



Neutral Citation Number: [2026] EWCA Civ 409

Case No: CA-2025-000700

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
KING'S BENCH DIVISION
COMMERCIAL COURT
His Honour Judge Pelling KC (sitting as a High Court Judge)
[2024] EWHC 13 (Comm)

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 01/04/2026

Before:

LORD JUSTICE MALES
LORD JUSTICE SNOWDEN
and
LADY JUSTICE COCKERILL

Between:

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|---|---|
| 1) GRANVILLE TECHNOLOGY GROUP LIMITED
(IN LIQUIDATION) | <u>Appellants/
Claimants</u> |
| 2) VMT LIMITED (IN LIQUIDATION) | |
| 3) OT COMPUTERS LIMITED (IN LIQUIDATION) | |

- and -

- | | |
|----------------------------------|---|
| 1) LG DISPLAY CO. LIMITED | <u>Respondents/
Defendants</u> |
| 2) LG DISPLAY TAIWAN CO. LIMITED | |

Thomas Raphael KC & Stefan Kuppen (instructed by **Osborne Clarke LLP**) for the
Appellants
Hanif Mussa KC & Sarah O'Keeffe (instructed by **Cleary Gottlieb Steen & Hamilton LLP**)
for the **Respondents**

Hearing dates: 20, 21 & 22 January 2026

Approved Judgment

This judgment was handed down remotely at 10.30am on Wednesday 1 April 2026 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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LORD JUSTICE MALES:

1. In a ‘follow on’ claim for damages for losses caused by the respondent defendants’ participation in an unlawful price fixing cartel, His Honour Judge Pelling KC assessed the damages suffered by the appellant claimants in the sum of £4,412,716 and awarded damages, after taking account of settlements reached with other defendants, in the sum of £942,438. These figures include interest. This award was considerably less than the amount which the appellants had claimed.
2. In this appeal the appellants contend that the judge made three material errors in his assessment of the damages:
 - (1) he applied a principle to the effect that when assessing damages in circumstances where precise calculation is not possible, the court ‘should err on the side of under-compensation’, when as a matter of law there is no such principle;
 - (2) he made clear and obvious errors when determining the amount by which the cartelists’ unlawful activities caused prices to be higher than they would otherwise have been (the ‘overcharge’); and
 - (3) he failed to apply the correct test in law, which requires a ‘direct and proximate causal link’, when determining that the appellants had ‘passed on’ 65% of the overcharge to their own customers and to that extent had successfully mitigated their loss (‘downstream pass on’).
3. I have concluded that the appeal should succeed to a limited extent. In his assessment of the overcharge and the level of downstream pass on, the judge did err on the side of under-compensation, which is the wrong approach in law. In all other respects, however, the judge was entitled to reach the conclusions which he reached and his approach involved no error of law.

Background

4. I can take the facts from the judge’s thorough and comprehensive judgment.

The cartel

5. The claim arises out of a cartel found by the EU Commission to have existed between 5th October 2001 and 1st February 2006 in the worldwide market for thin film transistor liquid crystal display (‘LCD’) panels. LCD panels consist of a lower glass plate, an upper glass plate and an injected liquid crystal between the two plates, which is placed in front of a light source to serve as a screen on electronic devices including computer monitors, notebook personal computers (‘notebooks’) and TVs.
6. The relevant findings concerning the existence of the cartel and the defendants’ participation in it are contained in ‘Commission Decision of 8 December 2010 relating to a proceeding under Article 101 Treaty on the Functioning of the European Union and Article 53 of the Agreement on the European Economic Area (COMP/39.309-LCD - Liquid Crystal Displays)’ (‘the Decision’). The Decision and these proceedings are only concerned with the use of LCD panels in the manufacture of monitors, notebooks and TVs. In summary, the Commission found that all the defendants to these proceedings were participants in the cartel. They gave effect to it by entering into

agreements concerning future prices, price ranges and minimum prices, on pricing and commercial matters for specific accounts, on future production planning and future capacity utilisation and by exchanging information on pricing, price coordination and other commercial aspects including sales volumes or capacity plans.

7. By reason of these conclusions, the Commission decided that various undertakings, including the LG defendants who are the respondents to this appeal, had infringed Article 101 of the Treaty on the Functioning of the European Union and Article 53 of the Agreement on the European Economic Area by participating, during the relevant period in ‘a single and continuous agreement and concerted practice in the sector of Liquid Crystal Display panels for TV, notebook and monitor applications’. The Commission fined the LG defendants €215 million.

The parties

8. The claimants were English and Jersey registered companies carrying on business in England and Wales in the manufacture and sale primarily of desktop personal computers sold with monitors and of notebooks. They sold their products principally to retail end user customers, but some products were sold commercially to business and educational end users. The claimants purchased (from suppliers located either in the UK or elsewhere) monitors and notebooks that had been manufactured using LCD panels and also LCD panels for use by them in the manufacture of notebooks. From 2003, the first claimant (‘Granville’) also sold TVs incorporating screens manufactured using LCD panels.
9. Granville and the second claimant (‘VMT’) are part of the same group. Granville sold its products directly to end users either from its own shops or online. VMT assembled and repaired products for Granville. The third claimant (‘OTC’) was not part of the same group as Granville and VMT. Most of the claimants’ relevant purchases during the relevant period were made from intermediaries in the supply chain downstream from the defendants. However, it was common ground that all suppliers upstream of the claimants passed on the whole of any overcharge to their customers, including the claimants (‘upstream pass on’) and that VMT passed on to Granville 100% of any overcharge which it suffered.
10. Each of the claimants is in liquidation and has been for many years. Granville entered administration on 27th July 2005 and liquidation on 15th January 2007; VMT entered administration on 5th August 2005 and liquidation on 15th January 2007; and OTC entered into administration in England on 29th January 2002 and liquidation on 5th February 2004. Each claimant ceased trading when it entered administration which, in each case, was during the currency of the cartel.
11. Although there were other defendants to the proceedings, the LG defendants were the only defendants who took an active part in the trial. All other defendants had either reached a settlement with the claimants, had become insolvent or had summary judgment entered against them.
12. The LG defendants were at all material times manufacturers and sellers of (among other things) LCD panels. They are based in South Korea and Taiwan but operate worldwide.

The claimants’ case

13. The claimants' case before the judge was that (a) as a result of the cartel, the prices they paid for LCD panels and products incorporating LCD panels were higher throughout the relevant period than they would have been but for the existence of the cartel; (b) they were entitled to recover this overcharge as damages for breach of statutory duty; (c) the LG defendants failed to discharge the burden upon them of showing that the claimants successfully mitigated their loss by way of downstream pass on¹; and (d) to the extent that the overcharge was passed on by the claimants to their downstream customers and so not suffered by them as a loss, it resulted or it was to be inferred that it had resulted in reduced sales and therefore caused them to suffer lost profits for which they were entitled to recover damages ('the loss of profits claim').

The defendants' case

14. The LG defendants' case, so far as relevant to this appeal, was that the amount of overcharge suffered by the claimants was limited and in any event that the claimants succeeded in passing on 100% of any overcharge which they suffered to their own customers, and therefore suffered no recoverable loss.
15. In addition, the LG defendants raised a number of other defences, including that the claims were barred by limitation and governed by foreign law, which, if successful, would have defeated those claims in their entirety. However, although these were significant issues at the trial, the judge decided them in favour of the claimants and they do not form part of this appeal.

The legal framework for the assessment of damages

16. So far as the quantification of the overcharge is concerned, the judge summarised the applicable legal framework in the following terms, which are not controversial:

'24. Where, a claimant has established a breach of statutory duty (as in this case the claimants have by their reliance on the Decision) it is entitled to recover damages to be assessed applying the measure of loss that is usually applied in English law to the assessment of loss caused by a tort – that is “ ... that sum of money which will put the party who has been injured, or who has suffered, in the same position as he would have been in if he had not sustained the wrong for which he is now getting his compensation or reparation” – see *Livingstone v. Rawyards Coal Co* (1880) 5 App Cas 25 per Lord Blackburn at page 39; and, specifically in relation to competition claims, *Sainsbury's Supermarkets Ltd v Mastercard Inc and others* [2020] UKSC 24; [2020] 4 All ER 807, where it was held that in a competition infringement case, the primary claim will be for the claimant's direct loss measured by the overcharge attributable to the relevant cartel activity less any part of that overcharge passed down stream to the claimant's customers – see paragraphs 182 and 194.

¹ Strictly, VMT did mitigate its loss because it passed on its loss to Granville (para 9 above), but it was not suggested that this intra group pass on affected the claimants' ability to claim.

25. There is no requirement to enquire into which defendant sold what products to each claimant. The claimants plead ... that each defendant is jointly and severally liable for any losses caused by the cartel and the defendants admit that averment ... It has not been suggested ... that this was wrong or that some other principle should apply and to the extent necessary I accept the claimants' submission that each of the defendants is jointly and severally liable for any loss caused to the claimants by the cartel.

26. In assessing the overcharge to be attributed to the relevant unlawful cartel activity it is usually necessary (and it is necessary in this case) to assess what would have happened had the infringement not occurred. This is so because in order to identify the Overcharge, it is necessary to identify and then exclude from the assessment of loss all price movements during the Relevant Period down to the date when the claimants respectively entered administration that would have occurred had there been no infringement.

