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## IN THE COMPETITION

Salisbury Square House
8 Salisbury Square
London EC4Y 8AP
Monday 13 June 2022
Before:
The Honourable Mr Justice Michael Green
Derek Ridyard
Sir Iain McMillan CBE FRSE DL
(Sitting as a Tribunal in England and Wales)

# BETWEEN: <br> Royal Mail Group Limited <br> BT Group PLC and Others v DAF Trucks Limited and Others <br> Claimants 

v

DAF Trucks Limited and Others
Defendants

## APPEARANCES

Tim Ward QC, Ben Lask and Cliodhna Kelleher (On behalf of RM/BT)
Daniel Beard QC, Daisy Mackersie and James Bourke (On behalf of DAF)
$(10.00 \mathrm{am})$

Housekeeping
THE CHAIRMAN: Good morning.
MR WARD: Morning, sir. We have one process point about this morning's hot tub.

THE CHAIRMAN: Okay.

MR WARD: I can explain now. Mr Harvey has asked to have with him a hard copy of some documents which are derived from the disclosure which relate to the regulatory process and we have explained it to DAF. We provided them with an index over the weekend and I think the position is that they object. Of course, reference can be made through the electronic bundle. They are all in the bundle.

THE CHAIRMAN: Right.

MR WARD: But Mr Harvey thought it would be of assistance to have the hard copy and, of course ...

THE CHAIRMAN: So these are hard copies of what documents?

MR WARD: For example, Postcomm documents on volume forecasts and so forth.

THE CHAIRMAN: These are documents referred to by him in his --

MR WARD: I do not think necessarily, no, but I think he has reflected on that he thinks it would be useful for this
morning's discussion.
THE CHAIRMAN: Okay. What is the problem with that?

MR BEARD: Well, there is no formal problem with it save that we do not generally -- we have not generally been seeking to allow the experts to take into the box sort of curated sets of material. The two issues that will arise and will be matters for submission are these are documents that were not referred to by Mr Harvey in his report and, therefore, in relation to these matters, if there were matters that Mr Harvey wanted to rely upon and explain the significance, he really should have explained that previously. We will deal with that in due course.

The other matter, of course, is that these were not put to Mr Bezant who was dealing with these sorts of regulatory issues last week and therefore, again, there are concerns in relation to it. The fact that there are hard copies rather than just calling up the electronic is not of significance. Providing witnesses with essentially comfort blankets of curated documents just is not the way that we have been doing things so whether that constitutes an objection or not does not matter from our point of view. We are concerned about what is being done here when these materials have not been referred to in reports and no evidence has been
provided.
THE CHAIRMAN: Yes. Well, they might be valid points to make in closing, but $I$ do not think they really affect the way that evidence should be given, and if it helps -- well, we will see if it helps, but ... so they are all in the electronic bundle, so we will be given electronic references.

MR BEARD: Yes. These are not documents that are outside Opus and that is why to put it as a sort of formal objection would be wrong because we recognise that it is not as though, like we had last week, with documents being introduced -- it is not the night before. I think two were added to Opus yesterday, it must be said, so a couple of them do fall into that category, but whether or not they are being added at the last minute -because I think most of these or all of them might be public documents, a bit like the ones previously. It is what is being done with them, but we will leave that. MR WARD: Just a point of clarification. Mr Beard used the word, "Curated". I do not think he meant to suggest that the lawyers have curated them. They certainly have not. These are documents that Mr Harvey has asked to put in.

THE CHAIRMAN: All right. Well, I think we should just get on with it and -- with our proportionate hat on. Right.

Welcome back. You probably need to be sworn in again. You can probably do it by heart by now.

PROFESSOR NEVEN: I think I could. MR JAMES HARVEY (affirmed)

PROFESSOR DAMIEN NEVEN (affirmed)
MR BEARD: Sir, before we begin, the tribunal is probably well aware of all the document references but, actually, this is a topic on which Professor Neven has only produced one report -- I am sure the tribunal is well aware of that -- and then we have the joint statement. Mr Harvey has produced a couple. Thank you.

THE CHAIRMAN: Okay.
Questions by THE TRIBUNAL
MR RIDYARD: The first question is very general, Mr Harvey. Maybe you could go first for us on this. Could you just explain to us, what is the issue in relation to volume and can you summarise the methodological issues that arise in addressing that issue?

MR HARVEY: Yes. So the issue is when -- if Royal Mail's price is increased as a consequence of passing on the overcharge, the question arises what happens next and whether and how much their sales would have reduced as a consequence, and so the first thing we need to work out is by how much would their sales have reduced as a consequence, which requires information relating to
how responsive customers are to prices, elasticity of demand, and then the thing that happens next is if volumes do go down, the revenues fall, but it is also possible that Royal Mail would have made cost savings as a consequence of selling fewer volumes, and so we need to work out by how much costs would have gone down as a consequence of the volume loss.

MR RIDYARD: Just to get a handle on this, so let us say hypothetically we were talking about a 10\% overcharge on trucks, that translates to an increase in the price of stamps of what kind of percentage?

MR HARVEY: So in my report I am having to take some hypothetical scenarios, but --

MR RIDYARD: Yes, of course.
MR HARVEY: -- but suppose that it was fully passed on, the increase in prices, $I$ think, would be of the region of $0.02 / 0.03 \%$, something like that.

MR RIDYARD: So $0.02 \%$ increase in the selling price downstream, and then we want to know what impact that has on volume of stamps sold --

MR HARVEY: Yes.
MR RIDYARD: -- and then we need to know what the relevant cost measure was, what is the avoidable cost or whatever the relevant cost measure is so we can then understand what loss of profit arose there.

MR HARVEY: That is right, yes. So, they are the key economic issues.

THE CHAIRMAN: You are saying that there is also, possibly, a reduction in costs as a result of this loss of volume~--

MR HARVEY: Yes.

THE CHAIRMAN: So margins could, sort of, stay the same if there is a balance, the increase in prices, loss of volume, reduction in costs.

MR HARVEY: It is not so much that, sir. When you, if you like, the sort of first round effect is revenues, revenues fall, but, obviously, what we are concerned about here is the extent to which that translates into... (Realtime transcription pauses for technical issue) THE CHAIRMAN: It is all being recorded so it is not ... so we might not have realtime; is that right? It is working now. It sort of stopped, I think, in the middle of Mr Ridyard's question. Why do we not go back to that and get your answer again?

MR RIDYARD: So then, let me ask again. So we have got a hypothetical 10\% increase in truck price. If passed through into stamp price, it would be a $0.02 \%$ increase in stamps. That results in a loss of -- in a reduction of stamp revenue to the Royal Mail, which you get by
knowing the elasticity of demand for postal services, and that, in turn, then has an effect on costs because you do not have to print the stamps that you are no longer selling and some other things maybe, maybe some deliveries do not happen, so that saves some costs, so you end up with a net profit effect there?

MR HARVEY: That is correct.

SIR IAIN MCMILLAN: Just on that point, that subject, if I may. Reduction in costs to maintain or try to maintain profit levels, would that be variable costs, would it be fixed costs, would it be both, and how do you quantify which costs would be cut in order to do that and how do you quantify that?

MR HARVEY: So the costs that we are concerned with are the costs that vary with volume, so in terms of how we do it, we have evidence from Royal Mail at various points in time where they have sought to understand the extent to which their costs do vary in volumes, and I think one of the things that we are going on to discuss, but $I$ can go there now, is which of those estimates are appropriate to use in the context of this calculation. But that is how it is done, so that the first part is the -- what is the reduction in volume, and there we have information from Royal Mail regarding how sensitive volumes are to price changes, and then the second part
is if that type of volume reduction takes place, what proportion, as it were, of costs are variable with volumes, and that comes from other documents.

MR RIDYARD: Thank you. Maybe, Professor Neven, do you want to step in now and pick up the story so far?

PROFESSOR NEVEN: Yes, indeed. Maybe the best thing would be for me to use a little graph and I would like to use, actually, the graph that Mr Harvey has produced, which is a simplified version of the graph that $I$ initially produced. That is in the third report of Mr Harvey. It is on page 106 and the document is $\{E / I C 52 / 106\}$.

Yes. That is it. Okay. So this graph actually explains, $I$ think, very clearly what are the effects of an increase in price that the regulator would have allowed in order to compensate for the overcharge. So what you have on this graph is, first, the factual quantity, which is the quantity that Royal Mail has produced, and you have the price that has been charged by Royal Mail, which is denoted as "PF", so this is the price interaction. This is the price that has resulted from -- it has taken place during the infringement. Now, what you also have in that graph is the quantity in the counterfactual and the price in the counterfactual, so you see that the quantity in the counterfactual is higher and the price in the
counterfactual is lower and, of course, the difference between the price in the counterfactual and the price in the factual is what is referred to as "Delta P", so it is the difference in price -- it is the increase in price that the regulator would have allowed in order to compensate for the existence of the overcharge. You also see that, because of this price increase, of course the quantity falls; that is to say the quantity in the counterfactual is higher than the quantity in the factual.

Now, in order to understand what happens when there is an overcharge -- and here $I$ am making the assumption, like Mr Harvey, that the overcharge is a fixed cost. We can discuss whether it is a variable cost later, but let us assume it is a fixed cost, so all of a sudden Royal Mail has to incur a higher fixed cost. Royal Mail goes to the regulator and says, "Look, I have a higher fixed cost, I need to be compensated for that. The price needs to increase". What you see in this graph is that there is a price increase that is allowed by the regulator, which is delta $P$, which has two effects. The first effect -- and this is the one that we have been discussing so far -- is that the quantity is falling from QC to QF. This is the lost volume, and you see that on this lost volume there is a loss of profit,
there is a loss of margin, and this is depicted by the area D. So it is essentially the initial margin, which is the difference between the price in the counterfactual and the cost -- the variable cost of Royal Mail. You see that this is the loss of margin on the quantity that Royal Mail will have lost as a consequence of the increase in price which has been granted by the regulator.

What you also see -- and I think that there has been a discussion last week on this and $I$ just want to clarify -- is that this is not the only effect, of course. What is also happening is that the price is increasing from $P C$ to $P F$, which means that on the quantities that Royal Mail keeps on selling, this is the quantity $Q F$, there is an increase in margin which is depicted by the area $A$, so whenever the regulator allows for an increase in price, two effects are taking place. On the one hand, there is a reduction in volume, which is the area $D$ in the graph; on the other hand, there is an increase in revenues on what $I$ referred to in my report on the intra-marginal sales. I mean, this sounds a bit technical, but, $I$ mean, this is only referring to the sales that Royal Mail keeps making after the increase in price.

So if you now think about the process of the
regulator, the regulator is trying to find an increase in price so that the combination of the two effects, the increase in revenues on the intra-marginal sales less the loss of margin on the marginal sales, the sales that are lost, is equal to a certain percentage of the overcharge that has to be compensated. So Mr Harvey says, "Okay, the increase in price has to be such that $50 \%$ of this overcharge is compensated". So what you see clearly in this graph is the regulatory process working. The regulator is calibrating delta $P$, so that $A$ minus $D$, the sum of these two areas, so the increase in revenues on intra-marginal sales less the less of profit on the marginal sales on those sales that are lost is equal to a certain percentage of the overcharge.

Now, what is the first thing to observe from this graph is that focusing on the loss of volume from the perspective of Royal Mail and seeking compensation for the loss of volume is a very one-sided perspective because whenever the regulator is increasing price, indeed there is a loss of profit on the lost sales, but there is an increase in revenue on the intra-marginal sales, so it is basically saying that the regulator is allowing for a price increase, there is a negative effect on the profit, there is a positive effect on the profit, and, of course, these two effects are meant to
be large enough in net terms in order to compensate the overcharge, but Royal Mail is seeking compensation for the negative effect, forgetting about the positive effect.

MR RIDYARD: I mean, your characterisation of the regulatory regime is sort of assuming the whole problem away here, is it not? You are saying if the regulator will make good whatever bad thing happens to Royal Mail, then, well, we can pack up and go home, can we not, because --

PROFESSOR NEVEN: Not necessarily because, I mean, Mr Harvey is making assumptions about the change in price that a regulator will set, which is only a proportion of the overcharge, and he is saying it is only a proportion of the overcharge, so there will be something left; okay? There will be a net reduction in the profit of Royal Mail. But focusing on the loss of profits on the lost sales is a very one-sided way of looking at it because, in any event, there is an increase in revenues on intra-marginal sales which has to be bigger -okay? -- and it has to be bigger because the regulator will make sure that is the difference between the increase in revenue, the area $A$, less the loss of profit, the area D -- that the difference between them is large enough in order to compensate a proportion of the overcharge. I am not saying it is 100\%. Mr Harvey
is saying it is 50\%; okay?
In a sense this is not Mr Harvey's problem. Mr Harvey had instructions to look at the loss of profits associated from the reduction in sales, but what I want to emphasise -- and this is one of the points that I made in my own report -- is that it is a very one-sided way of looking at the consequence of the price increase that is allowed by the regulator.

MR RIDYARD: Mr Harvey?
MR HARVEY: So I think in the context of the first report I was approaching it from the perspective of there is a pass-on that takes place, and call it $50 \%$. What would be the volume loss associated with that pass-on? So I did not really make any particular assumption about the way the regulator was going about its work at that point. It was simply to calculate that number. Professor Neven, in his reply, made the argument that, well, this would have been wrapped up in the way the price control worked, so that, in a sense, any increase in prices that gave rise to a volume reduction would be compensated for in a sense by the regulator allowing Royal Mail to charge a bit more, and then in my reply report to that, in my -- I have forgotten -supplementary report, $I$ commented on what $I$ thought about in terms of that argument and the applicability on
it, which $I$ think is the second agenda matter. PROFESSOR NEVEN: Sorry, I disagree with the description that Mr Harvey gave. I mean, in the first report that he has submitted, Mr Harvey has computed the price increase that would be required in order to absorb, indeed, the increase in the fixed cost associated with the overcharge. He has not referred in particular to the regulator. But the only way in which you can have a price increase in a regulated firm is if the regulator allows it, so Mr Harvey has actually computed that in his report. He has computed the price increase that is required in order to compensate for the overcharge. Now, there is one difference between what Mr Harvey does and what I have done, which relates to the question of Sir Iain, is that what Mr Harvey has done in his first report is to consider that whenever there is an increase in the price and the reduction in the quantity sold by Royal Mail, Royal Mail will lose not only D but also F , so basically he is assuming that the regulator is going to calibrate the price increase in such a way that the increase in intra-marginal revenue less $D$ and $F$ is such that it is equal to a proportion of the overcharge. So essentially what Mr Harvey is assuming is that the regulator will not take into account the fact that whenever the volume of sales of Royal Mail
goes down, the cost -- the variable cost of Royal Mail also goes down. He is looking at a loss of revenue on those marginal sales. He is not looking at the loss of margins.

I have assumed in my own calculation, in light of what Mr Bezant says, that the regulator would take into account the fact that if you were selling less as a consequence of the price increase, you are also going to save on variable cost because you are going to sell less and this is going to be taken into account in finding this price increase which will guarantee that additional revenues or additional profit, actually compensate for this additional fixed cost. So that is another difference between Mr Harvey and myself, at least in the context of the first report, because Mr Harvey does something different, as I am going to explain in a second, when he actually computes the loss of profit.

SIR IAIN MCMILLAN: Could I ask a question in relation to that, please? So if one assumes that the regulator allows an increase in the price to make up for the loss of profit or cost, whatever, is it possible, then, that that increase in price causes an additional drop in sales and it gets into a never-ending spiral?

PROFESSOR NEVEN: Yes, of course, what the regulator does --

I mean, you see that the regulator has to find the delta $P$ such that the area $A$ minus $D$ is equal to a fixed amount. Of course, I mean as you are increasing the price you are converging to that number -- okay? -- so there is one number that you can easily see -- there is one number which will ensure that the increase in revenues on intra-marginal sales less the loss of margins on the marginal sales is equal to that fixed number, so it is not never-ending. I mean, what happens is that you have to take both effects into account but it sort of converges to one number.

SIR IAIN MCMILLAN: So does that mean, therefore, that in your view, Professor, the increase in price for, say, stamps to make up for the losses elsewhere will not be elastic and that the sales will remain as they were in spite of the rise in cost to the consumer?

PROFESSOR NEVEN: No. What $I$ am saying is that the price in stamps will increase by the amount delta $P$ on this graph, and this is the amount which is calibrated by the regulator to ensure that Royal Mail has additional revenues that compensate for the overcharge or a certain proportion of the overcharge. So, indeed, the price goes up, the quantity goes down and there will be a loss of volume, there is no doubt about it, but the loss of volume and the loss of profit on that volume is only one
part of the story.
THE CHAIRMAN: You are saying it is all part of the regulatory process and the way the regulator arrives at the price cap?

PROFESSOR NEVEN: Exactly.
THE CHAIRMAN: So if we are not in a regulated world, then how does it work there?

PROFESSOR NEVEN: Ah, in a non-regulated world the problem would be much more complicated.

THE CHAIRMAN: Yes. You would not be able to see how the company arrived at its actual price, taking into account the volume effects and the knock-on ...

PROFESSOR NEVEN: Exactly. What happens is that a firm maximising profit will find the optimal price increase which adjusts -- I mean, it will find a price increase that -- I mean, it keeps on maximising this profit in order to absorb this increase in cost, so if you had to do the same exercise for a commercial firm, you would need to find what is the elasticity faced by that commercial firm and that will -- actually what matters is the firm level elasticity that will depend on competitors, that will depend on, you know, many different things, in order to find out what is the optimal level of pass-on, what is the optimal level of price increase.

THE CHAIRMAN: They are getting a long, long way from the original overcharge, are they not, because they are working out the effect of that or how it is passed through, then the effect on volume and then the effect on prices.

PROFESSOR NEVEN: They are finding the best way to accommodate the shock. I mean, the fact that they are hit by an increase in the price of trucks, so it is an increase in their cost, they need to figure out what is the best way of reacting to that in order to minimise the fall in profit. Of course, if you have an increase in cost, then there is no surprise. I mean, however you want to -- however well you will be able to adjust, you are going to have a reduction in your profit, but the commercial firm will do it in such a way as to optimise -- in such a way as to optimise its profit again, given the increase in cost that is incurring. In the context of a regulated firm, what leads to the price increase is not the optimisation of the commercial firm but it is the action of the regulator.

THE CHAIRMAN: So we need to -- we are examining what the regulator actually did?

PROFESSOR NEVEN: What the regulator actually did or what the regulator was supposed to do, yes, indeed.

THE CHAIRMAN: All right.

PROFESSOR NEVEN: What I have assumed, I mean, is that the regulator would take into account the fact -- I mean, with respect to what $I$ was discussing in terms of one difference between me and Mr Harvey is that what $I$ have assumed in light of what Mr Bezant has concluded is that the regulator would take into account the cost consequences of a reduction in volume. So you would lose your volume -- I mean, you are printing less stamps. If you are printing less stamps, I mean, you have sort of less cost in terms of printing stamps and Mr Bezant is suggesting that the regulator would have taken that into account.

THE CHAIRMAN: Do you want to comment on that, Mr Harvey? MR HARVEY: I am just thinking what order to do it in. So starting with the difference between the regulatory period and the commercial period, I think what is essentially being advanced here is that in the regulatory period the regulator has a view as to what the allowed, in a sense, profit should be for Royal Mail, and when volumes changed that view does not change and therefore it feeds very precisely into the prices that they are allowed to recover.

In the case of the commercial firm, they cannot escape the response of demand to price changes, so to me there is a key and distinct difference between the price
control period and the non-price control period.
On the observations in relation to variable cost savings that Professor Neven made at the start, so in my calculations I do take account of the fact that costs would be saved. What I have not done is to assume that there would be an additional saving of truck costs in the event of a reduction in volume. In actual fact, because of the price, the smallness of the price changes that we are concerned with here and the smallness of the volume changes, I really do not think that makes any material difference at all to the sums that we are arriving at.

MR RIDYARD: On the smallness, let us leave smallness to one side because we should discuss that, I agree. Let us leave the smallness point in itself to one side just for now.

PROFESSOR NEVEN: Can I just comment in here because I disagree with what Mr Harvey just said.

Mr Harvey, in his first report, is calculating delta $P$. He is calculating the price increase that would be required in order to compensate for A the increase in intra-marginal revenues, less D, less F, so it is clear that in his first report he ignores the cost saving when he computes the price increase. However, that is not the end of the story because the next stage,
of course, in order to compute the loss of profit on lost volume, is to compute area D. I mean, that is to say that is what Royal Mail is seeking compensation for. It is the loss of profit.

Now -- and Mr Harvey actually could have done -could have used the price increase that he had computed, which will give the price in the counterfactual and the quantity in the counterfactual, in order to compute area D. He could have done it but he is not doing that. He is using a formula, and maybe it is worth to go into his first report where he explained where the formula is or just you want me to explain what the formula does? MR RIDYARD: I am just -- I mean, this whole question over the formula is discussed at length, is it not, in your joint report? I mean, the to and fro of the arguments on the correct formula is explored in some detail in the joint experts' report.

PROFESSOR NEVEN: But I think -- would you just allow me to say one thing about the formula and explain why using the formula in order to estimate area $D$ is incorrect?

MR RIDYARD: Okay.
PROFESSOR NEVEN: There are two reasons. This formula has a denominator, what Mr Harvey describes as the loss of profit associated with the reduction in volume which should be area D, but it is not. The denominator in
this formula has area $B$ plus area D. So by doing that, naturally Mr Harvey is overestimating the loss of profits. He is going to tell you that it does not matter because the difference in price is small and we can discuss that indeed if the price difference is small.

There is a second issue with the formula of Mr Harvey, is that the denominator of that formula is a term that Mr Harvey is denoting as pass-on. If you look at the math, actually you can see very well what it is on the graph. It is $Q C$, it is the counterfactual, multiplied by the difference in price, so it is A plus B. That is what you have in the denominator of the formula.

