

# Positive Impact 06/07

Consumer benefits from competition enforcement,  
merger control, and scam busting

July 2007

OFT928

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# 1 EXECUTIVE SUMMARY

## Introduction

- 1.1 This document describes the calculation by the Office of Fair Trading (OFT) of the impact of its merger, Competition Act 1998 enforcement, and scams prevention work over the three financial years 2004 to 2007. We estimate that the OFT has saved consumers on average £126m per year.
- 1.2 Many of the beneficial outcomes of the OFT's work are not quantifiable in the time-frame available, and are not included.
- 1.3 We take as given that all market interventions conducted by the OFT, and not overturned on appeal, are warranted: we implicitly assume that the institutional structure is sufficient to ensure that any incorrect decisions or planned decisions are identified and corrected.

## Results

- 1.4 We estimate that consumers directly saved £92m per year due to the UK merger regime. £52m of this may be attributed to the OFT, of which £42m is a result of undertakings taken by the OFT in lieu of a reference to the Competition Commission (CC), and £10m is allocated to the OFT for its part in consumer savings arising from mergers blocked or amended by the CC following a reference.
- 1.5 We estimate that consumers directly saved £64m per year from market interventions following CA98 infringement decisions.
- 1.6 We estimate that consumers directly saved £10m per year from OFT actions to stop illegal scams.

## Difference from Positive Impact 05/06

1.7 The methodology adopted in Positive Impact 06/07 differs from Positive Impact 05/06 in the following ways:<sup>1</sup>

- we include the impact of our Scams prevention work
- we use merger simulation to adopt a 'conservative point estimate' approach to estimating the impact of our merger decisions rather than the 'lower bound' approach adopted previously
- we adopt a more realistic approach to estimating the likely duration of a cartel in the absence of OFT intervention
- we present impact as an annual average over the previous three financial years.

## Conservatism of results

1.8 The picture painted by this exercise is not complete. Our estimates of impact are highly conservative because:

- this document does not contain estimates the impact of market studies, market investigation references, non-scam consumer regulation enforcement, competition advocacy, approved consumer codes, Consumer Direct, or the support we provide to Trading Standards Services across the country. A number of reports have been published in the financial years

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<sup>1</sup> Positive impact: An initial evaluation of the effect of the competition enforcement work conducted by the OFT. December 2005. OFT 837.

- 2005/2007 that evaluate the impact of some of these activities<sup>2</sup>
- we only estimate the direct financial impact of our interventions. We do not estimate the impact of our deterrent effect, or of any psychological detriment averted by our actions
- we do not quantify the dynamic effects of increased competition on efficiency, innovation, and productivity.

## Structure of document

1.9 Section 2 describes the shared methodology that applies to all the estimates presented. Section 3 discusses estimation of the impact of the Scambusters team, section 4 discusses estimation of the impact of our merger control, and section 5 discusses estimation of the impact of our enforcement of CA98. Section 6 concludes, and compares estimated annual benefits with internal OFT costs.

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<sup>2</sup> These include evaluations of: the Consumer Codes Approval Scheme (OFT 870); the Car Warranties market study (OFT 852); support for Trading Standards in using Part 8 of the Enterprise Act (OFT 549); and the use of the Consumer Direct database by Trading Standards services (OFT 871).

## 2 METHODOLOGY

### Introduction

2.1 We refine the approach adopted in Positive Impact 05/06 to estimate consumer savings generated by our merger control, scambusting, and competition act enforcement in the period 2004/05 to 2006/07. We are confident that the figures presented are a conservative estimate of the positive impact of the OFT's work in the fields covered.

### Baseline assumptions

2.2 A number of assumptions underpin our evaluation of all areas of the OFT's work. They build on the foundation of Positive Impact 05/06 and the OFT's Economic Discussion Paper 4.<sup>3</sup>

2.3 The OFT's goal is to 'make markets work well for consumers'. For this reason, and in line with other competition authorities around the world, we estimate the benefit to consumers of the OFT's actions. We do not estimate the potential loss to business of the OFT's decisions.

2.4 We only estimate the direct financial impact of our interventions. We do not estimate the impact of our deterrent effect, or of any psychological detriment averted by our actions.

2.5 We do not quantify the dynamic effects of increased competition on efficiency, innovation, and productivity.

2.6 We focus solely on estimating the impact of market interventions undertaken by the OFT. We take as given that all interventions not overturned on appeal are warranted. We assume that the institutional structure is sufficient to ensure that poor decisions, or planned decisions, are identified and corrected.

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<sup>3</sup> 'The development of targets for consumer savings arising from competition policy' S. Davies and A. Majumdar. OFT Economic Discussion Paper 4. June 2002. OFT 386.

- 2.7 Where possible, we base our estimate on information obtained during our investigations. This information has already gone through a rigorous process of internal peer-review and the threat, and at times the actual procedure, of external review by the Competition Appeals Tribunal. Where the relevant information is not clearly contained in the case documents we have made assumptions based on international best practice, academic research, and case officer expertise.
- 2.8 All of our general and case-specific assumptions are conservative. We do not claim that exactly the estimated amount has been saved by the OFT, or even that it is our best estimate. Rather, under assumptions applied by other competition authorities or supported by recent academic literature, it is unlikely that less than our estimate has been saved.
- 2.9 We use the Consumer Price Index to take account of inflation. All figures are in March 2007 prices and rounded to the nearest one million pounds.
- 2.10 We discount future consumer savings at the Social Discount Rate of 3.5 per cent.<sup>4</sup> We increase the stream of historical damages to consumers to take account of the time value of money which we assume is 3.5 percent, approximately equal to the real mortgage rate.

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<sup>4</sup> Treasury Green Book 'Appraisal and Evaluation in Central Government', Chapter 5.  
<http://greenbook.treasury.gov.uk/chapter05.htm>

## 3 SCAMS

### Introduction

3.1 It is estimated that UK consumers lose up to £3.5bn a year through a variety of scams which exploit low-cost mass-marketing techniques to target recipients.<sup>5</sup> The Scambusters team was established in June 2005 to reduce this detriment by:

Aim 1 continuing to target scams causing the greatest consumer harm through direct action

Aim 2 empowering consumers through greater awareness

Aim 3 working with postal operators and other key service providers to disrupt scammers' route-to-market

3.2 This section describes Scambusters' initial attempt to estimate the impact of their scams prevention work in conjunction with the Evaluation Team of the Chief Economist's Office. We use figures for the historic financial detriment caused by scams to derive a forward-looking estimate of money saved by consumers due to the OFT's interventions since the Scambusters team was set up.

