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Calculating Damages in Price-Fixing Cases in the United States, Canada, and the European Union

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The Economic Building Blocks of a Damage Award

When calculating private damage awards in price-fixing litigation, economic theory can make a real-world difference. In their simplest form, awards are based on the difference between the price actually paid under the collusion and the price that would have been paid absent the collusion. The more units that are sold with an embedded overcharge, the higher the overcharge damages, all else being equal.

In reaction to the increase in their costs, purchasers may decide to raise their own prices to the next step in the distribution chain by an amount equal to or greater than the overcharge (full pass-on), by a portion of the overcharge (partial pass-on), or not at all (no pass-on). If they pass on some or all of the increase, then their own customers pay higher prices as a result of the collusive actions. These customers (or these customers' own downstream customers) may become indirect purchaser plaintiffs in jurisdictions where indirect purchasers are allowed to claim damages (such as in Canada, in the European Union, or in U.S. state courts, but not in U.S. federal courts).

However, if overcharges increase consumer prices, they may also reduce sales, resulting in lost profits on those lost sales for companies that were victims of the overcharge. This is where calculating damages becomes more complicated and requires some further economic analysis, including the calculation of elasticities.

A price elasticity is the relationship between price changes and changes in purchases by consumers. Demand for a product is said to be highly elastic if a small change in price (up or down) has a large impact on units purchased. Demand for a product is highly inelastic if changes in the price of a product have little effect on units sold.

This article explains the impact that price elasticities can have on damages awards in three different jurisdictions—the U.S. federal courts, Canada, and the European Union—and provides some basic examples to show some of the mathematical underpinnings of overcharge damages calculations, pass-on, and lost profits on lost sales.

Sources of Damages in Different Jurisdictions

Currently, these three components of private damage awards are treated differently, depending on where the suit is brought. In the United States, federal courts treat all price-fixing cases as if no pass-on has occurred, awarding damages solely on the basis of the increase in the direct purchasers' costs attributable to the collusion. The impact on indirect purchasers is not considered. (Some U.S. state courts also give indirect purchasers standing in price-fixing cases. These

cases are very active in the U.S. state court dockets, often migrating from one state to the next over a period of years.) However, private damage awards in antitrust cases are automatically trebled in the United States to increase the deterrent effect of the awards.

In Canada or the European Union, indirect purchasers (whether they are end consumers or the next link in the distribution chain) may also sue alleged illegal cartels for damages. If they do so, compensation for plaintiffs must be divided among the direct and indirect purchasers in proportion to the harm each party suffers.

The formal introduction of indirect purchasers is a comparatively recent development in both jurisdictions, following Canadian high court rulings in 2013 (Sun-Rype Prods. Ltd. v. Archer Daniels Midland Co. (2013); Pro-Sys Consultants Ltd. v. Microsoft Corp. (2013); Infineon Techs. AG v. Option consommateurs (2013)), and the 2014 issuance of the Directive on Damages (2014/104/EU) in the European Union.

Finally, in the European Union, the 2014 Directive on Damages also allows direct purchasers (or others along the distribution chain) to seek damages for lost profits on lost sales. These damages are in addition to direct damages from overcharges. In this regard, the European Union framework stands apart from the other two, which do not consider lost profits.

Table 1 summarizes the sources of private damages considered in each of the three jurisdictions.

Table 1: *Sources of Private Damages*

Source of Private Damages	U.S. Federal	Canada	European Union
(1) Overcharge to direct purchasers	YES*	YES	YES
(2) Price increases from overcharge passed on to indirect purchasers	NO	YES	YES
(3) Lost profits on lost sales	NO	NO	YES

* Damages awards are automatically trebled in U.S. Federal Court.

How Economics Makes a Difference

What does economics have to do with all of this? The answer, it turns out, depends on where the suit is being brought.

In Canada and the European Union, where price-fixing litigation may involve indirect as well as direct purchasers, the allocation and amount of awards can change depending on the combination of two factors: how much of the collusive price increase is passed on by purchasers to their own customers, and how sensitive those customers are to changes in price. If the goods in question are very price-sensitive, then a price increase may result in substantially lower sales; the same price increase in less price-sensitive markets will have less of an impact.