However, if you are using the formula, Mr Harvey could have used the price increase that he had computed in the first stage inputted into the formula but he does not do that. What Mr Harvey does is that he uses -- he replaces the area $A$ plus $B$ by, again, a proportion of the overcharge, and, you know, this is very odd because he has computed the price increase that would be allowed by the regulator in order to ensure a certain level of profitability. He does not use this price increase. He is introducing as estimate for A plus B a proportion of the overcharge.

Now, then you have to wonder what is the consequence of doing that? Basically, what he does, if you do that, is that he is now assuming, by doing that, that the price increase that would be allowed by the regulator is not the price increase that he has computed before but it is the price increase such that A plus B now would be equal to a certain proportion of the overcharge. So the effect of doing that is to introduce a change in price that is actually lower than the one he computed before; okay? But this is incorrect as a matter of using the formula and it is sort of logically very odd because, if you do that, if you use A plus -- if you use this -- the proportion of the overcharge as an estimate for $A$ plus B, you are implicitly assuming that there is a change in price allowed by the regulator that ignores the elasticity. So, I mean, you are introducing in the formula a change in price set by the regulator that ignores the elasticity in order to compute what is the loss of profit that is only existing because of the elasticity, so this is an odd way of doing it. That is the second reason as to why there is a discrepancy between my calculation and those of Mr Harvey and this is why I think that the approach of Mr Harvey in computing the loss of profit is actually incorrect.

THE CHAIRMAN: I think you probably ought to give Mr Harvey
a chance to respond on that.
MR HARVEY: Well, I am conscious of what Mr Ridyard just said, so the first response to this is precisely what I said in the report, which is --

MR RIDYARD: I mean, this is gone over in some detail in the report.

MR HARVEY: Yes, and it makes very -- I think we are talking about $£ 1,000$ or something like that difference because, of course, the percentage point increase in prices is trivially small.

MR RIDYARD: Are you accepting that there is some logical validity to Professor Neven's point but it is -MR HARVEY: No, there is another interpretation of these figures, which is that, in terms of the area B, Professor Neven said, well, I have sort of essentially over-included in the loss of volume reduction, albeit to a small number. The way that $I$ was thinking about it was more from the perspective of what is included in the pass-on figure in the first place and whether that over-includes -- so put another way, the possibility that the regulator, in setting the price, the higher price in this scenario, would not have taken account of the reduction in volume and, therefore, assumed that they could have recovered the full increase in price as across the counterfactual volumes, not the factual
volumes, so it is more a question of what ought to be netted out of the $50 \%$ figure rather than the loss of volume figure itself. But, as I said, I do not think -this really does not add up to a lot of money at all. It is $£ 1,000 / £ 2,000$.

PROFESSOR NEVEN: That is incorrect. I mean, what amounts to $£ 1,000$ or $£ 2,000$ is the fact that he has included the area $B$ when he should not. What is a more significant mistake is the fact that he has replaced in the denominator what is the quantity in the counterfactual multiplied by the change in price by the percentage of the overcharge which ignores the elasticity. This is a more significant mistake.

MR RIDYARD: I suggest we leave it there because I think this is, as I say, pretty well rehearsed in the joint reports.

I just wanted to go back very briefly, Mr Harvey, on something you said. When you were responding to Professor Neven's distinction between a private company and a regulated company, he was talking in general terms, but then you talked in very specific terms about the Royal Mail case and you talked about the period when there was price regulation or -- I cannot remember the exact terms you used, but $I$ just wanted to be clear from you which periods you were referring to there in terms
of the difference.
MR HARVEY: The difference -- so the periods that $I$ had in mind were the second price control and the third price control --

MR RIDYARD: Right.
THE CHAIRMAN: Postcomm 2 and 3?
MR HARVEY: Postcomm 2 and 3 -- as opposed to the first price control, which you will recall was a price freeze for some product and a price increase at a rate of RPI for others, and then beyond that we had the period of -the Government period and after that the Ofcom period. MR RIDYARD: So you are saying that the Postcomm 2 and 3 periods are various -- it is perhaps right to characterise the things that are driving price as being the price regulation -- well, price regulation is relevant, of course, all the way through -- but it is more relevant to characterise Royal Mail's conduct as being conduct where it can go to the regulator for some compensation for the loss it suffers, whereas outside that it is better to characterise its behaviour as if it was a private firm operating in a -- well, not a competitive market exactly, but a normal market?

MR HARVEY: Outside of that period you do not have the -sort of the volume forecasting, price setting, get back to the same profit.

MR RIDYARD: Yes, I am just trying to understand -- that is what you are saying?

MR HARVEY: Yes. Sorry, the reason I slightly hesitated, on price control 1 there was, of course, a price control, but as far as I am aware, because they simply fixed the -- set a price at RPI or price-froze them, I do not think they were taking account of the feedback with volumes into those prices. So that is -- so, in fact, there is sort of these three periods -- price control 1 , which is quite a crude, in a sense, price control process, price control 2 and 3, where volumes were considered, and then outside of that you are into what appears to be more like commercial price setting. MR RIDYARD: One thing I would like to come back to now is what I mentioned a moment ago or a few moments ago now, is this point about the small size of the effect because -- a point $I$ think, Mr Harvey, you make is that because these prices -- because the delta $P$ is so incredibly small, you know, none of this would be sort of measurable and therefore none of it would change anything in reality, whereas if we are talking about a 5\% price rise there might be a story to be explored, but if it is a $0.02 \%$ price rise there is nothing to see. Is that -- it may be crudely expressed -- is that your position on the smallness?

MR HARVEY: Broadly, yes. So it is obviously conditioned by my work on supply pass-on. What you learn through the loss of volume work is that the reaction of volumes to prices, it is inelastic, so if you have a $1 \%$ or $2 \%$ increase in -- a 1\% increase in prices, then you have a proportionately smaller reduction in volume. So when I have already concluded that the price increases were of an order of magnitude that perhaps would not have influenced the price control, here the order of magnitude of the volume changes are proportionately smaller, and so in looking at some of the issues that arose in the process of volume forecasting, I looked at the difference in volumes that are implied by the price changes on an annual basis, which are in the region of 1 to 2 million units out of sales of around 20 million. I also looked at the difference -- sorry -- 20,000, so 20 billion. I also looked at the difference between the regulator and Royal Mail in terms of their volume forecasts and there was, obviously, a large difference between them. So sort of set against those sort of benchmarks, this is a small figure.

MR RIDYARD: Is this the same argument that was rehearsed when we talked about the pass-through effect in the first place?

MR HARVEY: Yes, it is similar. Not the same.

MR RIDYARD: If you won that argument then we would not be talking about volume changes and if you lost that argument then $I$ suppose we would still want to be talking about them here, would we not?

MR HARVEY: Yes, we would, and then you are into how precisely do prices feed into the way the regulator -sorry -- the way volumes feed into the way the regulator sets prices through its modelling process.

MR RIDYARD: Yes.
MR HARVEY: That relates to the documents that $I$ wanted to show you.

MR RIDYARD: Is that adding -- I mean, we sort of went through that with Mr Bezant's evidence at some levels. Is that adding any value to the discussion?

MR HARVEY: I think so, yes. I can take you to it now. MR RIDYARD: Okay. Well, let us do it then, yes. PROFESSOR NEVEN: Can I just make one observation? MR RIDYARD: Yes, go ahead.

PROFESSOR NEVEN: Short. If you argue that the change in price is very small and if you argue that as a consequence the change in quantity is even smaller because elasticity is less than one, then the loss of profit has to be the product of the two which is even smaller, so, you know, if you argue that the changes in prices are small, there is no way you can argue that

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there is a loss of profit that is measurable.
MR HARVEY: I disagree with that, obviously.
THE CHAIRMAN: Getting smaller and smaller as you ...
PROFESSOR NEVEN: Exactly. You multiply two small numbers,
it gives you even smaller.
MR HARVEY: I am obviously not saying that the sum is
irrelevant in the context of the overcharge. It is
a different issue, is it not?

So these were the documents I wanted to show you. So if we could go to I3/390, page 47, \{I3/390/47\}. Does everyone have this? Okay. So just to locate this document, this is the document prepared by Frontier Economics. They are calculating volume forecasts for their price control.

THE CHAIRMAN: On behalf of who?

MR HARVEY: On behalf of Postcomm.
THE CHAIRMAN: Postcomm?

MR HARVEY: Yes.

THE CHAIRMAN: Okay.

MR HARVEY: So Frontier was Postcomm's adviser at this time. So the final proposal is the consultation document that emerges just before Postcomm obviously makes its decision. So you will see in the third bullet they say: "The overall ..."

Well, the starting point here says:
"The overall market volumes are iterated in that they are adjusted for the X factors proposed by Postcomm in its Final Proposals."

What Frontier is describing there is that they have done some sensitivity analyses to look at how the volume forecasts would be affected by adopting those X factors. Then this bullet point goes on to say that:
"The volume chosen by Postcomm for the Final
Proposals (and reported in Table 18) ..."
Which is on the previous page:
"... is based on overall market growing at the same rate as if the current price control had continued. However, we understand that Postcomm took account of the financial impact of this iteration as part of its own financeability analysis."

So what they seem to be saying here is that they have done the sensitivity to take account of the interdependency between prices and volumes, but that the volume forecast that was, in fact, chosen by Postcomm is based on the overall mail market growing at the same rate as if the price control had continued, so the current price control, of course, at this time being the second price control.

So that is this document.
MR RIDYARD: Does the following sentence sort of negate
that, though?
MR HARVEY: So the following sentence is saying that, when looking at, essentially, the cashflow implications, Postcomm also conducts some sensitivity analysis to see whether that would affect its view on where the price control should be set. That is not the same as saying that Postcomm set the price control to reflect the Xs for the prices as in the final proposals.

MR RIDYARD: This document is -- this is Postcomm's advisers describing what Postcomm did?

MR HARVEY: Yes, in its final proposals, that is right. So I think these were being produced in tandem. So I think this was published at the same time as the final proposals came out. Obviously they were talking to each other.

THE CHAIRMAN: Are they saying that that is the appropriate course to take, Frontier Economics, or are they just recording --

MR HARVEY: That is not my -- I think they are just recording what happened.

So that is that, and then Royal Mail. So, if we can go to $\{16 / 243.1 / 6\}$, so rather than me reading this all out, perhaps if you could read paragraphs 2.8 through to 2.10? (Pause)

MR BEARD: Can I just check? Is this now being put forward
as factual evidence as to Royal Mail's position?
THE CHAIRMAN: Well, we will wait to see, I think.

MR BEARD: Yes. No, well, it is something of a treat coming from the experts at this stage in the hot tub, but we will wait and see, as you say, sir. (Pause)

MR RIDYARD: So what is the bottom line?
THE CHAIRMAN: Probably the bottom line.
MR HARVEY: The bottom line is that when I spoke in my report about essentially a lack of fine-tuning of the prices to volumes in view of their size, this is what this document is suggesting, is that they are not actually fine-tuning the volume forecasts and the prices for the revised $X$ factors.

MR RIDYARD: Professor Neven, are you inspired to comment on this or ...

PROFESSOR NEVEN: No. Not on this, no.
THE CHAIRMAN: Sorry, just so I understand, you are saying that this shows that Postcomm was not really taking into account any loss of volume as a result of any increase in prices?

MR HARVEY: What $I$ am saying is that -- well, what this is showing is that new $X$ factors emerged through the new prices, emerged through the price control process, and this is suggesting that Postcomm did not go back to recalibrate the prices in view of the volume reduction
that could arise from it, and that is what Royal Mail appears to be expressing concern about here. So this argument that the price control is set in a way that gets you, sort of, back to where you were when prices change because they sort of recalibrate and set a new set of prices, that does not appear to be precisely what is going on here. There is some difference.

SIR IAIN MCMILLAN: Mr Harvey, is your point here that the evidence that you gave in terms of the granularity, that this supports your evidence?

MR HARVEY: Yes.
SIR IAIN MCMILLAN: Thank you.
MR HARVEY: Then in the end Postcomm set the volume forecasts equal to what was in that table 18 in the Frontier report.

SIR IAIN MCMILLAN: Thank you.
MR RIDYARD: I think we have dealt with the question of the marginal sales in the earlier discussion. It seems to me the only topic we have not -- well, we have touched on it but $I$ think it would be useful just to recap on it -- would be, insofar as volumes are lost -- you know, Royal Mail loses a certain volume of business, so how do we calculate -- how do we assess the impact of profitability on a lost -- you know, on these lost units? So which costs do we take into account when we

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observe a loss of volume and to see what impact that has on the business?

Professor Neven, would you like to go first on that?
PROFESSOR NEVEN: Yes. I mean, I have taken an estimate that the variable accounts for $40 \%$ of the total cost, and this is a mid-point of the estimates that are put forward by Mr Harvey, and there is also an estimate that seems to be more appropriate for the later period. We understand from Mr Harvey's description that maybe the variable costs were higher during the initial period, so from that perspective it is conservative, and this is also a number that is supported by the regulator. I mean, the regulator in the later period has a proportion which is $39 \%$ or $39.6 \%$ and I am not going to out-guess the regulator.

MR RIDYARD: Mr Harvey?
MR HARVEY: Yes, so the figures that I have used is a $30 \%$ variable cost estimate and $0 \%$ variable cost estimate, so perhaps if we go to -- I can show you the figures that Professor Neven was referring to, so --

MR RIDYARD: The 30 versus 39, is that worth us going to? I mean ...

MR HARVEY: Well, so, within the documents there are a range of estimates.

MR RIDYARD: What would be the case for $0 \%$ ?

MR HARVEY: The $0 \%$ is that the number of units that fall, so it is the $1-2$ million a year, is incredibly small. The figures that we have, the $30 / 40 \%$ figures, appear to be related to a volume reduction of the order of $10-30 \%$, so significantly larger, and what intuitively -- if you think about the way this business works, it needs to get letters and so forth all across the country to every home and it seems to me that the change in costs that could arise and the very small reduction in letter volumes might be a lot smaller than the change in cost that would arise for a 10-30\% change because that might give you an opportunity to reconfigure the way that your network runs. It may give you an opportunity to change the number of vans you have on any given route and so forth, and so it is kind of a reflection of what our figures measure and the circumstance that we are in with this case.

MR RIDYARD: I mean, I have read what Professor Neven has said on this. I will give you a chance to comment on your own, Professor Neven, but essentially a big effect is, in a business like this, it is made up of lots and lots and lots of very small effects all added together, so when it is added together to a very big effect, you are happy to countenance the idea that it may involve some cost savings. So I just think, intellectually, why
would you then not countenance it if you happened to have broken it down into lots and lots of small effects? MR HARVEY: I suppose what we are talking about here is 1-2 million letters or items and 20 million households, so that is -- what? -- 0.1 letter a year, something like that. When you are thinking about the actual activities that are being undertaken, which is to get the letter from A to B involving going to customers' houses, it is not clear to me that you would actually save costs.

MR RIDYARD: Okay, but there has to be -- it is a bit like the discussion we had last week or whenever it was about the numerous price caps and which one might be close to the threshold and which one would not. I mean, at some point one has to decide whether to put another van on the schedule, and when that decision happens it is very lumpy, it is a big increment of cost, but there has to be something that triggers that decision, whether it is going up or down, the number of vans, and it is very unlikely that any one of these changes would trigger that, but if you think about enough theoretical possibilities across the whole network, then sooner or later you will find one that does trigger it. MR HARVEY: That is possible, and that is why, in my analysis, I have a 70\% assumption and the 100\% assumption.

MR RIDYARD: Professor Neven, anything else to add?
PROFESSOR NEVEN: I agree with the observation that -I mean, one cannot rely on effects being small because of the fallacy of small effects. I mean, when big effects are the combination of a large number of small effects, if you neglect all small effects then you do not have any big effects either, so it is just rephrasing, I think, what was discussed earlier.

The only additional comment I would like to make is about the inherent distinction between variable cost and fixed cost, and the distinction really has to do with the time horizon. I mean, in the long term all costs are variable. Here we are considering an infringement that has lasted -- what was it? 14 years? -- and so, you know, this is the long term. Of course, we are looking at these increments every year, but this is a bit artificial. This is something that is taking place over a long period of time, so from that perspective, I mean, you might say that, yeah, well, maybe ...

MR RIDYARD: You have been very generous, then, to allow for the $40 \%$ ?

PROFESSOR NEVEN: Exactly.

MR RIDYARD: Mr Harvey, any comment on that point?

MR HARVEY: Well, even over that long time horizon, that
figure is still significantly less than the 10-30\%
volume reduction that is implied by these figures or on which these figures are based, so I do not -- you know, as I said, I accept that some costs could have been saved and $I$ have used the $70 \%$ figure, but, in view of the large difference between the two, I think it is appropriate to consider alternative estimates as well.

MR RIDYARD: Okay. I think that pretty much covers the points that we wanted to raise. Any points of ... MR BEARD: Just for clarification, I now need to raise a few points on cross-examination. You might be shocked and surprised, but very limited, I hope. I was intending to do nothing but now we have had some more documents --

THE CHAIRMAN: Yes. You want to go back to that?
MR BEARD: I would like to go back to it. Would it be possible now to have a break? We have now heard for the first time --

THE CHAIRMAN: I think that would be sensible, and we can resume -- so we will have Mr Harvey then being cross-examined first.

MR BEARD: Yes. I mean, I am thinking it is going to be 15 minutes. I am not thinking any longer than that because the key issues have been covered in the hot tub.

THE CHAIRMAN: Yes, and so you are released from purdah for ten minutes or so.

MR BEARD: Then you have to go back in. Then you have to be
sworn back in. Exactly.
(11.12 am)

> (A short break)
(11.31 am)

## MR JAMES HARVEY (affirmed)

Cross-examination by MR BEARD
MR BEARD: This is not going to take long, Mr Harvey. You have been provided with this file of documents but you went to two of them this morning, a Frontier report dated January 2006, and then a Royal Mail document at tab 2. Could we just turn that up, please? So it is \{I6/243.1/1\}, I think. Now, I think you have accepted that you have not referred to this document previously in any of your reports, have you?

A That is correct.

Q It is a Royal Mail document and as far as we know none of the Royal Mail witnesses have referred to this document. We will obviously check, and that is not a question for you, but did you talk to Mr Jeavons about this?

A No, I did not.
Q Did you talk to -- there is someone called Mr~Soteri; is that right?
(Pause for issue with microphone)
MR BEARD: Thank you.

THE CHAIRMAN: Do you want to ask the question again?
MR BEARD: Yes. So the question I was asking -- you have answered in relation to Mr Jeavons. Mr Soteri, who is the Royal Mail's chief economist that Mr Jeavons referred to in his witness statement -- I can take you to it if you want -- but did you make any enquiries of Mr Soteri about this material at all?

A No.
Q No, or indeed in relation to anything concerning the regulatory scheme?

A No.
Q No.
The front page of this document says it is Annex A5, and it says, "Frontier Economics' Report on 'Market Share Analysis ...' A Response by Royal Mail". So you understand this to be a document that was put in in response to the preceding document that you referred to us from Frontier; is that correct?

A Yes, that is my understanding.
Q I see.
You took us to page 5, I think -- is that right? 5 or 6? Page 6, $\{16 / 243.1 / 6\}$. That is 2.8 to 2.10 , under the heading, "Relationship of the [Frontier Economics] and Royal Mail Projections to Postcomm's Price Control". As I understand it, the point you are making is that

Royal Mail is making a complaint about the lack of full interaction between volume forecasts and price control proposals in the approach being adopted by Frontier. Is that the point you are trying to draw from this?

A Yes.
Q Yes. I see. If we go back a page, \{I6/243.1/5\}, I think the 2.7 -- this is introducing those concerns, I think, under the header, "Royal Mail Addressed Inland Volumes", so far as $I$ can see, reading this briefly. Does that look right to you?

A Yes.
Q Now, whilst you were speaking, I have been passed a document -- because we only got the index to this yesterday -- but someone very diligently has passed me a document from Frontier Economics. I do not know if we have enough copies. I hope we have. (Handed)

Have you seen this, Mr Harvey?
A No, I have not.
Q So you see what it says at the top:
"May 2006, Royal Mail's comments on Frontier's final report on modelling mail volumes proposed on final price control proposals [as read]."

Pretty self-explanatory, but then if we go down to the first paragraph, it seems to me, but $I$ may be wrong on this, that what it is referring to is the response
that has been put in, and in particular it says:
"Market share analysis for Postcomm's Final
Proposals [as read]."
Four papers which we labelled documents A to D. Document A, "Royal Mail's response to Postcomm's final proposals and draft licence modifications". Now, I have not seen that in this bundle of documents but that is not a document you have referred to, is it?

A No.
Q No, but document $B$ says "Annex A5 to document A". That looks like what we are talking about at tab 2, does it?

A It does.
THE CHAIRMAN: Annex A5 to document A?
MR BEARD: Yes.
THE CHAIRMAN: Annex A5 was a Frontier Economics report, was it not?

MR BEARD: No, sorry. Let us go back to that. Sorry, sir, I should be really clear. \{I6/243.1/1\}. You can see the badge at the top there, sir. It is a Royal Mail document, Annex 5.

THE CHAIRMAN: Oh, I see.
MR BEARD: I think Mr Harvey was saying this was Royal Mail's response to the earlier Frontier report. I think that was his position. I think that is on the transcript. All $I$ am doing is now linking that to this
document that $I$ have been provided with, which is a Frontier document. Frontier has a particularly distinctive font and layout of its documents, so even if it was not labelled at the top, I think we know.

So what it is referring to are documents A to D because this document we have on the screen is an annex to the main submission which Mr Harvey has not referred to, but Frontier call out and refer to, slightly unhelpfully, Annex 5 of document A as document B, but there we are. They then make observations in relation to those Royal Mail responses. You have not seen this before, you say?