3.3 We estimate the consumer savings that have resulted from the direct interventions of the Scambusters team (aim 1). We do not estimate the consumer savings that have come from Scambusters' education campaigns (aim 2) or its coordination with key service providers (aim 3).

3.4 We estimate that as a result of direct OFT intervention against scams, consumers have saved £18 million over the 22 months the Scambuster team has been operating, which equates to £10m per year.

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<sup>5</sup> 'Research on Impact of Mass Marketed Scams', OFT, December 2006

- 3.5 This is very likely to be a conservative estimate of consumer savings since:
- we only estimate the impact of one aspect of Scambusters' work (see above)
  - we exclude from our calculations cases for which we cannot give a reliable estimate of historic detriment arising from a particular case, or for which the OFT gave a Consumer Warning rather than taking more formal action through the seeking of assurances, undertakings or a court injunction.
- 3.6 At present, reasonably reliable evidence of historic detriment is not available for about one out of five scams successfully targeted by the Scambusters team. Embedding better monitoring and recording of consumer detriment in the Scambuster workflow will increase the proportion of their work included in future estimates of impact.
- 3.7 In addition to a need to improve the data used to estimate consumer savings, the framework we have developed remains very much a 'work in progress'. We see our current methodology as only the first step towards developing more robust estimates of the impact of the OFT's scams prevention work.

## Methodology

- 3.8 There is no accepted international methodology to draw on in estimating consumer savings from interventions against scams.<sup>6</sup> The following methodology has been developed by cooperation between the evaluation and scambuster units of the OFT.

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<sup>6</sup> The Federal Trade Commission's 'Consumer Protection Mission: Fiscal Year 2004' sets out projected savings of \$400m in 2004 'by stopping internet scams and other types of fraud'. However, the FTC have not supplied with additional detail on how they arrived at this projection.

3.9 We estimate consumer saving by the following calculation. For a given scam:

$$CS_a = F_a E_a(t) [1 - C_a] \quad (1)$$

Where:

- $CS_a$  = consumer saving due to OFT intervention against the scam
- $F_a$  = flow of historic financial detriment (per promotion or per month) to consumers caused by the scam
- $E_a(t)$  = expected duration (promotions or months) of the scam without OFT intervention
- $C_a$  = adjustment factor to correct potential upward bias of our estimate

3.10 There are therefore three inputs into our consumer savings calculation: Flow of Historic Detriment, Expected Future Duration of Scam without OFT intervention, and Adjustment Factor.

3.11 Of these, Flow of Historic Detriment is best described as an evidence-based estimate derived from historic data and the others two as judgement-based. Judgement-based estimates cover what would have occurred had the OFT not intervened against a scam, and are based on the expert judgement of the Scambusters team.

### **Flow of historic detriment ( $F_a$ )**

3.12 We obtain an estimate for the total historic detriment caused by a scam against which the OFT intervened. We only include financial detriment, even though the non-financial costs to scam victims can be substantial.<sup>7</sup>

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<sup>7</sup> 'Research on Impact of Mass Marketed Scams', OFT, December 2006: Non financial costs include emotional distress and reduced consumer confidence.

3.13 In general terms, for any scam A, to which  $n$  consumers fall victim:

$$D_a = \sum_{i=1}^n X_i \quad (2)$$

Where:

$D_a$	=	historic detriment suffered by victims of Scam A
$X_i$	=	detriment suffered by the $i$ th victim of Scam A
$n$	=	number of consumers who fall victim to the Scam

3.14 Fairly robust estimates of total historic detriment can be obtained for certain types of scam, particularly those which invited victims to call a premium rate telephone number to claim a prize. Information provided by the promoter on total calls made to the premium rate number and maximum call length duration allow us to calculate the number of people who called a premium rate number, and how much they spent on average.

3.15 It is harder to estimate total historic detriment for other types of scam. For a number of scams originating from overseas, our information concerning the number of victims and their average outlay is so sparse that no reasonable estimate of detriment can be made. We exclude scams like these from our study. However, where UK-based fulfilment houses are used by overseas marketers it may be possible to obtain customer order or response figures.

3.16 Collecting turnover or revenues of firms involved in a scam may also help give an indicator of the scale of detriment, though we have not used such information in this initial analysis.

3.17 We also note that in some cases not all of an undertaking's operations are necessarily unlawful and that not all of the money spent by consumers can be considered detriment.

- 3.18 Since we multiply historical detriment by the expected future duration of the scam in the absence of OFT intervention, it is necessary to express historical detriment as a flow.
- 3.19 We express this flow in one of two ways, depending on whether a particular scam can be classified as continuous or episodic.
- 3.20 Continuous scams operate for a significant length of time in an unchanged form. If the OFT stops a continuous scam, the scammer will not be able to launch a similar scheme very quickly, since it will involve a substantial investment of time and resources. Therefore, by stopping a continuous scam, and thereby putting the scammer 'out of action', the OFT is saving consumers the financial harm that would have occurred had the scam continued. An example of a continuous scam is a holiday club where the scammer encourages potential new members to pay a membership fee in exchange for discounts on travel and hotel costs.
- 3.21 The benefit of intervening against continuous scams can best be thought of in terms of the amount of time the scammer will be unable to operate due to OFT intervention. We therefore express the flow of historic detriment per month for continuous scams:

$$F_a = \frac{D_a}{t_c} \quad (3)$$

Where:

$t_c$  = number of months continuous scam has lasted

- 3.22 Episodic scams consist of a number of discrete episodes, such as a mailing distribution. The OFT will have reduced impact if it intervenes solely against one episode of the scam. It will cost the scammer very little to begin another episode with a new, equally harmful promotion that differs only slightly from the one which the OFT has stopped. However, the OFT will have a more positive impact if it stops future episodes of the scam from occurring. Where a scammer is subject to

formal enforcement action by the OFT (under the Enterprise Act), this will prevent the same or similar adverts being published in the future.

