Neutral Citation Number: [2024] EWHC 13 (Comm)

Case No: CL-2016-000758

IN THE HIGH COURT OF JUSTICE
BUSINESS AND PROPERTY COURTS OF ENGLAND AND WALES
COMMERCIAL COURT (KBD)

Royal Courts of Justice, Rolls Building
Fetter Lane, London, EC4A 1NL

Date: 08/02/2024

Before :

HIS HONOUR JUDGE PELLING KC
SITTING AS A JUDGE OF THE HIGH COURT

- -

Between :

(1) GRANVILLE TECHNOLOGY GROUP LIMITED (IN LIQUIDATION)
(2) VMT LIMITED (IN LIQUIDATION)
(3) OT COMPUTERS LIMITED (IN LIQUIDATION)

Claimants

- and –

~~(1) INNOLUX CORPORATION~~
(2) CHUNGHWA PICTURE TUBES LTD
(3) LG DISPLAY CO. LTD
(4) LG DISPLAY TAIWAN CO LTD
~~(5) SAMSUNG ELECTRONICS CO. LIMITED~~
~~(6) SAMSUNG ELECTRONICS TAIWAN CO LTD~~

Defendants

- -

Thomas Raphael KC and **Stefan Kuppen** (instructed by **Osborne Clarke LLP**) for the **Claimants**
The Second Defendant did not appear and was not represented.
Hanif Mussa KC and **Sarah O'Keeffe** (instructed by **Cleary Gottlieb Steen & Hamilton LLP**) for the **Third and Fourth Defendants**

Hearing dates: 26, 30 and 31 October, 1, 2, 6, 7, 8, 9, 15 and 16 November 2023

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Approved Judgment

This judgment was handed down remotely at 10.30am on 8 February 2024 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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Introduction

The Claim

1. This is the trial of a "follow on" claim for damages for losses allegedly caused by the infringement by the second, third and fourth defendants (amongst others) of the prohibition imposed by Article 101 of the Treaty on the Functioning of the European Union ("TFEU") and Article 53 of the Agreement on the European Economic Area ("AEEA") by their participation in a price fixing cartel that I describe in more detail below. Such claims are characterised in English law as tortious claims for breach of statutory duty – see Garden Cottage Foods Ltd v Milk Marketing Board [1984] A.C. 130 per Lord Diplock at page 141E and Cooper Tire & Rubber Company Europe Ltd v Dow Deutschland Inc [2010] EWCA Civ 864 per Longmore LJ at paragraph 17.

2. TFEU, Article 101 prohibits:

> "… all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market, and in particular those which:
>
> (a) directly or indirectly fix purchase or selling prices or any other trading conditions;
>
> (b) limit or control production, markets, technical development, or investment;
>
> (c) share markets or sources of supply;
>
> (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;
>
> (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts"

AEEA, Article 53 is in similar terms to TFEU, Article 101.

3. The claim arises out of a cartel, that was found by the EU Commission ("Commission") to have existed between 5 October 2001 and 1 February 2006 ("Relevant Period") in the world-wide market for thin film transistor-liquid crystal display ("LCD") panels ("LCD panels") for personal computer ("PC") monitor ("monitor"), notebook PC ("notebook") and television receiver ("TV") applications. LCD panels consist of a lower glass plate (a thin-film transistor or "TFT"), an upper glass plate (colour filter formation) and an injected liquid crystal between the two glass plates, which is placed

in front of a light source to serve as a screen on electronic devices including monitors, notebooks and TVs.

4. 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) ("Decision"). The subject matter of the Decision and these proceedings is concerned exclusively with the use of LCD panels in the manufacture of monitors, notebooks and TVs. In summary, the Commission found that all the defendants were participants in the cartel throughout the Relevant Period. The Commission found that the participants including the defendants gave effect to the cartel 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. By reason of these conclusions, the Commission decided that various undertakings, including the second to fourth defendants, had infringed Article 101 and Article 53 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 application*" – see Article 1 of the Decision. It is a measure of the seriousness of the findings made (to which I refer in more detail below) that the Commission fined the second defendant €9,025,000 and the third and fourth defendants €215,000,000.

The Parties

5. At all material times the claimants were English registered companies carrying on business in England and Wales in the manufacture and/or sale primarily of desk top PCs sold with monitors and notebooks. They sold their products primarily to retail end user customers but some products were sold commercially to business and educational end users. At all material times 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 that incorporated screens manufactured using LCD panels.

6. Granville and the second claimant ("VMT") are part of the same group. Granville sold its products using the brand "*Time*" and later "*Tiny*". It sold its products directly to end users either from its own shops or online. VMT assembled and repaired products for Granville. The third defendant ("OTC") also traded using the "*Tiny*" brand but 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 down stream from the defendants. This can create an added layer of evidential difficulty for claims such as this which however does not arise in this case because it is common ground that all suppliers upstream of the claimants passed on the whole of all price increases to their customers, including the claimants. A number of the claimants' upstream suppliers were located in jurisdictions other than England and Wales or the EEA or sourced LCD screens from such suppliers. This factor is relied on by the defendants for the purpose of contending that any claim in respect of such products is governed by laws other than that of England and Wales and must fail because no

attempt has been made by the claimants to prove such laws and/or on the basis that claims based on such sales falls outwith the territorial scope of EU law and therefore of a claim for damages for breach of statutory duty. I return to these issues later in this judgment.

7. The claimants allege 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 ("Overcharge"); (b) they claim to be entitled to recover the Overcharge as damages for breach of statutory duty; (c) to the extent that the Overcharge was passed on by them to their downstream customers and so not suffered by them as a loss, it resulted or is to be inferred to have resulted in reduced sales and therefore caused them to suffer lost profits ("Loss of Profits") for which they also claim to be entitled to recover damages and (d) they are entitled to recover interest including compound interest on the Overcharge and on any damages to compensate them for lost sales.

8. It is not disputed that VMT passed on 100% of any Overcharge it suffered to Granville. The defendants maintain that both Granville and OTC passed on the whole of the Overcharge to its retail customers and on this basis deny that they have suffered any loss by reason of the imposition of an Overcharge. They also deny that the claimants have proved the alleged or any Loss of Profits.

9. Each of the claimants is in liquidation and has been for many years. Granville entered administration on 27 July 2005 and liquidation on 15 January 2007; VMT entered administration on 5 August 2005 and liquidation on 15 January 2007 and OTC entered into administration in England on 29 January 2002 and liquidation on 5 February 2004. In each case the claimants ceased trading when they entered administration. Each entered administration before the Cartel came to an end and in each case the administration was brought to an end by liquidation before the Commission commenced its investigations. This is material to the limitation issue to which I refer in more detail later in this judgment. Damages are sought by each only for the part of the Relevant Period during which they traded. The liquidations continue and any recoveries in these proceedings will be available for distribution to creditors as part of the liquidation process in the usual way.

10. The second, third and fourth defendants were at all material times manufacturers of LCD panels.

11. The second defendant is described in Recital 2.2.5.30 of the Decision as being registered in Taiwan and as being " … *the ultimate parent company of a group of companies established and operating world-wide, which manufactured and sold, inter alia, LCD*…" panels. Summary judgment for damages to be assessed was obtained by the claimants against the second defendant by judgment of Butcher J of 14 January 2022 - see his judgment reported at [2022] EWHC 312 (Comm). It has taken no active steps in these proceedings since October 2020 and is thought by the claimants and third and fourth defendants to be in liquidation. It did not appear and was not represented at the trial.

12. The third defendant is described in Recital 2.2.2.13 of the Decision as having its registered office in Seoul, South Korea and as being " … *the parent company of a group*

of companies established and operating world-wide, which manufactured and sold, inter alia, LCD panels.".

13. The fourth defendant is a wholly owned subsidiary of the third defendant that is described in Recital 2.2.2.14 of the Decision as being at all material times " … *active in manufacturing and/or supplying in the LCD* …" market. Where I refer to the "defendants" below, I am referring to the third and fourth defendants collectively. Where it is necessary to refer to the second defendant I refer to it as such.

The Decision and its effect in these Proceedings

14. The Decision consists of the operative part, which is Article 1 and following, from which I have quoted earlier, and a large number of Recitals that precede the operative part of the Decision. It is common ground that the operative parts of the Decision are binding on the High Court.

15. The claimants also rely on the contents of a number of the Recitals in the Decision as evidence in support of their claim. The High Court is bound by those findings set out in the Decision's Recitals that formed an essential basis or provided the necessary support for the determinations in the operative part of the Decision, or are necessary to understand the scope of the operative part (which includes not only the finding of infringement but also the imposition of fines) – see Royal Mail Group Ltd V Daf Trucks Ltd and Others (Re Truck Cartel) [2020] C.A.T. 7; [2020] 5 C.M.L.R. 15. As the CAT observed, " ... *it is important to keep in mind throughout that the question being addressed is what in the recitals is necessary to interpret the above determinations in the operative part or provides an essential basis or necessary support for these elements, such that a contradictory finding by the tribunal would be inconsistent with those determinations as so interpreted. In some respects, that question falls to be answered by reading several recitals together and they do not always have to be read literally* …"

16. Applying those principles, in my judgment at least the following Recitals (the effect of which I summarise below) and those others that I refer to elsewhere in this judgment were necessary to interpret the operative determinations in the Decision as to the nature scope and extent of the infringement and the fines imposed or provide the essential basis or necessary support for those determinations:

    i) Recital 43, where the Commission found that the addressees of the Decision had a joint share in the world-wide sales of large size LCD panels of 69. 6 - 79 .2% during the period of the infringement;

    ii) Recital 48, where the Commission found that the LCD suppliers and major customers were global actors and LCD panels they produced were sold world-wide at prices set on a world-wide basis;

    iii) Recital 70, where the Commission found that the parties to the infringement engaged in bilateral and multilateral meetings and other contacts in relation to LCD panels for monitor and notebook ("IT") and TV applications from 5 October 2001 until at least 1 February 2006;

iv) Recital 72, where the Commission found that the participants engaged in anti-competitive practices included price fixing in the form of agreements on future prices, price ranges and minimum prices, on pricing and commercial matters for specific accounts, on future production planning and future capacity utilisation, exchange of information on pricing and other commercial aspects including sales volumes or capacity plans, as well as exchange of price information and price coordination for customers focused on GAMs (global accounts); and that application of those practices took place at world-wide and at EEA level, directly or indirectly, and was not restricted to specific geographic areas or shipment destinations;

v) Recital 73, where the Commission found the interaction amongst suppliers covered IT and TV applications of LCD and involved high, middle and lower levels of personnel. Their interaction was found to be regular: between October 2001 and February 2006, meetings were found to have taken place once or twice a month not only in order to enter into anti-competitive practices in the future but also, as is shown by their regularity and the reporting of data of the previous month, in order to ensure compliance with the arrangements previously entered into;

vi) Recitals 74-82, where the Commission found that the Cartel involved secret, continuous contact and coordination through regular bilateral and multilateral meetings (known as “Crystal Meetings”) and other contacts at all levels of the corporate hierarchy;

vii) Recital 82, where the Commission found the reasoning behind or that led to the cartel was that there had been an oversupply situation in the LCD industry throughout 2001, due to the large number of new factories that had been built in Taiwan. This situation led to a high degree of instability in the market that the cartel was intended to correct or moderate;

viii) Recital 83, where the Commission found that the defendants regularly attended multilateral meetings throughout the Relevant Period;

ix) Recitals 86 and 90-93, where the Commission found that the purpose of the Crystal meetings was to share information on price and shipment volume for the current and coming month and to agree future behaviour concerning pricing, production and capacity utilisation, notwithstanding the effect of the arrangements would or might have on down stream markets;

x) Recitals 94-96, where the Commission found that (a) the cartel applied to sales world wide but participants were aware of and sought effects in the European market (see Recital 94); (b) was known by the participants to be illegal (see Recital 95) and (c) those involved monitored each other’s pricing in order to maintain the effectiveness of the cartel (see Recital 96);

xi) Recital 98, where the Commission found that the objective of the anti-competitive arrangements was to increase and maintain prices of the LCD panels for IT and TV applications both directly by agreeing and entering into price fixing and indirectly by adopting a common understanding of the future strategy on the parameters which determine prices such as production, capacity, shipments and demand. There was regular, monthly, checking of the price, production volume, capacities and other parameters. The establishment of a common basis for future prices allowed the suppliers to verify compliance at the following monthly meeting when participants were required to update their current month's prices; and

xii) Recital 235, where the Commission found that the agreements by which the participants gave effect to the cartel related to the world-wide sales of the LCD panels, without geographical limitations, affecting prices globally with no limitations applied by the parties on panel types and sizes in general.

Framework Principles Applicable to Competition Law Infringement Claims

17. In English law, as I said at the outset, competition law infringement claims proceed as tortious claims for breach of statutory duty. In order to establish a competition law claim, a claimant must prove (i) an infringement of competition law and (ii) actionable loss caused by that infringement for which compensatory damages can be awarded.

18. A claimant alleging a competition law infringement can bring a claim before the English courts either as a 'standalone' claim (in which case it must establish both the breach of competition law alleged and the loss which it alleges was caused thereby); or (as in this case) as a 'follow-on' claim, where the claimants rely on the findings of the relevant competition authority (in this case the Commission) to establish breach. The "follow on" option is available because in law the High Court is bound by infringement decisions of the Commission, such as the Decision. However the claimant in a follow on claim must prove the loss it alleges it has been caused by the infringement relied on – see <u>Cooper Tire Europe Limited</u> (ibid.) by Longmore LJ at [2].

19. In those circumstances, the defendants cannot deny the existence of the cartel or their participation in it see <u>Cooper Tire Europe Limited</u> (ibid.) by Longmore LJ at [2]. In my judgment they also cannot deny that the scope and effect of the cartel was as described in the Recitals referred to above because to do so would be to impermissibly contradict the reviewable findings of the Commission – see <u>Royal Mail Group Ltd V Daf Trucks Ltd and Others (Re Truck Cartel)</u> (ibid.) and Article 16(1) of Regulation 1/2003, which precludes national courts from ruling on agreements, decisions or practices which were already the subject of a Commission decision under TFEU, Art.101 in a way that runs counter to the decision adopted by the Commission.

20. The conclusions of the Commission as to the nature and extent of the defendants' infringing activity and its blatancy are apparent from its findings and the fines that it imposed. As the CAT observed in <u>Royal Mail Group Ltd V Daf Trucks Ltd and Others (Re Truck Cartel)</u> (ibid.) at paragraph 268, *"…(a)n "object" infringement is deemed to be so likely to have had anti-competitive effects that it can be declared unlawful without actually examining or proving such effects …*" and that the accepted legal position is that there is " *… a high probability that cartel conduct which meets the criteria for an "object" infringement had adverse effects*." In fact the Commission went further in the Decision and concluded that the agreements and practices constituting the cartel's activities in this case had both " … *the <u>object and effect</u> of restricting competition in the Union and the EEA*."[Emphasis supplied]. However, that of itself says nothing about the amount of loss caused to the claimants as a result of that activity.

The Decision does not contain any findings about the particular effect of the infringement on the world, EU or any other particular markets, much less particular claimants, and provides no basis to infer what impact it had on such claimants.

21. In my judgment merely because a cartel was worldwide in scope and both blatant and cynical in its execution does not assist in arriving at a conclusion as to what loss was suffered by each claimant applying the measure of loss referred to below. The most that can be inferred safely from the existence of a world-wide price fixing cartel involving most of the most economically substantial participators in the relevant market that lasted for some years is that it is probable that for most of its duration it was effective in either raising prices higher than would otherwise have happened or preventing them from falling further than they otherwise would have. This reflects the point made by the Commission in paragraph 145 of its Practical Guide on Quantifying Harm In Actions For Damages Based On Breaches Of Article 101 ("Guidance"). However, the defendants do not (now) argue in these proceedings that no loss was caused by the cartel. They argue instead that (subject to the downstream pass on issues to which I refer below) no greater overcharge was caused than that estimated by Mr Parker the economist on whose expert evidence they rely. The inference I referred to earlier in this paragraph does not assist in quantifying whether the cartel had any effect beyond that conceded by Mr Parker. It does not in other words point to whether the Overcharge is 2.5% or over 70% to take two extremes that feature in this case.

22. In the circumstances of this case I consider that it can safely be inferred only that it is likely that the claimants experienced an overcharge caused by the cartel activity identified by the Commission in its Decision. That said, Mr Mussa KC acknowledged on behalf of the defendants in the course of his opening submissions that " *… we do not dispute that there will have been an overcharge on LCD panels sold during the infringement period due to the cartel…*". He added in his closing written submissions however that the " *… Decision makes no binding finding of an overcharge effect any greater than that estimated by Mr Parker…*" Thus whilst it is common ground that there was an overcharge, there is a serious dispute between the parties as to its magnitude.

23. The defendants contend that the cartel had a very limited actual effect on the prices paid by the claimants for LCD panels, maintain that each claimant passed on or at any rate it is to be inferred that they each passed on 100% of the increase in prices during the relevant period, including that part of the increase attributable to the cartel, to their downstream customers (so that on proper analysis they were caused no relevant loss and are unable to prove they were caused such loss as required by the English law principles that apply to tortious claims for breach of statutory duty) and have not proved any loss of profit resulting from lost sales caused by increased prices resulting from passing on the overcharge either as alleged or at all. In addition to these factual or technical economics disputes, there are various defences relied on including limitation and the assertion already noted earlier that any claim in respect of such products containing LCD Screens first placed on the market outside the EEA is governed by the competition laws of the states where that occurred and not those of England and Wales and must fail because no attempt has been made by the claimants to prove such laws and/or on the basis that claims based on such sales falls outwith the territorial scope of EU law and therefore of a claim under English law for damages for breach of statutory duty.

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.

25. There is no requirement to enquire into which defendant sold what products to each claimant. The claimants plead at paragraph 32 of the Re-Re-Re-Re amended particulars of Claim ("PoC") that each defendant is jointly and severally liable for any losses caused by the cartel and the defendants admit that averment in paragraph 32 of their Re-Re-Re amended Defence ("Defence"). It has not been suggested by or on behalf of the second defendant at the trial 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 counter factual 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 counter factual assessments.

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 counter factual world will involve using expert evidence to narrow as far as possible the range of uncertainty concerning the relevant counter factual 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. [1]

29. I have already referred to the pass on issue. There is both an upstream pass on and a down stream pass on issue. I have referred already to the upstream pass on issue and why it does not give rise to a factual difficulty in the circumstances of this case and I need say no more about it at this stage. Turning to the downstream pass on issue, although some systems of law (notably US Federal law) exclude issues of downstream pass on when assessing damages for anti-trust activity, English law requires this to be taken into account when assessing damages in such a claim. This is so not merely because the relevant EU law requires it but because as a matter of English law " … *the normal rule of compensatory damages applies to claims for damages for breach of statutory duty…*" and " … *there are cases where there is a need to avoid double recovery through claims in respect of the same overcharge by a direct purchaser and by subsequent purchasers in a chain, to whom an overcharge has been passed on in whole or in part* …" – see Sainsbury's Supermarkets Ltd v Mastercard Inc and others (ibid.) at paragraphs 196-197. The "… *normal rule of compensatory damages… "* permits recovery of damages only for loss proved to have been caused by the breach relied on which has been mitigated or could by reasonable steps have been mitigated. Loss that has been passed on either has not been caused to the claimant by the breach relied on or has been mitigated to extinction.

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[1] 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 not 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.

30. There is a difficulty about this issue in this case however. It might be thought that the degree to which some or all of a price increase has been passed on downstream is or should be largely a question of fact in relation to a claim based on a historical infringement. However in this case there is very limited evidence on the issue and the defendants in particular have sought to augment their case on the issue by expert analysis. This has undoubtedly added to the complexity and uncertainty of assessing damages in this case and in my judgment downstream pass on approached in this way engages precisely the same principles as those identified in paragraph 28 above.

31. The claimants deny any down stream pass on. However they assert that if and to the extent the defendants establish that the claimants passed on some or all of the Overcharge, the claimants also claim damages in respect of lost profits on lost sales arising as a result of the increased prices they sought for their computer packages. Again, whilst this might be thought to be an issue of fact, it has been approached as one to be resolved by expert evidence. To the extent that it is possible to resolve such a question in this way, in my judgment it too necessarily engages the cautionary principles I have identified in paragraph 28 above in relation to the assessment of the part of any price increase attributable to the infringing activity relied on by the claimants.

The Issues Between the Parties

32. In summary therefore, aside from the limitation and foreign law defences on which the defendants rely, the trial was taken up with

i) ascertaining the difference between the actual price charged for LCD panels over the relevant period and the price that would have applied but for the infringing activity. In this regard, the defendants accept that the Overcharge (the amount of which is in dispute) would have resulted in prices charged by manufacturers who did not participate in the cartel being elevated (referred to as the "Umbrella Effect") but there is a dispute between the parties as to the percentage of the Overcharge that would have been passed on by manufacturers who did not participate on the cartel;

ii) estimating what the parties have called the "*Volume of Commerce*" – that is the number of products purchased by the claimants either as LCD panels or as products into which LCD panels had been incorporated from the date when the Cartel was found by the Commission to have commenced down to the date when each of the claimants ceased trading. In relation to this issue, again it might be thought that this would be relatively straight forward question of fact to be resolved by reference to the purchase ledgers of the claimants . Unfortunately, there is no material available that shows precisely the volume of purchases made. There is a dispute between the parties as to what inferences should be drawn from the categories of material that are available. I develop this in more detail below. There is a subsidiary issue concerning OTC however, where there is a dispute as to whether it paid for all the units that were supplied to it, with the defendants contending that much of what was supplied between the start of the cartel and OTC being placed in administration would have been returned to the supplier either by its management prior to it being placed in administration or thereafter by its administrators or liquidators giving effect to title retention agreements relating to the goods supplied. Again I return to that issue below.

iii) Estimating the degree to which if at all those selling to the claimants (including all intervening suppliers in the supply chain between the cartel manufacturers on the one hand and the claimants on the other) absorbed any part of the Overcharge ("upstream pass on"), as to which the defendants accept that any Overcharge that is established was likely to have been passed on in its entirety to the claimants. Although it is common ground that those selling to the claimants would have passed on 100% of the Overcharge there is a dispute as the reasoning leading to this conclusion. This is only of importance because of a dispute between the parties as to whether the same methodology can be used to estimate down stream pass on by the claimants to their customers, with the claimants maintaining that it cannot and the defendants maintaining that it can; and

iv) Estimating the degree to which if at all the Overcharge was passed on by the claimants to its down stream customers ("down stream pass on"), with the claimants maintaining that none or almost none of the Overcharge as passed on and the defendants maintaining that all or most of the Overcharge was passed on; and

v) Estimating what if any loss of profit was caused to the claimants by lost sales resulting from any increase in price caused by down stream pass on of the Overcharge. This issue depends on the correct measure of what the experts referred to as "*elasticity of demand*" – that is the degree to which purchasers were deterred from purchasing by the (alleged) increase in price due to the passing on of the Overcharge; the extent to which what the experts referred to as "*diversion*" occurred – by which is meant customers buying other products offered by the claimants in preference to what they would have bought but for the alleged pass on of the Overcharge; the degree to which the margins used for the calculation of loss of profit on lost sales should be uplifted to eliminate the effect of the Overcharge and whether and if so what other adjustments need to be made in order that the claimants recover the full measure of the loss caused by lost sales (if any).

The prima facie loss suffered and therefore damages recoverable in this case is the sum of the Overcharge (net of any down stream pass on) multiplied by the volume of commerce and any loss of profit attributable resulting from sales lost as a result of any down stream pass on. Since this is not necessarily straight forward, it was agreed by the parties that I would make the findings necessary on the issues that the parties asked me to make findings about. These findings will then be used by the parties and their experts to arrive at the loss figure, with any remaining disputes arising out of that exercise being resolved at the hearing at which this judgment is to be handed down. This is not an ideal way of proceeding but in my judgment is the fairest and most practical in the circumstances of this claim.

33. In relation to the limitation, applicable law and territorial jurisdiction defences, the claimants contend those are relevant only to the claims against the third and fourth defendants. That is so because summary judgment for damages to be assessed has been

obtained by the claimants against the second defendant. That judgment also eliminates limitation as an issue other than in relation to the claims against the third and fourth defendants. I do not accept that the applicable law and territorial jurisdiction issues no longer apply so far as the claims against the second defendant are concerned. The judgment that was entered was for damages to be assessed and these issues are relevant to the quantum exercise notwithstanding the judgment against the second defendant.

34. In relation to the claims against the third and fourth defendants the applicable issues of law that arise are:

i) Whether any losses that arise out of purchases by the claimants of LCD panels or LCD Products containing LCD panels which were first put onto the market outside the EEA fall outside the territorial scope of EU law and are therefore unrecoverable;

ii) whether the Claim in so far as it arises out of purchases by the claimants of LCD panels or LCD Products containing LCD panels which were first put onto the market in South Korea, Taiwan, China and Japan is governed by the laws of these countries; and if so whether the claims by the claimant to recover damages for breach of TFEU, Article 101 and/or AEEA, Article 53 is a cause of action within the laws of those states. The claimants have not attempted to prove the relevant laws of any of those states and rely on the presumption ("Presumption of Similarity") that those laws are materially the same as English law unless the contrary is pleaded and proved. The defendants case is that the Presumption of Similarity is of no application applying the decision of the Supreme Court in Brownlie v FS Cairo (Nile Plaza) LLC [2021] UKSC 45 *per* Lord Leggatt at [119] – [124]. If the defendants are correct on this issue, they maintain the claim fails to the extent that it is based on purchases by the claimants of LCD panels or LCD Products containing LCD panels which were first put onto the market in South Korea, Taiwan and China and Japan. The defendants estimate this at about 78% of the whole. There is a dispute as to the correct percentage in the event the defendants succeeds on the principle In any event, the claimants submit that if I agree with the defendants on the issue of principle I should adjourn determination of the issue and give the claimants the opportunity to plead and prove the relevant foreign law. I return to that issue below; and

iii) Whether the claims against the third and fourth defendants are statute barred under the Limitation Act 1980 ("LA"). The claimants rely on LA, s.32 and maintain that they could not have with reasonable diligence discovered the relevant facts before publication of the Decision, particularly given that all the claimants are in liquidation and have acted at all material times by their liquidators and their support staff.

The Witnesses

35. The evidence that was adduced and which took up most of the time at trial was expert evidence. However some limited factual evidence was adduced from witnesses of fact. The claimants relied on such evidence from:

i) Mr Nicholas Wood, a partner of Grant Thornton UK LLP, and the present liquidator of the First and Third Claimants; and

ii) Mr Andrew Bartlett, a partner of Osborne Clark LLP, the Claimants' solicitors, with responsibility for the conduct of these proceedings.

Mr Wood's evidence is concerned with matters relating to the limitation issues that arise. Mr Bartlett's evidence is concerned with attempts to contact former senior employees of the claimants in order to obtain evidence from them concerning those issues identified earlier that could normally be expected to be determined as issues of fact. Neither assist concerning the Claimants' case on quantum, which is based on the documents and the experts' evidence and calculations.

36. Factual evidence was adduced on behalf of the defendants from:

i) Mr Hyung Seok (Kevin) Choi, who for part of the Cartel period was President of LG Display's Taiwan office;

ii) Mr Tae Hyung (Terry) Lim, who for part of the Cartel period was based out of the third defendant's operation located in Houston in Texas; and

iii) Mr Tai-Jong (Daniel) Lee, who for a small part of the end of the Cartel period visited or was in Taiwan and may have attended cartel meetings there.

37. Where the evidence is material to any issue I have to decide, I have tested the oral evidence of each of the witnesses of fact, wherever possible, against such contemporary documentation as there is, admitted and inconvertible facts and inherent probabilities. This is an entirely conventional approach – see <u>Onassis and Calogeropoulos v. Vergottis</u> [1968] 2 Lloyds Rep 403 at 407 and 413. It is of course necessary to consider all of the evidence – see <u>Kogan v. Martin</u> [2019] EWCA Civ 164 per Floyd LJ at paragraphs 88-89. There is however nothing either in this authority or the requirement to consider all of the evidence that prevents the evaluation of oral evidence using the techniques I have referred to. The evidence of fact relates to events that took place primarily between 2001 and July 2020. Given the passage of time since those events occurred, in my judgment the use of such techniques is all the more appropriate – see <u>Gestmin SGPS SA v. Credit Suisse (UK) Limited</u> [2013] EWHC 3560 (Comm) per Leggatt J (as he then was) at paragraphs 15-22.

38. Expert evidence was adduced by the claimants from:

i) Dr Rob van der Laan, an economist; and

ii) Mr Bruno Augustin, a forensic accounting expert.

The defendants adduced expert evidence from Mr David Parker, an economist who provided evidence in relation to those issues addressed by both Dr Van der Laan and Mr Augustin on behalf of the claimants. It was submitted on behalf of the claimants that Mr Parker gave evidence that was in part outside his area of expertise and that on occasion he acted as an advocate in support of the defendants. I do not accept the point that Mr Parker gave evidence outside his area of expertise. There is a high level of cross over between accounting and economic evidence in a case of this sort and in my view Mr Parker was well qualified by training and experience to give the evidence he did. I accept that on occasion Mr Parker sought to engage in argument with counsel rather than answering the question. To an extent that is the nature of expert economic evidence in a case like this because much of that evidence turns on the alleged applicability of economic theory. However some of Mr Parker's answers were over lengthy and on occasion he did not answer directly the questions that were being put to him. In my view similar criticisms could be made of parts of Dr Van der Laan's evidence. To the extent this is material, I have taken it into account in the conclusions reached below. However, I consider these points of limited effect.

Econometric modelling

39. Before turning to the issues that arise, a brief general description of some of the techniques used by the experts and the way in which they are referred to by the experts in their evidence will assist in making what follows more understandable.

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 dependant variable and the regressors, which in this case were data proxies for LGD 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.

43. In this case the main area of dispute in relation to Mr Parker's use of multiple regression analysis has been in relation to his choice of the proxy data used to identify the effect of demand on price movements and his reliance on price information for sales after the date when the Commission decided the cartel; had come to an end. This engages another concept that it is necessary I mention in general terms before turning to the specifics of this dispute.

44. It was common ground that in selecting a proxy source for the demand (or any other explanatory) variable, it is necessary choose one that is both sufficiently close to (in this case) the demand for LCD panels during the period being analysed to be economically relevant, whilst at the same time being unaffected by the LCD price. A data source that is substantially affected by (in this case) LCD panel prices is said to be "*endogenous"* and objectionable or potentially so because it will probably result in an endogeneity bias in the modelling outputs that in most cases will result in an under estimate of the overcharge attributable to the relevant infringement.

45. Choosing what source is appropriate is ultimately a matter for judgment. Mr Parker chose one that Dr Van der Laan considered too endogenous to be reliable and Dr Van der Laan chose two others, neither of which Mr Parker accepted were sufficiently economically relevant to enable the relevant non cartel contributors' price movements to be adequately accounted for. Assuming that there was substance in each of these points it will be necessary for me to arrive at a judgment concerning the amount of the Overcharge applying the general principles applicable to the assessment of damages identified earlier. This may involve reaching a conclusion concerning the effect of the cartel on prices charged during the relevant period that was higher than that estimated by Mr Parker and lower than that estimated by Dr Van der Laan when considering the multiple regression analysis technique used by Mr Parker. If I conclude that Dr Van der Laan's approach (or now his preferred or primary approach) to assessing overcharge (which does not involve the use of regression analysis) should be preferred, then different considerations may apply.

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)."

48. Subject to that qualification, R Squared is a highly technical statistical test which is designed to provide a broad indication of how close the regression model's projection gets to the observed data, when causal responsibility is allocated to each explanatory variable in the proportions that the regression modeller considers most appropriate for each. Broadly the closer to 1 the resulting figure is the closer the regression model is to the observed data. Mathematically, the test involves the software used for the regression analysis measuring the difference between the observed actual price points and the projected actual price points (the resulting sum being referred to as a "*residual*") then expressing it as a proportion, then subtracting the resultant figure from 1. A central thesis that Dr Van der Laan advanced was that the plausibility of each regression model was to be tested by how close the R squared figure was to 1.

49. The test is not an exact one because by definition it will affect different residuals in different ways. All that said, subject to the point made by Mr Parker already considered, the R Squared test is likely to provide one of a number of sense checks available to test various figures to the extent the relevant R Squared number has been made available to me. Inevitably, if I come to a conclusion relating to the percentage of price increase during the Relevant Time that represents the Overcharge that is different from one of those figures identified by Mr Parker and Dr Van der Laan, applying the approach to the assessment of loss noted earlier, then this sense test will not be available to me.

50. Turning to the Ramsey RESET test, this is an even more technical mathematical test which is designed to detect the omission of a relevant variable. It works by converting the residuals referred to above into mathematically generated curves and is said to identify the omission of relevant variables by variations to the expected resulting curves. The weakness in this test that Mr Parker referred to on a number of occasions is that if a model fails the test then one hypothesis that follows is that there might be something missing but it does not identify either what it is or what the effect on the model is of its hypothesised omission. As he put it, "*… if there is no obvious variable … that from theory you should put in, I think putting in variables in an attempt to fix the Ramsey Reset test, I am not sure is sensible".* I accept that as far as it goes but unless you have considered what explanation there is for the failure then as Mr Raphael KC put it in the course of his cross examination of Mr Parker it undermines the reliability of the regression.