27. In this case, very complex economic evidence involving statistical modelling at various levels of complexity and sophistication was deployed by both parties but in particular by the defendant in an attempt to identify what part of the price increases in LCD panels over the Relevant Period was attributable to the cartel's infringing activity. The level of mathematical sophistication that this evidence involved does not however lead to the conclusion that the counterfactual elements that have to be excluded can be quantified with precision – at best such sophistication should narrow the range of uncertainty that arises in most counterfactual assessments.'

17. In a key paragraph of his judgment, the judge then explained the approach to be followed when it is not possible on the evidence to arrive at a precise figure for a claimant's loss:

'28. In this case therefore, as in most other competition infringement cases,

“ ... the assessment of damages will involve an element of estimation and assumption. Restoration by way of compensatory damages is often accomplished by “sound imagination” and a “broad axe” or a “broad brush”. The court will not allow an unreasonable insistence on precision to defeat the justice of compensating a claimant for infringement of its rights ...”

– see *Asda Stores Ltd v. Mastercard Inc* [2017] EWHC 93 (Comm) per Popplewell J (as he then was) at paragraph 306 and *Britned Development Limited v. ABB AB* [2018] EWHC 2616 (Ch) per Marcus Smith J at paragraph 12. However, as

Popplewell J added at paragraph 307 of his judgment in *Asda Stores Ltd v. Mastercard Inc* (ibid.):

“...where the court is compelled to use a broad brush in the absence of precision in the evidence of the harm suffered by a claimant, it should err on the side of under-compensation so as (a) to reflect the uncertainty as to the loss actually suffered and (b) to give the defendant the benefit of any doubts in the calculation”.

It follows that compensatory awards depending on an assessment of what would have happened to prices in the counterfactual world will involve using expert evidence to narrow as far as possible the range of uncertainty concerning the relevant counterfactual circumstances applying the assumptions and approximations identified by the expert evidence (or that part of the expert evidence that is accepted) and then arriving at the best estimate that can be achieved within that range applying “sound imagination” and a “broad axe” or a “broad brush” but applying the cautionary approach identified by Popplewell J when doing so.’

18. It is apparent that ‘the cautionary approach’ identified by Mr Justice Popplewell in *Asda*, to which the judge referred in the final sentence of this paragraph, meant erring on the side of under-compensation when complete precision is not possible. However, this court held in *Britned Developments Ltd v ABB AB* [2019] EWCA Civ 1840, [2020] 4 CMLR 7, paras 65 and 221, that this approach was wrong. Rather than erring on the side of under-compensation, the court should aim to give the right amount of compensation, without erring in either direction:

‘65. Furthermore, it is in our view unfortunate that the judge in the present case should have found assistance in what Popplewell J said in *Asda* at [307], when the anti-competitive conduct in that case was not remotely comparable to the concerted and dishonest worldwide cartel in which ABB participated. Any suggestion, in a case of the present type, that the court should “err on the side of under-compensation” is liable to give entirely the wrong impression, quite apart from the obvious point that the aim of the court should always be to give the right amount of compensation, without erring in either direction. All that said, however, we remain of the view that, when paragraph [12(9)] of the judgment is read as a whole, it does not betray any fundamental error of approach which vitiated the judge’s performance of his task. The most that can be said, in our view, is that in considering the judge’s approach to, and assessment of, the evidence before him, we should be alert to the possibility that he may have been unduly prone to give ABB the benefit of the doubt, or to err on the side of under-compensation, when (of necessity) wielding the broad axe or broad brush. (We observe, in passing, that the two metaphors appear to have become interchangeable in the authorities,

although the images they conjure up are very different. For our part, we prefer to guide ourselves by reference to Lord Shaw’s time-hallowed “exercise of a sound imagination and the practice of the broad axe”, while reminding ourselves of the dangers of using any vivid metaphor to express a legal doctrine).

...

221. Thirdly, when in the supplementary judgment the judge returned to where we think he should have started, and he sought to assess an appropriate discount to reflect the risk of over-compensation arising from the possible future operation of the Cap, we think it particularly unfortunate that he should have referred to the “rule” of erring on the side of under-compensation where the court is compelled to use a broad brush, and the “need” to give ABB the benefit of any doubt in the calculation of damages: see [15(3)(d)]. As we have explained, there is in our view no such rule and no such need.’

19. When the judge’s judgment was sent to the parties in draft, the error in his paragraph 28 was pointed out to him. The judge did not make any material changes to the body of his judgment, and retained paragraph 28 in the same terms as in the draft, but added a footnote in the following terms:

‘Following delivery of this judgment in draft to the parties, the claimants drew my attention to subsequent authorities that decide that the cautionary principle referred to above should no longer be followed. I had not consciously made any adjustments applying this principle because in the circumstances I considered it unnecessary to do so. When I referred to paragraph 28 that was generally shorthand for the broad brush/broad axe approach. Avoiding over compensation is different from erring on the side of under compensation or giving the benefit of any doubts to the defendant. Had I made any such adjustments I would have identified them specifically. However, I have since reviewed each of the conclusions I arrived at where it was necessary for me to apply the broad axe/ broad brush approach consciously applying that principle but without qualification. I have concluded that no adjustments to the figures arrived at are required.’

20. I would commend the judge’s frankness in acknowledging the error in his paragraph 28 and for leaving in his judgment the reference to *Asda*, which had formed part of his thinking when he wrote it. I do not doubt that he carried out conscientiously the exercise of reviewing his conclusions which he described in the footnote. Nevertheless, the claimants’ first ground of appeal is that although the judge said that he had not consciously applied the cautionary approach of erring on the side of under-compensation, it should be inferred that as a subconscious reality his assessments of the overcharge and of the extent of downstream pass on must have been affected by this approach, to which he referred repeatedly throughout his judgment.

21. It will be necessary to consider this ground of appeal in due course. However, the correct legal principle is clear and is common ground. When the evidence will only take the court so far, enabling it to narrow the range of uncertainty in the assessment of damages, but not to arrive at a precise figure, the court will assess the damages as best it can with the use of ‘sound imagination and a broad axe’, aiming to award the right figure without erring in either direction.²
22. Of course, that principle is easier to state than to apply in circumstances where all the court can say is that the damages suffered are somewhere within a specified range and that the evidence does not allow a more precise assessment. If that is the best that the evidence can do, and one amount within the range is not more inherently probable than another, what amount is the court to award? Inevitably, whatever amount is selected is at least as likely to be wrong as to be right. In such circumstances, unless there is a particular reason to do otherwise, an award of an amount somewhere approximately in the middle of the range could be expected. Although such an award cannot be precisely accurate, it will at least reduce as far as possible the extent to which the claimant is either under- or over-compensated and will ensure that the risks of under- and over-compensation are broadly equal. Such an award is unlikely to be open to challenge in this court, not least because the trial judge will have a feel for the overall justice of the case which this court is unlikely to have.

Assessment of the Overcharge

23. I begin with the claimants’ challenge to the judge’s assessment of the amount of the overcharge. The judge’s conclusion was that this was 8% for monitors, 4% for notebooks and 14% for TVs.

The approach on appeal

24. The amount of the overcharge, expressed as a percentage of the price of the goods in question during the period of the cartel, is a question of fact, albeit one arrived at in the light of extensive expert evidence. There is, therefore, limited scope for an appellate court to interfere with the findings of the judge, in accordance with such well-known authorities as *Fage UK Ltd v Chobani UK Ltd* [2014] EWCA Civ 5, [2014] FSR 29, para 114, *Henderson v Foxworth Investments Ltd* [2014] UKSC 41, [2014] 1 WLR 2600, para 67, and *Volpi v Volpi* [2022] EWCA Civ 464, [2022] 4 WLR 48, paras 2 to 4. In short, an appellate court may only interfere if the judge’s findings are plainly wrong, in the sense that they are based upon an identifiable error or are findings which no reasonable judge could have reached. This limitation applies with particular force when, as in the present case, the judge’s findings are the outcome of a lengthy trial with highly detailed and technical expert evidence on interlocking issues and it is apparent from the judgment that the judge engaged carefully and thoughtfully with that evidence (see also, for a case dealing specifically with the appellate approach to complex expert evidence, *Thomson v Christie Manson & Woods Ltd* [2005] EWCA Civ 555, [2005] PNLR 38, paras 140 and 141).

² A principled alternative might have been to err on the side of over-compensation, on the basis that the defendant is a wrongdoer and that it is better that a wrongdoer should pay too much than that an innocent claimant should be under-compensated. However, neither party urged this approach upon us and it appears to be ruled out by the decision of this court in *Britned*.