- 3.23 The benefit of intervening against episodic scams is best thought of in terms of the number of future episodes that OFT intervention has prevented. We therefore express the flow of historic detriment per episode for episodic scams:

$$F_a = \frac{D_a}{t_e} \quad (4)$$

Where:

$t_e$  = number of months episodic scam has lasted

### **Expected future duration of scam without OFT intervention ( $E_a(t)$ )**

- 3.24 We then estimate how long the scam would have continued had the OFT not intervened against it.
- 3.25 For continuous scams, we estimate expected future duration in terms of the number of months the scam would have continued. This means that when multiplying historical loss by expected duration, they are in the same 'unit'.
- 3.26 For episodic scams, we estimate future duration in terms of the number of episodes the scam would have continued. Again, this allows us to multiply historical loss by expected duration.

### **Adjustment factor ( $C_a$ )**

- 3.27 It is possible that multiplying the flow of historic detriment by expected duration will give upwardly biased estimates of the consumer savings from OFT intervention because OFT intervention may not stop a scam outright.

- 3.28 We estimate an 'adjustment factor' for each scam to try and correct this potential upward bias, and to take account of any other factors on a case-by-case basis that may potentially limit the effectiveness of OFT action in stopping future detriment.
- 3.29 If OFT intervention has totally stopped a scam the adjustment factor is zero per cent. For scams such as these, multiplying historical detriment by expected duration gives our best estimate of consumer savings.
- 3.30 If a scam continued in an amended form multiplying historical detriment by expected duration will give an upwardly biased estimate of consumer savings. The adjustment factor tries to correct this.
- 3.31 For example, if a continuous scam was causing an average of £100,000 of loss per month to consumers before OFT intervention, and £60,000 per month thereafter, and we consider that it would have continued for one month more in the absence of OFT intervention, multiplying historical detriment by expected duration would overestimate OFT impact by £40,000.
- 3.32 An adjustment factor of 60 per cent would give a better estimate of the OFT's impact if we apply the consumer savings formula in 3.9:

$$CS_a = F_a E_a(t) [1 - C_a] = 100,000 * 1 * [1 - 0.6] = £40,000 \quad (5)$$

## Results

- 3.33 Table 1 contains a scam-by-scam breakdown of how consumer savings from direct OFT interventions were calculated. The names of the scams have been anonymised to protect commercial confidence. The savings for each scam are aggregated to give a figure for total consumer savings as a result of direct OFT intervention against scams.

**Table 1: Scam-by-scam breakdown of consumer savings due to OFT action**

Scam name	Historic financial detriment (£k)	Detriment estimated per	Expected duration without OFT intervention	Adjustment factor ( per	Consumer saving (£m)
Case 1	685	month	12	0	8.22
Case 2	424	month	8	60	1.36
Case 2	247	promotion	8	0	1.84
Case 3	741	promotion	4	30	2.08
Case 4	174	month	10	50	0.87
Case 5	30	month	12	50	0.18
Case 6	6	month	12	0	0.07
Case 7	428	promotion	6	0	2.57
Case 8	188	promotion	6	0	1.13
Total Consumer Saving (£m)					18

3.34 Our estimate of consumer savings resulting from Scambusters' enforcement work is therefore £18 million over 22 months, which equates to £10m per year.

### **Conservatism of results**

3.35 We think this is a conservative estimate of the positive impact the Scambusters team has had. This is due to several aspects of our approach.

- 3.36 We were careful to adopt a rigorous screening process. Only scams for which historical detriment could be estimated were included in our sample. Of those, where there was some uncertainty we adopted a conservative estimate.
- 3.37 In addition, our estimates focus solely on consumer savings caused by direct intervention by the OFT. As mentioned above, direct intervention is only one part of a three-pronged strategy by which the OFT combats scams, the other parts being consumer education and disrupting scammers' route to market.

### **Further work**

- 3.38 We stress that our consumer savings estimate is a first attempt to quantify the impact of Scambusters.
- 3.39 Our estimates may be improved by refining our assumptions of scammers' actions absent of OFT intervention. We make some strong assumptions about the nature of scams and scammers' behaviour. These assumptions are made to the best of our knowledge: however, the overall pool of knowledge about scams and scammers is small compared to that concerning many other areas of economic activity.
- 3.40 As our knowledge of scams increases, we can begin to question some of the assumptions of the model, or estimate key inputs more accurately.
- 3.41 For example, greater knowledge will enable us to estimate more precisely how long a scam would have continued in the absence of OFT intervention.
- 3.42 It will also allow us to question the assumption, implicit in our use of the adjustment factor, that a changed scam will continue for exactly the same length of time as the original scam would have done had the OFT not intervened. We may find out that a changed scam has a longer or shorter life expectancy than the original scam.
- 3.43 Other improvements might involve incorporating other sources of consumer saving. Direct intervention against scams is only one aspect of

the OFT's strategy to lessen the consumer harm caused by scams. Consumer education and the disruption of scammers' route-to-market also have a key role to play.

## 4 MERGERS

### Introduction

- 4.1 Positive Impact 05/06 assumed that the consumer savings from blocking or amending a merger is one per cent of the turnover in the affected market for one year. This methodology was drawn from competition authorities in the US and the Netherlands.
- 4.2 The conservatism of the methodology we adopted is inconsistent with the decision making process both at the OFT and the CC. Mergers are very unlikely to be blocked if they would only increase prices by only one per cent for one year.
- 4.3 We have developed a more detailed methodology that uses merger simulation to better reflect our decision making procedure. It is no longer a 'lower-bound' estimate of the consumer savings from our merger decisions, and instead represents a 'conservative point-estimate'.
- 4.4 We only estimate consumer savings from proposed mergers blocked or amended by the OFT and the CC. We do not estimate any deterrent effect of the UK merger regime. The OFT is currently conducting research on the deterrent effects of both the merger regime and Competition Act 1998 compliance, to be published in 2007.

### Methodology

#### **Apportioning consumer savings between the OFT and the CC**

- 4.5 The OFT is the first stage in a two-stage merger control regime. The Competition Commission (CC) is the second stage. The combined regime controls mergers in the UK and distinguishing between the consumer savings from the OFT's first stage and the CC's second stage is necessarily arbitrary.
- 4.6 As a matter of procedure, we have agreed with the CC that the OFT is responsible for estimating consumer savings from undertakings in lieu of a CC reference (UILs) and that the CC estimates the consumer savings

from mergers which they block or amend. This way the body closest to the final decision is responsible for estimating the decision's impact.