51. Although Mr Raphael suggested that the Commission's reasons for rejecting economic evidence put forward on behalf of the cartelists in the course of the procedure leading to the Decision was because the model relied on failed the Ramsey RESET Test, in my judgment the approach the Commission actually took is instructive. Its reasons are set out in Appendix 2 to the Decision. It identified five different reasons for rejecting that evidence. Of these, the first the Commission refers to is that the analysis was *"... very likely to suffer from severe endogeneity bias* …" and " … *In presence of endogeneity bias, no reliable result can be inferred from the estimation: the estimated coefficients are biased and they bear no information about the investigated hypothesis. Indeed, the direction and the magnitude of the bias on the estimated coefficient cannot be known a priori. This directly invalidates any conclusion which could be drawn from the study*." It is true to say that the Commission concluded that the model failed to the Ramsey test. It was unsurprising that the Commission concluded that this was likely to be the result of an omission of at least one variable that should have been included given the conclusions it had reached about the degree to which the model suffered from endogeneity bias. Thus the Commission concluded that the failed Ramsey test in combination with the endogeneity bias pointed to the likely omission of a relevant variable. The Commission's reasoning does not lead to the conclusion that in every case where a model fails the Ramsey test, its conclusion should be rejected. Whether that is so is very fact specific and in my judgment depends critically on the economic theory and reasoning that underlies how the variables used have been identified and the proxy data used for the purpose of attempting to assess the degree to which the regression model used has been undermined as a basis for assessing the likely Overcharge.

52. I return to this issue below when evaluating the evidence available in relation to the Overcharge issue. I note at this stage however that Mr Parker's analysis is not the same as that rejected by the Commission and the conclusions of the Commission concerning the regression analysis it was considering are of no direct assistance. The decision reached by the Commission was fact specific to the regression analysis before it and does not support any suggestion that a regression analysis that fails the Ramsey test must be rejected.

The Overcharge Issue

53. As already stated above, the Overcharge is the difference between the price that the claimant paid for the products they purchased directly or indirectly from the defendants during the Relevant Period less what they would have paid but for the cartel's effect on the prices they paid. It is common ground that the Overcharge is to be calculated by reference to a market wide average expressed as a percentage. The question is one of fact, which it is for the claimants to plead and prove. Since the claimants are permitted to recover only the losses caused by the breach of statutory duty it is necessary to identify and then remove from price fluctuations during the Relevant Period any fluctuations that would have occurred in any event. The claimants' case (on the basis of Dr Van der Laan's evidence) is that the Overcharge should be assessed as falling in a range of between 34.5% and 71% of the total price charged for all LCD panels during the Relevant Period. The defendants maintain (on the basis of Mr Parker's evidence) that the Overcharge should be assessed as being 5.7% for monitors and 2.4% for notebooks.

54. There is a fundamental difference of primary approach to this issue as between the expert economists. Dr Van der Laan maintains that the Overcharge should be assessed at 71% applying a trend line extrapolation. Mr Parker maintains that is a model that is inappropriate to adopt in a case such as this and that the appropriate model to adopt is a multiple regression analysis. Mr Parker maintains that applying that model leads to the conclusion that the Overcharge should be assessed as being 5.7% for monitors and 2.4% for notebooks. In the event that I reject his primary evidence as to how to ascertain Overcharge then Dr Van der Laan makes a number of criticisms of the way in which Mr Parker has carried out his multiple regression analysis modelling.

Dr Van der Laan's Modelling

55. Dr Van der Laan identifies a number of features of the market in LCD screens which it is necessary to have in mind when considering the effect of the cartel's activities on prices charged during the infringement period. The first of these features was what he characterised as a persistent overall decrease in production costs over time resulting from what he called "*learning effect*" by which he meant a reduction in the unit cost of production resulting from experience gained in manufacturing LCD screens and the introduction of more advanced and lower cost production facilities. Secondly he identified what economists refer to as a "*crystal cycle*" which in this case lasted for about 2 years historically and which resulted from an increase in capacity followed by a drop in prices to generate demand which then increases demand until demand exceeds supply and sale prices increase again. There was no dispute between the parties as to the existence of this phenomena but there is a dispute as to the assumptions that can properly be made concerning it. I turn to those below. However, Dr Van der Laan acknowledged in his first report that " … *calculating from peak to peak, the 1995-1997 cycle appears to be slightly shorter than two years (about 7 quarters or 1.75 years) and the 1997-1999 cycle appears to be slightly longer than two years (about 10 quarters or 2.5 years)*…". From this Dr Van der Laan concluded that:

> "On the basis of a cycle of just over two years, the Cartel Period would have covered a period of two Crystal Cycles. This implies that one can estimate the variables at the end of the Cartel Period using the values for the same variables at the beginning of the Cartel Period taking into account and extrapolating the trend from previous Crystal Cycles."

Finally, he identified as relevant to price the effects of supply and demand. He concluded that there was no difference in overcharge between monitors, notebooks and TVs. This appears to have been based on assumptions derived largely from the fact that the Decision grouped each of these sectors together. Whilst that is so, it should be borne in mind that the Commission was concerned with the existence of the cartel rather than its particular effects on particular market segments.

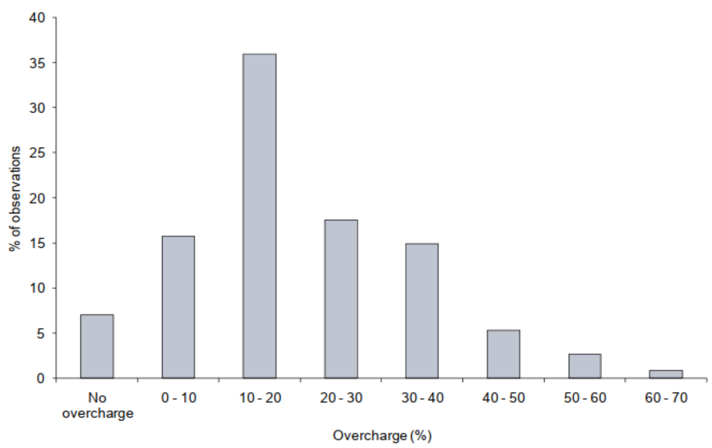
56. When Dr Van der Laan turned to evaluating the Overcharge, he noted that there was limited relevant data available for the period prior to the start of the infringing activity. He maintains that the data for the Post-Cartel Period is unlikely to constitute a reliable basis for assessing the counterfactual scenario. Mr Parker disagrees with that opinion and has relied on post cartel data as part of his regression analysis. I return to this issue below. He rejects the notion that the CRT (Cathode Ray Tube) sector could provide an

appropriate comparator. He refers to the defendant's expert report provided to the Commission which the Commission rejected for the reasons set out in Appendix 2 to the Decision.

57. Dr Van der Laan placed some reliance on an academic study of previous findings made in relation to other cartel claims over many years, which demonstrate overcharge rates expressed as a percentage of the counterfactual price of 25.08% (mean) and 21.74% (median) and a more recent study entitled Cartel Overcharges written by Professor John Connor. This last study is summarised in the abstract as being the result of a survey of more than 700 published economic studies and judicial decisions that contain 2,041 quantitative estimates of overcharges of hard-core cartels. Although Dr Van der Laan summarises the effect of this study as demonstrating median average long-run overcharges for all types of cartels over all time periods of 23.0% and the median cartel overcharge for all types of cartels over all time periods of 30.4% for global cartels, the findings are more nuanced than that. Professor Connor includes in his summary of his findings, that overcharges reached their zenith in 1891-1945 and have trended downward ever since. This needs to be borne in mind when considering this work, to the extent that it is material to the issues I have to decide, a question to which I refer below.

58. In his closing submissions, Mr Raphael referred to a study prepared for the Commission entitled "*Towards non-binding guidance for courts*" dated December 2009 prepared by Oxera Consulting Ltd. Its finding are summarised in the following graph:

Figure 4.1 Distribution of cartel overcharges in empirical studies of past cartels: indicative results from new sample selected by Oxera, based on Connor and Lande (2008)



The point that emerges is that an Overcharge of the magnitude contended for by Dr Van der Laan would fall within a group consisting of comfortably less than 3% of the whole, with most overcharges (approximately 57% of the whole) falling in the range of 1-20% overcharge. Thus to the extent this material assists at all it suggests as improbable or at any rate highly exceptional an overcharge at the level contended for by Dr Van der Laan.

59. More fundamentally however, I consider it wrong in principle to use historical data derived from other findings by other courts and economic studies in relation to other

cartels concerning other industries or industrial sectors to prove or assist in answering the empirical question concerning the level of Overcharge in this case. In my judgment the most that can properly be said of this material is that it is capable of providing a limited sense check at the end of the fact finding process in this case. For these two reasons I do not accept as correct Dr Van der Laan's conclusion that:

> "… as a starting point, it is useful to refer to the median overcharge of (comparable) worldwide cartels. The median overcharge is the overcharge that is most often encountered for global cartels. On the basis of the study of Conner (2014), this median overcharge is 30.4%. However, the average (mean) overcharge figure of 65.6% illustrates that it would not be surprising if there were a significantly higher overcharge."

In any event I do not accept that the Connor study leads to the conclusion that the figure of 71% for which Dr Van der Laan contends is one that is a statistically probable outcome looking at the historical data and that is all the more the case when Professor Connor's conclusion that statistically, overcharges have been trending downwards since 1945 and the information derived from the Oxera study referred to earlier is recalled. I do not accept the submission either that the decision of the CAT in Royal Mail v DAF Trucks [2023] C.A.T. 6; [2023] 5 CMLR 6 suggests otherwise. It suggests only that these studies provide support for the *"... accepted legal position of there being a high probability that cartel conduct which meets the criteria for an "object" infringement had adverse effects*." That much is obvious from the bar graph set out above, which shows no overcharge having been found only in about 7.5% of the cartel outcomes considered and some overcharge having been found in the remaining 92.5%. More to the point however, for present purposes, it is not in dispute in this case that the cartel had adverse effects in the form of at least the Overcharge acknowledged by Mr Parker. These studies say nothing about how the quantum of overcharge should be assessed or at what level they should be assessed, which as I have said is a fact sensitive question in every damages claim that depends upon the evidence deployed in the particular case. The CAT does not suggest otherwise in Royal Mail v DAF Trucks (ibid.).

60. Turning to Dr Van der Laan's analysis of the data available in respect of the defendants, it was that they achieved much higher profit margins during the infringement period than during the pre and post infringement periods. He concluded that was consistent with the Cartel creating an overcharge. However of itself it does not assist in quantifying that overcharge because it take no account of cost, supply and demand considerations, which are the factors that would have affected prices and margins in the counter factual world.

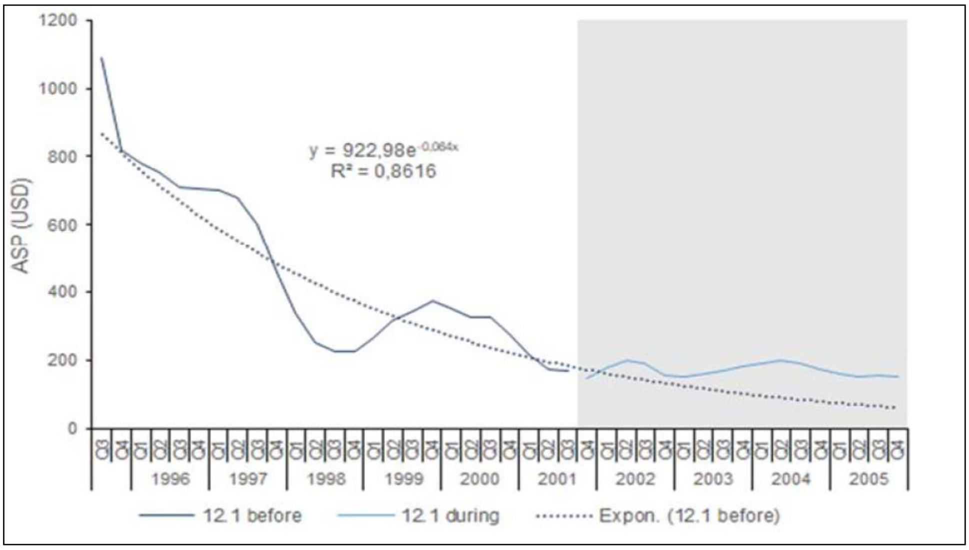
61. Having concluded that data from the immediate post cartel period (that is after 1 February 2006) could not safely be relied on – an issue to which I return below – Dr Van der Laan calculated Overcharge by comparing price information for a period prior to the start of the infringing activity (5 October 2001) with that for the Relevant Period, which was between 5 October 2001 and 1 February 2006. Dr Van der Laan places substantial reliance on his conclusion based on the data that prices went down steeply in the Pre-Cartel Period from April 2000 to March 2001. During the Relevant Period (October 2001 – February 2006) prices declined only very slowly and there were

several episodes where prices went up. In summary, he maintains that prior to the commencement of infringement no prices moved up but during the infringement period no prices moved down. Dr Van der Laan summarises this material as being:

Panel size	Average pre-cartel price change (2 Crystal Cycles)	Average Cartel Period price change (2 Crystal Cycles)
12.1"	-46%	-4%
13.3"	-60%	-6%
14"	-62%	-19%
15"	-63%	-24%
Average	-58%	-13%

Professor Van der Laan then estimated an overcharge of 168% averaged over the relevant range of panels assuming a linear price trend over the infringement period. By implication Dr Van der Laan accepted that this was improbable and that therefore the price changes may be better represented as an exponential function. This recognises that the sort of price decreases to which Dr Van der Laan refers in the table set out above could not be, and could not sensibly be argued to be capable of being, maintained over the long term. In my judgment this is self evident.

62. More generally, this approach does not take account of other changes taking place during the infringement period and his conclusion that this points to a very substantial overcharge during the infringement period assumes that the rapid decrease in prices being experienced prior to the commencement of the infringement period would have continued unabated throughout the infringement period. Thus Dr Van der Laan's approach assumes what it sets out to prove because it involves assuming that the pre infringement exponential trend would have continued unaltered in the infringement period, but for the infringing activity. Dr Van der Laan maintains that this approach derives support from the high R Squared value for the panels for which the largest data sets are available – that for 12.1 inch panels. He estimates the amount of the Overcharge that result graphically as a trend analysis ion the following format:



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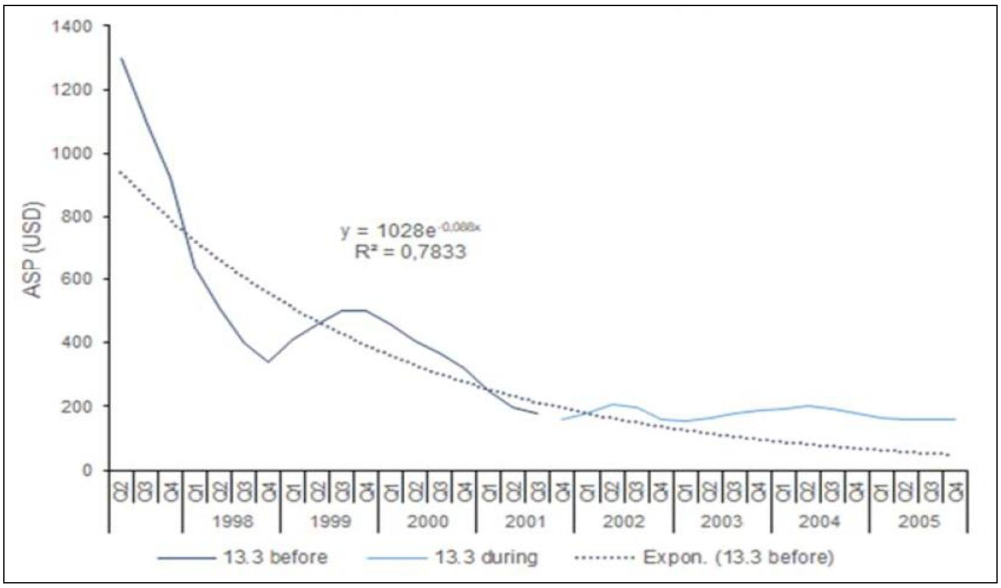
The shaded area represents the Relevant Period with the difference between the upper and lower lines representing the amount of the Overcharge, with there being a negative overcharge for Q4 2001. The apparent average overcharge over the whole period (adding the quarterly overcharges and dividing these by the number of quarters) is 71%. Dr Van der Laan performed a similar exercise in relation to 13.1 inch panels, which resulted in trend analysis in the following format:



Using this approach, the apparent average overcharge over the whole period (adding the quarterly overcharges and dividing these by the number of quarters) is 98%. This led Dr Van der Laan to conclude at paragraph 11.1.35 of his initial report that:

> "… based on the two largest datasets, which result in a price trend line which has a high R-squared (i.e. a good fit with the Pre-Cartel Period price observations) (12.1" and 13.1" panels), I calculate an average overcharge of 71% and 99%. These values correspond closely to the estimated overcharges halfway through the Cartel Period of 79% and 98% respectively. The average overcharge on the basis of these two panel sizes is therefore 85%. A conservative estimate of the overcharge for all panel sizes, using the lowest of these two figures is 71%."

63. In his second supplemental report (dated 25 September 2023), Dr Van der Laan described this conclusion as being " … *a conservative estimate despite it being slightly higher than the average overcharge for global cartels of 65.6% calculated in the wide-ranging study of Connor*." However, in his initial supplemental report, he had accepted that *"…(t)he methods that I used are, of course, by no means perfect as illustrated by the fact that different approaches result in different overcharge estimates…*" whilst at the same time rejecting the regression analysis approach adopted by Mr Parker on the basis that " … *in this case the data limitations are such that the results of any regression analysis need to be heavily caveated and treated with extreme caution*.". Notwithstanding his acceptance that the method he had used was not perfect in the joint statement that he and Mr Parker produced, he maintained his position that the Overcharge should be assessed at no lower than 71%.

64. At the heart of the defendants' challenge to the approach adopted by Dr Van der Laan is the absence of any attempt to control for production costs, production capacity, and

demand for LCD panels during the Relevant Period or to take any account of the post infringement period data. This last point is one I consider below when considering Mr Parker's evidence.

65. Turning to the Relevant Period, Mr Parker maintains that any model that fails to control for these metrics (production costs, production capacity, and demand) is bound to result in an inaccurate estimate of the likely rate of Overcharge over the infringement period. Although he does not say so, this inaccuracy could involve either over or under estimating the overcharge resulting from the infringing activity but on his evidence results in a very substantial over estimate of likely Overcharge caused by the infringement. Mr Parker considers these factors to be " … *critically important for assessing how prices would have developed in the counterfactual*." Dr Van der Laan disagrees in essence because " … *there are no indications that there would be any significant changes to factors affecting prices during the Cartel Period compared to the Pre-Cartel Period*." Thus the difference between Mr Parker and Dr Van der Laan, is that Mr Parker attempts to identify and take account of these factors whereas Dr Van der Laan assumes that there were no changes to any of them during the Relevant Period when compared to what occurred during the pre-infringement period.

66. Dr Van der Laan's view is that the main driver of the pre infringement price reductions were what he refers to as the learning effect – that as manufacturers became more experienced they were able to fabricate LCD panels at decreasing cost over time and that this effect was augmented by the construction and coming on line of bigger and better manufacturing plants. The difference between the two experts is that Dr Van der Laan assumes the (exponential) trend of decreasing prices resulting from one or other or both of these factors would have remained similar in the infringement period as it was in the pre infringement period, whereas Mr Parker seeks to test whether and if so to what extent that is a correct assumption by identifying and applying proxies that are economically relevant to the production cost, supply capacity and demand variables for LCD panels during the pre-infringement, infringement and post-infringement periods.

67. In my judgment in principle Mr Parker's approach is to be preferred over that adopted by Dr Van der Laan. My reasons for reaching that conclusion are as follows.

68. Firstly, whether an infringement results in overcharge is a question of fact with the onus of proving that an overcharge resulted resting on the party seeking damages – in this case the claimants. The trend line extrapolation method adopted by Dr Van der Laan involves drawing a downward line on a graph (being primarily that reproduced above for 12.1 inch screens) derived from data concerning the pre infringement prices for that type of screen and as I have said assumes that but for the infringement prices decreases would have followed that trend line during the Relevant Period – see Dr Van der Laan's first report summarised above and his oral evidence at T5/23/12-16. It does not seek to establish or even test whether prices in the counterfactual world would have followed the trend line during the Relevant Period– see T5/23/17-24 – or control for such changes – see T5/44/10-13. As Dr Van der Laan put it in his oral evidence " *I cannot prove anything, I can only give an indication that there's a trend line …*". This concession is obviously correct since otherwise the method is one that assumes what ostensibly it was intended to prove. However that is fatal to Dr Van der Laan's preferred or primary approach to identifying the level of Overcharge. It is almost by definition

not an economically or forensically appropriate basis for evaluating what overcharge occurred in the infringement period, at any rate in this case, particularly where the legal and evidential burden rests on the claimants and the claimants seek to discharge that burden by relying on Dr Van der Laan's primary evidence.

69. Secondly, the trend line extrapolation method adopted by Dr Van der Laan involved assuming that the price reduction the curve implied would continue albeit at a decreasing rate over time. As Mr Parker put it when he was cross examined about Dr Van der Laan's methodology, "… *it was a trend line through the data on prices and it says the average price reduction I have seen over the pre-cartel period for which he has data will continue at the same percentage rate forever*…". It was put to Dr Van der Laan that if his trend line was accurate then his model predicted that the price of a 12.1 inch screen in Q2, 2023 would be less than US$1, which he accepted was what it predicted and that such a prediction could not be right – see T5/24/24-25/4. That of itself is another major inhibition to accepting that the primary approach adopted by Dr Van der Laan establishes an Overcharge of in excess of 70% or even that the primary approach adopted is in principle more appropriate than that of Mr Parker. Dr Van der Laan sought to avoid the implications of this point by saying that the focus of attention should be limited to effect of the curve through the period during which the cartel was in operation. In my judgment that does not begin to provide an answer because if the curve is a steady exponential projection then if it predicts something that is wrong at one albeit later stage it cannot be said with confidence to be a reasonable predictor of what happened at any earlier period through which the curve passes. This is all the more the case because there is no evidence and no other way to deduce the point at which the extrapolation would cease to apply or why.

70. Thirdly, not only does this approach make no attempt to take account of variations affecting production costs, supply and demand occurring during the Relevant Period and result in commercially absurd results the further in time from the start point the effect of the curve is considered, but Dr Van der Laan's primary approach is highly sensitive to where in time the trend line is treated as commencing from. When it was put to Dr Van der Laan in cross examination that moving the start point to Q3 1998 resulted in a change in estimated Overcharge from 71% to minus 11.7%, Dr Van der Laan said that he had "*… no reason to assume … that's a wrong conclusion …"* – see T5/26/11-21. Dr Van der Laan considered that this was explained by the "crystal cycle" to which I have referred earlier. In essence this is a wave of peaks and troughs in prices caused at any rate principally by increases in supply of panels resulting from increases in manufacturing capacity and improved manufacturing efficiencies which resulted in sharply reduced prices which then increase over time as demand catches up with supply. I am unpersuaded by this explanation for the detailed reasons I give below but in summary because it assumes, wrongly, that the peaks and troughs of the cycle are identical in the time gap between them and in the length and amplitude of each peak and trough. It is these discrepancies that regression analysis attempts to eliminate to enable an accurate or more accurate calculation of Overcharge.

71. Fourthly, although Dr Van der Laan maintained that assuming there would be no variations affecting production costs, supply and demand occurring during the Relevant Period was justified because there was no evidence of such changes, that is wrong. Both experts agreed that the main influences on price were production costs, supply and demand. Changes in production costs were a feature of this particular market – Dr Van

der Laan attributes this to the learning effect (that with experience manufacturers were able to reduce the cost of manufacturing panels) and the coming on stream of bigger and more efficient manufacturing facilities. There is a dispute about whether this is the correct explanation (to which I turn below) but that does not affect the point that there were variations in supply and demand. In relation to demand Dr Van der Laan reports in his first report for example a steady increase in home computer ownership during the Relevant Period (5 October 2001 to 1 February 2006) in the UK for example from 49% to 65%. He also demonstrates a strong decline in the global sales of CRT screens and a strong increase in screens manufactured using LCD panels from about US$15b per annum to about US$70b per annum in 2006.

72. As I have said, Dr Van der Laan sought to avoid this issue as a source of concern for his approach by reference to the effect of the crystal cycle. That is not a sound basis for making the assumptions made by Dr Van der Laan for the reasons I give below. Ultimately however, the real point is that Mr Parker at least attempts to control for the likely actual effect during the infringement period of changes in production costs, supply and demand whereas Dr Van der Laan proceeds on the assumption that actual changes in these metrics during the infringement period can be ignored by assuming "*…that all other conditions and trends ... includ(ing) input prices, demand and technology remain similar…*" to those in the pre infringement period.

73. Fifthly, as Dr Van der Laan said in his first report and acknowledged in cross examination, his approach involves assuming that the market for LCD screens prior to the commencement of the infringement period was perfectly competitive. Dr Van der Laan defined this in his second supplemental note (in relation to the downstream pass on issue) as an assumption that the price of an article is equal to the marginal cost of production and that marginal cost will be the same for any quantity produced. His evidence was that on this assumption he could treat pre-Infringement prices as reflecting pre-Infringement costs and consequently could assume that the extrapolation of that price data into the Relevant Period also reflected costs during that period.

74. In my judgment this is a highly artificial construct that does not provide any empirical support for the conclusions that Dr Van der Laan asks me to adopt. As Dr Van der Laan says in paragraph 1.2.11 of his second supplemental note, it is a model that is " *… highly idealised and no market fully meets these assumptions*..." not least because market participants will be strongly motivated to make changes in order to make profits. It is largely for that reason that perfect competition conditions rarely occur in reality or for very long and in any event have not been proved to have occurred in the pre-infringement LCD panel market at any material time. As Dr Van der Laan acknowledged in cross examination at T5/38/11: " … *there are also some doubts around that, but if we assume that in the pre-cartel period there is -- there is competition, then prices would be reflective of costs to that extent*…"

75. In any event this approach does not adequately address changes in costs because the model assumes that in perfect competition conditions prices will follow increases in costs. That being so, increases in cost that occur during the infringement period will not be taken into account using Dr Van der Laan's approach unless such costs increases maintain a steady rate of increase over the whole of the period covered by the extrapolation curve where it passes through the Relevant Period. This led Dr Van der Laan to accept in the course of his cross examination " … *that if there is a substantial*

different development of input costs in pre-cartel period versus the cartel period, that you have to take that into account…".

76. It was suggested to Dr Van der Laan that energy prices were increasing strongly through the Relevant Period and he accepted that if that was so his model would not take account of those changes, which would in consequence be attributed to Overcharge caused by the infringing activity of the cartel. Dr Van der Laan was prepared to accept that the oil price data to which he was taken showed a sharp increase in the cost of oil over the Relevant Period of between US$30-40 per barrel. Ultimately his response was to question whether the energy cost increase would have impacted on the manufacturers of LCD panels as suggested, but in any event,

> "Of course it's possible with every particular cost element to see that it will not be a nice smooth line over time. But I think all these changes will kind of more or less balance each other out, and I have no indication that there is overall, taking all the potential relevant costs into account, that there is a trend break in the pre-cartel period versus the cartel period."

As to this, it is difficult to see how the manufacturers of LCD panels could be immune entirely from such energy cost increases and his suggestion that any such cost impact would be balanced out by other (unidentified) costs decreases is at best an untested and uninformed assumption.

77. The oral evidence of Dr Van der Laan I have referred to in the previous two paragraphs is an acknowledgement by Dr Van der Laan that his assumptions either don't or may not reflect reality. As Mr Parker put it when cross examined on Dr Van der Laan's approach:

> "Q. That trend line incorporates the balance of supply/demand, and so he's making a simple but robust inference as to where that trend line goes which incorporates the actual cost data.
>
> A. He is making a simple assumption, I wouldn't say it's robust, and it doesn't incorporate the actual cost data which we have and which my model does."

That is important because the alternative available to me (Mr Parker's multiple regression analysis) offers the possibility of addressing the reality rather than making theorised assumptions. The only answer to that which Dr Van De Laan offers is that the available data is not sufficient to enable a reliable regression analysis to be carried out. I address that below when considering Mr Parker's evidence, Dr Van der Laan's criticisms of it and what if any adjustments I need to make to Mr Parker's conclusions applying the principles referred to earlier.

78. Sixthly, as Dr Van der Laan accepted in relation to energy cost increases referred to above, because Dr Van der Laan's model does not control for changes in actual production costs during the cartel period, it follows that his model will attribute such increases during the Relevant Period to the effect of the Cartel even though the increases would have occurred in any event – a point that Dr Van der Laan accepted: see

T5/39/33-40/3. The multiple regression analysis technique adopted by Mr Parker eliminates or at any rate minimises this effect.

79. Seventhly, Dr Van der Laan’s preferred method did not control for changes in the supply demand balance, because in his view the need to do so is eliminated by the effects of the crystal cycle referred to earlier. I am unpersuaded by this explanation. Dr Van der Laan ‘s preferred model involved an assumption that the infringement period lasted exactly two Crystal Cycles “*for simplicity”* - see T5/44/22-24 - not withstanding that the infringement was not for exactly two cycles; that they were not of the same length or amplitude – see T5/45/14-15 and “ … *the pre-cartel cycles themselves were not identical...*” – see T5/49/20. As he accepted in the course of his cross examination “ … *as I'm focusing on a long-run trend I'm ignoring the crystal cycle and that there will be some deviations -- if the infringement lasted one quarter longer or something, there may be some deviations*…” The effect of this undermined the validity of Dr Van der Laan’s approach, which was to “ …*assume during the cartel period, that if there were differences in length that they would balance each other out, so that the average would be similar to the average of also the differences on the pre-cartel cycles.*” In my judgment there is no reason for making such assumptions if there is economically relevant data available that allows for changes in supply and demand during the infringement period to be identified and excluded from the calculation of Overcharge.

80. I am not suggesting that the method adopted by Dr Van der Laan is one that can never safely be adopted. The Commission’s Practical Guide referred to earlier recognises that in some circumstances it can be a “*simple technique”* that it is appropriate to adopt - see paragraph 67 – but, as noted in footnote 61, “… *a more accurate estimation of the underlying trend could be obtained through using regression analysis* …” and whilst it is noted in paragraph 68 that an extrapolation line can be adjusted to reflect changes not attributable to infringement activity that can be “ … *rather easily understood*…”, as noted in footnote 62, “(*s)uch adjustment, could, data permitting, be done in a more sophisticated way by using regression analysis*…” The method adopted by Dr Van der Laan uses only data from the period prior to the commencement of the cartel activity. Mr Parker’s method involves using data from both before during and after the infringement period. The Commission says of this in paragraph 72 of its Practical Guide that “ … *using data from both periods/markets may allow a more precise and accurate estimation of the parameters of interest, in particular if the available non-infringement data are limited or do not allow the dynamics of the industry at hand to be fully captured*.”

81. I accept Mr Mussa’s submission that the effect of this material is that the Commission considers linear extrapolation will usually be an appropriate model to adopt only where (a) there is no reason to believe that prices would have changed during the infringement period absent the infringement, (b) any expected price changes were of the sort that could be easily identified and adjusted for, or (c) there is no data available to conduct a more sophisticated regression.

82. It would not be appropriate to take an average of the results achieved by Dr Van der Laan and Mr Parker as a mechanism for estimating overcharge. As the Commission observes at paragraph 125 of its Practical Guide, where:

> "… the application of two methods produces apparently contradictory results (especially when two opposing parties each rely on a different method), it is normally not appropriate to simply take the average of the two results, nor would it be appropriate to consider that the contradictory results cancel each other out in the sense that both methods should be disregarded. In such a scenario it would rather be appropriate to examine the reasons for the diverging results and to carefully consider the strengths and weaknesses of each method and its implementation in the case at hand."

83. In the circumstances of this case, in my judgment the greater sophistication and precision that multiple regression analysis offers over the uncertainties implicit in Dr Van der Laan's approach leads me to conclude that in principle the multiple regression analysis approach adopted by Mr Parker is more likely to lead to an accurate estimate of the level of Overcharge resulting from this cartel. Of the two methods offered, it is the multiple regression analysis technique used by Mr Parker that at least attempts to control for the actual effect during the infringement period of production costs, supply and demand whereas Dr Van der Laan proceeds on the assumption that actual changes in these metrics during the infringement period can be ignored by assuming they did not alter.

84. Whilst I accept that ultimately the assessment of Overcharge will involve a broad brush assessment applying the principles referred to in paragraph 28 above, that is largely for the purpose of addressing the problem created by the existence of a range of uncertainty concerning the percentage of price increase over the Relevant Period that can be attributed to cartel activity. The purpose of preferring multiple regression analyses is to reduce the area of uncertainty that the broad brush approach has to address. That said, that does not mean that I should accept Mr Parker's analysis without qualification. Dr Van der Laan considers the approach adopted by Mr Parker and identifies what he considers to be weaknesses and errors in how the technique chosen by Mr Parker has been applied. This leads him to advance as his secondary method of assessing overcharge various permutations of the regression analysis prepared by Mr Parker.

Mr Parker's Modelling

85. As by now will be apparent Mr Parker's modelling depends upon comparing the prices of LCD panels manufactured by the third and fourth defendants and sold worldwide during the Relevant Period with the prices of panels sold by them outside (that is both before and after) the infringement period.

86. Mr Parker referred to the possibility of using geographical comparators but rejected that on the basis that the Commission had concluded the cartel was worldwide in its scope and effect. No one suggests that Mr Parker was wrong to reject a geographical approach in the circumstances of this case.

