Economics on Demand

Quantifying Competition Damages

November 2017
“People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.”

Adam Smith, The Wealth of Nations
“Member States shall ensure that any natural or legal person who has suffered harm caused by an infringement of competition law is able to claim and to obtain full compensation for that harm”.

Directive 2014/104
EU CARTEL FINES AND DECISIONS 1990-2016

Number of EU Cartel Decisions (1990-2016)

Average EU Cartel Fines per decision (1990-2016, €m)

Notes: Only cases where a fine was imposed are considered. As at 12 December 2016.
Source: European Commission Cartel Statistics.

Notes: Fines imposed not adjusted for Court judgements as at 12 December 2016. Average fine per cartel decision where a fine was imposed.
Source: European Commission Cartel Statistics.
Compensatory damages

From an economic perspective, the calculation of damages involves comparing two scenarios:

1. A hypothetical scenario which reflects the position that the claimants would have been in absent the infringement (the ‘counterfactual’), versus
2. The actual position of claimants

“Counterfactual” or “But for” profits are unobserved but need to be quantified

Straightforward in theory

\[
\text{Harm} = (\text{Profits had the unlawful act not occurred} - \text{Actual Profits}) + \text{Interest}
\]
ECONOMIC FRAMEWORK

Claimant’s counterfactual profits

A = Cartel overcharge for input. The increase in input costs multiplied by the customer’s purchasing volumes.

B = Pass-on effect. The value that the downstream firm recovers from passing on the input cartel’s overcharge to its own customers.

C = Volume effect. The possible loss of profits associated with a reduction in the customer’s downstream sales.

Damage = (A+C+D) – (B+D)

= A + C - B = overcharge loss + volume effect - pass-on

w = upstream input price (i.e. downstream cost) under competition (w' = upstream input price (i.e. downstream cost) under cartel)

p = downstream firm’s price with a competitive upstream market (p’=downstream firm’s price when a cartel upstream)

q = unobserved quantity with competition upstream (q’=observed quantity with upstream cartel)
<table>
<thead>
<tr>
<th>STEP 1</th>
<th>Value of trade affected by the cartel (&quot;Value of Commerce&quot;)</th>
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<tbody>
<tr>
<td>STEP 2</td>
<td>Price increase due to the cartel agreement (&quot;Overcharge&quot;)</td>
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<td>STEP 3</td>
<td>Pass-on/volume effect</td>
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<tr>
<td>STEP 4</td>
<td>Interest</td>
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Identification of purchases of products that were affected by the cartel.

Records for purchased value and volume of cartelised products can be obtained from:
- Accounting systems
- Storage management systems
- Tender records

In case of long lasting cartels collecting data for the entire cartel period might prove difficult. In cases of missing documentary evidence values and volumes can be estimated.

- For example, each mobile phone usually has one LCD screen.\(^1\)
  - Annual production volumes of mobile phones can be used to estimate phone manufacturers’ purchases of LCD screens (i.e., the cartelised products)

Potential ‘umbrella’ effects of the cartel (i.e., cartel effect extends to products not directly subject of the cartel agreement)

Possible ‘cartel overhang’ effects

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\(^1\) The District Court for the Northern District of California allowed claims against the members of the LCD cartel that were based on inferred value of commerce. See the summary judgment of Judge Illston in the District Court for the Northern District of California: The United States District Court for the Northern District of California (2012), ‘Order Granting in Part Defendants’ Joint Motion for partial Summary Judgment as to (1) Claims based on Inferred Invoices; and (2) State Law Claims’, Case No. C 09-5609 SI, August 31st.
STEP 2 – OVERCHARGE

Methods of estimating counterfactual prices

- **Comparator-based**
  - Same product at a time before/after the infringement
  - Different but similar geographic markets
  - Different but similar products

- **Cost-/finance-based**
  - Supplier’s costs + margin for a “reasonable return” under competitive conditions

- **Simulation**
  - Structural model of competition simulating the competitive price

OVERCHARGE – BEFORE-DURING-AFTER COMPARISON

Before-During-After Comparison

Before-During-After Comparison (control for cost changes)

Factors leading to a risk of overstating or understating the cartel effect?