The judgment

25. Because of the time which had passed since the activities of the cartel, there was only limited documentary and witness evidence to assist the judge in assessing the extent of the overcharge. Complex and detailed expert evidence was given by Dr Rob Van der Laan (an economist) and Mr Bruno Augustin (a forensic accountant) on behalf of the claimants and by Mr David Parker (an economist) on behalf of the defendants. The experts produced rival econometric models with which to analyse the available data, which the judge had to evaluate. As he explained, there was a fundamental difference between the experts as to the kind of model which it was appropriate to use.
26. Dr Van der Laan proposed a model applying what was described as a trend line extrapolation. In essence, this assumed that the reduction in prices of LCD panels which was occurring in the period before the cartel would have followed the same trend during the cartel period if it had not been for the unlawful activities of the cartel. Mr Parker, on the other hand, proposed a multiple regression analysis comparing the position before, during and after the period of the cartel. It is unnecessary for the purpose of this appeal to attempt to explain the differences between these different models, or the reasons for preferring one over the other, although the judge had to go into this in considerable detail. His conclusion, which is not challenged, is that a multiple regression analysis as proposed by Mr Parker was appropriate. He found that in principle this was ‘more likely to lead to an accurate estimate of the level of Overcharge’ (para 83), and would ‘reduce the area of uncertainty that the broad brush approach is to address’ (para 84).
27. The judge explained the nature of a multiple regression analysis in the following terms:
 - ‘40. Econometrics is a practice adopted by economists to analyse data using statistical methods. Much of the language used and the relevant concepts are those of mathematics and statistics rather than economics although there are critical economic judgments that have to be made, usually in deciding what data should be used for the statistical modelling that is adopted and in interpreting the results of such analysis.
 41. One such method is regression analysis. This is the method that has been used in this case by Mr Parker and has been commented on, mostly critically, by Dr Van der Laan. It is a technique commonly used by economists for various purposes including assessing the level of Overcharge in competition damages claims. There was a dispute between the parties as to the degree to which use of this technique was one conventionally adopted in such cases. In my judgment the use of this technique is very widely adopted by economists for this purpose – see by way of example *Royal Mail Group Ltd v. Daf Trucks Ltd* and others [2023] C.A.T. 6; [2023] 5 C.M.L.R. 6 at paragraph 328, where the technique was described as being “commonly adopted”.
 42. Regression analysis is a mathematical technique that permits an economist to measure the effect of a particular practice (here

price fixing) on prices actually charged by eliminating price movements not attributable to the practice being considered. As the Commission puts it in paragraph 69 of the *Commission's Guide on Quantifying Harm In Actions For Damages Based On Breaches Of Article 101*:

“Regression analysis therefore makes it possible to assess whether, and by how much, observable factors other than the infringement have contributed to the difference between the value of the variable of interest observed on the infringement market during the infringement period and the value observed in a comparator market or during a comparator time period.”

In this context the “variable of interest” (or “dependent variable”) is the price being charged for LCD panels and in a regression analysis the factors that contribute to the make up of price other than infringement are accounted for by the use of explanatory variables or regressors. In practice, the most effective evaluation is likely to result from multiple regression analysis where account is taken of all the factors that are relevant to price movements using explanatory variables for each over the period before during and ideally also after the period during which the cartel operated. The technique involves the use of sophisticated software in order to measure the correlation between the dependent variable and the regressors, which in this case were data proxies for LCD panel production costs, supply and demand, with the inclusion of a “dummy” variable to data that applies respectively outside (that is before and ideally after) and within the period of duration of the cartel.’

28. The model proposed by Mr Parker selected semiconductors as a proxy source for the demand variable and sought to measure the effect of the cartel on LCD panel prices by comparing prices for LCD panels with semiconductor prices before, during and after the period of the cartel. On that basis, Mr Parker concluded that the overcharge was 5.7% for monitors and 2.4% for notebooks.
29. Although Dr Van der Laan’s primary position, rejected by the judge, was that regression analysis should not be used at all, he also criticised aspects of the model prepared by Mr Parker. He challenged the selection of semiconductors as a useful proxy for demand on the basis that this would lead to results which were ‘endogenous’, in that the price of semiconductors was itself influenced by the price of LCD panels because many people who purchased computers containing semiconductors also purchased monitors. Dr Van der Laan proposed instead that a suitable proxy for demand would be a measure of GDP growth or of business confidence. The judge rejected this challenge, holding that there was no merit in adopting either of these alternative proxy data sources (para 104) and that the price of semiconductors was the best available proxy variable:

‘106. Mr Parker’s opinion remained that it was preferable to use a market specific demand measure. I agree. I have not been persuaded that endogeneity undermined use of the semiconductor metric. It is a market that is enormous when compared

to that for LCD screens and services multiple different commercial and consumer sectors. Dr Van der Laan's reasons for thinking there was an endogeneity risk posed by the use of the semi conductor data was speculative, untested and was one that Dr Van der Laan was unable to say was material. I agree with Mr Mussa's submission that it would be wrong to prefer a less economically relevant metric in the absence of any evidence of a material risk that using a more economically relevant metric would produce statistically biased results.

107. In the end broadly I prefer Mr Parker's evidence that the semi-conductor billing data is the best available proxy variable because it is very largely exogenous and closely correlated with monitor demand and no other proxy has been identified that more satisfactorily satisfies these requirements. That said, plainly there is a risk that to a limited extent the semi conductor proxy may under estimate overcharge by virtue of a limited endogenous element. Allowing for that impact requires the application of the principles summarised at paragraph 28. I return to that issue below.'

30. Another challenge by Dr Van der Laan to Mr Parker's model was what the judge described as 'the time lag issue' – 'whether the model should relate prices to explanatory variables at a single point in time so that a change in demand affects price in the same month that the change in demand occurs, or whether it should be assumed that changes in price will lag behind changes in costs or demand' (para 108). Mr Parker had considered and rejected the latter approach because, when he tested it, it resulted in statistically anomalous results. Dr Van der Laan did not advocate this approach if the regression model continued to use semiconductor prices for the demand variable (in which case his figures were effectively the same as the figures in Mr Parker's model), but did propose incorporating prices lagged by one month into the models using GDP growth or business confidence which he favoured, in which case the overcharge would vary, depending on the precise model used, between 17.7% and 20.9%. The judge understandably rejected this as unprincipled (para 109): either it was appropriate to use lagged prices or it was not.
31. The judge referred to what he called one of the difficulties of Dr Van der Laan's approach, which was that 'it alters through an unusually large number of reports. ... in his third report he moved away from the one month's lag thesis adopted in his second report to a two to three month lag applied to the price variable alone' (para 110 of the judgment), which had the effect of increasing the overcharge figure for monitors from 5.7% to 30.1% and for notebooks from 2.4% to 21.7%³, while also improving the 'R squared' figure ('R squared' being a highly technical statistical test designed to provide a broad indication of how close the regression model's projection gets to the observed data: see para 48 of the judgment).

³ The reason why this adjustment made such a dramatic difference to the outcome of the model was not explained, though the fact that it had this effect was not disputed.

32. The judge accepted Mr Parker's evidence that it was not appropriate to use lagged prices in the model:

'114. Whether a cost/price lag has occurred is by definition highly fact sensitive. There is no evidence of such a phenomenon in the LCD screen industry. If and to the extent the question is one of argument I consider that the assumptions made by Dr Van der Laan are likely counterbalanced by the fact that the reason for the cartel was to control prices by price fixing and controlling increases in supply. Such motivation suggests that it is highly unlikely that there would be any significant delay in changing prices by reference to changes in cost any more than in respect of changes in demand. Failing to do so would adversely affect profit on one side of the equation or market share on the other (depending on whether the costs and demand changes were up or down).'

33. A separate criticism of Mr Parker's model advanced by Dr Van der Laan was that it was inappropriate to rely on price information for sales made after the date, 1st February 2006, when the Commission decided that the cartel had come to an end.⁴ This was because, according to Dr Van der Laan, it would take some time for the market to return to normal competitive conditions, so that prices immediately following the end of the cartel would remain for a while affected by the cartel's unlawful activity. To that extent, therefore, a comparison of prices during and after the cartel period, as undertaken in Mr Parker's model, would be misleading. The judge accepted this point in principle, but not to the full extent for which Dr Van der Laan contended, which was that such 'price persistence' would continue for up to nine months. Rather, he accepted Mr Parker's evidence in the experts' joint memorandum that there would be price persistence after the end of the cartel for at most two or three months, and concluded that this would have ceased to have any substantial effect by sometime between the end of May and the end of June 2006 (para 141).

34. In the result, therefore, the judge accepted that the overcharge was as shown in Mr Parker's model, that is to say 5.7% for monitors and 2.4% for notebooks, but that these figures required some upward adjustment to take account of two factors. The first was the risk of endogeneity arising from the use of semiconductor prices, although the judge had determined that this risk was not sufficient to require rejection of their use as a proxy demand variable altogether. The second was the effect of post cartel price persistence while the market returned to normal after the unlawful activity ceased. The judge expressed his conclusion in these terms:

'143. Applying the principles summarised in paragraph 28 above and taking account of the endogeneity risk posed by use of the semi-conductor proxy as the demand variable in combination with the uncertainty already noted concerning the effect of post cartel price persistence leads me to conclude that if I was to adopt

⁴ It is somewhat artificial to think that the cartel came to an end at midnight on 1st February 2006, but in this follow-on action where the claimants have not sought to prove that the cartel endured beyond the date found by the Commission, that is the basis on which we must proceed. That does not necessarily mean, however, that the impact of the cartel on LCD panel prices terminated at midnight on 1st February 2006, which is a separate point.

Mr Parker's figure that would under estimate to a limited degree the level of overcharge. In my view a modest adjustment upwards of Mr Parker's figures is required to eliminate the possibility of under recovery by reference to these sources of uncertainty but limited so as to take account of what I consider is likely to be the modest effect of both factors and the need to be cautious to avoid over compensation. Taking into account all that I have so far considered, I conclude that the probable overcharge rate suffered by the claimant that is attributable to the cartel's infringing activity is 8% for monitors, 4% for notebooks and 14% for TVs.'

Was the judge wrong to reject the use of lagged prices?