87. Mr Parker also considered but rejected the approach of using as a comparator the price movements that affected a similar product not affected by the infringement over the period of the infringement. He rejected that approach on the basis that there were no sufficiently similar products that safely lent themselves to this approach and in any

event it can be difficult to adjust for product specific costs demand and supply factors. Again no one suggests that Mr Parker was wrong to reject the product comparator approach.

88. The temporal comparator method in my judgment is likely in principle to at least narrow the range of uncertainty that applies when considering whether and if so how much overcharge occurred during the Relevant Period that is attributable to infringing activity essentially for the reasons that led me to reject the primary approach adopted by Dr Van der Laan. It is not necessary that I explore all those issues again in detail. The real point is that approaching the problem in the way Mr Parker has approached it eliminates or at least minimises the extent to which it is necessary to make untested assumptions. This is so because Mr Parker's approach will establish empirically whether Panel prices were higher during the Infringement Period compared to the non-Infringement Period, once other factors affecting LCD Panel prices have been appropriately controlled for. This not only allows the level of overcharge to be quantified but it also enables conclusions to be drawn as to whether the infringing activity has caused an impact on prices.

89. There is however an issue between the parties as to whether it is statistically sound to take account of prices after the end of the infringement period essentially because the date that the Commission settled upon as the end point of the cartel was arbitrary. I turn to that issue below. However, even if the post cartel period either cannot safely be used at all, or can only be used subject to adjustment to take account of the possibility of the cartel continuing to influence prices after the notional end of the infringement period, that does not invalidate Mr Parker's modelling approach – it means merely that the primary focus will be on the position before and during the infringement period. The other issues that arise concern the appropriateness of the variables adopted. I turn to those issues in detail below.

90. I have explained the general principles relating to regression analysis already. It is a technique that is addressed in great detail in other reported judgments and no useful purpose will be served by my repeating the mathematical detail that goes with the application of the technique. It is sufficient to note that (as is common ground) the variable of interest is the defendants' LCD panel price during the Relevant Period with the effect of the infringement being estimated by identifying the existence and extent of any systematic differences in the defendants' prices before, during and after the Infringement that is not explained by the other drivers of the prices that are included within the econometric model used by Mr Parker. Even assuming this exercise is carried out in a way that eliminates that which should not be included and includes everything that should be included, as I have acknowledged already, the result is likely to be imperfect – which is why I have described the exercise as narrowing the scope of uncertainty that has to be taken account of using the judicial techniques identified earlier.

91. In relation to what price information is to be considered, I agree with Mr Parker's approach, which is to confine the information considered to that relevant to screens that are no smaller than 12.1 inches in size that were sold both within and before and after the Relevant Period since those are the products that are within the scope of the Decision. Whilst there is an argument of principle about the degree to which post infringement price movement should be considered in this case, I do not understand Dr

Van der Laan to disagree with this approach in principle. Although Dr Van der Laan did not think it appropriate to distinguish between monitor and notebook applications, Mr Parker does not agree. I consider that Mr Parker's approach is to be preferred. Dr Van der Laan assumes there are no material differences between the sectors. However that is an assumption. If empirical enquiry suggests that is or may be wrong then that assumption will or may have a material impact on the total overcharge in respect of which damages are recoverable. I prefer Mr Parker's approach because end user preferences and demand may have varied before during and after the Relevant Period and thus the competitive conditions may have been different in each market, essentially because, as the defendants' annual report from 2004 explained "*Notebook computers require an emphasis on thinness, light weight and power efficiency. Desktop monitors demand a greater focus on brightness, colour brilliance and wide viewing angles*." In consequence Mr Parker has undertaken separate analyses for each of these sectors in order to allow for the possibility that different drivers operated in each.

92. Mr Parker has applied various control variables in order to identify the quantum of price movement attributable to the infringement. That involves identifying the economic and commercial drivers that would have affected LCD screen prices and excluding factors that would not. As is common ground the relevant factors concern production costs, supply and demand and any relevant distinguishing characteristics applicable to particular types of screen. I do not understand Dr Van der Laan to disagree with this selection as a matter of principle.

93. In relation to production costs, Mr Parker applied a cost variable consisting of production costs (consisting of labour, material, manufacturing and overhead costs) less depreciation over the relevant period based on data supplied by the defendants. Again, I do not understand Dr Van der Laan to disagree in principle with this approach. Mr Parker recognises in principle that different margins may apply to different products. Transport costs may be relevant but were not included in the cost data that was available and different regional markets may have preferred particular products over others. This led Mr Parker to group panels according to panel size, country of recipient and resolution and to include an indicator variable for each group so created. There is a dispute between Mr Parker and Dr Van der Laan about the appropriateness of this step in the analysis.

The Demand Variable Issue

94. I have noted already the so-called crystal cycle caused by periods of excess capacity, when prices decreased and periods of increased demand which resulted in increased prices. I have noted the various assumptions that Dr Van der Laan made when adopting his preferred approach. I have rejected that as inappropriate unless there is no other alternative. Mr Parker's approach was to provide controls that were designed to approximate the effects of changes in supply and demand on prices before during and after the Relevant Period. It is this that gives rise to the first and perhaps most important difference between Mr Parker and Dr Van der Laan.. The key point concerns the selection of the appropriate demand variable. I do not understand it to be in dispute between the experts that a valid variable must be one that uses data that is as economically relevant as possible (that is in this context data from a sector that experienced broadly similar demand levels during the period being analysed) whilst not

being endogenous since if the data used is endogenous it may distort the impact of (in this case) the demand variable on price movement.

95. The dangers posed by endogeneity unsurprisingly led Mr Parker to reject use of the demand for LCD panels as a demand variable. Dr Van der Laan at least impliedly agrees. Using the demand for LCD panels as a demand variable was the approach adopted by the authors of the McAnneny Report submitted by the defendants to the Commission as part of its response to its Statement of Objections. It was rejected by the Commission because:

> " … regression analysis performed in the study is very likely to suffer from severe endogeneity bias. That is due to the fact that measures of quantities and price are simultaneously determined in the market and thus can not appear in the same (reduced form) regression model as explanatory and dependent variables respectively.. In other words, a reduced form model is incapable to capture a unidirectional causality link between quantity and price unless appropriate instrumental variables are used to correct for the endogeneity bias. … In presence of endogeneity bias, no reliable result can be inferred from the estimation: the estimated coefficients are biased and they bear no information about the investigated hypothesis. Indeed, the direction and the magnitude of the bias on the estimated coefficient cannot be known a priori. This directly invalidates any conclusion which could be drawn from the study."

Mr Parker accepted that this analysis by the Commission was correct and that its concern about relying on the demand for LCD panels as a demand variable was reasonable – see paragraph 5.111 of his first report, where he repeated the point already noted that to be used as a variable, it must reflect an economically relevant driver of the defendants' LCD screen prices that is unaffected by those prices. It was for this reason that Mr Parker used a different proxy from that used in the McAnneny Report.

96. The factors I have summarised led Mr Parker to conclude that semiconductor billings were:

> "… the most appropriate control as a proxy for the level of demand for TFT-LCD Panels. This variable was previously used in the expert report of Dr Leffler (acting against Participants in the Infringement on behalf of the U.S. Department of Justice ("the DoJ")), as a proxy for the level of demand for TFT-LCD Panels, as its value is related to the level of use of Notebooks and computer Monitors.I agree with Dr Leffler that semiconductor billings could be considered a useful proxy for demand in that it satisfies the key criteria of being correlated with LCD demand (economic relevance) as well as being unaffected by LCD price (exogeneity)."

Mr Parker considers this to be a good proxy for LCD panel demand because throughout the period before during and after the infringement, close to half of semiconductor turnover was generated in the market for computers so that (a) it is likely that semi conductor billings, like the demand for LCD screens would reflect the demand for PCs requiring monitors and for notebooks; but (b) it is unlikely that the price of LCD screens would affect semi conductor demand significantly because demand for them would be affected by numerous factors apart from the demand for LCD screens.

97. In his first report, Mr Parker considered and rejected GDP growth and business confidence as appropriate demand proxies. As he observed, " … *GDP growth records the changes over time in the total value of all final goods and services produced*…" and the " … *business confidence index is intended to capture information on future developments in output, based upon opinion surveys on developments in production, orders and stocks of finished goods in the industry sector*…" that capture " … *changes in the broad outlook of companies across the economy*…" He noted that adding either to his model provided a further control for strength of demand for LCD panels that should only be included within the model if they meaningfully improve the extent to which the model explains variations in the data. Having carried out that exercise, he concluded that this did not result in a material alteration from the results of the model as described above.

98. Using the summary provided in the course of the trial by Mr Raphael produced the following Overcharge results:

Model	**Monitor**	**Notebook**
Parker Original using Semi conductor proxy **(R^2)**	5.7% (0.704)	2.4% (0.497)
Parker Model using Semi conductor proxy and GDP Growth **(R^2)**	6.2% (0.713)	2.78% (0.497)
Parker Model using Semi conductor proxy and Business Confidence **(R^2)**	8.2% (0.716)	2.80% (0.499)

The changes in the R squared test for notebooks produce no more than a de minimis change and then only in respect of the inclusion of business confidence as a proxy. The improvements in the R squared result for monitors were marginally more significant being an apparent improvement of only 0.009 when adding the GDP proxy and 0.012 when adding the business confidence proxy. In principle however, using the semi-conductor proxy in combination with business confidence suggested a higher overcharge with a slightly increased R squared outcome for monitors and a much more modest increase in overcharge for notebooks with a very modestly increased R squared outcome.

99. The further question is whether either the GDP or Business Confidence rates should be used in substitution for the semi conductor as the demand variable proxy. Adopting this course significantly increases the indicative resulting Overcharge figures as follows:

Model	Monitor	Notebook
Parker Original using Semi conductor proxy **(R^2)**	5.7% (0.704)	2.4% (0.497)
Parker Model using GDP Growth **(R^2)**	14.7% (0.695)	13.9% (0.471)
Parker Model using Business Confidence **(R^2)**	17.6% (0.699)	14.7% (0.475)

However the R Squared results are poorer than those that apply to the original Parker model albeit that the differences are minute, being a difference of 0.009 when applying GDP Growth to monitors and 0.005 when applying the Business Confidence proxy to monitors. The changes for notebooks were marginally more significant in absolute terms with an adverse change when using GDP Growth of 0.026 and an adverse change when using Business Confidence of 0.022.

100. The problem that remains is that whilst Dr Van der Laan accepted that semi conductor billings represented a suitable market specific demand proxy – see T5/56/7-12 - he considered it may be sufficiently endogenous to invalidate it as an appropriate proxy – see T4/56/13-15, which led him to conclude that notwithstanding the difficulties referred to above, it was appropriate to use either the GDP or Business Confidence proxy, either exclusively or in combination with semi conductor billings as the data source for the demand variable.

101. The basis for this concern is set out in his second report in these terms:

> "5.8.7 Mr Parker does not appear to consider the mechanism through which changes in LCD panel prices could induce a change in semiconductor billings. Monitor and notebook panels are inputs into the production of PC units. When viewed at a market-wide level, an increase in the price of LCD panels might lead to an increase in the price of PC units. The reason for this is that an increase in the price of LCD panels represents an increase in the costs of producing PC units, which would induce an increase in the price of PC units. An increase in the price of PC units would, all other factors being equal, induce a decrease in the demand for PC units. A decrease in the demand of PC units induces a decrease in the production of PC units, which in turn

> induces a decrease in demand for inputs into the production of PC units such as semiconductors …
>
> 5.8.9 Accordingly, a shock in the price of LCD panels that induces an increase in the price of PC units is likely to have an effect on the level of demand for semiconductors through the mechanism described above. As such, it is likely that the exogeneity assumption of Mr Parker's econometric methodology is violated by the inclusion of the semiconductor billings variable in his regression analysis. The implication of this is that Mr Parker's estimate of the overcharge is unreliable, and it is both biased and inconsistent. I note that it is not possible to carry out formal statistical testing for endogeneity.
>
> 5.8.10 Thus, the use of semiconductor sales as an indicator of demand does not solve the issue of endogeneity: one cannot use a computer without a monitor and all notebooks of course have a screen included. I assume that the very large majority of PC packages will have a monitor included.
>
> 5.8.11 I consider that the use of the more general measure of welfare, income or buying power would be at least as good if not a superior proxy for demand. Furthermore, this sort of measure would not suffer from the issue of endogeneity."

In the course of his cross examination on this issue, Dr Van der Laan accepted that an increase in the price of LCD panels would not necessarily lead to a decrease in demand for semi conductors – see T5/58/8-11. He accepted that the semi conductor market was much larger than the LCD market and he agreed (or at any rate did not dispute) Mr Parker's evidence that in all years of the infringement period the semi conductor market was more than five times larger in value terms than the LCD panel market – see T5/81/5-15. This led to the following exchange between Mr Mussa and Dr Van der Laan:

> "Q. Even if there were some effect on semi-conductor demand from an increase in LCD panel prices, it's unlikely to be a meaningful impact, isn't it?
>
> A. I can't really -- I can't really -- I can't really comment on whether that is meaningful, yes or no because I -- I've not looked at the facts of the downstream market.
>
> Q. So your -- your concern is about the theoretical risk, is it?
>
> A. No, it is a real risk, I just -- it's not a theoretical risk, it's a real risk, only I'm not able to quantify exactly to what extent it is a risk.
>
> Q. So you're not able to say whether it's a material risk or not?

> A. No, I don't know if it's a material risk or no. However, I therefore choose not to take the risk at all and therefore I propose the other indicators for the amounts"

Pausing only to note the apparent inconsistency implicit in Dr Van der Laan's suggestion that he was risk adverse given his primary and preferred method of assessing Overcharge referred to above, the real point about this evidence is that it is entirely speculative. It involves setting out an academic thesis which is unsupported by any evidence or reasoning based on or referable to fact. This requires some caution.

102. Aside from this, this evidence does nothing at all to answer the points made by Mr Parker about the merits of using the alternatives that Dr Van der Laan encouraged me to adopt. In relation to GDP growth, Dr Van der Laan accepted that it looked at the entire economy and not any particular sector – see T5/62/16-20. When it was pointed out that he had rejected the concept of using indicators such as GDP Growth as a control for demand in his first report, his reply was:

> "It's one of the many factors that I consider. Again, here I'm not proposing that the amended Parker model or the Parker model is my preferred model, I'm only showing that with some variations in the Parker model, and in this case actually taking a different demand indicator already assessed and proposed by Mr Parker, which rejected, that it will result in different results of the overcharge estimate. <u>So I'm not saying here that I have a strong preference for one or the other, I'm not saying I like GDP better than I like semi-conductors</u>, I'm only saying that if you want to have a model and you want to have a -- a conservative approach, then I think that you should have presented with GDP growth and business confidence. And yes, actually -- I mean, <u>let me just -- just to correct myself on the last sentence, I think that GDP growth and business confidence are better indicators than semi-conductors simply because they don't have the endogeneity problem, so why take a demand indicator that has a certain risk versus two other demand indicators that don't have a risk</u>" [Emphasis supplied]

Three points arise from this: (a) Dr Van der Laan was not advancing the GDP or any other proxy; (b) he confirmed he was not suggesting the GDP proxy was better than the semi conductor proxy and (c) to the extent he changed that evidence he did so by reference to a point that he accepted be could not evaluate as material.

103. When he was asked about why he had referred to the business confidence model, his response was that he did so because Mr Parker had referred to it. He maintained that he had no reason to reject business confidence as an explanatory factor but then in relation to both it and GDP Growth the following exchange took place:

> "Q. You mentioned several times that you started from using the alternative demand indicators that Mr Parker had considered in his report?
>
> A. Yes.

Q. And did you conduct any further independent analysis of appropriate demand indicators?

A. No, I did not.

Q. So your views on demand indicators are focused on testing Mr Parker's alternatives in his report?

A. Yes, they are …"

104. In my judgment there is no merit in adopting either of the alternative proxy data sources that Dr Van der Laan attempted to rely on but which had been rejected by Mr Parker from the outset. Using the proposed alternatives do not result in meaningful changes when compared with the model that Mr Parker has used but at the same time showed either no material improvement in the R Squared result or a marginal reduction rather than improvement in the R Squared score.

105. Dr Van der Laan has made no attempt to test or investigate the merits of the alternatives that Mr Parker had rejected and has no real answer to the reasons why Mr Parker had rejected them in favour of the semi conductor metric. In addition, in my judgment the Business Confidence proxy is not helpful because (i) it is only weakly connected with demand for LCD panels; (ii) it is by definition much more subjective that the other demand proxies that have been identified by the experts and (iii) is also much more volatile. The alternative (GDP) does not suffer in the same way from the factors identified at (ii) and (iii) in relation to business confidence and does not suffer from an endogeneity problem but like GDP is only weakly connected with demand for LCD panels.

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 semi conductor 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.

The Time Lag Issue

108. As with alternative demand variable proxies, this issue was considered by Mr Parker in his initial report, principally at paragraph 6.26 and following. The issue here is 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. Mr Parker rejects the latter approach because when he tested it, it resulted in statistically anomalous results.

109. Dr Van der Laan takes a different view. However, it was nuanced. Whilst he considered that the regression models incorporating lagged variables for costs capacity and one or other of GDP Growth or Business Confidence as the demand variable to be superior to models which exclusively use non-lagged variables - because prices should be expected to be influenced by and respond to changes in cost and demand variables in the recent past (e.g. the previous month) rather than to respond immediately to any change in these factors – he did not apparently advocate such an approach if the regression models used continued to incorporate semi conductor billings as the data used for the demand variable. This is unprincipled – if the underlying justification for incorporating lagged costs and demand variables is as described then it ought to apply whether or not semi conductor billings are used as the appropriate proxy. It is worth noting however that lagging the explanatory variables in the manner suggested by Dr Van der Laan only results in a significant increase in the likely Overcharge figure based on regression if the more general demand proxies that I have rejected as inappropriate were used. However, given that what is suggested has no material effect given the conclusions I have reached concerning the appropriate approach to the demand variable I need say no more about this factor.

110. One of the difficulties about Dr Van der Laan's approach is that it alters through an unusually large number of reports. However, 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. When this is applied to Mr Parker's otherwise unaltered model that has the effect of increasing the likely Overcharge figure for monitors from 5.7% to 30.1% (with an improved R squared figure of 0.848) and for notebooks from 2.4% to 21.7% (with an improved R squared figure of 0.740). The improved R Squared figures was something that Dr Van der Laan relied on in his cross examination on this issue as supporting the adjustment I am now considering. As he put it:

> "… in this case the R-squared of the model increases quite significantly, which shows there's a much better fit by introducing the additional factors, in this case the lag for the price. So it's not only -- this is -- again this may be a potential concern, but given that the R-squared increases by so much I think it would -- it's very plausible interpretation is that lagged prices price persistence is relevant in this model."

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.

112. The defendants submit that I ought to reject Dr Van der Laan's evidence concerning time lag effects in its entirety because it is entirely unclear in what circumstances it came to be produced. This last point is one that to my mind is made largely for forensic effect. It is not suggested that the defendants have been prejudiced by the timing of its production because they were able to respond to it. Thus it seems to me the critical question that arises is only whether what Dr Van der Laan says concerning a suggested 2-3 month lag should be accepted.

113. Substantively, the defendants submit that the 2-3 month price lag theory is unsupported by any evidence and is implausible. In support of this submission the defendants rely on the sensitivity to price shown by the Crystal Cycle, which shows prices fluctuating significantly over relatively short periods, which is said to be inconsistent with delaying in altering prices for two or three months after a significant change in costs. Some care is needed about this – the Crystal Cycle is apparently driven largely by fluctuations in supply and demand, the magnitude of which is likely to be more significant than cost fluctuations. The willingness to respond quickly to major changes in supply and demand caused by the opening of new factories for example does not point necessarily to a willingness to change in the same way in relation to marginal changes in production costs. Dr Van der Laan's explanation when this point was put to him in cross examination was that " … *one of the probable explanations is that people are reluctant because there's incomplete information to make very drastic price changes even if there's some indicators that would justify such a change. So that basically there's some persistence in price…"* However, as he accepted later in this section of cross examination his conclusions were based on assumption and there was then this exchange:

> "Q: … you haven't presented any meaningful evidence of price persistence -- that there would have been price persistence in the counterfactual here?
>
> A. In the counterfactual there would -- there would be no reason to assume that price persistence would be different in the counterfactual period or in the counterfactual without the cartel, because the level of uncertainty would be exactly the same"

This approach continued later in his evidence when he sought to attribute price lags to long term supply agreements. It is not immediately clear how long term supply agreements relevant to costs could cause price lags other than by suppressing costs but the real point is that this was supposition – as Dr Van der Laan accepted, he had not seen any evidence of long running supply contracts and he avoided confirming but in any event I conclude that this was a theoretical explanation. This sort of speculation in relation to what ought to be an empirical question does not provide a sound support for this approach.

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).

115. Secondly, I accept that mathematically lagging in the manner adopted by Dr Van der Laan reduces significantly the extent to which Mr Parker's model treats input costs and demand as determining price. Whilst in principle that may suggest simply that cost and demand are not the main drivers of price in the LCD screen market, that is contrary to what has been agreed, is counter intuitive given the manner in which the Crystal Cycle operates in relation to demand and is logically inconsistent with the purpose of and primary market controls exercised by the cartel.

116. Thirdly, whilst I accept that price persistence may in principle be a factor that ought to be taken into account when modelling for a particular industry, whether in fact it is an appropriate factor to be included depends critically on the market or industry being considered. The point made by Mr Parker and at least impliedly accepted by De Van der Laan is that whether it is an appropriate factor to be included is essentially a factual question. It depends on the availability of evidence that proves the price lag that is being modelled for. If there is no such evidence (and none was referred to by Dr Van der Laan) then there is no utility and significant mathematical risk in including it.

117. For the detailed reasons set out above, in principle I prefer Mr Parker's approach to the assessment of the Overcharge over that of Dr Van der Laan on the issues I have so far considered wherever they differ.

Post Infringement Effects

118. One factor I have not considered so far concerns a submission by the claimants that Mr Parker's "before/during/after" regression leads to an under estimation of the likely overcharge because it cannot safely be assumed that the effects of the cartel's activities ceased to have any effects on the defendants' prices for LCD screens after the date adopted by the Commission as being the end of the cartel. This is said to be the likely result of an "… *enduring structural impact of the Cartel*…" and price persistence meaning that prices will only adjust back towards a competitive level over time as the effects of a non cartelised market start to assert themselves.

119. Mr Parker accepted in principle that if the post cartel data was affected by the infringement that would lead to an understatement of Overcharge applying his model. This effect was suggested to be the result of two factors – first, if and to the extent the effect of the cartel had been to limit capacity, then there was likely to be a time lag between the end of the cartel and the time at which capacity increased due to the cartel no longer operating and secondly a delay in time between the end of the cartel and the return of prices to levels unaffected by cartel activity.

120. Mr Parker agreed in principle that if the effect of the cartel had been to limit production and capacity then that would support the conclusion that post cartel prices would be affected by the infringement and that models based on post cartel data would understate the overcharge on which recoverable loss is based. His oral evidence was however that there was no evidence of a material effect post cartel of this type – see T8/39/23-24. His reasoning in relation to this was summarised by him in the experts' joint memorandum in these terms:

> "I have seen no evidence which indicates that the Infringement impacted on the level of capacity in the market either within the Infringement Period or subsequently, and as a result there is no reason to expect the Infringement to have had an effect beyond the Infringement Period. Moreover, changes of a month in the end date of period treated by my model as part of the Infringement Period results in a minimal change in the estimated Overcharge. "

Dr Van der Laan's summary of his evidence on the same issue was premised on critical assumptions:

> "If Post-Cartel Period data are affected by the Cartel (with both LCD panels costs and prices being higher than the competitive level absent the Infringement), and if these Post-Cartel Period data are used as an indication of the competitive level (a benchmark) to estimate the overcharge, then the model will result in estimate of the overcharge that is too low"

121. The difficulty about this approach is the point made by Mr Mussa, which I accept, which is that " … *like the magnitude of overcharge, whether a given cartel has a post-Infringement effect is an empirical question; any assessment must take as its starting point the particular Infringement in question. The issue between the parties is therefore whether there is evidence of any such an effect*."

122. It was suggested to Mr Parker that his model would not work if it applied only to the data before and during the infringement period, to which he responded that its predictive power would be reduced – see T8/81/16-21. I construe this as meaning that the model is not entirely invalidated but the scope of uncertainty will be wider. I accept that in principle that will be so. I reject the notion (if such is alleged) that this conclusion means that I ought to accept Dr Van der Laan's preferred approach. His approach ignores what happened after the date when the Commission concluded the cartel as coming to an end but his model continues to suffer from all the difficulties referred to above that led me to reject it as a sound basis for attempting to identify the likely level of overcharge.

123. It will help to remove from consideration points that I regard as wrong or immaterial before turning to the substance of the sub issue I am now considering. Firstly. I reject as wrong the defendants' characterisation of this part of the claimants' case as an attempt to expand their case beyond the realm of a purely follow on claim. Whilst it is true to say that the claimants seek to make various assertions about the effect of the cartel after the date the Commission have concluded it came to an end, this is not for the purpose of making a hybrid claim, which is not open to the claimants on the case as

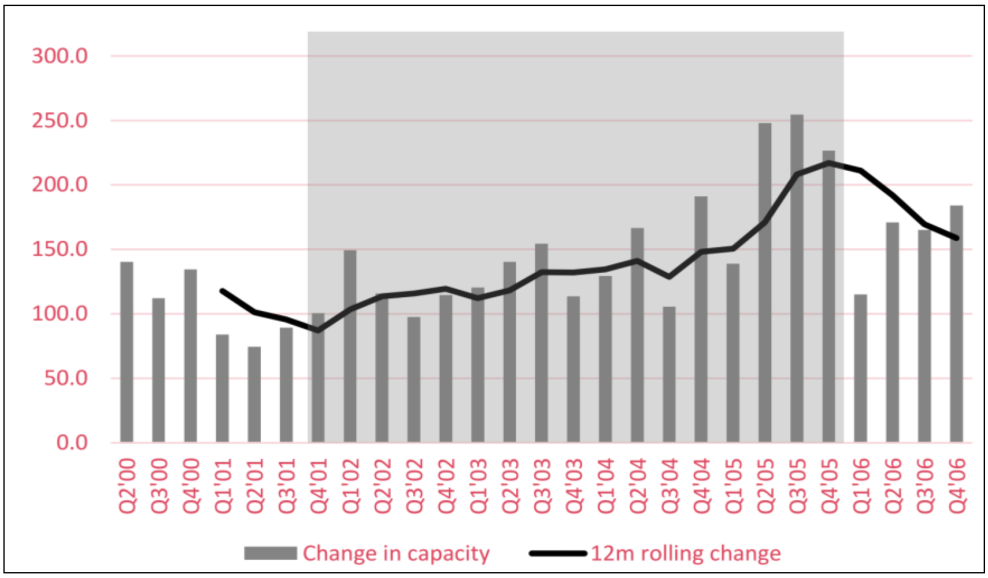
pleaded, but rather is an attempt to argue that the likely overcharge percentage identified by Mr Parker's baseline model understates the relevant percentage because the post infringement data remained affected by the infringing conduct during the infringing period. It is not an attempt to claim damages outside the period covered by the Decision. It is an attempt to ensure that the material on which the court reaches a conclusion concerning the level of Overcharge during the infringement period is assessed correctly. I reject therefore as misplaced the suggestion that the submissions I am now considering are not one available to the claimants.

124. I turn now to whether there is evidence that supply was reduced by the cartelists during the infringement period. This issue was summarised in the joint memorandum under the sub heading "*Impact [of] the Infringement on Capacity*".

125. Mr Parker summarised his evidence as being

> "There was increasing investment in capacity during the Infringement Period. Investment in capacity during the Infringement Period was always greater than prior to the Infringement Period. Following the Infringement Period, capacity increases fell, while remaining above pre-Infringement Period levels."

He illustrates by using glass substrate input capacity as a proxy (because it is a critical raw material used in the manufacture of LCD screens) as showing that LCD panel capacity was added at an increasing rate through the infringement period, with the lowest 12 month rolling average being in Q4 2001, at the start of the infringement period. The peak in capacity being added in Q1-3 in 2005, just before the end of the cartel (shaded area being the infringement period):



This suggests that decisions on adding capacity and the addition of capacity were taking place throughout the infringement period. It does not support the proposition that capacity increased only gradually after the end of the cartel from capacity lows achieved during the cartel. It suggests if anything a retrenchment after the end of the cartel. This is consistent with the finding made by the Commission as to the effect of the cartel on capacity which was that it concerned agreeing future behaviour concerning pricing, production and capacity utilisation.

126. Dr. Van der Laan's opinion was however that discussions between Cartelists on capacity (as referred to in the Decision) were effective in controlling and coordinating increases in capacity and that " … *the impact of this anti-competitive conduct on the supply side would have continued into the Post- Cartel Period and so one cannot assume that pricing in the Post-Cartel Period will be representative of the competitive pricing that would have occurred in the absence of the Cartel*." As I have explained, Dr Van der Laan's empirical research did not extend beyond gathering the pre infringement data necessary to construct his preferred model. Thus, as the language quoted above makes clear, his opinion involves making an assumption.

127. Mr Parker also considers that since the cartelists did not control the whole of the market, it follows that if the cartelists had been reducing capacity increases over the period the cartel was in operation, so as to leave unfulfilled demand (as a method of driving prices up) the statistical evidence would demonstrate that over the infringement period manufacturers who did not participate in the cartel would have increased capacity in order to take advantage of the unfulfilled demand. Mr Parker's evidence on this is that in Q4 2001 (the start of the infringement period) the cartelists held 45% of capacity; that this rose throughout the period the cartel was in operation to 60% by Q1, 2006, when the cartel ceased operating and continued to increase in the 12 month period after the end of the cartel.

128. Mr Parker also carried out an analysis of investment in current generation fabrication plants (which as explained earlier are more efficient and thus allowed LCD screens to be manufactured in greater quantity at less cost per unit manufactured) during the Relevant Period. If what was happening during the Relevant Period was that the cartelists were reducing capacity or the growth of capacity so as to create unfulfilled demand in order to drive up downstream prices, then it was to be expected that non participants in the cartel would have increased their proportion of the total new generation fabrication plants commencing operations during the Relevant Period. Mr Parker's evidence was that the cartelists held 82% of current generation capacity at the end of the cartel but only 59% at the start. This suggests that the cartelists were investing in improved manufacturing facilities through the period of the cartel and so is inconsistent with the notion that during the cartel its participants reduced investment in capacity or reduced the rate of increase in capacity, the market effects of which would have carried on for a period after the end of the cartel.

129. It was principally these three factors that led Mr Parker to conclude that:

> "Whether the Infringement impacted capacity is an empirical issue to be addressed via suitable analysis, with the relevant issue being whether there was a reduction in growth in capacity by the Participants compared to what might have been expected in the counterfactual. As I have set out above, I do not consider that there is any such evidence, as capacity grew faster during the Infringement Period than pre-Infringement Period, and Participants grew their capacity faster than non-Participants"

I agree. I do not accept that what is set out in the Decision concerning the exchange of information concerning capacity and expansion takes matters further. It is not necessary that I carry out an investigation into whether the relevant paragraphs on which the claimants rely are ones that satisfy the test set out earlier concerning the admissibility of recitals in decisions. That is so because I am not concerned with what the cartelists agreed or did not agree – that was a matter for the Commission when deciding whether there had been an infringement of Article 101 or not. I am concerned with attempting to quantify the effects of the infringing activity. That depends on an analysis of the evidential material available and that which I have considered so far does not support the conclusion that there was a carry over effect into the post infringement period that either invalidates relying on post infringement statistics for modelling purposes or that the resulting overcharge information so under estimates the overcharge resulting from the infringing activity as to require an upward "broad brush" adjustment.

130. Mr Parker's approach is to be contrasted with that of Dr Van der Laan on this issue. As I have said already, Dr Van der Laan's approach of necessity involves speculation on the basis of theoretical assumptions. He sets out his evidence on the issue I am now considering in section C of his first report entitled "*Competition in the Post Cartel Period – Ongoing Unlawful Conduct*".

131. Dr Van der Laan starts by making the valid points that (a) it is not clear why the Commission chose 1 February rather than 28 February 2006 as the end date for the cartel; (b) that the date chosen precedes by between 9-10 months the date when the Commission first sought information from the cartelists concerning the cartel; (c) the Commission initially concluded that the cartel came to an end in June 2006 which it reduced to 1 February 2006 on the basis of responses from those or some of those to whom statements of objection had been sent by the Commission and *"(i)t therefore appears that the EC had indications that the Cartel continued until about June 2006…*"; and (d) the Decision states in terms that the Commission could not be sure " … *with absolute certainty that the infringement has ceased*…" which is why it was necessary for the Commission to require the entities to which the Decision was addressed " … *to bring the infringement to an end (if they have not already done so)*…" All this leads Dr Van der Laan to say that:

> "… in respect of the Cartel, there are strong indications that anticompetitive conduct continued past the end of the Cartel Period and so I do not consider that it is safe to assume that unrestricted competition returned to the market for LCD panels immediately following the end of the Cartel Period. "

In my judgment this goes too far. The facts and matters to which Dr Van der Laan refers provide a tenable basis for concluding only that anticompetitive conduct <u>may have</u> continued past the end of the infringement period and in any event the facts and matters to which he refers say nothing about the qualitative impact any such continuation may have had. As I have said (and as I think was in the end common ground) any such effects depend principally upon the degree to which if at all capacity was reduced as a mechanism for creating unfulfilled demand and on the degree to which prices remained higher than they would have been in the counter factual world during the immediate post cartel period.