How to measure these effects?
Comparison with possible benchmarks like:

- imported products or private label products which were not in the cartel,
- products sold in countries which were unaffected by the cartel,
- products sold to a subsidiary of the firm (assuming that the firm charged competitive prices to its subsidiary), or a similar type of product (e.g. with similar costs).
OVERCHARGE – DIFFERENCE-IN-DIFFERENCES ANALYSIS

Difference-in-Differences (DiD) method compares:

- development of prices in the infringement market over the infringement period with
- development of prices in an unaffected comparator market during the same time period
OVERCHARGE – COST-BASED APPROACH

COUNTERFACTUAL PRICE

“Reasonable margin”

+ Unit production costs

Margins in similar industries or in the same industry in a non-cartel period

Data should be available from management accounting information of the defendants
A simulation analysis models:

- The supply side of the market, e.g. how firms compete with each other to maximise profits
- The demand side of the market, e.g. how customers choose what to buy in order to maximise their own “utility”
- Using observed data on prices, volumes and costs, the economic simulation predicts market outcomes (i.e. prices and volumes)

The overcharge is obtained by comparing prices predicted in absence of collusion with realised prices.
RELATIVE MERITS OF DIFFERENT METHODS

**Comparator-based**
- Intuitive
- Can isolate the effect of the infringement if other factors impacting prices can be identified
- Most-widely used approach cartel litigation; judges are familiar with method
- Problematic in case of ‘cartel overhang’ effects

**Cost-/finance-based**
- May be carried out with publicly available data, but often requires information held by defendants
- Commercial courts are familiar with methods
- Can be used if no suitable benchmark is available (e.g. ‘differentiated’ goods)
- Can be difficult to isolate all the factors which affect reported profits

**Simulation**
- Benchmark derived from theoretical models plus empirical input
- Full equilibrium model loved by academics
- Flexibility allows scenario analysis
- Requires making assumptions about effect (e.g. defendant charged monopoly price during abuse)
STEP 3A – PASS-ON

If cartelists can show that the overcharge was passed on fully, they are almost off the hook.

- The burden of proof is with the cartel members, which can be difficult without access to end-product price data
  - High standard of proof set by Barling J in *Sainsbury’s v MasterCard*?

- Degree of pass-through depends on a wide range of factors and may be very low or very high depending on circumstances

- Can use statistical or econometric methods to estimate

\[
\Delta \text{price} = £2 \text{ per pack}
\]

Volume effect

\[
\Delta \text{price} = £2 \text{ per pack}
\]
There is a clear economic prediction that passing-on causes a volume effect:

- Due to passing-on the overcharge downstream sales go down (i.e. Claimant does not earn a margin on lost volumes).
- Claimants have the right “to claim and obtain compensation for loss of profits due to a full or partial passing-on of the overcharge”[Directive 2014/104/EU, Art. 12 (3)]
- But the burden of proof is on the Claimant to show that there was a volume effect
- In practice, the volume effect is ignored in many cases

Approach to identify the volume effect:

- Before and after or yardstick analysis (as before)
- Simulation model (as before)
- Demand estimation (estimating elasticity of demand)
“The payment of interest is an essential component of compensation to make good the damage sustained by taking into account the effluxion of time and should be due from the time when the harm occurred until the time when compensation is paid, without prejudice to the qualification of such interest as compensatory or default interest under national law and to whether the effluxion of time is taken into account as a separate category (interest) or as a constituent part of actual loss or loss of profit.”

Two economic arguments for applying interest:

- Interest as damages (i.e., compensation for the additional financing cost because of the overcharge)
- Interest on damage (i.e., compensation for being kept out of the money for potentially a significant period of time)

The choice of the appropriate rate and the decision between simple vs. compound interest tend to be a legal issue rather than being based on sound economics:

- Rationale for interest in case law is mixed:
  - Barling J in *Sainsbury’s v MasterCard*: factual cost of debt financing during the infringement period
  - Lord Carlile of Berriew J in *2 Travel v Cardiff Bus*: BoE base rate plus 2% “in what is a purely compensatory award of damages”
  - ‘Legal’ rate applied in many countries on the Continent; e.g., in Germany, a simple interest of 5% + basic rate of the Deutsche Bundesbank is applicable

The profile of the counterfactual prices and volumes matter:

- Interest claims will be higher for damage occurred at the beginning of the cartel period
- The interest component can be a significant portion of the claim in case of long lasting cartels (e.g. 10 years)

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<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Lost profits (£’000)</td>
<td>800</td>
<td>640</td>
<td>960</td>
<td>2,400</td>
</tr>
<tr>
<td>Simple Interest @ 5% (£’000; up to Dec 2016)</td>
<td>420</td>
<td>304</td>
<td>408</td>
<td>1,132</td>
</tr>
<tr>
<td>Compound Interest @ 5% (£’000; up to Dec 2016)</td>
<td>536</td>
<td>378</td>
<td>494</td>
<td>1,407</td>
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The objective is to place claimant in position it would have been but for the infringement

Four theories:

- Claimant faced additional cost of financing the overcharge he would not have incurred but for the infringement
  - The average cost of financing the business (given by the weighted average cost of capital WACC)
    - The WACC is calculated as the weighted sum of the cost of debt and equity finance
  - The cost of the debt/equity finance actually used by the claimant in each year between the date of the infringement and the award
    - This is broadly the approach taken by Barling J in Sainsbury’s v MasterCard

