

# **A Review of OFT's Impact Estimation Methods**

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# 1 EXECUTIVE SUMMARY AND RECOMMENDATIONS

1.1 This report evaluates OFT's impact estimation methodologies, comments on whether these are sound, and suggests possible modifications to the methodologies and its presentation. The OFT's Statement of Requirements (SOR) asks for particular attention to be paid to:

- merger simulation for vertical mergers and co-ordinated effects
- comparing OFT's evaluation methods with those used by other international competition and consumer authorities worldwide
- high level suggestions on improving the overall approach
- initial ideas on estimating impact in areas not currently covered by the programme
- initial ideas on any further research required.

1.2 From my research on the methods used elsewhere in the world (Appendix B), I believe that there is no other Competition Authority (CA) worldwide which takes impact estimation more seriously than OFT. Various statements in the academic and policy literatures suggest that OFT is widely seen as amongst the leaders in this field. I also confirm that much of OFT's work in this area is well-founded in up-to-date appropriate academic literatures (Appendix A).

1.3 From inspection of the specific methodologies applied to individual cases in each of the areas of policy, I can confirm that OFT displays due rigour and caution in deriving its estimates

1.4 Estimating the impact of competition policy is inevitably somewhat speculative, but I am satisfied that OFT's current estimate (as reported in Positive Impact 08/09) is reasonable, and very comfortably achieves HMT's target of 5:1.

## High level issues

- 1.5 There are six key, defining features of the methodology:
- Estimates are in terms of consumer benefits (that is, apply the consumer welfare standard).
  - Estimates are ex-ante, rather than ex-post.
  - Estimates are deliberately 'conservative' (as opposed to 'lower bound' as in the earlier work on impact estimation).
  - It is assumed that no intervention can have a negative impact.
  - Estimates are presented as 'point' estimates (rather than as a range of plausible values).
  - Most areas of policy are included, but consumer education and deterrence are two major exclusions.

## Overview of estimates

1.6 I have been asked to assess the methodology rather than the estimates per se. Nevertheless an inspection of the relative magnitudes across areas of policy for 08/09 reveals some striking differences in the benefits/costs ratio:

- mergers and (to a much lesser extent) market studies record a much higher ratio than the average
- competition enforcement is much lower than average
- consumer protection is at the average.

These are important background for the following sections.

## Methodology by area

1.7 **Mergers** - OFT relies very heavily on simulation, a methodology not without its critics. The magnitudes of the simulated price increases

appear to be reasonable and not untypical of anticompetitive mergers, as reported in the existing literature. But whether they qualify as 'conservative' is questionable, and this raises a doubt that the impact of merger policy may be relatively overestimated. On the other hand, this is off-set by two other questionable assumptions which work in the opposite direction: (i) a 20 per cent transfer of impact to CC even for mergers in which CC is not involved, and (ii) a 35 per cent scaling down to allow for the possibility that an SLC would not have been found had mergers been referred to CC.

- 1.8 **Competition enforcement, chapter I** - Where possible, estimates of the price-raising effects and likely future duration of cartels are taken from the investigation. Where not, the methodology applies some fairly standard lower bound default assumptions – 10 per cent and six years respectively. Assessing the estimated magnitudes relative to the wider existing cartel literature, I suggest that the price-raising 10 per cent default is over-conservative, and that 15 per cent might be more appropriate, but still conservative.
- 1.9 **Competition enforcement, chapter II** - There has been only one Chapter II case included in the Positive Impact 08/09, and its impact is evaluated using an arbitrary lower bound default assumption.
- 1.10 **Market Studies** - Estimates are case-specific and sometimes derived (correctly in my opinion) from ex-post evaluation. Magnitudes of estimates are plausible and, in my opinion, suitably conservative.
- 1.11 **Consumer protection (non-scam)** - OFT has introduced a new methodology based on the effects of the interventions on the numbers of complaints. While this is innovative and imaginative, the practical experience from 08/09 suggests that this should be interpreted with caution. The overall impact, as estimated, is very small and inspection of the data reveals that the methodology does not work for a large proportion of cases.

## **Conclusions and Recommendations**

- 1.12 OFT work in this area puts it amongst the leaders worldwide. The methodology is well-informed by the academic literature. Inspection of

the detail of the methodology, when applied to individual cases, reveals due rigour and prudence. I am satisfied that its current aggregate estimate of its benefits/costs ratio is reasonable. It clearly satisfies HMT's target of 5:1.<sup>1</sup>

1.13 Returning to the defining features of the methodology, I believe the reliance on ex-ante is correct, and the claim to be conservative generally defensible. However, I suggest that the methodology may be less conservative in one area (mergers), but more conservative in another (enforcement).

1.14 I have a number of recommendations on the methodology in specific areas.

- Mergers. To re-consider whether calibration of specific parameters is duly conservative. The 20 per cent transfer of savings to CC for cases in which it has not been involved The 65 per cent scaling down for UILs/abandoned mergers to allow for the hypothetical possibility that CC might not have found an SLC.
- Competition enforcement Chapter I. Consider raising the default for the price-raising effects of cartels.
- Competition enforcement Chapter II. Pending further research, consider raising the default lower bounds to equality with Chapter I.
- Market Studies. None.
- Consumer Protection. Further work is desirable.

1.15 Finally, I have speculated on possible modifications to the methodology and how it is presented. These are offered as food for thought:

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<sup>1</sup> The OFT has a performance target agreed with HM Treasury of delivering direct financial benefits to consumers of at least five times its cost to the taxpayer.

- distinguishing those estimates in which we have a high degree of confidence from those which are more approximate
- offering a range of estimates, with the best estimate supplemented by upper and lower bounds
- taking exploratory steps towards a confidence interval approach.

1.16 This report has five more sections. Section 1 provides a brief introduction. Section 2 describes and assesses the 'high-level' assumptions which set the framework within which OFT assesses its impact. Section 3 overviews the current estimates (as reported in the OFT's Positive Impact 08/09) drawing comparisons between the five areas. Section 4 is the bulk of the report. Each sub-section describes and assesses the methodology and assumptions used in each of the five areas. Section 5 contains my conclusions and recommendations.

1.17 There are also three appendices, each of which is drawn upon in the main text. Appendix A briefly summarises related academic literatures, Appendix B summarises practices of other CAs around the world in this area, Appendix C summarises the current state of the academic literature on simulating vertical mergers and mergers with coordinated effects.

## 2 INTRODUCTION

2.1 The OFT's evaluation team has published annual Positive Impact notes since 2005. The note sets out impact estimates by OFT's area of work and explains the methodologies used to estimate impact. The first Positive Impact note estimated the impact of merger control and competition enforcement. Over the years, the scope was extended and the most recent one (Positive Impact 08/09) covered the following areas: merger control, enforcement of competition law, consumer protection enforcement, and market studies and reviews.<sup>2</sup> The SOR for the Review of impact estimation methodologies asks for an evaluation of OFT's impact estimation methodologies in each of those areas.

2.2 This evaluation should assess whether these methods are sound, and consider any possible improvements. The SOR asks for particular attention to be paid to:

- merger simulation for vertical mergers and co-ordinated effects
- comparing OFT's evaluation methods with those used by other international competition and consumer authorities worldwide
- high level suggestions on improving the overall approach
- initial ideas on estimating impact in areas not currently covered by the programme
- initial ideas on any further research required.

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<sup>2</sup> Annual Positive Impact notes can be found on the OFT website.  
[www.oft.gov.uk/advice\\_and\\_resources/resource\\_base/evaluation/publications](http://www.oft.gov.uk/advice_and_resources/resource_base/evaluation/publications)

### 3 THE METHODOLOGY – HIGH LEVEL ISSUES

- 3.1 This section identifies six key defining features of the overall methodology.<sup>3</sup>
- 3.2 OFT's impact target, and therefore methodology, focuses solely on the **benefits to consumers**.<sup>4</sup> I believe that this is totally appropriate: it reflects OFT's general approach to competition policy, and is in keeping with the practice of most other Competition Authorities (CAs) around the world.
- 3.3 The methodology is based on **ex-ante** (as opposed to ex-post) estimates (Positive Impact 08/09 para 1.5). I believe this is appropriate since ex-post evaluation is costly and not always practicable (see Sabbatini 2008 for example).
- 3.4 All estimates are described as '**conservative**', and OFT justifies this label in three ways. First, the aggregate estimate excludes any allowance for positive impact in various omitted areas: consumer education, codes and support for Trading Standards, reduced psychological consumer detriment, and the dynamic effects resulting from greater competition. Second, in each area where impact is quantified, OFT opts for methods which entail conservative assumptions. (Positive Impact 08/09 para 1.18). Third, no allowance is made for the deterrent effect of policy. In my opinion, the choice of a conservative approach is wise since this is a self-assessment exercise, and this helps counterbalance any doubts that assessment may be too optimistic – in particular that ex-ante estimates will almost inevitably generate positive values, given that the OFT has decided to intervene in the first place. One objective of this report is to assess whether estimates are, indeed, conservative and, in particular, whether the term 'conservative' is interpreted equivalently across the various areas of competition policy. Moreover, the interpretation of

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<sup>3</sup> Some of these, and other more general issues were raised in OFT (2008e).

<sup>4</sup> This is explained and justified in OFT (2008c, inter alia, p.7 para 2.6.)

'conservative' is considered relative to the practice prior to Positive Impact 06/07, which was based on 'lower bounds' estimates.<sup>5</sup>

- 3.5 It is assumed throughout that **no intervention had a negative impact**.<sup>6</sup> This is justified as follows: 'all interventions..., 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' (Positive Impact 08/09 para 1.12) While this could also be justified by pointing to the otherwise conservative nature of the methodology, it does presume a zero probability of Type 1 errors (false 'conviction').<sup>7</sup>
- 3.6 The methodology is based throughout on **point estimates**, that is, any intervention will have an impact of X, with complete certainty. This may be defensible in terms of simplicity and proportionality, especially when estimates are deliberately conservative. Nevertheless, I consider below how uncertainty might be acknowledged.

## Exclusions

- 3.7 As mentioned, the main exclusions from the quantification are Deterrence, Consumer Education and Advocacy, and dynamic effects. The first two are discussed in chapters 4 and 5.
- 3.8 There are a number of other more specific lower-level assumptions embedded in the methodology, for example, with market investigations and mergers, benefits are shared with CC, also, where possible, estimates are presented in the form of a three-year moving average. The

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<sup>5</sup> In one of the earliest of its evaluation publications, Davies and Majumdar, OFT (2002) had advocated the lower bound approach.

<sup>6</sup> Arguably, the 35 per cent scaling down of mergers impact is an exception to this, see section 4.1.

<sup>7</sup> By the same token, one might argue that the methodology ignores the possibility of Type 2 errors (not 'correcting' anticompetitive conduct/mergers), and this raises the question of whether we should countenance the costs imposed by OFT on society: in this case, of failing to prevent what it 'should prevent.'

former is discussed below in section 4, the latter is, in my opinion, a sound working practice, given the 'lumpiness' in the series resulting from the 'big cases'.

## 4 OVERVIEW OF ESTIMATES – CROSS-AREA COMPARISONS

4.1 To provide an opening perspective, Table 4.1 reports the estimates of consumer savings (taken from Table 1.1. of the Positive Impact 08/09), combined with an unpublished breakdown of partial costs (taken from the summary sheets sent to me), disaggregated by area of policy. As can be seen, in aggregate the ratio of the two (11.4) is more than double the target of 5:1 agreed with HMT.<sup>8</sup>

**Table 4.1: Estimated annual consumer savings and OFT costs, 2006-09**

	<b>Annual Benefits</b>	<b>Annual Partial Costs (07/09)</b>	<b>Benefit/partial Costs</b>
Consumer protection (excluding scams)	£57m (14%)	£5mn (14%)	11.4
Scams	£11m (3%)	£1mn (3%)	11.0
Mergers	£131m (32%)	£5mn (14%)	26.2
Competition enforcement	£78m (19%)	£17mn (47%)	4.6
Market studies	£132m (32%)	£8mn (22%)	16.5
<b>Totals</b>	<b>£409mn</b>	<b>£36mn</b>	<b>11.4</b>

Sources: Table 1.1 Positive Impact 08/09, and unpublished disaggregation of costs from confidential internal OFT spreadsheet

4.2 While it should be stressed that the ratio falls to 8:1 once all costs are used ( that is, including costs not directly attributable to these areas – not shown in my table), this breakdown is useful for comparative purposes, and shows that:

- Mergers far exceeds the benchmark – fulfilling it four times over.