In economics, the degree to which changes in pricing affect purchases, known as the price elasticity of demand, is most often indicated by a negative number. For example, a demand elasticity of -1 means that when prices increase by 1 percent, the quantity demanded decreases by 1 percent. An elasticity of -2 means that when prices increase by 1 percent, the quantity demanded decreases by 2 percent.

In Canada and the European Union, if some of the overcharge is passed on by purchasers to the next level in the distribution chain, the size of awards based on the overcharge must be adjusted correspondingly, both because fewer transactions take place and because the purchas-

ers should not be compensated for the share of the overcharge passed on to the next level in the chain of distribution. In the European Union, however, lower sales volume due to pass-on effects also translates into higher damages calculations for purchasers in the form of lost profits on lost sales. In those cases, profit margins matter because the higher the plaintiff's margins on the relevant transactions, the higher the loss to compensate on lost sales.

In the following sections, we provide some basic examples of damage calculations in each of the three jurisdictions to illustrate how this works out in practice. For the sake of comparison, we use dollars as the currency in all the examples.

Examples of Damage Calculations

In any of the three jurisdictions, if direct purchasers do not pass on any of the cost increase to their own customers by holding their own prices steady, damages are driven by the cost increase to direct purchasers. If there is no pass-on, indirect purchasers, elasticity of demand, and profit margins are irrelevant, and damage calculations require applying the increase in the direct purchasers' unit costs to the volume of commerce affected.

Direct purchasers. The "pass-on defense" is not available in U.S. federal courts following the U.S. Supreme Court's decisions in *Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977), and *Hanover Shoe, Inc. v. United Shoe Machinery Corp*., 392 U.S. 481 (1968). Table 2 shows a pro forma illustration of how the damages might be calculated in a U.S. federal antitrust suit, assuming, of course, very simplistic and uniform facts.

In this market, prior to the collusive action, the unit price is $10. We assume that the collusion increases the unit costs to the direct purchasers by $1, but we make no assumption about pass-on because that is irrelevant to the calculation in U.S. federal court. Sales volume can be directly observed from sales records during the conspiracy period.

In this example, assuming that 100 units were sold during the conspiracy period, the direct purchasers' total costs will be raised by $100 (the $1 unit cost increase multiplied by 100, which is the number of units sold). The direct purchasers can claim the entire overcharge of $1 per unit, multiplied by the number of units.

Of course, the United States is unique in that antitrust damage awards are automatically trebled to provide additional deterrence to anticompetitive actions. Therefore, the total award to the plaintiffs paid by the defendants in our example would be $300, not $100.

Table 2: *U.S. Federal Example with No Pass-On*

Before Conspiracy	
Quantity Sold	Not relevant
Unit Price to Customers (Indirect Purchasers)	$10
During Conspiracy	
Increase in Unit Cost for Direct Purchasers (Overcharge)	$1
Estimation of Damages (No Pass-On)	
Quantity Sold	100
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	100 * $1 = $100
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed On)	Not considered
(3) Damages due to Lost Profits on Lost Sales	Not considered
Total Direct Plaintiffs Damages Award	**$100**
Treble Award to Direct Plaintiffs (U.S. only)	**$300**

Indirect purchasers. When indirect purchasers are added into the mix, as in the Canadian and European Union regimes, the numbers change, and the elasticity of demand first comes into play. If the price to the consumer increases above the non-collusive market price, then economic theory predicts that fewer units of the product will sell. We can estimate the decrease in purchases based on the elasticity of demand and, in turn, calculate the amount of the damage awards.

As shown in Table 3, direct purchasers in the example pass on the entire cost increase of $1 per unit and increase the price to indirect purchasers by that amount. If the elasticity is low, then unit sales are relatively unaffected by this price increase, and the product of sales volume and the aggregate price increase may remain high at $95 (95 units sold instead of 100 with a $1 embedded overcharge). But if the elasticity is high, sales may fall to, say, 75, and total damages from overcharges would amount to $75. (In either scenario, the overcharge damages to the direct purchasers are zero because they passed on the entire cost increase.)