132. In my judgment the answers to these questions depend on evidence and in this case on the evidential inferences that can safely be drawn from such statistical evidence as is available. It is simply not good enough in a case of this sort for it to be said (as does Dr Van der Laan) that " … *it is a common assumption that prices will not immediately return to the competitive level following the formal end date of the Cartel*…" Equally speculative were Dr Van der Laan's comments that (a) " … *if one or more of the Cartelists agreed to delay investing in new generation fabs*[2] *(which would have reduced costs of production and increased overall capacity), costs would be higher in the Post-Cartel Period irrespective of the fact that price-fixing agreements had stopped*…"; and (b) "… *to the extent that the Infringement affected investment in production facilities and vertical integration involving panel producers, there is no reason to assume that pricing will ever have returned to the competitive price that would have emerged in the absence of the vertical integration*." Given the limited nature of his comments and the absence of any empirical investigation by him as to what if any post cartel effects occurred – see by way of example paragraph 10.9.22 of his first report- it is not surprising that his conclusions on this issue were limited to that set out in paragraph 10.9.23 of his first report:

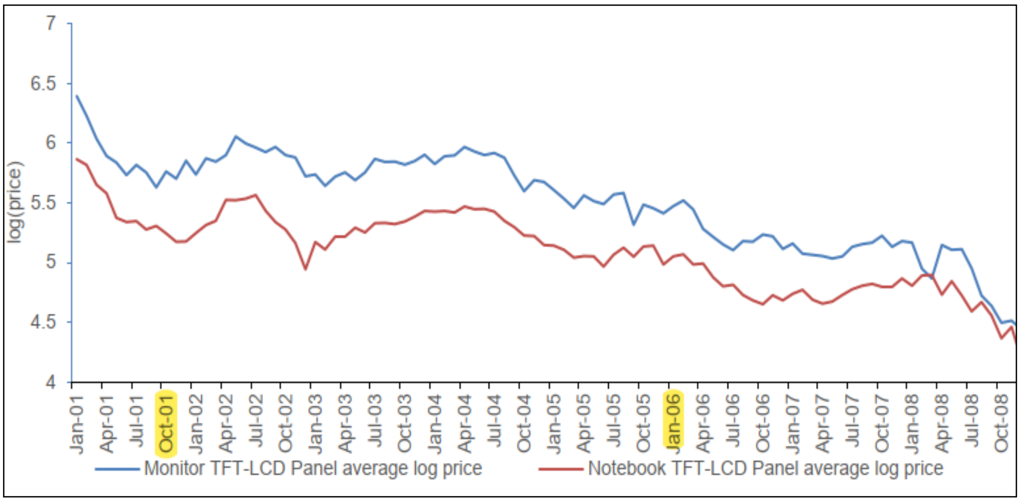
> "Accordingly, the effects of the Infringement could have lasted much longer than the Cartel Period and the time taken to return to competitive pricing (the run-off period) is likely to have been considerably longer than might be expected for a cartel covering pricing alone"

In light of this material. I prefer the evidence of Mr Parker on this issue over that of Dr Van der Laan. On Mr Parker's evidence he was plainly correct to disagree with the proposition identified in the joint memorandum that there is " … *empirical evidence that the Infringement led to a reduction in investment in capacity by the Participants*…" and it is difficult to see how Dr Van der Laan could express his "*qualified*" agreement to the proposition given the theoretical nature of the evidence he gave with no attempt to qualify what if any post cartel effect in fact occurred.

133. I have so far considered reduction in capacity or reduced growth in capacity in the post cartel period. There is another issue however, it concerns the more general point made by Dr Van der Laan that in his view "… *following a cartel it is very unusual for prices to return to a competitive level immediately*…" and *"... it is very unlikely that the prices in the Post-Cartel Period would not have been affected after a Cartel which lasted at least 52 months*." His view is 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. In Dr Van der Laan's view " … *any model which relies on data from the Post-Cartel Period, will be an underestimate of the actual overcharge*…" but although "… *one may assume that this effect on the estimate is significant however I am not able to quantify this*.".

[2] "Fab" is a word used by the cartelists, expert witnesses and the Commission to refer to a fabrication plant, factory or facility at which LCD panels are and were manufactured.

134. Dr Van der Laan starts with the average LCD panel prices for both notebook and monitor panels charged by the defendants over the period of his model which he presents graphically as:



Dr Van der Laan shows that the price series used is "*persistent*" by which he means that a present price depends at least in part on the price in previous time periods and that this implies that if there was an overcharge during the Cartel Period, the prices in the Post-Cartel Period would also be affected. Dr Van der Laan carried out a mathematical analysis of this material, which led him to conclude that monitor prices when tested against any particular price result in lags of 1, 2, 7, and 9 months and for notebooks of 1, 2, 3 and 6 months. Dr Van der Laan says that this means in real world terms that the price for a monitor panel is partly determined by the prices in the prior month and prices 2, 7 and 9 months in the past and for notebooks is partly determined by the prices in the prior month and prices 2, 3, and 6 months in the past. He concludes that:

> "These results indicate that the effects of the Cartel will likely have persisted in both LGD's monitor and notebook panel prices for at least 6 months after the end of the Cartel Period. The implication of this is that Mr Parker's model will provide an underestimate of the overcharge"

135. Dr Van der Laan summarises his evidence in the joint memorandum as being 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 and adds that:

> "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."

Mr Parker's response is that:

> "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 for 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. <u>I therefore consider that Dr Van der Laan's analysis is consistent with price persistence for at most 2-3 months."</u> [Emphasis supplied]

136. When this issue was explored in cross examination, Mr Parker changed his evidence. What he had described in the joint memorandum as being consistent with price persistence for at most 2-3 months now became a "*statistical correlation in prices"* although Mr Parker did not define what he meant by this expression. In statistics, a correlation is usually a relationship <u>whether causal or not</u> between two <u>random</u> variables. In other words, Mr Parker's oral evidence on this issue was close to the opposite of what he was apparently saying in the joint memorandum. As he added in the course of his answers in cross examination, "*…it does not mean there's an economic meaning to that correlation… it doesn't mean that's actually a determinative of prices, it means you picking up a statistical correlation…"*. This issue was carefully explored by Mr Raphael in cross examination. He put to Mr Parker that this was not what he had stated previously – see T8/36/5 and 18-20. Following an answer that took matters no further, Mr Raphael then suggested to Mr Parker that:

> "18 What's happened, Mr Parker, is you subsequently realised the implications of price persistence for the overcharge estimates; that's the cause of the change?"

Mr Parker's response was to say "*…I had not considered the implications of price persistence for the overcharge estimates…"* and that his explanation for his change of evidence was that "*… I had spent more time thinking about: is it an economically plausible way of thinking about what affects prices in this market …"* I then asked Mr Parker if the effect of his oral evidence was that he wanted to change what he said in the joint report, to which he responded "*…I would say replace "price persistence" in the last sentence with "statistical correlation in".* He added that *"I don't think there's evidence from a material effect post cartel or any material overhang-type effect so I would say no, I don't think that's right"*.

137. This change of position was unsatisfactory. Mr Parker is a highly accomplished economist and statistician with very substantial experience of giving advice and evidence in competition contexts. This change struck me at the time he gave his oral evidence and strikes me now as a substantial change of view that would require a clear explanation as to how the error came to be made and a substantial justification before I could safely accept it. I was not satisfied then and I am not satisfied now on either aspect. 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 world wide price fixing cartel could be eliminated instantaneously on the coming to an end of the cartel. I consider that in the context of this case that point is all the stronger because of the points

made by Dr Van der Laan concerning how the Commission approached its investigation.

138. That said, I do not think the post cartel price effects are capable of calculation with precision by reference to the statistical analysis that Dr Van der Laan has used, but to be clear I do accept that analysis strongly supports the inherent improbability that the effects of the cartel came to an end at midnight on 1 February 2006. The impact of the statistical analysis in relation to the issue I am now considering illustrates the need at all times when considering statistical analyses in this area to remember that (a) the fact that calculations are carried out in a very sophisticated manner to three decimal places does not lead necessarily to the conclusion that that the result is accurate to the level of certainty such expression implies and (b) it is necessary to approach all these questions with the commercial and economic realities squarely in mind.

139. Where does all this lead? First, I conclude that Mr Parker's evidence in the last sentence of his comment in the joint memorandum is to be preferred over his reformulation and on this issue I ought to accept Dr Van der Laan's evidence that in this case at least, the failure to take account of post cartel overcharge will result in a more than *de minimis* under estimate of the actual overcharge using the regression analysis model used by Mr Parker.

140. Dr Van der Laan attempted to carry out an adjustment of Mr Parker's model to take account of this factor. The result of excluding the post cartel data was to produce a negative overcharge for monitors of (-6.9)% and for notebooks of (-15.9)%. Dr Van der Laan describes this outcome as "*extremely implausible*" and that "… *one cannot draw very strong conclusions from this result*…" I agree. In those circumstances, I conclude that I must arrive at a figure applying the broad brush approach summarised in paragraph 28 above.

141. Mr Parker's view was that the post cartel effects attributable to price persistence would have ceased to apply after a period of three months from the notional end of the cartel. Notwithstanding my concerns about Mr Parker's evidence in relation to this issue, I consider his evidence on this particular point is to be preferred. Although Dr Van der Laan concluded that price persistence continued for monitor panels for up to 9 months and for notebooks for up to 6 months, in my judgment that comes up against the point made by Mr Parker quoted already concerning the implausibility of effects occurring after 4 months of having no impact (in relation to monitors) for which there is no answer. The pattern of price movements for monitors and notebook screens appear to be broadly similar in the period January to July 2006. Whilst these issues are ultimately a matter for judgment applying the principles set out in paragraph 28 above, I think it probable that the persistence effect would have diminished over time and probably would have ceased to have a substantial effect by sometime between the end of May and the end of June 2006. Whilst the statistical results generated by Dr Van der Laan by excluding the post cartel data from Mr Parker's model suffers from the defects already noted, it provides some support for a conclusion that the probable overcharge is much nearer to what Mr Parker concludes than what Dr Van der Laan concludes it was applying his preferred method of assessment. Mr Parker does not suggest otherwise.

TVs

142. Mr Parker's base line model for TVs resulted in an overcharge of 11.89% using the model he developed for monitor and notebooks. It follows that if in principle Mr Parker's approach is to be preferred, any adjustments I conclude are required should be subject to similar adjustments. There are uncertainties created by this approach as Mr Parker acknowledges in section 6.2 of his third report at paragraph 6.12. The reasons for this include that semi conductors may not be as optimal a demand control as for monitors and notebooks, because TV screens were and are larger and the market for TVs was small at the start of the Relevant Period. The claimants propose that the same overcharge rate should be applied to all products. As I have said already, I do not agree with that approach. In my judgment therefore, an adjustment has to be applied to Mr Parker's overcharge rate for TVs to take account of the points made above. I have also taken into account the point that Mr Parker's base line estimate may already attribute a greater proportion of market price increases to the infringement than it actually caused arising from the sub optimal nature of the model.

Conclusions Concerning the Overcharge

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.

The Upstream Pass On Issue

The Issue in General

144. The defendants are "… *content that the Court make a finding of 100% pass-on, if it considers that economic theory can be taken into account when assessing pass-on (whether upstream or downstream*)" – see paragraph 173 of the defendants' closing submissions. This hints at what in fact is the position – that there is a major difference of view between the parties as to whether and if so to what degree the claimants passed on price increases they experienced as a result of the cartel. The defendants' position is that whether there has been upstream pass on is a question of fact. I agree. As Dr Van der Laan put it in the joint memorandum, pass on " … *is primarily a factual matter that should preferably be assessed using empirical evidence. In absence of suitable data and information to assess pass on, the second-best approach is to use other evidence that might provide an indication in relation to the likely level of pass on*." Mr Parker agreed. As he put it in the joint memorandum, *"(e)conomic reasoning is particularly likely to be important where empirical evidence is patchy or absent*."

145. The defendants submit that there is far more factual evidence available relating to downstream pass on than there is for upstream pass on. Again I agree. This is not

surprising given that the claimants purchased many thousands of LCD Products over the infringement period from different suppliers and (a) the manufacturer of the LCD panel within the LCD Product purchased by the claimants cannot be determined from the product description in the purchase invoice; (b) all the main manufacturers of LCD monitors and notebooks sourced LCD panels from more than one panel manufacturer; and (c) disclosure has not been obtained from the suppliers to the claimants.

146. The defendants then submit that if I conclude that " … *there is insufficient factual basis to permit a downstream pass-on finding, [I] would not be able find upstream pass-on either and the Claimants' claim must be dismissed*." I do not accept that this follows. There is no necessary reason for treating both the upstream and downstream pass on issues as identical or ones that must by definition be resolved in the same way. The factual issue that arises can be proved by evidence of fact or by inferences and conclusions to be drawn from expert evidence. In principle there is no reason why one cannot be proved by factual evidence and the other by expert evidence or a combination of the two. Further, to the extent that expert evidence is relied on it is at least possible that different considerations apply or at least may apply when assessing up stream and down stream pass on questions. I prefer therefore to consider each issue separately and I do not accept that my conclusions on one lead necessarily to the same conclusion for the other.

147. There is no material factual evidence available that is relevant to the upstream issue, not least because it is not possible to identify the precise supply chains pursuant to which the claimants purchased their LCD Products. It is for that reason that both Mr Parker and Dr Van der Laan agree that it is reasonable to determine upstream pass-on predominantly or wholly on the basis of the underlying economics of the upstream market for LCD panels – see paragraph 43 of the joint memorandum.

148. Dr Van der Laan's main reason for concluding that there would have been 100% upstream pass on is that the margins recovered by intermediaries between the defendants and the claimants were so low that that they would be loss making unless any panel price increases were passed on. The logic of this is obvious. His evidence (set out at paragraph 12.2.3 and following of his first report) is that margins for monitors were generally low and understood by the defendants to be low at 7% and that without full pass on of cost increases a supplier would be quickly operating at a loss, which it would be at best impractical to absorb. His evidence was also that the cost of the screen represented a high proportion of the total cost of manufacture of a monitor. He also relied on some evidence that suggests that panel price changes appeared to have been common with prices decreasing steeply in the Pre-Cartel Period from April 2000 to March 2001 with an average fall of 31% in the 12 months prior to the commencement of infringing activity. He assumed that the conditions applicable to note book manufacturers would be materially the same as those that applied to monitor manufacturers.

149. Mr Parker's evidence on the issue I am now considering was to elide the issues of upstream and down stream pass on and conclude on the basis of economic theory that "*… pass-on was around 100% both upstream and downstream, with stronger evidential support for this conclusion in relation to downstream pass-on*."

150. Both experts agreed that upstream pass on was likely to be "*…around 100%"* – see paragraph 47. Mr Parker did not expand upon his agreement but Dr Van der Laan reiterated his opinion that

> "…it is most likely that the overcharge was passed-on to intermediate purchasers such as the Claimants. Evidence provided by LG (in Van der Laan, 12.2.5) suggests that the panel purchasers/monitor sellers operated at a very low profit margin on LCD monitors (after subtracting the costs of a monitor other than the LCD panel). This low margin implies a limited ability to absorb cost increases including any overcharge on LCD panels. It was therefore very likely that any overcharge by the LCD panel producers would be passed on to indirect purchasers such as the Claimants. This is supported by a high correlation between average LCD panel prices and LCD monitor prices paid by the Claimants. Accordingly, in Dr Van der Laan's opinion, the upstream pass-on rate to the Claimants should be assumed at around 100%"

151. I conclude that the claimants have proved that upstream pass on was 100%. I reach that conclusion for the reasons identified by Dr Van der Laan, whose evidence on this issue was not challenged and which I accept.

Umbrella Effects

152. This is a separate issue relevant to upstream effects on the claimants. It is concerned with the effect of the cartel on prices charged by panel manufacturers who did not participate in the cartel. The claimants' case is that non participants would have charged higher prices in response to those being charged by the participants. Mr Parker's conclusion was that " … *although there are likely to have been umbrella effects, they are unlikely to have been at the full level of the Overcharge caused by the infringement.*" Notwithstanding that evidence, Mr Mussa conceded in his written closing submissions that the defendants were "*…content for the Court to make a finding of 100% umbrella effects*…", although Mr Mussa made this concession "*… on a broad axe basis*…". In those circumstances I do not attempt to resolve the technical issue between Dr Van der Laan and Mr Parker as to whether the umbrella effect should be treated as being 100% or some lesser percentage of the whole. It is not necessary for me to do so. Although it was suggested by Mr Mussa that if I accepted the submission of the claimants (as I have to an extent in relation to the overcharge issue) that Mr Parker's modelling under estimates the value of the claim, I should adjust my evaluation of the umbrella effects to take account of Mr Parker's view that it was unlikely that non participants would increase their prices to the same extent as participants, in my judgment that would be inappropriate. The adjustments that I have made so far relate to an effect where there was no reliable statistical evidence that enabled the effect to be calculated. The issue I am now considering is different. Once it is conceded that I should make a finding of 100% umbrella effects, no adjustments that reduce the impact of that concession are appropriate.

The Volume of Commerce Issue

153. This issue is concerned with identifying the number of monitors and notebooks to which the overcharge multiplier referred to above should be applied. Given my conclusions on upstream pass on and umbrella effects, the sole question concerns the total volume of monitors and notebooks purchased by each claimant during the relevant period. It is common ground that the relevant period runs from 1 November 2001 to the date when each Claimant ceased trading. The reason for this is that such documentary evidence as is available suggests that the time between an order being placed by the claimants and the goods ordered being delivered was in the range of between 2 – 4 weeks. This led Mr Parker to conclude that:

> "… it is inappropriate to include invoice evidence from October 2001 in the estimate of affected purchase volumes. Given the relevant lead times, I consider it is more appropriate to start from November 2001 (recognising that this is also an approximation)."

Mr Parker also noted that the claimants' approach had been not to distinguish between products manufactured by participants in the cartel and products purchased from non participants. Mr Augustin agreed with this approach – see paragraph 4.6.6 of his second report.

Notebooks – Granville and VMT

154. The parties are apparently agreed as to the approach to estimating Granville and VMT's purchases of notebooks. Mr Mussa stated in his written closing submissions that the defendants did not "… *invite the Court to make findings on them, although reserves the right to do so if the Claimants refuse to remove these figures from their calculations*" I have acceded to that invitation. However, if agreement had not been reached on relevant volume between the delivery of this judgment in draft to the parties and the hand down date, they must be resolved at the hand down hearing, if necessary by me delivering a short supplemental judgment dealing with the issue. All parties are directed to include all submissions relevant to this point in their skeletons for use and the hand down hearing.

Monitors - Granville and VMT

155. There are two issues of principle that arise, being (a) whether proforma invoices constitute reliable evidence of the relevant claimant having completed a purchase of a LCD monitor; or (b) whether the number of purchases completed should be calculated by reference to sales invoices or management accounts. In relation to this last point the defendants accept that simply looking at the sales invoices alone will probably understate the volume of commerce in monitors because sales invoices have been lost in the intervening years, not least as a result of the claimants entering administration then liquidation, but maintain that looking at the invoices and proforma invoices in combination will over state the claim.

156. During the infringement period, a technological change was taking place in which fewer and fewer people wanted personal computers with CRT[3] screens and more and more

[3] Cathode Ray Tube

wanted LCD screens as a matter of preference. The defendants maintain that this will lead to an over estimate of volume because (a) it is more likely that earlier rather than later sales invoices will have been lost; (b) more CRT than LCD monitors will have been sold at the start of the relevant period than at the end of it and (c) there are many more proforma invoices for LCD screens than for CRT screens.

157. As will be apparent from what I have said so far, these issues depend on what assumptions are to be made as to what copy invoices have been lost and the degree to which pro forma invoices can be assumed to evidence actual transactions that in the end took place.

158. The defendants' solution on this issue is to invite me to estimate Granville and VMT's volume of commerce in monitors by taking a midway position between the figure calculated by the defendants based on sales invoices alone and that calculated by Granville and VMT. The claimants maintain the VMT management accounts are a better source of data and provide a pragmatic best estimate of the volume of commerce I am now considering. If that is rejected then it is submitted I should use the data provided by the pro forma invoices.

159. The sales invoices are hard copy documents stored when the claimants went into administration. It is clear that not all the boxes of sales invoices have been retained – see Mr Augustin's first report, where he says at paragraph 5.3.4 that:

> "a) There is a risk that not all purchase invoices were retained by Granville or OTC prior to administration, particularly given the historic nature of the Cartel and the fact that most records at that time were hard copy rather than electronic;
>
> b) It appears inevitable that not all invoice records will have been retained by the Liquidators. The Claimants' disclosure statement highlights that the majority of OTC records were destroyed in 2009 and there are certain Granville records which are no longer available due to a small number of boxes containing company records which were inadvertently destroyed in 2017; and
>
> c) There is a risk that not all invoices have been identified during the disclosure process or for inclusion in the Invoice Spreadsheet by paralegals or OC, given that hundreds of boxes of hard copy documents have had to be searched manually. … not all records retained by the Liquidators have been reviewed, for the reasons explained in the Claimants' Disclosure Statement."

The defendants accept that to calculate volume only by reference to invoices would probably result in an under estimate of volume. In those circumstances, it would only be appropriate to rely on the sales invoices alone if no other evidence were available. There is other material available. It is no doubt for these reasons that the defendants makes the concession referred to above.

160. In my judgment, in principle the management accounts are likely to represent the best evidence from which conclusions as to volume of commerce can be reached. It is

common ground that this is so in relation to notebooks – see T7/12/18, where Mr Parker was asked whether he accepted the overall reliability of the management accounts, to which he responded *"(w)ith respect to notebooks, yes."* He added that the management accounts were "*…appropriate for calculating the number of notebooks with minor adjustments…"* . This represented a change of view by Mr Parker, who had originally concluded that the accounts were not a good basis from which to derive the volume of commerce in notebooks. He attributed his change of "*… view on that in respect of the arguments that have been made and I now think that they are appropriate for notebooks, but I still have my reservations in relation to PC monitors..*." because " … *you need to make quite a number of additional assumptions that are more material…*" – see T7/12-13. From this I conclude that in principle Mr Parker accepted the management accounts as fundamentally sound. I agree.

161. It was common ground that an adjustment had to be made in relation to monitors because the material in the accounts related to the sale of PCs not monitors and some would be sold without monitors and others would be sold with CRT monitors rather than LCD monitors. In relation to these adjustments, Mr Parker accepted that " … *Mr Augustin has gone into quite a bit of detail in how you might do that. I think the approach that he's done is the best approach that's been presented…"* and that if the accounts are to be used then " … *I think his approach is reasonable, is the best approach available from what we've seen*". The effect of this evidence distilled to this:

> "Q. Therefore if management accounts are the right things to use, you essentially agree with Mr Augustin's figure that we've seen in the skeleton?
>
> A. Yes."

He accepted that the choice was whether to use the accounts or the sales invoices. However, as I have explained it is now accepted that the invoices alone will probably lead to an under estimate of the relevant volume of commerce. Indeed, inferentially it is likely to be a substantial under estimate given that of the 118,000 notebooks that are evidenced by the management accounts, only 57,000 odd were also evidenced by sales invoices. Even allowing for the adjustments that it is common ground have to be made in relation to monitors, it is probable that looking at the sales invoices alone would result in a substantial under estimate of the volume of commerce in monitors and not merely "*possible"* as stated by Mr Parker in the course of his oral evidence – see T7/17/5-11. Ultimately there was this exchange between Mr Raphael and Mr Parker:

> "… it's obvious, isn't it, that the management account inferences is the better way of getting to the result?
>
> A. I think that may be the case... It is possible that management accounts plus adjustments might be a better way… Mr Augustin's approach is the best way to make those adjustments that's available, but it may be that there is no good way ultimately of making those adjustments…"

In the light of this evidence I accept as correct Mr Augustin's evidence based on the management accounts.

162. In the result therefore I accept (subject to confirmation of the mathematics by the parties) that the 491,380 PCs referred to in the management accounts should be reduced to 444,228 when adjusting for an estimate of the number of units likely sold without any monitor and to the 229,708 units to account for the issue concerning CRT monitors. I conclude therefore that the relevant volume of commerce in monitors during the Relevant Period was 229,708 units.

163. In light of these conclusions it is not necessary for me to consider further the proforma invoice issue. As will be apparent from what I have said so far, I reject the defendants' submission that the appropriate solution is simply to estimate the relevant volume at the midpoint between the claimants and defendants calculations. To adopt that course would be unprincipled where as here there is evidence that with appropriate adjustments can deliver a much more accurate result and where it is common ground that the adjustments adopted are as Mr Parker put it "… *the best way to make those adjustments that's available*…"

TVs - Granville

164. The claimants invite me to assess the volume of commerce in relation to TVs at 909 on the basis that the figure is supported to 50 units by sales invoices and as to a further 859 by pro forma invoices. Mr Raphael submits that I should arrive at that conclusion because the 50 sales invoices are inferentially likely to underestimate the volume of commerce in just the same way that it did for both notebooks and monitors.. This is on any view a small element of the claimants' claim with a very modest financial value. It therefore merits the application of broad brush and axe principles given the sums in issue if not *de minimis* are close to it.

165. I have so far not had to consider the pro forma invoice issue given my conclusions concerning the value to be given to the contents of the management accounts. However, none of the management accounts provide a breakdown of TVs sold.

166. I conclude that on the balance of probability that simply looking at the sales invoice will result in an underestimate of the relevant volume of commerce. This is so in relation to both notebooks and monitors and there is no reason to suppose that there would be any material difference in relation to TVs. Estimated volume therefore depends on the degree to which it is appropriate to rely on proforma invoices to lift the figure higher than that derived from the sales invoices.

167. In my judgment some caution is required in relying on proforma invoices because they are not evidence of a concluded transaction but are generated as part of the negotiations that may lead to a concluded transaction. It follows that some proforma invoices will be for transactions that in the event never took place and others will be for transactions that proceeded but for different quantities or at different prices and some will apply to transactions which ultimately resulted in a sales invoice that is available. All this means it is implausible to suppose that that the proforma invoices should be treated as proving the total of the transactions to which they apparently relate. That said, there is no specific proforma invoice that the defendants have been able to point to that demonstrates or suggests any of these characteristics in the way that the defendant was able to identify in relation to monitor transactions. I accept that there will be a smaller risk of duplication in this situation because of the small number of documents involved.

Nonetheless the possibility of the other problems I have referred to remain. All this leads me to accept Mr Raphael's formulation – namely that the proforma invoices "*…should be taken into account…"*. I consider that the safe course given these conclusions is that to assess the volume of commerce in respect of TVs at 695. This includes the 50 units for which a sales invoice is available and a rounded reduction of 25% in respect of the units to which the proforma invoices apply.

The OTC Issue

168. The claimants seek to establish the volume of commerce for OTC of 28,584 monitor panels and 10,963 notebook panels by reference to goods received reports for November 2001 to January 2002. I consider that this material provides good evidence of what was ordered and supplied from 1 November 2001 to 29 January 2002, when OTC was placed in administration. As Mr Parker acknowledged in his 4th Report at paragraph 2.11, these reports demonstrate "… *deliveries of components, including TFT-LCD Monitors and Notebooks. As noted in Parker 1, these reports demonstrate that suppliers shipped the components that had been ordered by the Claimants, and that the latter took delivery of those components*." I agree.

169. Mr Parker maintains however that they do not provide "*…conclusive evidence of OTC purchasing and paying for any LCD Panel purchase that was affected by the Infringement*" or that "… *any money was paid to the suppliers by OTC, nor when the delivered items were ordered*." I agree with that as well, although not that it is material. Whether any money had in fact been paid is immaterial if there was an unconditional obligation to pay the price for the goods delivered and to my mind when the goods were ordered is likewise immaterial because it is common ground that for present purposes, the Relevant Period runs from 1 November 2001 to the date when each Claimant ceased trading. 1 November was selected in order to take account of the time lag between an order being placed and the goods ordered being delivered.

170. The point made by the defendants in the end was that OTC was placed in administration about three months after the date on which the cartel started to have any effects on the claimants, and at a time where its losses exceeded its assets by about £45m, with substantial losses having been made throughout 2001. The accounting material available (and it is not necessary that I set it out in this judgment) was put to Mr Augustin as showing that that OTC was struggling to pay its suppliers of LCD monitors and notebooks to which he responded "… *I would agree that they were struggling to pay, which is not surprising, but I don't agree necessarily that they didn't pay in the end*."

171. The key allegation made by the defendants is that it is likely that OTC was returning any goods it received, and/or not paying for them. Returning delivered goods would have extinguished any liability to pay an overcharge. There is some very limited evidence that supports this proposition. The defendants rely on a single cash flow statement that suggests in a very limited number of cases Return Merchandise Authorisations had been issued by OTC. I am not able to place any weight on this document. It is an internal document which was not spoken to by any witness from OTC, it does not identify what quantities of product OTC was apparently attempting to return or when, nor critically does it evidence that the products were in fact returned or that the supplier accepted the returns or waived payment of the price. The best that can

be said this document is that it suggests an intention to return some stock to suppliers including suppliers of panels and products incorporating panels. The other evidence that the defendants rely on is an estimated outcome report from the administrators reflecting the position as at 18 June 2002. The statement records valuation for stock with a value of £3,144,000 to which has been added a laconic note that "*Most stocks were subject to reservation of title claims*".

172. This very limited evidence leads the defendants to submit that I cannot safely conclude that the Claimants kept or paid for the goods delivered to them as recorded in the 'goods received' notes and that I should assess OTC's volume of commerce at half of that which is recorded in the 'goods received' reports.

173. In my judgment on this issue the defendants must be confined to their pleaded case. As pleaded their case is that OTC would only have suffered loss if it paid for any goods received prior to entering into administration. I am not able to accept that proposition. The fact that OTC entered administration and then liquidation does not lead to the conclusion that a liability incurred before either was somehow discharged. Subject to limited exceptions, the effect of administration and liquidation is to limit an insolvent company's liability to (in this case) the seller to whatever dividend is paid out as a result of the insolvency process. Insolvency is a class remedy with all sums due to the insolvent company (including in this case any damages recoverable from the defendants in respect of losses caused by breach of statutory duty) being collected in and then distributed *pari passu* amongst the creditors of the company in the class order set out in the Insolvency Act 1986. A trade creditor's entitlement to receive a dividend assumes the insolvent company's liability to that creditor to have been proved either by a judgment or arbitral award or more usually by it being admitted to proof in the insolvency process. Proof does not depend on payment having been made before the commencement of the insolvency process or indeed at all in the context of a claim for damages. Payment is immaterial as long as the party liable (in this case the insolvent company) had incurred an unconditional obligation to pay – see Total Liban SA v Vitol Energy SA [2001] QB 643, where Mr Peter Gross QC (as he then was) overturned a conclusion by an arbitrator that a liability without payment did not constitute a loss that could found a claim for substantial damages. The Judge held that there was not "*... any general common law rule in English law that liability without payment does not constitute a recoverable loss. Nor, if it were open to me, do I think that there ought to be any such rule*." It was a proposition that was objectionable in principle – see 651A-E; was likely to generate obvious commercial upheaval and inconvenience – see 651F-G; and was contrary to long standing and binding authority, in the form of Randall v Raper (1858) EB & E 84 – see 652F-653H - which was held to be authority "*… against the existence of any rule of law that liability without payment does not constitute recoverable loss…*" – see 661C-D.

174. It was submitted by the defendants that the OTC claim should fail because some of the relevant products may have been returned to the suppliers, either by the company before it entered administration, or by the company, acting by its administrators after it had entered administration, giving effect to title retention provisions in the contracts between OTC and its suppliers.

175. In my judgment that submission is one that I should reject. First, I accept Mr Raphael's submission that the point is one that is not available to the defendants because they have

not pleaded it. Secondly and more fundamentally there is no evidence to justify a finding that goes further than that some products may have been returned to some suppliers. There is simply no evidential basis for a conclusion that material amounts of relevant goods were returned, or that the suppliers waived any liability that OTC might have had as a result or that any material amounts of relevant goods were surrendered after OTC was placed in administration or as to the extent to which that resulted in OTC's liabilities being discharged or reduced. In my judgment therefore, Mr Raphael was correct to submit that this point never progressed further than speculation.

176. In the circumstances, I conclude that the volume of commerce for OTC has been established as being 7,779 monitor panels and 21,798 notebook panels by reference to goods received reports for November 2001 to January 2002.

The Downstream Pass On Issue

177. As set out at the outset of this judgment, this issue is concerned with estimating the degree to which if at all the Overcharge was passed on by the claimants to its down stream customers. The Defendants ask me to conclude that there was 100% downstream pass-on (or alternatively, close to 100%). The claimants' case is that there was no or close to no down stream pass on. The point is a critical one because the Overcharge ceases to be recoverable to the extent that it was passed on subject to the secondary claim for lost profit caused by a reduction in sales volumes attributable to the increase in price attributable to any down stream pass on.

178. The first issue that arises concerns on whom rests the burden of proof in relation to this issue and what evidence is required in order to discharge it. In my judgment this issue has been resolved by the Supreme Court in <u>Sainsbury's Supermarkets v VISA Europe</u> [2020] UKSC 24. The relevant part of the judgment starts at paragraph 207, where the Supreme Court concluded that "*… there is a legal burden on the defendants to plead and prove that the merchants have mitigated their loss…*" and whether or not (in this case the Overcharge) " *… has been passed on is a question of fact, the burden of proving which lies on the defendant who asserts it*." However:

> "…once the defendants have raised the issue of mitigation, in the form of pass on, there is a heavy evidential burden on the merchants to provide evidence as to how they have dealt with the recovery of their costs in their business. Most of the relevant information about what a merchant actually has done to cover its costs, … will be exclusively in the hands of the merchant itself. The merchant must therefore produce that evidence in order to forestall adverse inferences being taken against it by the court which seeks to apply the compensatory principle."