35. Leaving aside for the moment the more general criticism that the judge's assessment of the overcharge was at least subconsciously affected by the need to err on the side of avoiding over-compensation, a point to which I shall return, the claimants' first specific criticism of the judge's approach was that the judge made an obvious error in rejecting the inclusion of lagged prices as a variable in Mr Parker's counterfactual model on the grounds that there was no evidence of price persistence in the LCD screen industry. Mr Thomas Raphael KC for the claimants submitted that there was evidence of price persistence throughout the period of the cartel, and that the judge was therefore wrong to say at paragraph 114 that there was no such evidence. Rather, he submitted that Mr Parker had accepted the existence of this phenomenon, at least for a period of two or three months, and that the judge should therefore have adopted a regression model including the use of a price variable lagged for two or three months (and specifically that he should have accepted the model showing an overcharge of 30.1% and 21.7% respectively) or at least should have given weight to this model in selecting a different and higher overcharge percentage within the range provided by the various models.
36. I would accept that this court would be entitled and obliged to interfere with the judge's finding if it was indeed based on a misunderstanding of the evidence and a failure to appreciate that his conclusion was contrary to the agreed view of the experts. But as I shall attempt to show, that is not the position.
37. I would accept that the judge was mistaken in his paragraph 114 to say that there was no evidence of price persistence in the LCD screen industry, if what he meant was that there was literally no such evidence as distinct from no evidence which he accepted. Dr Van der Laan suggested in his third report that there was a two or three month lag in prices before and during the period of the cartel. Plainly the judge was aware of this, as he referred to it and discussed its effect in his paragraph 110, to which I have already referred (para 31 above). But the judge immediately went on to discuss the reasons why Mr Parker (whose evidence he accepted) disagreed:

'111. Mr Parker did not accept this reasoning. Why this is so involves a significant amount of very technical statistical maths. However it starts with the point that the adjustments carried out by Dr Van der Laan mean that the only explanatory factor that affects the price level in a given period is the price level in the two previous periods, which Mr Parker contends makes no sense when it is agreed (as it is here) that prices will be affected by

costs, supply and demand. This is described by Mr Parker as “... not credible...”. He added that he had tested his model using a lagged price variable and had concluded that it should be rejected because “ ... while there was a statistically significant effect of the lagged price variable, this had arisen because the lagged price variable was correlated with costs, rather than because last period’s price had any causal effect on this period’s price ...” Mr Parker’s opinion was also that by omitting lag to both the demand and capacity variables that resulted in a substantially increased overcharge that does not occur when they are included.’

38. After discussing the issue further, the judge reached his conclusion in paragraph 114 which I have set out at paragraph 32 above.
39. In these circumstances I think it is reasonably clear that the judge did not mean to say that there was literally no evidence of price persistence in the LCD screen industry, as he had just discussed at some length the competing views of the experts as to the existence or otherwise of this phenomenon. The better reading of his conclusion is that he did not accept Dr Van der Laan’s evidence, for the reasons which he gave, namely the contrary evidence of Mr Parker and the inherent improbability of such price persistence when the price-fixing activities of the cartel were taken into account. In my judgment this was a conclusion which the judge was entitled to reach with which this court should not interfere, having regard to the limitations within which an appellate court must operate – unless it can be shown that the judge misunderstood Mr Parker’s evidence on this point.
40. Mr Raphael submitted that the judge did indeed misunderstand Mr Parker’s evidence and that Mr Parker had accepted Dr Van der Laan’s evidence that there would be price persistence for a period of two or three months. For this purpose it is necessary to look closely at the experts’ joint memorandum where Mr Parker is said to have accepted this point.
41. One of the propositions discussed in the joint memorandum was that ‘There is evidence that the Infringement led to higher prices for LCD panels in the post-infringement period’. Dr Van der Laan agreed with this proposition. His view is recorded as being:

‘Agree. Dr Van der Laan presents evidence that there was price persistence, i.e. that the price of an LCD panel in a month is partly determined by the price of the LCD panel in the previous month. There is a statistically significant effect up to 9 months – see Van der Laan 2, 4.3.

Both Dr Van der Laan and Mr Parker conclude that there was an overcharge (the estimate for Notebook panels is not significant in Mr Parker’s baseline model but with the small changes suggested by Dr Van der Laan there is a statistically significant overcharge on both Notebook and Monitor panels).

An overcharge during the Cartel Period in combination with price persistence implies that prices during the immediate Post-

Cartel Period were affected by the Cartel: it would have taken time for prices to return to the competitive level.

Additionally, costs were likely to be higher due to Cartel as a result of reduced learning effect and delayed investment in fabs. This implies that prices in the Post-Cartel Period could have been affected by delayed investment for around two years (the time it takes for a new fab to become operational).'

42. Mr Parker's view was recorded as follows:

'Disagree. Dr Van der Laan presents no evidence that this is the case. I do not consider the Infringement to have reduced investment in production capacity (rather, there was evidence of capacity growth throughout the period) or to have led to permanently higher production costs. In any event, even if there had been capacity restraint, there is no reason to think that this would have been maintained beyond the Infringement. See Parker 2, Section 5.3.

I do not consider that Dr Van der Laan has demonstrated price persistence for 9 months in his analysis in Van der Laan 2. His analysis shows effects in months 1 and 2, but no significant effects for monitors in months 3, 4, 5, 6, or 8, with month 7 being significant but incorrectly signed (that is, a higher price 7 months previously actually reduced current month prices). For notebook panels, Dr Van der Laan finds significant effects in months 1, 2 and 3, but after that largely a mix of insignificant and incorrectly signed lags. It is not economically plausible that prices 4 months previously have no impact, but prices 9 months previously do have an impact, as I would expect the impact to reduce over time. I therefore consider that Dr Van der Laan's analysis is consistent with price persistence for at most 2-3 months.'

43. It is apparent that the issue being discussed here was the time which it would take for the market to return to normal competitive conditions after the cartel ceased to operate. It was a matter of common sense (or as the judge said at paragraph 138, inherent probability) that this would take some time and the judge's conclusion at paragraph 141 was that it might have taken until June 2006. To the extent that Dr Van der Laan's opinion was based on the existence of price persistence during the period of the cartel, the judge was entitled to reject his evidence, with which Mr Parker plainly disagreed. I do not read Mr Parker's stated view as accepting price persistence as a general phenomenon throughout the relevant period. If he had accepted this, he would not have begun his comment with the word 'Disagree'. The more limited point he was making was that, even on Dr Van der Laan's analysis, if price persistence after the end of the cartel existed at all, it was limited to a period of two or three months and not the nine months for which Dr Van der Laan contended.
44. Mr Raphael seized on a sentence in paragraph 137 of the judgment as constituting acceptance of Dr Van der Laan's evidence of price persistence. The judge said that:

‘I conclude that the inherent probabilities are as Dr Van der Laan says and that it would be both unusual and highly unlikely that the effects of a worldwide price-fixing cartel could be eliminated instantaneously on the coming to an end of the cartel.’

45. Mr Raphael submitted that there were two separate findings here, the first being an acceptance generally of Dr Van der Laan’s evidence on price persistence and the second being a finding as to the inherent improbability of the instantaneous cessation of the effects of the cartel. I cannot read the judgment in that way. When this section of the judgment is read in context, it is plain that it is dealing solely with the lingering effect of the cartel after it had come to an end. Indeed, the judge recorded at paragraph 133 that in addition to his more general evidence about price persistence (which the judge rejected) it was also Dr Van der Laan’s view ‘that there was price persistence in the period after the cartel came to an end because it takes time for the effects of a cartel on prices being charged to unwind’. That is what was being referred to in the sentence from paragraph 137 set out above.
46. Mr Raphael referred to long-term contracts as an example where price persistence would play a role. As the judge said at paragraph 113, however, it is not immediately clear how long-term supply agreements relevant to costs could cause price lags other than by suppressing costs. But in any event, there appears to have been no analysis at the trial of the long-term supply agreements concluded by the defendants or of the practical effect which they might have had. Disclosure of such contracts was sought and given, but we were told that the documents were not even included in the trial bundles. The judge was therefore entitled to regard reference to long-term supply contracts as a support for the existence of price persistence as speculative.
47. Accordingly, I consider that the necessary foundations for this first criticism of the judge’s conclusion are not established. Whether the model should include lagged prices in order to take account of price persistence during the period of the cartel was a matter on which there was competing expert evidence. The judge was entitled to prefer the view of Mr Parker that it should not. That is so despite the fact that, as we were told, in litigation about this same cartel in the United States, price persistence was treated as a feature of the LCD panel market during the relevant period. That may be so, but the judge’s task was to make findings based on the evidence in these proceedings. Contrary to Mr Raphael’s submission, there is no contradiction between the judge’s rejection of the use of lagged prices in the model and his acceptance that it would have taken some time for normal competitive conditions to be resumed after the cartel came to an end. These are distinct points.
48. Mr Raphael criticised some of the judge’s subsidiary reasons for rejecting the use of lagged prices in the model, but if (as I conclude) his primary attack on the judge’s conclusion fails, namely that it was based on a misunderstanding of Mr Parker’s evidence, it is unnecessary to consider these further points.
49. A further reason why Mr Raphael submitted that the judge was wrong to reject the use of lagged prices was that including these prices gave better results for ‘R squared’, a statistical test which I have already mentioned, and another statistical test known as ‘Ramsey RESET’. I refer to these tests further below.

Was the judge wrong to reject the use of lagged explanatory variables?