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<sup>8</sup> Objective 1.1 in the CSR07 performance framework.

- Market studies are also much higher than the average – achieving a ratio three times larger than the target.
- Consumer protection (scams and non-scams) is at the average level.
- Competition enforcement is not only much lower than average, it is scarcely meeting the Treasury’s 5:1 target.

4.3 There may be various potential explanations for this unbalanced pattern of ‘payoffs’ across areas, but in my mind it raises three questions of potential immediate relevance:

- Is the methodology over-generous in evaluating the prevented price increases from the typical merger (and perhaps market study)?
- Are the aggregates for mergers and market studies dominated by a few large (and arguably carrying ‘too much’ weight) cases?
- Is the methodology too cautious in evaluating the higher prices resulting in the typical CA98 case?
- Does the OFT successfully intervene in a sufficient number of competition enforcement (CA98) cases?

4.4 The first three are directly relevant to the project in hand (impact methodologies). The last is of wider interest – is CA98 a relative weakness in the OFT’s activities?<sup>9</sup>

4.5 This breakdown is also potentially relevant to resource allocation issues within OFT. Does it suggest that OFT should devote relatively more resources to the productive areas (and less to the unproductive?) Or does it point to ‘less success’ (broadly defined) in pursuing CA98? These are relevant questions, but one should heed the cautionary message of Neven and Zengler (2008) about misuse of impact evaluations.

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<sup>9</sup> I have been informed that more cases are expected to be completed (there are quite a few in the pipeline) so it is possible that CA98 impact estimates will be higher in the future.

4.6 Table 4.2 reports the number of cases, by policy area, on which the 08/09 Impact is estimated. While the merger estimate is based on a fairly large number of cases, both market studies and CA98 involve only a handful of cases. This means that the aggregate savings computed in both these areas may be very sensitive to one or two extreme observations. More generally, in all areas, a large proportion of total savings are accounted for by one or two cases. The procedure of reporting three year averages will tend to smooth impact estimates over the years, but it remains true that potential errors in particular cases could make year to year fluctuations volatile.

**Table 4.2: Number of cases by area, 2006-09**

	Number of cases	
	OFT	CC
Consumer protection (excl scams)	Unclear from Positive Impact 08/09	
Scams	27	
Mergers OFT	20	
Mergers CC		15
Competition enforcement	5	
Market studies	4 <sup>1</sup>	
CC Market studies		6

Sources internal OFT spreadsheet (unpublished)

Notes: 1. includes Payments Systems Task Force

## 5 EVALUATION OF METHODOLOGIES BY AREA

5.1 This section assesses the detail of the methodologies used to evaluate impact by area of OFT's work. It also evaluates the magnitudes of estimates - both absolutely and alongside comparators (other CAs, the CC and academic).

### Mergers

#### The methodology and key assumptions

5.2 Simulation is at the heart of the merger methodology. For all mergers in which there was an 'intervention' (UILs<sup>10</sup> agreed with OFT or merger abandoned on referral to the CC), an economic model is used to simulate how prices, demand, and market share might have changed were the merger to have gone ahead absent the intervention. There are four key assumptions

- The model is chosen, as appropriate, from three candidates – Cournot for homogeneous products and PCAIDS or ALM for differentiated product industries. For vertical mergers, simulation is done for each stage separately.
- The estimates of consumer benefit resulting from this methodology represent 'conservative point-estimates', in the sense that 'any assumptions made to run the model are conservative.' The model is calibrated using low, medium and high assumed values of the industry elasticity (which is a key input in the model), and uses the medium as the chosen point estimate. The conservatism relates to the range of the elasticity assumptions.
- Savings are assumed to last for two years – thereafter, market correction (for example, entry) is assumed to wipe out any anti-

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<sup>10</sup> Undertakings in lieu or UILs are cases where the OFT accepts binding undertakings from the merging parties as an alternative to referring the merger to the CC. The undertakings must be aimed at preventing or remedying the adverse competition effects identified

competitive consequences. Off model adjustments may also be necessary to accommodate any properties of the merger or market not picked up by the models.

- Where simulation is not appropriate for the case, it is assumed that the consumer savings as a proportion of turnover are equal to the mean of the lower bound of that ratio across all simulated mergers over the previous three financial years.

Two further adjustments are also important

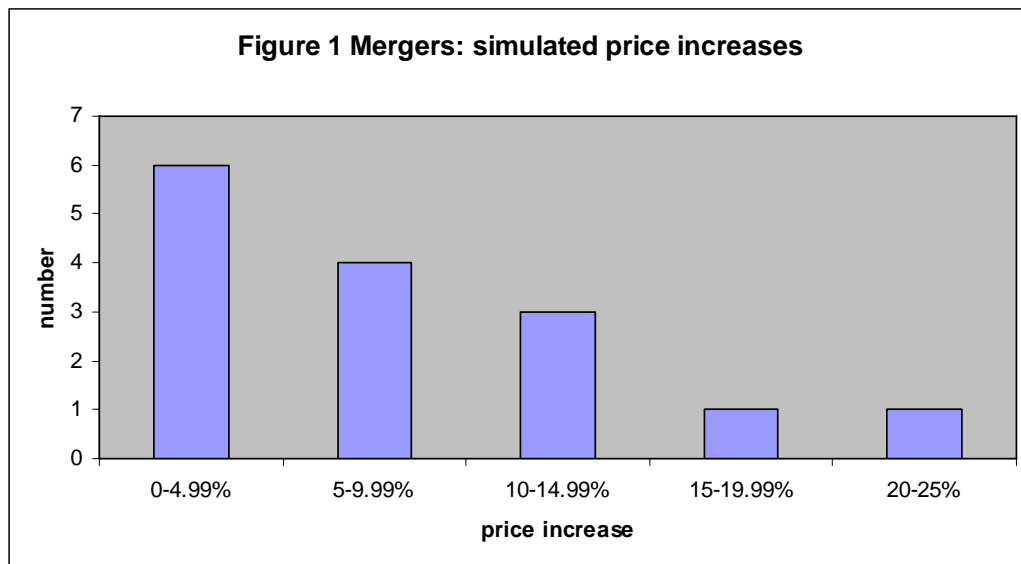
- Allowance for CC involvement: recognising that UK merger control is a two stage process, with OFT at the first stage and the CC at the second, 20 per cent of the savings from UILs and abandoned mergers are attributed to CC, while 20 per cent of the savings from CC's interventions are attributed to OFT. The latter are calculated by CC.
- To account for uncertainty, estimates for UILs and abandoned mergers are scaled down by 35 per cent. This derives from the assumption that there is only a 65 per cent probability that the CC would have made an SLC finding in these cases had they been referred to CC. In turn, this is justified on the grounds that an SLC was found in only 65 per cent of mergers actually examined by the CC in the last two years.<sup>11</sup> 'In the absence of evidence to the contrary, we see no reason to assume that the proportion of SLCs among UILs and abandoned mergers would be different to this'.

### **The magnitude of estimates**

- 5.3 OFT was able to simulate three quarters of all 20 intervened mergers in 2006-9 for the purpose of impact estimation, as reported in Positive Impact 08/9 (the other five were inferred), which suggests that simulation is more widely applicable than is sometimes supposed.

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<sup>11</sup> This may be revised in future if the 'hit rate' in 2009-10 changes.



- 5.4 The mean simulated avoided price increase was eight per cent (and median seven per cent), for five mergers the increase was in excess of 10 per cent, but less than five per cent in six others.<sup>12</sup>

### Assessment of assumptions and estimates

The assumptions

- 5.5 The strong reliance on **simulation** exposes the impact methodology to some well known criticisms of the simulation methodology in general (Appendix A). Its major strength is that it requires an explicit use of theory to identify the counterfactual, and this should facilitate a 'joined-up' approach to making and then evaluating decisions. However, simulation is inevitably sensitive to modelling assumptions. As OFT acknowledge, it is more suited to some oligopoly models (and therefore markets) than others. Similarly, it emphasises the price effects of mergers, to the exclusion of innovation, repositioning etc, and possible changes in conduct. Very often in particular markets there is an absence of good estimates of the demand elasticities, and choice of values is somewhat arbitrary. Werden (2008) reports that the DoJ typically

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<sup>12</sup> This compares with a mean of 12 per cent for the four mergers estimated in Positive Impact 06/07 – the first year in which impact was based on simulation.

employs a range of 1 to 1.5, but does not explain why. Perhaps most important of all, there is mixed evidence on how well simulation predicts actual outcomes. Ashenfelter & Hosken (2008 p.36) suggest that 'careful evaluation of their effectiveness seems long overdue'.

5.6 From inspection of the mergers simulated by OFT for Positive Impact, it is clear that ALM is the model more or less routinely employed (used for all but one case). There are no vertical or coordinated effects cases in this period. The majority of mergers involve local competition, and although the implicit symmetry of the ALM is inevitably an approximation, it is not an unreasonable choice. The one exception is a merger involving homogenous products, for which the Cournot model is used. In the latter, no adjustment has been made for potential capacity constraints. I have no information on whether capacity of rivals might have been actually constrained in that case, but to the extent that it was, simulated price rises would have been higher and the absence of any adjustment is therefore quite consistent with a conservative approach. My main concern is with the assumptions made about the magnitudes of the industry elasticity. Across cases, the median (and modal) range is -0.5 to -1.5, the midpoint of which is -1 (sometimes the range is even less elastic.) Of course, in the absence of detailed market-specific information, the choice of any particular range will be arbitrary. Having said this however, and remembering that the Impact is evaluated at the midpoint of the range – typically unity – it is not at all clear why this should be interpreted as '**conservative**'. With demand relatively inelastic, predicted price increases will tend to be potentially very high. I suggest that the spirit of conservatism would be better captured by employing the most elastic value in the elasticity range, and/or by extending the range beyond -1.5, perhaps to -1.75 or -2.<sup>13</sup>

5.7 Furthermore, no allowance is made for efficiency savings from the mergers. This is acceptable if simulation is employed in the initial investigation, merely to give a rough feel for the 'upward pressure on prices', which might then be assessed alongside the possibility of

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<sup>13</sup> I think there would be considerable value in conducting a meta-analysis of the magnitudes of estimates of demand elasticities – either within OFT or externally.

efficiency savings. However, when used, as here, to predict how much price would have risen, absent intervention, it requires some discussion and justification. My own preference would be to include a ball-park assumption of say a three per cent efficiency saving reflected in marginal cost. Alternatively, OFT might wish to defend the assumption of zero marginal cost saving – pointing to the fact that firms typically refer only to savings in fixed costs (which are irrelevant here). I think this is important, given the claim that the methodology is conservative.<sup>14</sup>

- 5.8 Confining the assumed savings to just **two years** is conservative<sup>15</sup> and in line with common practice (see below).
- 5.9 The treatment is reasonable for those cases which are **not amenable to simulation** – especially as they are relatively few.<sup>16</sup>
- 5.10 In my opinion, the **80:20 split between OFT/CC** is more questionable. While it is reasonable that some of the savings from CC interventions should be attributed to OFT, it is not so obvious why the reverse should be true since the CC has no input into these cases.<sup>17</sup> It also appears to be inconsistent with the treatment of market studies, see below, for which a similar deduction is not made for cases with no CC involvement.
- 5.11 The **35 per cent scaling down** assumption might be interpreted as an admission that the OFT sometimes makes mistakes, in which case it would be the singular exception in the whole Impact programme, which abstracts from the possibility of Type I errors. This interpretation is

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<sup>14</sup> It should be remembered that, without efficiency savings, simulation models will never predict negative price increases. Thus, Type I errors are ruled out by assumption.