A No.
Q No. When we go through, you will see over the page, in the hard copy, "Input to model". I am not going to go through all of this and I am not going to pretend I understand what is going on here at all, Mr Harvey, but "Inputs to model, entrant costs", and then we have "Volume levels" on the next page, and you see in document B, so that is the one that you have taken us to:
"Royal Mail says it was right to submit its November projection. Royal Mail presented this November submission as a draft off the end of the consultation period ... [as read]", and so on.

It outlines the criticisms, but it appears, if you go over the page again, that actually there were further steps taken in relation to this because there is an output described on the next page. The concern, Mr Harvey, is that you have turned up at this stage referring to documents that have never been referred to in any of your reports. You have provided us with a Frontier document from 2006, you have provided us with this one Royal Mail document which has never been attested to or commented on by a Royal Mail witness and, actually, you have missed out entirely the fact that there are responses to this material from the authors of the report. You have, have you not?

A Mr Beard, you said that this says that the further work was -- sorry, are you saying it says that further work was done in response?

Q No, I am not saying that I know whether further work was done in response or not, Mr Harvey. What $I$ am saying is that there is a further document that responds directly to the one you have relied on this morning for the first time.

A There is, yes.

Q You have not referred to that?

A No.

Q So this illustrates precisely the problem of curation of
documents at the last minute, does it not, Mr Harvey, because none of these materials have been put to Mr Bezant or are available to him, are they?

A This document seems to repeat the point that was made in the original Frontier report, so I accept that I have overlooked this document, but the two paragraphs say the same thing.

Q We do not know whether or not there is any other material, do we, Mr Harvey?

A No, we do not.
Q If we could just go back to the first document you took us to this morning, which was $\{13 / 390 / 47\}$, I think. I think that was the page you took us to. If we just go back a page, $\{I 3 / 390 / 46\}--I$ think this actually flashed up at one point when we were going through -you see this is all under the heading "Volume Forecast for Final Proposals", and here we have tables of numbers and those appear to be volumes of letters. Is that how you read it?

A Yes.
Q You will see the numbers there, and they are all rounded to the nearest million, are they not, Mr Harvey?

A They are, yes.
Q So we have volume forecasts being fed in here that are actually rounded to the nearest million, so there is

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detailed consideration in relation to these forecasts.
That is the relevant level of volumes to be considered,
is it not?
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A They are rounded to the nearest million. My point is a bit different, which is that these forecasts are not predicated on the final $X$ figure and the price control.

Q I think we have been through the smallness issue that you have raised previously and I am not going to go back to the points that were discussed this morning or, indeed, with Mr Bezant in relation to what $I$ think Professor Neven referred to as the fallacy of small effects. But leaving aside that smallness issue, I think, in fact, on the issue of principle, in relation to at least PC2 and PC3, I think there is actually -there is agreement, is there not, that in relation to the exercise that Postcomm was undertaking, it would have tried to triangulate volumes, costs and prices to come up with a settlement that resulted in the same profit outcome for Royal Mail, whether we are in the counterfactual or factual world, leaving aside the smallness issue; correct?

A Yes.
MR BEARD: I do not have any further questions for this witness. Thank you very much.

MR WARD: Can I ask more by way of re-examination?

THE CHAIRMAN: Of course.

Re-examination by MR WARD
MR WARD: It was put to you that you do not know if any further work was done, I think by Frontier, but are you able to comment on the nature of the final volume forecasts that were adopted by Postcomm?

A Yes. As I think I said earlier, they are the same volume forecasts that were presented in the Frontier document that I showed to you earlier.

Q Can we turn up on the screen, please, \{I3/392/1\}? This is the licence modification proposals.

MR BEARD: Is this really suitable for re-examination? It is a document that was not referred to at all during the course of the hot tub or indeed my cross-examination. I do not understand on what basis it is going to be referred to.

THE CHAIRMAN: Do you need to put it to this witness?

MR WARD: I do not actually. We will just put it in closing. That is fine. Thank you.

THE CHAIRMAN: Thank you very much, Mr Harvey. Professor Neven, you have some questions?

MR WARD: I do have some questions for Professor Neven, yes, thank you.

THE CHAIRMAN: Just so the transcribers are aware, I think the counsel are the wrong way around in the transcript.

MR BEARD: Well, I sympathise with Mr Ward and I am delighted for my elevation!

MR WARD: The honour is all mine!
THE CHAIRMAN: Good. So Mr Ward?
PROFESSOR DAMIEN NEVEN (affirmed)
Cross-examination by MR WARD
MR WARD: Good morning, Professor Neven. I want to start with some questions aimed at defining the areas of difference between you and Mr Harvey and it would be useful, if we may, to pick up your first -- I think your only loss of volume report, which is at E4/37 -- I am not sure what bundles you have, I am afraid, [E/37/1]. If we can go to page [E/37/6], please. Do you have that, Professor?

A Yes.
Q Page 6, paragraph 2.6, you say:
"In this report, I have set out the correct framework and formulae for assessing the change of profits arising from pass-on. Using this framework and formula, but assuming the same Overcharge values and pass-on rate considered by Mr Harvey -- which I do not agree with, but which I adopt for like-for-like comparison of methodologies -- I find that the potential reduction in profits that RMGL experienced as a result of lost volumes would be $£ 4.1$ million."

Just pausing there, when you say, "the same Overcharge values and pass-on rate", the overcharge comes from Mr Harvey's report, and, of course, I know you do not accept that, and the pass-on rate we are talking about is 50\%, and, of course, Mr Harvey says it is nil and Mr Bezant says it is $100 \%$.

A Exactly. That is right.
Q Yes, so those are the assumptions. You say Mr Harvey's implied estimate is 5.8 million, and although we are grateful for you bumping it up, you appreciate that Mr Harvey thinks his upper figure is 5.3 million and that is just a calculation error of some kind. You do not?

A No, I think that mine is correct.
Q Okay. Well, all to the good, I suppose, for my client, but I want to talk now about what the differences are. The important point is that you say underneath, though, having given with one hand 4.1 million:
"Once the increase in profit on infra marginal sales is taken into account ... however, I find that [Royal Mail] would have experienced a significantly lower (possibly zero) reduction in its profits as a result of pass-on."

I wrote down this morning that you said the price has to be bigger, the regulator will make sure.

A I think that you are misquoting me.
Q I do not think so.

A What I have explained this morning is that there are two effects when you let the price increase -- when the regulator let the price increase. There was a reduction in profit from the lost sales and there was an increase in revenues from infra-marginal sales, and to the extent that the regulator calibrates the price increase so that the overcharge that has to be compensated with the $50 \%$ of the fixed amount that Mr Harvey is assuming -I mean, the price increase is supposed to compensate for that, then, necessarily, the increase of revenues on infra-marginal sales has to be bigger than the loss of revenues or the loss of profits on the lost sales because you get $A$ minus $D$ in what $I$ showed this morning that has to be equal to a positive amount. So necessarily, since $A$ minus $D$ has got to be equal to a positive amount, $A$ has to be greater than $D$.

Q So what $I$ am trying to get clear, first, in evidence, as I read your report and as I heard your evidence, you are positively asserting that this increase in the price of infra-marginal sales took place -- not just the pass-on, which is the thing we are actually assuming, but that this additional increase to compensate for loss of volume?

A I think you are being confused in the way you look at this, I am afraid. I mean, what we are looking at is whether, indeed, there has been a price increase allowed by the regulator that compensates for this fixed amount that we are considering, which is a proportion of the overcharge. That is what we are looking at.

Q Yes.
A How can the regulator do that? The regulator can only compensate for this additional cost by allowing for additional revenues.

Q That is right, but $I$ fear, as often has happened when we have met, we might be going round in circles slightly. Allow me to just try to -- in simple steps. We know that the way Mr Harvey has done this is to say, "I am doing an experiment to test the effect of $50 \%$ pass-on, even though I think the answer is zero. I then see what sales would have been lost as a result"?

A No, but in order -- sorry, no, you are getting this wrong. In order to do that, Mr Harvey needs to have an assumption with respect to the price increase.

Q Exactly.
A What is the price increase that will be allowed?
Q I think at the moment, Professor Neven, I am really just trying to discuss what Mr Harvey did do. I know you think it is wrong, I know --

A No, no.
Q You do not even agree that that is what he did?
A Okay. I think that I disagree with your description. What $I$ am saying is that, in order to identify the loss of profit from lost volumes, Mr Harvey needs to have an assumption with respect to the price increase, and the price increase is the price increase that in all circumstances is the price increase that would be allowed by the regulator.

Q I will try again. What Mr Harvey thinks he has done is he thinks if he takes an overcharge of 100 , he thinks he has added $£ 50$ on to that, on to his prices -- take 50 -and then tried to determine what the effect would be on loss of volumes. That is what his modelling is actually -- what he has actually done, Professor Neven.

A Well, okay. What Mr Harvey has done in his formula is close to what you describe, but this formula -- as I tried to explain this morning, when you input this fixed amount, which is the overcharge, when you input it into the formula, it has a meaning in that formula and in that formula it is the counterfactual sales multiplied by the price increase, and if I sort of back-engineer this price increase, indeed, I find that Mr Harvey has assumed a price increase allowed by the regulator which is actually -- is lower than one
initially computed in his first report, yes.

You know, it is all very confusing in Mr Harvey's report because the first part of his report computes a price increase, I mean, basically looking at the two effects, I mean, the reduction in the profit from the loss of volume and the increase in revenues from the infra-marginal sales, and then he forgets about that price increase. He does not use it. Then in his formula he inputs into the denominator this figure, which is the proportion of the overcharge which, in the context of that formula, must be equal to some price increase.

THE CHAIRMAN: It would help me, certainly, Professor Neven, if you just concentrated on the question that was being asked, which was to describe what -- it was describing what Mr Harvey was doing. I know you disagree fundamentally with the process of Mr Harvey, but I think we are just trying to establish what did he actually do. MR WARD: I thought it was going to be simple, but I think what we can do is look at what Professor Neven did.

THE CHAIRMAN: Okay.

MR WARD: If you do not mind, Professor Neven, opening up now Mr Harvey's third report. It is at $\{\mathrm{E} 5 / 52 / 114\}$.

MR BEARD: So you intervened, saying that it is important that Professor Neven focused on the questions, of
course, but I think, just looking at the transcript, what Professor Neven was explaining was why Mr Ward's approach was not, in his view, an accurate account of what Mr Harvey had done, and he was answering, therefore, the question that was being posed. It may be a complex answer, but $I$ think it is the answer.

A Sorry, which report?
MR WARD: It is Mr Harvey's third report, please, which is a supplemental report. Do you have that?

A Yes.
Q If we look at page $\{E / 52 / 114\}$, please, we have a table 12. Do you have that?

A Yes.
Q Now, this is Mr Harvey's table, but it is based on the figures from your first report, and I just want to work through the line at the bottom with you, if you do not mind, which is the line of totals, where you start with 29 million-odd of overcharge. Do you have that, Professor Neven?

A Yes.
Q Jolly good. Then you have "Impact of increase in prices", 18 million-odd, and Mr Harvey has interpolated these percentages, so he says the increase in prices is $64 \%$.

A Of what?

Q Of the total overcharge.

A Okay.
Q Then he has your impact of reduction in volumes --
A Sorry, it is not an increase in price, it is an increase in revenue. It is the impact, so the revenues.

Q You are right. That is what it says at the top, "Impact of increase in prices" is $64 \%$. Then we have your reduction of volumes minus 4.1 million, which is the figure we spoke about a few moments ago, and that is minus 14\%. Then the overcharge less pass-on and loss of volume, minus 14.624 coming out at a total of minus 50.

A Yes.

Q So what we have in your calculation is essentially the -- a calculation based on the proposition that the impact of reduction of volumes of minus 14 is entirely compensated by the impact of increase in prices, which is plus 64, to get us to 50 .

A So what this says is that overall there is $50 \%$ of the overcharged, which is 29 million, which is indeed absorbed, and $50 \%$ which is incurred.

Q Exactly. You assume, in effect, the loss of volume will be fully set off by the impact of increase in prices, do you not?

A No, I am not assuming anything like that.

Q To come out at 50, your minus 14 of loss of volume is
entirely offset by your plus 64 impact in prices, is it not?

A This is the mechanics of this calculation, is that -I mean, since you are looking at a price increase that will, indeed, lead to a compensation of $50 \%$ of the overcharge, you compensate for $50 \%$ of the overcharge, and there are two effects. I mean, there is the loss of volume effect and there is the -- as you quoted, the impact of the increase in price on the revenues --

Q Yes.
A -- so it has to be the case.
Q It has to be the case on your view of the world, but the question that we are asking is whether, in fact, it actually happened.

A Ah.
Q I mean, of course we are on the assumption that the overcharge is passed on. Would there, indeed, have been an adjustment to infra-marginal prices, not just to recover the overcharge but to compensate for the loss of volume?

A I rely on Mr Bezant's report with respect to this.
Q You rely on Mr Bezant's report, and we can see that -we can put Mr Harvey away for now. What we can see, if we go to your report, again, which is $\{E / 37 / 14\}$, top of the page, please, you say -- do you have that?

A So, loss of volume, expert evidence 4, is it? No, it is not 4.

Q Tab 6, I am told, possibly, in your bundle.
A Tab 6?
THE CHAIRMAN: He has a few bundles there.
A Yes. Too many bundles.
MR WARD: This will be worth keeping out because we are going to come back to it.

A Yes. Okay, I have it. Which page is it?
Q Of your report, it is page 14. Do you have that?

A Yes.

Q This is where you say, at the top:
"I summarise below the key conclusions from the Bezant Report that are relevant to my assessment ..."

A 14?

Q Is the internal page number --
A It is 14.

Q So which would you prefer me to use, just for clarity?

A Whatever.

Q Whichever. I will just try and be clear which one I am using. So this is bundle 14, and you say at the top of the page:
"I summarise below the key conclusions from the Bezant Report that are relevant to my assessment of the loss of volume claim."

We can see that the footnotes at the bottom of the page are all from Mr Bezant's report and then on the next page we can see the same, although, in fact, there is one reference to Mr Harvey's report, $\{E / 37 / 15\}$. Now, is it fair to say that you have not engaged with the question of a supply pass-on itself, the question that has been debated between Mr Harvey and Mr Bezant?

A I have not engaged with it. I have relied on Mr Bezant's report.

Q You have relied on Mr Bezant's report. You appreciate that the issue here that Mr Harvey has raised is whether there would be an adjustment to volumes to reflect -sorry -- an adjustment to prices to reflect the very small volume increment we are talking about, which is 1 or 2 million items a year out of 20 million? We discussed that this morning.

A But sorry, again, $I$ mean, Mr Harvey is assuming a change in price in order to get these calculations.

Q Indeed he is.
A He does, so he cannot deny the fact that he needs to have a price increase in order to be able to compute a volume effect.

Q That is right, and the question is whether it is yet further fine-tuned, to use Mr Harvey's expression, to
compensate out the volume effect in the rise of prices in infra-marginal sales.

A But, no, this formulation is incorrect and it is also a question that you put to Mr Bezant, which I think is the wrong way of looking at it. Whenever -- and this is what I tried to explain this morning. I am sorry. I am really trying to answer the question -- if you are increasing the price, there are two effects. There is an effect on the loss of volume, there is an effect on the additional revenues that you get from the stamps that you keep on selling. It is not additional. It is just part of the same. It is part of the same effect of the price increase that is allowed for, which Mr Harvey is also assuming.

Q Well, the issue between us, I believe, is whether or not that increase in price is just the 50 in my stylised example, which is that it is half the overcharge, or whether it is the 50 plus 14, which is what you have in your report.

A Again, you are misunderstanding this. I am sorry. I mean, the price increase is set so that it sort of just compensates for the $50 \%$ of this fixed cost, which is the $50 \%$ of the overcharge. That is what -- you know, what the price increase does in my calculation. That is also what the price increase does in Mr Harvey's initial
calculations.
Q But the further step that is required for your
infra-marginal sales point is that the volume changes that that causes feed back into the -- into a higher price.

A No. I am sorry.
Q You just think it is just automatic?
A No, it is not -- no, I think you are misunderstanding this. I think that as you are moving along a demand curve -- I mean, as you are increasing the price, you are losing some quantities, but you keep on making sales on whatever you keep on selling, on the stamps that you keep on selling, and there is no further step. It is just part of the same step. That is why I think that, you know -- anyway, let me not comment on this.

Q I will try again, and it is just this: on Mr Harvey's view of the world you pass on 50, you lose volumes. On your view of the world, the price increase is enough to compensate you for those lost volumes.

A No, I think that is incorrect. I mean --
Q Well, that is what the figures show we just looked at.
A Both in Mr Harvey's world and my world, we are in the same world. I mean, whenever there was a price increase, there is an increase in the revenues from infra marginal sales and there was a loss of revenues
from what you do not sell. There is no additional step. It is part of the same step, and if you look at Mr Harvey's report, he does exactly the same. If you look at Mr Harvey's datapack, he does exactly the same. There is no additional step.

Q I am sorry Professor Neven, and forgive me if it really is my misunderstanding, but let me go back to the way Mr Harvey described your calculation. Back on page -if we go back to $\{E / 52 / 114\}$, this was Mr Harvey's supplemental.

A Which page?
Q 114. We looked at this before. Bottom line. You get to 50\% overcharge by netting off the reduction volumes of minus 14 against the 64 .

A But of course.
MR RIDYARD: Sorry to interrupt. I think this confusion might be caused by this $50 \%$ number. What, exactly, is it $50 \%$ of?

MR WARD: Well, the example that Mr Harvey tested was that $50 \%$ of the overcharge would be passed on. That was the point.

MR RIDYARD: Right, but what exactly does that mean? So the overcharge is the $£ 29$ million --

MR WARD: It means 14 million-odd, 14,624.
MR RIDYARD: So 14 million is passed on?

MR WARD: Yes.
MR RIDYARD: But $I$ think -- what exactly does that -sorry -- what exactly does that mean? I think that is the source of the confusion between you.

MR WARD: It may be, and $I$ am quite sincere in offering my apologies if $I$ make it worse not better, but as I understood, what Mr Harvey was testing was if you round the number to 30 million to make our lives simpler, you add 15 million on to the price and then you test that through the elasticity of demand to see what the volume effect is.

A This is not how it works. I mean --
MR RIDYARD: You cannot -- when you say you add 15 million to the price, I mean, that -- you add 15 million to the total revenue, do you mean?

MR WARD: Yes.
MR RIDYARD: Taking account of what? Of what sales you will lose by doing so?

MR BEARD: I am very cautious to intervene, but given that Mr Ward is in this section and keeps going to this table, it is sensible to actually go back to 4.26 in Mr Harvey's own report, so that is a couple of pages back, where he explains what he says he understands Professor Neven is doing, and I leave Mr Ward to ask questions in relation to it, but I think there is a fundamental problem with the line of questioning.

A I think that $I$ now understand where you are coming from. MR WARD: Okay.

A I think it is basically the idea that you get this 14 million and you just put them on the top to the price. That is not the way it works. What happens is that you get this 14 million, which is an additional cost. You need to generate revenues to compensate for those. How do you achieve that? You achieve that by a price increase. This price increase has two effects: reduction in the profits on the lost sales; increasing revenues on the infra-marginal sales. That is what I do. This is what Mr Harvey is doing.

THE CHAIRMAN: What is important is what is the regulator doing.

A Then there is a question -- and there $I$ rely on Mr Bezant.

THE CHAIRMAN: Right.
A You know, I am basically computing this price increase that would, indeed, make sure that the revenues compensate for these additional fixed costs and I rely --

THE CHAIRMAN: Do you say the regulator actually did that?
A I have no judgment on that. I rely on Mr Bezant. I have not looked at that evidence.

MR WARD: Thank you. So what you are telling us is you are not able to add anything to what Mr Bezant was able to say about this?

A Nothing.
Q If we just look at what you have said, if we could, in your report about this. If we go to $\{E / 37 / 16\}$, and $I$ am sorry, I do not know which tab it is for you, Professor Neven.

A 6. Which page?
Q This is where you talk about what the regulator actually did. If you go to the top of the page, you are talking about PC2. Page 16.

A Yes.
Q 3.27 .
A Yes.
Q You say:
"The main implication of the above is that [Royal Mail's] costs during the period would have been broadly equal to its revenues on an ex ante basis ..." You cite Mr Bezant for that, and that is, indeed, something quoted from Postcomm. Then in similar vein at 3.29 you say:
"The implication of the above is that PC3 would have ... resulted in [Royal Mail's] costs over the period being broadly equivalent to its revenues on an
ex-ante basis, such that cost increases would be broadly met with price increases."

But you, yourself, have not done any detailed scrutiny of the regulatory material, have you, or any?

A None.
Q You have not looked at it at all?
A No. I just rely on Mr Bezant.
Q So you are not able to say whether that broad approach would have been sufficient to pick up this very small volume effect?

A I rely on Mr Bezant's conclusions.
Q So you have no independent view of whether that would have been the case?

A No.
Q You accept that that is a different question to the theoretical question of what should have happened or could have happened?

A I rely on what Mr Bezant is saying about what happened.
Q Again, when we look at what you say about unregulated prices, if we go back to the previous page, page \{E/37/15\}, you say in paragraph 3.25, the last four lines -- this is talking about unregulated prices:
"I ... assumed for the purpose of my analyses in this report that the approach to [Royal Mail's] price setting was consistent with the objective of the
regulatory approach adopted by Postcomm in PC2 and PC3 ... for non-regulated products ..."

You have not examined the facts about whether Royal Mail actually set its prices in that way, have you?

A But Mr Harvey has not either. I mean, Mr Harvey has not considered what happened to a commercial product, and we had the discussion this morning about what a commercial firm would have done, and in order to find out what a commercial firm would have done, you have to look at the elasticity and what would be the optimal pass-on.