179. I refer in paragraph 28 above to the broad brush and broad axe approach to the assessment of damages that is to be expected in claims of this type, as to which see <u>Sainsbury's Supermarkets v VISA Europe</u> (ibid.) at paragraph 217 and following of its judgment. It is not necessary to set out the reasoning in full but it is necessary to note that at paragraph 223 of its judgment the Supreme Court acknowledged that in many and perhaps most cases, it will be necessary to have to resort to estimates when

addressing the pass on issue, approved the statement in paragraph 33 of the Commission's "*Guidelines for national courts on how to estimate the share of overcharge which was passed on to the indirect purchaser*" and stated that "*national courts cannot reject submissions on passing-on merely because a party is unable to precisely quantify the passing-on effects*". It then added:

> "The power to estimate "requires national courts to, firstly, base their assessment on the information reasonably available and, secondly, strive for an approximation of the amount or share of passing-on which is plausible" (para 34). The 2019 Guidelines note that several member states already have rules which correspond to the power to estimate which the Damages Directive envisages and (in footnote 39) refer to Lord Shaw's statement in Watson, Laidlaw & Co Ltd … that harm may be quantified "by the exercise of a sound imagination and the practice of the broad axe", and to the application of that statement by the Court of Appeal in Devenish Nutrition Ltd (above), para 110."

The Supreme Court concluded this part of their judgment by stating that:

> "The loss caused by the overcharge included in the MSC was an increased cost which the merchants would in all probability not address as an individual cost but would take into account along with a multiplicity of other costs when developing their annual budgets. The extent to which a merchant utilised each of the four options, which the CAT identified and we described in para 205 above, can only be a matter of estimation. 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."

180. It follows from this that although the defendants bear the legal burden of proving downstream pass on, I reject as wrong the notion advanced by the claimants that down stream pass on can <u>only</u> be evidenced by tracing the change in cost of the LCD panels from the claimants' purchases through to a change in sales price to the end consumer and any submission that I should conclude that the defendants have failed to discharge their burden because the material does not exist to enable such an exercise to be carried out. Where documentary evidence is limited, such an approach would effectively make it impossible to demonstrate pass-on. That would be contrary to the approach mandated by the Supreme Court in <u>Sainsbury's Supermarkets v VISA Europe</u> (ibid.) as summarised above. Thus while I accept Mr Augustin's evidence "…*that one cannot trace changes in LCD panel prices through to the Claimants' sale prices to customers*…", that is only the start of the enquiry not the end of it for the reasons identified by him in the course of his cross examination:

> "Q. You accept that even if one cannot trace changes in LCD panel prices through to the claimants' sale prices to customers in the way proposed, downstream pass-on may still have occurred?
>
> A. Yes.
>
> Q. Your chosen method of analysis is not necessarily informing you about the rate of downstream pass-on in this case?
>
> A. No, it doesn't.
>
> Q. And you're specifically not offering the view that there was zero downstream pass-on in this case?
>
> A. Yes, I am not expressing the view. I just – when I was unable to trace things through, I decided to assume a particular zero per cent downstream pass-on for the sake of my calculation."

It was no doubt for that reason, that Mr Augustin accepted later in his cross examination that

> "If indeed the factual evidence was non-conclusive or for whatever reason people decided that it could not rely on the factual evidence, then economic evidence or economic analysis would become relevant again.

and that he was not in a position to conclude that economic theory was irrelevant to this is issue – see T4/110-111, *passim.*

181. I accept the defendants' overarching submission that where, as here, the available documentary material is limited, 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.

182. I do not accept the defendants' submission that in terms of evidential standard they are required to establish only a "*plausible factual foundation*" for the application of such reasoning following the decision of the Court of Appeal in NTN Corporation and other v. Stellantis NV and others [2022] EWCA Civ 16. That test was formulated by the Court of Appeal in order to identify the evidential standard that the CAT (or a court) must apply to determine whether a pleading is to be allowed to proceed to trial – see paragraph 22 of Green LJ's judgment. Understood in this way, I reject as wrong the claimants' submission that this approach involves reversing the burden of proof or that it defeats the public policy of maintaining effective competition in the EU or to the extent there is a difference, that it is contrary to the effectiveness principle. As the Supreme Court noted in paragraph 187 of its judgment in Sainsbury's Supermarkets v VISA Europe (ibid.) "… *Community law does not prevent national courts from taking steps to ensure that the protection of rights guaranteed by EU law does not entail the unjust enrichment of those who enjoy them*."

183. Turning now to the evidence, it is right to observe that there was a high level of evidential confusion about this issue on the part of the claimants. The initial plan was that the down stream pass on issue was to be addressed by Mr Augustin not Dr Van der Laan. This continued down to the joint memorandum, where Dr Van der Laan described downstream pass on as being addressed by Mr Augustin because it was, or was primarily, a factual matter. Dr Van der Laan confirmed that he had adopted this position because that is what he had been instructed by the claimants' solicitors to do – see T4/101/19-102/7. Had he been instructed to consider down stream pass on, Dr Van der Laan accepted that he would have had to test the competing positions of the parties and specifically "…*whether a position of very low or zero per cent downstream pass-on was realistic in this case*". He described his instructions as being "… *that there was factual evidence in relation to the downstream market and therefore there was no need to resort to economic modelling*." He added that in light of his instructions, "… *I didn't look at the factual evidence myself, so I can't really say if it was weak evidence or if it was strong evidence*."- see T4/110/11-16.

184. This changed when Dr Van der Laan provided his fourth report on 9 October 2023 – 16 days before the start of the trial. Dr Van der Laan sought to deflect questions about how he came to prepare that report – see T4/126/14-127/16 - before he accepted, reluctantly in my judgment (see T4/127-129), that he had been instructed to address the economic case on downstream pass on. Tellingly, he commented specifically on the reasons why he was instructed to prepare his fourth report as being that *"... I don't know what the exact considerations were, but like I said, it appears that the -- that the general mood had shifted, that there was a need to respond to the economic arguments*." It would be impermissibly speculative to attempt to reach conclusions about this change other than to note that until shortly before Dr Van der Laan produced his fourth report, the claimants had been content to proceed on the basis that there was factual evidence that enabled the downstream pass on to be addressed and therefore no need to resort to economic modelling, whereas Mr Parker expressed the view he had expressed consistently that in his opinion there was 100% down stream pass on.

185. The scope of Dr Van der Laan's fourth report was limited. It was not Dr Van der Laan's aim to test the proposition that there had been 0% down stream pass on or even set out the economic framework required for such a finding to be made – see T4/ 133/8-15 – even though that was and is the claimants' case; and as he acknowledged:

> "I have not drawn the conclusion that -- I don't think I have at least now -- that Mr Parker is wrong or that Mr Augustin is wrong or -- I'm just saying, look, if you look at these very general economic effects, then there may be other elements in there and that may actually point to -- because Mr Parker already addressed the economic effects -- that may actually point to -- that the truth is more in the direction of Mr [Augustin], like I said, without quantifying it or attaching a percentage to that."

As he put it a little later in his cross examination, "… *it's not my intention to provide an alternative estimate or something*…" and that his purpose was to **" …** *caution ... the court [against] jump[ing] to conclusions too quickly based on the simple analysis provided by Mr Parker*."- see T4/139/13-140/1. This part of his cross examination concluded with the following exchange:

> "Q. You're picking faults with Mr Parker's analysis without providing a constructive alternative yourself, aren't you?
>
> A. That's true. That's mostly for the reasons, what I said is, basically, the time pressure, et cetera, and it's also because it wasn't in my instructions to look at it, therefore I had very limited knowledge -- and still have very limited knowledge -- on the downstream market…"

186. It will be necessary to consider in detail now the evidence of both Mr Parker and Dr Van der Laan on the down stream pass on point and then reach conclusions in relation to that issue. I make clear at this stage, however, that I reject the notion that the absence of a "*constructive alternative"* from Dr Van der Laan is the result of "*time pressure*" or his admitted very limited knowledge of the down stream market if that was intended to be a criticism of the defendants or their solicitors. Rather if these factors are relevant at all, they are the result of Dr Van der Laan not being instructed to consider this issue until after completion of the joint expert report not withstanding that Mr Parker had given evidence on the issue in his reports served consistently prior to the joint meeting. Why the claimants or their advisors chose to approach the claim in the way they did is not something that I can or ought to reach conclusions about. The only point that matters is that any time pressure related difficulties experienced by Dr Van der Laan were the result of the instructions he received not anything that can be attributed to the Defendants or their advisors.

187. I also reject the claimants' submission that if the defendants are unable to prove the existence of pass on from the evidence that is available, I should conclude that establishes there is no evidence of pass on. This submission ignores the expert evidence available that is relevant to the issue but also ignores the point that (as the claimants accept) the claimants no longer have all their documentation from the Relevant Period because they ceased trading and entered administration and then liquidation some 20 years ago.

188. That said, great care is required in drawing inferences in favour of the defendants from the absence of such evidence. Some reliance was placed by the defendants on the absence of any witness evidence from those involved in the management of the claimants during the Relevant Period. In my judgment this is misplaced. Firstly the asymmetry of information problem that applies in relation to the documentation relevant to pass on does not arise in the same way in relation to witnesses, whose identity is known or can be ascertained by defendants using conventional litigation techniques. Here the identity of the relevant former officers and managers of the claimants was either known to the defendants or could have been ascertained from any early stage in the life of this litigation. It is unknown whether the defendants approached any of these potential witnesses. However what is clear is that if the defendants considered these witnesses had relevant evidence to give they could and should have adduced evidence from them, particularly when the onus of proof is considered.

189. Secondly, I accept the evidence of Mr Bartlett concerning the attempts made on behalf of the claimants to contact former employees who might be able to assist and why nothing useful emerged from that exercise. I accept his evidence that people working under his supervision or that of the relevant liquidators " … *spoke to all the people who*

were prepared to speak to us." I also accept his evidence as to how those who were contacted were identified – that is by looking at the employee records – see T9/157/15-19. I consider this approach was appropriate given the lapse of time that had occurred and the absence of any other basis for identifying managers and other employees able to give relevant evidence.

190. Of the senior officers and managers who could have assisted, Mr Gilbert-Harris had died and attempts to contact others failed. In cross examination, Mr Mussa identified two individuals who might have been responsible for pricing issues as being Mr Tahir Mohsan and Mr Kieran Crawley and asked Mr Barlett whether any attempt had been made to contact either of them. I accept Mr Bartlett's answer that they were but without any success.

191. There was some criticism of Mr Barlett that no attempt was made to contact names that appeared on documents known in these proceedings as BOMs. These documents are otherwise referred to as Bills of Materials and set out the component parts of computer equipment that was either to be offered to the market or to particular customers. They contained provision for sign off by various identified senior managers. Mr Bartlett's explanation was that these documents emerged at a late stage in the litigation and were not searched for potential witnesses. I accept this evidence. As is apparent from his evidence concerning Mr Mohsan and Mr Crawley, most if not all these names were contacted as part of the employee list exercise referred to earlier. In my judgment it would be entirely inappropriate for me to draw inferences adverse to the claimants from their failure to adduce evidence from former employees in these circumstances. Whilst I do not accept that the senior officers and managers of the claimants would not be able to recall at least the fundamentals of their pricing policy during the Relevant Period simply by reason of the lapse of time that has occurred, I accept on the evidence available that reasonable attempts were made by the claimants to contact potentially relevant witnesses but they were unable to find anyone who was ready or willing to give such evidence.

192. I now turn to the relevant economic evidence. Mr Parker's evidence was that on the basis of the economic factors identified by the Commission in its Quantification Guide that are relevant in this case, it was to be expected that there would be a high level of pass on at or close to 100% both upstream and down stream of the claimants. In reaching this conclusion he identified as relevant specifically to downstream pass on (a) the duration the infringement; (b) the role of LCDs as inputs to downstream production and (c) the intensity of competition in the UK PC market.

193. In relation to the first of these factors, he acknowledged that this would be most relevant where the existence of long term supply contracts might result in a pass on lag but suggested that in relation to the claimants' down stream markets "…*there appears to have been scope to change prices quickly at least in the downstream market, which does not appear, on the basis of the evidence available to me, to have been characterised by long-term contracts, but reflected a series of one-off sales to individual consumers*." If this is correct, then it is likely that the duration of the cartel (October 2001-February 2006) was immaterial, although in general terms I accept the point that "… *the duration of the Infringement suggests that cost increases are more likely to have been passed on*." Whilst long term contracts are likely to have been a feature of the up stream market, that is immaterial for present purposes since as I have

explained it is common ground that there was a 100% upstream pass on of the Overcharge.

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 down stream 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 *"…(t)he 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…*"

195. In relation to the third of the factors referred to above (the intensity of competition in the UK PC market), Mr Parker's evidence was that as a matter of economic theory, markets " *… in which there is little or no product differentiation tend to be characterised by more intense competition and tend to a greater level of pass-on*." This seems uncontroversial in principle and is supported by the Commission's Quantification Guide at paragraph 178. In relation to monitors he makes the point that the desk top products offered for sale do not identify the monitor being offered other than generically (i.e. a 15 inch LCD monitor for example rather than specifying by whom the monitor had been manufactured) and that the claimants purchased screens from numerous different manufacturers during the cartel period. This leads Mr Parker to conclude that "*… the lack of branding and broad homogeneity of Monitors in the market implies that there were low barriers to switching between brands. In turn this will tend to lead to a high level of ... downstream pass-on*."

196. With these conclusions in mind, Mr Parker then suggests that, as a matter of economic theory, markets with "*… a low degree of product differentiation tend to be characterised by a high degree of competition, which also increases the likelihood of passing on Overcharges to customers*." He maintains that the UK market was notable during the relevant Period for there being a large number of competing brands without strong differentiation between them. His evidence is that this shows the downstream UK PC market was "*highly competitive overall"* during the Relevant Period, which implies "*… a high degree of pass-on in the downstream market*." This is likely to be so where suppliers with limited market share such as the claimants were competing largely on price and where the Overcharge was being experienced by all such suppliers.

197. Mr Parker considers that this theoretical analysis is supported by some limited documentary material disclosed by the claimants. In relation to the educational and commercial sectors he refers by way of example to two "*Price Generators*" – that is

spreadsheets showing how prices were being calculated. The detail does not matter. What these documents suggest is that where a price was being calculated for an end user in these sectors, the method used was to prepare a bundle of component parts together constituting the item to be supplied together with the actual cost of each constituent element and then applying a mark up of 15% to 20% in order to arrive at the price to be sought from the customer. In the two examples set out by Mr Parker in his report, one for a commercial user featured a monitor with a cost price of £72.99 that was increased to £90.74 to arrive at the "*Sell Price*". A similar technique was used in the education sector example selected by Mr Parker where the monitor cost price was identified as £78.52 and the "Sell Price" at £92.38. Mr Parker summarises this process as being one where the cost price of all the component parts are added up then a target margin applied. His evidence is that this supports the contention that there was a 100% pass on to end users because pricing was arrived at by applying a mechanical uplift to whatever were the costs of the component parts when added together. As Mr Parker acknowledges, this approach to pass on actually does more than pass on the Overcharge because it applies an uplift of 15% to the cost price that includes the Overcharge so that what is being passed on is 115% of the Overcharge.

198. Mr Parker also draws attention to some internal emails concerning the increase of prices as a result of a worldwide increase in the prices of microprocessors and memory. This does not concern LCD screens but the point made is that it illustrates the claimants' approach to pricing. The internal email is dated 8 January 2002 and is from Dr Tariq to various managers within the Granville organisation. It identifies that:

> "Worldwide Memory Prices have increase over 400% over the past week. 512MB of memory has increased by almost £100 inc. VAT and further rises are imminent."

It then sets out the planned responses as including increasing prices by £49 "*next week*" and a further £49 "*by the end of January*". This was carried into effect by an internal document dated 18 January 2002 which included instructions as follows:

> "(4) Magazine advert Price increases - Important
>
> Due to the memory price increases and the fact that we do our magazine adverts so far in advance we are having to increase the prices of all the systems that are being offered in the magazines. You will have to explain the current situation to customers and if needed you will have to point out that prices are subject to change. The following blanket rule applies.
>
> All 128mb models are being increased by - £10 ex vat = £11.75
>
> All 256+384mb pc's are being increased by - £20 ex vat = £23.50
>
> All 512mb pc's are being increased by - £50 ex vat = £58.75
>
> …
>
> 10) Memory price increases

> With immediate effect memory pricing is going up as follows:
>
> 0999-060-00001 128mb SDRAM PC133 Now £49.99
>
> 0999-060-00004 256mb SDRAM PC133 Now £79.99
>
> Sales of these products must also be limited to 2 per customer. This is to prevent traders from buying up the stock."

Mr Parker says of this internal material that it is "… *consistent with the approach set out in Granville's price calculators, and implies effectively 100% pass*-*on of cost increases on a key component within Granville systems within a month*."

199. Ultimately this all leads Mr Parker to conclude that in relation to downstream pass on, both economic theory and the price setting factual material referred to above provide strong support for concluding that there was circa 100% downstream pass on. This carried through as I have said into the joint memorandum with Mr Parker maintaining that there was 100% downstream pass on with Dr Van der Laan maintaining the issue was a factual one to be assessed using empirical evidence and was to be addressed by Mr Augustin.

200. In his first report, Mr Augustin acknowledged that most of the data available that is relevant to downstream pass on comes from Granville and not from OTC, which traded as I have said only for about 4 months within the Relevant Period. He concluded however that "… *both Granville and OTC operated similar businesses, were subject to the same wider market pressures and operated in the same competitive space, and therefore that my conclusions in relation to downstream pass-on would be applicable to both Claimants*." Mr Parker does not suggest that any different approach should be adopted and therefore I accept that approach as one I should adopt in the circumstances.

201. Mr Augustin's evidence was that Granville adopted a pricing strategy around psychological pricing points (i.e. pricing a product at say £599 rather than £601). I accept that it used this technique extensively although in my view not exclusively. That the technique was used extensively is supported by the array of marketing material that Mr Augustin refers to in paragraph 7.2.6 of his first report and it is also supported by the analysis set out in Annex 1 to Mr Raphael's closing submissions, although I should make clear that I do not accept that every price said to show use of a psychological pricing point in that schedule falls into that category. It is difficult to see how a price fixed at £700 for example (see lines 5-8) can fall into this category. The psychological magic is said to be achieved by creating an impression of cheapness but an immaterial reduction below a sum thought to be psychologically important to a decision to buy. A round figure of £700 for example does not obviously involve this marketing technique. A further element of imprecision becomes apparent when comparing line 18 (£879) with line 10 (£749) with one said to show use of this technique but the other not.

202. However, even taking account of these factors shows that in the majority of cases Granville used this technique. The point that Mr Augustin seeks to obtain from this part of his analysis is that it negatives Mr Parker's conclusion that by default the claimants fixed prices on a cost plus basis – that is by calculating the cost price of a given package and then adding to it a pre determined margin. The difficulty about this point as I see it is that it could be correct but may not be. The claimants could have calculated a price

on the cost plus basis and then adjusted the margin downwards in order to arrive at a potentially psychological pricing point. This would explain the wide variety of different psychological pricing point prices shown in the Annex to Mr Raphael's closing submissions. Equally plausibly the claimants could have adopted the technique identified by Mr Augustin of fixing a selling price and then adjusting the content of the package to achieve a particular margin.

203. The real difficulty is that without any evidence of what was actually happening from those responsible it could be either although for reasons I explain in detail below, I consider it likely that in most cases the claimants would start with a cost plus approach. In my judgment the email relied on by Mr Augustin as supporting the approach he identifies at least equally supports the approach being as described by Mr Parker. The text of the email is:

> ""Following some aggressive price reductions from our competitors, We [sic] are now forced to reduce the retail price of the above product. Ultimately [sic] resulting in the need for a lower cost price.
>
> Please can you give this your urgent attention and come back to me with your proposal"

The point that emerges from this email is not that the price being charged originally had been arrived at in the way Mr Augustin contends for but that the price being charged achieved a particular margin that could only be restored following a price cut by reducing the cost price.

204. Mr Augustin maintains that Granville's aim and approach was to offer PC Packages and Notebook Packages at similar price points to competitors but to offer a better specification of package at that price point. In my judgment the main importance of this lies in it demonstrating how competitive the downstream consumer market was during the Relevant Period. It is not necessary that I set out all the material that demonstrates this approach. However it is relevant to note how specification comparisons were carried out. Certain elements in the packages were marketed by name – so for example processors were identified by manufacturer's name (Intel Pentium, AMD Athlon and Intel Celeron are examples) as were printers included in the package (HP, Lexmark and Epson are examples). However when it came to monitors, they were exclusively identified by size (for example 15 or 17 inch) and never by manufacturer. This suggests that end user customers were perceived to be influenced by the manufacturer of some elements of the packages offered but were not influenced by the identity of the manufacturer of the monitors included in the package. Thus when Mr Augustin maintains that the material to which he refers in footnote 348 of his first report shows the claimants competing by including within its packages "… *a superior monitor (see cells F30, C50 and G50)*" that is misleading if read in isolation from the underlying material referred to. Each of the cells referred to in the spreadsheet annexed to Mr Augustin's report simply refers to monitors as respectively 15 inch TFT (cell C 50 and F30 in relation to a Packard Bell package); 17 inch (cell G50 in relation to a Granville product).

205. Mr Augustin maintains that the "… *strategy of providing a better specification PC than competitors at a particular price point would again suggest that Granville did not simply adopt a "costs plus margin" approach*." I am bound to say I don't see how that follows particularly when as Mr Augustin says in paragraph 7.2.14 of his report, *"(t)he ability to charge lower prices than competitors was explained by Granville to customers as being due to Granville having no intermediaries and manufacturing their own PCs*". What this practice does suggest is that the end user consumer market in the UK during the Relevant Period was highly competitive. I accept that this approach to marketing to consumers may have meant that the ability of the claimants to increase prices asymmetrically when compared to its competitors was at best limited but in my view none of this would necessarily have inhibited the claimants from passing on market wide variable cost increases and the narrower its margins were the more unlikely it would be that such cost increases would not be passed on.

206. Mr Augustin mentioned three other factors that he considered contraindicated downstream pass on by the claimants. The first concerned extended warranties. His evidence on this issue was that extended warranties "… *were seen as 100% margin products, which I understand is due to the fact that 70% of warranty claims are made in the first 12 months of purchase, during which time Granville was still covered by manufacturer warranty.*" This evidence was supported by reference to a Granville board minute dated 30 August 2001. It is said to be supported as well by the higher commissions paid to sales staff for purchases of extended warranties and by sales reporting of warranties separately from PC packages and notebooks. Mr Augustin's evidence was that the sale of warranties was seen as a way of improving profit margin and thus a means by which negative margins could be tolerated. I accept that offering extended warranties would improve the margin on units which were sold together with such a warranty. Whether such a warranty was purchased was of course a matter for the consumer. The other factor mentioned by Mr Augustin were promotions at particular points in the year (usually Christmas) involving price reductions or the addition of free peripherals.

207. The third factor mentioned by Mr Augustin as being relevant to the inherent probabilities of downstream pass on concerned the contribution made by panel prices to the total price of the PC packages and notebooks being sold by the claimants. His conclusion from an assessment of the material available was that LCD panel prices accounted for between 9 to 20% of the PC Package price and around 10% to 15% of the Notebook Package price. Mr Augustin's point was that the lower the contribution made by the LCD panels to the cost of the packages being sold, the less likely it was that a cost increase would be passed on, even if the cost increase were one affecting the whole market. He pointed out (in his second report) that this was different from the upstream market because the cost of an LCD panel as a proportion of the price of a monitor for example was bound to be higher than the proportion the cost of a monitor bore to the total price of the PC package being sold to consumers. At a high level of generality I accept the proposition that the lower the contribution made by the LCD panels to the cost of the packages being sold, the less likely it was that a cost increase would be passed on, particularly in a highly competitive market but the issue is acutely fact specific and in my judgment the potency of this point in relation to downstream pass on is that it erodes as the margin on sales tightens.

208. Mr Augustin's conclusion from the evidence summarised above is that "… *the Claimants' pricing strategy for the basic PC packages was based heavily on psychological price points and focussed on remaining competitive to offerings from other retailers, rather than pursuing a specified margin or return on costs (i.e. 'cost plus' pricing* …" which they were able to sustain by selling high margin add-ons such as extended warranties. As I have said already, this may be consistent with a limited ability on the part of the claimants to make asymmetrical price increases, but it does not lead necessarily to the conclusion that they would be unable or discouraged from passing on market wide price increases. In reality the narrower the margin on consumer sales the more likely it is that market wide cost increases would be passed on. It is possible that the margins from add-ons such as extended warranties improved the claimants' margins but the effect of not passing on a market wide cost increase would simply erode the benefits obtained from warranty sales. It is improbable that such a result could be maintained on anything other than a short term basis and there is some evidence, to which I refer below, that suggests the claimants' management readily considered passing on market wide cost increases either by increasing prices or reducing specification in relation to items such as memory. Overall, Mr Augustin proceeded on the assumption there was no downstream pass on both for the reasons summarised above and because the information available did not enable changes in LCD panel prices to be traced through to the claimants' sale prices to their customers.

209. This last point was one that Mr Augustin and Mr Parker returned to in the joint memorandum. In relation to the proposition that downstream pass-on is evidenced by tracing the change in cost of the LCD panel from the claimants' purchases through to a change in sales price to the end consumer, Mr Augustin confirmed he had been instructed to adopt this method and that he had not been able to trace the changes in the LCD panel prices through to the Claimants' sale prices to customers because there was insufficient documentary evidence to do so. Mr Parker rejected this as an adequate approach because if this narrow approach was adopted then it would make it impossible to demonstrate pass on where documentation was limited. He added:

> "I consider that economic reasoning, coupled with evidence of internal policies and approaches, can demonstrate pass-on even where there is insufficient data to allow other methods such as a forensic accounting analysis or econometric or statistical evidence of pass-on."

I agree with this as long as it is understood that the phrase "*can demonstrate pass-on*" is understood to mean proving it to the relevant standard as identified at the start of this section of the judgment.

210. The joint memorandum then identified each of the economic theories relied on by Mr Parker in support of his contention that downstream pass on was or was likely to have been at or close to 100%. In summary these were that economic theory shows that:

i) downstream pass-on will tend to be high when the cost being passed-on is a per-unit variable cost;

ii) pass-on will generally be higher when a cartel covers a high proportion of total sales in the market;

iii) downstream pass-on will tend to be high when the downstream market is competitive;

iv) pass-on will generally be higher when products are relatively undifferentiated;

v) firms which do not hold market power tend to pass-on market-wide variable cost increases to a high degree;

vi) Granville would be more likely to pass-on an overcharge if it could easily adjust its pricing; and

vii) frequent changes in PC package specifications are likely to facilitate pass-on of any overcharge;

In relation to each of these points, Mr Augustin responded:

> "Mr Augustin's conclusion on downstream pass-on is not based on economic theory. Mr Augustin is not an economist. Mr Parker has introduced new evidence he relies on which was not quoted in his reports. Mr Augustin has not had time to respond to this new evidence but reserves the right to do so at a future date."

211. In relation to Mr Augustin's point that competition may put pressure on some market participants not to pass on cost increases, Mr Parker rejected the proposition for essentially the reasons identified already, that is that it "*…conflicts with the predictions of economic theory for cost shocks which apply across the market. Economic theory shows that pass on of such a market-wide cost increase in a competitive market would be around 100%*". That is so because Mr Parker's opinion (consistent with the view he had expressed in his report) was that:

> "competitive pressure drives prices down towards marginal costs. In the event of a fall in costs, competitive pressure will lead firms to decrease prices to match competitors' pricing. This effect is symmetrical in the event of a cost increase – firms will need to increase prices to maintain their viability on the market and will similarly react in the same way as competitors. Whether up or down, pass-on of a market-wide variable cost shock is expected to be around 100% in a competitive market."

212. Mr Parker also rejected Mr Augustin's point that increases in cost components which are a small proportion of the package price are not likely to be passed on. As he put it:

> "As a matter of economic theory, all variable costs, however small, will need to be passed on to consumers by firms in competitive markets, otherwise those firms will go out of business. However, cost components which are an extremely small proportion of the downstream product price may be passed on at a lower rate than those which are a large proportion, at least if there are price adjustment costs"

Mr Parker accepted Mr Augustin's analysis that LCD Panels represented between 9% and 20% of the total cost of the products being sold by the claimants but concluded that was "*… a significant proportion…*" and not a small proportion of the package price. He added at paragraph 4.24 that Granville could not operate profitably while ignoring costs of this magnitude. In my view this misses the point since what it is necessary to consider is the effect of an increase in the price of a particular component (a monitor) that represents between 10% and 20% of the total cost of the product. The issue is whether that increase has the effect of eroding margin to such an extent as to force Granville to pass on the increase or whether it could afford to absorb some or all of the increase, when judged against the economic theory that a market-wide cost shock in a competitive market will likely give rise to a pass-on rate of around 100%.

213. In relation to the proposition that there was significant product and brand differentiation in the downstream market for the manufacture and retail of PC packages, Mr Augustin chose not to engage but Mr Parker repeated the points made by him in his report which he summarised in these terms:

> "The brand of a monitor was not important to consumers (Parker 1, 8.26-8.32). In any case, for components where branding was important (such as the CPU or GPU), it was not Granville's brands which were the attraction but rather the component manufacturer brands. These were also sold by Granville's competitors. … Mr Augustin appears to have misunderstood the relevance of differentiation in relation to the assessment of pass-on. The relevant issue relates to whether Granville was differentiated from its competitors (for example, by access to proprietary components not available to other producers), not whether Granville sold multiple different products."

214. Mr Augustin returned to these issues in his supplemental reports. It is worth noting at this stage, that Mr Augustin accepted in his second report that (a) the claimants could adjust prices quickly if they chose to do so; (b) that LCD products were a variable cost for the claimants; (c) there was probably little product differentiation between the LCD monitors (of the same size) which were purchased by the claimants in bulk and that the brand of LCD monitors may not have normally been a point of differentiation in Granville's PC Packages; and (d) that the claimants operated in a competitive market. In relation to this last point, although Mr Augustin says that this may have put pressure on them not to pass on price increases in order to stay competitive, to my mind this is simply an argument. The one does not necessarily and is not alleged necessarily to follow from the other. It is equally the case that in a low margin competitive market it may not be sustainable not to pass on a market wide cost increase.

215. In relation to the price generator documents relied on by Mr Parker, Mr Augustin emphasised the point that they applied only to commercial and educational sector sales which represented between 2 and 8% of the total sales by Granville and thus do not form a proper basis for concluding there was 100% down stream pass in the consumer sales market and in any event the price generator documents do not evidence sales at the prices set out in the documents and that to suggest otherwise is inconsistent with Mr Parker's approach to pro forma invoices, which he maintained should be treated with caution when considering the volume of commerce question. I agree with the

proposition that the price generator documents do not evidence sales at the prices generated. There is some evidence that the price generated was not the price ultimately agreed – see paragraph 6.3.8 (b) (ii) of Mr Augustin's second report. As Mr Augustin observes, if one extrapolates from the single transaction he refers to, "… *it suggests that Granville underwent pricing negotiations with the customer for this potential sale as opposed to adopting a computational method, including all component costs plus a fixed margin, for its ultimate pricing*."

216. In relation to the internal email relied on by Mr Parker, Mr Augustin's points were first that it concerned memory not LCD products. This is immaterial: the point being made by reference to the email was that it showed a propensity to pass on cost increases to variable cost components very quickly after the claimants became aware of them. I accept however that Mr Augustin was able to identify a single email where apparently Granville was willing to tolerate a reduction in margin from 13.39% to 8.83% following a cost increase. There are obvious dangers in attempting to read too much into single internal emails, particularly when the context is unclear. What the email appears to relate to is a short term strategy where the sale price was being maintained on a short term ("*when its gone its gone*") situation. Finally he criticises Mr Parker's approach to the psychological pricing point which in summary was to treat it as less significant in volume terms than was suggested by Mr Augustin (something I have already reached conclusions about) and largely irrelevant to pass on because if a pass on was to occur where psychological pricing was being applied it was likely that the price increase would be to the next psychologically significant price point. Mr Augustin criticises this approach because it is one based on theory and not on any factual evidence. Mr Augustin's point is that retail customers "… *may perceive any price increase, or reduction in package "quality" to be unjustified*." Undoubtedly this would be a factor in a highly competitive retail consumer market but in my judgment it failed to take any account of a difference between asymmetrical price increases across the market and those driven by market wide component part increases where each market participant will be affected in the same way.

217. Following the preparation of the joint memoranda, aside from Mr Augustin's supplemental reports, there were two events of significance. The first was the production by Dr Van der Laan of his fourth report in which he addresses down stream pass on for the first time and secondly the Bills of Materials documents ("BOM") were disclosed in two tranches on 11 August and 13 October 2023. A typical example of a BOM is the following:

Time BOM Analysis

Bundle: **0415-030-02207**

Base Unit: **0500-503-00499**

Selling Price		594.89
Cost of Notebook		525.00
Other Bundle Items	WORKS V7 CD WITH OFFICE 070-02405	0.58
	ST WARRANTY OPTION	42.00
	FAMILY/HOME PACK XP	2.76
Primary Margin	Delivery	42.00
		612.34
Primary Margin %		
		-17.45
		-2.93%

218. These documents are potentially significant because they are not relevant only to the educational and commercial sales sectors. Mr Parker's opinion is that they support his conclusion that downstream pass on would have been in the region of 100%. He maintains they show that prices were set on a cost plus basis with the cost of the component parts being identified and then a margin applied to them.