- 4.7 Where necessary, and as a matter of presentation, we have agreed to apportion consumer savings from mergers referred to the CC between the two phases roughly in proportion to cost. As such, we allocate to the OFT 20 per cent of consumer savings resulting from CC intervention, and 100 per cent of the consumer savings from any undertakings in lieu of reference.

### **Scope of merger simulation**

- 4.8 Due to time and resource constraints we have only used merger simulation to estimate the impact of the UILs received by the OFT during the financial year 06/07. For each merger we estimate a lower, mid, and upper estimate of consumer savings to reflect uncertainty in inputs.
- 4.9 We have not simulated the mergers in which the OFT intervened for the years 04/05 and 05/06.
- 4.10 We estimate consumer savings for the cases that we do not simulate by the following method:
- calculating the percentage of annual turnover accounted for by our 'low' estimate of total consumer savings for each of the undertakings which we have simulated. This represents a conservative estimate of total consumer savings as a percentage of annual turnover
  - taking an average of this calculation across all the cases simulated to obtain a conservative estimate of the average consumer savings as a proportion of annual turnover for the cases in which the OFT accepts undertakings in lieu of a reference
  - applying this average to the turnover of the markets that we have not modelled.

4.11 Mathematically:

$$CS_j = T_j \times \frac{\sum_{i=1}^N \frac{CS_i}{T_i}}{N} \quad (6)$$

Where:

- $CS_j$  = Consumer savings from unsimulated undertaking  $j$ ;
- $T_j$  = Turnover in relevant market in unsimulated undertaking  $j$ ;
- $N$  = Number of simulated undertakings;
- $CS_i$  = Consumer savings from simulated undertaking  $i$ ;
- $T_i$  = Turnover in relevant market in simulated undertaking  $i$ ;

### Merger simulation

- 4.12 In most cases where the OFT makes an intervention, such as preventing a commercial agreement or supporting a voluntary consumer code scheme, the intervention causes a change. Since the OFT action has changed something, it can be relatively straightforward to observe the impact that the action had.
- 4.13 Merger control is different since the OFT intervention is to force the market structure not to change. As such, it is very hard to observe what our impact might be.
- 4.14 One way to estimate the impact of a decision to block a merger is to use an economic model to simulate how prices, demand, and market share might have changed were the merger to have gone ahead.
- 4.15 Simulating the effect of a merger is a three step process of comparative statics:

Step 1: Calibrate the models to describe as accurately as possible the pre-merger state of the market.

Step 2: Use the calibrated models to predict what effect a change in market structure would have on price and demand. Compare the pre- and post-merger price and demand estimates to assess the likely impact of the merger.

Step 3: Multiply this by an estimate of the amount of time it might take for entry and other market changes to correct for any anticompetitive effects of the merger.

- 4.16 Off model adjustments may be necessary during Step 3 to accommodate any properties of the merger or market not picked up by the models.
- 4.17 A detailed description of the models and process can be found in the companion document 'Consumer savings from merger control: Merger simulation for impact estimation.'<sup>8</sup>

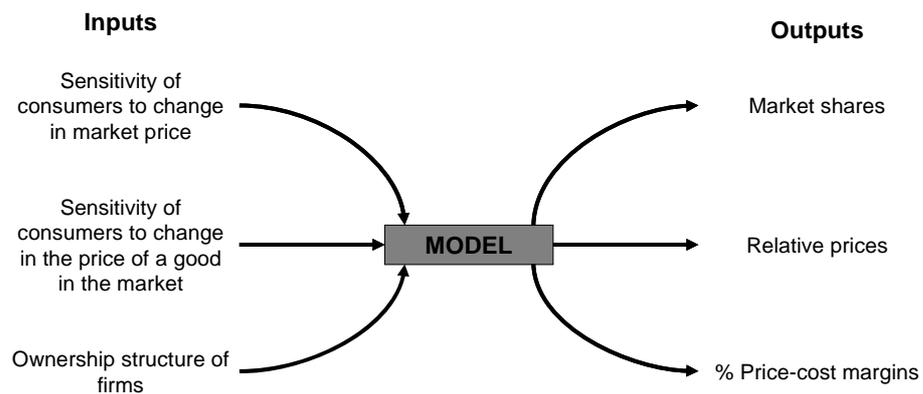
### Step 1: Calibrate the models

- 4.18 The data requirements for calibrated merger simulation are similar to the requirements for the analysis that informs our actual decisions. To determine whether a merger is likely to significantly lessen competition, it is necessary to have an understanding of the order of magnitude of: market concentration, demand side substitutability between products in the market, and demand side substitutability of the market in general. Calibrated merger simulation requires quantitative estimates of these inputs.
- 4.19 The models convert the inputs into a prediction of what the market shares, prices, and price-cost margins would be if the market were in equilibrium. The equilibrium assumption behind the models means that adjustments are likely to be necessary when modelling markets in states of change.

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<sup>8</sup> Consumer savings from merger control: Merger simulation for impact estimation. OFT917. April 2007.

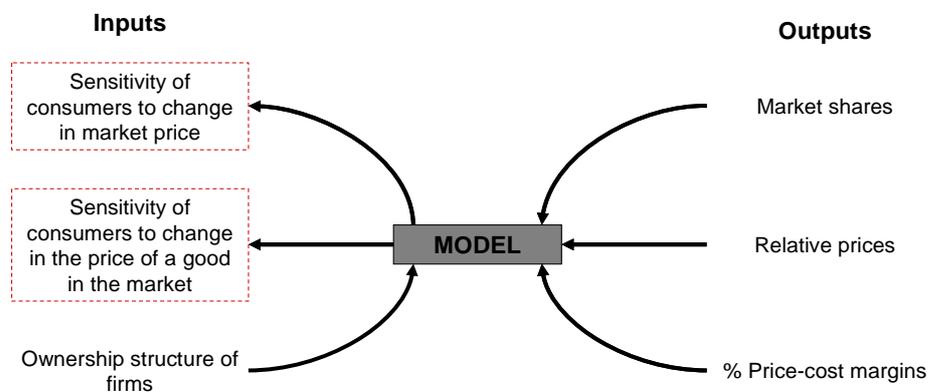
**Figure 1: Simple model design**



4.20 Pre-merger, we know more about the outputs of the models than the inputs. For example, market shares and price-cost margins are more visible than numerical estimates of price sensitivity. The models work in both directions: the inputs of the models may be calibrated to ensure that the outputs match the pre-merger status of the market.