Q Mr Harvey has actually considered quite a range of evidence, in fact, about Royal Mail's price setting, but you have not, have you?

A No, I have not, no.
Q So you are not able to say whether, in practice, it would have been done in such a way so as to capture these very small volume effects?

A It is an assumption that $I$ am making in light of Mr~Bezant's reports, yes.

Q Would you just give me one moment, please?
THE CHAIRMAN: Yes. (Pause)
MR WARD: Thank you. I have no more questions, Professor Neven.

THE CHAIRMAN: Thank you. Any re-examination? Right.

Thank you very much, Professor Neven. Onto complements.
MR BEARD: So everyone gets released and resworn again.
I think we can probably start -- I mean, it is long enough to lunchtime to start now, is it not?

THE CHAIRMAN: Yes. I think we should. How are we doing on the overall timing? We are going to get through everything we need to in the two days?

MR BEARD: Oh I think absolutely. The only thing I would say is -- Professor Neven has obviously been in the hot tub and then cross-examined now --

THE CHAIRMAN: Shall we have a ten-minute break?
MR BEARD: I think that might be fair to him, just to have a breather and change gear, given that we are going on to another topic.

THE CHAIRMAN: Well, shall we say 15 minutes?
MR BEARD: That would be great, I think.
THE CHAIRMAN: That is not going to put us in any difficulty?

MR BEARD: None of this is going to impact on the chances of us finishing.

THE CHAIRMAN: All right. We will have a 15-minute break. (12.14 pm)
(A short break)
(12.30 pm) MR JAMES HARVEY (affirmed) PROFESSOR DAMIEN NEVEN (affirmed) Questions by THE TRIBUNAL

MR RIDYARD: Okay. So the subject is complements. Shall we start with the economic principles, if we may? Mr Harvey, do you believe that the prices of complementary products are likely to be negatively correlated to one another?

MR HARVEY: The economic theory says that when the price of one product rises and that gives rise to a reduction in demand for that product, it also will give rise to a reduction in demand for a complement and that could put downward pressure on its prices. Whether that happens in practice depends on how responsive demand is to price changes and conditions of competition in the complementary product market.

MR RIDYARD: So when would it not happen, then?

MR HARVEY: It would not happen when demand for the product is entirely inelastic, so there is no price response, and it would not happen when the product market for the complement is perfectly competitive, otherwise, in economic theory, there would be a relationship.

MR RIDYARD: So it almost always happens then?

MR HARVEY: Sorry, I do not know whether it almost always happens in practice, but in theory, yes, apart from
those two circumstances.
MR RIDYARD: The theory is there to try and predict. What happens in practice? Do you think the theory is wrong or ...

MR HARVEY: No, I am just saying that my economic theory predicts that there would be a downward pressure on the price of the complement, save for in those two circumstances. Whether that does happen is an empirical question.

MR RIDYARD: Fine. But apart from those two polar cases that you describe, the economically inelastic demand or -- what was the other one? Completely --

MR HARVEY: Perfectly competitive.
MR RIDYARD: -- perfectly competitive market, then theory would expect that, as the price of -- that you would get this negative price relationship between the two?

MR HARVEY: Yes.
MR RIDYARD: Professor Neven, anything to add on that?
PROFESSOR NEVEN: No, I think it is important to emphasise that strict complementarity is one of the provisions that is relevant for that discussion, but I think you are going there.

MR RIDYARD: But just to stick on this question, though, back to you, Mr Harvey, does that mean that we can go out and observe complements and see this happening in
practice by just looking at prices of complementary products to see whether their prices do behave negatively against one another?

MR HARVEY: No, you cannot just do that.
MR RIDYARD: Why not?
MR HARVEY: Because there might be other factors that influence the price changes of those products.

MR RIDYARD: For example, an upper demand shift for both products would lead both of their prices to go up because of an exogenous increase in demand, for example?

MR HARVEY: Yes, that is correct.
MR RIDYARD: Okay. Now let us look at what, in principle, the factors are that are likely to determine any complement effect. We have listed various factors in question B. The first one is strict complementarity, which means for every one of $A$, you automatically have to buy one unit of $B$ as well. Is that the case in the trucks and bodies case, Professor Neven?

PROFESSOR NEVEN: What I would like to emphasise for the definition of strict complementarity is not that there was a strict ratio, that is to say for each naked truck you have a body or that for each tractor you need to have a trailer. What is key for the definition is that there is no other use of the complement but to be used in conjunction with the other item. That is to say that
there is no use for bodies if not to be put on a truck. There is no use for trailer if not to be pulled by a tractor. That is key because it means that the demand for the complement, the demand for the body, the demand for the trailer, derives solely from the demand for the system, so, indeed, in strict complementarity you have the use in fixed proportion. But what is even more important is the fact that there is no other use but to be used in conjunction with the other item, so that there is no other factor that will affect the demand for bodies.

That is different for tyres. I mean, that is different for other products that may be complement to the truck because, you know, there is a big market for secondhand tyres, for replacement tyres, for instance, and that is the key thing, that when you have strict complementarity the demand is for the complement, for the bodies, for the trailers solely determined by the demand for the systems.

MR RIDYARD: We will come on to that maybe later on. Mr Harvey, any comments on that?

MR HARVEY: No, I agree with that.

MR RIDYARD: Are we agreed that that is the case with trucks and bodies?

MR HARVEY: To a large extent, yes. I think for bodies,
obviously, there are alternative uses for trailers, but in the context that we are talking about it is broadly correct.

MR RIDYARD: So, the second aspect is the -- we were wondering whether the price cost margins on the products, does that affect the kind of complementarity relationship you would expect to observe on prices? Mr Harvey, what do you think about that?

MR HARVEY: Yes, I think it would. I think this is a critical part. So the intuition is linked to, I think, the strength of competition in the two markets but one way of thinking about it is if the supply of the complement product is highly competitive, then the margins in the supply of that product would tend to be low, so in the event of a price increase for the truck, there may be little room for the complement supplier to cut its price because they are already at a price close to cost, so you can, I think, give the intuition in that way, but the relative -- essentially the relative, you might say, ability and incentive of one side of the market to sort of sap up the price increase by cutting its prices will depend on competition and, therefore, depend on the relative margins in the markets.

MR RIDYARD: Professor Neven?
PROFESSOR NEVEN: Yeah, I agree with the intuition that if
the market for complements is highly competitive, then it is unlikely that you will have a complement effect. If there is a shift in the demand for complement that results from a reduction in the demand for systems, it is unlikely that you would have a significant increase in the price of complement or assume there is a change in the price of complement.

Now, the issue with respect to the relative margins is much more complicated, and this is highlighted by the results of my calibration exercise and maybe when we come to that $I$ will explain in a little more detail about how significant the differences in margins are. MR RIDYARD: Okay. Can we deal, now, with what the basic facts are on that, though? I mean, are the margins on trucks different from the margins on bodies?

PROFESSOR NEVEN: Yes. I mean, the numbers that I am using for my calibration indicate that there are sort of different margins, at least for DAF, on different types of trucks, and just to give you a sense, the lowest margins are around 7\%, and that is for the medium trucks, essentially the LF family, simple, medium trucks. The heavy trucks, rigids, I mean, have a higher margin of about 13\%. If you are considering the tractors, I mean, again, the simple tractors have a margin of about 16 and the more expensive tractors
with more than two axles, so three axles, I mean, they have a margin of 17.

So you have a range of margins, and, actually, we will see, when we look at the results of my calibration, that it matters for the outcome, and with respect to the margins on complements, my central estimate is a margin of $11 \%$. So you see that we have a margin for trucks that are, for some trucks, below; for other trucks, above.

MR RIDYARD: When we talk about "margins", here what is that?

PROFESSOR NEVEN: This is a difficulty for the -- not a difficulty for DAF, of course, because we are using the data that we have been discussing two weeks ago in the context of overcharge, so we have the actual transaction prices and we have MLO, so when I talk about the margin is on the basis of the MLO.

With respect to the suppliers of complements, I am using company accounts, and so this is not a measure of marginal cost, but this is a measure of a broad -- it is a measure of cost that is broader. I mean, it is probably closer to average cost.

THE CHAIRMAN: Sorry, that is an average, you say, for this of $11 \%$ ?

PROFESSOR NEVEN: Yes.

THE CHAIRMAN: You say there were higher margins for the heavier trucks?

PROFESSOR NEVEN: Yes.
THE CHAIRMAN: Does that correspond, that the bodies that are supplied with those trucks -- are they higher margins or you do not know?

PROFESSOR NEVEN: I do not know. I do not know.

THE CHAIRMAN: You cannot get that from the company accounts?

PROFESSOR NEVEN: Exactly.
MR HARVEY: In terms of the data that we do have and the data that has to get fed into this analysis, we have, for the bodies and trailers manufacturers, their average margins, so we cannot look at any sort of mix effect. For the truck manufacturers, obviously we only have DAF, and so within Professor Neven's analysis it is necessary to back out of the implied margin for the other manufacturers.

In terms of the overall facts, I think the relativities do depend a bit on what time period you look at as well, so $I$ think the margins for DAF trucks do change over time and so the relativity would be affected by that too. I do not have the figures off the top of my head.

MR RIDYARD: Is it a bit counter-intuitive to say that the margins for a body manufacturer would be higher than the margins on truck manufacture? Professor Neven?

PROFESSOR NEVEN: I mean, the margins on trucks are higher for most trucks -- okay? -- than the margins for trailers and bodies, and it is only the LF type of trucks, so it is only the medium trucks for which the margin is below. I mean, it is 7\% in the numbers that I am using relative to an average of 11.

Now, I mean, 11 is a weighted average of the margin of the suppliers, and, I mean, I identify the suppliers from various sources. When $I$ focus on a subset of suppliers, $I$ am allowing margins for some body suppliers and actually some lower margins for body suppliers and some higher margins for trailer suppliers, so it seems that there is -- to the extent that you can identify the trailer supplier and separate them from the body suppliers, there seems to -- it seems to do with the differentiation.

MR HARVEY: I mean, it is a little tricky because, of course, we do not have a lot of information about the way the supplier trends and bodies works and how competition takes place in that market, but what we do know is that there are a large, relatively speaking, number of suppliers. I think we each counted in the region of 20 --

MR RIDYARD: Of bodies?
MR HARVEY: Of body suppliers, yes. I think we also understand that -- I am cautious about saying this -- is that with some exceptions the product being supplied is fairly sort of vanilla, as it were, so the combination of those two things might led you to expect lower sort of margins measured in the correct way, as opposed to the trucks manufacturers where there are a few of them and perhaps greater product differentiation.

MR RIDYARD: I had in mind one of the factual witnesses, maybe it was Mr van Veen, I think, but he likened trucks to iPhones and he was saying they are very high-tech and therefore you would expect, obviously, very high sort of R\&D costs and so forth, which seems intuitive, and therefore you need fairly high margins compared to other products, whereas -- obviously it is a very uninformed intuition of mine, but I might have wondered whether making bodies would be more of a sort of -- you know, a sort of simple engineering process which would have -not have loads of $R \& D$ associated with it and so forth. But that is just an uninformed speculation on my part, but having looked at these things, would that confirm with your views of what you think about the two industries?

MR HARVEY: I do not know the extent to which R\&D costs are
incurred in the supply of bodies. There is variation between them. Obviously you have refrigerated bodies and those that are not and that type of thing, but my understanding is, in the main, all of the body suppliers are capable of providing those bodies. I think there are some exceptions. I think some of the trailers that BT purchased are modified in some way to help erect poles, but it is not something that $I$ have investigated in detail.

MR RIDYARD: Professor Neven?

PROFESSOR NEVEN: I have tried to develop an intuition for that from a number of industry reports and I referred to, I think, three different industry reports. They tend to accord with the intuition that you have, namely that the supply of bodies and trailer is fairly commoditised, that this is a sector in which you do not have a lot of research and development. That is a sector whose cost is heavily influenced by the cost of metals, by the cost of steel, and, of course, as we both observed, you have a lot of entry. I mean, you have many competitors and you typically, I mean, would expect to have such a large number of competitors in an industry in which there are no large cost of entry, large fixed cost of entry or entry barriers, so all of that goes into the same direction. But, of course, as
you observed already, the data that we have on margins is unfortunately not of the same quality. I mean, the DAF data on margin is an MLO margin, the data that we have with respect to the supplier of complements is coming from published accounts, and it is difficult to control for -- I mean, what could potentially be issues. I mean, for instance, one of the main suppliers of trailer is Cargobull. I mean, Cargobull is actually a German company. It has accounts in the UK, but, you know, what these accounts in the UK actually mean, I am not entirely sure. I mean, they could be heavily influenced by transfer pricing, for instance, because Cargobull is producing in Germany, it is producing in Poland, so we have to be aware of these differences in the quality of the data.

MR RIDYARD: Okay. The third item on our list was demand elasticity. I suppose if you are considering products in strict one-to-one ratios and there is no other production, then demand elasticity is the same for both products --

PROFESSOR NEVEN: Exactly.
MR RIDYARD: -- by definition.

PROFESSOR NEVEN: Is the demand for systems.
MR RIDYARD: Because the system demand, but what about -and is demand elasticity relevant at all, then, to the
considerations here?
PROFESSOR NEVEN: I mean, as we are going to see when we look at the results, I mean, the elasticity, what we calibrate is the elasticity of demand for systems, and, indeed, I mean, the parameter that is we calibrate, all the different parameters that we calibrate will correspond to different elasticity for systems and this has an impact on the overall effect, yes.

THE CHAIRMAN: When you say "systems", you are referring to ...?

PROFESSOR NEVEN: By "system", I mean the combination between a rigid and a body, so a system is a combination of the two relevant complements.

THE CHAIRMAN: So it is the whole?
PROFESSOR NEVEN: The whole thing, yes.
MR RIDYARD: Mr Harvey?
MR HARVEY: Yes, I think intuitively this matters in that is price -- sort of a stand-alone price increase in the price of the truck, then it will give rise to a reduction in the demand for it and complements, and, therefore, the scale of the price response from the complement supplier, I think, would depend on the potential reduction in demand, so I think that is probably why it feeds into Professor Neven's calculations and it is relevant.

MR RIDYARD: The other aspect of demand elasticity is the brand level elasticity of demand. So if I am a body manufacturer, something bad has happened to mean there are fewer trucks being demanded, so then I have to -then this whole debate is about what do I then do, to what extent do $I$ then chase volume by cutting my price, or do I just say, "Well, I do not have very far to go to concede lower prices so $I$ would rather lose sales than cut my margins". So from that point of view, would the demand level elasticity for the individual body manufacturers be relevant?

MR HARVEY: Yes, things are -- that would -- that probably goes back to the second bullet point. It is the strength competition that the brand manufacturer -- the body manufacturers -- face between one another, yes.

PROFESSOR NEVEN: But it depends, first and foremost, on the demand elasticity because, as you pointed out, the demand for trailers and bodies is the demand that is derived from the demand for the systems, for the combinations, and --

MR RIDYARD: Yes.
PROFESSOR NEVEN: -- the parameters that we calibrate, that I calibrate, are parameters that will reflect the significance of product differentiation in the suppliers of complement, and, of course, the optimal reaction to a shift in the demand for system that may be induced, for instance, by the overcharge will be driven by the demand elasticity that they face.

MR RIDYARD: Which demand elasticity? The brand level or the --

PROFESSOR NEVEN: Brand level, exactly, because in the demand system you have parameters that will reflect the substitution between trucks that have -- or combinations that have, say, the same trucks, a DAF truck, a DAF body, and -- sorry -- a DAF truck, not a DAF body -a DAF truck and different types of bodies, and there will be a parameter that will reflect the degree of substitution between those, and --

THE CHAIRMAN: Sorry, please finish.
PROFESSOR NEVEN: -- of course, the extent to which a supplier of a body will have a demand such that buyers will easily switch to another combination involving a DAF truck and another body will determine the extent to which they will react, of course. So what I am trying to say is that the optimal reaction of the body suppliers or the trailer suppliers is going to be determined by some parameters of the demand system that we are trying to calibrate because this demand system will represent the degree of substitution between combinations, between systems, that have different body
suppliers which reflect this brand element that you are referring to.

THE CHAIRMAN: So my question was going to be, if there is perfect complementarity between the bodies and the trucks and the demand for trucks goes down because of price increase, how can there be any increase in the market for bodies because there is not the -- they have to go together with the trucks.

PROFESSOR NEVEN: Okay. So it is important to go through the reasoning. So what is happening is that we are considering an increase in the price of trucks that could be due to the infringement; okay?

THE CHAIRMAN: Yes.
PROFESSOR NEVEN: It means that for given price of complements, the price of systems is going up because the price of trucks is going up and the price of a complement is the price of a body or a trailer plus the price of the truck, so it means that the demand for systems is going down. As you pointed out, I mean, it also means that the demand for the bodies is going down. How could they react? If the body suppliers are reacting by reducing their own price, it will lead to an increase in the demand for system again that compensates the initial shift.

THE CHAIRMAN: So it will increase the demand of the whole
thing?
PROFESSOR NEVEN: Of the whole thing because, you know, what matters is the combination between the two price. So if the price of trucks is going up exogenously because of the infringement, $I$ mean the sum of the two price is going up, that means that lower quantity of the complements is demanded. They might react by cutting their own price, which will go some way towards compensating the initial shift in demand.

MR RIDYARD: It will moderate the original price increase. PROFESSOR NEVEN: Yes. Exactly.

MR RIDYARD: Yes. Okay. Now, are there any other characteristics of the industry that one should be looking at to try and get a handle on this complements effect, other than the ones we have just been through? MR HARVEY: I think we have captured the main ones from our discussion. We did just touch on these of entry and exit and the supply of the complements, so I think anything that drives the relative strength of competition between the two parts of the system would be relevant.

MR RIDYARD: I was just wondering whether there will be anything on the supply side of the body manufacturers. If the body manufacturers could easily put other things together, other than bodies -- I do not know quite what that would be -- but if it is the same engineering
skills and -- that were required to make bodies plus other things, could that be relevant? Could that affect their -- the intensity with which they chased volume? MR HARVEY: Yes, I think it could. It would -- if the body manufacturers are capable of doing other things, then changes in the -- obviously in the price they receive for the product might encourage them to either do more of that activity or, indeed -- and by doing less of something, something else, and, indeed, if the other markets they are operating in have a similar change, then it could go the other way.

PROFESSOR NEVEN: I mean, I agree with that. If they have an opportunity -- if they have alternative opportunities, using the equipment, the factories, the press and so forth, besides producing bodies or trailers, faced with a decrease in the demand for bodies and trailers they might switch to these other activities. However, I mean, going through these industry reports and, in particular, going through the company profiles, I mean, you tend to see that these companies tend to be quite focused, the product firms. MR RIDYARD: Maybe it is not that interesting in practice. Okay.

So the next question is one which, Professor Neven, you have already sort of hinted at already, but just --
we were just wondering whether, you know, the truck and the body thing is the one aspect of complementarity that has been highlighted here, but you could think of the truck itself, which it is, really, a bundle of complements, is it not, because DAF, presumably, does not make tyres or -- I do not know whether it makes gearboxes or all sorts of other things and it certainly buys in engines for some of the trucks that we have been talking about, I believe, from another company, so why are we talking about this complements argument here in relation to bodies but we are not talking about it in relation to tyres and gearboxes and other engines that might be bought in?

PROFESSOR NEVEN: Yes. I think that there are two aspects to the answer to that question. The first one is actually a definition of what is a naked truck -okay? -- because we are making this distinction between a naked truck on the one hand and the bodies and the trailers, so, I mean, what sort of meaningful definition of a naked truck do we have? I think that the right way to look at it is to look at the naked truck as a combination of complements that cannot be unbundled. I mean, when you are buying a DAF LF, you are buying the chassis with the engine. You are not buying, sort of, separate bits and pieces; okay? You are basically,

I mean, buying a set of items that are put together that cannot be unbundled.

Of course, when we talk about bodies and trailers, they are unbundled and, typically, I mean, as we have discussed two weeks ago, I mean, the naked trucks are sold separately from the bodies and the tractors are sold separately from the trailers, so I think that is the first part of the definition. I mean conceptually a naked truck is a set of complementary items that cannot be unbundled, and, of course, bodies and trailers can be unbundled.

The second element that we already discussed is that bodies and trailers have no other use but to be used in conjunction with the naked truck or the tractor, which is not the case with tyres, which is not the case with sort of other items that may be complement to the truck or, for that matter, with the use of the truck.

MR RIDYARD: Well, truck tyres can only be used on trucks, can they not?

PROFESSOR NEVEN: Yes, but it was a replacement market.
MR RIDYARD: How is that relevant, then?
PROFESSOR NEVEN: It is relevant because it means that the demand for truck tyres, I mean, will be determined by the demand for new trucks but also by the replacement of tyres on existing trucks.

MR RIDYARD: Other than what we talked about -- let us leave that to one side -- the demand for replacement tyres would -- it is what it is, is it not, depending on the profile of the trucks out there?

PROFESSOR NEVEN: Yes.
MR RIDYARD: So the only thing changing at the margin when there is a -- you know, if there is a truck cartel which raised prices and reduces the demand for trucks, then that is bad news for tyre manufacturers.

PROFESSOR NEVEN: It is bad news but it is a small fraction of the overall demand for tyres. Indeed, it is bad news for Michelin that is selling tyres to DAF that we put on the truck, but, you know, the demand for tyres that are put on new trucks is a fraction of the overall demand for tyres, which includes the replacement market. So a shift in the demand that is resulting from an increase in the price of new trucks, I mean, will have less of an effect because it is part of a wider market.

MR RIDYARD: Proportionately, but it is still the same number of tyres that is going to be off the market because of the cartel.

PROFESSOR NEVEN: Correct, but there are other determinants in demand.

