{a - mc_d + mc_u}{2} \tag{10}$$

We will assume that these cartel or monopoly prices are indeed their unlawful actions. However, if the actual prices are in fact lower, our market-based approach can also be implemented in a similar manner, adjusting for the lower damages.

Now it is possible to calculate the industry-wide profits of the firms in each of the markets, and the consumer surplus, as a function of the price set in the upstream-market:

$$\pi_u(P_u) = \frac{n(a - mc_d - P_u)(P_u - mc_u)}{b(1 + n)} \tag{11}$$

$$\pi_d(P_u) = \frac{n(a - mc_d - P_u)^2}{b(1 + n)^2} \tag{12}$$

$$CS(P_u) = \frac{n^2(a - mc_d - P_u)^2}{2b(1 + n)^2} \tag{13}$$

As always in cases of cartel or excessive prices, the court must determine what the normative level of prices in the upstream-market is (denoted by P_u^N , which corresponds to a quantity Q_u^N sold). Hence damages are the result of a deviation of the upstream-market from this price to the monopoly price, P_u^M . Different damages (denoted by D) are inflicted on both direct customers, which are the retailers (denoted by D_d) and the indirect ones—the final consumers (denoted by D_c):

$$D_d = \pi_d(P_u^N) - \pi_d(P_u^M) \tag{14}$$

$$D_c = CS(P_u^N) - CS(P_u^M) \tag{15}$$

Consider now a PCC—compensation for these damages via future price reduction. Assume that each consumer’s demand is constant over time, and so are the market structure and cost functions of the firms. In order to compensate for these damages, the price-cap approach requires the court to force firms in the upstream-market to charge a price P_u^R , which satisfies $mc \leq P_u^R < P_u^N$, i.e. it is higher or equal to the firms’ marginal cost, but lower than the normative price. This price should be maintained for a time span, τ , defined as

$$\tau = \frac{(Q_u^N + Q_u^M)(P_u^M - P_u^N)}{2Q_u^N(P_u^N - P_u^R)} \quad (16)$$

Note that the compensation period, τ , is calculated in a naïve manner—as if not taking into account the fact that the lower price imposed by the court is bound to increase the demand of the direct and indirect customers, hence increasing their welfare. This method results in a higher than necessary compensation, in order to keep a larger amount of the surplus in the hands of the direct and indirect customers, and so as not to erode the deterrence of the defendants by allowing them to overextract profits in the process of compensation for their unlawful act.

5.2 The Properties of the Market-Based Approach

We now turn to presenting and proving the appealing properties of the price-cap compensation and market-based approach. It should be noted that all of them are also valid in a one-tier or model or a three-tier model.

Proposition 1 (Deterrence): *The price-cap compensation approach implies that the defendants are deterred. Hence, from their standpoint, the cost of the compensation imposed on them by the court is higher than the increase in their profits due to their unlawful act.*

Proof. The increase in profits of the firms in the upstream-market due to a deviation of the prices from P_u^N to P_u^M is $\pi_u(P_u^M) - \pi_u(P_u^N)$, while from their standpoint, the cost of the compensation is $\tau[\pi_u(P_u^N) - \pi_u(P_u^R)]$. Hence, the net gain from the violation is:

$$\begin{aligned} & \pi_u(P_u^M) - \pi_u(P_u^N) - \tau[\pi_u(P_u^N) - \pi_u(P_u^R)] = -n(P_u^M - P_u^N) \times \\ & \times \frac{(2P_u^M - 2mc_u + P_u^N - P_u^R)(P_u^M - P_u^N) + 2(P_u^M - mc_u)(P_u^N - P_u^R)}{2b(1+n)(2P_u^M - mc_u - P_u^N)} \end{aligned} \quad (17)$$

$$\text{Since } 0 \leq mc_u \leq P_u^R < P_u^N < P_u^M,$$

the net gains for the defendants, as a result of the violation, are negative. ■

Hence, we see that the price-cap compensation approach achieves the main requirement from any compensation method stemming from an unlawful act—it acts as a deterrence tool.⁴⁵

45 This analysis does not take into account the fact that the probability of getting caught is lower than 100 percent.

It should be noted that often civil overcharge litigation cases are accompanied by fines or other criminal sanctions. Hence, deterrence is not left entirely to the compensation scheme.

Proposition 2 (Efficiency gains for the defendants): *The defendants would prefer a price-cap compensation over a lump-sum compensation for the damages incurred due to their unlawful act.*

Proof. If the court could calculate all the incurred damages, in order to implement a lump-sum compensation (denoted by LSC), then it would amount to:

$$LSC = \pi_d(P_u^N) - \pi_d(P_u^M) + CS(P_u^N) - CS(P_u^M) \tag{18}$$

Hence, from the standpoint of the defendants, the net gains from the implementation of price-cap compensation are:

$$LSC - \tau [\pi_u(P_u^N) - \pi_u(P_u^R)] = \frac{n(3P_u^M - 2mc_u - P_u^N)(P_u^M - P_u^N)}{2b(1+n)^2(2P_u^M - mc_u - P_u^N)} \times \\ \times [(P_u^R - mc_u)n + 2P_u^M - 2mc_u + P_u^R - P_u^N] \tag{19}$$

Since $0 \leq mc_u \leq P_u^R < P_u^N < P_u^M$, the net gains for the defendants, as a result of the implementation of price-cap compensation relative to a lump-sum compensation, are positive. ■

The price-cap approach would therefore be preferred by the defendants over comprehensive lump-sum compensation. This is due to the fact that from their standpoint, it generates welfare-increasing transactions, which are also profitable. Hence, this might imply better cooperation with the court, on the part of the defendants, in implementing such compensation, specifically for finding such P_u^R that $mc_u \leq P_u^R$.