- Claimant was deprived of returns that it could have earned on the amounts lost
  - Compensates for loss of opportunity of investing the money (‘opportunity cost’)
  - Approximated by claimant’s WACC

- The overcharge as a ‘forced loan’ to the defendants
  - The overcharge can be seen as if the claimant gave a ‘forced loan’ to the defendants
  - This ‘loan’ should at least pay interest at the defendants’ cost of finance; i.e., the defendants’ WACC

- Compensation for the time value of money
  - The actual cost of finance (WACC or debt only), the loss of opportunity of investing the funds and the ‘forced loan’ include compensation for risk
  - Repayment of damages once awarded is risk-free, and, hence, a risk-free rate (e.g. the BoE base rate) could be used to compensate only for the passing of time and for inflation
BRINGING IT ALL TOGETHER – A HYPOTHETICAL EXAMPLE

Cartel found to have
- fixed prices and allocated customers of glass bottles sold to vineyards, drink manufacturers and the dairy industry
- existed between January 2003 and December 2005
- covered UK, Germany, and Northern Europe

Claim brought by a soft drink manufacturer

Value of commerce:

<table>
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<tr>
<th>Year</th>
<th>Number of bottles bought</th>
<th>Value of commerce (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>14,766,000</td>
<td>8,859,600</td>
</tr>
<tr>
<td>2004</td>
<td>15,952,500</td>
<td>9,571,500</td>
</tr>
<tr>
<td>2005</td>
<td>18,098,500</td>
<td>10,859,100</td>
</tr>
<tr>
<td>Total</td>
<td>48,817,000</td>
<td>29,290,200</td>
</tr>
</tbody>
</table>
Economic advisers used 3 methods to estimate overcharge:

- Before-during-after regression accounting for cost and demand changes: 15.2% overcharge estimate
- Difference-in-differences using France, Italy and Spain as benchmarks: 12.1% overcharge estimate
- Simulation model: 18.5% overcharge estimate
- Pooled estimate: 15.3%

Pass-on estimated based on retail sales data of soft drink manufacturer: 25%

Interest applied at cost of debt from claimant’s annual accounts: 8% (up to December 2016)

### QUANTUM ESTIMATE OF SOFT DRINK MANUFACTURER

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<tbody>
<tr>
<td>2003</td>
<td>8,859,600</td>
<td>1,355,519</td>
<td>338,880</td>
<td>1,016,639</td>
<td>1,858,832</td>
<td>2,875,471</td>
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<tr>
<td>2004</td>
<td>9,571,500</td>
<td>1,464,440</td>
<td>366,110</td>
<td>1,098,330</td>
<td>1,778,082</td>
<td>2,876,412</td>
</tr>
<tr>
<td>2005</td>
<td>10,859,100</td>
<td>1,661,442</td>
<td>415,361</td>
<td>1,246,082</td>
<td>1,775,548</td>
<td>3,021,629</td>
</tr>
<tr>
<td>Total</td>
<td>29,290,200</td>
<td>4,481,401</td>
<td>1,120,350</td>
<td>3,361,050</td>
<td>5,412,462</td>
<td>8,773,512</td>
</tr>
</tbody>
</table>
1. Framework

There is consensus among economists about the framework within which damages should be assessed. The overall framework can be used for all different types of damage cases, but the focus will be on different effects.

2. Data

The different methodologies above can be used to assess the different components of damages, but in practice the deciding factor is usually the availability of data. Even with poor data it is usually possible to derive an estimate of damages, but with a lower degree of certainty about the figure. However, it may not be possible to establish causality.

3. Final damages figure

Different methodologies may provide multiple estimates of the same variable. The expert can choose the most appropriate or pool the results.
LOOKING AHEAD

Private damages actions going forward:

- Pass-on study of the Commission published in October 2016
  - will be the basis of Commission Guidelines on the passing-on of overcharge
- Case law in relation to interest still not entirely based on economic principles
  - simple vs compound
  - little economic analysis to justify rate at which interest is awarded
- How will class actions play out?
  - collective redress possible at the CAT since Consumer Rights Act in October 2015
  - economics of damage quantification will be broadly the same for class actions
  - pass-on to indirect buyers will become more important (consumer class actions)
    - potential tension between claims of direct and indirect buyers
      - risk of overcompensation?
    - for example, MasterCard claims from Sainsbury’s (and of other retailers) v the class action Walter Hugh Merricks CBE
- Class certification stage so far not well tested in UK cartel litigation
  - economic analysis required for certification?
    - similar effect on all class members