Table 3: ***Canadian Example with Different Elasticities of Demand (Full Pass-On)***

Before Conspiracy		
Unit Price to Customers (Indirect Purchasers)	$10	
Quantity Sold	100	
During Conspiracy		
Increase in Unit Cost for Direct Purchasers (Overcharge)	$1	
Estimation of Damages Assuming Full Pass-On		
Cost Increase Passed On	$1	
During-Conspiracy Price to Customers (Indirect Purchasers)	$11	
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	95	75
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	$0	$0
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed On)	95 * $1 = $95	75 * $1 = $75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	Not considered	Not considered
Total Damages Assessed (Owed to Indirect Purchasers)	**$95**	**$75**

Now, let's assume that the direct purchasers pass on only half the cost increase. As illustrated in Table 4, changing the unit price still changes the quantity sold given any non-zero elasticity, but because the price increase for the end consumer is not as high, the decrease in sales is also less. This means that more sales are affected by the (lower) price increase, resulting, in our example, in a total damage assessment of $97.50 if the elasticity is low (97.5 units sold with $1 embedded overcharge), and of $87.50 if it is high (only 87.5 units sold). However, the total damages must be split between direct and indirect purchasers in the case of partial pass-on, whereas the damage to direct purchasers from the overcharge is zero with full pass-on.

Table 4: ***Canadian Example with Different Elasticities of Demand (Partial Pass-On)***

Before Conspiracy		
Unit Price to Customers (Indirect Purchasers)		$10
Quantity Sold		100
During Conspiracy		
Increase in Unit Cost for Direct Purchasers (Overcharge)		$1
Estimation of Damages Assuming Partial Pass-On		
Cost Increase Passed On		$0.50
During-Conspiracy Price to Customers (Indirect Purchasers)		$10.50
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	97.5	87.5
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed On)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	Not considered	Not considered
Total Damages Assessed (Owed to Direct and Indirect Purchasers)	**$97.50**	**$87.50**

Lost profits from lost sales. In the European Union, one more component of damages remains: lost profits on lost sales. Awards consequently may be calculated as a combination of overcharge (based on price increases) plus the value of profits (based on margins) that would have accrued to direct purchasers, and possibly others along the distribution chain, had they not lost unit sales because of the inflated collusive price.

The combinations of high and low margins with high and low elasticities will yield different total damages amounts, as shown in Tables 5 and 6. Note that, the higher the margin, the larger the awards for lost sales because each unsold unit results in a loss proportional to the corresponding margin.

However, firms operating in industries that are characterized by higher profit margins, such as high-end luxury goods and heavy equipment manufacturing, tend to face lower elasticities of demand. This may be, for example, because products are differentiated. Conversely, firms in industries where there are many available substitutes for an item (such as substituting whole wheat bread for white bread in grocery stores), typically operate with low profit margins and face higher elasticities of demand. This may be, for example, because products are commoditized and firms have to compete away their margins to secure sales.

Consequently, the most likely outcomes in our examples will be a high-margin/low-elasticity case or a low-margin/high-elasticity case. Comparing results in Tables 5 and 6 for such outcomes (that is, high-margin/low-elasticity versus low-margin/high-elasticity)

shows that full pass-on results in higher total damages than partial pass-on. However, if direct purchasers pass on the full amount of the increase, they may only claim damages from lost profits on lost sales (and not on the overcharge itself), which shifts a larger portion of the damage assessment from direct purchasers to indirect purchasers.

Table 5: ***EU Examples with High Margins and Different Elasticities of Demand (Full and Partial Pass-On)***

Before Conspiracy		
Unit Price		$10
Unit Cost		$5
Per-Unit Margin		$5
Quantity Sold		100
During Conspiracy		
Increase in Unit Cost for Direct Purchasers (Overcharge)		$1
Estimation of Damages Assuming Full Pass-On		
Cost Increase Passed On		$1
During-Conspiracy Price to Customers (Indirect Purchasers)		$11
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	95	75
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	$0	$0
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed On)	95 * $1 = $95	75 * $1 = $75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	5 * $5 = $25	25 * $5 = $125
Total Damages Assessed (Owed to Direct and Indirect Purchasers)	**$120**	**$200**
Estimation of Damages Assuming Partial Pass-On		
Cost Increase Passed On to Indirect Purchasers		$0.50
During-Conspiracy Price to Customers (Indirect Purchasers)		$10.50
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	97.5	87.5
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed on)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	2.5 * $5 = $12.50	12.5 * $5 = $62.50
Total Damages Assessed (Owed to Direct and Indirect Purchasers)	**$110**	**$150**