Note that although defendants would prefer the price-cap market-based approach over a lump-sum compensation, deterrence will remain intact according to Proposition 1.

Proposition 3 (Full compensation and efficiency gains to direct and indirect customers): *The implementation of price-cap compensation both fully compensates all direct and indirect customers and generates additional welfare-increasing transactions for them.*

Proof. The difference between the compensation to the consumers and the damages they incurred is:

$$\begin{aligned} & \tau [CS(P_u^R) - CS(P_u^N)] - [CS(P_u^N) - CS(P_u^M)] = \\ & = \frac{n^2(3P_u^M - 2mc_u - P_u^N)(P_u^M - P_u^N)(P_u^N - P_u^R)}{4b(1+n)^2(2P_u^M - mc_u - P_u^N)} \end{aligned} \quad (20)$$

The difference between the compensation to the firms in the downstream-market and the damages they incurred is:

$$\begin{aligned} & \tau [\pi_d(P_u^R) - \pi_d(P_u^N)] - [\pi_d(P_u^N) - \pi_d(P_u^M)] = \\ & = \frac{n(3P_u^M - 2mc_u - P_u^N)(P_u^M - P_u^N)(P_u^N - P_u^R)}{2b(1+n)^2(2P_u^M - mc_u - P_u^N)} \end{aligned} \quad (21)$$

Since $0 \leq mc_u \leq P_u^R < P_u^N < P_u^M$, the net gains for each of these groups, as a result of the implementation of the price-cap compensation approach, relative to a lump-sum compensation, are positive. ■

For the claimants—be they direct or indirect purchasers of the defendants—the PCC approach is preferable to comprehensive lump-sum compensation. For each group, it produces full compensation for the damage incurred, while also generating welfare-increasing transactions. This approach also directs the compensation to each group, without the court having to identify each individual who was damaged and perform a specific damage calculation, and without the need for each of them to prove their specific damages (e.g. presenting invoices).

5.2.1 Distributional Concerns

Importantly, since the compensation in the PCC is a fluid one—and not directed specifically to those who were injured—it is interesting to analyze its distributional aspects. Note that though consumers, *as a group*, are fully compensated, and even enjoy additional efficiency gains, the answer to the question of whether *each individual consumer* is fully compensated depends on a few assumptions. Obviously, we assume that the demand function of each consumer is similar in the period of the price overcharge and in the compensation period. Clearly, this assumption is close to reality in some of the cases but not in others. When it does not hold and some consumer leaves the market they cannot be compensated by PCC and someone else enjoys a windfall. We discuss this matter at length in Sections 7.8 and 7.9 of the article.

Furthermore, damages stem from both the overcharge on the units sold, and the reduction in quantities sold due to the overcharge. This reduction in quantities sold (because of the overcharge) is due to consumers who reduced the quantity of goods they purchased, and the rest of the reduction is due to would-be consumers who opted to refrain entirely from buying. In some cases, the PCC may overcompensate would-be consumers at the expense of the other

consumers.⁴⁶ This is clearly the case if the reduction in quantity is entirely due to would-be consumers (who opted to refrain entirely from buying), and there are no consumers who reduced the quantity they have purchased. To the contrary, PCC does fully compensate each individual consumer when the group of actual consumers is identical to the group of would-be consumers, and these two groups are proportionally identical (in the sense that if the actual purchases of one consumer were twice the size of a second one, then his loss of consumer surplus from would-be purchases would also be twice as large as that of the second consumer). This is, for instance, the case when all consumers have an identical demand function for the product.

In any case, we do not see this as a major flaw of PCC however, since we are not aware of any other compensation method that could better identify and compensate consumers due to a reduction in quantities bought. As an illustration, suppose that the court is determined to track down each consumer and fully compensate her for all losses generated by the overcharge. In this case, how could the court distinguish between a consumer who bought three units, and otherwise buy four units, from a consumer who bought three units but would otherwise buy ten units? How could it identify and compensate a would-be consumer who did not buy any units, but would otherwise buy three units?

Moreover, there is an easy fix for this minor flaw of PCC. If one insists to fully compensate each of the consumers, though, it is possible to increase the size of the compensation, by adjusting the compensation period, so that consumers who keep their demand level fixed regardless of the inflated price would receive full compensation. Technically, the period of compensation calculated in Equation (5) could be altered to be longer, so that:

$$\tau = \frac{A}{C} = \frac{P^M - P^N}{P^N - P^R} \quad (22)$$

In this case, Proposition 1 (deterrence) and Proposition 3 (full compensation) would still hold, while Proposition 2 (efficiency gains to the defendants) may or may not hold, depending on the parameters of the model.