50. The claimants' second specific criticism of the judge's approach was that he was wrong to reject the use of lagged explanatory variables in the regression model. There were two aspects to this submission. The first was concerned with three variants of Mr Parker's model to which Dr Van der Laan had referred. One of these, which used semiconductor data as a proxy for the demand indicator, showed the same levels of overcharge as in Mr Parker's own model which the judge accepted. The second and third variants, which showed higher levels of overcharge, were based on the use of GDP growth and business confidence, which (as explained at paragraph 29 above) the judge had rejected. For the same reason, therefore, the judge was entitled to reject the use of these models.
51. The second aspect of this submission concerned a model which Dr Van der Laan included for completeness, based on the use of lagged costs and capacity instead of current costs and capacity, which showed an overcharge of 13.3% for monitors and 9.8% for notebooks. However, it was not his evidence that such a model ought to have been adopted. Indeed, it was never the claimants' case that a regression model based on lagged explanatory variables should have been adopted. It is an untenable submission on appeal that the judge was wrong in failing to adopt a model for which the claimants never contended.

Should the judge have rejected Mr Parker's model as insufficiently robust?

52. Mr Raphael's third major criticism of Mr Parker's model was that it was not sufficiently robust. He submitted that small but reasonable changes to its specifications consistently produced much higher overcharge percentages, which were inherently more plausible than those produced by Mr Parker's model – whose percentage, in the case of notebooks, was statistically indistinguishable from zero. He submitted that it was inherently implausible that the cartelists would have engaged in unlawful activity for a sustained period, with all the risks entailed, unless they were gaining significant financial benefit in the form of the overcharge from their participation in the cartel (cf. *Royal Mail Group Ltd v DAF Trucks Ltd* [2024] EWCA Civ 181, para 140). As a result, Mr Raphael submitted that the judge was wrong to adopt Mr Parker's model and should have adopted, or at least taken into account, other alternative plausible models which produced a higher overcharge figure.
53. The difficulty with this submission, as Mr Parker pointed out in his evidence, is that it assumes that the overcharge percentage produced by his model is wrong (i.e. is too low) when that is what the model is intended to determine. His view, in effect, was that it would be a mistake to start with an assumption that the level of overcharge would be significant and to design a model to achieve such a result.
54. The judge was well aware that Mr Parker's model produced a lower overcharge percentage than some of the other regression models suggested by Dr Van der Laan, and was aware too that it achieved a low result for R squared and failed the Ramsey RESET test. He considered this issue in some detail in the light of extensive expert evidence and preferred Mr Parker's view:

'46. It is necessary next to consider two other concepts that took up a significant part of the expert oral evidence at trial. Dr Van der Laan maintained that the soundness of the conclusions reached by Mr Parker depended on the application of statistical

tests and that applying those tests to Mr Parker's regression model demonstrated that it could not safely be relied on. Although a number were mentioned in the course of cross examination, the two that the Claimants placed most reliance on were "R Squared" and "Ramsey RESET". Although Dr Van der Laan's position was that the statistical tests that I have referred to were the primary determinant of whether the model had been correctly formulated, Mr Parker considered that these were of subsidiary importance because he considered the most important thing to do when preparing a model was to ensure that all the right variables (and proxy data sources) were being used in order to ensure that the exercise was as Mr Parker put it "economically sensible".

47. In principle I should make clear even at this stage that I prefer Mr Parker's approach to that adopted by Dr Van der Laan on this issue. It reflects what has been said in other cases where these issues have arisen - see by way of example paragraph 302 of Marcus Smith J's judgment in *Britned Developments Ltd* (ibid.), where he recorded that both experts in that case were agreed and he accepted that in order to be reliable a regression analysis had to be well specified - that is to " ... take account of the main drivers of project prices and not take account of factors which were irrelevant." - and in academic writing and other guidance - see (a) the principles set out in *Carter-Hill: Principles of Econometrics* (4th Ed.) at 233-234 and (b) the comment of the Commission at paragraph 81 of its *Practical Guide* that carrying out a regression analysis requires:

"... a good understanding of the industry concerned, in the first place, to formulate the right hypotheses when constructing the regression equation and to make the right choice as to the factors that are likely to have significantly influenced the variable of interest (and which should therefore be included in the analysis)".

55. Mr Parker had considered the fact that his model did not perform well by reference to these statistical tests, but concluded that these were 'of subsidiary importance' and that 'the most important thing ... was to ensure that all the right variables (and proxy data sources) were being used in order to ensure that the exercise was ... economically sensible'. His view was that his model achieved this primary objective. This was evidence for the judge to evaluate, and which he was entitled to accept in preference to the evidence of Dr Van der Laan, even if another judge might have reached a different conclusion. There is no error here which would entitle this court to interfere.
56. Further, it is false logic to suggest that an overcharge limited to the level shown in Mr Parker's model would not have represented a worthwhile return for the cartelists after taking account of the financial and reputational risks which they ran by engaging in their unlawful activity. That would depend on such matters as the worldwide volume of sales and the prices charged for the cartelists' products. Depending on such matters, an overcharge of the order of 5% may well be significant. The fact that Mr Parker's

model shows an overcharge of 5.7% for monitors and 2.4% for notebooks is not a reason to regard the model as unreliable.

57. I would add that there is force in the point made by Mr Hanif Mussa KC for the respondent defendants, easily lost sight of on appeal, that by the time the judge came to consider Dr Van der Laan's criticisms of the robustness of Mr Parker's model, he had rejected Dr Van der Laan's primary evidence that a regression model as proposed by Mr Parker should not be used at all. That rejection would naturally affect the weight which the judge would attach to the evidence of the respective experts. Compared to the fundamental question of what kind of model it was appropriate to use, Dr Van der Laan's criticisms of Mr Parker's model were secondary, despite the prominence which they have attained on appeal. This reinforces the view that, taking the expert evidence as a whole, the judge was entitled to prefer Mr Parker's evidence.
58. I do not consider that the judge can be criticised for failing to adopt a 'blended' approach, arriving at an overcharge percentage by picking a figure which took account of a variety of different models. If the judge accepted that the components of Mr Parker's model were the best available, and that there were good reasons for not adopting the alternatives suggested by Dr Van der Laan, as he was entitled to do, he was entitled also to conclude that it did not make much sense to derive an overcharge percentage by reference to what he had concluded were inferior models.

Did the judge err on the side of avoiding over-compensation?

59. Having rejected the claimants' specific criticisms of the judge's reasoning, I return to the question whether, in his final assessment of the amount of the overcharge, the judge wrongly erred on the side of under-compensation, applying the *Asda* approach which has now been held in *Britned* to be wrong (paras 17 to 22 above). Although the judge explained in the footnote to paragraph 28 of his judgment, and I would accept, that he had not consciously made any adjustment applying this principle, I consider that the text of his judgment must speak for itself on this issue.
60. To my mind the text of the judgment is clear. In paragraph 84 the judge said that 'ultimately the assessment of overcharge will involve a broadbrush assessment applying the principles referred to in paragraph 28 above'. Those principles included erring on the side of under-compensation. In paragraph 90 the judge referred to 'narrowing the scope of uncertainty that has to be taken account of using the judicial techniques identified earlier'. At paragraph 107 he referred again to 'the application of the principles summarised at paragraph 28'. At paragraphs 140 and 141 he referred to the need to apply 'the broad brush approach summarised in paragraph 28 above' and to 'the principles set out in paragraph 28 above'. Finally, the judge stated his conclusion on the overcharge issue in paragraph 143 which I have already set out, but which I repeat here with added emphasis:

'143. Applying the principles summarised in paragraph 28 above and taking account of the endogeneity risk posed by use of the semi-conductor proxy as the demand variable in combination with the uncertainty already noted concerning the effect of post cartel price persistence leads me to conclude that if I was to adopt Mr Parker's figure that would under estimate to a limited degree the level of overcharge. In my view a modest adjustment

upwards of Mr Parker's figures is required to eliminate the possibility of under recovery by reference to these sources of uncertainty but limited so as to take account of what I consider is likely to be the modest effect of both factors *and the need to be cautious to avoid over compensation*. Taking into account all that I have so far considered, I conclude that the probable overcharge rate suffered by the claimant that is attributable to the cartel's infringing activity is 8% for monitors, 4% for notebooks and 14% for TVs.'

61. Although the references in some of the earlier paragraphs of his judgment to the principles stated in paragraph 28 are open to interpretation, the words which I have emphasised refer clearly to the cautionary principle of avoiding over-compensation by erring on the side of under-compensation, which principle has now been disapproved. Whether or not the judge actually applied this principle, he said in this crucial paragraph that he was doing so. He said that, in order to avoid over-compensation, he was limiting the full extent of the modest adjustment upwards which would otherwise have been required.
62. It seems to me that we must proceed on the basis that when the judge wrote this paragraph and arrived at his final figure for the overcharge, he did what he said he was doing. This was after all his own explanation for the figures at which he arrived. Despite the footnote, to allow the judge's figures to stand would leave the claimants with an understandable sense that the result was unjust. What then should we do?
63. In my judgment the only possible course is for this court to decide for itself what adjustment to the judge's figures is required. It would not be right to send the matter back to the judge, who has already said that there should be no adjustment. It would be disproportionate to order a trial of the issue before another judge. So we must make the assessment ourselves, even though there is little to guide us beyond the judge's statement that, even without this limiting factor, the upwards adjustment from Mr Parker's figures would only have been modest. Beyond that we can only apply the 'broad axe' in a more or less arbitrary way. Adopting that approach, I would assess the amount of the overcharge as 10% for monitors, 6% for notebooks and 16% for TVs.