219. I am bound to say that I do not see that as the effect of these documents. It is difficult to know what approach was adopted without a witness to explain. However, the documents set out a selling price and the cost of the component elements of the offer and then conclude with a "*Primary Margin*" which the cash difference between the sell price and the component costs and a "*Primary Margin %"* which is the primary margin presented as a percentage of the given selling price. As I see it the document could equally have been prepared by specifying a selling price and then working out the margin when parts of a certain specification were incorporated into the package. This is more probably what was happening because there is no fixed margin identified in the documents. They range from negative margins as shown in the BOM reproduced above, to others showing margins variously of 1.05%, negative 7.04% then adjustments to the selling price from £509.79 to £594.89 to produce a positive margin of 8.3%, and a positive margin of 11.98% on a selling price of £526.81 which was then adjusted to £565.96 so as to increase margin to 18%. There is no evidence as to whether the packages to which the BOMs relate were ever offered as part of Granville's retail consumer offer or if they were at what prices. Whilst I cannot rule out what Mr Parker says of these documents, I think it more probable that they were internal documents used as part of a process at arriving at what was regarded as an appropriate selling price. The documents are not consistent with the claimants working to a fixed margin. What

they suggest is that the claimants' business was a low margin business in a highly competitive market in which it was necessary to test specifications against price on a frequent basis in order to stay competitive.

220. That said, this is probably a matter of detail. The end result is as Mr Parker puts it in paragraph 3.16 of his fourth report:

> "I note that the specific margins on individual bundles vary within a range. I have calculated that the average margin across all of the retail price calculators is 9.4%, with 39 of the 49 products having margins between 0% and 20%, six of the 49 products showing negative margins on the basis of list costs of labour, overheads, licences and delivery, and the remaining four of the 49 products showing margins in excess of 20%. Again, I consider that this is consistent with broadly cost-plus pricing. In every instance, the core approach to pricing is to calculate the costs of constructing the product bundle, with the margin over costs then depending upon commercial considerations, and that margin generally remaining in a fairly narrow range."

Mr Parker also carried out an analysis of cost against selling price as shown by the BOMs which he presented graphically as:

Mr Parker describes this pattern as being consistent with a cost-plus pricing relationship, with higher costs being strongly correlated with higher prices and therefore "… *with a high degree of passing on*." He gains support for this proposition from the calculation in the top right of the graph, which he describes as showing "…*the statistical fit of a simple univariate regression (of price as a function of cost) is extremely high, with an "R2" of 0.941 – that is, over 94% of the variation in the retail* *price is explained by production costs*." The pass on is about 133% but that is explained by the fact that VAT has been included in the notional selling price and by slightly higher margins applying to the higher cost PC bundles.

221. Mr Augustin considered this material in his third supplemental report. In summary he considered that nothing significant could be extrapolated from the BOM material because (a) it covers only a three month period between 15 March and 23 June 2004 and he could not "*… reliably assume that conclusions drawn from this limited time period are applicable to the whole Cartel Period…*"; (b) the BOMs only cover a limited period and only show the cost of each bundle at one snapshot in time, so they don't demonstrate the changing prices of the bundle over time following the change in cost of individual components of a bundle; (c) the relevance of these documents is further limited because only 8 are for PC packages containing a LCD monitor and 17 relate to notebooks, which together make it all the more unreasonable to draw inferences concerning pass on from the material; (d) it is not accurate to describe the documents as price calculators essentially for the reasons I expressed earlier, that is "*… there is no evidence that the selling price stated in the documents is the output of the document, and therefore that the documents were the determinants (i.e., the 'calculators' or 'generators') of selling price…*" and that "*… it appears more likely based on the layout and presentation of the BOM Analysis documents, that they were used to add up the costs of the inputs of a particular package and compare them to a pre-proposed selling price in order to monitor the resulting margin and consider if it was acceptable. The fact that the margin varied from one package to another is evidence that these were not "price calculators" in the sense that the selling price was calculated based on the input costs and a specified margin*." Again, this reflects the conclusion I derived from the documents set out above.

222. The fact that this run of documents covers only a three month period is not as significant as Mr Augustin (and for that matter Dr Van der Laan) suggest. As Mr Augustin accepted in the course of his cross examination, he would have expected the claimants to have used similar techniques in the course of their business for other months during the Relevant Period – see T6/56/13-17. I accept as correct his point that each bundle is one snapshot in time. Indeed, I don't think he was challenged on that point. I am not persuaded that the documents are only significant to the extent that they relate to packages with LCD screens – the point to be derived from them relates to the way in which the claimants operated their retail consumer sales businesses and there is no reason why they would have operated differently when marketing packages with LCD screens from what they did in relation to packages either without a monitor at all or sold with a CRT monitor.

223. I agree with Mr Augustin that this material does not show price fixing on a cost plus basis in the usually understood sense of that term – that is by adding together the costs of producing a product or service and then adding a pre determined margin to arrive at a selling price. He makes good that point in the bar graph presentation at paragraph 1.3.32 and the scatter diagram at paragraph 1.3.24 of his third supplemental report.

224. By the same token I do not agree with him that its significance was limited to internal cost control and "*… understanding the profitability of individual products …*". Whilst this is an inference from the material, I consider it is likely that BOMs were used by the claimants' management as a mechanism for testing whether a proposed product could

be offered to the market at an acceptable selling price. I consider that is apparent from the examples where a price giving a negative margin is then adjusted upwards to arrive at a positive margin. This is what was to be expected of a business with limited market share (in the claimants' case, of under 20% of the retail PC and notebook market) operating in a low margin, highly competitive retail market in which technical advances occurred rapidly but against a background of fluctuating variable costs. In summary as Mr Augustin puts it in his third supplemental report, "… *Granville appears to set the sales price first, with the margin depending on the cost price, rather than the cost price and a fixed margin determining the sale price."* However that is not inconsistent with passing on market wide upstream price increases. Indeed if anything, it is consistent with that occurring, particularly where new packages were being released to the market on a regular short term basis as technical developments occurred.

225. That said, I do not accept that the BOM material or Mr Parker's analysis of it leads to the conclusion that the claimants are likely to have passed on 100% of any variable cost increase. As Dr Van der Laan says, if this was so then one would expect a consistent margin to be visible whereas there were widely differing margins used by the claimants for different products with no real consistency. In those circumstances, I do not consider that it can be safely concluded from the BOM material that the level of pass on was 100%. Whilst it shows a high correlation between selling prices and costs it says nothing about whether the pass on would be 10% or 100%.

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 cost increases were managed. As is apparent from what I have said above, there is no such evidence.

227. I remind myself that the onus rests on the defendants to prove that downstream pass on has occurred and the likely magnitude of such pass on. The evidence that is available satisfied me on the balance of probability that the claimants would have sought to pass on any such cost increases wherever possible. I reach that conclusion for a variety of reasons. First of all and bearing in mind Dr Van der Laan's counsel that I should be cautious before acting on economic theory alone, I am satisfied that in the circumstances of this case the economic theory set out by Mr Parker points strongly toward it being more probable than not that the claimants' managers would have sought to pass on such cost increases. The Overcharge was the result of a worldwide cartel in which the cartelists included the largest and most economically powerful manufacturers of LCD panels with a joint share in the world-wide sales of large size LCD panels of 69.6-79.2% during the period of the infringement (see Recital 43 of the Decision) and which not only affected the prices charged by the cartelists but also facilitated increases in price at or about the same level by non participants. On the balance of probability it affected all downstream manufacturers and suppliers of products incorporating LCD monitors. The Overcharge was a per unit variable cost as is common ground. These two factors together mean that the overcharge was experienced across the whole market in which the claimants traded. It is thus highly likely that the claimants would have sought to pass on a high proportion of the overcharge ass a mechanism for avoiding loss of

margin in the highly competitive market whilst at the same time not losing significant market share essentially because all participants in the market the claimants were selling into were affected in the same way and suffered the same constraints.

228. It is entirely clear (indeed it is not in dispute or seriously in dispute) that the downstream markets in which the claimants were participants (principally the UK PC and notebook consumer markets and to a lesser extent the end user commercial and educational sector markets) were highly competitive as a consequence of which margins would be constrained. The claimants' room for manoeuvre was further constrained by the fact that they did not have a market share during the Relevant Period that exceeded 18%. In my judgment these factors make it more probable than not that the claimants would have sought to pass on much if not all of the Overcharge.

229. Although Mr Parker maintained that it was probable that there would be a high level of downstream pass-on because the products being sold by the claimant and their competitors were relatively undifferentiated, in my view some caution is required about that proposition. It is clear from the materials that I have reviewed above that the claimants and their competitors did not differentiate by manufacturer in relation to monitors and the screens incorporated into notebooks. However, by the same token the claimants and their competitors did compete by using other components manufactured by identified manufacturers (printers are an example) and they did compete by specification in relation to some of the components of the packages sold and by price. I accept that in relation to the claimants there was no particular brand differentiation that had a premium effect on the products it offered for sale. In this sense pass on was more likely because the principal bases on which the claimants were able to compete were specification and price with no market position that might have enabled them to charge higher prices and therefore make a higher margin than their competitors, as might have been the case with Apple for example. In my judgment it is probable that margins were tight for the claimants throughout the Relevant Period. This is apparent from the margins referred to in the BOMs and is apparent too from the emphasis placed internally on the desirability of selling extended warranties in order to enhance overall margin. The importance of this as a factor for the claimants is apparent for example from the enhanced incentives offered to staff in respect of warranty sales. The tightness of margins is also apparent from the reaction to an increase in the cost of memory components by Granville as set out in the internal email relied on by Mr Parker in his first report. In my judgment it is also apparent from the reaction to a reduction of margin in relation to TVs referred to in the email referred to by Mr Augustin. At a practical level, price variations could be achieved with relative ease because the product specifications of the claimants' various offers altered frequently.

230. All of this points as I have said to the probability of a high level of pass on. What it does not do in my judgment is point necessarily to the conclusion that any pass on would have been 100% nor does it point to any particular level of pass on. Mr Raphael refers specifically to the Commission's Guidance on how to estimate the passing on of overcharges (2019/C 267/07) ("Pass On Guide"). As the Commission say at paragraphs 177-180:

> "(177) At a given level of the supply chain, competition between firms can be more or less intense. At one extreme, when a firm is a monopolist at its level of the supply chain, there is no

> competition. At the other extreme, competition between firms can be very intense (e.g. when many firms sell rather homogeneous products in a market with low barriers to entry), such that each firm acts as a price-taker and does not influence market prices which will be at or very close to the marginal costs of production. This latter case is referred to as perfect competition. In between these two extreme cases lies a broad range of intermediary scenarios, where competition could be more or less intense, depending e.g. on the number of firms in the industry or whether products sold by different firms are close substitutes or not."

In my judgment this paragraph describes two largely theoretical extremes but for the reasons that I have set out at length above, I consider the claimants' position in relation to the UK PC consumer retail market to be much closer to what the Commission in that paragraph describes as "*perfect competition"* than to that of a monopolist. The Commission continued:

> "(178) Such market competitiveness directly impacts passing-on. In the benchmark case of perfect competition, industry-wide cost shocks are passed on at a rate of 100 percent to direct customers. Such stylised market structure of perfect competition may function as a benchmark for the court when assessing passing-on effects (even though in real world markets it is less often observed). By contrast, in monopoly or various intermediary scenarios, the passing-on of an overcharge may not amount to a rate of 100 percent, but instead can lie above or below this threshold, including a passing-on rate of zero percent.
>
> (179) One example of market structures characterised by imperfect competition is a market with differentiated products. Differentiation can arise either in terms of product characteristics or geography. For instance, the direct purchasers may offer products which differ from each other in their actual quality, or the quality perceived by the customers of the product. Alternatively, due to different locations of the direct purchasers, the transportation costs of the goods offered may vary in relation to different customers (whose location might also differ). Differentiation can make products less than perfect substitutes of each other. Customers might not view all products as perfectly interchangeable.
>
> (180) This less than perfect substitutability might result in reduced competitive pressure on suppliers who may not face competitors offering closely interchangeable products. In other words, according to economic theory, the intensity of competition will be reduced when product differentiation increases. As explained in paragraphs 177 et seq. above, weaker competition will decrease the passing-on rate of an industry-wide overcharge, i.e. as the differentiation of the direct

> purchasers' products increases, and the passing-on rate of the industry-wide overcharge they were subject to will approach the rate where each direct purchaser is a monopolist. Conversely, when the product differentiation is limited, the passing-on rate of an industry-wide overcharge will be larger."

231. I accept Mr Raphael's submission (made by reference to paragraph 187 of the Pass On Guide and other academic work to similar effect cited by Dr Van der Laan in his second supplemental report) that where psychological pricing is being used this may have an impact on the timing or degree to which an industry wide variable price increase is passed on. However the issue is highly fact sensitive and is of relatively limited impact in the circumstances of this case. That is so because firstly, as I have explained already, whilst it is clear that some psychological pricing was adopted by the claimants, it was not universal. Secondly, passing on price increases can be achieved in a number of different ways including altering the specification of the product being offered. Thirdly, as I have said the claimants fairly frequently changed the specification of what was being offered and it would appear from the BOM documents that prices were arrived at in the first instance by looking at the current costs of the component parts of what was being offered and then adjusting the proposed selling price to arrive at an acceptable margin. All that said, I accept that this factor is one that I ought to take into account in reaching a conclusion concerning whether pass on is likely to have occurred in the round with the other factors already noted and is also relevant to an assessment of the likely level of any pass on.

232. Another factor that Mr Raphael relied on (made by reference to paragraph 186 of the Pass On Guide) concerns the costs associated with the process of price adjustment. There is no evidence available to me concerning the costs that would be incurred by the claimants in implementing a price increase. In my judgment it is likely to have been relatively insignificant for the following reasons. Firstly, the claimants appear to have conducted a more or less continuous advertising campaign by placing advertisements in specialist and other more general magazines and other publications. It would appear that much if not most of the preparation of these advertisements was handled within the organisation of the claimants. In any event, informing an agent or publication of a change in price of a product is neither costly or time consuming.

233. Secondly, as I have said, the claimants fairly frequently altered the specification of the products being offered to the public, which required the alteration of advertising copy in any event. Mr Parker concluded (on the basis of the BOM documentation, which as I have said and repeat spanned only a 3 month period) that Granville launched at least 49 new products over three months, equating to an annual rate of around 200 per year. As Mr Parker put it, this practice would have enabled the claimants "*… to rapidly react to any overcharge by introducing new product formulations at different prices (even if it was for some reason difficult to change the price of an existing product, which does not appear to have been the case)*." This is significant because passing on a market wide variable cost increase in relation to one component does not involve merely increasing the price of an existing product but can as easily be achieved in a market involving the sale of PC packages by choosing different mixes of component parts and in so doing sticking to a psychologically chosen price if that was considered commercially expedient.

234. Thirdly, the claimants offered their products for sale through outlets they operated. It is clear that the claimants communicated on a very regular basis with their outlets with pricing information.

235. Fourthly, whilst I accept that some managerial time would be taken up in price changing I do not regard that as likely to be material in the circumstances of this case. It would appear the claimants operated a flat management structure with its senior management involved on a day to day basis in its pricing decision making. That is apparent for example from the documents disclosed as part of the second tranche of BOM documents that required prices with low margins to be referred to senior managers. There will have been some cost in altering pricing information but there is no evidence as to what it was and the additional cost of carrying out such an exercise in my judgment is likely to be limited. All of that said, I accept that this factor may result in some delay in passing on variable cost increases. This is supported to a degree by the internal email relied on by Mr Augustin concerning TV pricing referred to earlier.

236. For these reasons, I conclude that the cost of effecting pass on was at most a minor barrier to passing on variable cost increases. In particular, I consider that if anything the frequent changes to product bundles provided a recurring opportunity for passing on such costs without incurring the cost of changing prices by adjusting the content of product bundles and pricing them if thought necessary using psychologically selected prices for the new bundle. Whilst I regard this factor as one of limited weight, I have taken it into account when arriving at the conclusions reached below.

237. The final point I should refer to at this stage is Mr Raphael's submission that it is improbable that any pass on occurred because of the importance to the claimants of the sale of extended warranties. In essence the point made is that the claimants would have been incentivised to keep prices low because of the high margins made from the linked sale of extended warranties. In my judgment this point is of itself of limited significance. Increasing the selling price does not affect the margins made on the sale of extended warranties nor is there any evidence that it would reduce the number of warranty sales. Indeed, at a high level of abstraction, it is counter intuitive to think that sales of extended warranties would drop if the price of a product increased. Warranties are likely to be perceived to be more desirable in relation to high price items where the cost of repair or replacement would be higher than lower priced items. It is also the case that an extended warranty will not be sold with every product. There is no evidence of the proportion of PC and notebook sales that also generated extended warranty sales. The information available shows only that about 10% of Granville's overall revenues were generated by warranty sales and circa 80%-90% margin was achieved on such sales. Merely looking at the margin on the sale of such a warranty is misleading. It is necessary to take into account the margin made from the sale of extended warranties for all products of the relevant class in order to arrive at a conclusion as to the contribution to the overall margin likely to be made in respect of the sale of that product. The information is not available to enable those sorts of calculations to be made. Indeed, the oral evidence in cross examination from Mr Augustin on this topic shows the speculative nature of the point being considered:

> "Q. But it also doesn't follow necessarily in the opposite direction, does it? The fact that cover sales are being made

> alongside the sale of a main product bundle doesn't necessarily mean that pass-on rates are being reduced, does it?
>
> A. Well, it might do. If -- if Granville was thinking that the cover sales are very important and they are making good margins on them, there's more incentive not to pass-on an increase because they -- if they don't -- sorry -- if they lose volumes, they won't make the margin on the cover sales. So I think -- I think (inaudible) might think differently about that."

238. In my judgment the best that can be said of this point is that a firm in the position of the claimants may be disincentivised from passing on some or all of a market wide increase in a variable cost by increasing its sale price (particularly a psychologically influential sale price) if it was thought that would reduce sales of that product and thus the proportion of extended warranties that might otherwise have been sold with the lost sales so that net revenues or profits were reduced. In those circumstances, the real issue concerns the effect of psychological pricing. I have considered that point already. In reality there is no evidence that increasing prices would affect the volume of sales of extended warranties other than if the effect of increasing prices would reduce sale volumes.

239. As will be obvious at the level of economic theory, the incidence of pass on is likely to be much more a question of degree than one of all or nothing. I doubt whether the UK PC retail consumer market could be described as one of perfect competition not least because that is largely an economists' construct. However as I have concluded during the Relevant Period it was much closer to that than to the alternative construct of a monopolist. As I have also explained, I consider that there was to a degree differentiation in terms of product characteristics. As I have said this did not occur in any meaningful way in respect of LCD monitors for example but participants in the downstream market were not selling monitors alone (or at any rate if they were that has not been treated as material for present purposes). They were selling either packaged desktop PCs or notebooks and in doing so were competing not merely by price but on the technical capacity of the packages they were selling. There was thus <u>to a degree</u> some product differentiation and to that extent the offer by the claimants and other market participants did to an extent differ from each other in their actual quality, or the quality perceived by the customers of the product. However, the differentiation was limited. There is no evidence from which I can reach any conclusions as to the efficacy of this differentiation other than the apparent emphasis placed on it by the claimants' officers and managers. However, I conclude that the differentiation that occurred in this market was limited and was primarily focussed on persuading consumers that by buying from the claimant they were getting a package that offered similar functionality as other packages but at a lower price. These factors suggest that the passing on of an industry wide cost shock would be at the higher rather than the lower end of a range between 0% and 100%

240. Returning to the facts of this case, in my judgment it is significantly more probable than not that the claimants wished to maximise margins where they could. That is consistent for example with the close attention that senior management paid to low end margins as is apparent from the documents including in the last tranche of BOM disclosure and from the emphasis placed on the sale of extended warranties with each unit sold to

consumers. It is consistent too with the obvious concern in the internal emails referred to earlier about the impact of increased costs on current retail offers. I fully accept that it is highly improbable that they could contemplate improving margin by asymmetrical price increases above those being offered by their competitors for comparable packages because they were not selling their products on the basis of a particular brand goodwill but on price relative to the functionality of what they were selling in a highly competitive market.

241. However the position was likely to be markedly different in relation to an industry-wide cost shock which involved the effects of as pervasive a cartel as the one that operated in relation to LCD panels, where all participants would be faced with the same variable cost increase both because of the market dominance of the cartelists and the umbrella effects of the cartel. There is no doubt it would be attractive to the officers and managers of the claimants to avoid passing on all of any price increase in the cost of monitors and notebooks driven by an increase in the cost of the screens built into them (or for that matter any other component in the packages they sold) if they could. It would be an opportunity to further their pricing policy based on competing on price. However, in my judgment it is improbable that the claimants had much if any room for such an approach as is apparent for example from the email concerning memory cost increases. That said, I accept that the lower the price increases as a proportion of the total cost of the products being offered to the consumer retail market, the more likely it was that an attempt would be made to limit or delay passing on the full effects of pass on. An example of this approach is seen in the email concerning TVs relied on by Mr Augustin. It is also apparent from the staggered approach to pass on shown in the memory email relied on by Mr Parker. I accept too that some delay in pass on might occur as a result of launching a new product with an altered specification or be staggered so as to permit price adjustments that were perceived to be more psychologically appealing. Clearly if this judgment was being made on a product by product basis then the room for such an approach would have been greater where the margin of the product affected was relatively high and much less where it was already relatively low. The difficulty about this is that the margins on the claimants' products differed widely from product to product as Mr Augustin has demonstrated.

242. This is why the BOMs are important. I accept that it is improbable that the authors were accumulating the costs of a package and then applying a margin to it to arrive at a sale price. As I have said above, it is much more likely that they started with a price they considered would be attractive to customers for a certain level of functionality and then assembled the costs of the parts necessary to provide that functionality in order to test the margin that would be available if the package was offered for sale. Once that was done commercial judgment was applied by deciding whether to offer the package at all and if so at what selling price, but the starting point was apparently always the cost of assembling the proposed package, including the cost of a monitor. The evidence available suggests that these judgments resulted in significantly different margins over time for different packages. Since there is no material available from the claimants that enables me to track the price changes for particular products against the cost increases for monitors or for that matter any other components, it is not possible to ascertain whether and if so what consistent policy was adopted by the claimants' management to this sort of issue. There is no evidence that there was a base line margin from which the claimant deviated when for example costs increased. There is simply a wide spread of

different margins over the period. This suggests there would be substantial pass on in some cases but less so in others.

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%.

245. In relation to the claimants' commercial and educational sector business, I conclude that pass on would have been broadly the same or perhaps slightly higher than that which applied in the consumer retail market. There is no evidence as to the competitive nature of the commercial and educational sector markets but there is no reason to suppose that it was materially less competitive than the consumer retail market. Although it is suggested that the price generator documents referred to by Mr Parker show a distinct cost plus approach to pricing in the commercial and educational sectors, I am unpersuaded that is so. The price generator documents suffer from the same problem that the BOM documents suffer from – there is no evidence to support the contention that the selling price was arrived at by applying a margin to a total cost price. To my mind the price generator documents are likely to have performed a similar function to the BOM documents – it provided the critical information to enable the claimants' managers to negotiate with bespoke customers on selling price.

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%.

Loss of Profit on Lost Sales

248. This is a claim by the claimants for additional loss alleged to have been caused by a reduction in volume of sales caused by increasing selling prices to accommodate the Overcharge cost of LCD Monitors and screens incorporated in notebooks. Since this is a head of loss claimed by the claimants, the burden is on the claimant to plead and prove the losses claimed. Unsurprisingly, this is an exercise that depends largely on economic modelling. This part of the claim arises only if and to the extent that there was downstream pass on. As indicated above I have concluded that that there was downstream pass on by the claimants of 65% of the Overcharge.

Elasticity of Demand

249. In order to calculate the loss of profit that should be recovered under this head of loss it is necessary to start by attempting to estimate the sales that have been lost as a result of the effect of the infringement on sales prices. This involves identifying the "*price elasticity of demand"* for the product in question, by which is meant the extent to which sales reduce following an increase in price. The more "*elastic*" a product the greater will be the number of purchasers discouraged from purchasing it. The starting point should be that this is a factual question that depends on information relevant to the particular time period for the particular product. There is no such material available so the relevant conclusions have to be drawn from other studies in relation to other products.

250. Having reviewed six possible studies, Mr Parker concluded in his first report that the most appropriate source to use for this purpose is that of J Foncel and M Ivaldi entitled " *Operating System Prices in the Home PC Market*" published in 2005 in the Journal of Industrial Economics ("F&I"). This study sought to estimate the price elasticity of demand for the home PC market in each of the G7 countries over the period 1995-1999. Mr Parker concluded that this study was the most appropriate to use in the circumstances *"… because they produced an estimate for the UK home PC market using data from close in time to, albeit slightly preceding, the Infringement Period. The data is therefore as close as I could find to the market of interest.*" Although this study is concerned with domestic consumers, Mr Parker has used the same statistical conclusions in relation to the claimants' commercial and education sector businesses as well as to its consumer retail business.

251. Mr Raphael does not dispute that this is the correct source to use as a matter of principle and identifies the difference between the parties as being whether I should adopt the figure of 3.247%, which is the high point of the range of between 2.145% and 3.247% identified by F&I for the market that all parties are agreed is the one that should be adopted (the entire UK population), or 2.7%, which is the midpoint in the range that F&I identify for the relevant market.

252. The claimants contend that I should adopt the higher figure because (i) the F&I range is for the whole home computer market whereas this claim is concerned with a subset consisting of home computers sold with LCD monitors and notebooks; and (ii) firm specific price elasticities are higher than the elasticity for the overall market.

253. As to the first of these points, Dr Van der Laan's reasoning is that:

> "The Foncel and Ivaldi paper estimates price elasticities for the UK home PC market. The estimate they provide is for all types of home PCs, which include notebooks and desktop PCs….
>
> As the Foncel and Ivaldi estimate covers all home PCs, it includes those that do not include an LCD screen. As a result, an elasticity estimate for the part of the market that covers PCs with LCD screens would be higher…[because] (e)conomic theory states that the more narrowly defined the market, the more elastic the demand because there are more substitutes. Therefore demand is likely to be more elastic for a subsection of the PC market that consists of PCs with LCD screen only"

254. In my judgment whilst this point is sound in theory, the adjustment proposed (even allowing for the broad brush / axe approach that is to be applied in this area) is excessive given the nature of the problem identified and should not be adopted having regard to the requirement that in this area a court should err on the side of caution in order to avoid over compensation – see the authorities referred to at paragraph 28 above. My reasons for adopting this approach are that firstly during the Relevant Period the demand for systems supplied without either any monitor at all or with a CRT monitor rather than a LCD monitor would be limited although not *de minimis*. As to this, (i) as Dr Van der Laan accepted at T5/126/18-21, notebooks by definition come only with LCD displays; (ii) Dr Van der Laan accepted that the likelihood of a consumer purchasing a system with a CRT screen was most likely at the start of the Relevant Period and decreased over the length of the Relevant Period so that at the start only an unidentified portion of the relevant market would wish to purchase a system with a CRT screen and that portion would have diminished over time. Dr Van der Laan was not able to identify the proportion of customers who would choose CRT over LCD monitors "… *because I haven't looked at the downstream market*…" – see T5/125/16-17; and (iii) in relation to sales of systems without monitors of any description, Dr Van der Laan accepted that as being " … *a very theoretical option, but in theory, I guess it would exist*…" This suggests that a substantial majority of the relevant market was either for notebooks or PC packages with LCD screens with the latter increasing progressively throughout the Relevant Period. All this suggests that to adopt Dr Van der Laan's proposed solution would result in "… *generating an elasticity figure that overestimates true price elasticity on the market for the relevant Products during the Relevant*

Period…" as Mr Mussa submitted and thus to over recovery by the claimants. The defendants also contend that Mr Parker has already favoured the claimants by selecting the entire population of the UK as the relevant market so that the factors identified by Dr Van der Laan have already been counter balanced. Although no attempt has been made to quantify the statistical effect of this adjustment, I accept that this was an adjustment that works significantly in favour of the claimants and thus counteracts any effects unfavourable to the claimants caused by under estimating elasticity.

255. As to Dr Van der Laan's second point – that firm specific price elasticities are higher than the elasticity for the overall market – I reject that too as justifying the adjustment he seeks in this case. This point is not one that Dr Van der Laan had articulated before trial. He had accepted the approach that Mr Parker had adopted in using the F&I study and the market that he had selected. The point was not the subject of any detailed statistical analysis and broadly I accept Mr Parker's argument that the point is of much less significance where what is being considered is a market wide variable cost increase where a uniform price increase is being implemented across competitors in a highly competitive market thereby making inter-brand switching much less significant. Whilst I accept that the downstream market was not one that satisfied the test for perfect competition, all the other points made by Mr Parker apply. Applying a broad brush or axe and bearing in mind the need to avoid over compensation, I conclude that any adverse effect for the claimants caused by the effect I am now considering is likely to be neutralised by the benefits conferred on the claimants by selection of the entire population of the UK as the relevant market.

256. For these reasons, I am satisfied that the elasticity figure I should adopt is that identified by the defendants of 2.7.

Diversion Ratio

257. The second factor used to calculate lost sales losses is the diversion ratio, which represents the extent to which lost sales losses were recaptured by Granville, through selling an alternative product to customers who would have bought a particular LCD Package absent the overcharge. The defendants contend that I should adopt a 50% diversion ratio whereas the claimants contend that I should adopt a figure of 7%, which is the claimants' overall market share. Neither of these figures is supported by any empirical or statistical evidence.

258. Clearly the theoretically available range is between 0% (with no switching to other Granville products) and 100% (which would apply if there was full switching). Mr Parker's assessment is no more than an assumption that on 50% of the occasions in which Granville fully passed on the LCD overcharge in the form of higher PC Package or Notebook prices, customers remained loyal to Granville and purchased an alternative Granville product. It is not suggested that there is any evidential or statistical reason for adopting that assumption. As I have noted earlier, it is not suggested that there was any brand attachment or loyalty to Granville's products and the claimants competed on price relative to functionality. It follows that in the 50% of cases identified by Mr Parker, customers would not do any of the things identified by Mr Augustin including going to a competitor with the aim of securing a PC package or notebook with a similar specification for a cheaper price, or a higher specification package at a similar price. This is counter intuitive. If products were available from a competitor with the same

specifications but at a cheaper price then it is inherently more probable than not that most consumers would select that option in the absence of any brand attachment. This would suggest that Mr Parker’s assumption may be over optimistic. However, that assumes such products would be available. Given the Overcharge was the result of a market wide variable cost shock experienced by a highly competitive market it is improbable that such products would be available. If that is correct then Mr Parker’s figure would be justifiable once account is taken of those customers who abandoned purchasing a PC package or notebook altogether or purchased a cheaper or lower specification product either from the claimants or a competitor.

259. Dr Van der Laan’s approach was to conclude that the 50% figure was not credible and that the 7% figure should be adopted. He justified this approach on the basis that:

> “… the Claimants appear to have had a combined market share of only 7% of the market (see Parker 1, §3.36). This implies that the total number of customers for which the first option was a PC package supplied by [Claimants], for which the second option (after being faced with an unexpected higher cost) was a computer package supplied by the [Claimants], et cetera was only 7%. This implies that the remaining 93% of the customers for whom the first choice was a PC package supplied by another supplier, for whom the second-best option (after being faced with an unexpected higher cost), et cetera, opted for an alternative PC retailer…
>
> Customers who faced an increase in the price of the Claimants' PC packages were, on the basis of limited market share of the Defendants and the higher joint market share of competitors to the Claimants, very likely to select their second-best option from a supplier who was part of the remaining 93% market share not provided by the Claimants. The random 50% “diversion ratio” applied by Mr Parker (selected as the average between 0% and 100% options for switching) does not appear plausible given the Claimants' market share of 7%. Absent information on the extent to which the Claimants retained their customers by offering an alternative product, in my view 7% would be the best estimate of the potential customers who would purchase a second-best option also provided by the Claimants.”

260. Dr Van der Laan’s approach ignores the points I have made already concerning the overcharge being the result of a market wide variable cost shock experienced by a highly competitive market. It presupposes that a customer’s response to an overcharge would be to disregard his or her previous decision to purchase from the claimants altogether and simply shift allegiance to a competitor of the claimants. This is a possible but improbable result unless by shifting they could secure a PC Package or notebook with a similar specification for a cheaper price, or a higher specification package at a similar price. This is unlikely given the competitiveness of the market and market wide effect of the cause of the overcharge.

261. Both of the claimants' expert witnesses suggested some additional reasons for thinking Mr Parker's figure was too high. This included that online customers might have a lower retention rate, and that some customers may have decided not to purchase before visiting one of the claimants' shops and ascertaining for the first time the price of what they had hoped to purchase. I accept all these points are possibilities but what was not explained is why these factors are not adequately catered for by the 50% figure adopted by Mr Parker. If the economic considerations I have referred to above were considered in isolation a markedly higher figure than 50% would appear to be justified. What justifies reducing the retention figure to 50% are the factors relied on by Dr Van der Laan and Mr Augustin amongst others. Those factors cannot justify a conclusion that 93% of consumers would redistribute to competitors of the claimants in the absence of evidence that by so doing, they could secure a PC package or notebook with a similar specification for a cheaper price, or a higher specification package at a similar price, given that the Overcharge is a cross market variable costs shock.