<sup>15</sup> It seems unlikely that OFT would choose to intervene if it believed that self-correction within the market would occur within the following two years.

<sup>16</sup> The low number is re-assuring, moreover, simulation was not used in three of these four cases because of time constraints, and not because the methodology was inappropriate *per se*.

<sup>17</sup> I anticipate that a case might be made, along the lines of a deterrent effect of potential referral to CC, but if this is the argument, it should be explicitly argued. In any event, I would not be persuaded that it merits such a large deduction.

admittedly too extreme. The OFT has a duty to refer a merger to the CC if it believes that the merger gives rise to a realistic prospect of an SLC. If, in the event, CC judges that, in 35 per cent of cases, there is no such SLC, this does not mean that the OFT was incorrect to refer for deeper investigation. Nevertheless, by settling in Phase 1, the parties clearly prefer to agree undertakings rather than incur the additional costs of a subsequent CC investigation. This need not be an implicit acceptance that CC will find an SLC - it may be simply that they view the costs as prohibitive – but it does seem more likely than in those cases where UILs are not agreed. If so, UIL and, even more so, abandoned mergers are unlikely to be a random sample, and the 35 per cent correction is likely to be an overstatement of the probability that there might be no SLC.<sup>18</sup>

#### The estimates

- 5.12 In assessing the magnitudes of the estimated price effects, ideally it would be helpful to provide a perspective from the ‘population distribution’ for all mergers. Unfortunately, as noted by Bergman (2008, p.394), ‘there exist amazingly few econometric studies of the price effects of mergers’. Nevertheless he conducts a small meta-analysis using data from a recent survey by Weinberg (2008) for a (not necessarily random) sample of 13 markets from 15 US mergers, and reports a mean of 7.6 per cent (median (4.8 per cent)). Ashenfelter and Hosken (2008) examine five US mergers which they carefully select as representative of cases ‘on the cusp’ of intervention – the marginal mergers which might just have been intervened, but which were not in fact. They suggest that these mergers identify where the US authorities draw the line between intervention and non-intervention. Using a difference-in-differences approach, they estimate the typical price raising effects of these mergers to be in the range three to seven per cent.

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<sup>18</sup> I understand, of course, that this view is not shared by the OFT, as expressed in PI 08-09: ‘we see no reason to assume that the proportion of SLCs among UILs and abandoned mergers would be different to this (the proportion of SLC findings in the cases in which UILs are not agreed)’.

- 5.13 Given that the OFT cases were intervened, then a mean estimate of seven per cent for what would have happened absent intervention is not implausible in the light of these previous studies. However, it is less obvious that these are particularly conservative estimates.

#### **Comparison with other CAs**

- 5.14 CC also estimates the likely counterfactual price rises that would have occurred in those cases where it intervened.<sup>19</sup> However, it does not adopt a single methodology in each case, preferring instead to draw upon the beliefs of its case teams to derive what it refers to as its 'best guess'. Although CC's evaluation documents (for example, CC, 2009) quantify the magnitudes of the aggregate benefits to consumers from its cases, it is impossible to back out from these the price rises implied.
- 5.15 The other major authorities which conduct impact evaluation fall into two types: those adopting a similar approach to OFT, and those employing simple rules of thumb. The DoJ uses simulation where possible, and a mean avoided price rise of six per cent is apparently representative. However, it assumes that the saving lasts for only one year. Mateus et al in their 2008 report use simulation to estimate the impact of the Portuguese authority's work in this area and report a mean estimate of 5.7per cent. EC simply assumes that its merger interventions help avoid price rises from merger of 10 per cent, but only for one year. In the absence of case-specific information, the FTC generally estimates consumer savings conservatively as one percent of the volume of commerce in the affected markets (assuming savings last for two years in merger cases).<sup>20</sup> NMa also uses a one per cent lower bound, unless better information is available.

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<sup>19</sup> It should be recalled that OFT is attributed with 20 per cent of the gains from CC interventions.

<sup>20</sup> This is not intended as a precise estimate of consumer savings, but, rather, as an indication of general magnitude. A more precise estimate based on case-specific information is used whenever possible. For more see FTC's strategic plan - [www.ftc.gov/opp/gpra/spfy09fy14.pdf](http://www.ftc.gov/opp/gpra/spfy09fy14.pdf).

**Table 5.2 Other CAs' assumptions applied to OFT merger caseload (£m)**

		<b>Turnover</b>	<b>Impact</b>
OFT		2,099	175*
After 35% deduction			114
DOJ	Simulation (6%), 1 year		126
PCA	Simulation (5.7%), 2 years		239
EC	10%, 1 year		210
FTC/NMA	1% , 2 years		42

\* This assumes for convenience, that the real locations with CC exactly balance

5.16 Table 5.2 conducts a comparative evaluation of the different CAs' methodologies, by applying them (hypothetically) to the mergers evaluated by OFT in Positive Impact 08/09. As can be seen, the OFT methodology ranks in third place of the five authorities, that is, the median, and after the 35 per cent deduction, it slips to fourth place. On this basis, a label of 'conservative' is not unreasonable.

### **Alternative Methodologies**

5.17 Beverley (2008) attempted to apply the Events Study methodology to five CC/OFT mergers (BSkyB-ITV, HVM-Ottakars, South-East Water-Mid Kent, Stericycle-LLC and Wienberger-Baggeridge), but concluded that typically it could not provide any results because of the absence of identifiable/quantifiable rival share valuations.

## **Competition Enforcement: Chapter I (Cartels)**

### **The methodology and key assumptions**

5.18 Where possible, estimates are based on information from case teams, but where this is not available, OFT applies 'rules of thumb that are consistent with international best practice and recent academic research'

(2009a, p. 36). This is one of the two areas (along with mergers) which are longest established in Impact Estimations.

5.19 The methodology is fairly standard and involves three assumptions.

- **Future cartel duration prevented.** Up until 2006, the norm was to assume as a rule of thumb, that absent intervention, the cartel would exist for a further six years,<sup>21</sup> but this was modified from the 06/07 Positive Impact onwards. The six-year default is still used for all cartels of existing duration of seven years or less. But, it now allows for the fact that longer established cartels are likely to continue to live for longer. For any cartel already in existence for  $D$  years, where  $D > 7$ , it is assumed that its future life, absent intervention, would have been  $1.4D - 3.5$ . For example, if  $D = 8$ , future life = 7.7, rising to 10.5 for  $D = 10$ , and 24.5 for  $D = 20$ .
- **Affected turnover.** This is assumed to be only the turnover of the infringing parties. This is conservative, to the extent that a high cartel price allows competing outsiders to free-ride by raising their own price up towards the cartel's price.
- **Extent of the avoided price-raise.** This is estimated if possible during the investigation. Where not, a conservative 10 per cent is assumed. In the three years (2006-09) covered by the most recent Positive Impact, the rule of thumb default was invoked in only one of the three cartels involved, but in the years prior to 2006, all cartels were assumed, by default, to have involved a 10 per cent overcharge.

### The magnitude of estimates

5.20 In the Positive Impact 08/09, there were four Article 81 cases. In three, estimates of price reductions were taken from the case team (17 per cent, 15 per cent and five per cent), and for only one was the 10 per

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<sup>21</sup> As always in its impact estimates, the OFT uses a 3.5 per cent rate to discount future savings based on the HMT Appraisal and Evaluation in Central Government Green book.

cent default used. This is in contrast with the 12 cases prior to 2006, in which a 10 per cent default was used in all cases. Assumed further duration was six years in all cases except one, in which three years was assumed.

### **Assessment of assumptions and estimates**

The assumptions

- 5.21 The six year **future duration** default is a widely used assumption by CAs (see below), and OFT's recent modification for older cartels is imaginative and in keeping with its policy of drawing on the results of academic research. The use of the formula above (paragraph 5.19) is based on some data on cartel survival reported in Connor and Zimmerman (2005). This is an interesting attempt to capture an important aspect of real-world heterogeneity amongst cartels. However, it is not in keeping with OFT's general claim to be conservative in its approach, especially when compared with other CAs. Moreover, I am not aware of how strongly significant are the coefficients in the estimated formula. Also bearing in mind that most survey articles suggest a median lifespan of cartels of between five and eight years (for example Levenstein and Suslow (2007)), I am unconvinced that this modification is really necessary. On a practical note, it has yet to be applied in the Positive Impact since no cartel uncovered in this period has been sufficiently long-lived.
- 5.22 Confining the **affected turnover** to just that of the infringing parties is conservative and prudent. Nevertheless, it would be instructive to know by how much estimates would be increased if the higher price was applied to the full market turnover.
- 5.23 The assumed **10 per cent price-raising effect** of cartels is the assumption which deserves revisiting. The justification for this default is spelled out in Positive Impact 06/07, which cites four reasons:
- The United States Sentencing Commission (USSC), has long used this assumption.

- A survey of 13 cartels by (Werden, 2003) reports a median of 18 per cent, mean of 21.3 per cent, and lowest value of 6.5 per cent.
- A survey of over 300 international cartels by Connor and Bolotova (2005) 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 National Audit Office(2005) report on the OFT supported using a 10 per cent default.

5.24 A reading of these sources confirms that 10 per cent is indeed a very conservative lower bound, and is open to debate. Connor (2009) suggests that the original USSC judgment was probably based on a very small number of early cases, and he concludes 'Thus, the lynchpin of modern criminal cartel fines is supported by a surprisingly small amount of evidence.' Connor's and Werden's samples imply, if anything, that 10 per cent lies below all but the extreme lower tail of observed real world cases. The NAO's support for 10 per cent appears to be based on the suggestion of the current author, who along with Majumdar (OFT 2002), suggests 10 per cent as the **lower bound** of what might be typically expected in practice.

5.25 Unlike for mergers, there is much more extensive existing data in the academic literature on the price raising effects of cartels. I suggest that these might be used in future in-house research to shed more light on the definitions of 'lower bound' and 'conservative'. In particular, Connor's recent published and unpublished articles in this area are informative. For instance, in a current working paper (2009, which updates and extends many of his previous papers in this area), he reports the distribution of 'Cartel Overcharges', based on an extensive sample of 1517 cartels. The median overcharge lies between 17 per cent and 30 per cent depending on the subsample. Importantly for present purposes, his Figure 8 and Table 5 (p.94) show that **only 20 per cent of cartels raise price by 10 per cent or less**. In a related paper (Bolotova Y, Connor J and D Miller, 2009), 21 per cent of US cartels overcharged by 10 per cent or less. From these distributions, I estimate that the 80 per cent confidence interval is approximately 10-45 per cent and the 90 per cent confidence

interval approximately five to 100 per cent. Against this backdrop, a 10 per cent default might be interpreted either as a practical lower bound, or as a very conservative estimate. For the sake of argument, 15 per cent might be a more appropriate figure – but, at this stage, this suggestion is offered more to provoke thought than as a hard recommendation. Ideally, Connor’s estimates merit closer scrutiny.

### Comparison with other CAs

5.26 Amongst the other major authorities, the 10 per cent default appears to be common practice, however, the EC assumes five years of future life, while the DoJ assumes only one year. Unsurprisingly therefore, using the DoJ’s defaults to value OFT’s cartel impact results in a much lower figure than the OFT’s estimate. On the other hand, applying the EC’s defaults yields a substantially higher estimate than the OFT’s.