4.21 Figure 2 shows how the inputs in the dashed boxed can be calibrated from known pre-merger outputs.

**Figure 2: Calibrating difficult inputs from pre-merger information**

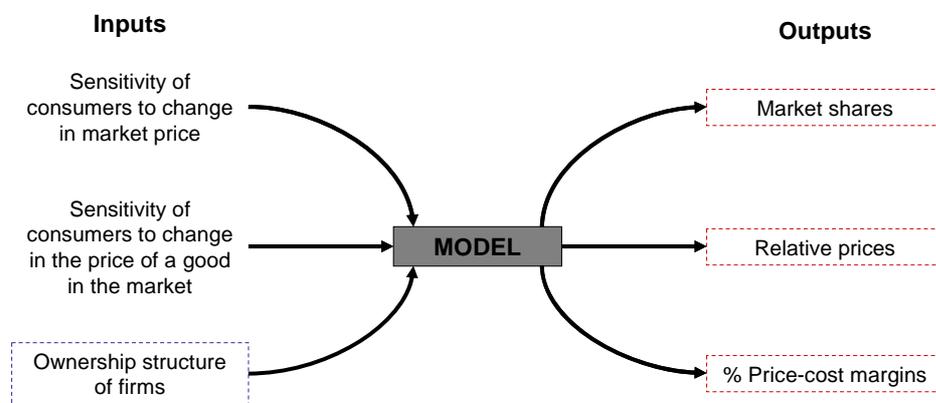


4.22 If we have incomplete information about the pre-merger state of the market then it may not be possible to calibrate **both** price sensitivity input variables. In particular, if we only have rough estimates of price-cost margins that do not accurately distinguish between the equilibrium profitability of different firms then complete calibration of the inputs is not possible. In such cases it is necessary to estimate off-model the unknown input variable on which there is least uncertainty.

## Step 2: Predict the effect of the merger

- 4.23 The effects of a merger can easily be predicted by using the same calibrated input variables, but changing the ownership structure of the firms to reflect the merger. The model simulates the effect of the merger and predicts what the post-merger prices, margins, and market shares would be in equilibrium.
- 4.24 Figure 3 shows how new outputs can be estimated by changing the ownership structure input.

**Figure 3: Post-merger model inputs and outputs**



- 4.25 The impact of the merger can be observed by comparing the pre- and post-merger market shares and prices. In addition to estimating changes in the relative market shares of each firm the models will estimate any change to aggregate market demand.
- 4.26 The models simulate price changes and do not simulate endogenous changes in quality or variety. We are unaware of any models that can numerically predict the impact on quality or variety of a merger with the relatively small amount of information available to the OFT as a first stage authority. However, many of the mergers we find likely to lead to a significant lessening of competition would have such non-price effects. Where we believe a significant lessening of competition would lead to a decrease in quality or variety we use price changes as a proxy for welfare changes as a result of non-price effects.

4.27 The impact of the merger consists of two effects:

- **The 'price effect':** After a merger it is likely that the price in the market will increase. Those people who continue to buy products at the inflated price suffer a 'price effect' which is direct financial loss. It is equal to the percentage change in price multiplied by the annual turnover of the post-merger market.
- **The 'deadweight effect':** A number of other consumers will stop buying the good because of the increased price. These consumers lose the utility that they would have gained from purchasing the good at the pre-merger price. The deadweight effect is equal to the price effect multiplied by the percentage change in price, and multiplied again by the market elasticity of demand.

4.28 Combining the price and deadweight effects gives an estimate of the annual consumer detriment that the merger was likely to have caused.

### Step 3: Estimate duration and calculate total impact

4.29 The last element in the calculation is the likely duration of the consumer detriment effect before entry, technological change, or other events remove the anticompetitive effects of the merger. While this has to be estimated on a case by case basis we suggest a default minimum estimate of two years, since if we believed the market would rectify itself quicker we would be unlikely to find a significant lessening of competition in the first place.<sup>9</sup> The Federal Trade Commission (FTC) in the US and the Dutch competition authority (NMa) also assume in their estimated impact calculations that markets would rectify within two years.

4.30 For increased accuracy we discount consumer detriment at the Treasury social discount rate of 3.5 per cent per year.

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<sup>9</sup> OFT Substantive Merger Guidance, paragraph 4.23.

4.31 Off-model adjustments to the final estimate of harm are sometimes made to account for properties of the market or merger that are not considered by the merger models, such as vertical or co-ordinated concerns.

## Results

### Undertakings in lieu of a reference

4.32 Table 2 summarises merger simulation of three undertakings taken by the OFT in lieu of a reference to the CC. When presenting aggregate consumer savings numbers we adopt the mid estimate.

**Table 2: Estimated consumer savings from simulated undertakings in lieu**

	Low estimate	Mid estimate	High estimate
Turnover in markets	£375m	£375m	£375m
Consumer savings	£53m	£65m	£77m

4.33 Table 3 summarises the 'low' estimates of consumer savings as a percentage of turnover for the three simulated mergers.

**Table 3: Low estimate of consumer savings as a percentage of annual turnover**

Merger A	6%
Merger B	13%
Merger C	16%
Average	12%

4.34 Table 4 summarises our estimates of consumer savings from the mergers that we did not model.

**Table 4: Estimate of consumer savings from undertakings in lieu for years in which merger simulation has not been used**

	Turnover	Consumer savings per cent	Consumer savings
FY 04 / 05	£161m	12 per cent	£19m
FY 05 / 06	£359m	12 per cent	£43m
Total	£520m	12 per cent	£62m

## CC decisions

- 4.35 In their 05/06 Annual Report the CC estimate that their merger decisions would save consumers £32m for each year the markets investigated would have remained less competitive.<sup>10</sup> In their 06/07 Annual Report they estimate their decisions would save consumers £3.7m per year.<sup>11</sup> The CC have not estimated consumer savings from the mergers they investigated in financial year 04/05 and we do not include estimates for these years.
- 4.36 When considering the total consumer savings from CC merger decisions we adopt the CC's default assumption that decreased competition would have lasted for three years after CC intervention.<sup>12</sup> We discount future savings by 3.5 per cent per year. Table 5 summarises the consumer savings apportioned to the OFT from decisions made by the CC after referral.