In summary, the PCC approach has several appealing properties. First, it induces deterrence, so that the defendants are better off not doing their unlawful act. Second, it fully compensates both direct and indirect purchasers, as can

46 This could be illustrated in the graph of Section 3.1: The overcharge damage per-unit in the A area is $P^M - P^N$, while it is lower in the B area. Nevertheless, the compensation per-unit, which appears in the C area and the D area, is the same for both groups. Therefore, if the A area and the B area represent the demand of different consumers, then the ones in the B area are overcompensated, while the ones in the A area are undercompensated.

be done under EU law. Third, the PCC approach facilitates additional welfare-increasing transactions for both the defendants and each of the claimants, be they direct or indirect purchasers of the defendants. Fourth, it directly applies only to the relationship between the defendants and their direct customers, as under U.S. law. Fifth, it does not require the defendants to have to identify each of the direct consumers and potential consumers, who could be anonymous in some cases. Instead, if the demand of each customer is assumed to be relatively stable over time, then the compensation will automatically be allocated to them, and even to those who refrained from buying the product due to its excessive price and were damaged as a result. Sixth, in order to implement PCC, the court is not required to obtain any additional data other than what is already available. It must only choose a price $P^R \geq mc$, but this, in principle, could be done in collaboration with the defendants, who also benefit from such a compensation mechanism.

6. POSSIBLE EXTENSIONS OF THE MODEL

6.1 Relaxing Assumptions

The insights we have shown here regarding the PCC approach are more general and not limited to the exact model specifications we have shown. We will now discuss some possible extensions of the model, which maintain its qualitative properties.

First, note that the model we have shown allows for each of the vertical markets to be characterized by the entire spectrum between a monopoly (when $n = 1$), and perfect competition (when $n \rightarrow \infty$). It also allows for less vertical tiers, by technically making some of these markets inactive (when $n \rightarrow \infty$ and $mc = 0$). In addition, as mentioned above, the propositions also hold when applied to a three-tier model or more.

Furthermore, we assume that the demand function is linear. Alternatively, we can require at least that, regarding the relevant range of prices, the linear approximation is a good one.

We assume that the demand function is constant over time. However, the model can be extended to cases in which demand is either known, or changes in it could be reasonably predicted. Similarly, we assume that the cost functions are constant over time. However, the model can be extended to cases in which the cost functions are either known, or changes in them could be reasonably predicted (e.g. when they change in accordance with some known index or input price). These two adjustments are more complex to implement as the compensation period is longer. Hence, implementation of PCC

with a larger discount over a shorter period of time may be preferable for this reason.⁴⁷

We also assume in the model that the cost functions are characterized by a fixed marginal cost. However, the appealing properties of the price-cap compensation approach also hold in the more conventional case of an increasing marginal cost. Note, however, that in this case P^R should be set so that it is higher than the marginal cost throughout the relevant range, i.e. for all quantities up to the point at which the aggregate marginal cost function intersects with the demand function. This assumption is required, since firms will not produce units of the product at a marginal cost higher than the price. Hence, a price that is lower than marginal cost may result in a supply shortage at the price which the court imposes on the market, and in turn inefficient rationing may occur.

For the sake of simplicity, we assume that there is no time value of money, namely no interest rate (or a discount factor of one), though a discount factor could easily be incorporated into the model. Regarding the level of such discount factor—we suggest looking at the required compensation as an obligation of the defendant; and so the discount factor, in this case, should roughly equal the interest rate on defendant's marginal unsecured debt.

Finally, we have assumed that the baseline for compensation is the damages incurred by the defendants. However, this assumption can be relaxed, in order to implement punitive damages. The application is straightforward—simply by multiplying the compensation period, τ , by the relevant factor (i.e. by three for treble damages). Obviously, this will increase deterrence, overcompensate the plaintiffs, and generate additional welfare-increasing transactions.

6.2 Other Consumer Class-actions

Throughout the analysis, we have assumed that defendants' unlawful act concerned charging excessive prices. However, this mechanism could be extended and used more broadly to compensate consumers for damages due to any reason, in a single-tier market. Such compensation would still have the appealing property of generating welfare-increasing transactions and not require each claimant to quantify and prove its damages. For any total required compensation, denoted by TRC , the period over which the price, P^R , should be imposed by the court needs to be adjusted to the following:

$$\tau = \frac{TRC}{Q^N (P^N - P^R)} \quad (23)$$

47 For other reasons see our discussion in Section 7.3.

Note that in such a case, it would probably be reasonable to assume that the current market price is already the normative price, P^N .

In various consumer class-action suits, the PCC market approach can be used as a substitute for the current compensation techniques, such as coupon-settlements or charitable donations. When appropriate, PCC can easily transfer compensation funds from defendants to consumers, without the need to identify and locate the numerous plaintiffs and with very little administrative costs.

6.3 Sanctions by Regulators and Forward-Looking PCC

Price caps have been used by competition regulators worldwide, as a means to routinely regulate suppliers in uncompetitive markets (e.g. [Armstrong & Sappington 2007](#); [Sappington and Weisman, 2010](#)). In addition to such forward-looking regulatory price caps, our PCC market-based approach could also be used by regulators and various enforcement authorities as a backward-looking mechanism, to apply deterrence and compensate consumers due to past infringements.