**Table 5.3 Evaluating the OFT’s cartel cases using other CAs’ assumptions**

		Turnover (£m)	Impact (£m)
OFT		277	74
EC	10%, 5 years discounted 3.5%		125
DOJ	10%, 1 year		28

## Competition Enforcement: Chapter II

### The methodology and assumptions

5.27 The methodology for Chapter II cases is similar to Chapter I, but with two differences: (i) the default price rise is five per cent, (ii) duration is left at the discretion of the case officer in the particular case. Assumption (i) is justified simply because it is conservative.

### **The magnitude of estimates**

- 5.28 There is only one case included in Positive Impact 08/09 – a small case with estimated impact of £10 million.

### **Assessment of assumptions and estimates**

- 5.29 Unlike mergers and cartels, this is almost completely uncharted territory, and the above assumptions are arbitrary, but they do satisfy the claim for conservatism.
- 5.30 Unfortunately, the wider academic and policy literature contains few attempts to quantify the effects of intervention against abuse of dominance. Werden (2008, pp. 442-3) argues that 'In assessing the effects of antitrust enforcement, cases involving exclusionary conduct present the greatest challenge'. He points to the difficulties in establishing the extent to which rivals are harmed and the impact on consumers, and explains that delicate trade-offs are involved where the practice may entail an element of efficiency enhancement. Predatory behaviour is particularly problematic, given the need to quantify short-run and long-run impacts of opposite directions.
- 5.31 A thorough survey of the relevant literature is a possible area for future research, but the literature is likely to be patchy and dispersed. Given the infrequency of Chapter II interventions, perhaps this is not a top priority.

### **Comparison with other CAs**

- 5.32 For Article 82, the EC's methodology assumes that the customer saving corresponds to 10 per cent of the size of the relevant market(s) to which the anti-competitive practice relates. It explains that this figure is based on an analogy to the SSNIP (Small but Significant and Non-transitory Increase in Price) test. The price effect is assumed to last for one year.

## **Market studies and Market Investigation References (MIR)**

### **The methodology and assumptions**

- 5.33 For market studies, there is no common methodology. Again, the use of conservative assumptions is stressed, but this is the one area where the impact evaluations are not always ex-ante. It is explained that subsequent monitoring of market developments may lead to revised assumptions and updated impact estimates, and where possible, use is also made of ex post impact estimates based on evidence from ex-post evaluations. In the four cases included in the 08/09 Positive Impact, evaluation was ex-post in two.
- 5.34 For MIRs carried out by CC, 20 per cent of the impact is credited to the OFT. For OFT market studies and reviews of undertakings and orders that involve or could involve the CC, 80 per cent is credited to OFT. However, for market studies where referral to the CC is not considered as a possible option, the OFT is credited with the full 100 per cent.

### **The magnitude of estimates and case-specific methodology**

#### Payment Systems Task Force (£14mn)

- 5.35 This is based on an ex-post review, (OFT (2009b), see particularly footnote 16, p.17.) Estimated benefits derive from consumers' valuation of the faster clearance of cheques. The assumptions do indeed appear to be conservative: consumers are now willing to pay 25 per cent more than they said they would in consumer research carried out for the earlier report. As the introduction of the Faster Payments Service was gradual, it was assumed that the service only operated at 60 per cent capacity for the first year, and that benefit has been reduced to 40 per cent for that period. This equates to a conservative estimate of loss of benefits to consumers of between £38m and £82m. The cost of implementing this system was six times greater than implementing the proposed slower system, and they have estimated that running costs have also increased by six times. Using this methodology with updated figures, they estimate that the surplus (consumer benefit over cost) of the Faster Payments

Service over 10 years will be in the region of between £468m and £1.48bn. The lower of these bounds is used here.

#### SME banking (£25mn<sup>22</sup>)

- 5.36 This was an in-house ex-ante estimate, reported in the Positive Impact as the lower of two conservative rules of thumb methods. It involved estimating how many accounts switched and an average saving in bank charges per account. Both figures were informed by the case team. An alternative rule of thumb generates a higher figure of £40m.

#### Internet Shopping (£24mn<sup>19</sup>)

- 5.37 This was also an in-house ex-ante estimate. It assumes, conservatively, that only five per cent of consumers were reached by OFT actions (designed to improve business practice and information provision, and increase awareness of online consumer rights.) Detriment in these three areas had been quantified as part of the 2007 market study with a lower bound estimate of £385mn. Assuming subsequent market growth, aggregate detriment is £500 m p.a. Thus a five per cent reduction in detriments is £25mn. Assuming reduced detriment lasted (again conservatively) for only two years, the annual discounted saving is £24mn. Although all estimates are necessarily only 'ball-park', it is reasonable to describe them as conservative. Probably more important is the conceptual precedents that this treatment establishes. This policy to educate and protect consumers by OFT is assumed to have three arms: (i) improve business awareness and information provision (ii) increase in consumer awareness about online consumer rights (and therefore benefits/reduced detriment from exercising these rights – for example cancelling a purchase if unsuitable, savings on price from increased search) (iii) increase in consumer confidence and as a result market

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<sup>22</sup> Please note this figure is different from estimated impact per year (£18m). It is the total impact, £50m (£18m annual times duration = three years estimated by case team) divided by two that gives us an annualised impact estimate over the period 2007 to 2009. Likewise for Internet Shopping, total impact over two years is £50m (annual impact of £25m x expected duration, two years) and annualised impact £24m.

expansion. I see no reason why this example should not be invoked in the general area of consumer education (see below).

### **Assessment of assumptions and estimates**

- 5.38 Although one might debate the specific assumptions made in specific cases, overall, the term 'conservative' is fair. My only substantive comment relates to the higher level assumption that none of the credit is attributed to CC for cases in which the CC was in no way involved (for example, Internet Shopping and PSTF). I think this is correct, and it contrasts with the treatment of mergers – as discussed earlier – where 20 per cent credit is transferred to CC for mergers which are settled with an UIL without reference to CC.

### **Comparison with other CAs**

- 5.39 The only real comparator is the Competition Commission's assessment of market investigations. CC explains (CC, 2009, p.2) that it uses 'analysis which is typically more backward-looking. Adverse findings relate to features of the market that already exist, and calculations of the detriment arising typically relate to the last few years.' It explains that the methodology is, like OFT's, case specific, and that the assessment relates to detriment and often forms part of the CC's investigation.
- 5.40 It is not the purpose of this report to comment substantively on CC's methodologies. The key difference is that the CC generally estimates the consumer detriment associated with the competition problem that is addressed by its remedies, while OFT attempts to estimate consumer savings as a consequence of investigation. The methodologies can produce similar estimates of impact – if remedies are expected to be fully effective and all beneficial impacts of intervention are captured in the measurable consumer detriment.<sup>23</sup>

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<sup>23</sup> However, estimates of consumer detriment may over estimate the consumer benefits of intervention (if remedies are less than substantially effective), or under estimate the consumer benefits (if there are significant benefits of intervention which are difficult to quantify, for example - dynamic benefits or in cases with complex regulatory effects. This difference in approach is also noted, but without comment, in OFT (2008c, para 4.20).

- 5.41 The mean benefit of the four OFT cases is £22mn p.a., which is noticeably smaller than the mean of £45 m estimated by CC for the six market investigations it has undertaken over the years 2006/09. However, the CC average is swollen by one large case, and if that is excluded, its average falls to £19mn. Against this, admittedly limited, perspective, the OFT estimates do not seem unreasonable.<sup>24</sup>

### **Alternative Methodologies**

- 5.42 Beverley (2008) attempted to apply the Events Study methodology to four CC market investigations (Payment Protection, Home Credit, Classified Directory Advertising and Groceries), but concluded that no effect could be identified in three, and although an effect was identified in Classified Advertising, this reflected the market's evaluation of the impact of price controls on Yell's future revenues - not necessarily the same as benefits to consumers.

### **Consumer Protection (non-scams)**

- 5.43 Here, the methodology has been only recently introduced and it was first included in the 08/09 Positive Impact report.

### **The methodology and assumptions**

- 5.44 At the heart of the methodology are data on the number of complaints against targeted traders,<sup>25</sup> pre- and post-intervention. Any reduction in complaints is converted into a financial estimate of avoided consumer detriment by valuing each complaint at a proportion of the purchase value of the product or service concerned. That proportion is calculated using a standard formula which has been previously estimated from

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<sup>24</sup> It is worth bearing in mind that these estimates are based on relatively small number of cases and market size, that is likely to have a big impact on the scale of potential benefits, varies substantially from case to case.

<sup>25</sup> Defined as those firms brought into compliance by the then CPG (consumer protection group) – now CMG (Consumer Markets Group).

survey data on consumer detriment relative to purchase price.<sup>26</sup> This is then grossed up to allow for additional benefits of (i) consumers who had not complained against the trader concerned, and (ii) consumers of other firms who were also engaging in similar practices who, it is assumed, are now persuaded to also cease the practice.

- 5.45 Although no allowance is made for deterrence of similar practices in the future, one might argue that (ii) has a strong flavour of deterrence, in which case this would be the exception to the general principle of the methodology to ignore deterrence throughout. It might be questioned whether this is justifiable, in the spirit of conservative assumptions.

### **The magnitude of estimates**

- 5.46 Positive Impact 08/09 reports no detail other than the aggregate value for 2008/9 of £57mn. However, confidential background worksheets which have been made available to me reveal that for a majority of cases the methodology was problematic to apply as any positive effects from reduced complaints against the trader were more than outweighed by increased complaints against the sector as a whole in the second stage. This highlights an innate problem (for the methodology) that complaints post-intervention may actually increase due to increased consumer awareness.

### **Assessment of assumptions and estimates**

- 5.47 Taken at face value, it is difficult to offer an informed judgement on the estimated magnitude of £57mn as of the aggregate avoided detriment in this area, but in absolute terms, it appears very small when compared to the OFT's own estimate of aggregate consumer detriment of £6.6 billion (OFT, 2008b), and also the figures published in the recent London Economics research paper using CMG case studies, (OFT, 2009c).

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<sup>26</sup> The source for the data used to calculate this formula is a consumer survey reported in OFT992 – Consumer Detriment – Assessing the frequency and impact of consumer problems with goods and services (April 2008).

- 5.48 The methodology is very much work in progress, which requires further development. In fact, the OFT has already started to develop a wider approach that goes beyond complaints data following the evaluation of CPG case studies by London Economics published in September 2009. If it is still to be used in this form in future Positive Impacts, a number of the steps in the methodology should be revisited. For instance, how statistically robust is the formula used to convert purchase value into detriment? Should this be sector specific? Might there be cases where the detriment exceeds the simple purchase price? Similarly, how robust are the differential sector multipliers (what are the sample sizes they are based on)?
- 5.49 Even putting aside these detailed technical concerns, the practical experience from applying the methodology for 2008/9 is not encouraging. As mentioned, this is based on just eight cases, in only two of which was there a reduction in the number of complaints against the targeted traders. In the one case where savings were achieved, it is actually in stage 2 of the methodology where the entire savings are made. In this stage, savings are grossed up to allow for sector wide savings on the assumption that other traders, not subject to the specific intervention, were persuaded to change similar practices that they were assumed to be previously employing. But examination of this case provides further cause for concern: there were actually more complaints against the targeted trader post-intervention, so there is apparently no direct reduced detriment for its customers. However, there was a reduction in the aggregate number of complaints against all firms in the sector to which it belongs. In effect, the methodology attributes the sector-wide reduction to a sort of deterrent effect – improved practices by the targeted trader’s rivals, even although the targeted trader itself appears, at first sight, not to have improved its own practices. There is a (maybe unavoidable) paradox involved in using complaints data: intervention increases consumer awareness, but this may well increase the number of complaints.
- 5.50 Overall then, what appeared to be a thoughtful and imaginative approach at the planning stage, appears to be problematic with the benefit of hindsight. I am aware that OFT is continuing to work on developing the methodology and has produced a draft ‘consumer toolkit’. This

contemplates a broader strategy which might also entail consumer surveys pre- and post-intervention. This could well help avoid some of the problems just described.