<sup>10</sup> Competition Commission 2005/2006 Annual Review, page 4.

<sup>11</sup> Provisional estimate provided by CC in anticipation of publication of their 2006/2007 Annual Review.

<sup>12</sup> Competition Commission 2005/2006 Annual Review, page 5.

**Table 5: Estimates by the Competition Commission of consumer savings from merger decisions**

	CC estimate of consumer savings	Percentage apportioned to the OFT	Consumer savings apportioned to the OFT
FY 05 / 06	£90m	20%	£18m
FY 06 / 07	£10m	20%	£2m
Total	£100.00m		£20.00m
Annual average	£50m		£10m

## Summary

4.37 Table 6 summarises the consumer savings arising from the OFT's merger control during the three financial years 2004 to 2007.

**Table 6: Estimates of consumer savings from OFT merger control in financial years 2004-2007**

	Consumer savings from undertakings	Consumer savings from CC decisions	Total
FY 04 / 05	£19m	n/a	£19m
FY 05 / 06	£43m	£18m	£61m
FY 06 / 07	£65m	£2m	£67m
Total	£127m	£20m	£147m
Annual average	£42m	£10m	£52m

4.38 During the past three financial years OFT merger control has saved consumers, on average, £52m per year.

## 5 CA98

### Introduction

- 5.1 The OFT carries out a wide range of work in support of the implementation and enforcement of the Competition Act 1998 (CA98). This includes:
- **formally investigating** anti-competitive practices such as price-fixing, bid-rigging, predatory pricing, margin squeezes, and other abuses of dominant positions, and
  - giving **informal advice** to firms and other industry bodies concerning behaviour and conduct.
- 5.2 Investigations may stop anti-competitive actions and lead to measurable consumer savings. In addition, they may lead to fines that deter future anti-competitive conduct. Some actions are cleared after formal investigation. These investigations also have significant benefit since they establish legal precedent and regulatory stability and transparency.
- 5.3 We estimate the direct financial benefit to consumers of formal CA98 investigations that result in an infringement decision.<sup>13</sup> We do not estimate the benefits arising from deterrent, precedent setting, or informal advice.
- 5.4 We improve the methodology of Positive Impact 05 / 06 with a more detailed analysis of the likely duration of anticompetitive agreements but for the OFT's intervention.

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<sup>13</sup> We rely on a combination of academic research and international best practice to estimate the likely impact of our interventions in all cases, irrespective of whether the infringement decision included a finding of effect. For the avoidance of doubt, the inclusion in these figures of consumer savings estimates for those cases where the decision was based solely on the anticompetitive object of the parties' conduct should not be treated as constituting or implying a formal finding as to the effect of the infringement.

## Methodology

5.5 All of the CA98 infringements found by the OFT over the financial years 2004-2007 were horizontal chapter 1 agreements (cartels).

5.6 We estimate the annual impact on consumers of price fixing cartels by multiplying the turnover of the affected goods or services by the price increase caused by the agreement. Mathematically:

$$a = t \cdot p \quad (7)$$

Where:

$a$	=	annual impact;
$t$	=	turnover of affected goods or services;
$p$	=	price increase caused by the agreement.

5.7 We estimate future consumer savings by multiplying the annual impact by the number of years we believe the cartel may have remained operational, but for the OFT's intervention, and adjusting to take account of the social discount rate. Mathematically:

$$f = \sum_{s=1}^c a / (1 + \rho)^s \quad (8)$$

Where:

$f$	=	future consumer savings;
$c$	=	number of years cartel would have remained operational but-for the OFT's intervention;
$\rho$	=	forward-looking social discount rate (3.5 per cent).

## Turnover

5.8 It is likely that the price of strategic complements to the goods or services offered by the colluding firms will increase, independent of who produces them. In the interests of conservatism, unless there is strong evidence otherwise we assume that only the goods or services of the colluding parties are affected by the cartel, and that the price of the goods or services of other firms in the market are unaffected.

- 5.9 Were a cartel to have a vertical aspect we would use the turnover of the goods or services in the downstream market closest to the consumer. None of the cases included in the current estimate of impact were vertical.

### **Price rise**

- 5.10 In some cases the price rise caused by the agreement has been identified in the investigation procedure. In some, case officers may be able to estimate a likely price effect, perhaps from price analysis immediately after the successful enforcement of an OFT investigation. At other times we rely on a mixture of case officer intuition, international best practice, and recent academic research.
- 5.11 The United States Sentencing Commission (USSC) assumes that 'the average gain from price-fixing is 10 per cent of the selling price', and in the absence of case-specific evidence we assume the same.<sup>14</sup> Academic evidence suggests that this is likely to be highly conservative. A survey of 13 recent cartels by Gregory Werden at the Department of Justice (DoJ) suggests a median increase of 18 per cent, and a mean of 21.3 per cent, though the lowest was only 6.5 per cent.<sup>15</sup> A separate analysis of over 300 international cartels by Connor and Bolotova (2005)<sup>16</sup> suggests that domestic EU cartels during the period 1991-2004 overcharged on aggregate between 13 per cent and 19 per cent, depending on the econometric specification used. The recent National Audit Office investigation into the OFT supported using a 10 per cent price increase to evaluate the consumer savings from price fixing investigations.<sup>17</sup>

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<sup>14</sup> USSC guidelines for the United States courts, USSC Section 2R1.1, Bid-rigging, price fixing, or market allocation agreements among competitors, application note 3.

<sup>15</sup> 'The effect of antitrust policy on consumer welfare: what Crandall and Winston overlook.' Greg Werden. *DoJ economic analysis group discussion paper*. 30. 2nd January 2003.

<sup>16</sup> 'Cartel Overcharges: Survey And Meta-Analysis' John M. Connor and Yuliya Bolotova. *Purdue University working paper* 2005.

<sup>17</sup> 'The Office of Fair Trading: Enforcing competition in markets.' National Audit Office, 17<sup>th</sup> November 2005. HC 593 Session 2005-2006.