Consider the example of a manufacturer that breached its regulatory duties and the regulator in charge decides to administer sanctions against it. Such a regulator can charge the manufacturer with a monetary fine that must be paid to the state treasury. We argue that such a regulator should also consider a possible alternative in the form of a PCC. When appropriate, PCC can supply regulators with effective deterrence, enhance social welfare in the regulated market,⁴⁸ and award valuable compensation to the general consumers.⁴⁹

PCC is especially suitable for regulators for two reasons: First, in a market that is regulated anyway, a temporary price intervention seems less intrusive. Second, the experienced regulator in the relevant market should have prior knowledge about the firm's marginal costs or can otherwise easily collect such information.

The use of PCC can replace monetary fines and divert these funds from the state treasury to the general consumers. Therefore, a self-interested state might be reluctant to adopt PCC and favor a lump-sum fine instead. However, compensating consumers and enhancing social welfare are important

48 See Sections 3.2, 3.3, and 5.

49 PCC is more suited to situations where the defendants' regulatory breach caused economic harm to the general consumers. Consider a case where a regulated firm breached consumer protection regulations. A PCC plan could supply valuable compensation to these consumers. However, in situations where the regulatory breach did not cause economic harm to consumers, offering compensation to these consumers might be considered a wasteful windfall, while awarding a monetary fine to the state instead, may solve a collective action problem and enable the state to rectify the harm done. Consider another example of a firm that breached an environmental regulation and polluted a lake. Compensating the firm's consumers in these circumstances serves no purpose and might also be more expensive than a simple fine. The state could use the fine it collects to clean the polluted lake or fund healthcare for the injured public, actions that otherwise would not be done.

considerations that states, regulators, and lawmakers should take into account. And while regulators may use our PCC approach as a possible sanction to remedy past antitrust breaches, one can envision the use of PCC by private plaintiffs to prevent future abuse of market power. In other words, price caps could be used for both forward-looking and backward-looking purposes through private as well as public enforcement mechanisms.

7. DISCUSSION AND LIMITATIONS

PCC is not intended to replace lump-sum compensation in all overcharge cases, but rather to serve as one more tool in the court's toolbox in such cases, which could prove valuable in appropriate cases. In this section, we discuss several observations and reservations regarding some limitations in the implementation of the PCC market-based approach.

7.1 General Assumptions of the Model

We implicitly assume that in each period, all markets immediately converge on the static equilibrium. This implies that we implicitly assume that there are no such frictional phenomena as sticky prices, i.e. there is no restriction on prices which prevents them from decreasing and immediately converging on the new equilibrium.

We assume that the demand function is relatively similar during the overcharge and compensation periods and that the cost functions are relatively stationary. Specifically, if the defendants' marginal cost may fluctuate during the period of compensation, then there might be a need to link the price cap imposed by the court to some exogenous related index or commodity price. This is but one reason that a short compensation period will generally be preferable.⁵⁰

We assume that the defendants are able to increase their outputs during the discount period and handle the expected rise in consumers' demand, so no shortage is expected to occur. We also assume that defendants are unable to unnoticeably lower their products' quality, thus eroding compensation and deterrence. Finally, we assume that the defendants remain active in the market throughout the time of the unlawful overcharge and the discount period. We discuss the implications of possible changes in the consumer population in Sections 7.8 and 7.9.

⁵⁰ See Section 7.3 for additional discussion of this matter.

7.2 Setting a Cap Higher than Marginal Costs

When setting a PCC plan, the capped price must be higher than the defendants' marginal costs. Such a condition will allow the defendants to continue to sell their products at a marginal profit and will eliminate any negative incentives that might arise if the defendant were ordered to sell at a marginal loss.

We do not consider such a condition to be problematic. Almost all consumer class-action suits are settled,⁵¹ and therefore almost every PCC plan would be designed and set by the parties themselves in a settlement agreement. Before agreeing to a settlement, the defendants will ensure that the capped price is not too low and above marginal costs.⁵² Therefore, when a court will be asked to approve a PCC in a settlement agreement, it can quite easily assume that the mutually agreed upon price is indeed higher than marginal costs. On the very rare occasion that a court might wish to independently design a PCC plan, without the parties' consent, it must diligently ensure that the price it sets is indeed above marginal costs. The court should consider giving the parties a right to petition the court and ask it to raise the price-cap, in exchange for prolonging the discount period.

In addition, in antitrust litigation and other overcharge cases, information about the defendants' marginal costs often is revealed during litigation (or such information can easily be revealed). Therefore, the PCC approach is especially befitting in these types of litigation. For the same reason, PCC can easily be implemented by a well-informed regulator.

We acknowledge that PCC can only be used in markets where current prices are indeed higher than marginal costs. Otherwise, in a market that is highly competitive and the current market price equals marginal costs, the parties will not be able to establish a sufficient discount for the purpose of compensating consumers, and a PCC plan would be less appropriate. Note, however, that such markets are less prone to overcharge litigation, due to the difficulties in coordinating many competitors in cartelistic arrangements.

7.3 Setting the Compensation Period

When setting a PCC remedy, the court needs to specify the compensation period for defendant's discounts. In our model, we have shown one way to calculate this compensation period. Another alternative is to prescribe the number of defendants' products that will be sold under the price cap.