### **Comparison with other CAs**

- 5.51 From my brief survey of other CAs and consumer protection agencies (particularly the FTC), I understand that they conduct analyses using complaint data and a range of other empirical information from various sources to analyse consumer injury in individual cases. However, to my current knowledge, this is not formalised in any aggregate estimate of Impact.

### **Scams**

- 5.52 Shortly after starting this project, I was told to now disregard the Office's work in this area because the scams team has been disbanded. In fact, there is probably little that could have been said. The Positive Impact report merely states that estimates are based on conservative assumptions using the case officer's knowledge. It is also apparent that, like most of the other areas, the overall estimate is very dependent on a few large scams: just three account for over half the total benefit.

### **Excluded areas**

#### **Consumer Education and Confidence**

- 5.53 An estimate of Impact in this important area of OFT activity is desirable. While this will require further reflection and research, my immediate thoughts are that impact can be conceptualized as from two effects:
- increased consumer confidence in using the market, which should be market-expanding
  - increased consumer ability and willingness to search effectively and thereby secure a lower price and better quality/more suitable products.

- 5.54 There are potential parallels here with how impact has been measured for market studies, for instance in Extended Warranties and particularly Internet Shopping (see above), and these might be explored.
- 5.55 Additionally, any potential methodology might be piloted using information reported in the ex-post evaluation of the Save Xmas initiative (OFT (2008a)). That was designed to educate (particularly vulnerable) consumers in how best to save for Christmas. The follow up survey reports that it led to 40 per cent of consumers changing their saving behaviour - opening an account with a bank or building society, budgeting and planning, and starting saving etc. Consumer benefit presumably derived in the form of safer savings and avoidance of high interest charges on distress borrowing to fund Christmas presents etc. In principle, such benefits should be approximately measurable.

### **Deterrence**

- 5.56 Currently, this is only acknowledged in Positive Impact in a short closing section headed 'wider benefits', where reference is made to a possible multiplier of five, as implied by the results from the Deloitte study for OFT (2007a). I have not pursued this here since it is a large issue, outside the scope of my current brief, but I return to the subject in the final section.

## **6 CONCLUSIONS AND RECOMMENDATIONS**

### **Overall Evaluation**

- 6.1 From my research on the methods used elsewhere in the world (Appendix B), I believe that there is no other Competition Authority worldwide which takes impact estimation more seriously than OFT. Various statements in the academic and policy literatures suggest that OFT is widely seen as amongst the leaders in this field. I also confirm that much of OFT's work in this area is well-founded in up-to-date appropriate academic literatures (Appendix A).
- 6.2 From inspection of the specific methodologies applied to individual cases in each of the areas of policy, I can confirm that OFT displays due rigour and caution in deriving its estimates.
- 6.3 Estimating the impact of competition policy is inevitably somewhat speculative, but I am satisfied that OFT's current estimate (as reported in Positive Impact 08/09) is reasonable, and very comfortably achieves HMT's target of 5:1.

### **The defining features of the overall methodology**

- 6.4 In section 2, I identified what I see as six defining assumptions at the heart of the methodology. Each is generally reasonable and justifiable, but I conclude this report by re-visiting them, and in some cases with suggestions as 'food for thought' and perhaps further research.

### **Consumer benefits**

- 6.5 OFT explains that the pursuit of consumer welfare in the short term is most likely to maximise total welfare over the longer term. It works to drive up productivity, innovation and economic growth and promote general trust in markets and consumer confidence. In doing so, it will also help increase total welfare over the longer term. Any alternative approach that used a total welfare standard would need to capture these wider, potentially very significant, dynamic effects, in order to provide a fair picture of the value of competition interventions. I do not believe that any such dynamic analysis is feasible – especially within the context

of a comprehensive impact evaluation such as this. In the absence of dynamic analysis, a methodology based on total welfare would be misleading since static total welfare would not provide a fair reflection of the value of the competition regime.

### **Ex-ante evaluation**

6.6 Estimates are ex-ante<sup>27</sup> and are based on the best information available at the time of estimation, generally before the full impact is observable. The use of ex-ante, rather than ex-post estimates is appropriate for three reasons:

- a definitive measure of ex-post impact is often impossible (for example, we will never know what would have happened had a prohibited merger not been prohibited)
- interventions may have an impact well into the very long-term, and there could never be any obvious cut-off point at which it is routinely decided that impact could be evaluated
- ex-post evaluation is necessarily a costly exercise, and if it were to be conducted routinely and comprehensively across all cases considered by the OFT, the opportunity cost (in terms of other activities which would have to be foregone) would be disproportionate.

6.7 OFT does undertake ex-post evaluation of selected cases or areas – typically by outside experts/consultants - and I believe that currently it strikes the correct balance between ex-ante and ex-post evaluations.

### **Conservative estimates (and no negative impacts)**

6.8 The claim that all estimates are ‘conservative’ is publicly defensible. For the methodology in aggregate, this is a fair description, but I have slight reservations whether ‘conservative’ is interpreted uniformly across areas

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<sup>27</sup> With two exceptions in Market Studies.

of policy. I recommend further internal discussion within the Office, especially concerning the relative treatment of mergers and enforcement cases. Arguably, estimates for the former are less conservative than for the latter, where the treatment still corresponds more to the earlier interpretation of 'lower bound' (see below). Relatedly, the methodology rules out, by assumption, the possibility of a negative impact (due to a Type I error), this may be inevitable, but casts some doubt about the label 'conservative'.

### **Point estimates**

- 6.9 The justification for providing only point estimates (as opposed to a range of estimates) is obvious: exercises such as this are already costly and even after adding further sophistication, they will be always inevitably remain speculative. However, a methodology such as the current one, which summarises using just a single number runs the risk of spurious precision, and raises doubts about robustness. My strong suspicion is that, by adding lower and upper bounds to the current point estimate, OFT would be able to show that (i) it fulfils a 5:1 benefit-cost ratio even using much more conservative estimates than at present, and (ii) savings are far greater, once one includes more probable allowances for savings in each area. I recommend that OFT should conduct some internal research exploring the feasibility of establishing upper and lower bounds, to supplement the existing emphasis on a single point estimate (see below for some initial suggestions).

### **Exclusions**

- 6.10 Currently, the methodology is not applied to all areas of OFT's activities. It does not estimate any benefits from consumer education or the deterrent effect of OFT's work. I discuss below how this might be rectified.

### **Comments by specific areas**

- 6.11 On the basis of my discussion in the previous sections, I offer the following recommendations for internal consideration in each of the policy areas.

## **Merger control**

- Re-consider whether the parameter estimates used in the simulation of individual mergers can be truly defended as conservative. Also, how might estimates change if a notional allowance is made for efficiency effects?
- Re-consider and discuss with CC whether it is appropriate to allocate 20 per cent of the savings from UILs and abandoned mergers to CC – bearing in mind that CC plays no role in such cases.
- Re-consider whether it is appropriate to scale down by 65 per cent the savings from merger decisions. This is meant to reflect the fact that CC does not find an SLC in all cases referred to it by OFT. However, it might be argued that mergers settled in Phase 1 are not representative of those actually referred.

## **Competition Enforcement: cartels**

- The recent amendment to the OFT methodology, which assumes longer expected future duration for longer-established cartels is debatable, inconsistent with practice by other CAs, and anyway has so far not been invoked. I suggest that it be dropped.
- The assumption that cartel overcharge is 10 per cent dates back to the initial lower bounds approach. Re-consider whether this might be raised – perhaps to 15 per cent - to ensure more consistency with how the term ‘conservative’ is interpreted elsewhere in the methodology.

## **Competition Enforcement: Article 82**

- The current five per cent price raising assumption is arbitrary, and arguably should be brought into line with the assumption in cartel cases. Perhaps a thorough survey of the relevant literature on the impact of abuse is an area for future research, if not a top priority.

## Market studies

- None.

## Consumer Protection (non-scams)

- This is undoubtedly a difficult area in which to assess impact. OFT has trialled an imaginative and innovative methodology, but in my opinion, the initial experience is disappointing. I fully support the ongoing further evaluation work in this area.

## Possible Alternative Approaches

- 6.12 As already mentioned, I believe that OFT's Impact Methodology has successfully achieved its initial objective, to establish a defensible method for assessing value-for-money. Quite clearly it achieves its target benefits-cost ratio. With this immediate objective achieved, the OFT may now wish to take a further step forward by engaging in a round of developmental work which would help address my above reservations on conservative point estimates. This would be in-house and confidential, at least in the first instance. To help fix ideas, I offer three suggestions, listed in ascending order of ambitiousness, although I do not anticipate that any would entail extensive research costs.

### Extension 1: distinguishing 'good' from 'speculative' estimates

- 6.13 It is inevitable in a far-ranging evaluation such as this that some estimates are more precise than others. A modification of the existing methodology would be to label each estimate, for an individual intervention in each area, either as a 'good' estimate or just a 'rough approximation'.<sup>28</sup> The two would then be summed separately, and the aggregate benefit/cost ratio could be computed with and without the approximate estimates included. If this route was pursued, there would

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<sup>28</sup> This is a (quite large) extension of an idea raised by Sabbatini (2008) in his paper summarising Italian experience.

be a case for being less conservative for good estimates, while reverting to lower bounds for the rough approximations.

### **Extension 2 Attaching 'ball-park' Upper and Lower Bounds**

- 6.14 A variation on this theme would be to introduce lower and upper bound estimates in each area. The lower bound might be equated to the traditional rule of thumb values (one per cent in mergers, 10 per cent in cartels), but extended to all areas of policy if possible,<sup>29</sup> the upper bound, more controversially, might include an allowance for deterrence. One virtue of this approach is that there would no longer be the need to constrain the 'best' estimates to be 'conservative'. More generally, it would establish that, on the one hand, OFT achieves its target even employing the most timid of criteria, and on the other hand, the best estimate of the benefits-cost ratio would far exceed the numbers in the current public domain.

### **Extension 3 Moving towards confidence intervals**

- 6.15 It is standard practice in statistics to report statistical confidence intervals alongside point estimates: for example, we might refer to an estimated value of a demand elasticity as, say -0.8, but acknowledge that the 95 per cent confidence interval around that number is a range of say -0.6 to -1.0. Although our best estimate is -0.8, if we are to be 95 per cent confident in our claims, we must concede that the 'true' value may be as low as -0.6 or as high as -1.0.
- 6.16 Although there would be real virtue in being able to report impact in a similar way, realistically, major conceptual and practical problems render such an objective impossible.<sup>30</sup> Nevertheless, small progress in this direction might be achievable using data already in the public domain on estimates of the price-raising effects of cartels and mergers (see sections

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<sup>29</sup> This would be straightforward for market studies, but more problematic for other areas such as consumer protection and education.

<sup>30</sup> Conceptually, it is impossible to attach standard errors to estimates derived from even the more sophisticated simulations. Lack of data is also a major constraint.

4.1 and 4.2). For expositional purposes only, suppose that Connor's extensive research on real world cartels has approximated the 'population' distribution of price-raising effects of all cartels, we could easily identify the 95 per cent or 90 per cent confidence interval around his mean (of about 20 per cent). Something similar might be possible with further work on a meta-analysis of anti-competitive mergers.<sup>31</sup>

6.17 Whether or not these particular suggestions are pursued, I conclude by reiterating the slight concern which has motivated them. This is the intrinsic danger, in any internal impact evaluation of this sort, that the Authority is 'caught between two stools'. On the one hand, caution is imperative in order to avoid suspicions of over-optimistic self-justification – hence the attraction of the lower bound approach. On the other hand, it is also important that the value of the Authority's activities be properly recorded – an over-modest approach seriously risks a future downgrading of resource allocation to OFT. I argue that the current practice of reporting just single point estimates attempts to look in both directions, but achieves neither completely satisfactorily. A range of estimates, by providing additional degrees of freedom might better achieve both objectives.