- 5.12 Where anticompetitive practices represent price fixing of one sort or another, market sharing or bid rigging we adopt a default estimated price rise of 10 per cent.
- 5.13 Practices that restrict competitive pressure but do not consist of price fixing, bid rigging, or market sharing agreements also lead to consumer harm. Such practices are likely, at least, to have a price effect via distorted reaction functions of competitors, and an efficiency effect via weakened market punishment of a failure to constrain costs.<sup>18</sup> There is uncertainty as to the likely impact of such practices and, in the interests of presenting a conservative estimate of impact, we adopt a lower default price increase of five per cent.
- 5.14 Because of a deterrent effect, it is possible that recently observed price increases are less than the price increases that cartels would be pursuing in the absence of competition enforcement authorities.

## **Time**

- 5.15 In Positive Impact 05/06 we assumed that, in the absence of case specific information otherwise, an anti-competitive practice would have lasted 6 years from inception.
- 5.16 We now use a new methodology that takes advantage of the fact that knowing how long a cartel has already existed provides some information on how long it is likely to exist in the future.
- 5.17 We use a list of cartel durations contained in the appendix of Conner and Zimmerman (2005)<sup>19</sup> to obtain an estimate of how long a cartel will last given it has already lasted a certain amount of time.

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<sup>18</sup> For a further discussion of the link between competition and productivity see OFT research document 'Productivity and Competition' (OFT 887), particularly paragraphs 5.2 and 5.3.

<sup>19</sup> 'Determinants Of Cartel Duration: A Cross-Sectional Study Of Modern Private International Cartels' Jeffrey E. Zimmerman and John M. Connor. *Purdue University Working Paper*, April 2005.

5.18 For example, we estimate the additional duration of a cartel that has already lasted eight years in the following way:

- ordering the durations in the sample we find that there are 37 cartels whose duration is longer than eight years
- we take the mean of the durations of these cartels: 15.5 years
- the estimated additional duration is then 15.5 years minus eight years equals 7.5 years.

5.19 Analysis of our results suggests a rule of thumb methodology for estimating likely future cartel duration as follows: if a cartel has lasted seven years or less so far, it can be expected to last an additional six years. If it has lasted more than seven years, it can be expected to last 1.4 times the time it has already lasted minus three and a half years.

5.20 Mathematically:

$$\begin{aligned} E(y) &= 6 & \forall & \{d \leq 7\} \\ E(y) &= d \times 1.4 - 3.5 & \forall & \{7 < d\} \end{aligned} \tag{9}$$

Where

- $y$  = number of years cartel may be expected to last;
- $d$  = historical duration of cartel.

5.21 Further details of our calculations can be found in Annexe A.

## Results

5.22 Timely OFT CA98 interventions during the three financial years 2004 – 2007 saved consumers £193m.

5.23 During the past three financial years OFT competition enforcement has saved consumers, on average, £64m per year.

## 6 CONCLUSIONS

### Consumer savings

- 6.1 Table 7 summarises our estimates of the direct consumer savings resulting from the interventions of the OFT scambusting, merger control, and CA98 enforcement work.

**Table 7: Average annual consumer savings from OFT interventions in each of the financial years 2004-2007**

	Estimated annual consumer savings	Notes
Scambusters	£10	Conservative estimate. Initial methodology.
Merger control	£52m	Point estimate. Ignores productivity and deterrence.
CA98 enforcement	£64m	Point estimate. Ignores productivity and deterrence.
Total	£126m	

### Costs

- 6.2 Table 8 summarises the costs of the scambuster, merger control and CA98 work conducted by the OFT in the financial year 06/07.

**Table 8: Annual costs to exchequer in financial year 2006 - 2007**

	Estimated annual costs	Notes
Scambusters	£1m	Includes share of office overhead and litigation expenses.
Merger control	£4m	
CA98 enforcement	£23m	
Total	£28m	

## Further work

- 6.3 The OFT is committed to undertaking a diversified portfolio of high-impact work across the economy. To ensure effective prioritisation and delivery of work, and to encourage transparent accountability to stakeholders, the OFT is also committed to a wide-ranging programme of impact estimation and evaluation.
- 6.4 This document summarises estimates of impact for three areas of the OFT's work, all of which deliver value for money despite the narrow focus of the impact estimation methodologies used. Over the course of the next financial year the OFT will work to extend impact estimation to a wider range of its interventions.
- 6.5 In addition, over the next 12 months the OFT will publish two in-depth pieces of research into the effectiveness of competition policy:
- an investigation into the extent of our deterrent effect via a series of interviews with both internal and external legal counsel
  - an analysis of the OFT's effect on anti-competitive practices in the provision of construction work to public bodies.
- 6.6 The OFT actively welcomes suggestions, comments, and criticisms of its impact estimation and evaluation programme which may be sent to [evaluation@oft.gsi.gov.uk](mailto:evaluation@oft.gsi.gov.uk).

## **A ESTIMATION OF CARTEL DURATION**

### **Introduction**

- A.1 This annexe provides estimates for cartel duration, given information of how long they have already lasted using a sample of international cartels and a straightforward statistical method. Data and time constraints do not allow us to develop a methodology that uses information on market characteristics.
- A.2 We adopt a simple rule of thumb: if a cartel has lasted seven years or less so far, it can be expected to last an additional six years. If it has lasted more than seven years, it can be expected to last 1.4 times the time it has already lasted minus three and a half years.

### **Data**

- A.3 As a source of information we have used the paper: 'Determinants of cartel duration: a cross-sectional study of modern private international cartels' (Zimmerman and Connor (2003)).
- A.4 Zimmerman and Connor estimate a series of econometric models to explain cartel duration in terms of a range of market characteristics such as market share, the number of firms in the cartel and the industry within which the cartel operates. Their sample comprises 207 international cartels that were discovered from 1990 to 1994.
- A.5 In addition, a list of cartels used in their analysis is included in the appendix. For 166 of these cartels the length of time that the cartel lasted is given.

### **Methodology**

- A.6 The nature of the econometric model adopted by Zimmerman and Connor makes it impossible to derive estimates of cartel duration without the underlying data set, which, given time constraints, we were

unable to obtain.<sup>20</sup> This precludes our use of information about market characteristics in estimating cartel duration.

- A.7 We use the list of cartel durations to obtain an estimate of how long a cartel will last, given it has already lasted a certain amount of time.
- A.8 In order to obtain an estimate of how long a cartel will last given it has already lasted a certain amount of time, say  $t$  years, we take the **conditional** mean, that is the mean of all the durations in the data set which are above  $t$  years. The estimated additional time that a cartel will last is then the **conditional** estimated mean minus the time it has already lasted.
- A.9 For example, we estimate the additional duration of a cartel that has already lasted eight years in the following way:
- ordering the durations in the sample we find that there are 37 cartels whose duration is longer than eight years
  - we take the mean of the durations of these cartels: 15.5 years
  - the estimated additional duration is then 15.5 years minus 8 years equals 7.5 years.
- A.10 This method can then be applied to estimate additional duration for all values of  $t$ , and the results used in the evaluation of OFT work.