Downstream Pass On

The ground of appeal

64. I turn next to the claimants' challenge to the judge's finding that they passed on to their own customers 65% of the overcharge which they suffered, and to that extent mitigated their loss. The claimants' case on appeal is that the judge failed to apply the relevant test of a 'direct and proximate causative link' required for a defence of downstream pass on and that, had he done so, the evidence could not have supported a finding that there was such a link. It was therefore the claimants' case that there was no downstream pass on at all and that they ought to have recovered the full extent of the overcharge as damages.

The need for a direct and proximate causative link

65. As explained in *Sainsbury's Supermarkets Ltd v Visa Europe Services LLC* [2020] UKSC 24, [2020] Bus LR 1196, para 205, a business which faces an increased cost in the form of an overcharge has in general four options: (1) to do nothing and thereby suffer a reduction of profits or an enhanced loss; (2) to reduce discretionary expenditure such as marketing and advertising costs, or to reduce capital expenditure; (3) to reduce its costs by negotiating with its suppliers; or (4) to increase prices to its customers. If the business adopts the third or fourth option, or some combination of them, it will to that extent have avoided its loss. Downstream pass on is therefore a form of mitigation, to which conventional principles of the law of damages apply, one of which is that a claimant cannot recover damages for loss which has been avoided. The legal burden is on a defendant to prove that a claimant which has suffered an overcharge has mitigated its loss in this way, although there is in practice a 'heavy evidential burden' on the claimant, once the issue is raised, to provide evidence as to how they have dealt with the recovery of their costs in their business (paras 211 to 216). It is evident that determining the extent to which such mitigation has occurred may involve complex economic evidence and analysis.
66. As the Supreme Court explained at paragraph 215, whether a loss has been avoided is a question of fact ('whether in fact the merchants have avoided all or part of their losses'), although a question of legal or proximate causation also arises:
- '215. ... But the question of legal causation is straightforward in the context of the retail business in which the merchant seeks to recover its costs in its annual or other regular budgeting. The relevant question is a factual question: has the claimant in the course of its business recovered from others the costs of the MSC [merchant service charge], including the overcharge contained therein? ...'
67. As with any question of fact, the answer will depend on the evidence, which includes any evidence which is relevant (para 178). That includes expert evidence.
68. The Supreme Court went on to recognise that legal disputes must be dealt with at proportionate cost, and that this may require the court to forego precision and to take a pragmatic view of the degree of certainty which may be achieved in the assessment of damages, an approach which also gives effect to the EU law principle of effectiveness. Accordingly:
- '225. ... In accordance with the compensatory principle and the principle of proportionality, the law does not require unreasonable precision in the proof of the amount of the *prima facie* loss which the merchants have passed on to suppliers and customers.'
69. Thus the 'broad axe' approach applies not only to the quantification of an overcharge, but also to an assessment of the extent to which loss caused by an overcharge has been avoided as a result of downstream pass on.
70. The requirement of 'a direct and proximate causative link' is derived from the decision of the Competition Appeal Tribunal in *Royal Mail Group Ltd v DAF Trucks Ltd* [2023] CAT 6, [2023] CMLR 6:

‘228. By way of summary on the legal test for causation in relation to a pass-on form of mitigation defence, we respectfully conclude that DAF must prove a direct and proximate causative link between the Overcharge and any increase in prices by the Claimants. It is not enough for DAF to say that all costs, including increases in costs, are fed into the Claimants’ or their regulators’ business planning and budgetary processes. There must be something more specific than that ...’

71. The CAT went on to identify ‘a number of potentially relevant factors’, expressly said to be non-exhaustive, on which a defendant might rely. These were:

‘(1) Knowledge of the Overcharge or the specific increase in the cost in question;

(2) The relative size of the Overcharge against the Claimants’ overall costs and revenue;

(3) The relationship or association between what the Overcharge is incurred on and the product whose prices have been increased; and/or

(4) Whether there are identifiable claims by identifiable purchasers from the Claimants in respect of losses caused by the Overcharge.’

72. It is important to understand the context. The complaint was that suppliers of trucks had unlawfully inflated the price of their products and the issue was whether the overcharge suffered by the claimant, Royal Mail Group, had been passed on to its customers. This was said to have occurred in different ways. The first was that Royal Mail had sold used trucks (i.e. the very same product supplied by DAF) at a higher price than they would have done without the overcharge. This was referred to as ‘Resale Pass-On’. The CAT accepted that ‘the legal test for causation can be satisfied ... by the very close association between the products in question – new and used trucks – and the Overcharge having a direct effect on the trucks market’ (para 225). In other words, if the prices charged by the cartelists had caused a market-wide increase in the prices of trucks, both new and second-hand, above what they would otherwise have been, and Royal Mail had sold second-hand trucks originally supplied by DAF at market prices, they would have avoided their loss by downstream pass on and the requirement for a direct and proximate loss would be satisfied – without the need for an elaborate economic analysis.

73. DAF also had a more ambitious case which was referred to as ‘Supply Pass-On’. This was that the overcharge in the cost of trucks to Royal Mail had been passed on in the sale of products sold by Royal Mail, such as postage stamps. The CAT noted at paragraph 572 that there was no direct association between truck costs and the products sold by Royal Mail and that it would be impossible to identify which prices in relation to which specific products actually increased because of the overcharge. In that context it held at paragraph 573 that ‘the legal test for causation which requires the Overcharge to be a direct and proximate cause of the increase in specific prices’ was not satisfied: ‘the Overcharge was too remote from the downstream prices’.

74. There was no challenge on appeal to the CAT's approach to Resale Pass-On, but its approach to Supply Pass-On was challenged (*Royal Mail Group Ltd v DAF Trucks Ltd* [2024] EWCA Civ 181). Sir Julian Flaux C summarised succinctly the distinction between factual and legal causation:

'150. ... Factual causation involves consideration of whether the effect of the mitigating conduct was in fact to reduce or eliminate the claimant's loss, whereas legal causation concerns whether, even if the effect of the mitigating conduct was in fact to reduce or eliminate the claimant's loss, as a matter of legal policy, it should serve to reduce or eliminate the damages payable by the defendant to the claimant.'

75. The requirement of a direct and proximate causative link was an aspect of factual causation:

'151. In terms of factual causation, DAF could only succeed in its argument on SPO [Supply Pass On] if it could establish that the prices charged by Royal Mail and BT to their customers were higher because of the overcharge, in other words if it could establish (and the burden of proof is on DAF) that the overcharge had been passed on to those customers. The CAT was unanimous as to this requirement at [223] of its judgment where it said: "we consider that DAF must prove that there was a direct and proximate causative link between the Overcharge and any increase in prices by the Claimants. That means that there must be something more than reliance on the usual planning and budgetary process, into which the Overcharge was input and at some point prices increased." I agree with Mr Ward KC that the CAT was applying the correct legal test, as recently restated by this Court in *Stellantis* (as cited at [23] above).'

76. This court also made clear that the four factors identified by the CAT are not necessarily decisive. They are factual indicators, not legal requirements. Even where none of them is present, it remains a question of fact whether the requirement of a direct and proximate causative link has been proved:

'154. The CAT concluded that none of the four factors was present in this case, a conclusion which was not challenged on appeal. However, as set out at [85] above, Mr Beard KC did submit that the majority had been wrong to conclude at [573] that: "we think that in a situation where none [of the four factors] are present, the evidence of factual causation needs to be that much stronger so that the requisite proximity can be established." In my judgment, that submission is misconceived. In circumstances where none of the four factors which might establish the requisite degree of proximity to establish a direct causative link between the Overcharge and the prices charged by the Claimants is present, it is both logical and common sense to conclude that there would need to be some other evidence of factual causation to establish that requisite degree of proximity.

Far from that majority conclusion being confused and incorrect as Mr Beard KC submitted, its analysis is clear and correct, disclosing no identifiable error of law.’

77. The CAT has subsequently confirmed that the four factors identified in *Royal Mail* are not determinative or exhaustive and that it remains a question of fact, on the evidence as a whole, whether downstream pass on has been proved: *Stellantis Auto SAS v Autoliv AB* [2025] CAT 9, paras 251 and 252.
78. Drawing the threads together so far as relevant for the purpose of this appeal, the legal test for factual causation in the context of an issue about downstream pass on is whether there is a direct and proximate causative link between the overcharge suffered by the claimant and the prices charged by the claimant to its downstream customers. In other words, it is necessary to focus on why a claimant’s prices to its customers are as they are. A defendant must prove that those prices are higher than they would otherwise have been and that this is (in whole or in part) because of the overcharge which the claimant has incurred. If that is proved on the balance of probabilities, the loss will to that extent have been avoided and the defence of downstream pass on will to that extent have been made good. The necessary direct and proximate causative link will have been established.
79. In a case where the cartelists’ unlawful conduct causes an increase in the market price of the products in question and the products sold by the claimant to its customers are the same products or are products equally affected by the increase in that market price, proof of factual causation will be relatively straightforward, at least in principle. But if it can be proved, the legal burden being on the defendant, there is no policy reason to prevent effect being given to the defence of downstream pass on as a matter of legal causation. In contrast, if the products sold by the claimant are materially different from those which are subject to the overcharge, particularly if the claimant is unaware of the overcharge, factual causation will be much harder for a defendant to prove. There will need to be evidence that the prices of the claimant’s products were in fact higher as a result of the overcharge which may, as in the postage stamps example, be extremely difficult to prove. However, the issue remains one of evidence and proof, rather than legal policy, so that if the necessary factual link can be proved, there is no policy reason to exclude the defence.
80. If the factual scenarios which may arise represent a spectrum, with second-hand trucks at or close to one end and postage stamps at the other end, the LCD panels with which the present case is concerned are closer to the trucks end of the spectrum. The product sold by the claimants included the same screens as were sold by the defendants, albeit as an individual component of a larger package comprising notebooks and desktop computers, as well as a small number of TVs. As the judge put it:

‘194. In relation to the second of these points (the role of LCDs as inputs to downstream production) Mr Parker makes two points, each of which he maintains support the proposition of a high degree of downstream pass on. Both are based on the proposition that as a matter of economic theory, pass on is more likely to occur where a cartel affects the variable costs of those who are being supplied with the cartelised product, because variable costs directly influence (or are at least likely to

influence) short term pricing decisions. This is significant in this case because LCD panels are a key component for producing LCD monitors and notebooks and the cost of LCD monitors and notebooks is a variable cost in the claimants' business of producing and/or selling to end users desktop "bundles" – that is a computer, monitor and peripherals such as a keyboard and mouse – and notebooks. Mr Parker's evidence is that this is all the more significant in the downstream market in this case because variable cost contribution of the LCD element was substantial as a proportion of the total cost of the units being sold. Mr Parker's conclusion derived from this factor was that "...the nature of the increases in cost to LCD monitor manufacturers and to downstream PC retailers caused by an Overcharge for LCD Panels – being both substantial and impacting variable costs – increases the likelihood of high pass-on of any Overcharge by Granville downstream..."

The judgment

81. The judge noted that in view of the passage of time, documentary evidence to show whether the overcharge had been passed on to the claimants' customers was limited. In those circumstances he accepted at paragraph 181 the defendants' submission that 'it is in principle open to them to attempt to discharge the burden that rests on them by resort to expert evidence based on economic reasoning, coupled with evidence of internal policies and approaches subject only to the point that if such evidence is to satisfy me that the defendants have discharged the burden that rests upon them it must be shown to provide a sound evidential foundation for the conclusion that the legal burden that rests on the defendant has been discharged'.
82. The judge was careful, however, not to draw inferences in favour of the defendants from the absence of documentary evidence or of witnesses able to speak about the position in the relevant period (para 188). This approach struck an appropriate balance. On the one hand, it would have been wrong to draw an inference that the claimants had chosen not to call evidence because they were concerned that the evidence would not assist them. On the other hand, it remained the case that the claimants bore an evidential burden to explain their pricing strategies.
83. For the defendants Mr Parker gave evidence that there was 100% downstream pass on, but initially Dr Van der Laan did not address the issue, having been instructed not to do so on the basis that it was a factual question. Subsequently, however, he did address the issue, criticising Mr Parker's evidence but (as he accepted in cross examination) not providing an alternative analysis himself.
84. The judge analysed in detail the factors relied on by Mr Parker for his conclusion, including the duration of the infringement, the role of LCD panels as inputs to downstream production and the intensity of competition in the UK personal computer market. He considered the extent to which Mr Parker's theoretical analysis was supported by the limited documentary material disclosed by the claimants. Against this, he referred to the evidence of the claimants' accountancy expert, Mr Augustin, whose evidence was that Granville had adopted a strategy of psychological pricing (e.g. pricing a product at say £599 rather than £601), which the judge accepted had been used

extensively and in the majority of cases although not exclusively, and which the claimants relied on as showing that they had not fixed prices on a cost plus basis (i.e., by calculating the cost price of a product/product package and then adding a pre-determined margin to it). The judge did not wholly accept this point, as it could be the case that the claimants had adopted a cost plus basis, and then adjusted their margin downwards in order to arrive at a psychological pricing point; alternatively they could have fixed a selling price and then adjusted the content of the package being sold to achieve a particular margin. He concluded that the pricing strategy adopted by Granville in a competitive consumer market was to offer PC and notebook packages at similar prices to competitors, but to offer a better specification at that price.

85. Three other factors were relied on by Mr Augustin as casting doubt on the existence of downstream pass on. The first concerned extended warranties which were regarded as highly profitable because 70% of warranty claims were made within the first 12 months of purchase during which Granville was still covered by the manufacturer's warranty, so that the price of the warranty was very largely profit. He suggested that the sale of extended warranties would enable Granville to tolerate a loss on the hardware being sold and would therefore operate as an incentive not to pass on price increases. The second factor was the existence of promotions at particular points in the year involving price reductions or the addition of free peripheral products. The third was that LCD panels represented only something between 9% and 20% of the price of computer packages sold by the claimants, which was said to render it less likely that a cost increase would be passed on.
86. The judge considered and weighed all these factors at some length, referring not only to the evidence of economic theory but also to the limited documentary evidence which was available. Having done so, he rejected at paragraph 225 the defendants' case (and Mr Parker's evidence) that the claimants were likely to have passed on 100% of any variable cost increase. He then said that:
- '226. Given the nature of the evidence relevant to the downstream pass on issue (and the conclusions I have reached so far), I consider that the approach summarised in paragraph 28 above is one that I must apply to the downstream pass on issue in the circumstances of this case. Had this claim involved companies currently trading, I would have expected much more relevant material to have been available supported by relevant oral evidence from officers and managers (or retired officers and managers) as to how sector wide variable market wide costs increases were managed. As is apparent from what I said above, there is no such evidence.'
87. Applying this approach, and reminding himself that the onus was on the defendants, the judge was satisfied that the claimants would have sought to pass on any cost increases wherever possible in order to avoid a loss of margin in a highly competitive market in circumstances where, as a result of the defendants' economic power, the overcharge was experienced across the whole market in which they traded. However, while the factors identified pointed to the probability of a high level of pass on, they did not necessarily mean that any pass on would have been 100%; nor did they point to any particular level of pass on.

88. After considering further the various factors relied on by the claimants, the judge rejected as ‘entirely unreal’ their case that there was no pass on which had been proved. Similarly, it was equally unreal to say that there was 100% pass on:

‘243. This leads me back to the approach to be adopted in assessing damages in follow on infringement cases. The evidence available satisfies me first that as a matter of economic theory it is more probable than not that the claimants would have passed on at least some of any market wide variable cost shock. Further, the evidence summarised in this section of the judgment satisfies me that it is more likely than not that the probable level of pass on would be between 50% and 100%. This leads me to conclude that I should reject the claimants’ case that the defendants have failed to prove any pass on and that I should therefore conclude that there was 0% pass on. That is with respect entirely unreal.

244. By the same token I reject the notion that I should conclude that pass on was 100%. That is equally unreal in the circumstances of this case for the reasons that I have summarised above including because pass on was less likely in relation to products where the starting margin was higher, it is likely that any pass on would be delayed or staggered over a short period either to allow a “while stocks last” campaign or to await the launch of a new or replacement product (which appears to have happened frequently and which would limit the effect of Add On sales of items such as extended warranties) and/or because of the incidence of psychological pricing policies. However, it is probable that when viewed as a whole the claimants’ consumer retail business was a low margin business that was undoubtedly operating in a highly competitive market. In my judgment therefore it is improbable that industry wide cost increases could be ignored or action delayed for long. All this leads me to conclude that across the claimants’ retail consumer businesses it was probable that industry wide variable cost increases would be passed on at a level of somewhere between 50% and 100%.’

89. Wielding the broad axe, the judge stated his final conclusion on this issue as follows:

‘246. As I have set out in paragraph 28 above, the assessment of damages in competition infringement cases is likely to involve estimation and approximation to arrive at an appropriate figure within the bounds of uncertainty established by the evidence. It involves the application of a broad brush or a broad axe depending on what element in the assessment is being examined. As always there are two factors in play – the need on the one hand to ensure that a claimant is compensated for infringement of its or their rights but to err on the side of under compensation where there is uncertainty in order to avoid the claimant recovering more by way of damages than it would be entitled to applying conventional principles.

247. The degree of uncertainty depends on the evidence available. In relation to the issue I am now considering this has allowed the narrowing of the range of uncertainty concerning downstream pass on to that mentioned above – that is between 50-100%. In my judgment, applying the principles summarised in paragraph 28 above, taking account of the whole of the expert and other evidence relevant to this issue, that pass on by the claimants is likely to have altered over time and applied in different ways in relation to different products and balancing the need to ensure the claimants are properly compensated against the requirement to exercise caution where there is uncertainty leads me to conclude that I should assess pass on at a blended rate of 65%.’

The claimants’ submissions

90. For the claimants Mr Raphael submitted that the judge was in error in finding that any downstream pass on was proven, as the legal test was not satisfied. Specifically, he submitted that the judge failed to apply the legal test of a ‘direct and proximate causative link’ between the overcharge and increased prices to the claimants’ customers. He submitted that if the test had been properly applied, there could have been no finding of downstream pass on.
91. In this regard Mr Raphael relied on the following matters. First, he submitted that an analysis of the claimants’ pricing showed that they did not make pricing decisions on a cost plus basis and that there were widely differing margins for PC packages sold to their customers with no consistent approach. Second, he submitted that the judge had accepted that the overcharge could not be traced through to price increases by the claimants. Third, he relied on four specific factors as negating any direct and proximate link, namely that: (i) pricing was not on a costs plus basis; (ii) pricing was at psychologically attractive price points in the majority of cases; (iii) pricing was significantly impacted by the financial incentive to obtain sales of extended warranties; and (iv) the PC packages were assembled from numerous different components. More generally, Mr Raphael submitted that the judge’s reasoning was based on economic theory alone, rather than concrete factual evidence.