51 Overwhelmingly, most class-action suits are settled. See Frankel (2011, footnote 144), listing evidence that a vast majority of certified class actions are settled.

52 When the price is always above marginal costs, the defendants could still earn some marginal profit from sales, although they might not be sufficient to cover fixed costs.

The length of the compensation period (or the number of items sold) depends on the magnitude of the discount imposed. There is a tradeoff between the length of the period and the size of the discount. In theory, full compensation could be achieved by either a short period of substantial discounts or a longer period of smaller discounts. Nevertheless, prolonged PCC periods raise some practical concerns. Thus, extended discounts' period raises concerns that defendant' marginal costs would fluctuate in either direction;⁵³ that consumers' population would change;⁵⁴ or that the defendant will engage in price manipulation.⁵⁵ All these concerns push toward relatively short discount periods. However, a short period of discounts entails greater risk of hoarding products.⁵⁶

7.4 Previous Critique of "Fluid Recovery"

The use of a market-based mechanism for compensating consumers in class-action suits, previously referred to as "fluid fund" or as a "fluid recovery," was criticized by Durand (1981). Her argument rests primarily on a theoretical assumption that the current market prices equal marginal costs. Therefore, any attempt to reduce the defendant's price will result in a price *below* marginal costs, leading to inefficient sales by the defendant.⁵⁷ Durand also argues that defendants may react to price discounts by creating a shortage in supply that will raise transaction costs. Consumers will be forced to make a special effort and incur high costs in order to locate and procure scarce products, and these additional "inconvenience costs" will offset any potential financial benefits PCC might have to offer.⁵⁸

Durand's reservations deserve reconsideration. Durnad's main argument assumes that current prices always equal marginal costs, an assumption we reject. We assume in the model that the current market price is *higher* than marginal costs, and therefore the capped price can be set to be higher than

53 See discussion in Section 7.2 and 7.11.

54 See discussion in Section 7.8.

55 See discussion Section 7.10.

56 See discussion Section 7.7.

57 Durand (1981) also considers monopolies where prices are above marginal costs, and therefore a mandatory discount will not create inefficiencies. However, she argues that there will be room for only very small discounts in price, so market compensation through discounts has no avail.

58 See also Barnett (1987): "They will be willing to stand in lines and travel longer distances to take advantage of the reduced price. These inconvenience costs will mount until they equal the price reduction. Thus, consumers will receive no real benefit."

marginal costs. In reality, markets rarely exhibit “perfect competition” and market prices are most often above marginal costs, as shown, for instance, in [Hall \(2018\)](#).

However, even if we accept such an assumption, many of Durand’s additional arguments are doubtful. If a court sets a price lower than marginal costs for a certain period, the defendant may indeed refuse to sell any units during this period. But courts could react and demand that defendant continue to supply the required quantity (one indirect way to do so is by setting the price-cap for a certain number of items sold, rather than setting it for a time period). Such hypothetical court order would prevent shortage and the risk of “inconvenience costs” to consumers. Notwithstanding the above, we emphasize that we do not advocate a PCC with a cap below marginal costs, as such a remedy will overly increase demand and create a deadweight economic loss ([Polinsky & Rubinfeld 2008](#), who raise this point in relation to coupons).

[Durand \(1981, p. 193\)](#) mentions another concern, namely that the defendant’s sales at a loss will cause the defendant to go bankrupt. This argument is also questionable, as the total sum of the defendant’s losses from granting discounts should be equivalent to (if not smaller than) the lump sum of damages that the defendant must pay. In addition, the traditional legal remedy of lump-sum damages requires an immediate payment of an enormous lump sum. A “fluid recovery” or PCC remedy, in contrast, mandates only small installments of discounts, a much more convenient payment method for defendants. In sum, as compared to the traditional legal remedy of an immediate payment of a large amount of damages, our PCC approach seems to create a much smaller risk of defendant’s bankruptcy.

7.5 Predatory Pricing and Effects on Competitors

A central criticism concerning PCC is that the defendants’ discounts will hurt their competitors.⁵⁹ The defendants’ obligation to lower their prices will force their competitors to lower prices as well. They will therefore suffer financially in the same way as the defendants, even though they did not break any law.⁶⁰

59 For example, see *Levi Strauss*, 41 Cal. 3d at 473, 715 P.2d, at p. 572, which is willing to consider PCC (“fluid find”) only if the defendant has no competition. See also [Durand \(1981, p. 193\)](#).

60 Competitors might argue that they are being “punished” even though they did not break the law, join the cartel or overcharge consumers. Therefore, from an *ex ante* perspective, they would have been better-off by breaking the law. At least then they would have profited from the said breach.

There is a simple answer to this argument.⁶¹ In our view, defendants' decision to lower prices is well vested in their legal prerogative.⁶² Even if some competitors may be hurt by such a decision to lower prices, it does not mean that this act is problematic from a legal standpoint. Defendants can lower prices of their own volition, before any court or legal settlement orders them to do so, and can continue to offer low prices even long after the PCC plan has expired. The only difference, in this case, is that the discounted price-cap is set by the court or by the settling parties. But the court's involvement does not make it any worse or riskier for competitors.