## Results

- A.11 The additional duration of a cartel that has already lasted  $t$  years is estimated using the above method at all points in time where at least one cartel expired (at points in between these times the **conditional**

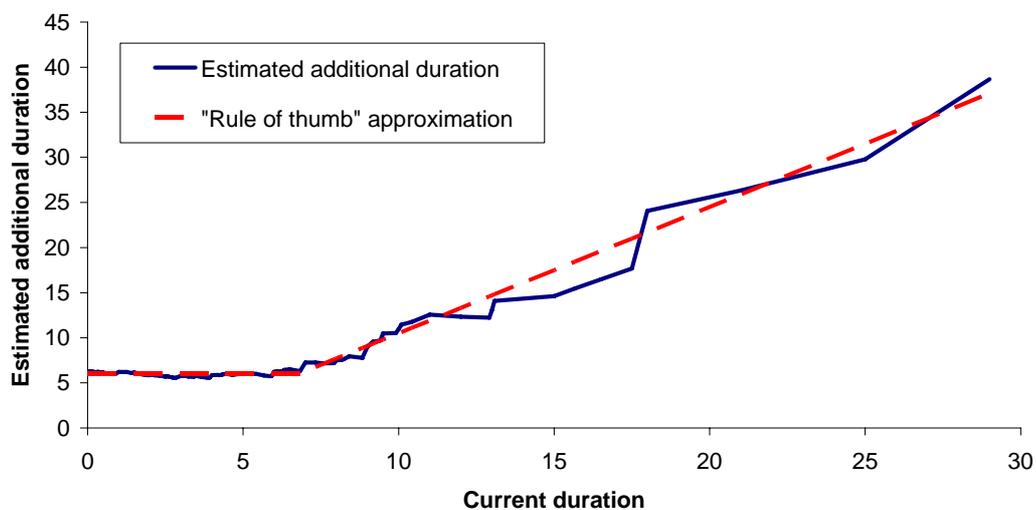
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<sup>20</sup> Zimmerman and Connor estimate a Cox's proportional hazards model. The estimated coefficients from a proportional hazards model are not suitable for our purpose of estimating cartel duration. We are currently taking steps to obtain the data set from the authors, which should yield an estimation procedure that can incorporate information about certain market characteristics.

mean remains the same). The results can be expressed in a table that provides an estimated additional duration for every time  $t$  that the cartel has already lasted, or as a graph.

- A.12 The graph below shows our estimation of cartel duration using the above method. The blue solid line represents the estimations made using the method above at points in time where at least one cartel has expired. The red dashed line represents a rule of thumb approximation which is explained below.

**Figure 1: Estimated Cartel duration**



- A.13 For cartels that have lasted up to seven years, the estimated additional duration is more or less constant at approximately six years. For cartels that have lasted more than seven years, the estimated additional duration then increases quite sharply: the estimated additional duration for a cartel that has lasted 10 years is approximately ten and a half years, and for a cartel that has lasted 15 years the estimated additional duration is approximately 15 years.

- A.14 We construct our rule of thumb for the likely duration of a cartel in two stages:

- for cartels that have lasted seven years or less, their approximate estimated additional duration is six years

- for cartels that have lasted more than seven years, we fit a straight line using ordinary least squares.

A.15 We approximate the results from the estimation procedure as follows: if a cartel has lasted seven years or less so far, it can be expected to last an additional six years. If it has lasted more than seven years, it can be expected to last 1.4 times the time it has already lasted minus three and a half years.

A.16 Mathematically:

$$\begin{aligned} E(y) &= 6 & \forall & \{d \leq 7\} \\ E(y) &= d \times 1.4 - 3.5 & \forall & \{7 < d\} \end{aligned} \quad (\text{A1})$$

Where

$y$  = number of years cartel may be expected to last  
 $d$  = historical duration of cartel

A.17 It should be noted that as the amount of time that the cartel has already lasted increases, there is less information available to estimate how long it is likely to last. The estimates of additional duration for cartels that have already lasted a long time should therefore be treated with some caution.

## Issues

A.18 There are a few issues that need to be taken into consideration in applying the results of these estimations to evaluate the impact of CA98 infringement decisions.

A.19 Firstly, the sample of cartels used to estimate cartel duration here may not correspond to the cartels investigated by the OFT. The sample used here consists of **international** cartels that were discovered from 1990 to 1994. Cartels that are subject to CA98 infringement decisions are typically not international cartels. The estimates of cartel duration made here will therefore be less applicable if the distribution of international cartel duration is different to that of cartels investigated by the OFT.

- A.20 Although we cannot be certain that the distribution of international cartel duration is the same as that for domestic cartels, there is little published evidence that it is systematically different and little reason to believe that it should be biased in a particular direction.<sup>21</sup> In the absence of contrary evidence, we believe that the sample of international cartels used here will provide a good approximation for domestic cartel duration.
- A.21 Secondly, the sample used here only includes cartels that have been discovered by antitrust authorities. Cartels that are never discovered, but end of their own accord, are not included in the sample.
- A.22 Since we wish to evaluate the impact of an OFT action, we should estimate how long a cartel would have lasted **in the absence of competition authority action now and in the future**. We would therefore wish to use a sample that includes only cartels that ended without antitrust intervention. In the sample used here, this principle is clearly contradicted as some of the cartels have ended because of action by antitrust authorities. This is a problem for which there is no obvious solution, as information on the endpoints of cartels that have not been investigated by antitrust authorities is sparse.
- A.23 As a result, our estimates for cartel duration are likely to be significantly underestimated. This is consistent with the methodology adopted for evaluating the impact of OFT work. An underestimate of how long a cartel would have lasted will lead to an underestimate of consumer savings.

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<sup>21</sup> In the paper *'Determinants of International Cartel Duration and the role of Cartel Organization'* Levenstein and Suslow compare the durations found in a few studies of international and US cartel duration. They find that the average durations are similar across all the studies, at about 7.5 years.