MR RIDYARD: Yes. Mr Harvey?
MR HARVEY: I do not think, at the level of principle, that
there is a major difference. I do understand that there might be a spectrum in terms of how closely knit the inputs are to the truck, but the general economic principles that we have been through, which are, you know, what happens when there is a price increase of the truck, does that put downward pressure on the demand for things that go into it, I think the considerations that we have spoken about apply there.

I mean, it strikes me that, you know, there may be a distinction here to be made between the supply of bodies to Royal Mail that were sold by DAF, so Royal Mail was buying -- literally buying the bundle, and so from DAF's perspective when these market forces mean that there is downward pressure on the price of bodies, it would be, in the first instance, DAF that experiences the price reduction as part of its input costs, and then, of course, it then needs to make a decision as to whether to -- and how much to pass that on to customers. The economic forces are the same, but obviously there is sort of another step, as it were, in that, whereas for the -- I think what is being labelled sort of the offsetting complements which basically relate to trailers, I think there the customers purchase them from the trailer manufacturers, and so I suppose in a sense that would be the direct beneficiary of any
reduction in price. So I think there might be a relevant distinction to make between those two circumstances, but the fundamental economics of these, I think, would apply to other things bundled with the truck, but it is a matter of degree, I suppose.

PROFESSOR NEVEN: I mean, there has to be a reality check here. I mean, you do not have a very active, open market for engines to be fitted in LF trucks; okay? It is not as if, you know, buyers --

MR RIDYARD: Yes. Understood.
PROFESSOR NEVEN: I mean, and so that is the -- and what we also have, however, is that there is a very active market for the supply of bodies to be fitted on rigid and there is a very active market for trailers to be pulled by tractors.

MR RIDYARD: This is probably -- yes. Maybe we will carry on -- there are one or two more questions this afternoon lunch.

THE CHAIRMAN: We will resume, then, at 2 o'clock, and you are still in purdah. I guess that means you can go out for lunch together, but maybe you have got alternative arrangements.

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(1.04 \mathrm{pm})
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(Luncheon adjournment)
(2.00 pm)

THE CHAIRMAN: Good afternoon.
MR RIDYARD: Okay. So just a couple of questions to finish off on this topic of the economic principles. I suppose I just wanted to get your perspective on why it is we are talking about the complement effects here, whereas we are not talking about it in relation to the other components, if you like, of trucks, some of which may be integral to trucks, some of them may be less integral. Do you think it might be something to do with the nature of the infringement, you know, the way in which the alleged cartel was formulated? Professor Neven?

PROFESSOR NEVEN: Yeah, I think that we are concerned about the complements with respect to bodies -- or concerned with bodies and trailers as complement, essentially because they are real complement, as discussed earlier, unlike many others, and secondly because they have a significant value relative to the value of the naked truck and because, indeed, the infringement, the way European Commission has described it, and the way I understand it, is an infringement that led to an increase, potentially, of the price of rigids without bodies and tractors, so, I mean, we have only one of the component in the system which is affected by the infringement and the other component is a strict complement and is significant in value. That is,

I think, what motivates the analysis.
MR RIDYARD: Mr Harvey?
MR HARVEY: I am not sure why it has been separated out, so I engage with the defence, as I saw it. As I said earlier, I do not really see a sort of a clear-cut distinction between the body, on the one hand, and other inputs that get bought into the manufacturer of a truck, so I am not sure $I$ can assist you further with that. MR RIDYARD: It may not be a question for you at all, but may be more of a legal question, but -- as to whether the infringement actually encompassed the bodies -- the prices of bodies as well as the prices of trucks.

MR HARVEY: Yes. I think we spoke about that in the context of the overcharge, and that is sort of, again, why, it seems to me, relevant to potentially make a distinction between the bundled complements and the offsetting complements because, on one view, the bundled complements effectively amounts to a reduction in the manufacturing cost of DAF and how that would affect end prices for customers if the infringement included bodies, then there would be sort of a lesser pass-on effect to customers compared to the counterfactual.

MR RIDYARD: Okay. Thanks.
Okay, so we will move now on to Professor Neven's approach to -- to put some numbers on the complements
effect.
So, Professor Neven, could you start, maybe, just by telling us what are the critical components -- you know, the set-up of your calibration model?

PROFESSOR NEVEN: Yes. Maybe just as an introduction to what the methodology does, so what the methodology does is to take a few observables, I mean -- and what I observed are the prices of DAF trucks. I observed the cost of DAF trucks. I observed the prices and, well, actually observed the margins of the complements. I observed different segments in the complements and I can deduce the price and the cost of the complements from the margins. So, basically, I have prices and cost for DAF trucks. I have sales of DAF tracks. I have sales in the market as a whole. I have market share of the other manufacturers. I have a segmentation of the different type of complements and I have prices and costs on average for those complements.

So these are things that I observe and I specify a model of competition between truck manufacturers and between body suppliers or complement suppliers, and in specifying that model, $I$ derive what is the equilibrium of that model, and by "equilibrium", I mean the prices and the quantities that DAF and its competitors would have set, the prices and the quantities that the
suppliers of complement would have set, and then I basically impose the equality between what I observe and what is the equilibrium of this model of competition, and by imposing this identity between what $I$ observe and what is the equilibrium of that model, I can deduce the parameters that are not observed, and the parameters that are not observed are essentially the parameters of demand, and the parameters of demand, they reflect essentially the degree of substitution between systems that have trucks from different manufacturers but the same complement, the same type of body, or the same type of trailers, the substitution between systems that have the same complement, say the same trailer or the same body with different truck manufacturers -- or the other way round, sorry. Maybe I said twice the same thing, so let us just rewind.

So the key parameters of demand is the degree of substitution between trucks of the same manufacturer and different bodies, suppliers, the degree of substitution between different systems that have the same bodies but trucks from a different manufacturer and then the degree of substitution between systems that have nothing in common; okay? These are the key parameters, and I also have specific parameters of demand for DAF and for the other manufacturers, but, I mean, not to be lost in the
details, essentially the calibration methodology is to rely on a few observables -- the prices, the quantities, the market size for both trucks and for the suppliers of complement, to derive a model of competition in which I can find what is the equilibrium. I impose the identity between the equilibrium and what I observe, which allows me to infer these key parameters of demand.

When I have inferred these key parameters of demand, then $I$ have a fully computable model of the market, essentially I can then use that model in order to simulate what happens if there are some exogenous changes, and what I simulate is what happens if there is an infringement that leads to an increase in the price of trucks by all the manufacturers, so, essentially, I mean, the method is to use observable -- limited amount of observable, to develop a model from this to derive the parameters of demand that I do not observe to get a fully computable model, then simulate what happens to that equilibrium, to that model, if I have a change like the infringement that leads to an increase in the price of all manufacturers; okay?

So you realise that, in doing this, of course what is key is the structure of the model that you build in which you are deriving an equilibrium, and, you know, there you have to make assumptions. You have to make
assumptions about the market structure; you have to make assumptions about, in particular, the market structure with respect to the suppliers of complement; you have to make some solidifying assumption with respect to the market structure in the supply of trucks. That is essentially because we do not observe the prices of the competitors or the cost of competitors, so we have to make assumptions about the market structure and you also have to make assumptions about the various types of complements, and I have used information from the Department of Transport about, you know, different types of bodies and different types of trailers and I have done a separate calibration, a separate simulation, for each of those segments. We can discuss the specifics of these assumptions in a minute, but essentially the idea is to develop this model of competition to impose identity with some observables and then to simulate that model.

MR RIDYARD: Why do you need to make an assumption about the structure of the components industry when we can observe it?

PROFESSOR NEVEN: The problem is that I know that there are a number of competitors.

MR RIDYARD: I think 20, you mentioned.
PROFESSOR NEVEN: Exactly, but I do not have the market
shares. I mean, I do not know how significant they are and, in order to meaningfully specify them, I would need to know their market shares, and I do not have that. So what $I$ assume is that there is a competition between suppliers of bodies and trailers which is symmetric and I assume that there are only two suppliers, which may sound extreme -- okay? -- but it is precisely because there are 25 that $I$ feel relaxed in assuming that there are two. This may sound counter-intuitive, but the idea is that if you have a large number of competitors in an industry which is one in which products are not highly differentiated, then one of the insights from models of competition is that we know that the number of competitors actually does not matter all that much in order to explain margins. I mean, what is going to explain the margins in an industry in which there is a low level of product differentiation is precisely the fact that there is a low level of product differentiation, so whether you have two competitors or four competitors or 10 or 15 may not matter all that much.

So, indeed, this is one of the assumptions that $I$ am making in which $I$ am imposing a structure which does not fit with reality. Clearly, I mean, I am assuming that there are two competitors that are symmetric. In
reality, there are many more, but I am relaxed in doing that because it is an industry in which margins are unlikely to be determined by the number of competitors, are much more likely to be determined by how close the products -- how close are the products that they are selling.

MR RIDYARD: So your two suppliers have very similar products and, therefore, there is very close competition between them under the assumptions that you have made? PROFESSOR NEVEN: That is right. Exactly.

THE CHAIRMAN: I think you also said that you had to make assumptions about the market for trucks --

PROFESSOR NEVEN: For trucks, yes.
THE CHAIRMAN: -- as well.
PROFESSOR NEVEN: Let me explain what $I$ do there. I only have prices for DAF and I only have cost for DAF, but I know that -- I mean, the position of DAF and the position of the other suppliers is very different. I mean, DAF has a market share which is much larger than the market share of the others. I mean, if you are referring to rigids, for instance, I mean, DAF has a market share of about -- it depends on whether it is medium or high, but it is around $30 \%$ to $35 \%$, which is much in excess of the market share of the others. If you are looking at the market for tractors, I mean, the
asymmetry is less significant, but it is important that my model can allow for this asymmetry between DAF and the other suppliers.

THE CHAIRMAN: Is it relevant that it was not a competitive market?

PROFESSOR NEVEN: Okay. Let us get to this. I do my simulation, so I do my calibration at the time at which it is a competitive market, so what $I$ do is that $I$ do this exercise that $I$ describe in matching the observables with the model for the period 2013, 2015. So I estimate the parameters in the period which is untainted, in which there is a competitive outcome, and then $I$ assume, having derived this fully computable model -- I mean, having derived this, I then assume that with those parameters there would be an infringement, such that prices of all trucks would increase by 1\%, say. But, so -- indeed you are right that $I$ would have to be careful not to calibrate the model in a situation in which prices are not set competitively, but this is not what I do. I do this calibration for the period 2013/2015.

Now, to go back to your question about the market structure for trucks, it is important that my model has demand parameters that can explain the differences in market shares between DAF and the others, but my model
imposes that competition from the others is symmetric, and, again, $I$ wish $I$ could do something better than that, but I cannot because I would need to have, you know, prices and sales of each of the competitors if I were to try to calibrate more precisely the sales and the prices of the -- use the sales and the prices of the competitors to undertake a calibration. So I basically have a model in which I have two demand parameters that are specific to DAF and then another two demand parameters that are specific to all others.

MR RIDYARD: Okay. So can you explain that -- just bring that out a bit more? So you have got a factual market structure which is one supplier has got more shares than the rest, the others are all considered to have small but similar shares --

PROFESSOR NEVEN: Actually what $I$ do is that I -- because they all have similar shares except for the small ones -- I mean, you have Iveco and MAN that are about half the size of the others, so I assume that besides DAF there are four other competitors. It is Scandia, it is Volvo, it is Daimler and then it is the combination between MAN and Iveco.

MR RIDYARD: Okay. So what does that mean in terms of how you characterise competition between those different groups in an industry?

PROFESSOR NEVEN: I mean that I characterise competition in the truck industry in such a way that the demand that is addressed to DAF has some specificity and I calibrate this demand specificity as we are going to see it is quite important for the result. So, I mean, I allow, I mean, to have specific demand features for DAF, but I impose that the demand features for the others are the same.

MR RIDYARD: To be more specific, when you say "specific demand features", what does that mean?

PROFESSOR NEVEN: Okay. What I mean is that I have a demand system -- I have a system of demand for combinations between trucks and complements, say trucks and bodies or tractors and trailers -- okay? -- and, I mean, those can be either a combination between a DAF truck and a trailer or a body for one of the two suppliers in the complement market or they can be a combination between any of the other manufacturers and, again, one of the two complement, either body or trailer. So my demand system allows the parameters, so the elasticities, if you want, to be different for DAF and for all the others. So the degree of substitution between a combination that has a DAF truck plus a body from one manufacturer is going to be allowed to be different in my model from the elasticity that I am going to be
calibrating for the demand for a system that involves, say, a Mercedes truck together with the body or a trailer from one of the two suppliers.

MR RIDYARD: Mr Harvey, any comments so far?
MR HARVEY: I think we have covered the critical inputs assumptions to competitors' competitiveness and then the truck prices for competitors. So I did, in my report -if I could just take you to some of the places where I have tried to address some of those points. So it is $\{E / 28 / 110\}$.

So, the purpose of this table was to summarise the main input into the modelling. As Professor Neven indicated, we have the price and cost of DAF trucks, but we do not have that for non-DAF trucks, and so the start point for that is to assume that the cost of manufacturing for non-DAF trucks is the same and then the model outputs the price of non-DAF trucks. So, to the extent that the model is poorly calibrated, the model will mispredict the price of non-DAF trucks.

It is related to a concern I had, which is that in the run of this model the output suggested that the margins for non-DAF trucks and therefore the prices were significantly lower than for DAF trucks. I think that arises due to some of the points that Professor Neven has just made, but the effect of that is that on average
it means that the margins in the truck market are perhaps too low, depending on what the true margins are, and that would tend to tip that relativity in favour of the body manufacturers absorbing a means of price cut rather than the truck market. But, in any event, they are estimates. We do have DAF yearly sales.

The sales of bodies and trailers, and their prices, we do not know that. We do have some information on the market shares of the trailer and body manufacturers from their annual accounts, so that is the inputs.

On the assumptions out of table 26, which I now cannot find, which, again, the purpose of this is to summarise -- so that is on, sorry, $\{E / 28 / 130\}$. I think, as Professor Neven has indicated, because we both have very little information regarding the prices and costs of everything but DAF trucks, the inputs into the model are relatively scant and so the outputs are driven by the modelling structure that Professor Neven has used.

So this summarises the various assumptions, which includes the number of body and trailer suppliers at 2, that they are symmetric, the decision in relation to the truck market, that they are symmetric, and so forth, so I will just take you to those briefly. It is intended to summarise the various choices that have been made and I have explained what $I$ think about them in my report.

One of my concerns with the modelling in the first report was that there were some additional restrictions that were placed on the model in order to drive out a result. I relaxed those restrictions in my reply and found that they had a large effect on the implied complements effect and by removing them it reduced the effect. Professor Neven subsequently updated his report, which I suspect we might talk about later, but the results of my sensitivity analyses are in table 25, which is on page $\{E / 28 / 122\}$.

MR RIDYARD: Maybe we will come on to those in a moment when we specifically talk about the various sensitivities. MR HARVEY: Yes.

MR RIDYARD: Just to pick up one point in particular that you mentioned there -- and this is a question to Professor Neven -- I mean, the -- having assumed that DAF has similar costs to the competitors because it has a higher market share, you -- I can see why you have assumed it has got a higher margin, but, I mean, DAF's market share across -- sorry?

PROFESSOR NEVEN: I am not assuming that DAF has a higher margin. I think that, to be clear, what $I$ am doing there is, of course, I observed the margin of DAF and I observed the market share of DAF. I do not observe the cost or the prices of the competitors. I assume
that the competitors for any given segment of trucks has the same cost as DAF, but I let the model calibrate the price of competitors, and this is an issue we will come back to because it is indeed something which is important for the results of the calibration.

MR RIDYARD: It leads to the competitors having a lower margin than --

PROFESSOR NEVEN: No. I mean, we are going to discuss that in a second. There are some parameter configuration in which they have lower margins and parameter configuration in which they have higher margins.

MR RIDYARD: But they have higher margins than DAF?

PROFESSOR NEVEN: Yes, and I will explain why. I think it is very intuitive, actually.

MR RIDYARD: Okay.

PROFESSOR NEVEN: So -- indeed, but you might still worry about the idea that $I$ have the assumption that they have the same cost even if $I$ allow the margins to be determined by the model, and I did some sensitivity around that. I mean, say, assume -- okay? -- cost of competitors are 5\% below, cost of competitors are 5\% above DAF, is it that the calibration and, in particular, the prices of the margin would be so different? That does not seem to be significant and it is very intuitive. I mean, you know, you have a margin,
this is what is key for this model. If you fix one and if you allow the other parameters to vary, it is not going to have a big effect. So, you know, what is -the real restriction in this calibration is coming from the fact that I do not have prices for competitors and I do not have specific market shares for the competitors.

MR RIDYARD: Just a factual question. I mean, DAF's position in the UK market as being the market leader, is that replicated across Europe in general?

PROFESSOR NEVEN: No.
MR RIDYARD: Does that provide any clues as to -- is the UK market -- is it right to look at the UK market separately for these purposes or is there any sort of cross-check that one can do by looking at the truck manufacturers' positions across other European markets?

PROFESSOR NEVEN: Indeed. I mean, this exercise could be replicated in other countries and the market structure in Germany is quite different. I mean, in Germany, as you would expect, it is Daimler and MAN that have a higher market share than the rest and in France it is Volvo Renault that has a higher market share, so there are some remnants from these sort of national suppliers, and, indeed, sort of calibrating this model in these other countries would provide a cross-check, but I have not done that yet.

MR RIDYARD: Yes, indeed. Okay. Before we get to the more detailed points, I mean, perhaps, Mr Harvey, could you summarise for us why you do not like this approach? What would you say would be your main concerns with Professor Neven's approach?

MR HARVEY: So I think the start point for me was that we needed to find evidence about whether complements, the price of complements, in fact, fell. I do not really see -- this is not a criticism, actually, of this specific simulation model, but simulation models in general are intended to almost provide a refined hypothesis based on economic theory and models of competition, so $I$ see this more as almost if everyone plays by the rules that are within the simulation modelling process, then we would expect to see these types of figures, assuming all of the inputs and so forth are correct, but that is not the sort of approach that we have adopted in the context of the -- say, the overcharge analysis, where we are seeking to measure, in fact, what happened. So that is my main concern in relation to, I think, the use of simulation models in this context.

In terms of the simulation model that Professor Neven has prepared, again, this is not really a criticism of Professor Neven. It had to rely on
a very large number of assumptions and estimates that are not capable of being verified, and so it is very hard to know how robust the answers really are. What I do know is that when I make changes to the input assumptions that intuitively matter, such as the margins, they have a very large effect on the results, so I think they are the three -- to summarise, they are the three main reasons that $I$ have concerns with this type of approach.

MR RIDYARD: Perhaps that would be a good time to come on specifically to the sensitivities that have been looked at on this. Maybe, Professor Neven -- you have already mentioned these in passing, but are there some points that you would like to summarise here in terms of ... PROFESSOR NEVEN: Yes. I think that it will be useful to go through the results because, you know, in the end, whether these models are useful or not depends a little bit on whether the results that they produce make sense -- I mean, whether there is an economic interpretation of the results that make sense, and so --

MR RIDYARD: Sorry, as you say that, I mean, maybe it would just be useful for us to summarise what you are saying.

So in all this you are forcing through the effect of a $1 \%$ increase in truck prices and your bottom line out of this is that about -- approximately a third of that
effect is --

PROFESSOR NEVEN: No, it is less. It is significantly less. So that is why I think that we should go through the results.

MR RIDYARD: Okay. Just tell us what the bottom line is just so that we have got that in mind when we go through the --

PROFESSOR NEVEN: Okay. So the bottom line for Royal Mail is that about $6 \%$ of the overcharge would have been compensated by a reduction in the price of complement and in the case of $B T$ it is about $25 \%$. I mean, that is the ballpark estimate.

MR RIDYARD: That is driven by the fact that the BT bodies and trailers are more expensive?

PROFESSOR NEVEN: That is right. I mean, the BT -- it is only bodies in the case of $B T$, there was no trailer. In the case of BT -- I mean, the bodies are specialised bodies that are much more expensive than the trucks; okay? So BT is buying both medium and heavy trucks, but they tend to be fairly cheap in relation to the body that they are putting on them and so that is the reason why you get a stronger effect. But $I$ think it is useful to go through the results because, I mean, in the end, I mean, the proof of the pudding is in the eating. I mean, is it that you get results that make economic
sense, that have an order of magnitude that make economic sense and also differences across segments that make economic sense?

So if we could go to my third report -- now let me see where this one is. It is EIC/63. I would like to go to table 1, $\{\mathrm{E} / 63 / 1\}$.

THE CHAIRMAN: Which page is that on?
PROFESSOR NEVEN: It is on page 18 in the pagination of the court, $\{E / 63 / 18\} .16$ in my report.

So what you have in this table are, first, the various segments in which I have performed a calibration, and let me explain what these segments are because it is important for the interpretation. So, the first four segments, $0,1,2$ and 3, are tractors, and segment 0 and segment 2 are cheap -- so to speak, cheap tractors. They are two-axle structures, okay? As I mentioned before, the margin on those tractors is about $16 \%$. Segment 1 and 3 are more expensive tractors. They have three axles and DAF actually has a higher margin, about 17\% to 18\%, and a lower market share with respect to those tractors.

Now, for each of the tractors, say the cheap tractor, segment 0 and segment 2, I have two types of trailers, and that corresponds to what I observe in the data, in particular the data from Royal Mail, because $B T$
does not have trailers, and we see that Royal Mail is purchasing two types of trailers, a cheap trailer and an expensive trailer, and the cheap trailer is a standard trailer that costs about $£ 25,000$, so about the same as a -- well, a bit less than the tractor, and the second one, C 2 , is a very expensive trailer. It is a double-decker. It is essentially a trailer in which you have two levels inside the trailer and it is much more expensive. It costs about $£ 55,000$ per trailer. So segment 0 is essentially the cheap tractor with the cheap trailer; segment 1 is the expensive tractor with the cheap trailer and so forth. So the first four segments, 0 to 3, are the tractor segments.