6.18 This can be illustrated with reference to the deterrence impact of OFT's activities. Currently, Positive Impact 08/09 (para 7.3) explains, quite properly, that 'indirect benefits to consumers through deterrence could be five times as much (as the current impact estimate) – a further £1000 mn per year'. This is of course a speculative figure,<sup>32</sup> at present consigned only to very brief discussion in a low profile section entitled 'wider benefits' at the end of the document. Arguably, deterrence might be given more prominence if the range of estimates approach was adopted, and the upper bound included a 'deterrence multiplier'.

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<sup>31</sup> Bergman (2008) is a small recent example of what I have in mind.

<sup>32</sup> Based on the headline findings of OFT (2007a).

## APPENDIX A. SURVEY OF RELEVANT ACADEMIC LITERATURE

### Introduction

- A1. Academic research on evaluating competition policy has grown rapidly in the last 10-15 years, and this is a good time to ask: 'what have we learned so far?' This brief survey<sup>33</sup> is not about the effectiveness of competition policy per se, but rather the evaluation methodologies employed in the academic literature. Appendix B surveys the impact methodologies of Competition Authorities (CAs).
- A2. Some other surveys are beginning to emerge in the literature (see, for example, some of the papers in *De Economist* 2008, especially that of Bergman). At the outset, I should state my own bias is that, if possible, evaluation should be 'joined up' with the decision making of the CA in the first place, and that, since decision-making should be theoretically aware, so too should evaluation methods

### The purpose

- A3. Evaluation can take many forms, not least because it is required for different purposes:
- to quantify the benefits of competition policy in aggregate (consumer savings), as in OFT's Positive Impact programme
  - to conduct an overall qualitative assessment of the efficacy of policy in a specific area (for example, merger policy)
  - to assess the success of a particular intervention (for example, a prosecuted cartel, or prohibited merger)

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<sup>33</sup> This survey is based on my keynote lecture, 'Ex-post evaluation methodologies of competition enforcement', presented to the Conference on Ex-post evaluation of competition policy, Mannheim June 4, 2009.

- to check on the quality of the CA's decision-making - analysis, data collection, etc.

These are all valid objectives, and each may well require a different methodology.

## **Methodologies**

A4. Broadly speaking, methodologies are either quantitative or qualitative, and, if the former, the core question at the heart of the methodology is how to identify the counterfactual. I first list for each methodology and each policy area, some of the seminal or particularly relevant recent papers.

### **Simulation**

A5. Simulation is based on constructing a formal model of competition in the market, calibrating the parameters using real world information (sometimes estimated econometrically), and assessing how the equilibrium will change with and without the intervention. Here, the counterfactual is equated to the theoretical equilibrium which would have occurred without the intervention. Simulation may be full-fledged or 'back of envelope'

Mergers: Hausman/Leonard (1997), Werden (2000), Nevo (2000), Pinkse/Slade (2004), Ivaldi/Verboven (2005) Peters (2006), Davies/Lyons (2007)

Cartels: Verboven/v.Dijk (2007)

### **Event studies**

A6. The event study uses the financial markets' assessment of the impact of an event (say a merger) and then announcement of an intervention on stock prices. When applied in this area, it usually focuses on the valuation of rivals. The counterfactual is how stock prices would have evolved without the intervention.

Mergers: Eckbo (1983), Duso et al (2006), Duso et al (2007), Beverley (2008)

Cartels: Bosch/Eckard (1991), Langus/Motta (2006)

### **Econometric ex-post studies**

A7. These involve statistical comparisons between the market concerned after the event against some statistical control, for example, a similar market without the event, or the same market before the event. The methodology often employs some form of Difference in Differences (DiD) estimation, in other cases, the comparison is statistically quite informal.

Mergers: Ashenfelter/Hosken (2008), Weinberg (2008), Dobson/Piga (2009)

Cartels: Symeonides (2002), Grout and Sondregger (2005)  
Levenstein/Suslow (2007), Connor (2007)

Abuse: Shaw/Simpson (1986 & 1989)

A8. These methodologies are invariably applied to mergers and cartels, with far less written on Article 82 or deterrence.

A9. There is also a variety of other more qualitative approaches: surveys (of ex-post opinions of parties, peers practitioners etc., academic collections of Expert opinions on specific cases (Kwoka & White (2005), Lyons (2009), Court Appeals (see Bergman 2008). Other much more aggregate studies employ cross-country or panel data, attempting to identify the effects of competition policy on macro aggregates, for example, price-cost margins, GDP, productivity.<sup>34</sup>

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<sup>34</sup> See Bergman (2008), section 3.4 'Macro-level studies' for a discussion and selected references.'

## Evaluation of Methodologies

### Simulation

- A10. The major strength of simulation is its explicit use of theory to identify the counterfactual, and this facilitates the 'joining-up' of the analysis undertaken at the time of the intervention with the subsequent evaluation.
- A11. However, as is well documented, it is very sensitive to modelling assumptions. It is also clearly better suited to some oligopoly models (and therefore markets) than others. Invariably, the emphasis is on price and quantity to the exclusion of innovation, repositioning etc, and possible changes in conduct (relevant to Coordinated Effects.) Full-fledged simulation, entailing econometric estimation to calibrate demand parameters, is data intensive. In 'back-of-envelope' form, simulation requires extraneous estimates of elasticities, but there is often a scarcity of good estimates. Werden (2008) reports that the US typically employs a range of 1 to 1.5 for the aggregate industry demand elasticity, but is this a reasonable ball-park range? Such inelastic demand will inevitably lead to high predicted price increases.
- A12. Crucially, there is mixed evidence on how well simulation predicts actual outcomes. Ashenfelter & Hosken (2008 p.36) are undoubtedly correct in suggesting that 'careful evaluation of their effectiveness seems long overdue'

### Event studies

- A13. The big advantages of event studies are that they are 'objective' (the stock market is the outside referee) and quick (undemanding of modelling and demand). However, they are subject to various limitations. There are identification worries: (i) does a negative impact on rivals' share price necessarily signal a pro-competitive merger (as is usually assumed) or that the merger has exclusionary effects? (ii) does a positive impact on rivals' valuation signal expected coordinated effects, as opposed to revised expectations about rivals' potential efficiency gains and/or

possible take-overs? Are stock markets really informationally efficient?<sup>35</sup> How widely can the methodology be employed? What if rivals are scarce, unquoted and/or conglomerates? Beverley (08) uncovers real problems in her sample of nine CC mergers/inquiries, and concludes that: 'Unfortunately, as our case studies have shown, this (adequate quoted firms for whom the case accounts for a large share of turnover) is rarely possible', and this raises a real doubt that the methodology can only be applied for biased samples of markets.

A14. Again, there is still remarkably little evidence on whether event studies predict actual outcomes well – especially in this context with respect to rival stock price and profits. Duso et al's affirmative evidence (2006) is not totally persuasive, and replication and deeper statistical analysis is required.

### **Difference in Difference**

A15. The difference-in-difference approach (or more informal equivalents such as invoking simple estimates of how price changed in similar markets or in the same market before the event<sup>36</sup>) can often be persuasive. However, there are usually some doubts – the methodology is inevitably atheoretical, and everything rests on how well the control correctly identifies the counterfactual. For cartels, typical counterfactuals are pre-cartel, post-detection or similar non-cartelised markets, but each is potentially problematic. Post-detection prices may be misleading if firms maintain high price in order to minimize the impression of a high price-raising impact of the cartel during its duration (Harrington, (2004)). Pre-cartel price might also be confusing if the cartel was formed in response to a break down in tacit collusion – either during a period of price war or not – if the latter, is this appropriate? For mergers, if the control is other

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<sup>35</sup> Werden (2008) clearly thinks not: the Event Study 'presumes that the instant analysis of uninformed investors is more accurate than the painstaking work of enforcement agencies with access to confidential documents and data.'

<sup>36</sup> Informal examples of this approach can sometimes be found in CC's evaluations of merger interventions and market investigations.

non-merging rivals, then how does one control for the externality of the merger on those rivals? Ashenfelter/ Hosken (2008) use private labels as a control for merged leading brands, but are their prices really unaffected by the merger? There are similar doubts with Dobson/Piga's (2009) use of airline routes from different but close airports. As with event studies, there is the danger that data availability will lead to unrepresentative samples. Many studies in this area relate to branded consumer products using scanner data.

### **Qualitative surveys**

A16. These are rare in the academic literature – one suspects because they are unattractive to academic journals. There are a number of potential limitations: parties often have short corporate memories, and in their minds, interventions often overtaken by subsequent events (see Clarke et al (1998), low response rates and respondent bias. This approach is often rich in descriptive detail, but to the exclusion of clear definitive conclusions.

### **Conclusions**

A17. There are some fairly generic worries expressed in the academic literature. As a general proposition, there is a danger that evaluation might distort the efforts and decisions of CAs towards too much intervention in general, and to specific cases and areas where it's easy to claim big savings (see Neven and Zengler, 2008). Some evaluation methodologies almost inevitably exclude the possibility of 'wrong' intervention – especially simulation and rules of thumb (but not event studies or DiD) which typically exclude the possibilities of Type I and Type II errors.

A18. Potential sample selection bias is often a very real problem: most methodologies can only be applied for markets with certain characteristics – not least data. Carlton (2009) has argued that any sample of unchallenged mergers entails an (easily overlooked) inbuilt bias. Even with a lax CA (inclined to make Type II errors), the mean price increase in a sample of unchallenged mergers is typically negative since the sample includes 'good' mergers alongside the incorrectly permitted

'bad' (price increasing.) Therefore, he argues, evaluation should always compare outcomes with the CA's predictions at the time.

A19. There are also some striking gaps. As already noted, some areas of policy far less evaluated than others. Methodologies tend to focus on the short-term, and there is a need for longer-term perspectives. A specific example is the possible efficiency savings from merger which may only emerge two-three years after merger, and the same may be true for entry and repositioning. Arguably, there is a need for more longitudinal studies examining longer-term competition issues in particular markets. Symeonides (2002) found that early cartel legislation in the UK provoked a subsequent merger wave, Clarke et al (1998) provide case study evidence which suggests that once one form of vertical practice is prohibited, it is replaced by another (Ice Cream, Travel Agents.) It matters what happens next, and **not just in short-run**. Studies which move in this direction: are Sabbatini (2008), who considers a sequence of cases in baby-milk, and Nevo (2000) who includes various different mergers in his simulations.

#### **Choosing between methodologies**

A20. Returning to typology, my opinion is that different methodologies are better suited for some purposes than others.

A21. When evaluating policy in a particular area – say mergers – it is dangerous to generalise from case studies or unrepresentative samples. This raises doubts on all of event studies, simulation and DiD. However, a recent ingenious methodology of Ashenfelter/Hosken (2008) deserves attention. They identify a set of marginal mergers (on the cusp between intervention and non-intervention), and 'estimate' (by DiD) the resulting price increases attributable to merger. Assuming that these are the marginal mergers, then, by assumption, all intervened mergers should lead to higher price increases than this. This provides a lower bound on averted increases (about four per cent on average in their five cases).

A22. When evaluating a specific intervention (for example, a particular cartel or merger), the event study and DiD may be appropriate, assuming availability of the necessary data). Expert commentaries are also

attractive (Lyons 2009, Kwoka & White 2005.) Simulation is less attractive, given how often it seems to predict outcomes poorly

A23. When evaluating the quality of the CA's decision-making - analysis, data collection etc - event studies and DiD are unhelpful since neither is based on explicit theory. Here, simulation scores more strongly, since it forces us to articulate the model, make specific assumptions (about entry, capacity etc.) and to specify the data to be collected – precisely the purpose of the evaluation, that is, the accuracy of assumptions, rather than the magnitudes of price increases.