Did the judge apply the wrong test?

92. It is true that the judge did not refer in his judgment to the need for ‘a direct and proximate causative link’ to be established between the overcharge and the prices charged to the claimants’ customers. It might have been better if he had done so. However, the need for such a link to be established by a defendant was common ground between the parties at the trial. It was expressly accepted by the defendants and the relevant case law was cited to the judge. In these circumstances, it is to be expected that this was the test which the judge applied, unless there is something in the judgment to suggest otherwise. In my judgment there is not. It is clear, including from the passages which I have set out, that although he did not use the language of ‘direct and proximate causative link’, the judge’s whole enquiry was whether the prices charged by the claimants were higher than they would otherwise have been as a result of the overcharge and whether this was because of the overcharge. In a case such as the present, where the products sold by the defendants were essentially the same products as sold by the

claimants, albeit incorporated into larger packages, an affirmative answer to those questions would itself establish the necessary link.

93. Accordingly, the real issue is whether the conclusion which the judge reached, that there was an element of downstream pass on in the claimants' pricing, was open to him on the evidence. As explained at paragraph 24 above in relation to the assessment of the amount of the overcharge, the approach to be taken to this issue by an appellate court is to determine whether a judge's findings are plainly wrong, in the sense that they based upon an identifiable error or are findings which no reasonable judge could have reached.
94. In my judgment there is no such error and the judge's conclusion that there was at least some downstream pass on was open to him. Undoubtedly this was a case in which the factual evidence available to the judge was limited, which is not surprising in a case where the claimants had been in administration and then liquidation for about 20 years by the time the case came to trial. That meant that much of the claimants' documentation which might have been available was no longer in existence, while there was no witness available (or at any rate none was called) who was able to speak with first-hand knowledge about the claimants' pricing strategies and the reasons for particular price increases. In that context it is to be borne in mind that although the legal burden was upon the defendants, there was a 'heavy evidential burden' on the claimants to provide evidence about these matters (*Sainsbury's Supermarkets*, paras 211 to 216).
95. In those circumstances the judge had to do the best he could with such documentary material as had survived, together with expert evidence as to the circumstances prevailing in the market and their likely impact on the claimants' approach to pricing. In my view this provided a sufficient factual foundation for the conclusions which the judge reached – after, I note, a trial lasting 11 days. The judge was entitled in this respect to give such weight as he thought appropriate to the expert evidence (*Sainsbury's Supermarkets*, para 178). That evidence was not merely 'broad economic theory' at a high level of abstraction, but was concerned with the particular features of the market in which the claimants operated and the functioning of their specific business.
96. It is apparent from the judgment that the judge grappled carefully with each of the matters on which Mr Raphael relies. For example, he considered in some detail such matters as the extent to which the claimants' pricing was on a costs plus basis, their use of psychologically attractive price points, the impact of the profits obtained on the sale of extended warranties, the fact that LCD screens formed only one part of the PC packages sold by the claimants which were assembled from numerous different components, and the limited size of the overcharge which nevertheless would be significant in a business where margins were tight. The fact that the judge disagreed with the claimants' submissions that these matters indicated that there was no downstream pass on is not to the point.
97. It is apparent also that the judge was faced with a situation where both parties were adopting an all or nothing position. The defendants, with the support of Mr Parker's evidence, were asserting that there had been 100% downstream pass on, so that the claimants' loss was entirely avoided. The judge rejected that extreme, recognising the force in the matters on which the claimants relied. The claimants, in contrast, were asserting (as they still do) that there had been no downstream pass on at all and that they had absorbed all of the overcharge without passing any of it on to their customers.

That assertion, however, was made without the support of any witness evidence, whether factual or expert. Even the claimants' experts did not contend that there would in fact have been zero downstream pass on in the circumstances of this case. Dr Van der Laan accepted expressly this was not what he was saying.

98. In these circumstances it is not surprising that the judge rejected both of the extreme positions adopted by the parties. In my judgment he was entitled to do so, drawing reasonable inferences from the available information and the expert evidence, and considering the inherent probabilities in the situation in which the claimants were placed. His conclusion that there had been some downstream pass on appears to me to accord with the common sense of that situation. He was entitled to characterise as unreal the contention that none of the overcharge had been passed on to customers.

Did the judge err on the side of avoiding over-compensation?

99. Once it is concluded that the judge was entitled to find that there was some element of downstream pass on in the claimants' pricing, the final question is whether the judge's assessment that this occurred at what he described as 'a blended rate of 65%' involved erring on the side of avoiding over-compensation. I set out again the paragraphs in which he arrived at this conclusion, with added emphasis:

'246. As I have set out in paragraph 28 above, the assessment of damages in competition infringement cases is likely to involve estimation and approximation to arrive at an appropriate figure within the bounds of uncertainty established by the evidence. It involves the application of a broad brush or a broad axe depending on what element in the assessment is being examined. As always there are two factors in play – the need on the one hand to ensure that a claimant is compensated for infringement of its or their rights but *to err on the side of under compensation where there is uncertainty in order to avoid the claimant recovering more by way of damages than it would be entitled to applying conventional principles.*

247. The degree of uncertainty depends on the evidence available. In relation to the issue I am now considering this has allowed the narrowing of the range of uncertainty concerning downstream pass on to that mentioned above – that is between 50-100%. In my judgment, applying the principles summarised in paragraph 28 above, taking account of the whole of the expert and other evidence relevant to this issue, that pass on by the claimants is likely to have altered over time and applied in different ways in relation to different products and balancing the need to ensure the claimants are properly compensated against the requirement to exercise caution where there is uncertainty leads me to conclude that I should assess pass on at a blended rate of 65%.'

100. It can be seen that the judge regarded the evidence as enabling him to conclude that the level of downstream pass on was somewhere between 50% and 100%, but that it did not enable him to be more precise. This was a wide range of uncertainty, no doubt

because of the limitations of the evidence to which the judge referred. It might in those circumstances have been expected that he would apply a rate of downstream pass on somewhere in the middle of the range (para 22 above), but in fact the figure of 65% which he adopted was more favourable to the claimants. The judge did not spell this out, but it seems to me to be likely that his decision to take a figure which was more favourable to the claimants than the mid-point of the range of uncertainty is explained by his recognition that although the factors relied on by the claimants (psychological pricing, extended warranties, etc) did not justify the conclusion for which the claimants contended, i.e. that there had been no downstream pass on at all, they did nevertheless have considerable force and needed to be factored in to the overall figure.

101. That was in my judgment a reasonable conclusion, which the defendants have not challenged. In effect, just as it was ‘unreal’ to think that there was 100% downstream pass on, it was also unreal to think that the level of pass on was close to 100%. Although the judge said that the level of pass on was somewhere between 50% and 100%, it is apparent from the judgment as a whole that the ‘real’ or realistic level of pass on was somewhere between 50% and a figure falling somewhat short of 100%.
102. However, the judge also stated, in the words which I have emphasised in his paragraph 246, that it was necessary ‘to err on the side of under-compensation where there is uncertainty’. There was here very considerable uncertainty, as the evidence did not enable the judge to say more than that the level of downstream pass on was somewhere in a wide range. In my judgment the text of the judgment is unequivocal in stating that in such circumstances the judge had erred on the side of under-compensation, and again we must proceed on the basis that this is what he did. As in the case of his assessment of the amount of the overcharge, we are faced with a situation where the body of the judgment says in terms that he adopted this approach, while the judge’s footnote to paragraph 28 (para 19 above) says that he did not. In those circumstances, I consider that we must treat the judgment as setting out the process of reasoning by which the judge arrived at his figure, rather than the footnote.
103. This leaves us in the uncomfortable position where we must wield the broad axe for ourselves, without knowing what the judge would have concluded if he had not adopted this approach, and therefore with no real guidance as to where the axe should land. Recognising that this is the least bad course, I would assess the level of downstream pass on at 60%.

Disposal

104. For these reasons I would allow the appeal to the limited extent of varying the judge’s assessment of the overcharge and downstream pass on figures. Instead of the figures used by the judge, the claimants’ damages should be assessed on the basis that the overcharge was 10% for monitors, 6% for notebooks and 16% for TVs; and that 60% of the overcharge was passed on to the claimants’ customers.
105. At this point it is necessary to mention the loss of profits claim (para 13 above), which did not otherwise feature in the appeal. Part of the damages awarded by the judge were for loss of profits, calculated on the basis that the level of downstream pass on was 65% as found by the judge. The case theory for this claim was that to the extent that the overcharge was passed on by the claimants to their downstream customers, the increased prices would have resulted in some loss of sales and therefore lost profits for

which the claimants were entitled to recover damages. The claimants accepted that if they succeeded in whole or in part on the downstream pass on issue, that would mean that there would have been a lesser impact on their sales, so that their damages for loss of profits would need to be reduced.

106. The parties expressed confidence at the hearing that, if we were to conclude that the figures needed to be adjusted in the way which I have indicated, it would be straightforward to make the necessary calculation of the damages to be recovered.

LORD JUSTICE SNOWDEN:

107. I agree.

LADY JUSTICE COCKERILL:

108. I also agree.