Now, from 4 to 14 you have the rigid segments and you have the distinction between the medium and the heavy trucks, and the segments involving medium are 4, 7 and 13. You see 6 to 16 , that corresponds to medium trucks and the segments that involve heavy trucks are 8, 12 and 14. Again, for each, you have different types of bodies, and what $I$ see in the data is essentially, for Royal Mail and BT, three types of bodies. I have -- and that is the bulk of the bodies for Royal Mail -- cheap bodies that cost less than $£ 10,000$. I mean, it is essentially a curtain side. It is a box. It is a very simple body.

I have more expensive bodies that typically cost about, sort of, $£ 15,000$ to $£ 17,000$. Those are referred as, "Bodies 10-20K", and then, in the case of BT, I have specialised bodies, those that were used by BT that can be very expensive. They can cost up to 50 again -£50,000 to $£ 60,000$. So basically I have a number of segments that correspond to different systems, I mean, trucks, that can be either cheap trucks or expensive trucks, medium or heavy and different types of bodies.

I undertake the simulation -- the calibration -sorry -- of the demand parameters for each of the segments separately, and then you see, in the last two columns, what is referred to as my minimum -- I should say Mr Harvey's minimum. Sorry, it is Harvey's minimum -- okay, it is Mr Harvey's minimum, and here let us explain what this is coming from.

As Mr Harvey has explained, I initially did a calibration of this model. Mr Harvey has identified the fact that I had not identified all of the possible parameters that would fit the observables and he did that by running my model, and he said, "Okay, you have investigated a range of parameters, but there are other parameters that you have not investigated that could also fit the observables". So I redid my calibration, and Mr Harvey was correct, that I had searched for valid
parameters in a space that was constrained. I have then expanded the search for valid parameter configurations and I have now new estimates of the complement effect. This is what is referred to -- what you have in this column, that is my minimum and Harvey's minimum is what Mr Harvey has found when he has looked at the first version of my calibration.

What is interesting is to look at the structure of those numbers. Now, it is interesting that if you look at the relationship between the number that you have in the "My minimum" column and the characteristics of the trucks and the complements, there is a meaningful economic relationship.

Let us start with the trucks for which we have the lowest margin. It is segment 4, 7 and 14. These are the medium trucks; okay? So these are trucks for which the margin of DAF is around $7 \%$ and for which the market share of DAF is about $30 \%$ to $35 \%$, and you see that for those segment 4, 7 and 13 I have a complement effect which is 1.3. It means that in those segments where the market share of DAF is high, where the margin of DAF is high, the complement effect tends to be strong.

Let us now look at the segment with heavy trucks, which is 8, 12 --

MR RIDYARD: You said the margin of DAF is low?

PROFESSOR NEVEN: Low. Did I say "high"? Sorry. MR RIDYARD: Yes. You meant "low", yes.

PROFESSOR NEVEN: I meant "low". The margin for the medium trucks is about 7\% --

THE CHAIRMAN: So you said that the 4, 7 and 13 have a complement effect which is 1.3.

PROFESSOR NEVEN: 0.3, that is right. So 4, 7 and 13, you see that it is along 0.3, and these are the three segments for which we have medium trucks, for which the margin is low.

Let us now look at the heavy trucks. Heavy trucks is 8,12 and 14. In those -- in this segment the margin of DAF is about $13 \%$, it is more significant, and the market share of DAF is also high. What you see is that in this segment of heavy trucks we have a complement effect which, instead of being around 0.3, is now around 0.2. You see that it is 0.19 for 8 , it is 0.19 for 12 , it is 0.19 for 14. So we see already that as a function of the characteristics of the market in which DAF is operating, we see there is a difference in the complement effect, and I explain, you know, why we get this in a second, but let us continue with the tractors.

Tractors you have $0,1,2$ and 3 , as 1 mentioned earlier, and what you see is that the two segments in which the margin of DAF is around $16 \%$, which is the two
axles, has an effect which is now around $0.12 / 0.11$, and we see that -- for the segment in which the margin of DAF is the highest, which is the tractor segment with more than two axles, the three, you see that the complement effect is, again -- is smaller, is 0.08 in segment 1 and segment 3 .

So what we see -- and this is one of the reasons as to why I have some confidence in these results -- is that there is a relationship between the strength of the complement effect and the margin that DAF has in those respective segments. What $I$ see is that the higher -or the lower is the margin that DAF has, the stronger is the complement effect, and I can explain why.

MR RIDYARD: Okay. Well, you will come to that in sort of -- that is how you would kind of expect the pattern to be, but $I$ do not know that the fact that it is the right pattern gives us any assurance that it is the right level, that the numbers are right.

PROFESSOR NEVEN: Okay.
MR RIDYARD: I mean, they may be right relative to one another --

PROFESSOR NEVEN: Yes, exactly.
MR RIDYARD: -- but why are they right?
PROFESSOR NEVEN: But then, in order to understand why you might have some confidence in them, you have to
understand where these differences are coming from. Why is it? What is the effect? What are the parameters being calibrated that leads to these differences? Essentially what is happening and what is explaining the difference in the strength of the complement effect are the characteristics of the parameters that are calibrated in terms of the relative significance of the substitution among different systems, on the one hand, and the substitution with outside goods, on the other. So what is happening is that, as Mr Harvey has observed, there are many parameters that will fit the observable, so really there are many of them, and however you can characterise them economically, and there is a range of parameters which fit the model, such that there is a fair amount of price differentiation among the manufacturers, but such that there is a significant elasticity at the market level. So to see the intuition, think about the price of a system going up. Two things can happen: either because the price of a system is going up the buyers are switching to alternative system, and that is going to be determined by the degree of product differentiation between the systems, or they would stop buying altogether -- okay? -- which is essentially aggregate elasticity, if you want.

Now, at the opposite, what you could have is a situation -- I mean, if you look at the weight between these two factors, you can have either a situation in which you have a significant effect associated with the substitution of one different system, so that in the event of an increase in the price of one system, customers are switching to the other system and the residual demand is unimportant, or you could have the opposite; okay?

Now, when is the complement effect going to be strong? The complement effect is going to be strong when, in response to a price increase by all manufacturers, there is a big shift in demand or the opposite, the complement effect is going to be weak when, in response to an increase in the price by all truck manufacturers, the shift in the overall demand is weak. You know, the shift in the overall demand is going to be weak when the elasticity in the market with respect to the outside good is limited.

So if I interpret the calibration of my model, if I interpret the parameters for which -- which explain these numbers, what $I$ do see is that in those segments for which DAF has a low margin, essentially there is only one set of parameters that will achieve the calibration; those parameters for which the substitution
with the outside good is actually relatively significant in relation to the substitution among the systems. That is why, for instance, for the segments 4, 7 and 13 I have a relatively strong complement effect, because for those segments in which the margins of DAF is relatively small, the dominant parameter configuration is one in which the substitution at the second level, the substitution with the outside good, is relatively strong.

What I have, however, for the other segments in which the margin of DAF is much higher is that there is an alternative parameter configuration which -- such that, you know, indeed, these parameters can match the equilibrium of the model, which has, I mean, a much lower level of product differentiation among the different systems, so a much closer substitution, but, at the opposite, almost no elasticity at the segment level. For those, of course, when you increase the price for all the manufacturers, the complement effect is going to be much weaker.

THE CHAIRMAN: I think we ought to give Mr Harvey a chance to comment on -- you have said quite a lot.

PROFESSOR NEVEN: I am sorry, but it is not simple to explain.

THE CHAIRMAN: No, I understand.

MR HARVEY: Can I just show you some of the sensitivities that $I$ did that go to the level of the effect?

So that is on page $\{E / 28 / 149\}$. As we spoke about at the start, we do not have good information about the prices and costs of the complements and so one of the sensitivities that $I$ produced was to examine the extent to which the effects changed when we made alternative assumptions regarding the prices and costs of the complements.

So the first column, Professor Neven's model, that shows the median complement effect in his first report, so this is before he made the changes that he has just described, and at that point was using the median number that emerged from the model, not the minimum, and that was before the relaxation of the restriction that I identified. Then the subsequent column shows how that number, ie the median percentage change in the complement price, changes when $I$ increase or reduce the complement cost or price, and this is to reflect that we do not know -- and neither do I in my analysis -- the margins at the segmental level.

If you just scan across this, what it shows is that the results of this simulation exercise are very sensitive to the -- to these figures. Of course, we do not know whether the true figures are higher or lower,
but it does indicate that modest changes in them give very different answers. I am afraid I do not have this table replicated for the use of the minimum that Professor Neven just presented or for the situation where we relaxed the restriction that he spoke about, but it does show quite how sensitive the levels are to changes in those key input assumptions. So I considered that was an important sensitivity in view of what we do and do not know about the products in question. The other sensitivity that $I$ did -- well, it is less of a sensitivity, really, it is just to sort of illustrate a point. So let me just find the table. Table 28. That is on page $\{E / 28 / 143\}$. In this table I have not changed any of the input assumptions. Instead, what I have done here is to show the minimum complements effect emerging from the simulation, the median, which, at the time of this report, was the figure that Professor Neven relied on, and then a maximum, and the final column shows the ratio of one effect to the other, so the maximum to the minimum, and, as you can see, the range that emerges from this is very wide. It does not go to levels directly, but it does indicate that there is a lot of uncertainty within this modelling process that arises because of the lack of information that we have. So I am not sure this fits
under the standard bracket of "sensitivity", but I think it is relevant for the interpretation of the results. So they are the two sensitivities that I point to at this stage.

MR RIDYARD: Professor Neven, do you agree with the first one of those tables?

PROFESSOR NEVEN: No, I do not. I actually would like to draw attention to the sensitivity that I have replicated in my third report, so it is IC63, and that is on pages 21 and 22, $\{E / 63 / 21\}$. The first table, which is on page 21, actually highlights the fact that the sensitivities that have been implemented by Mr Harvey are really unreasonable in the sense that you see, for instance, that -- and that makes a lot of sense -- if you have an 11\% margin for bodies and trailers, if you have a 10\% decrease in the price, that essentially means that the margin goes to zero, or if you have a $10 \%$ increase in the cost, it means, again, that the margin is zero.

This is what you have in the column, "Complements". These are the margins under the sensitivity of Mr Harvey. So there are two sensitivities of Mr Harvey with respect to complement which involve 10\% decrease in the price or $10 \%$ increase in the cost that essentially annul the margins, and then, of course, if there was no
margin, then you would expect, indeed, the complement effect to become very small.

Similarly, the $10 \%$ increase in the price and the 10\% increase in the cost -- sorry -- $10 \%$ decrease in the cost lead to margins which, for a sector like bodies and trailers, would appear to be very, very high. So I have replicated what $I$ consider to be more reasonable sensitivities in the following page, $\{E / 63 / 22\}$, and I have done that in the context of the new implementation of the model, that is to say the implementation of the model in which I have searched through the entire parameter space to identify the minimum.

You see there that the minimum undercharge in the case of Royal Mail in the benchmark is 6\%; okay? There was 6\% of the overcharge that is compensated by the undercharge across the different types of bodies and trailers. If I increase the body price by 5\% and the trailer price by 2.5\%, the effect goes to 8.5\%. If I reduce the body price by 5\% and the trailer prices by 2.5\%, I get that the effect goes down to 3.6\%, and you have similar figures for $B T$ bodies in the last line.

Clearly there is some sensitivity, I mean, clearly, depending on what you assume for the prices, you have changes in the results, and then $I$ am not denying that.

I mean, these are changes. However, these are changes that also make economic sense. I mean, you expect that, as you are increasing the body price, that the effect is going to grow stronger; as you are decreasing the body price, that the effect is going to be weaker, for the reasons that we have discussed earlier.

So, indeed, I mean, there is some variation in the results, depending on the inputs of the model. You know, whether these changes are changes such that we should worry about, $I$ mean, it is indeed a matter of judgment. I find comfort in the fact that they make economic sense and, similarly, you know, what motivates the relative comfort that $I$ have in this methodology are the results that I described earlier. I mean, these results make sense in terms of the significance of the complement effect in relation to the margins of DAF and I can also understand where they are coming from. I can also understand that when DAF has a very low margin, it is impossible for the model to find a set of parameter configurations such that there is a very low elasticity at the segment level. There has to be something else. There has to be something in terms of the demand parameters that reflects some degree of differentiation among the systems in the market. So the fact that not only I get the systematic pattern, but $I$ can also
explain why I get these differences, brings me some comfort.

Now, of course Mr Harvey is right in pointing out that, you know, there was a wide range of parameters that can actually fit the model, that is to say there is a wide range of parameters such that the equilibrium of the model replicates the observables that I have, but I think the -- it is an inherent property of that sort of model that you get many parameters. I mean, of course, if $I$ had sort of better information, in particular, if $I$ had information on the prices of competitors, I mean, the range of parameters for which I could get the calibration would be drastically cut, but I just do not have it. So it is an inherent property of that sort of exercise that you get many parameter configurations and I think that the test of whether you have confidence in the result is really whether they make economic sense and what $I$ find is that I have parameters that make economic sense. I have an order of magnitude of the effect and a relative order of magnitude across segments that make some economic sense.

MR RIDYARD: So just to summarise your criticism of Mr Harvey's sensitivity analysis, you are saying that a $10 \%$ change in cost or price has a very extreme effect on margin and therefore it is too great. So you do not disagree with the arithmetic, you just do not think it was the right sensitivity to look at?

PROFESSOR NEVEN: Yes. I think he also did it in the context of my first model, so my first calibration, and the results are different --

MR RIDYARD: Sure. That was just a function of the ordering of the processes.

PROFESSOR NEVEN: Yes.
MR RIDYARD: Is there anything that you would like to say on that, Mr Harvey?

MR HARVEY: Just two points. One is in relation to the sensitivities. It is obviously always a choice as to what one you run. I think the key issue is that what matters for the results is the margins at the segment -the segment level because different segments are being applied to Royal Mail and BT, and so I think the observation that it is too extreme or too heavy-handed a sensitivity here is motivated by almost an average view. I have got no idea and neither has Professor Neven what the margins would be for individual trucks. It is not obvious to me that it follows that it is too heavy-handed.

PROFESSOR NEVEN: Sorry, we are talking about complements here not trucks.

MR HARVEY: Sorry, complements. The second point around
sort of it making economic sense, I am sort of not really surprised that it kind of does follow Professor Neven's intuition because, of course, the model is built on $a$-- is built to follow economic rules, so $I$ am not sure that that is a test of this model.

MR RIDYARD: The relative answers do not give you any comfort in the levels?

MR HARVEY: No.

PROFESSOR NEVEN: Well, can I just comment on that? I think that it is true, of course, that there was a lot of structure in these models. However, it is not as if any parameter configuration would work, okay? Let me do the infinity of potential parameter configuration. Many of them do not work. The model has some bite in restricting parameter configurations, so -- and, indeed, the model delivers parameter configurations that can be interpreted. That is why I have some comfort, but I am not denying the fact, of course, that this methodology here is a methodology that imposes a lot of structure.

MR RIDYARD: Earlier on we were talking about the relative margins of DAF versus the other truck manufacturers. This is all -- I am talking about DAF margins, so where do the other -- where do the competing truck manufacturers fit into the story?

PROFESSOR NEVEN: That brings me back to the two types of parameter configuration that $I$ could distinguish as fitting the data. There is one of them, the one that involves an elasticity at the level of the segment and some differentiation among the systems, which typically yields fairly low prices for the competitors, so margins that are around the margins of DAF; typically slightly lower. It also makes sense -- I mean, given the observation that DAF has a higher market share, I mean, you know, you would ...

Now, the other parameter configuration that I referred to, the one in which you have almost no elasticity with respect to the -- at the segment level is one that typically involves much higher prices for the competitors. So I have these two -- I mean, the models can fit both. The model can fit both in some segments. The model can fit the world in which the prices of competitors are close to DAF as well as a world in which the prices of competitors are higher than DAF, except in those segments in which DAF has very low margins and in those segments the only parameter configuration that works is the parameter configuration in which the competitors' prices are close to DAF, and all of that makes a lot of sense. I mean, you know, you would not expect a situation in which DAF has low
margin, high market shares and the competitors could have much higher prices. It just would not make any sense. So it makes sense that this particular parameter configuration that you get for those segments in which DAF has a higher margin simply does not work when DAF has a lower margin.

The final thing I would observe, which I think gives me some confidence about the result, is that this sort of low margin for DAF and elasticity at the segment level, where do we observe it? We observe it for the medium trucks and that is also where we observe -- we expect to get some more elasticity at the segment level. Why? Because of substitution with vans. I mean, there is a substitution between LF trucks and vans. You expect more elasticity here, So that is where you get more segment elasticity and it does not -- it actually gives me some comfort that for that particular type of trucks I do not get the alternative possibility of very high prices for competitors and very low segment elasticity.

MR RIDYARD: Mr Harvey, any comments on that?

MR HARVEY: No, I have not.
MR RIDYARD: One thing -- I mean, it is -- one thing which I would like to bring this discussion back to is a discussion we had earlier about the principles and the
sorts of features that would drive a big or a small complement effect, and when we were discussing the nature of trucks against the nature of trailers, I mean, I think there was some agreement with the idea that trucks would tend to have higher margins than trailers because trailers are commodities and trucks are high-tech products, you know, for want of a better characterisation.

I mean, I suppose I would like to know what you both think about that characterisation and how it fits with the numbers in this simulation because I suppose crudely you would expect to see the numbers going into this exercise, if we had the numbers, for much higher margins on trucks than on trailers and that does not seem to be the case here. Have I got that wrong or can you comment on why it is that we are seeing the numbers that we are seeing?

PROFESSOR NEVEN: What -- I mean, just first on the facts, I mean, the margin for bodies and trailers is around 11\% in the main simulation. I do some sensitivity as well, but let us forget about this. I mean, you get sort of the -- well, $I$ will look at the sensitivity still --

MR RIDYARD: It gets 7 to 16\% on your trucks?

PROFESSOR NEVEN: Then you get higher margins on trucks -MR RIDYARD: On some trucks, but not others?

PROFESSOR NEVEN: Exactly, not others. But it also makes sense that you get lower margins on the LF trucks. MR RIDYARD: I can understand why the smaller trucks have lower margins than the big trucks but $I$ do not necessarily understand why that range of margins straddles the margins for trailers.

PROFESSOR NEVEN: I mean, I have no direct answer to that. This is what I observe. I mean, I observe that the margins --

MR RIDYARD: We cannot observe a lot of these numbers, can we, because we are just using imperfect data?

PROFESSOR NEVEN: Exactly. It could be that the margins are lower -- it could be that the margin for bodies and trailers is lower than 11\% and -- yes.

MR RIDYARD: Yes. Okay. Mr Harvey, do you have any observations on that?

MR HARVEY: The only -- we do -- so on the -- for the trailer and body manufacturers, of course, we have the accounting data so we do not know for certain exactly what costs are feeding in, the extent to which they are like-for-like. So in a world where they are including almost more fixed costs or something like that or too little fixed cost, rather, in this case, that could account for it.

One thing that we do know -- and I have not got the
date in front of me -- is that Cartwright, who was a supplier to Royal Mail of trailers, they exited the market and I cannot remember the date now.

PROFESSOR NEVEN: 2018.

MR HARVEY: 2018. Thank you. They exited with margins in their accounts around the level that we have foreseen for the others. We, of course, do not know why. I do not know why they exited and whether it was financial reasons or for other reasons, but that might indicate that the margins that we are observing in the accounts are not a true reflection of the margins that they were earning and making pricing decisions on, but that is all we know.

MR RIDYARD: It is a matter of perspective, is it not, really?

MR HARVEY: Yes.

PROFESSOR NEVEN: But, of course, if the actual margins were lower, the complement effect would also be lower. That is also true.

THE CHAIRMAN: When you say they "exited" the market, you mean they went into liquidation or they just decided they did not want to do any more of this sort of stuff? MR HARVEY: I do not know the circumstances. For clarity, I am not attaching too much weight to this observation, but in terms of interpreting the figures and the
possibility they are not measuring the right thing -PROFESSOR NEVEN: I think it was a family story, at least this is what $I$ got from the internet, that there was a brother who was unhappy with the family business and set up his own business which is also doing trailers and bodies independently under a different name. That is what I got from the internet.

MR RIDYARD: Okay. Are there any other points that -- or areas that you think we -- Mr Harvey, I should address this to you, I guess, in the first instance. Any other points that we have not addressed in this discussion on Professor Neven's calibration approach?

MR HARVEY: I think we have discussed the main issues from my perspective.

MR RIDYARD: Professor Neven, any other points you wanted to make?

PROFESSOR NEVEN: No.

THE CHAIRMAN: Do your conclusions, Professor Neven, have the effect that the body suppliers, manufacturers, are effectively bearing some of the cost of the overcharge --

PROFESSOR NEVEN: Yes, that is correct.

THE CHAIRMAN: -- because it does not --

PROFESSOR NEVEN: You are right. I mean, as a consequence of the increase in the price, they were left to reduce
their own price.

THE CHAIRMAN: They are reducing their own prices --

PROFESSOR NEVEN: That is right.
THE CHAIRMAN: -- which then has an effect on the demand for the whole.

PROFESSOR NEVEN: As you pointed out earlier, yes, exactly. THE CHAIRMAN: So DAF sort of gets the benefit of that -PROFESSOR NEVEN: So they certainly get hurt, yes, and DAF gets the benefit of it, yes, indeed.

THE CHAIRMAN: -- because it is not reducing its prices? PROFESSOR NEVEN: Well, no. That is right.