On the contrary, the court's supervision over defendants' discounts is expected to make such discounts safer: the discount will be visible and publicly known, the court will supervise the settlement agreement process and terms, and finally competitors will have easy access to the court to object to any problematic aspect of the settlement. However, we are of the opinion that courts should reject any competitor's objection based solely on harsher competition, as competitors do not have a protected legal right to keep their prices high. We note that quite often competitors benefited significantly from defendants' overcharged prices, as it allowed them to raise their own prices.⁶³ Therefore, their case against the indirect effect of defendants' PCC plan on them seems unconvincing. We also note that if competitors are forced to respond to defendants' discounts and lower their prices respectively, it implies greater benefit to consumers and greater social surplus.

The harm caused to competitors could raise serious concern only if the defendants' discounts result in *predatory pricing*: a situation where the defendants' very low prices block potential competitors or force current competitors out of the market, allowing the defendants at a later stage to exploit their new market position by raising prices.⁶⁴ The alleged risk is that defendants might

61 Others who have addressed that concern include Mandig (1976, p. 960), who suggested that the defendant's discounts will be implemented on all suppliers in the market and not on the defendant alone. Later, the defendant will be required to also compensate her fellow suppliers. Barnett (1987, footnote 46), has also suggested an alternative mechanism in which the defendant will be ordered to offer rebates to consumers for their purchases from *other* suppliers (and therefore the defendant will be indirectly forced to lower her own prices).

62 Short of predatory pricing, as discussed below.

63 Interestingly, several courts have acknowledged the right of cartel victims to claim "umbrella" damages, i.e. compensation from cartellists for inflated prices paid to noncartel members. See, for instance, the Court of Justice of the European Union confirmed that in a judgment in 2014: *C-557/12 Kone AG and Others v ÖBB-Infrastruktur AG*. Similarly, in 2019, Canada's Supreme Court allowed a class action claim against Toshiba, Pioneer and others for such damages.

64 For a general discussion on predatory pricing, see (Bolton et al., 2000), Brodley, & Riordan (2000), Kobayashi and Hylton, 2010, and (Hemphill and Weiser, 2018).

use a PCC settlement as legal camouflage or as a court's 'stamp of approval' for initiating predatory pricing. In our view, though, there is no much danger that defendants could use a PCC plan as a cover for predatory pricing.⁶⁵

First, to prove predatory pricing, competitors must show that defendants set prices *below* marginal costs.⁶⁶ However, as discussed above, a prime condition for an efficient PCC is that defendants' price-cap be set higher than marginal costs. This would appear to preclude the use of PCC for the purpose of predatory pricing. *Second*, the court should clarify that its authorization of the PCC plan does not imply any immunity for the defendants, nor does it block any future claim of predatory pricing. *Third*, there are many reasons why a settlement agreement is a very undesirable and unsuitable opportunity for the defendants to consider predatory pricing: (i) *Visibility*—in class-action suits, the court's ruling and the terms of the settlement agreement are visible and public knowledge. It will be very hard for defendants to conceal predatory pricing; (ii) *Supervision by the court and plaintiffs' lawyer*—a PCC plan is examined and authorized by both the court and the plaintiffs' lawyer, an agent of the direct purchasers. Either of them can and should object to a settlement that imposes predatory pricing on future competitors; (iii) *Low litigation costs*—if defendants instigate predatory pricing in a settlement agreement, the litigation costs for any competitor who wishes to object to such an agreement would be much lower⁶⁷ than the litigation costs for a competitor filing a standalone legal suit claiming predatory pricing.⁶⁸

We also note that there is probably a low risk that defendants' temporary discounts would deter *potential* competitors from entering the market, considering that prior to the remedy the defendants breached the law by inflating prices and yet such potential competitors have not entered the market.

65 Generally, we might add that many underplay any concern regarding predatory pricing. The common notion is that "predatory pricing schemes are rarely tried, and even more rarely successful." See Kobayashi (2010), Hemphill & Weiser (2018, p. 2053).

66 See Hemphill & Weiser (2018, pp. 2068–2069): "Under the particular approach to predation that justifies use of a price-cost test, marginal cost—the cost of producing an additional unit of output—is the theoretically correct measure of cost. However, marginal cost is difficult to measure, so parties and courts resort to proxies."

67 The litigation costs in an objection to a class-action settlement are expected to be lower than the litigation costs of a standalone law suit claiming predatory pricing: (i) usually there are no court fees when filing a motion objecting to a class-action settlement; (ii) when deciding on a motion, the legal procedure is usually shorter and lighter; (iii) the court may be slightly more favorable toward the competitor and more suspicious of the defendant in a motion, as the court will have just found the defendant liable for breaking the law; (iv) when considering a motion in an antitrust class-action, during the litigation the court will already have reviewed the defendants' pricing.

68 For a discussion on the difficulties and obstacles in proving predatory pricing, see Section 7.5.

7.6 Complementary Goods

Another difficulty arises when the defendants' products are complementary goods, and the defendants hold market power in the products to which the PCC does not apply. For the purpose of illustration, assume a defendant that sells two items, item A and item B, and that these items are complementary to one another, meaning that consumers usually buy them both, together. Now assume that consumers sue the defendant for breach of duty in connection with item A, and a PCC plan is set for the purchase of item A alone. Whenever the price of item A is lowered the demand for it will rise, and because items A and B are complementary, the demand for item B will rise as well. This will enable the defendant to raise item B's price, as its price is not capped, and thus to reimburse itself through the sales of item B for the mandatory discounts on item A.⁶⁹ Note, however, that such a problem also arises in connection to coupon settlements.