A24. Finally, when quantifying ex-ante the aggregate benefits from competition policy, as in the present project, the superiority of simulation, supported where necessary by rules of thumb, is clear. Indeed, it is not obvious how the other methodologies described here might be used across the board ex-ante. Of course, this is not to deny the limitations of simulation – some have been mentioned briefly above, and in various places in the main text.

## **APPENDIX B. BRIEF SURVEY OF THE IMPACT METHODOLOGIES OF OTHER COMPETITION AUTHORITIES**

- B1. The following is based on (i) reading of other competition authorities' (CAs) web pages and other literature in the public domain, supplemented by email correspondence with a network of contacts in the Authorities.<sup>37</sup>

### CAAs which currently do evaluate impact

#### **European Commission - DGCOMP<sup>38</sup>**

##### Cartels

- B2. The estimation assumes that: (a) the average expected life span of a cartel at the time of its discovery is five years, (b) the average cartel gain from setting a cartel price equals to 10 per cent of the value of the sales to which the cartel infringement directly or indirectly relates and (c) the annual discount rate of 3.5 per cent for year  $n + 1$  to  $n + 4$  is applicable. Each of these assumptions is conservative, the true savings could be significantly higher.

##### Anticompetitive practices other than cartels

- B3. The estimation assumes that the customer saving corresponds to 10 per cent of the size of the relevant market(s) to which the anti-competitive practice relates. The 10 per cent value is based on an analogy to the SSNIP (Small but Significant and Non-transitory Increase in Price) test. The price effect is assumed to last for one year.

##### Mergers

- B4. The estimation assumes that the future customer savings resulting from corrective merger decisions corresponds to 10 per cent of the size of the

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<sup>37</sup> The author attempted to contact directly the international authorities referred to in this section. Where this was not possible, he relied on information obtained through desk research.

<sup>38</sup> See DGCOMP (2008) and Lowe, (2009).

relevant market(s) on which the concentration would have significantly impeded effective competition. The 10 per cent value is again based on an analogy to the SSNIP test. The price effect is assumed to last for one year.

#### **USA - DOJ**

- B5. In correspondence, Werden explains 'We do little in the way of impact evaluation, and what we do is rather simplistic. I described the main thing in Werden (2008)' This article provides an up to date description of DoJ's methodology. It assumes that price will fall by 10 per cent after a cartel has been detected and that the cartel's life span was shortened by one year. For mergers, simple oligopoly models are used to simulate the price effects that merger enforcement prevented. The savings effect is assumed to last one year. For the first three quarters of 2007, the weighted average price effect was six per cent, a number that is thought to be fairly representative.<sup>39</sup>

#### **USA - FTC**

- B6. According to OFT's Positive Impact 05/06, FTC assumes that the averted price effects of mergers last for two years instead of one, and a lower-bounds approach for the price effect of mergers is used more often: it is typically assumed that an anti-competitive merger would have raised prices at least one per cent.

#### **Netherlands - NMa (Dutch Competition Authority)**

- B7. The NMa publishes estimates of the gains in consumer surplus resulting from the enforcement of competition law and sector specific regulation (the energy and transportation sectors) in its annual reports. Information on the relevant turnover, the amount of the price effect (that is, lower prices) as a result of the NMa intervention and the price elasticity of demand are used to calculate consumer surplus.

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<sup>39</sup> A figure communicated to Bergman (2008) in personal correspondence from Werden (22.10.2007).

- B8. The key assumptions applied to estimate impact of antitrust policies (only penalty decisions are taken into account) are: i) relevant turnover is the turnover related to the infringement and fined companies only, ii) a conservative 10% default price increase, iii) Elasticities are taken from the case or other publicly available resources.
- B9. Similar assumptions are applied for mergers (in terms of relevant turnover and elasticities used) but the default price increase assumed is one per cent.
- B10. Estimates of consumer surplus are presented as three-years moving averages. Furthermore the NMa does ex post evaluations in specific cases and event studies (for example, reputation study to the effects of cartel enforcement by the NMa).

### **Portugal - Portuguese Competition Authority (PCA)**

- B11. A recent publication (by Mateus et al 2008) assesses the impact of the PCA actions during its first term (2003-2007) and covers: cartel and abuse of dominance cases, mergers and advocacy.<sup>40</sup>

#### Cartels & Other Anticompetitive practices

- B12. Three alternative approaches are used, depending on data available and the case in hand: (i) direct information from the investigation, (ii) difference-in-differences econometrics if suitable counterfactuals are available, or (iii) 'an approximation', which I interpret to mean some rule of thumb. The report quotes a lower and upper bound on the estimates between 14 and 22 per cent.

#### Mergers

- B13. The estimation is 'based on a combination of established default 'lower bound' measures and simulation techniques'. In fact, the report is a little ambiguous on how the lower bound is set. The mean simulated price

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<sup>40</sup> Please note that this was not a PCA report so any views expressed in it should be treated as those of the authors.

increase appears to be 5.3 per cent. The price effect is assumed to last for two years and is discounted at 3.5 per cent.

#### Advocacy

B14. The report estimates the effects of five of the PCA's recommendations in this area.

### **CAs currently not explicitly systematically evaluating impact**

#### **Canada - Canadian Competition Bureau**

B15. The Bureau reports on performance through Industry Canada's Departmental Performance Report (DPR),<sup>41</sup> but it has no formal impact evaluation programme. However, it does conduct ex post evaluation of cleared mergers, reviews in-house behavioural remedies, and analyses complaint numbers pre and post intervention.

#### **Australia - Australian Competition and Consumer Commission**

B16. ACCC conducts one-off evaluations undertaken on ad hoc basis. It uses internal tools, such as indicators and self-assessment, as well as looking at numbers of complaints before and after actions, inspections and sweep to check compliance.

#### **Denmark - Danish Competition Authority**

B17. The DCA will be looking in to the subject over the next year or so, but will probably use a methodology that is more simple than the OFT's. It has not done any work in this area recently. Some years ago it estimated the possible consumer harm in a few merger cases, but not on a regular basis.

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<sup>41</sup> The 2008 report is at: [www.ic.gc.ca/eic/site/ic1.nsf/eng/h\\_00226.html](http://www.ic.gc.ca/eic/site/ic1.nsf/eng/h_00226.html)

### **Finland - Finnish Consumer Agency**

B18. There is no formal programme similar to OFT's, but qualitative tools are used to measure impact, including systematic self-assessment, and customer satisfaction surveys.

### **Hungary - Hungarian Competition Policy (GVH)**

B19. There is no formal impact evaluation, but some ad-hoc work on specific cases, typically using the Difference-in-differences methodology. One novel approach they do use:

B20. 'We do something that is slightly close to ex-post evaluation, but much more from a PR point of view: after big cases, we run a public poll whether and how the customers perceived the merger and the CA's decision - we did it after a recent newspaper merger that was to be blocked but withdrawn in the last minute' (email from Csorba, 31.08.09)

### **Korea - Korean Competition Authority**

B21. KCA publishes ad-hoc evaluations.

### **New Zealand- Commerce Commission**

B22. Nothing formal at present

### **Norway - Norwegian Competition Authority (NCA)**

B23. The 2006 publication by the NCA, 'Competition and Welfare: The Norwegian Experience' edited by Lars Sørsgard, included views from leading academics and professionals on the impact of competition in seven Norwegian industries. Other evaluation publications include an ad-hoc evaluation of NCA's intervention in the book industry (2004 to 2007) and a study commissioned to Copenhagen Economics in 2006 – 'Assessing actions of the Norwegian Competition Authority' which lists a number of potential indicators for performance monitoring. Following this report, the NCA has started to carry out ex post evaluations of decisions in its core areas.

## **APPENDIX C. RECENT ACADEMIC WORK ON SIMULATING VERTICAL MERGERS AND MERGERS WITH COORDINATED EFFECTS**

- C1. Traditionally, the merger simulation literature has focused overwhelmingly on horizontal mergers with unilateral effects. Coordinated effects and vertical mergers are rarely simulated if at all. This reflects the fact that the underlying economic theory in these areas was much more contested than for unilateral horizontal mergers, and demands on data were anticipated to be excessive (see Davies and Lyons's summary, 2007, pp. 65-7). However, academic developments in very recent years are beginning to provide a number of promising possibilities in both areas. This Appendix briefly summarises some of the key recent literature.
- C2. At the outset, I have two cautionary observations. First, and pragmatically, I think it is unlikely that either vertical or coordinated effects mergers will feature prominently in Positive Impact assessments. I note that none of the mergers covered by the 08/09 Positive Impact was vertical or involved coordinated effects. The reasons are easily understandable. For vertical mergers, what might be called the default assumption is that there will be no net anti-competitive effects: the case for efficiency savings is typically much stronger, and the theoretical reasons for expecting upward pressure on prices much weaker and more contested, than for horizontal mergers. Even in those, probably very rare, cases where OFT might consider that there is a harmful net negative effect on consumers, the analysis is likely to be complex and demands on data heavy. In these circumstances, it seems unlikely that the parties would accept UILs, and the case would inevitably proceed to phase 2. With coordinated effects mergers, the negative impact on consumers, if proven, is unambiguously negative. However, the case is likely to be controversial and again would require complex and lengthy analysis, and is unlikely to be settled in Phase 1. In my opinion, and notwithstanding the desirability for both OFT and CC to develop their skills and understanding of vertical and coordinating effects mergers in order to inform their case investigations, I would not expect this to have a significant pay-off in future Positive Impact assessments.

C3. Second, although the recent literature is advancing our understanding, many of the models, in both areas, are still at a developmental stage - seemingly very sensitive to specific assumptions, and demanding on data. Again, this is not to deny their potential value in the context of a lengthier Phase 2 merger investigation by CC,<sup>42</sup> but it does mean that we are still some way from developing simplified 'back of the envelope' equivalents which can be simply taken down off the shelf and applied quickly and cheaply as would be required in Positive Impact evaluations.<sup>43</sup>

### **Vertical mergers**

- C4. The baseline model (rooted in the Chicago school, and assuming fixed coefficient production functions and unchallenged monopoly at one stage of production) is that a vertical merger will have no anti-competitive impact. Monopoly profits can only be earned once. There are strong reasons for supposing a default where the consumer will actually gain from vertical merger - to the extent that it may eliminate double marginalization (where there is some market power at both stages), and/or reduced transactions costs (for example, by promoting the incentive for specific investment).
- C5. For this benevolent view to be overturned, there must be the potential for integration to have foreclosure consequences (for existing or potential new rivals.) In that case, there may be a trade-off, and the balance may be adverse for consumers,<sup>44</sup> but simulation will require very careful theoretical modelling, detailed knowledge of the industry and pre-merger policies of firms. For example, only if the merging parties were originally using linear pricing is there full double marginalization pre-merger. More

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<sup>42</sup> Indeed, see below for two examples where vertical simulation models have already played an important role in EC cases.

<sup>43</sup> A major attraction of the simulation models OFT employs for horizontal mergers is their simplicity.

<sup>44</sup> 'Anti-competitive foreclosure' in the terminology of the EC's new Non-Horizontal Merger Guidelines.

generally, there is a large number of alternative contracts that firms may already be using pre-merger which can mimic full vertical integration.