THE CHAIRMAN: Okay. I think we will take our ten-minute break.
(3.11 pm)
(A short break)
(3.22 pm)

MR RIDYARD: Now we move on to Mr Harvey's approach, which is obviously a rather different way of looking at the problem. Mr Harvey, can you summarise briefly what you have done?

MR HARVEY: Yes. I have gathered data on the trailer body manufacturer margins over time. I have looked to see whether those margins, ie increases or decreases in them, appear to be related to changes in the prices of trucks to try and account for possible influences that
could put upward pressure on both truck prices and margins or vice versa. I have looked at -- tried to look at periods where conditions appear to be more stable. That is the essential basis of my approach. MR RIDYARD: Just at the basic level, $I$ mean, do we observe a sort of cyclical pattern in margins that you would expect if it was the case that trailer and body margins fall when demand falls and rise when demand increases? MR HARVEY: Not especially, no. No. They seemed to just move up and down in a way that is -- appears relatively unrelated to the economic movements -- sorry -- the GDP growth and that type of thing. So, no, I did not detect a strong relationship between them.

MR RIDYARD: Obviously it is just a question of presenting a number of charts and you do not claim it is anything much more than that, but -- so what conclusions, if any, you know, can we draw from those pictures?

MR HARVEY: As you indicate, $I$ have been reasonably careful about not seeking to present that analysis as if it is on sort of a par with the overcharge analysis, and so the conclusion that I draw is I cannot see within the data evidence of a complements effect. I acknowledge, though --

MR RIDYARD: Sorry to stop you there, but I mean there -I was talking much more generally, really, to see
whether there was even an impact of demand changes on margins, not specifically related to the infringement, but just in general. I think there would then be a whole other level of -- another level of, you know, analysis to try and focus on the effect of the infringement because then you would have to hold other things constant, which is what you tried to do with the econometric analysis, but $I$ was talking at the -- just to be clear, I was talking about the whole general level of whether margins for trailers seemed to be influenced by swings in demand for trailers for whatever reason.

MR HARVEY: No, I cannot see that in the analysis.

MR RIDYARD: So if you cannot see that, then it seems fairly evident that you would never have a chance of seeing an effect of the infringement.

MR HARVEY: Well, it depends on -- there is a period that I investigate where $I$ know that there was quite a significant change in truck prices. That coincides with the introduction of Euro 6 trucks at a time where other factors, such as demand, appear to be more stable and so $I$ do not see an effect there either, but it is correct to say that I do not have a model that explains the formation of truck and trailer margins because $I$ do not have the data to allow me to do that.

MR RIDYARD: Professor Neven, anything to add or comment?

PROFESSOR NEVEN: No, I think that I have explained my concern about the two analyses that Mr Harvey is putting forward. I mean, there is one analysis in which he is looking at margins during and after the infringement period for these particular manufacturers and, you know, it is impossible to identify the effect of the infringement if you do not control for what needs to be controlled for, and, you know, the overcharge exercise, you know, we spend a lot of time and effort controlling for the right thing and here we have sort of 17 data points per manufacturer. I think, you know, it is very difficult to detect anything and, with respect to the second exercise in which Mr Harvey is looking at the margins of the suppliers of complements, on the one hand, and the changes in the prices of trucks, I mean, if you were to try to detect a complement effect, you really need to identify some exogenous changes in the price of trucks and it is extremely difficult to do that. I mean, even considering the introduction of Euro 6 and the cost may be, you know, some more exogenous but the prices are not. I mean, the prices of trucks will have been set, anticipating what is the demand for those trucks and also what is the demand for the systems, I mean, for the combination between the trucks and the complement, so I think that --

MR RIDYARD: Is that true, because $I$ thought in $95 \%$ of cases the truck manufacturer does not provide the body. PROFESSOR NEVEN: No, but --

MR RIDYARD: But you would still anticipate the --
PROFESSOR NEVEN: I would still anticipate the demand will be --

MR RIDYARD: I see the point.
THE CHAIRMAN: Mr Harvey, you, I think, accept the sort of economic theoretical basis for the complements effect -MR HARVEY: Yes.

THE CHAIRMAN: -- but you did not -- in what you looked at, you did not see any such effect?

MR HARVEY: No, exactly. So I -- it is almost back to the differences between these analyses. So my analysis is attempting to look at what happened in terms of margins and the relationship with prices. It carries with it the limitations that we have spoken about, whereas the simulation analysis is not doing that; it is looking at what could happen if people follow the -- essentially follow the rules, as I said earlier. We have a --

THE CHAIRMAN: Are there such rules?
MR HARVEY: We have -- some of the criticisms that I made of Professor Neven's analysis in relation to the mix of trailers equally is made of mine, which is I do not know the changes in mix of trailers and that type of thing
over time either. So the difference is there are strengths and weaknesses of each analysis in their own right. Mine is attempting to look at market outcomes but it suffers from some limitations, as Mr Ridyard has alluded to.

THE CHAIRMAN: I understand your criticisms of Professor Neven's approach, but did it give you cause for concern that your analysis did not throw up what one might have expected to see from the pure economic theoretical point of view?

MR HARVEY: I think I am -- and I have indicated in the report -- I am conscious that if there are other factors moving and they are sort of dwarfing this complements effect, I may not be able to detect it in my analysis. That is not something that was triggered by Professor Neven's modelling or critique; that is something that $I$ was conscious of when preparing the analysis.

THE CHAIRMAN: What are the sort of other factors that would be?

MR HARVEY: Other factors that could affect the relationship would be demand conditions, so if there is an increase in demand for the system, that could put upward pressure on the prices of both complements. Other factors could be changes in the mix of trailers sold. If some
trailers have -- attract higher margins than others, that could distort the measured relationship. Some of those things I tried to investigate if not take account of, so the reason for looking at margins rather than revenues or something like that was to take account of the different cost of manufacturing different trailers, so I use the word "control" loosely to incorporate that in the analysis.

The second thing that $I$ tried to do was to look at periods in which some of those changes were more stable, so -- sorry -- some of those factors were more stable and seeing if $I$ can detect an effect there, but, of course, that does come with the cost of removing data for me to investigate. So they are the things that I attempted to do.

On the introduction of the Euro 6 sort of case study, I thought that was an interesting case study to investigate because it is something that seems to affect the cost of supplying the truck but would not affect, necessarily, the cost of -- obviously the cost of supplying the bodies. It seemed something as close to a separate supply side event that $I$ could investigate and I did not find an effect there either, but all of this was undertaken in the confines of the data that I had.

PROFESSOR NEVEN: Sorry, but you cannot expect to see anything if you are using 17 data points. I mean, there is such a serious problem of identification here. I mean, as Mr Harvey has explained himself, I mean, if you have a demand that is increasing, it is going to increase the demand for the truck, increase the demand for complements, both prices are going to go up, so, I mean, if you do not sort of control for the amount in a refined way, I mean, whatever you find in terms of the relationship between the price of trucks and the price of complements may be due to these common factors and, you know, in the overcharge you are using 155,000 data points in order to try to identify the overcharge and here we are using 17 data points on noisy data in order to try to see whether there is a difference between the period of the overcharge and the period outside the overcharge or we are looking at a correlation between the price of trucks and the margins which we know can be due to common factors without controling for them. There are so many problems of identification here that I think that, you know, out of this you really cannot gather very much.

MR RIDYARD: That is sort of partly what led me to ask the question I asked. I will try and ask it again, but it seems to me that if -- one thing you might possibly get
out of 17 data points would be at least to understand whether, for an event such as, you know, the overheating of the economy in 2007 and then the GFC and the sort of falling off a cliff effect of demand in 2008 -- I mean, even there do you see an impact on the margins of the body of suppliers because, I mean, after all, in all of this we are talking about a scenario in which, other things being equal, demand for bodies falls. The one we are interested in, of course, is the effect of the infringement, but do we get an observable pattern from a very, very extreme experiment of overheating demand and then a huge drop off in demand in subsequent years? MR HARVEY: So let me find a good chart just to look at. MR RIDYARD: It depends on how you define a "good chart", I think.

MR HARVEY: You know what I mean.

So $\{E / 1 / 135\}$. So this is the first of a series of charts that plot the gross margin of the various manufacturers over time. So this is what I was referring to earlier, Mr Ridyard. So in this chart there is a dip in the margin below the average level in the financial crisis period. Having said that, you can see, looking in the context of the entirety of the time period, it is rather up and down, so I would not -I did not reach a strong conclusion on that basis.

If we turn to the next page $\{E / 1 / 136\}$, so -SCSC Realisations, that is the company for Cartwright I spoke about earlier. As you can see here, there is a sort of variation around the level. I am not detecting a strong demand change here.

MR RIDYARD: In fact we are getting -- in quite a lot of these charts you are getting quite big variations in the margins in years when nothing much is happening to demand, so it really is not showing up very much of -MR HARVEY: That is right. There is a series of charts here which show variation in margin from year to year.

MR RIDYARD: Yes. Okay. I do not think there is much more to be said on it.

THE CHAIRMAN: Yes. Unless anyone wants to say anything more about it, that is the end of our hot tub session, then.

MR BEARD: I was going to have very, very limited cross-examination. I can actually ask a question for clarification now.

THE CHAIRMAN: All right.

MR BEARD: It may be just -- only because it flows on.

Just going back to what you refer to as the "good chart", Mr Harvey, so page 135, $\{E / 1 / 135\}$, you said on [draft] page 141 -- and it may be a date issue for me -but you said, "in this chart there is a dip in the
margin below the average level in the financial crisis period". But, as $I$ see it, the margins start falling from 2003 and continue on down towards 2008 and then start climbing up again. Are you saying that -- what are your dates for the financial crisis? I think that is the clarification.

MR HARVEY: 2008, 2009, 2010, and my eye here -- I was drawn to 2008, but you are quite right, it drops from the period before that, and I wanted -- sorry -- to clarify what I meant by "good chart". I did not mean "good chart" in terms of picking out something which showed a demand effect. What $I$ was trying to say was charts that show how margins evolve over time.

MR RIDYARD: I fully understood that. Do not get me wrong.
MR BEARD: I will take "good chart" as a jury point for these purposes, but it was more the clarification on dates that $I$ was interested in. As I say, I will review what I have but I do not think I am going to have cross-examination for Mr Harvey. But if we took a break now --

THE CHAIRMAN: Shall we take a break? Mr Ward, you have some cross-examination for Professor Neven?

MR WARD: I do actually, yes.
THE CHAIRMAN: Right. Okay. Have you any idea how long? MR WARD: 45 minutes, maybe.

THE CHAIRMAN: Okay. So it would obviously be good to finish off this subject tonight, if we can.

MR WARD: Yes.

THE CHAIRMAN: So shall we just take a short break, maybe five minutes, because we had a break just before we -MR BEARD: Yes. Sure. It is just to review what I have and I will confirm.

THE CHAIRMAN: Is that long enough?
MR BEARD: That will be fine. Thank you.
THE CHAIRMAN: All right. Five minutes.
(3. 40 pm )
(A short break)
(3.46 pm)

MR BEARD: I have been back through the questions I have got a variance on, the questions Mr Ridyard was raising or go to matters where answers have been provided by the experts, and since we are not in the business of cross-examining on stuff that has already been dealt with in the hot tub, I am content to leave matters as they are and move on.

THE CHAIRMAN: Thank you very much. Excellent. Very good. So we will have Professor Neven, then.

MR BEARD: Yes.
MR WARD: That must mean that Mr Harvey is released from purdah because there are no questions for him.

THE CHAIRMAN: I think that must be right. He was anyway when he came out of the hot tub. He does not have to be -- yes. We need to do that. PROFESSOR DAMIEN NEVEN (affirmed)

Cross-examination by MR WARD
MR WARD: You explained in your reports that you conducted the simulation analysis because you did not have the data to do a full empirical analysis of the complement studies; yes?

A That is right.
Q But, in principle, you would expect the existence of the effect is an empirical question.

A Yes.
Q Now, of course, your clients do sell a lot of trucks and quite a few bodies, do they not? Just to remind you, bodies are manufactured at Leyland and the pricing statement says from 2007 they sold about 1,000 a year. In addition, of course, they are selling bodies directly, manufactured by others, to Royal Mail and I think it is Morrisons, is it not? When they sell what you would call "naked trucks", the buyer is going to need a body or, if it is a tractor, a trailer from somewhere, are they not? Yes?

A Yes.
Q The consequence of your argument is, in effect, every
buyer will need a body or a trailer; yes?
A Yes.
Q So if you are right about this complements effect, it is quite a fundamental feature, is it not, of the market that DAF is selling into?

A Yes.
Q Indeed, the logic of your model is that even a 1\% change in the price of the trucks will have a complement effect on the -- a price effect on the trailers or the bodies, will it not?

A It will according to my simulation, yes.
Q Would you accept that it is quite likely that DAF itself would have an understanding of whether any of this was happening in the marketplace, that it might notice that customers were putting pressure on them because trailer prices had gone up or they might find that if they put the price of trucks up, they cannot get such good prices for their own bodies?

A I think that they might have a sense that the price of bodies will affect the willingness to pay of the buyers for the trucks and I think that Mr Ashworth actually said something to that effect.

Q Well, he does not actually quite say that. We can look at what he says.

A It is paragraph 73.

Q I think it is 72, but maybe you are right. Let us look at it together.

THE CHAIRMAN: Can we have the reference?

MR WARD: It is $\{D / 22 / 21\}$. He says at 72 the things he took into account, (b):
"the price that DAF UK was able to negotiate with third parties for ... bodies and tail lifts ..."

A Where is it?
Q 72. He does not tell us much about what that would mean, but my question for you, really, is whether you asked DAF at all about whether it had any of that kind of market intelligence about what the relationship between these products might be, even qualitative information.

A Shall we look at 73 --
Q Yes.
A -- because 73, I think, is more informative with respect to the issue.

Q Well, let us look at it together, of course.
"As DAF UK had to deliver a fully built truck to Royal Mail, including the body and tail lift, Andy or Geoff ... with Bob ... negotiated with the bodybuilders ... DAF UK either charged these elements to Royal Mail at cost, or took a small margin ..."

A Then let us continue.

Q Yes.
"Any proposed price increase from a bodybuilder or tail lift ... was usually used to justify a corresponding increase to Royal Mail. Conversely, on [other] occasion, due to pressure ... we were forced to ask third-party suppliers either to hold or reduce their prices."

A That is very significant because it means that what matters to Royal Mail is the combination between the truck and the body, so there was pressure from Royal Mail, lower willingness to pay. They had to turn to the body suppliers to ask for a lower price. That is essentially an illustration of what my model is doing.

Q Well, does it really go that far, Professor Neven? Is it not really just saying that they passed these things on at cost or took a small margin? I think Mr Ashworth said $£ 50$ in the example we looked at.

A Well, I think that -- the first part of this quote I think is quite telling to show that there is really a competitive constraint exercised by the competitors in the complements market, but what I think is more interesting with respect to the perception that with the complements effect from Mr Ashworth is the last sentence, in which he says Royal Mail, on occasion, was not happy about the price, and so, you know, they had to
turn to the complement suppliers to obtain a better offer, which supports the view that Royal Mail was concerned about the price of the system.

Q Yes, but it is not saying here that, as a result of that, the price that DAF offered on its part of the system was any different.

A Well, no, it does not say that, you are right, it does not say that, but it sort of supports the idea in general that it was a complement effect.

THE CHAIRMAN: Well, is it not saying that it goes both ways?

A Yes.

THE CHAIRMAN: I mean, sometimes it was used to negotiate an increase in the overall price.

A Can I see the first part of the -- because the second part is clear -- right? -- so we have to go back to the first part.

THE CHAIRMAN: Yes.
A Can we see the first part of the paragraph?
MR WARD: Yes. We have it now. (Pause)

A Yes, the fact that they charged at cost, of course, is quite significant because there is a competitive constraint that is exercised by direct procurement.

Q They just either passed it on or added a small margin which Mr Ashworth had said was $£ 50$ in the example, but
you have not asked them more generally about whether they have any experience of this complement's effect in practice?

A I mean, that is a question that $I$ have raised with them and I have asked and I never got a very clear answer, I mean -- and I think that is because I talked to the wrong people.

THE CHAIRMAN: You have asked them that specific question?
A I have. I mean, of course I have sort of done this analysis and I have asked whether this analysis corresponded to their, you know, understanding of the market, and I never got a very clear answer about this. I think that maybe it is because $I$ was talking to DAF NV and not people like Mr Ashworth. I do not know.

MR WARD: Is that in your report anywhere?

A No.
Q No. When you say you did not get a clear answer, you mean you did not get a supportive answer?

A No, I did not get a clear answer.
Q I see.
Can I just get clear one very, very basic feature of this simulation model?

A Yes.

Q It is obviously not an empirical assessment of whether there actually was a complements effect, is it?

A It depends what you mean by "empirical". I mean, it is an empirical exercise because it relies on observable, market observable, and it imposes a lot of structure. It is not -- if you mean, by "empirical", an attempt, using econometric analysis, to try to see whether, in response to an exogenous increase in the price of trucks, the price of complements may have gone down, no, it is not an exercise of that sort.

Q So it does not tell us whether, on the facts, in the past, during the infringement, the overcharge actually caused a complements effect?

A If there was an overcharge --
Q If there was an overcharge.
A -- which -- I mean, because it is also -- you know, in doing this exercise, I mean, you have to be careful not to assume that there was an overcharge.

Q I understand, but it is not a test of causation in the sense that what actually happened in the world -whether one thing caused another.

A It is not a test which relies on trying to detect through an econometric exercise the existence of this complement effect, no, it is not.

Q Now, I want to look at some of the inputs into the model in a bit more detail.

The first one is about the period of the data that
you used, and you touched on this earlier, that you used data from the period 2013 to 2015, although, of course, in fact, what we are interested in is whether there was a complements effect during the course of the cartel. It is right, is it not, that in your model you assume that manufacturers set their profit -- their prices -independently?

A Of course.
Q It is baked into your model, is it not?
A Of course.
Q One of the problems that we have here is that there is a cartel in the market as well?

A Not in 2015, I believe.
Q Indeed. That is, indeed, the problem with using that data?

A No, sorry, I think there is a misunderstanding here. I am sort of using data for 2013 to 2015, which is a period where there is no infringement, and $I$ am building a model which is a model of competitive interactions in which the truck manufacturers are setting their prices independently, and then, in the context of the simulation, I see what happens if they would all jointly increase the price by 1\%.

Q Yes. Of course, by doing that, what you are doing is assuming that there is the -- if you like, that the
infringement gave rise to a uniform increase in the
price of --

A Yes, that is correct.
Q We have no data about that, do we, because we have only looked at DAF's infringement?

A That is correct.
Q So that, in itself, is a potentially significant departure from reality?

A I do not know whether it is. I mean, I have no -- any other assumption would be complete speculation from my part.

Q But the other thing it does not take into account is the fact that the price setting itself might be coordinated. Applying a single 1\% increase across the board does not account for the fact that the price setting may not itself be independent, does it?

A But, I mean, if you have a 1\% price increase from a competitive level, this can only arise if you have co-ordination, otherwise it will not stay on. I mean, this is just ... it is a matter of definition, really.

Q Is it not the reality that what you are doing here by using this later data is just airbrushing out the effects of the decision and imposing a uniform $1 \%$ increase that simply does not capture the reality of the cartel, does it?

A No, I think that it is a way of simulating what would be the effect of a $1 \%$ price increase which is exogenous, which is off from the competitive level, which is typically what an infringement would do.

Q But in an otherwise competitive market where people set prices independently?

A But, you know, you need to look at the effect of the infringement relative to something, I mean, and, you know, it is natural to look at the effect of the infringement relative to a competitive counterfactual, which is what I am doing.

Q Can $I$ show you, please, $\{E / 28 / 1\} ?$ This is Mr Harvey's second report. \{E/28/139\}. This is his reply report. Do you have that, Professor Neven?

A Yes, I do.
Q Thank you. If we look at table 27, Mr Harvey has drawn some comparisons with some key metrics used in your model between average invoice price, average MLO cost and average annual sales. For 2013 to 2015, which is the period you use, he compares the infringement period, which he then breaks down into two phases. Would you accept that what this shows is that this data is very, very different -- the infringement period data is very different from the data you used in your model?

A The numbers are different.

Q Indeed.

A The numbers in the table are different. The question is, you know, whether that would invalidate the methodology. I mean, is it what --

Q I am more interested in the results at this point than the methodology.

A No, no, I am interested in having a sound methodology and is it that, you know, observing that you have very different prices during the period of the infringement is something that would invalidate the methodology? Why?

Q This is just completely different. You have got very limited empirical inputs into your model. These are very different inputs. They may well alter the results.

A Well, the question is whether, with these different inputs, I would calibrate very different parameters and whether I would choose a parameter constellation corresponding to the minimum of the complement effect that would be different. I mean, I do not know, honestly, I do not know, and I do not want to speculate about that. I mean, I estimate the model -- I calibrate the model in a competitive environment and I think this is the only sensible way of doing it, that you need to have a benchmark and then $I$ look at departure from that benchmark.

Q Well, let us look at another aspect.
A You know, I could not use this data because there was infringement during that period so there was no way I could use the data.

Q Well, that may be so, but it is precisely during the infringement period that we are trying to establish the extent of the complements effect.

A But that is precisely because there is an infringement that I need to have a counterfactual, and the counterfactual, $I$ only have it in the data after the end of the infringement.

THE CHAIRMAN: You mean there needs to be a competitive market --

A Exactly. Exactly. There needs to be a competitive reference, otherwise I just --

MR WARD: But you then apply that, what you have learnt from the 2013-2015 period, to decide what the complements effect was during the infringement period.

A You know, I calibrate my model on the competitive counterfactual and then $I$ simulate what would be the complement effect corresponding to a one-off, 1\% jointly coordinated increase in prices by the manufacturers.