Table 6: ***EU Examples with Low Margins and Different Elasticities of Demand (Full and Partial Pass-On)***

Before Conspiracy		
Unit Price		$10
Unit Cost		$8
Per-Unit Margin		$2
Quantity Sold		100
During Conspiracy		
Increase in Unit Cost for Direct Purchasers		$1
Estimation of Damages Assuming Full Pass-On		
Cost Increase Passed On to Indirect Purchasers		$1
During-Conspiracy Price to Customers (Indirect Purchasers)		$11
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	95	75
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	$0	$0
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed on)	95 * $1 = $95	75 * $1 = $75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	5 * $2 = $10	25 * $2 = $50
Total Damages Assessed (Owed to Direct and Indirect Purchasers)	**$105**	**$125**
Estimation of Damages Assuming Partial Pass-On		
Cost Increase Passed On to Indirect Purchasers		$0.50
During-Conspiracy Price to Customers (Indirect Purchasers)		$10.50
Elasticity of Demand Used to Estimate Damages	*-0.5 (Low)*	*-2.5 (High)*
Quantity Sold	97.5	87.5
(1) Damages to Direct Purchasers due to Higher Costs (Overcharge)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(2) Damages to Indirect Purchasers due to Higher Price (Overcharge Passed On)	97.5 * $0.50 = $48.75	87.5 * $0.50 = $43.75
(3) Damages to Direct Purchasers due to Lost Profits on Lost Sales	2.5 * $2 = $5	12.5 * $2 = $25
Total Damages Assessed (Owed to Direct and Indirect Purchasers)	**$102.50**	**$112.50**

Summary: Tradeoffs Between Overcharge Damages and Lost Profits on Lost Sales

Our simplified illustration shows that when elasticities of demand are high (greater than 1 in absolute value), unit sales shrink faster for any given level of price increase. With lower sales (assuming pass-on to final customers), the overcharge (cost increase) is applied to a smaller number of transactions.

However, introducing lost profits on lost sales has the potential for reversing this effect. When the volume of actual sales goes down, then the volume of lost sales goes up. If the elasticity is high enough, it can more than offset the deflating effect on damages of low margins characteristic of highly elastic markets. The result is likely to be higher awards for direct purchaser plaintiffs, as well as higher total claims against the defendants.

The opposite is true in inelastic markets, where consumers will not substantially reduce their purchases in response to any price increase even under high pass-on. Consequently, plaintiffs will have a relatively higher volume of sales on which to calculate damages from the overcharge alone. Even though margins on lost sales are likely to be higher, the result may still be lower awards for direct purchaser plaintiffs and lower total claims against the defendants.

Looking across jurisdictions, the most straightforward case is in U.S. federal courts, where pass-on does not apply. The volume of sales used to calculate damages to direct purchasers is based solely on the overcharge and the actual number of units sold. Of course, as explained above, the volume of actual units sold is ultimately affected by the elasticity of demand, but U.S. federal courts are not concerned with this effect because lost profits on lost sales are irrelevant.

In Canada, the situation will be identical to that in U.S. federal courts when direct purchasers do not pass on any of the collusive price increase. If they do, indirect purchasers can join in on the claims, but as in the U.S. federal courts, damages awards are based solely on the volume of units actually sold, and no estimation of price elasticity of demand is necessary to ascertain awards, given that lost profits on lost sales are not considered.

Estimates of price elasticities of demand become relevant for courts in the European Union, where lost profits on lost sales are added into the mix. For example, in industries with high elasticities and low margins, the low margins will result in significant pass-on of the collusive increase in costs. This will result in large losses of unit sales, as fewer customers are willing to pay the higher price. Given significant pass-on, the final consumers will be compensated by overcharge-based calculations, while direct and indirect purchasers along the distribution chain will be compensated mainly through lost profits on lost sales.

Conversely, in industries with low elasticities and high margins, direct purchasers are less likely to pass on the collusive increase in costs, which means that sales volumes are less likely to be affected. The direct purchasers then will be compensated for all portions of the overcharge they did not pass on, and damages related to lost profits on lost sales will be minimal.

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