- C6. As mentioned earlier, two recent vertical EC mergers (TomTom/TeleAtlas and Nokia/Navteq) illustrate the value of vertical simulation in practice (and confirm no adverse impact). Evidence considered in these cases includes models simulating the profitability to the merging firm of foreclosing a downstream rival, and the likely price effect for consumers. I am aware that, within OFT, research is already well underway in developing a relatively simple numerical approach along these lines to vertical mergers. I will be very happy to join in the internal discussions, but this public report is not the best place to pursue this at this stage.
- C7. Beyond these cases, there is an interesting group of papers which have explored vertical relationships between manufacturers and retailers/distributors. Typically, these are based on structural models involving differentiated products demand systems. Brenkers and Verboven (2006) assess the effects of removing vertical restraints in the European car market, by estimating a differentiated products system and specifying a model of oligopoly pricing. They then simulate policy experiments. Villas-Boas (2007) models relationships between manufacturers and retailers in the grocery industry (for Yogurt in the US.) Demand estimates are used to compute price-cost margins for retailers and manufacturers when wholesale prices are not observed. She compares simple linear pricing, vertical integration and other supply scenarios and shows how results imply either non-linear pricing by manufacturers or bargaining power for retailers. Bonnet, Dubois and Simioni (2006) also apply a differentiated product model to investigate non-linear pricing in groceries (mineral water). Amongst other things, they employ their estimated structural model to simulate the effects of changes in ownership. Applications of this literature have the potential to provide considerable insights into the likely impact of changes in ownership in vertically related industries, and illustrate the key role of the nature of pricing pre-merger. However, in my opinion, none is sufficiently general or translatable into the sort of simple simulation 'workhorse' model required here.

## Coordinated Effects

- C8. There is a vast literature on tacit collusion and coordinated effects. On a theoretical level, most of it is rooted in the theory of repeated games and is devoted to identifying the factors which make it more likely that a post-merger equilibrium is collusive whilst the pre-merger equilibrium is not. Qualitatively, there is consensus (although not necessarily unanimity) on the role of some factors (such as concentration, symmetry, homogeneity, transparency) and this has long since been translated into the 'checklist' approach to identify which mergers are more likely to have coordinated effects. However, the task of quantifying the magnitude of the price-raising effects is still in its infancy, not least because of the problem of multiple equilibria.
- C9. There is a cluster of recent contributions which is the most relevant for present purposes, with Peter Davis and Pierluigi Sabbatini, working singly, together, and/or with other authors (Davis (2006), Davis and Huse (2009), Sabbatini (2008)). At the heart of their models is the differentiated product industry used in unilateral effects models, and mergers are assessed in terms of how they affect the relative profitability of colluding. An accessible summary is already provided by Davis in the form of a CC working paper (2006). More recently, Davis and Huse (2009) have produced a real world application (to the HP-Compaq merger in the network server market), in which they claim (correctly to the best of my knowledge) to present the first empirical coordinated effects merger simulation model in a differentiated product market. As it happens, they show the incentive to coordinate will have fallen following the merger between HP and Compaq. The model is also extended to allow for an impact of multi-market contact, a competitive fringe, and the presence of an antitrust authority.

## Bibliography

- Ashenfelter O and Hosken D, (2008) 'The effect of mergers on consumer prices: evidence from five selected case studies, NBER Working Paper 13859, March
- Bergman M. (2008), ''Quis Custodiet Ipsos Custodes?' or Measuring and Evaluating the Effectiveness of Competition Enforcement', *De Economist*, 156: 387-409
- Beverley L (2008), 'Stock Market Event Studies and Competition Commission Inquiries', CCP Working Paper 08-16,
- Bolotova Y, Connor J and D Miller (2009), 'Factors influencing the magnitude of cartel overcharges: An empirical analysis of the US market', mimeo.
- Brenkers, R. and Verboven, F. (2006), 'Liberalizing a Distribution System: The European Car Market', *Journal of the European Economic Association*, 4(1) 216-251.
- Bonnet, C., Dubois, P. and Simioni M. (2006), 'Two Part Tariffs versus Linear Pricing Between Manufacturers and Retailers: Empirical Tests on Differentiated Products Markets' IDEI Working Paper, 370
- Bosch, Jean-Claude and Woodrow Eckard, Jr. (1991), 'The Profitability of Price Fixing: Evidence from Stock Market Reaction to Federal Indictments', *The Review of Economics and Statistics*, 73, (2), pp. 309–317.
- Carlton D, (2009) 'Why we need to measure the effect of merger policy and how to do it', *Competition Policy International*, Vol. 5:1 Spring: 76-90
- Clarke R, Davies S W and N Driffield, (1998), *Monopoly policy in the UK': assessing the evidence'*, Edward Elgar, Cheltenham, UK
- Competition Commission, (2009) 'Estimated costs to consumers of mergers and market outcomes against which the CC took action between April 2008 and March 2009',

- Connor J. (2007), 'Price-Fixing Overcharges: Legal and Economic Evidence', *Research in Law and Economics*, 22, pp. 59–151.
- Connor J, (2009), 'Price-fixing overcharges: revised Edition', manuscript, Purdue University, dated July 29 2009, emailed to the current author October 14 2009.
- Connor J and Y Bolotova (2005), 'Cartel Overcharges: Survey And Meta-Analysis', *Purdue University working paper*.
- Connor J and J. Zimmerman (2005), 'Determinants of Cartel Duration: a Cross-sectional Study of Modern Private International Cartels', *Purdue University Working Paper*.
- Davies S and Lyons B (2007), *Mergers and Merger Remedies in the EU: Assessing the Consequences for Competition*, Edward Elgar, Cheltenham, UK
- Davis, P. (2006), 'Coordinated effects merger simulation with linear demands', Competition Commission
- Davis P, and Huse C. (2009), 'Estimating the 'Coordinated Effects' of Mergers', unpublished mimeo.
- Davis, P. and Sabbatini, P. (2008), 'Coordinated Effects Merger Simulation', unpublished mimeo.
- Dobson P & Piga C (2009), 'Mergers and Business Model Assimilation: Evidence from Low-Cost Airline Takeovers', Loughborough University WP 2009 - 2
- Duso T, Neven D, Roller L-H (2007), 'The political economy of European merger control: evidence using stock market data', *Journal of Law and Economics*, vol. 50, pp.455-489
- Duso T, Gugler K and B. Yurtoglu (2007), 'Is the Event Study Methodology Useful for Merger Analysis? A comparison of stock market and accounting data', Working Paper
- Eckbo B. (1983), 'Horizontal Mergers, Collusion, and Stockholder Wealth', *Journal of Financial Economics*, 11, pp. 241–273.

- DGCOMP (2008), 'DG Competition Annual Management Plan 2008', EC., at: [http://ec.europa.eu/atwork/synthesis/amp/doc/comp\\_amp.pdf](http://ec.europa.eu/atwork/synthesis/amp/doc/comp_amp.pdf) Cartels.
- Grout P and S Sonderegger (2005), 'Predicting Cartels', Bristol Discussion Paper
- Harrington, Joseph E. (2004), 'Post-Cartel Pricing During Litigation', *Journal of Industrial Economics*, 52, pp. 517–533.
- Hausman J and G Leonard (1997), 'Economic Analysis of Differentiated Products Mergers using real world data', *George Mason Law Review*, 5.3: 321-46
- Ivaldi, M. & F. Verboven (2005), Quantifying the Effects from Horizontal Mergers in European Competition Policy, in: *International Journal of Industrial Organization*, Vol. 23, pp. 669-691
- Kwoka J E and White L (2005), *The Antitrust Revolution: Economics, Competition, and Policy*, (5<sup>th</sup> ed) Oxford University Press
- Langus G and M. Motta (2006), 'On the Effect of EU Cartel Investigations and Fines on the Infringing Firms' Market Value', Manuscript, European University Institute, Florence.
- Levenstein, M. and V. Suslow (2006), What Determines Cartel Success? *Journal of Economic Literature*, 44, pp. 43–95.
1. Lowe P, (2009) 'Cartels, Fines and Due Process', *Global Competition Policy*, June 09(02), pp. 1-7
  2. Lyons B (ed) (2009), *Cases in European Competition Policy: the Economic Analysis*, Cambridge University Press
- Mateus, A, Gonçalves, P, Rodrigues J (2008), 'Performance of national competition authorities (Portuguese Competition Authority)', *Concurrences Revue des droits de las concurrence*, No. 3-2008, pp. 40-54
- National Audit Office, (2005), 'The Office of Fair Trading: Enforcing competition in markets' HC 593 Session 2005-2006.

- Neven D and H Zengler (2008), 'Ex-post evaluation of enforcement: a Principal-Agent Perspective, *De Economist* 156: 477-490
- Nevo, A. (2000), Mergers with Differentiated Products: the Case of the Ready-to-eat Cereal Industry, in: *RAND Journal of Economics*, Vol. 31 (3), pp. 395-421.
- OFT (2009a), 'Positive Impact 08/09. Consumer benefits from the OFT's work', OFT 1102
- OFT (2009b), 'Review of the operations of the Payments Council. A follow-up to the work of the Payment Systems Task Force', March 2009, OFT1071
- OFT (2009c), 'Evaluation of a sample of Consumer Enforcement Cases', Prepared for the Office of Fair Trading by London Economics, October 2009, OFT1139
- OFT (2008a) 'Evaluation of the Save Xmas awareness campaign', Prepared for the Office of Fair Trading by Ipsos Mori, October 2008, OFT1029
- OFT (2008b) 'Consumer detriment: Assessing the frequency and impact of consumer problems with goods and services', OFT992
- OFT (2008c) 'Approach to calculating direct benefits to consumers', OFT 955, available in [www.offt.gov.uk/shared\\_offt/reports/Evaluating-OFTs-work/oft955.pdf](http://www.offt.gov.uk/shared_offt/reports/Evaluating-OFTs-work/oft955.pdf)
- OFT (2008d). 'Consumer savings from merger control: merger simulation for impact estimation' OFT 917, available at [www.offt.gov.uk/shared\\_offt/reports/Evaluating-OFTs-work/oft917.pdf](http://www.offt.gov.uk/shared_offt/reports/Evaluating-OFTs-work/oft917.pdf)
- OFT (2008e) 'OFT response to points raised during the consultation on its approach to calculating benefits', OFT 955a.
- OFT (2007a) 'The deterrent effect of competition enforcement by the OFT', report prepared by Deloitte for OFT, OFT 962
- OFT (2007b), 'Positive Impact 06/07. Consumer Benefits from Competition Enforcement, Merger Control, and Scam Busting', Report 928, at:

- OFT (2006), 'Positive Impact 05/06
- OFT (2002), Davies, S. and A. Majumdar, 'The Development of Targets for Consumer Savings Arising from Competition Policy', OFT Economic Discussion Paper No. 386
- Peters, (2006) 'Evaluating the Performance of Merger Simulation: Evidence From the U.S. Airline Industry,' *Journal of Law & Economics*.
- Pinske, J. & M. E. Slade (2004), Mergers, Brand Competition, and the Price of a Pint, in: *European Economic Review*, Vol. 48, pp. 617-643.
- Sabbatini P (2008), 'Assessing the impact of antitrust intervention by the Italian Competition Authority', *De Economist*, 156: 491-505
- Sabbatini P (2006), 'How to simulate the coordinated effect of a merger', *Autorita Garante della Concorrenza e del Mercato, Temi e Problemi*, 12
- Symeonidis G (2002), *The Effects of Competition: Cartel Policy and the Evolution of Strategy and Structure in British Industry*. Oxford University Press, New York.
- USSC guidelines for the United States courts, USSC Section 2R1.1, Bid-rigging, price fixing, or market allocation agreements among competitors, application note 3.
- Verboven F and T van Dijk (2007), 'Cartel damages claims and the passing-on defence', K.U. Leuven Working Paper
- Villas-Boas, S (2007) 'Vertical Relationships between Manufacturers and Retailers: Inference with Limited Data', *Review of Economic Studies*, 74(2), 625-652
- Weinberg M (2008), 'The Price Effects of Horizontal Mergers', *Journal of Competition Law and Economics*, 4. pp. 733-447.
- Werden G. (2008), 'Assessing the Effects of Antitrust Enforcement in the United States' *De Economist*, 156: 433-51

Werden G, (2003) 'The effect of antitrust policy on consumer welfare: what Crandall and Winston overlook.', *DoJ economic analysis group discussion paper*. 30.

Werden, G. J. (2000), Expert Report in United States v. Interstate Bakeries Corp. and Continental Baking Co., in: *International Journal of the Economics of Business*, Vol. 7 (2), pp. 139-148