Q Assuming that that is the only effect that the cartel has on the competitive situation during infringement.

A You know, is there a better way of simulating the effect
of an infringement, which is a 1\% increase -- it could be 1 or 10 , by the way, it does not matter. I mean, that -- I mean, the idea of infringement, if there was a coordination, is indeed that you are off the competitive equilibrium. You have supporting prices above the competitive equilibrium I think is the natural way of doing it.

Q I want to talk about different aspects of independent pricing, which is the way that trucks and bodies and trailers were sold sometimes in bundles, as we have discussed, particularly for DAF, for Royal Mail in particular, but also, as we have said, more generally. You have said in your report that you ignore this feature, that you assume that all bodies or trailers are sold independently from trucks. Is that not right?

A I do assume that the bodies and trailers are set by independent suppliers, so I do not pay specific attention to the fact that a truck manufacturer may also be a supplier of complements. That is correct.

Q You know that is particularly important given the kind of purchases made by my client?

A I do not think it is important, honestly, because of the competitive constraint that is exercised by the suppliers of bodies and trailers. I mean, this is a fairly competitive market and you see it in the quote
from Mr Ashworth. Mr Ashworth, I mean, he is clearly saying that, you know, there is a competitive constraint. So I do not think that, you know, DAF would be in a position to deviate from the pricing of the suppliers.

Q In any event, it is not a feature that you picked up in your report?

A No, there is only so much you can do.
Q Well, let us talk now about the trailer and body manufacturers. As we discussed earlier, you have simplified -- in terms of trailer and body manufacturers, we go from a reality that there are 25 to you assuming that you have two and that they are symmetric.

A Yes.
Q So that completely disregards, for example, the point that Mr Ridyard made earlier about the possibility for brand level elasticity differences, does it not?

A It imposes that there is a symmetry in the model, yes; that the brand effect for the two manufacturers are the same.

Q It would disregard, for example, differences between the manufacturers such as Cargobull that you mentioned earlier, which you said was based in Germany, and that could make quite a big difference, could it not?

A In what sense?

Q Well, in terms of, for example, its costs, its currency impact?

A Yes. I mean, I guess that, you know, it is correct that there may be differences in the cost base and this will not be picked up in my simulation.

Q You made a point that, $I$ think -- forgive me if $I$ am misremembering. I did not take a note, I do not have a note here -- you made the point that you do not know what their market shares are, do you, the difference?

A No, I do not.

Q Can $I$ show you a slightly different metric that Mr Harvey provided? This is in $\{E / 28 / 135\}$ in his reply report. This figure 26 is revenue of selected body trailer suppliers in 2013 and there are just 14 of them there. But what we can see is revenue in millions of pounds, GBP, is dramatic differences here, can we not, the scale?

A Yes.

Q So that again at least suggests that modelling on the basis of two symmetric suppliers, essentially competing in a materially identical way, is a very serious over-simplification, is it not?

A It is a simplification, but, as I explained earlier, I am not particularly worried about this. I mean, the
fact that there are many suppliers is actually a support for the assumption of assuming that there are only two because, if you have many suppliers, it means that entry barriers are very low, it means that they are producing products that are close substitutes. So this is not the assumption of this calibration that $I$ would be sort of most concerned about.

Q It does rather suggest, assuming that there are two and they are symmetrical, it is a serious over-simplification?

A Oh, it is clearly -- I mean, any model is an over-simplification of reality. The question is to design a model in such a way that it is still reliable.

Q Well, let us talk about the truck manufacturers because here, again, you have simplified.

A Yes.
Q You have gone from six to five in particular.
A Yes.
Q What you have said about this is that MAN and Iveco have market shares that are roughly half those of the other three.

A That is right, yes.
Q Can we look, now, at your plausibility report, which is \{E/10/25\}. I hope you have that to hand. I am not absolutely certain you do. I am told that you might not
have it there, Professor Neven. Would you mind looking at the screen with me? It is your own bar chart.

A No problem.
Q What we have here is figure 1, which is market shares of truck manufacturers for trucks with a gross vehicle weight over 6 tonnes in 2005, so in the infringement period, in the UK. What we can see here, as you say yourself at 4.27 below, is there is a considerable degree of asymmetry in the market shares of truck manufacturers in the $U K$, and then you say:
"DAF [UK] has a significantly stronger position, followed by Daimler, Volvo-Renault ... Iveco, Scania and MAN have smaller market shares. This observation suggests that a common understanding would be difficult to reach and maintain ..."

But if we look at this data from within the infringement, if we do as you have proposed and add MAN and Iveco together, you are going to get another competitor -- I have not actually done the maths, but pretty much around the same share as DAF, are you not?

A Yes, but what matters for my calibration is the situation in 2013-2015 and, if you were to look at that data -- I do not remember the details of the data, but I think you will find that, indeed, Iveco and MAN together have shrunk and, in particular, Iveco has
shrunk.

Now -- so that the assumption that indeed you can put sort of Iveco and MAN together $I$ think is probably more sensible for the period for which I am doing the calibration, 2013-2015.

Q Does that not rather make the point, though, that it is not representative of the period of the infringement?

A I mean, what it says is that, given that $I$ need to build a competitive counterfactual, I make assumptions that are sensible in the context of building that competitive counterfactual and then $I$ simulate the effect of the infringement by an increase in price.

Now, the fact that, you know, the competitive situation in terms of market share -- I mean, during the infringement and after the infringement, during the period for which $I$ am doing the calibration -- are different is not something $I$ can do anything about.

Q It just shows your model is departing from the reality of the --

A But again you have to explain in what way this will be important.

Q Well, it is important, is it not, if we have gone -- you have modelled one large competitor and four rather than five the same size. What we are really seeing is a lot of differentiation.

A But, you know, on what basis are you saying that adding one competitor -- I mean, having five instead of having four would make such a big difference? I mean ...

Q Well, Professor Neven, it just departs from reality. That is what $I$ am saying.

A No, but the reference here is to look at whether economic models that would be calibrated with five instead of four would give different results. I mean, that would be the question to ask and I am not sure you are shedding any light on that.

Q Is not the answer you just do not know what difference it would make?

A It is something that you can test. I mean, it is something that can be tested, and typically in these models, when you go beyond four competitors, I mean, there was not much difference.

You know, the sort of assumptions I am making here with respect to market structure are really not uncommon among competition agencies when they do calibration. I mean, the European Commission is making similar assumptions when it is doing calibration for mergers and I have in mind exercises of calibration undertaken by the Commission that imposes much more structure than I have.

Q Those calibration models are done in order to predict
the future, are they not?

A Yes.

Q What we are doing here, in fact, is trying to predict the past, is it not?

A Indeed you are right. That is right. But it is a response to -- in both instances -- to the fact that we have no data.

Q Indeed, but the ultimate question for the tribunal will be not "Are we obliged to do this?" but "Is it robust enough to be relied upon?".

A I think this is a very -- this is a question for the tribunal, indeed.

Q You will appreciate our case is that it is not. Now, just moving on to the inputs into the model, the first one is a truck manufacturer prices and costs and, as we have already discussed, you only have prices and cost data for DAF --

A Yes.

Q -- and you assume that the costs of the other manufacturers are not the same.

A Yes.

Q What you explained this morning is that you allow the prices of the other manufacturers to be calibrated --

A Yes.
Q -- but, of course, those prices are an output of the
model, are they not, therefore?

A It is an output of the model in the same way that parameters that are estimated from the calibration, so it is in the same way.

Q So it does not actually help you overcome the problem that you do not have this input?

A It does, actually, because $I$ think the fact that -- I am much more relaxed about the fact that I am assuming that manufacturers have the same cost as DAF, knowing that I allow the model to determine the prices.

Q Well, of course the costs incurred by the manufacturers are crucial, are they not, to the margin that they could earn?

A Yes, but the margins are determined by the model, so the thing is, $I$ mean, because the prices are not put precisely, I mean, this will be equilibrium margins and the models will determine them.

Q The prices may well be determined by the model, but the crucial point here is you do not have the actual costs to put in in order to determine those margins. You just have to make an assumption.

A I think that $I$ am not sort of getting my point across. I think that, you know, I am not too worried about assuming that they have the same cost because I have this flexibility with respect to the prices because the
prices will be determined by the model.

Q Let me turn, now, to what you say about the prices for bodies and trailers. I would like to go to your first report again, which is $\{E / 12 / 39\}$. I want to just take you through the steps that you take in order to generate this price. It is B.7. Regarding bodies, you do not actually have prices for the bodies, do you, other than the DAF ones?

A No, I do have prices from the --

Q We are going to look at what you have and how you get to the price that you rely on.

So you start by obtaining data on volumes for different body types in the UK market from public sources.

A Yes.

Q At (a), over the page, $\{E / 12 / 40\}$, you get data on the total number of registered trucks, so this is all trucks on the road.

A Yes, this is stock and I am assuming that the flow is equivalent to the stock.

Q Yes, exactly. So you make that assumption at (b) underneath. Although it is a stock, you assume that the flow, ie the distribution of sales in the period you are interested in, will be the same.

A Yes, that is right.

Q Then you say at B.8:
"The Department for Transport does not provide data on body values ..."

So then you say:
"I have obtained this data ... from third parties [which is the market intelligence report]. [It gives] aggregate volumes of sales and average values for popular body type ..."

So you say, three lines from the bottom, you derived average prices for body type and year. We see that in the graph. But then what happens is you do not actually apply those, do you?

A Correct them.

Q You make some more adjustments. Well, you say
"correct", but you certainly adjust, and you say at B.9, on page 41, $\{E / 12 / 41\}:$
"The estimates provided by the Absolute Report reflect the factory gate prices, hence they do not include amounts associated with the fitting of the body on the truck or amounts associated to tail lifts or other products normally sold with ... [it]."

Then you say:
"To reflect the actual prices ... I have used the prices collected in the Absolute Report to compute relative prices between bodies, taking box bodies as the
reference. I have then used the average body price obtained from DAF manufactured body price data (which relates to box bodies) as the reference value ... I have obtained adjusted values for other bodies by multiplying their price relative to box bodies in the Absolute Report by the reference value of box bodies obtained from DAF data."

So what you have done here is you have actually increased the prices of the bodies, have you not, above the level of the Absolute Report?

A I have increased the absolute value of both the Absolute Report using DAF data, which is, of course, much more precise.

Q The effect of that is to increase the scale of the complements effect in your model, is it not?

A Is that clear? It is not so clear, actually, because, I mean, in my -- the results of my simulation are not clearly -- actually, you see that in table 1 of my third report, is that the value of the complements does not have such a strong effect on the overall complement effect beyond -- I mean, what really is driving the result is the margin, so $I$ do not think that you can say this and it is certainly not borne out by the result.

Q Would you accept that what we have here is a whole series of assumptions, so very different from simply
relying on actual invoice prices?
A Oh yes. I mean, indeed. I mean, there is an approximation here. Of course I am using DAF data because it is reliable and $I$ know what are the weaknesses of the Absolute Report is that, you know --

Q You are assuming, in effect, DAF's box body prices are sufficiently representative that they can be used as a scale across all types and across all manufacturers?

A No. I can use the difference between DAF's box body and the absolute price for box bodies.

Q Indeed.
A Yes.
Q Then you are extrapolating that, essentially?
A That is correct.
Q So it is a very long way short of a robust price derived from actual data, is it not?

A I wish I had better data.
Q Of course. Then for trailers, trailer prices, you base the entire analysis on Royal Mail's purchases of two types?

A That is right.
Q So, again, it is an assumption that the entire trailer market is equivalent to Royal Mail.

A Yes. That is -- I mean, I am only using these two trailers. I tried to look for reliable sources of data
on trailers, but you do not get something -- I did not find anything comparable to what $I$ found from the Absolute Report.

Q Then when we go to costs, we have heard already this morning that what you use is margin information, which is not a measure of marginal cost.

A That is correct.
Q You accepted this morning -- sorry, not this morning, it was this afternoon -- that within the average margins, body margins would be lower than trailer margins.

A Yes. I think it is likely to be the case.
Q So this is another significant over-simplification, is it not?

A I did a sensitivity on that.
Q What I want to ask you now about is the outputs of the model and we talked this morning about how you did a first specification and then, after Mr Harvey had made his point about the width of the parameters, you reconfigured the model and the result of that was a considerable reduction in the complements effect; do you recall?

A Yes.

Q Mr Harvey showed the tribunal this afternoon a table which contained variation in maximum, if you recall. We can look at it again, but $I$ also want to show you an
updated one. Just to remind you and to remind the tribunal, we are talking about at $\{E / 28 / 143\}$. Sir, I am almost finished. I am on my last few questions.

THE CHAIRMAN: Fine.
A E/28?
MR WARD: 143. You will recall we looked at this about 45 minutes ago or so.

A Yes.
Q This is a table that took your results, and he used the minimum and median that you had provided and then recalculated a maximum which was not in your results, and then what Mr Harvey pointed out in the hot tub is a great divergence of ratios of maximum to minimum. Do you recall?

A Yes. I recall that, but this is based on the output of my first model.

Q Exactly. Now we have the same table, which I am pleased to say is agreed between the parties, which deals with your updated results, and this -- I do not know if you have a hard copy, probably not. It is -- let me just get the reference. It is J4/445. Could we go to page $\{J 4 / 445 / 3\}$, please? Do you see that, Professor Neven? It is the same table. What we see is -- if we read along the rows, we have got the segments, we have got
the "Previous minimum", which means I think your initial model, then the "Revised minimum", which is your second version, and then the "Maximum", which Mr Harvey calculated.

A But -- okay.
Q I just want to explain what it says before we start debating it -- then "Previous ratio (maximum to minimum)", which was in the table we just looked at, where we see it ranges from 1.0 to 4.0 , and then in the last column we have "Revised ratio (maximum to minimum)", which -- reflecting your newly reduced minimum results. Here we can see a variation from 1.6 to 13.6 in terms of ratio. Do you see that?

A Yes.
Q As I said, I am pleased to say that the arithmetic is agreed and I want to put two points, really, to you about this table. The first one is: would you accept that these extremely wide variations between the maximum and the minimum itself undermines the confidence we can have that the model is sufficiently specified?

A No. First observation is that this table is not actually representing the maximum of the second simulation. It is basically using the maximum of the first simulation to do minimum of the second simulation, so to have a like-for-like comparison you should have
looked at the maximum from the third simulation, but anyway.

Q I am so sorry, I thought it was agreed.
A Sorry, the numbers are correct but they are not the relevant numbers. But it is okay because if you were to do the correct exercise they would not be very different so that does not matter all that much. But as I explained earlier, I am not particularly worried about the fact that in a model like this one, in which the model is undetermined, that $I$ have very different parameter configurations that are valid as long as I can understand them, and I understand that these maxima do not make any sense and so -- I mean, maybe there was a point that has not been sufficiently emphasised in the discussion today, is that, you know, I systematically take the most conservative approach possible. I always take the parameter configuration that yields the smallest possible complement effect, even in circumstances in which $I$ think that the corresponding parameter configuration does not make so much economic sense.

I mean, for some of the segments that $I$ discussed earlier, the minimum is actually achieved for prices of the competitors that are $30 \%$ above the prices of DAF. I do not think it makes a lot of sense, but that is
where the minimum is, so because I want to be conservative, because $I$ know the limits of my methodology, I take this minimum.

Q Saying it is conservative assumes that the model is reliable and one of the answers must be right, does it not?

A I do not think this is the way in which you want to look at those models. I mean, you do not want to, I mean, look at the results of these models, of these simulations, and say there is just one parameter configuration that is correct. No. I mean, you have to take into account the characteristics of the methodology, you have to take into account the fact that inherently they will do a diversity of solution and you have to assess them overall without sort of focusing on one number.

Q Does not that shear range of solutions that $I$ am putting to you just show that the model does not have adequate data points in it to provide reliable answers?

A I would not reach that conclusion. As I said earlier, I have confidence, some confidence -- I do not want to over-sell -- I mean, I have some confidence in the results of this calibration exercise because of the ranges of valid parameter configuration that $I$ find and because of the interpretation that $I$ can give.

Q Let us just look at that last point, which is my final topic. If we look at this table, I think the point you were making earlier in the hot tub is that, for example, segments 4, 7 and 13 are similar -- and we do not have the precise descriptions here -- and you pointed to the fact that under the revised minimum they were $0.31,0.30$ and 0.29 .

A That is right, yes.
Q But if we look at your first set of results --
A My first set of results? Yes.
Q -- 4 and 7 are respectively 0.36 and 0.77 .
A Oh, but, I mean, there is no doubt that my second simulation is much better than the first one.

Q You were quite content to rely on the first one, were you not?

A All what $I$ can do is that $I$-- can say, sorry -- is that I am very grateful for Mr~Harvey to have pointed out to the fact that I had looked at a subset of parameters that was not sufficiently wide and I have now looked at an even wider set of parameters than Mr Harvey had done and I am now sort of content that I have found the true minimum.

Q Well, part of what you are saying, Professor Neven, is that, because you find the results plausible, the model must be valid.

A What $I$ am saying is that, you know, you do not want to assess the output of these models simply on the basis of the diversity of parameter configuration that you get. You want to look at what these parameter configurations mean, what the economic interpretation is, and this is what I have tried to do earlier today.

Q But justifying the model by reference to the fact that you think the results look plausible is just hopelessly circular, is it not?

A No, I do not think so, because when you start that sort of exercise, you know, you do not know what sort of results you are going to get, and if $I$ had, you know -it is circular if you inevitably get to the conclusion, and here it is not circular because it is entirely -you know, it would have been possible for this simulation exercise to yield things that were completely random, I mean, uninterpretable, and it is not the case.

MR WARD: I have no more questions. Thank you.
THE CHAIRMAN: Re-examination?
Re-examination by MR BEARD

MR BEARD: Just a couple of quick re-examination questions. Mr Ward put paragraph 73 of Mr Ashworth's statement to you, Professor Neven. We will deal with in submissions the fact that that was not put to Mr Ashworth and there was no questioning about these
issues of any DAF witnesses.
THE CHAIRMAN: Maybe they were content with what he actually said.

MR BEARD: Well, maybe. We will come back to that, but paragraph 47 of the pricing statement, $\{C / 9 / 17\}$, could we go to that? Have you seen this pricing statement, Professor Neven?

A Where would that be?
Q It will pop up on the screen, but you are aware of what the pricing statement is?

A Yes, but I do not know which part --
Q No, no, sure. I just will not go to the first page. So this was a statement put in by way of evidence in relation to pricing matters by DAF at the order of the court. If we could just expand 46 and 47. Have you seen these paragraphs, Professor Neven?

A Some time ago, yes. Okay. So essentially 46 is referring to where, again, the fact that at least the dealer is going to take into account not only the truck but also the bodywork and, of course, the willingness to pay of the buyer will be a function of both, yes.

Q In relation to 47 that is customers, what is that talking about in the context of the debate we have been having today?

A Yes, it is very clearly what we were saying earlier,
that the customer would take into account the cost of the body. Actually it is explicit, "when considering the sales price that would be paid for the Truck without the body", so that is quite direct.

MR BEARD: Yes. We will come back in submissions to the fact that this was not put to any DAF witnesses.

If we could go to $\{E / 12 / 60\}$, you referred to one sensitivity analysis at [draft] page 168 of the transcript. You referred to a sensitivity analysis in relation to body and trailer margins. Is that sensitivity analysis found -- I recognise this is
leading -- in the section entitled "Sensitivity analysis" in your first report?

A It was in the first report, this one, I think, but I did a sensitivity analysis also in the context of the third report.

Q It is in the third report. Okay. Sorry.
A I think I discussed it earlier this afternoon, so it is IC63.

Q The sensitivity analysis section begins at page 17, so \{E/63/19\}, I think, two pages on. Sorry.

A It is page 22 in the --
Q Right, $\{E / 63 / 21\}$. Page 22 , did you say?
A Page 22 of the tribunal's -- that is right.

Q Could we just flip over again, \{E/63/22\}. Thanks. Is
it this one?

A That is right.
Q Do you want to explain very briefly what you have done there?

A No, I think that we discussed it earlier. I think what I did is $I$ changed the body prices as well as the trailer prices, which of course had the margin, so increased them or decreased them.

Q So that was the sensitivity you were referring to?

A Yes.

Q That is helpful. I was just trying to clarify for the transcript. I do not have any further questions in relation to these matters.

THE CHAIRMAN: Thank you very much.

MR BEARD: Thank you.
THE CHAIRMAN: Thank you, Professor Neven. I think we have finally come to the end of your evidence. Thank you very much for all your help and to Mr Harvey as well. Tax.

MR BEARD: What a better way to spend a Tuesday, sir.
MR WARD: I am pleased to say I think it is the last one.

THE CHAIRMAN: Yes, I thought you might say that.

MR BEARD: Another negotiation has been had by the sound of it.

THE CHAIRMAN: Has there been any further narrowing?

MR WARD: Yes, I think there has been significant narrowing. THE CHAIRMAN: Good.

MR BEARD: At the moment $I$ am going to be an hour or so, maybe a bit longer, I will look overnight, but I certainly at the moment do not think $I$ am going to be half a day, so ...

THE CHAIRMAN: In terms of our preparation, is there something that we should concentrate on in terms of the re-reading?

MR WARD: I gather there is a letter on its way which will explain the scope of the issues.

MR BEARD: Yes. I think many have fallen away. If Mr Coulson says there is a letter coming, then I am going to wait and see what Mr Coulson has done in relation to these matters.

THE CHAIRMAN: So we can start at 10.30 tomorrow?

MR BEARD: That is absolutely fine as far as $I$ am concerned. I do not want to speak for Mr Lask, but -MR WARD: I am confident he is not going to say he wants the whole day minus an hour.

THE CHAIRMAN: All right. So 10.30 tomorrow. Thank you. (4.33 pm)
(The hearing adjourned to 10.30 am on 14 June 2022)

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