However, this problem can also be dealt with. One possible solution could be to authorize the court to also cap the price of any complementary good. Such a cap on complementary goods can be set consensually by the parties themselves, as part and a valuable condition of the settlement agreement. Otherwise, PCC may not be an appropriate compensation alternative in circumstances of complementary goods with associated market power.

7.7 Hoarding Products

Another possible criticism concerning PCC is that distributors, various intermediaries, or even the final consumers might be able to buy massive amounts of the defendants' products at the discounted price, store and hoard these items throughout the discount period, to be used after the compensation period is over.⁷⁰ Such behavior may distort the size of the compensation, and may also distort how it is divided among the different parties.

However, many assets and services cannot be physically hoarded by distributors or end-users, for instance, services, such as taxicab rides, or short-lived products, such as fresh food. When this is not the case, perhaps courts can discourage hoarding and assist fair trade by concealing the length of the discount period, making it confidential. Courts could also forbid or limit the hoarding

69 When the defendants' products are complementary, setting a price-cap compensation plan might enable the defendants and plaintiffs' lawyer to collude. They might present an artificial settlement to the court, one that does not really compensate plaintiffs or deter defendants but only rewards the plaintiffs' lawyer.

70 See [Shepherd \(1972\)](#) and [Dejarlais \(1987\)](#).

of products, for example, by limiting the maximum number of items that can be sold to a single purchaser.⁷¹

7.8 “Fluid” Compensation to Nonplaintiffs

PCC is a “fluid” discounts remedy, meaning that all purchasers in the market may benefit from this remedy. This “fluidity” feature creates a legal difficulty, as legal compensation is extended also to purchasers who are *not* plaintiffs and were not harmed in the first place. While this feature of the remedy does not affect deterrence, it may cause courts to reject general discount remedies (Moore 2013). We offer a few answers to alleviate the court’s concern.

First, as further elaborated in Section 7.9, PCC is best suited to the many cases where there is a high overlap between the plaintiffs’ class and future customers. In such common cases, the fluidity of the compensation mechanism is expected to be small in practice. Second, illegal overcharges, by their nature, often create harms to a group that is very hard to identify in full. Most frequently, high prices induce some consumers to either reduce their demanded quantity, or to refrain completely from buying the product. This deadweight loss should be internalized by the defendants by means of including it in the damages borne by the defendants. But to prove that a certain consumer has refrained from buying is close to impossible, which means that some fluidity in compensation seems natural in such cases. In fact, courts are accustomed to grant *cy-près* remedies that benefit non-plaintiffs—e.g. when defendants pay damages to charity. In this regard, PCC offers a preferable *cy-près* remedy that resembles ordinary compensation, as it focuses on lowering the future price to consumers and to potential consumers.

Third, the fluidity of the remedy is merely a distribution issue. As we have shown, the PCC remedy enhances social welfare, provides necessary deterrence, and requires very little administrative costs. Precise distribution can be viewed as a consideration of lesser importance. This is especially true since, as we have proved in Proposition 2 and Proposition 3, both the defendants and all the plaintiffs’ groups are expected to benefit from PCC. Hence, there is no reason for the court to be reluctant to agree to such a remedy. Sure enough, the more stable is the population of (repeat) consumer, the more sensible is the PCC remedy.

Finally, as explained above, under *Illinois Brick* rule, compensation in anti-trust cases go only to direct purchasers, who are often distributors and wholesalers. The population of distributors and wholesalers is quite stable in comparison to the population of consumers. Because PCC goes directly to such large and stable

71 Shepherd (1972).

buyers (and only indirectly benefits end-consumers), courts hesitate to use this remedy because of its fluid nature should be carefully reconsidered.

7.9 Plaintiffs are Often Repeat Customers

PCC is undoubtedly best suited to cases where the plaintiffs are repeat consumers of the defendants. An example of such is when the defendant sells everyday non-durable convenience products. In such cases, the original plaintiffs are expected to be compensated through future purchases at the discounted price.

PCC will be less suitable in cases where plaintiffs tend not to purchase additional items from the defendants. Plaintiffs may be reluctant to purchase additional items from the defendants either because such items are a costly or one-time purchase (for example, a refrigerator, a car, or a cellphone), or because the defendants' breach of legal duties has made consumers dislike or distrust them and their products. If plaintiffs are not repeated consumers of the defendants, PCC will not grant them any reimbursement for their damages and the entirety of the discounts will benefit other (similar) consumers. However, even in such situations, PCC would still create a social surplus,⁷² generate deterrence,⁷³ and could be used as *cy-près* compensation method.⁷⁴

How often does antitrust litigation deals with an everyday nondurable convenience product (and thus PCC will be more suited) compare to litigation concerning one-time purchases (where PCC might be less suited)? We examined the largest forty antitrust cases reported from 1990 to 2008 by Lande & Davis (2008a,b) and found that in at least 24 (60 percent) of them, a recurrently purchased everyday nondurable goods were involved. This means that in a typical antitrust litigation a PCC remedy would have compensated many of the same consumers.