262. The claimants' alternative submission is that Mr Parker's 50% figure is still too optimistic even allowing for the factors I have considered so far because the only potentially relevant diversion in the present case therefore would be to PC packages sold by the claimants without a monitor or with a CRT rather than a LCD monitor. This led Mr Raphael to put to Mr Parker in the course of his cross examination, that:

> "Q. But you've got to change that assumption, haven't you, because a 50 per cent diversion ratio, even if it was plausible on the basis of going back and purchasing something with an LCD, does not make any sense when the only thing you might be logically going back and buying is a CRT, there's got to be a lower diversion ratio form that, got to be.
>
> A. Well, this is something on which we don't know the answer, so I was putting out some possible mechanisms. I agree with you that one of those mechanisms probably should be considered as within the market, but 50 per cent, as you know, is quite broad brush at that point.
>
> Q. Well, it's worse than broad brush, Mr Parker. If one was using 50 per cent for recapture on the basis of a group of options, which included all the LCD options, and if you narrow down the logically possible diversion that isn't captured by the elasticity only to CRT options, then you must accept starting from 50 per cent that the diversion ratio is going to be well below50 per cent when any looking at CRT diversion.
>
> "A. Well, if 50 per cent was the right number in the first place, and it covered all these factors and now you agree one of these factors should not be included, then yes, it would be somewhere lower than 50 per cent.
>
> Q. But I think you accepted that your best guess is now less than 50.

> A. Well, I've accepted if 50 was the right number on the original and now one of the options is lower, then yes, that would be right. But the ultimate question is: what proportion of customers are likely to pick up a CRT? We don't really know, and it's somewhere between 0 and 100 -- if it was really 50, it could be somewhere lower than 50 now that we've ruled out trading down to other LCDs."

263. In light of this exchange I have come to the conclusion that the appropriate sum to adopt is one that is significantly more than 7%, for which there is no justification, even on a conventional economic analysis but an unspecified figure that is less than 50% in order to give effect to Mr Parker's concession recorded above. It is also necessary to take account of the point that the alternatives under consideration (purchases of a system incorporating a CRT monitor or a system sold without a monitor of any sort) are not a realistic substitute (in most but not all cases) for notebook sales lost.

264. Applying the broad brush / axe approach identified earlier and bearing in mind the need for caution in order to avoid over compensation, I conclude the safe figure to adopt is 25%. This is less than the average of the two figures the parties selected, reflects the concession made by Mr Parker, the point noted above concerning notebooks moderated by the need to control the risk of over compensation in an area where there is no empirical evidence to assist.

Extended Warranty Sale Margins

265. The claimants' case supported by Mr Augustin is that warranty sales are made on 10% of sales ("Hit Rate"), with a margin of 88.94% (in fact 88.4% as I explain below) and that that is the basis on which damage for lost sales should be assessed. Mr Parker maintains that the hit rate in the counter factual world should be lower than 10% (even though he accepts that figure was achieved on actual sales – see T7/86/1-2) because the sales lost were likely to be from the lower end of the price range, where purchasers were less likely to purchase Add-Ons. In relation to margin, Mr Parker maintained a margin of no more than 70% is justified taking account of the incidence of employee commission, that an increasing number of products were sold inclusive of extended warranties from April 2005 and that The Supply of Extended Warranties on Domestic Electrical Goods Order 2005 came into force on 6 April 2005, which Mr Parker maintains would have significantly reduced the profitability of selling extended warranties.

266. In relation to the counterfactual hit rate, Mr Augustin did not accept that customers priced out by the passing on of the overcharge were not ones who would have purchased warranty cover. When this point was put to him in cross examination, his response was "*… I don't think that follows. I don't know whether anybody's done a study of sales of warranties, but I -- I won't be surprised if the lower income people are just as likely to buy warranties than ones who are richer*." In my judgment this is not an issue that the experts can sensibly be expected to assist on once it is accepted that there is no learning on the issue. Whilst I can see that more price conscious purchasers might be less inclined to purchase Add-Ons, by the same token such purchasers may be more sensitive to the desirability of insuring against the need to replace or repair a PC

package or part of it. Overall I do not see any justification for adopting a hit rate figure for present purposes of less than 10%.

267. An argument remains as to what figure in the range of 70%-88.4% (or 88.94%) should be adopted as the margin to be assumed for sales of warranties in the counter factual world. The figure Mr Augustin gave initially was 88.4% – see Mr Augustin's oral evidence at T6/10/2-12 - but was then altered to 88.94% - see T6/12/16 – and is premised on a charge of £25 in respect of a warranty with an averaged cost of £216[4]. The parties are agreed the correct figure is 88.4%. I round this to 88%.

268. There is a further adjustment to be made because cover sales were not expected in the non-consumer channel and also in the reseller channel. Following some clarificatory submissions from the parties, I accept that the effect of this point is to require a reduction to the amount of the total turnover used for calculation of the amount of lost cover sales, to reflect the evidence that lost cover sales did not arise for the reseller and the non-consumer sales channels. The effect of this adjustment will have to be worked out following the hand down of this judgment in accordance with what was agreed as to how the final quantum figure should be arrived at unless agreement can be reached following the circulation of this judgment in draft.

269. Mr Parker sought to make other adjustments based on the points already summarised earlier in this section. His oral evidence in chief on this point was:

> "I think the margin that should be applied should take account of -- should not be 100 per cent but should take account of the cost of warranties, which should take account of commissions paid to sales staff for making these warranties, and probably also any costs of interchange fees if the – if you are making payments by a credit card. And therefore I don't think a 100 per cent margin rate is appropriate. I would think a rate of more likely around 70 per cent is more likely to be correct"

In the course of his cross examination, Mr Parker was able to point to evidence of commission being paid to sales staff in respect of extended warranties. This is consistent with the material I referred to much earlier in this judgment concerning the payment of enhanced commission on the sale to such warranties. This was estimated by Mr Parker at between 5% to 7% - see T7/92/4-5. It was put to Mr Parker by Mr Raphael that the documentation to which Mr Parker was referring didn't prove the payment of commission on every extended warranty sold. I accept that there may be some sales where commission was not payable to sales staff but that is only likely to be where the sale took place as part of an online sale. Mr Raphael suggested there was no evidence as to how it was accounted for within the claimants' business. There is no such evidence but there has to be an element of reality introduced at this point. If sales staff were or a store was paid a commission of between 5-7%, then it would be commercially absurd to treat the margin made by the claimants on the sale of extended warranties as being margin gross rather than net of commission because the contribution made by the

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[4] Following a request by me after the end of the trial for clarification as to which figure I was being asked to adopt, both parties confirmed that the figure I should adopt on the assumption I accepted Mr Augustin's evidence on this point is 88.4%

sale of warranties to the profits made by the claimants of necessity was net not gross of commission.

270. In my judgment sales commission ought to be taken account of on a broad brush or broad axe basis in relation to the issue I am now considering on the basis that commissions were payable in at least some cases in relation to extended warranties in the earlier part of the relevant period. Given the uncertainty that surrounds this issue some care needs to be taken but by the same token it is necessary to make an adjustment in order to take account of this factor.

271. In my judgment there should be a further reduction of 2½% from the figure that otherwise results from adjustments for the two factors identified by Mr Augustin to reflect the incidence of sale commission. This is half the lower sum referred to above and is justified at that figure to take account of commission not always being paid because of the way commission was structured and also to take account of the reducing impact of warranties as a separate source of income in the back end of the relevant period.

272. There remains the question of reducing sales of warranties in the latter part of the Relevant Period. There is no evidence that permits this to be quantified with certainty. Attempting to arrive at a blended margin figure taking account of this factor would involve minute adjustments if over adjustment was to be avoided in relation to a speculative area of the enquiry and I have decided that the safer course is to leave this out of account.

273. In the result, I conclude that extended warranty margin should be reduced to 88% less the sum to be deducted for the other factor identified by Mr Augustin and in either case a further 2½%.

The Margin Uplift Point

274. I can take this issue more shortly than the other points so far considered. This point is a highly technical one and on the information available likely to be close to *de minimis* in effect. In essence the point is that the profit on lost sales would have been higher on lost sales where there has been downstream pass on with that figure rising the less the Overcharge was passed on. What the figure will be depends on two variables – the level of overcharge and the level of pass on with this issue likely to be significant only where the overcharge level is high and the pass on level is low. I have not carried out the calculation on the basis of the findings I have made. As was agreed I leave that to the parties. In principle however, this effect should be taken into account in calculating the damages to which the claimants are entitled in respect of lost sales. I do not accept the defendants' submission that this should be ignored applying the broad brush / axe approach to quantification. As I understand Mr Parker's evidence the figure can be calculated once the overcharge and pass on rates have been quantified. The broad brush effect is relevant only where accurate calculations cannot be made. Where they can they should be and the effect incorporated into the damages calculation.

Limitation

275. The Claim Form in these proceedings was issued on 7 December 2016. The defendants maintain that time had begun running by 6 December 2010 and, therefore, the

claimants' claims are barred by operation of s.2 and/or s.9 of the Limitation Act 1980 ("LA"). The claimants maintain this is wrong applying LA, s.32(1)(b), which in so far as is material provides that time does not start to run for limitation purposes where *" ... any fact relevant to the plaintiff's right of action has been deliberately concealed until the plaintiff has discovered the… concealment… or could with reasonable diligence have discovered it*"

276. The effect of LA, s.32 in relation to cartel claims was considered by the Court of Appeal in Gemalto Holding BV and others v Infineon Technologies AG and others [2022] EWCA Civ 782; [2023] Ch 169. That claim was a follow on damages claim in relation to a cartel found by the Commission to have operated between 2003 and 2005. In April 2013 the Commission had announced publicly that it had sent a statement of objections to participants in that cartel. In September 2014 the Commission had issued an infringement decision. In September 2019 the claimants brought a follow-on claim against the defendants, claiming damages for loss arising from the cartel. The defendants contended that the claim was statute barred. The claimants relied on LA, s.32 as do the claimants in this case. The judge held that the claim was time-barred because pursuant to LA s.32(1)(b) the limitation period had begun to run by the end of April 2013. In doing so the judge had applied the so called "Statement of Claim Test" by which time would not begin to run until the claimant had, or could with reasonable diligence have, obtained such knowledge as would allow it and its professional advisors properly to plead a claim that would not be liable to be struck out as unarguable or lacking a sufficient evidential basis.

277. The claimants appealed and the Court of Appeal dismissed the appeal but held that the judge had been wrong to apply the Statement of Claim test and that the correct test required the court to conclude that time started to run from the point at which the claimant had sufficient confidence to justify embarking on the preliminaries to the issue of a claim form, such as submitting a claim to the proposed defendant, taking advice and collecting evidence, but would not be satisfied if a claim pleaded on the basis of the details known (or which could have been discovered by reasonable diligence) by the claimant would be struck out. In dismissing the appeal, the Court of Appeal held that where the claimant sought damages arising from the operation of a cartel, a worthwhile claim would arise when the claimant knew (or could with reasonable diligence have discovered) that there might have been a cartel and the identity of the participants. In that case time started to run from the date when the Statement of Objections had been issued because the content of that announcement combined with the other material then available to the claimants had allowed them to identify the essential elements of and participants in the cartel. Importantly however, it was accepted by the defendants that the mere issue of a statement of objections by the Commission was not, by itself, a sufficient basis on which to infer involvement in a cartel. Statements of Objections are not published and the press announcements issued by the Commission do not identify those to whom a Statement of Objections has been sent. However recipients sometimes announce publicly in press statements that they have received such a Notice and that is what occurred in both in Gemalto Holdings and in this case.

278. In relation to the appropriate test, Sir Geoffrey Vos MR summarised the position at paragraph 45 as being that "… *limitation begins to run in a deliberate concealment case when the claimant recognises that it has a worthwhile claim, and that a worthwhile*

claim arises when a reasonable person could have a reasonable belief that (in a case of this kind) there had been a cartel…" and added at paragraph 46:

> "Once the claimant knows objectively that a cartel has been concealed, it does not need to have certainty about its existence or about the details of that cartel. That is why the Supreme Court made clear that the claimant needs only sufficient confidence to justify embarking on the preliminaries to the issue of a writ, such as submitting a claim to the proposed defendant, taking advice and collecting evidence. … A claim in respect of a concealed event would not be a worthwhile one if it were pure speculation, but it would be if, as in this case, an authoritative regulator had thought it sufficiently serious, having investigated all the evidence available, to lay charges or issue a Statement of Objections.
>
> 50 … One can embark on the preliminaries to the issue of a writ once one knows that there may have been a cartel without knowing chapter and verse about the details."

However, in order to satisfy the test it is necessary to be able to identify those who potentially will be liable. As Sir Geoffrey put it at paragraph 53:

> "The claimant can embark on the preliminaries to the issue of a writ (and therefore the limitation has begun) once it knows that there may have been a cartel and the identity of the participants, without knowing chapter and verse about the details."

As he added at paragraph 64:

> "… the limitation period starts to run under FII when the claimant can embark on the preliminaries to the issue of a writ. That is when it knows that there may have been a cartel and the identity of the participants, without knowing chapter and verse about the details."

The reasons for this were further explained by Green LJ in his concurring judgment at paragraph 73 where he emphasised that:

> "In a cartel case it is the agreement or concerted practice to which the putative defendant was a party that is concealed. It is therefore the revelation of sufficient facts about the cartel and its parties that matter. The other ingredients of the cause of action (effect on trade, and object or effect on competition) are consequences of the existence of the cartel, not discrete facts that are, in a practical sense, capable of being independently concealed. Once revealed that a defendant was party to a cartel these matters are consequential."

The position is the same whether what is alleged is actual knowledge or knowledge that could have been acquired with reasonable diligence.

279. Since a claimant can embark on the preliminaries to the issue of a Claim Form, (and therefore the limitation period has begun to run) once it knows (or could with reasonable diligence have discovered) that there may have been a cartel and the identity of the participants, without knowing the details, the defendants submit that it follows that time started to run in this case from well before 6 December 2010.

280. It is convenient to start by considering the position but for the fact that the claimants were all in liquidation at all material times. It is submitted that the claimants had no actual knowledge of the LCD panel cartel until September 2015. I accept that is so given the date when the claimants were placed in administration and because I accept Mr Wood's evidence that " … *the existence of the LCD cartel was drawn to the attention of the Liquidators when a law firm (Stewarts) drew our attention to it in September 2015*." However, this is immaterial because time starts to run under LA.s.32(1)(b) either when "… *the plaintiff has discovered the… concealment…*" **or** *"… could with reasonable diligence have discovered it.*" It is the reasonable diligence route on which the defendants rely, not actual knowledge.

281. The Statement of Objections was issued by the Commission on 27 May 2009, the Commission issued a public statement confirming that fact at or about the same time and thereafter the defendants acknowledged publicly that they were addressees of the Statement of Objections. In its press statement the Commission stated that:

> "The European Commission can confirm that in May 2009 it sent a Statement of Objections under EU antitrust rules to a number of companies active in the supply of liquid crystal display (LCD) panels, concerning their alleged participation in a cartel in violation of EC Treaty rules on restrictive business practices (Article 81 of the EC Treaty and Article 53 of the Agreement on the European Economic Area). The product under investigation is the main component of thin, flat monitors used for example in mobile phones, televisions, computers, digital watches and pocket calculators. …
>
> A Statement of Objections is a formal step in Commission antitrust investigations in which the Commission informs the parties concerned in writing of the objections raised against them. The addressee of a Statement of Objections can reply in writing to the Statement of Objections, setting out all facts known to it which are relevant to its defence against the objections raised by the Commission. The party may also request an oral hearing to present its comments on the case.
>
> The Commission may then take a decision on whether the conduct addressed in the Statement of Objections is compatible or not with the EC Treaty's antitrust rules. Sending a Statement of Objections does not prejudge the final outcome of the procedure."

Thereafter Reuters reported on 13 July 2009 that:

> "Dutch electronics maker Philips PHG.AS and South Korea's LG Display 034220.KSLPL.N said on Monday they had received a charge sheet from the EU's executive arm about suspected price-fixing on LCD panels….
>
> Philips said it received the charge sheet as a former shareholder of LG Display and this did not mean it was directly involved.
>
> LG Display, the world's No. 2 maker of LCD panels, said it was reviewing the statement of objections but declined to comment further. …
>
> In a separate case, LG Display in November pleaded guilty to LCD price-fixing in the United States, along with Japan's Sharp Corp 6753.T and Taiwan's Chunghwa Picture Tubes 2475.TW. LG Display paid $400 million in fines then.
>
> A spokesman at Samsung Electronics 005930.KS, the world's No. 1 LCD maker and LG's home rival, declined to comment on the latest development but said it had been fully cooperating with the EU investigation, which started in 2006."

The Financial Times reported these events on 13 July 2009 in an article that included the following statements:

> "The European Commission did not identify the suspected cartel members, but Philips, the Dutch electronics company, acknowledged that it had received the formal statement of objections in respect to LG Display, a jointly owned business in which it has since sold its remaining stake. …
>
> The Commission's charges – which were delivered to the companies two months ago but which came to light only on Monday – come three years after it was revealed that authorities in the US, Japan, South Korea and Europe had launched an international investigation into alleged price-fixing by LCD screen manufacturers. …
>
> In late 2006, when the industry was struggling with falling prices and oversupply, LG Philips said that it was – along with a number of other companies – being investigated by international regulators for "possible anti-competitive conduct".
>
> Other companies that said they were answering regulators' queries at the time included Samsung Electronics and Sharp. All the companies identified pledged to co-operate fully with the investigations.
>
> Since then, LG Display, Sharp and Chunghwa Picture Tubes have agreed to plead guilty and pay a total of $585m in fines following from the US probe into the sector. …

> Officials at Samsung Electronics, LG Display and Chunghwa Picture Tubes were not available for comment."

The Guardian also reported these events under the headline:

> "**LCD flat screen makers charged with price fixing**
>
> **LG and Philips among electronic groups accused by European Commission of operating a cartel**"

in these terms:

> "European regulators have charged several of the world's biggest technology companies, including LG and Philips, with fixing the price of flat LCD screens in a move that could lead to fines running into hundreds of millions of pounds.
>
> The European Commission said today that it has sent a formal statement of objections to a number of companies alleging that they operated a price-fixing cartel. ,,,
>
> The commission did not reveal who had received its letter – part of an investigation launched three years ago – but Philips later admitted that it had been charged and it would "vigorously oppose" the allegations. LG added that it had also received the statement of objections, which it was reviewing. …
>
> In a separate case, LG Display pleaded guilty to price-fixing charges in the US last November after an investigation by the American competition authorities. Also pleading guilty at the time were Sharp, Hitachi and Taiwan's Chunghwa Picture Tubes. Together they paid some $600m in fines for fixing the price of screens sold to gadget manufacturers. That investigation followed scrutiny by the authorities in Japan and South Korea."

There was similar reporting in the specialist trade press.

282. This reporting followed earlier reporting of proceedings in the USA in respect of the same cartel against the same participants. So for example on 12 November the New York Times reported:

> "Prices for the flat screens in televisions, personal computers and cell phones have plummeted in recent years — but the decline would have been even faster if it hadn't been for an international price-fixing cartel, the Justice Department said on Wednesday.
>
> Three leading flat-screen producers — LG Display of South Korea, Sharp of Japan and Chunghwa Picture Tubes of Taiwan — pleaded guilty and agreed to pay a total of $585 million in criminal fines for their role in fixing the price of liquid-crystal display panels.

> LG is paying the most: a $400 million fine, the second-highest criminal fine ever imposed by the Justice Department's antitrust division. … "

That article also reported that

> "Government investigations, legal specialists said, are under way in Europe, Japan and South Korea. In the United States, private class—action suits have already been filed seeking damages for companies that purchased flat-panel screens, and for consumers who bought flat-panel—equipped products. Some of the private suits, if successful, could provide a way for consumers to benefit, though the compensation for any individual would probably be slight."

283. In my judgment the directors of a company whose business consisted solely or very largely of the supply of consumer electronics could reasonably be expected to consider at least the business sections of main stream newspapers published in at least England and Wales where they traded. Similarly they could reasonably be expected to pay close attention to reportage in those papers that concerned their industry, or industries involved in the direct or indirect supply of a major component namely monitor and notebook screens incorporating LCD technology. That is all the more the case where as here the market in which the claimants participated was one with notoriously narrow margins.

284. In my judgment therefore on the material published in the UK general and trade press referred to above, the claimants could with reasonable diligence have discovered that the Statement of Objections had been issued and that the defendants were recipients of it from which it follows that the claimants could with reasonable diligence have discovered there may have been a cartel and the identity of the participants. It follows that the claimants' claims would be statute barred unless the effect of the claimants being in administration or liquidation result in a different analysis.

285. The real issue therefore concerns the impact of the claimants entering administration then liquidation. There is no dispute about the timings of these events. Each entered administration before the Statement of Objections was issued. OTC entered administration on 29 January 2002, Granville entered administration on 27 July 2005 and VMT entered administration on 5 August 2005.

286. This issue was considered by Foxton J in Granville Technology Group Limited and others v. Infineon Technologies AG [2020] EWHC 415 (Comm). This case was decided at a time when the Statement of Claim test rejected by the Court of appeal in Gemalto Holding BV and others v Infineon Technologies AG and others (ibid.) was still considered to be good law. This is a point relied on by the defendants to support a submission thatInfineon (ibid.) is no longer good law. I return to that issue below. Foxton J concluded that he should take account of the relevant claimant in that case (OTC) being in administration in deciding whether it could with reasonable diligence have discovered the existence of the cartel relevant in that claim. On appeal, the Court of Appeal upheld this approach – see OT Computers Ltd (in liquidation) and others v Infineon Technologies AG and another [2021] EWCA Civ 501; [2021] QB 1183,

holding that although LA, s.32(1)(b) was objective, in the sense that it was concerned with what the claimant could have discovered with reasonable diligence and not merely what he had in fact discovered, the question remained what the actual claimant, rather than some hypothetical claimant, could reasonably have discovered and that to approach the issue in any other way would defeat the purpose of LA, s.32, which was to ensure that the claimant was not disadvantaged by reason of being unaware of the circumstances giving rise to his cause of action as a result of concealment. It followed that LA, s.32(1)(b) did not require a claimant in administration to be treated as if it had still been carrying on business at the time when the facts concerning the defendants' price fixing cartel began to emerge – see Males LJ at paragraph 59 and following. Thus where a claimant is insolvent and run by an insolvency practitioner the test to be applied in answering the reasonable discoverability question posed by LA, s.32(1)(b) is to be answered by asking what can be expected of a reasonably diligent insolvency practitioner.

287. Applying that test, I do not consider that it could reasonably be expected that such a practitioner would access the foreign news media referred to above. Further, like Foxton J, I reject the notion that "*…administrators of a company which has sold its assets should be following the trade press for the market in which that company had traded six months and more after trading had ceased.*" In this case, as in Infineon (ibid.), the question is to be determined by reference to the articles published by Reuters and in the Financial Times and Guardian referred to earlier.

288. As I have said already, OTC entered administration on 29 January 2002, and Granville and VMT entered administration on 27 July 2005 and 5 August 2005 respectively. The Statement of Objections was issued by the Commission on or about 27 May 2009 and the various reports of that event were published on or about 13 July 2009 – some 7 years after OTC had been placed in administration and some 4 years after the defendants had been placed in administration. As Foxton J found in Infineon (ibid.), I consider it unrealistic to suppose that the insolvency practitioners (or more likely their staff) would be scanning the business section of newspapers or the Reuters web site for articles that may be relevant to the companies concerned so long after the companies had ceased trading, administration has been commenced and ended with the placing of the companies in liquidation and the winding up of their affairs. Quite simply it is not realistic to suppose that administrations of hopelessly insolvent companies could be conducted on this basis. The position would possibly be different if the business of the companies was being continued by the administrators with a view to selling on the business of the company concerned as a going concern. However that was not the position in relation to any of the claimants.

289. In this context, I accept Mr Wood's evidence concerning the practicalities, which reflect my own experience over many years when sitting as a s.9 judge in the Chancery Division in Manchester that an insolvency practitioner will usually be acting at the same time in a substantial number of administrations and liquidations of companies trading in a wide variety of different industrial and commercial sectors, where the funds available to carry out investigations may be very limited. Whilst this does not absolve a practitioner from taking all reasonable steps to recover assets for the benefit of creditors, what is reasonable necessarily must take account of these factors. I should make clear however, with all respect to Mr Wood, that he goes too far in saying as he did in the course of his oral evidence that practitioners of reasonable care and skill

would not have understood that the existence of a potential cartel meant that the company might have a claim. I would expect a practitioner of reasonable care and skill to be familiar with the basic building blocks of UK competition law, which has been part of UK business law life for many years and in its present form since Chapter 1 of the Competition Act 1998 was enacted. Although there is a danger in over generalisation, Chapter 1 of the Act follows fairly closely the general approach to competition of the TFEU and AEEA, That said, this point is of little or no significance having regard to the potency of the other points I have referred to.

290. The defendants submit that I should ignore these concerns because they are no longer relevant following the reformulation of the approach to LA, s.32 in Gemalto Holding BV and others v Infineon Technologies AG and others (ibid.). I reject that approach for two reasons. First, the basis on which the Court of Appeal decided Gemalto Holding BV and others v Infineon Technologies AG and others (ibid.) was by reference to the decision of the Supreme Court in Test Claimants in the Franked Investment Income Group Litigation v Revenue and Customs Commissioners [2020] UKSC 47 ("FII"), which the Court of Appeal held "*… explained the rationale of section 32(1) in a new and comprehensive manner*." FII was the authority that the Court of Appeal applied in OT Computers Ltd (in liquidation) and others v Infineon Technologies AG and another (ibid.) when upholding Foxton J's approach. It is inconceivable in my view that Males LJ would have proceeded in that way (with the unqualified support of the two other members of the Court of Appeal panel) if he or they had considered it invalidated the approach that they were adopting, or for that matter that the very experienced counsel in that case would not have submitted that FII had that effect if they had considered the point arguable. Secondly and more fundamentally, I do not see how the reasoning of the Court of Appeal in OT Computers Ltd (in liquidation) and others v Infineon Technologies AG and another (ibid.) could be undermined by the change in approach following Gemalto Holding BV and others v Infineon Technologies AG and others (ibid.). Each of those cases was concerned with different legal issues. The scope of the requirement for objectivity dealt with in OT Computers Ltd (in liquidation) and others v Infineon Technologies AG and another (ibid.) had nothing to do with the rejection of the Statement of Claim test in Gemalto Holding BV and others v Infineon Technologies AG and others (ibid.). Both work together.

291. All this leads me to conclude that the limitation defence must fail in the particular circumstances of this case. In those circumstances, the claimants' alternative submission that the claim against the fourth defendant was not in any event statute barred does not arise. However, I should make clear that had it been relevant, I would have accepted the claimants' submissions on this issue essentially for the reasons identified by Mr Raphael in paragraph 407-409 of his closing submissions.

The Foreign Law issue

292. The defendants submit that a substantial part of the claims are governed by non-EEA law (alternatively, by the laws of Taiwan, Japan, South Korea and China); that they have put those foreign laws in issue in their defences to these claims; that it is not appropriate to rely on the presumption of similarity in respect of those laws; and that the proportion of the claim governed by foreign laws therefore falls to be dismissed. The claimants submit that as presently pleaded, the defences plead the application of foreign law only as to Producer Country First Sales and the Laws of the Producer

Countries and so it is not open to the defendants to assert that foreign law is applicable to those parts of the claim relating to panels first placed on the market in a non-EEA state. That being so, the claimants maintain that foreign law has not been put in issue in relation to any sales other than to Producer Country First Sales and so English law applies in respect of all non EEA aspects other than Producer Country First Sales. In any event, the claimants maintain that English law applies to all the claims in any event.this but if that is wrong that the similarity presumption applies but if that is wrong, the claimants seek an adjournment to plead and prove foreign law.

293. In relation to this last point the claimants maintain that their failure as yet to plead and prove any relevant foreign law is a **"***technical ground*" of defence, that the defendants did not raise the suggestion of non applicability of the similarity presumption until the PTR, have never pleaded and proven that any relevant foreign law is different from English law and that it " … *would have been wasteful for the Claimants to have pleaded and proved foreign law, at great expense, before this point*." The claimants' main point at this stage however is that English law applies.

294. It is necessary to start by considering what is the applicable law of the claims. It is common ground this is to be determined applying the Private International Law (Miscellaneous Provisions) Act 1995 ("PILA") since the events with which this claim is concerned occurred before 11 January 2009, when Rome II came into effect – see Iiyama (UK) Ltd v Samsung Electronics Co Limited [2018] EWCA (Civ) 220; [2018] 4 C.M.L.R. 23 at [45].

295. By PILA, s.9(4), the applicable law as determined applying the Act is to be used for the purpose of determining " … *whether an actionable tort or delict has occurred*". The applicable law is to be determined applying PILA, ss.11 and 12. In so far as is material PILA, ss. 11 and 12 provide:

> "11.— **Choice of applicable law: the general rule.**
>
> (1) The general rule is that the applicable law is the law of the country in which the events constituting the tort or delict in question occur.
>
> (2) Where elements of those events occur in different countries, the applicable law under the general rule is to be taken as being—
>
> …
>
> (c) in any other case, the law of the country in which the most significant element or elements of those events occurred.
>
> …
>
> 12.— **Choice of applicable law: displacement of general rule.**
>
> (1) If it appears, in all the circumstances, from a comparison of—

> (a) the significance of the factors which connect a tort or delict with the country whose law would be the applicable law under the general rule; and
>
> (b) the significance of any factors connecting the tort or delict with another country,
>
> that it is substantially more appropriate for the applicable law for determining the issues arising in the case, or any of those issues, to be the law of the other country, the general rule is displaced and the applicable law for determining those issues or that issue (as the case may be) is the law of that other country.
>
> (2) The factors that may be taken into account as connecting a tort or delict with a country for the purposes of this section include, in particular, factors relating to the parties, to any of the events which constitute the tort or delict in question or to any of the circumstances or consequences of those events."

This claim is a claim for damages caused by breach of the duty imposed by TFEU, Article 101. It is necessary to start by identifying the elements constituting the tort of breach of statutory duty. They are (a) occurrence of the relevant agreements, decisions and concerted practices; (b) the restriction on competition within the internal market and (c) loss or damage caused to the claimants by the restriction.

296. It is not in dispute and in any event is obvious from the recitals in the Decision summarised at the start of this judgment that the relevant agreements, decisions and concerted practices all occurred outside the EU in Taiwan, Japan and South Korea. It is also not in dispute that the overcharge for the LCD panels incorporated into the goods which the claimants ultimately bought, occurred when the LCD panels were first sold by the cartelists including the defendants to the manufacturers of screens that were then incorporated into monitors and notebooks (who are referred to in many of the authorities and some of the submissions in this case as "*original equipment manufacturers*" or "OEMs"). Again it is not in dispute that this occurred outside the EU in Taiwan, Japan, China and South Korea. It is or should not be in dispute that the cartelists sold approximately about 26.9%-38.7% of their production directly into the EEA including the UK – see Recital 49 to the Decision, where the Commission found that from October 2001 to January 2006, LCD panels were sold directly by the addressees to customers in the EEA (Direct EEA Sales). It is also not in dispute but in any event I find that the claimants were all English registered companies carrying on business in England and Wales who suffered loss (subject to downstream pass on) in England and Wales, when they purchased monitors or notebooks with LCD screens incorporated into them or the parts necessary to enable them to assemble notebooks. Their losses on reduced sales were also suffered in England and Wales.

297. Once the different elements of the events and the country in which they occurred have been identified, the court then has to make a '*value judgment*' regarding the '*significance*' of each of those 'elements' in relation to the tort in question – see Iiyama (UK) Ltd v Samsung Electronics Co Limited (ibid.) at [48]. In that case, it was conceded that "…*in the modern world the place where a cartel agreement happens to be made is*

of little significance…" Neither party in this case suggests, and in particular the defendants do not suggest, otherwise. I agree. That being so, the primary considerations that remain by a process of elimination are (a) the place or places where the cartel was intended to be implemented; and (b) the place or places where the damage resulting from the infringing activity was suffered.

298. The defendants submit that the most significant element of an Art. 101 claim is generally and in this case is where the restriction of competition occurred, which the defendants maintain was where the cartel was first implemented at prices incorporating the Overcharge, which was when LCD panels were sold to OEMs in Taiwan, Japan, China and South Korea. This submission is essentially the same submission that was made on behalf of the defendants in Iiyama (UK) Ltd v Samsung Electronics Co Limited (ibid.) – see [54]. That submission was rejected by the Court of Appeal in that case although that was in the context of an application by the defendants for the claimants' claim to be struck out or for reverse summary judgment. The impact of that authority is therefore limited since this is not such an application but it is worth noting that the Court of Appeal in that case observed that:

> " … the tort in question is infringement of Article 101, which is a creature of EU law and has direct effect throughout the EU. Against that background, the fact that the pleaded damage has all occurred within the EU and the internal market may well give that factor more weight in the value judgment which has to be performed than it would have in relation to other economic torts with no EU law dimension. Indeed, although we do not say it could never happen, we have some difficulty in imagining a case where a private law claim for damages for breach of Article 101, brought by a claimant domiciled within the EU in respect of loss allegedly suffered in the EU as a consequence of a worldwide cartel, could properly be prevented from going forward to trial on the basis that the applicable law of the claim was clearly a foreign law."