We should note again that under the current *Illinois Brick* rule, consumers, who are generally indirect consumers, are entirely excluded from antitrust litigation and none of them can be a plaintiff. For such consumers, the PCC remedy would certainly be an improvement.

7.10 Price Manipulation

Like any other legal compensation technique, PCC is also susceptible to manipulation. Whenever litigating parties agree to a settlement using a PCC plan,

72 See Sections 3.3 and 5.

73 See Sections 3.5. and 5.

74 See Section 6.2.

there is a risk that the defendants will try to artificially raise current market prices, so that the later concession on their part to lower the price will have no real deterrence value nor provide any compensation to consumers. Such a problem might even be aggravated if we consider the possibility of collusion between the defendants and the plaintiffs' lawyer in a class action, e.g. the defendants may raise their price just before and for the purpose of a PCC settlement, or they may incorporate a PCC into a predetermined discount plan or use the mandatory discount as a marketing or advertising tool.

Courts should therefore carefully examine any proposed PCC settlement, as courts should do in every class-action settlement offer, to see whether the proposed benefits to consumers are genuine and substantial and deterrence of defendants is adequate. As mentioned in Section 2 above, a more severe manipulation problem arises with the common and currently used coupon remedy.

7.11 Courts' Intervention in Commercial Trade

PCC implies that a court will set the maximum price that the defendants can charge. One might wonder whether such legal intervention in commercial trade is wise and prudent. Are courts and judges equipped for this kind of task, or should they avoid intervening in market pricing? And if such price intervention does indeed create a social surplus, should law and the courts be more proactive and set prices in other circumstances?

Traditionally, courts are hesitant and reluctant to intervene in commercial trade and almost never set prices. Normally, courts and judges are not suited to or equipped to decide the terms of a commercial trade. Such legal interference is considered paternalistic and susceptible to inefficiencies. Therefore, as a general principle, legal and regulatory intervention in trade should be kept to a minimum.

However, we argue that enforcing a PCC plan does not amount to interference in commercial trade. *First*, in antitrust litigation and overcharge cases, the underlying assumption is that the law and courts are able to intervene in the defendants' market behavior and must do so when necessary. *Second*, PCC will usually be set by the parties themselves following a compromise settlement, where courts are only asked to approve a bilateral and consensual agreement. *Third*, the implementation of a PCC plan is a very exceptional, temporary one-time event, thus the risk of errors is low. And *fourth*, PCC is triggered and justified by the defendants' breach of law, and its very aim and purpose are to inflict economic harm on defendants, thereby deterring them. In such circumstances, intervention in trade is less intrusive.

8. CONCLUSION

The USA and the EU vastly differ in their attitude toward damages to indirect purchasers in cases of illegally overpriced products or services. In the USA only direct purchasers can sue for damages, and they can sue for the entire inflated charge, whether or not they have passed on part of the harm to indirect purchasers, including end-consumers. The member states of the EU generally adopt the opposite view. Both direct and indirect purchasers may sue, but each may only sue for its share of the harm from the overcharged prices.

As we have seen, the difference between the two approaches has sparked an academic debate over the pros and cons of each method. In this article, we argue that it is often unnecessary to determine which approach is superior. Rather, we offer a market-based solution, which enjoys the best of both approaches. Our PCC remedy fully compensates both direct and indirect purchasers, as is done under EU law. However, it does not require the court to conduct any complicated and burdensome calculations. Nor does it not require the court to allocate suitable damages respectively to indirect consumers and to potential consumers, in order to compensate them.

In cases where the demand of each customer is relatively stable over time, the compensation method offered in this article will automatically allocate full compensation (even to those who refrained from buying the product due to its excessive price and were damaged as a result). Compensation will flow in a mirror image of the harm that was inflicted through the market mechanism in the first place. Importantly, the court is not required to obtain any additional data other than what is already available in such typical litigation. It must only choose a price $P^R \geq mc$, and full compensation, together with adequate deterrence, will flow from the remedy.

Price-caps as a remedy, despite the abovementioned advantages (which have never been seriously considered), have rarely been implemented in reality. And when this remedy has been employed, it has faced criticism from academia. As we have explained, we believe that most of the criticism is misguided, stemming in part from confusion between price-caps and the use of coupons, the latter being highly inefficient in terms of redemption rates, procedural costs and is more prone to manipulation. Price-caps to the contrary are relatively simple to implement. Criticism was also driven by the fear that discounted prices would be so low that economic inefficiencies would arise. We have explained that quite often price-caps can be calibrated above marginal cost, deflecting this criticism.

Finally, PCC is not intended to replace lump-sum compensation in all overcharge cases, but rather to serve as one more tool in the court's toolbox, which

may prove to be a valuable one in appropriate cases. Contrary to common belief, it allows fair and full compensation without requiring the court to delve into complicated economic analysis, such as the analysis of the competition structure in each tier of consumers, elasticities of demand, etc. In addition, it allows all potential claims, by direct and indirect claimants alike, to be addressed in a single legal procedure.

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