299. In their opening submissions the claimants addressed the issue I am now considering "*… on the assumption that the Infringement, and as necessary the Claim, fall within the territorial scope of EU law*". However these issues are interwoven because the defendants' submission is that the claimants should be able to recover no greater proportion of any market-wide loss estimate than is governed by English law. Given this factor and the point made by the Court of Appeal in the paragraph of its judgment quoted above that the tort in question is infringement of Article 101, which is a creature of EU law, leads me to conclude that I should consider the territorial scope question first since it is likely to have a substantial impact on the proper law issue. I accept Mr Raphael's submission that if the whole of the claimants' submission is one within the territorial scope of EU competition law then it is "*… simply incoherent, and contrary to the principle of effectiveness of EU law, to apply non-EEA law to it. If the claim is within the territorial scope of EU law, then EU law requires that EU competition law can and should apply to it.*" Reverting back to what I said above, if and to the extent that the focus in relation to applicable law should be on the restriction on competition within the internal market, then concluding that EU competition law should not apply to infringing activity that has effect within the EU because the cartelists are based, or

conspired, or first gave effect to their conspiracy outside the EU would have a chilling effect on the efficacy of EU competition law as an effective mechanism for protecting and enhancing fair competition for the benefit ultimately of all consumers within the EU.

300. Turning to the territorial scope of EU competition law, there are three decisions of the European Court of Justice ("ECJ") that in my judgment together enable this issue to be resolved. The first is Re Wood Pulp Cartel: A. Ahlstrom Oy And Others v. E.C Commission [1988] 4 C.M.L.R. 901 ("Woodpulp I"), which was concerned with a cartel formed and operating outside the EU which sold products directly to customers in the EU at prices that included a cartel driven overcharge. The cartelists in that case challenged jurisdiction on the basis that they were established in Canada, the United States and Finland. The jurisdiction challenge failed before the ECJ on the basis that "*… where those producers concert on the prices to be charged to their customers in the Community and put that concertation into effect by selling at prices which are actually co-ordinated, they are taking part in concertation which has the object and effect of restricting competition within the Common Market…*" As the ECJ observed:

> "If the applicability of prohibitions laid down under competition law were made to depend on the place where the agreement, decision or concerted practice was formed, the result would obviously be to give undertakings an easy means of evading those prohibitions. The decisive factor is therefore the place where it is implemented."[Emphasis supplied]

The ECJ also added that *"(i)t is immaterial in that respect whether or not they had recourse to subsidiaries, agents, sub-agents, or branches within the Community in order to make their contacts with purchasers within the Community*."

301. This led the Court of Appeal in Iiyama (UK) Ltd v Samsung Electronics Co Limited (ibid.) at [70] to conclude that:

> "Woodpulp I is therefore authority for at least three key propositions. First, the territorial scope of Article 101 is not confined to anti-competitive agreements made within the EU. Secondly, wherever such an agreement is made, it falls within the scope of Article 101 if it is implemented in the EU. Thirdly, it accords with the territorial principles of public international law to apply the competition rules of EU law to the implementation within the EU of anti-competitive agreements, wherever they are made. The implementation within the EU took the form of direct sales by members of the cartel to customers in the EU, at inflated prices."

However, as the Court of Appeal also observed,

> "Since the implementation consisted of direct sales to customers within the EU, it was unnecessary for the court to consider what the position would have been if the wood pulp had moved through a longer supply chain, including in particular an initial sale at cartelised prices to an innocent purchaser outside the EU."

302. The question that remains is whether extra territorial effect can be asserted where it is reasonably foreseeable that a cartel formed and operating outside the single market will have effects in the EU which are both immediate and substantial. This is referred to as the qualified effects doctrine. This was considered in the next of the three cases which in my judgment are relevant to the territorial scope of EU competition law, Gencor Ltd v E.C. Commission [1999] 4 C.M.L.R. 971 ("Gencor"). The first point to be made about that case is that it was concerned with the Merger Regulation, not Article 101 or its predecessor, Article 85. However, in my judgment that makes no material difference since that regulation is concerned materially for present purposes with mergers that create or strengthen a dominant position so as to impede effective competition. Gencor was concerned with a proposed merger that concerned companies that were all based in South Africa apart from one that was based in England. The applicant in that case (Gencor) maintained that the Commission lacked territorial jurisdiction. The Commission accepted that the Merger Regulation like Articles 85 and 86 (now 101 and 102) was concerned with competition within the Common Market. The CFI concluded that the Commission had territorial jurisdiction "… *when it is foreseeable that a proposed concentration will have an immediate and substantial effect in the Community* …" - see paragraph 90 of the judgment. However, as is apparent from paragraph 92, whether this test is satisfied in relation to the three criteria of immediate, substantial and foreseeable effect is a question of fact in each case. The effect of this decision is therefore to create or acknowledge the existence of the qualified effects test as an alternative to the test established by Woodpulp I.

303. The third case relevant to the territorial scope of EU competition law is the decision of the Court of Justice of the European Union ("CJEU") in Intel Corporation Inc v European Commission [2017] 5 C.M.L.R. 18 ("Intel"). This case concerned an abuse of a dominant position contrary to TFEU, Article 102 by a US based undertaking dominant in the semi-conductor sector. This case engaged for the first time before the CJEU whether if components are first sold outside the EEA to unrelated purchasers also outside the EEA, the link between the internal market and the infringement would be too weak to permit jurisdiction to be established using the qualified effects test. The applicant (Intel) contended that it was not foreseeable that the agreements with Lenovo regarding CPUs for delivery in China would have an immediate and substantial effect within the EEA.

304. The CJEU held that the Commission could establish jurisdiction based on the qualified effects test. In reaching that conclusion, the CJEU held at paragraph 42 and following that:

> "it must be borne in mind that, as the Advocate General noted in point 288 of his Opinion, the EU competition rules set out in arts 101 and 102 TFEU are intended to prevent collective or unilateral conduct of undertakings limiting competition within the internal market …
>
> Thus, the court has held, as regards the application of art.101 TFEU, that the fact that an undertaking participating in an agreement is situated in a third country does not prevent the application of that provision if that agreement is operative on the territory of the internal market…

Moreover, it must be noted that, in order to justify the application of the implementation test, the court has emphasised that if the applicability of prohibitions laid down under competition law were made to depend on the place where the agreement, decision or concerted practice was formed, the result would obviously be to give undertakings an easy means of evading those prohibitions…

The qualified effects test pursues the same objective, namely preventing conduct which, while not adopted within the EU, has anti-competitive effects liable to have an impact on the EU market…

The argument put forward by Intel, supported by ACT, that the qualified effects test cannot serve as a basis for the Commission's jurisdiction is therefore incorrect…

Accordingly, that argument must be rejected as unfounded…

it is necessary to examine the argument put forward in the alternative by Intel, according to which, even if the qualified effects test were applicable in the present case, the General Court wrongly considered that the agreements concluded with Lenovo in 2006 and 2007 would have foreseeable, immediate and substantial effects in the EEA…

it is necessary to examine the conduct of the undertaking or undertakings in question, viewed as a whole, in order to determine whether the Commission has the necessary jurisdiction to apply, in each case, EU competition law…

insofar as Intel criticises the General Court for considering that it was foreseeable that the agreements concluded with Lenovo concerning CPUs for delivery in China would have an immediate effect in the EEA, it must be pointed out, first, that the General Court rightly held, in [251], [252] and [257] of the judgment under appeal, that it is sufficient to take account of the probable effects of conduct on competition in order for the foreseeability criterion to be satisfied…

Secondly, since in [255] of the judgment under appeal, the General Court found, in essence, that Intel's conduct vis-à-vis Lenovo formed part of an overall strategy intended to ensure that no Lenovo notebook equipped with an AMD CPU would be available on the market, including in the EEA, the General Court did not err in considering, in [277] of the judgment under appeal, that Intel's conduct was capable of producing an immediate effect in the EEA…

That argument must therefore be rejected as unfounded….

> Lastly, Intel submits that the General Court wrongly considered that the agreements concluded with Lenovo concerning CPUs for delivery in China could have a substantial effect on the EEA market even though the effects of those agreements were negligible…
>
> It suffices, in that respect, to note that the General Court held that Intel's conduct vis-à-vis Lenovo formed part of an overall strategy aimed at foreclosing AMD's access to the most important sales channels, which, moreover, Intel does not dispute in its appeal…
>
> Accordingly, in view of the considerations set out in [50] above, the General Court did not err in law in holding that, faced with a strategy such as that adopted by Intel, it was appropriate to take into consideration the conduct of the undertaking viewed as a whole in order to assess the substantial nature of its effects on the market of the EU and of the EEA."

The Court ended this section of its judgment by observing that:

> "As the Commission emphasises, to do otherwise would lead to an artificial fragmentation of comprehensive anti-competitive conduct, capable of affecting the market structure within the EEA, into a collection of separate forms of conduct which might escape the EU's jurisdiction."

305. Although Intel (ibid.) was concerned with the territorial jurisdiction of the Commission, rather than the territorial scope of Article 101 or Article 102; and it was a case about Article 102, not Article 101, both points are immaterial for present purposes – see Iiyama (UK) Ltd v Samsung Electronics Co Limited (ibid.) at [91, where the Court of Appeal held that it could not " … *accept that the territorial scope of the Commission's jurisdiction differs in principle from the territorial scope of the two Articles, except possibly in relation to foreign transactions which the Commission may legitimately take into account when levying fines*." In relation to the point that it concerned anti-competitive conduct which was intended to have a direct effect in the EU, by excluding a competitor from the relevant market, the Court of Appeal held the more important point was the express acceptance by the Court that Intel's conduct in making the anti-competitive arrangement outside the EU "*was capable of producing an immediate effect*" in the EU. It concluded that the CJEU's decision "… *can therefore be expected to provide a solid foundation for further incremental development of the Court's jurisprudence in this difficult area of law*…" and that the decision:

> "provides substantial support for the argument that a worldwide cartel which was intended to produce substantial indirect effects on the EU internal market may satisfy the qualified effects test for jurisdiction. Whether or not the test is satisfied will depend on a full examination of the intended and actual operation of the cartel as a whole."

306. Specifically in relation to "indirect" effects, the Court of Appeal rejected the proposition that the claimants claims were unarguable on the basis that the purchase of cartelised goods within the EU where the supply chain included a prior sale by a cartel member outside the EU at an inflated price to an innocent third party, fell outside the territorial scope of EU competition law, even though the inflated price had been passed on down the chain. As the Court of Appeal put it at [98]:

> "… the European case law which we have reviewed shows it to be at least arguable with a real prospect of success that intended
>
> effects within the EU internal market of a worldwide cartel fall within the scope of Article 101, and that the production of such effects on the EU market, if substantial and of a systemic nature, may properly be characterised as immediate effects of the offending agreements. The test is one of substance rather than terminology, and in the context of the qualified effects test we do not consider that directness of effect should be treated as an additional requirement to immediacy of effect. The relevant criterion is that the effects produced in the EU should be immediate, and the European Court has now given authoritative guidance on how that concept should be understood. We are unable to accept the proposition that the mere existence of even one prior sale to an innocent third party outside the EU at an early stage of the supply chain must, without more, lead to the conclusion that the test of immediacy cannot be satisfied. Like the other criteria, it requires an overall assessment in light of the offending conduct viewed as a whole."

307. The Court of Appeal also rejected the risk of double jeopardy posed by the extra territorial aspects I am now considering on the basis that those " … *who participate in a worldwide cartel cannot complain if their conduct gives rise to proceedings in different jurisdictions, or if they have to meet possibly overlapping claims*." Finally, the Court of Appeal rejected as immaterial the presence within the supply chain of a series of intra-group transactions on the basis that:

> "What matters is that the cartel was always intended to have worldwide effect, including in the EU, and it must have been contemplated that the supply chains whereby cartelised goods ended up being purchased within the EU might include intra-group transactions. The important point is that purchases are ultimately made, at an inflated cartel price, within the territory of the EU. The existence of such purchases, on any substantial scale, must therefore have an effect on the operation of the internal market."

308. Returning to the facts of this case, in my judgment the evidence available establishes that the cartel in issue in these proceedings was a worldwide cartel which was intended to produce and in fact produced substantial indirect effects on the EU internal market. That is apparent from what I have said elsewhere in this judgment but in summary is apparent from the findings of the Commission as set out in the Recitals within the

Decision including those at Recital 43 (and 407, which is to broadly similar effect), 48, 72, 94-96 including in particular the finding of the Commission referred to at Recital 92-94 that the participants in the cartel were aware of and sought effects in the European market, and 235, the effect of which I have summarised earlier in this judgment. As the Commission found at Recital 408, "… *the infringement covered the entire EEA. In fact, the geographic scope of the cartel was more than EEA wide, namely world-wide*."

309. The Commission found at Recital 51-52 (and 380) that:

> "… LCD panels produced by the addressees may also be purchased by customers in the EEA as part of IT and TV final products sold in the EEA by third parties (hereinafter referred to as "Indirect Sales"). These indirect sales were of significant magnitude as more than 16 million LCD TVs were sold in Europe during the infringement period. With their joint world-wide market share of around 75% in large LCD panels (see recital 43), the sales of TVs manufactured with the incorporation of LCD panels of the parties could be estimated at more than 12 million units, while LCD Monitors incorporating the parties' products and sold in Europe, the Middle East and Africa ("EMEA") amounted to around 200 million pieces.
>
> Europe represented a significant share of the world-wide market of final LCD products. Sales of LCD TVs to Europe went from 7.8% of total world-wide sales in the last quarter of 2001 to 40.5% by the end of 2005. Sales of LCD Monitors to Europe went from 37.1% of world-wide sales at the end of 2001 to 26.9% by the third quarter of 2003. Monitor sales to the EMEA represented 35% of the world-wide market in the third quarter of 2004, increasing to 38,7% by the end of 2005."

310. The Commission rejected an argument (relevant to the level of fines imposed) by the defendants that the cartel had not been directly implemented in the Union, and the Commission had not established that the cartel had foreseeable, immediate and substantial effects on trade between Member States; and that European customers were not the main focus at the Crystal meetings – see Recital 413, which incorporates by reference earlier recitals including (i) Recital 283, where the Commission found that in a single, complex and continuous cartel infringement with the objective of increasing and maintaining prices of LCD panels for IT and TV applications at world-wide and EEA level; (ii) Recital 324, where the Commission found that LCD panels were delivered and/or billed directly to customers in Europe, including various producers of downstream equipment and to European entities connected to the undertakings that participated in the infringement such as Samsung; (iii) Recital 325, where the Commission found that the cartel produced effects within the EEA not only through the direct sales of LCD panels but also indirectly through inter-state trade of incorporated LCD panels; and (iv) Recital 327, where the Commission concluded that:

> "… it can be concluded that the cartel arrangements had an appreciable effect on trade between Member States and Contracting Parties to the EEA Agreement. In this connection, it

> is not relevant that the market situation with respect to LCD panels was not identical to the one at stake in the Woodpulp case. In any event, the Court of Justice held in Woodpulp that even if there were no trade between Member States in the intermediary product concerned by the cartel arrangements, where the product constitutes the raw material for another product marketed elsewhere in the Union, the agreement whose object or effect is to restrict competition by fixing prices for the intermediate product is capable of affecting trade. It is not disputed that there is significant trade between Member States of finalised products incorporating LCD panels."

311. The EEA market to which the Commission refers necessarily includes the UK market since the Commission proceeded on the basis that because the cartel was a worldwide cartel " *… the relevant geographic area is the whole territory of the EEA. The territory of the EEA evolved during the infringement. Until 30 April 2004 it consisted of the territories of the then fifteen EU Member States together with Iceland, Lichtenstein and Norway, whilst from I May 2004 the territory comprised the 25 EU Member States together with Iceland, Liechtenstein and Norway...*" – see Recital 385 of the Decision.

312. All three claimant companies carried on their businesses in England and Wales. In carrying on that business they purchased both LCD panels and products containing panels in or into England and the claimants suffered their loss in England and Wales, where they purchased and sold on their products, when they either sold on to customers without passing on the Overcharge or suffered lost profit as a result of sales being lost.

313. For these reasons, I conclude that the claim is one that comes within the territorial scope of EU competition law Returning to the applicable law issue, these conclusions lead me to the further conclusion that applying PILA, s.11(2)(c), the applicable law is that of England and Wales including the law of the EU that applied at the time of the events giving rise to this claim. I reach that conclusion because the most significant elements of those events were (a) the place or places where the cartel was intended to be implemented, which for the reasons I have identified was materially the territory of the EU including the UK and, therefore, England and Wales ; and / or (b) the place or places where the damage resulting from the infringing activity was suffered which again materially was England and Wales. As the Commission makes clear in Article 331 of the Decision, while the effects of the cartel were experienced elsewhere as well that is entirely immaterial for present purposes, as is the fact that a number of sales were first put on the market outside the EU. That is so because the Commission has decided and the Decision establishes that the indirect sales of panels were targeted at the EU (including England and Wales) and were intended to and in the event had substantial effects on competition in the EU (including England and Wales). Whilst each case is fact specific, the conclusion I have reached is consistent with the approach of Barling J in Deutsche Bahn v Mastercard [2018] EWHC 412 (Ch), where he concluded that the most significant element was not where the unlawful conduct was centred, but where the restriction of competition which affected the merchants, occurred and that the fact that the loss of that merchant, in each case, occurred in the same country, reinforced that conclusion.

314. Given these conclusions, it has not been necessary for me to consider PILA,s.12. Had it been necessary to do so and had I concluded that the general rule was that the applicable law in relation to sales that were first put on the market outside the EU was the law of the state where that had occurred, I would nonetheless have concluded that the significance of the factors referred to above which connect the tort to the EU and, therefore, England and Wales, so outweighed the factors connecting the tort to the states where LCD screens were first put on the market outside the EU during the Relevant Period so as to make it substantially more appropriate for the applicable law to be the law of England and Wales incorporating that of the EU as relevant. EU competition law is the most appropriate law to apply to a tort concerned with a breach of TFEU, Article 101 to the extent that it has effect within the EU because it comes within the territorial scope of EU competition law and English law is the most appropriate intra EU system of law to apply by reason of the effect on the market so far as the claimants are concerned being in England and Wales, the claimed losses having been suffered in England and Wales and the claimants having carried on business in England and Wales during the whole of the relevant period until they were each placed in administration. The geographical place of incorporation of each claimant is a minor consideration although the first and second claimants were registered in England and Wales and although OTC was registered in Jersey, it nonetheless carried on business in England and Wales and claims in respect of losses suffered there. To my mind it is also at least realistically arguable, given the cost and inconvenience of having to prove separately the competition law of each state where LCD screens were first put on the market outside the EU during the Relevant Period, that to decide otherwise would undermine the direct effect and/or the effectiveness principles. However, it is not necessary for me to decide that point in the circumstances.

315. In light of these conclusions I need not say anything about the presumption of similarity because the point is not one that arises. It is a novel point best left to a case where a conclusion on the point is material to the outcome of the case.

Interest

316. The Granville claimants claim compound interest in the pre-insolvency period applying the principles set out in Sempra Metals Ltd (formerly Metallgesellschaft Ltd) v Inland Revenue Commissioners and another [2007] UKHL 34; [2008] 1 AC 561 ("Sempra Metals") and simple interest at 8% thereafter. The defendants maintain that the claimants have not satisfied the pre-conditions that apply to a claim for compound interest and have not established an entitlement to simple interest at any rate other than that which is usually applied to commercial claims, which in my experience ranges between 1% and 3% above base rate for sterling denominated claims down to the date when judgment is entered after which the Judgment Act rate will apply.

The Compound Interest Claim

317. In principle it is open to a claimant to plead and prove its actual interest losses caused by late payment of a debt, which might include an element of compound interest subject to the principles governing all claims for damages for breach of contract, such as remoteness and failure to mitigate and the court has a common law jurisdiction to award interest, simple and compound, as damages on claims for non-payment of debts as well

as on other claims for breach of contract and tort – see Sempra Metals *per* Lord Nicholls at 94. However, Lord Nicholls added at [96]:

> "But an unparticularised and unproved claim simply for "damages" will not suffice. General damages are not recoverable. The common law does not assume that delay in payment of a debt will of itself cause damage. Loss must be proved."

and at [97] that *"(i)f a party chooses not to prove his interest losses the remedy provided by the law is to be found in the statutory provisions*."

318. The claimants' claim as it is currently pleaded is in these terms:

> "61. The Claimants are entitled to complete compensation for all of their losses, including for … additional financing costs and/or for interest losses incurred as a result of having to pay unlawful Overcharge amounts in respect of LCD Panels and LCD Products throughout the Relevant Period and having been kept out of and denied the commercial use of monies.
>
> 62 Throughout the Relevant Period the Claimants and each of them borrowed money from banks and other creditors, on which interest was payable at prevailing rates. In the absence of the Overcharges to which the Claimants were subjected throughout the Relevant Period, the Claimants would have offset such savings against their respective borrowings and/or would have borrowed less and/or would have reinvested the amounts in their respective businesses.
>
> 63. In the premises, and/or in view of the facts and matters pleaded herein, the First and Second Claimants are entitled to and do claim interest whether under common law and/or under the court's equitable jurisdiction on a compound basis during the Relevant Period. Compound interest is claimed at a rate of 2.5% per annum above the Bank of England Base Rate ("Base Rate") as it stood from time to time, alternatively at such rate and for such period up to the date of judgment as the Court thinks fit. The Third Claimant claims simple interest under the Senior Courts Act 1981 during the Relevant Period at the rate of 2.5% per annum above Base Rate, or such other rate as the court thinks fit.
>
> 64. At trial, the Claimants will adduce evidence of their respective borrowings and/or investments, as appropriate."

The claimants maintain this is an adequate pleading of a claim for interest (including compound interest) as damages and that "*… no pleading point is now taken…"*. This last point appears correct not least because in their closing submissions the defendants maintain only that this part of the claimants' claim has not been proved as required.

319. The principles applicable to what must be pleaded and proved were considered by the Privy Council in Sagicor Bank Jamaica Ltd v Seaton and others [2022] UKPC 48; [2023] 1 WLR 1759. Although that decision was concerned with the law of Jamaica and not binding in a technical sense, in my judgment it should be followed unless it can be shown that what is stated is plainly wrong according to English law. I am satisfied that what the Board said in that case reflects English law and that the decision should be followed.

320. Lord Hodge delivered the judgment of the Board and in relation to the issues I am now considering held that that common law did not:

> "…recognise that a claimant or plaintiff› kept out of his or her money in a commercial context is as a norm entitled to claim and receive as damages for breach of contract interest on the withheld sums that is calculated by reference to the cost of borrowing such sums at a conventional rate without evidence from which such a loss can be inferred"

and that "… *such claims are for actual or real damages, not theoretical and non-existent loss*…" Lodge Hodge summarised the current position as being:

> "A plaintiff seeking interest as damages where the defendant has withheld money in breach of contract must plead and prove its loss. If a plaintiff pleads that it has incurred loss by having to borrow replacement funds, what it must prove are facts and circumstances from which a court may properly infer on the balance of probability that it has borrowed funds to replace that which has been withheld from it. What evidence will suffice to enable such an inference to be made will depend upon the facts of the particular case."

The defendants maintain that the claim for interest as damages fails because it merely alleges being kept out of the money needed to do business without more and that is the type of claim that the authorities indicate should be rejected.

321. The claimants maintain that the relevant evidence foreshadowed by paragraph 64 of their pleading is provided by Mr Augustin. The issue I am now considering is addressed by him at section 9.3 of his first report. As is apparent from what I have said earlier in this judgment and in relation to other issues, there is no empirical evidence that assists on the issue I am now considering. The claim is advanced therefore solely on the basis of Mr Augustin's opinion that:

> "…the most likely use of that extra cash would have been to reduce debt (either by paying off existing debt earlier or by taking on lower amounts of new debt). This is because, in my experience, businesses that take on significant debt to help fund their business operations will seek to repay that debt at the earliest opportunity and save the interest on that debt (which is effectively a guaranteed saving) unless they have other ways in which they can use cash available in the business to generate financial returns in excess of the cost of debt. Furthermore, I

> would generally assume that a business would apply funds so as to reduce its most expensive (or otherwise onerous) debt first, where it has outstanding debt with different interest rates (or other onerous terms)."

322. There is evidence that Granville operated using a combination of term loans and overdraft type facilities being that set out in paragraph 9.4.4. and following of Mr Augustin's report. The facilities are substantial and as he remarks, in relation to the overdraft facilities, it would probably have been open to the lenders to call for repayment on very short notice unless there was some form of special agreement to contrary effect between the borrower and lender.

323. In at least two of the three years during the Relevant Period for which accounts are available a note in the accounts suggests that the head room provided by the facilities was limited – see paragraph 9.3.11 of Mr Augustin's first report. That was reflected too in board minutes of meetings at which the issue was considered – see paragraph 9.4.13. It is probable that the fixed term loans were used to fund working capital – see paragraph 9.4.15. Mr Augustin's opinion is that had money represented by the Overcharge been available to the claimants, it would have been used first to reduce the on demand (overdraft) facilities. I accept that evidence because that represented the greatest risk for the claimants posed by their debt financing model since repayment could be called for with either no or very limited notice and the greater the sums involved the greater the difficulty there was likely to be in complying with any such demand.

324. Mr Parker agrees that interest is relevant:

> "… primarily in order to compensate for any additional financing costs the Claimants may have faced as a result of having suffered a loss of profits. Additional financing costs could have been incurred if, for example, the loss of profits resulted in increased debt levels compared to the counterfactual, assuming the Claimants would have paid interest on that debt. Equally, additional financing costs could have been incurred if the loss of profits resulted in lower levels of investment in the business or if they created a need for additional shareholders' funds to be raised."

325. Mr Parker also agrees that in the pre-administration period it is "… *the marginal source of finance which is important in determining the increase in interest payments resulting from the Infringement*…" I take this to be a reference to the on demand (overdraft) facilities to which Mr Augustin refers. He accepts that debt was the main source of finance. This too is consistent with what Mr Augustin says and is consistent too with the fact noted by Mr Parker in paragraph 10.40 of his first report "… *that when Granville realised its interests in a third party firm in December 2004, it used the funds raised to repay* [bank] *debt*." Mr Parker also notes that the administrators reported on 30 September 2005 in relation to Granville that "*bank facilities of £20m were already fully drawn down*". Mr Parker makes the points that those facilities comprised an overdraft of £11m, a term loan of £4.1m and a letter of credit of £5m and that this "...

implies that bank facilities were the marginal source of finance between December 2004 and July 2005." I accept this analysis.

326. Both experts are agreed that the rate for interest calculation purposes pre-administration is base rate plus 2.5%. I agree with this conclusion because that was the rate payable by Granville to its bankers (HSBC) down to 18 December 2004, when the rate payable reduced to base rate plus 1.75%. Mr Parker initially considered that thereafter, the rate that should be adopted is 1.75%. Mr Parker was able to calculate the rates paid by Granville throughout the period as being:

Effective date	End date	BoE base rate	Margin over base	Cost of debt
Oct 2001	Oct 2001	4.50%	+2.50%	7.00%
Nov 2001	Jan 2003	4.00%	+2.50%	6.50%
Feb 2003	Jun 2003	3.75%	+2.50%	6.25%
Jul 2003	Oct 2003	3.50%	+2.50%	6.00%
Nov 2003	Jan 2004	3.75%	+2.50%	6.25%
Feb 2004	Apr 2004	4.00%	+2.50%	6.50%
May 2004	May 2004	4.25%	+2.50%	6.75%
Jun 2004	Jul 2004	4.50%	+2.50%	7.00%
Aug 2004	Dec 2004	4.75%	+2.50%	7.25%
Jan 2005	Jul 2005	4.75%	+1.75%	6.50%

Mr Parker considers that from an economic perspective, during the pre- insolvency period these rates of interest should be compounded on a quarterly basis. I agree. It is common ground between the experts. The reason why Mr Augustin considers it wrong to reduce the applicable margin rate to 1.75% as Mr Parker had done is because that reduction applied to a term loan and in the Counterfactual Scenario, any additional funds would have reduced the On Demand Facilities, which continued to carry the 2.5% rate. Mr Parker conceded this point in paragraph 5.4 of his third report. I conclude that is the appropriate way to proceed because I infer that any additional cash available during the Relevant Period would probably have been used first to pay down the on demand debt. It follows that the final line of Mr Parker's table should be altered so that the margin over base becomes 2.50% and the cost of debt becomes 7.25%.

Interest rates post Insolvency.

327. The claimants maintain they are entitled to simple interest by operation of s.35A of the Senior Courts Act 1981. Although that appeared at some stage to be in dispute it is apparently now agreed that both claimants are entitled to simple interest under the Act, in the case of Granville from the date when it was placed in administration. The debate that remains concerns rate. The claimants maintain that the applicable rate should be 8%, alternatively base + 2.5% whereas the defendants maintain the rate should be 1% above base rate except for months where the base rate fell below 1%, in which case it is just to award 2% above base rate.

328. Mr Raphael contends that the 8% rate is appropriate whereas Mr Mussa contends that there is no basis whatsoever to justify a rate of 8% statutory interest and such an award would be contrary to both principle and authority. Mr Raphael submits that this is the appropriate rate by operation of s.189 of the Insolvency Act 1986 ("IA"), which in so far as is material provides:

> "**189.— Interest on debts**.
>
> (1) In a winding up interest is payable in accordance with this section on any debt proved in the winding up, including so much of any such debt as represents interest on the remainder.
>
> (2) Any surplus remaining after the payment of the debts proved in a winding up shall, before being applied for any other purpose, be applied in paying interest on those debts in respect of the periods during which they have been outstanding since the company went into liquidation.
>
> (3) All interest under this section ranks equally, whether or not the debts on which it is payable rank equally.
>
> (4) The rate of interest payable under this section in respect of any debt ("the official rate" for the purposes of any provision of this Act in which that expression is used) is whichever is the greater
>
> of—
>
> (a) the rate specified in section 17 of the Judgments Act 1838 on the day on which the company went into liquidation, and
>
> (b) the rate applicable to that debt apart from the winding up."

329. In my judgment IA, s.189 is immaterial to the issue I have to determine. Firstly, although Mr Raphael submits that the effect of this provision is that a company in liquidation will be required to pay to creditors interest at the statutory rate of 8% where there is a surplus in respect of the period from the date of the insolvency to the date of payment, that is not actually its effect. The 8% rate applies only to any surplus remaining after the payment of the debts proved in a winding up. It thus contemplates an additional payment to creditors at the judgment rate where there are funds available after all proved debts have been paid in full and thus before there is any distribution for example to members. This is entirely principled because it places putting creditors in the same position as judgment creditors to the extent there are the funds available in the company's estate to enable that to be achieved.

330. The applicability of this provision was rejected in Re MSD Cash and Carry Plc [2018] EWHC 4033 (Ch). In that case interest was sought by a liquidator under s.35A at the rate of 8% which the judge (HH Judge Hodge KC) recorded had been said "…*to reflect both the current Judgment Act statutory rate and also the rate applicable to interest on debts in the winding-up*." The judge was referred to IA s.189 – see [17] to [18]. The forensic basis for the submission made in that case was if anything stronger than that

in this case and was that if the respondent " … *were entitled to interest at 8% on his provable debt in the liquidation, he ought to be repaying the sum by which he has been wrongly preferred at the same interest rate*." The judge referred to an earlier first instance decision of Mr Robert Hildyard QC (as he then was) in Pena v Coyne [2004] BPIR 1286, which concerned a claim founded on a transaction at an under value where counsel had sought to pray in aid IA s.189. Mr Hildyard observed that it seemed unlikely that that section, which was said only to apply in the event of surplus assets, actually would ever have become applicable in the case before him. That is so in this case as well. Judge Hodge accepted the submissions of the paying party including a submission that there was "*no authority whatsoever for the proposition that s.189 should govern the rate of interest on monies recoverable by an insolvency office-holder, such as a liquidator*…" and concluded that the case before him was not one to which IA s.189 applied. There is no material distinction of principle between the applicability of IA s.189 in that case and this and it would be wrong in principle for me not to follow the decision in Re MSD Cash and Carry Plc unless I was satisfied that it was plainly wrong. Not merely am I not satisfied that the decision is wrong but in my view it is plainly right and founded on prior first instance authority, which the judge followed.

331. The question that remains is what rate should be adopted for the calculation of interest down to the date of judgment. Although Mr Mussa submits that 1% above base rate is conventional in commercial court cases, I am not able to agree. The rate adopted is that assumed most likely to be the rate at which the receiving party could normally be expected to borrow. Unusually there is evidence in this case as to the rate that at least Granville could borrow at and that was base rate plus 2.5%. I have no reason to think that any other rate would apply to any of the other claimants and in those circumstances, I conclude that the appropriate rate to adopt in all the circumstances for interest payable by operation of s.35A is base plus 2.5% down to judgment.

OTC

332. I consider that similar considerations apply in relation to interest so far as OTC is concerned. It is entitled to interest at base rate plus 2.5% both before and after it was placed in administration since no claim has been proved by it for interest as damages and it is entitled therefore to statutory interest at the appropriate rate – see Sempra Metals *per* Lord Nicholls at 97. I see no good reasons for applying any different rate to that I have concluded should apply after the Granville claimants were placed in administration. It is likely to reflect the rate at which OTC was able to borrow just as it does for the Granville claimants.

333. It should be possible for the parties to agree an interest calculation. If there is a dispute as to when interest should run from it will have to be resolved on the hand down of this judgment. Provisionally however, I consider one broad brush way of achieving fairness would be to apply half the rate I have concluded should be adopted for the whole sum recoverable over the Relevant Period down to administration and thereafter at the full rate on the whole sum down to the date when judgment is entered whereafter the Judgment rate will apply. Any issues that remain to be resolved once the impact of this judgment has been considered will be resolved at the hand down and consequential matters hearing.