IN THE COMPETITION APPEAL TRIBUNAL

Case No: 1284/5/7/18
1290/5/7/18

Salisbury Square House
8 Salisbury Square
London EC4Y 8AP

Tuesday 28 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:

Royal Mail Group Limited
BT Group PLC and Others v DAF Trucks Limited and Others **Claimants**

v

DAF Trucks Limited and Others **Defendants**

A P P E A R AN C E S

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)

Tuesday, 28 June 2022

(10.30 am)

THE CHAIRMAN: Good morning.

MR BEARD: Good morning, sir.

Closing submissions by MR BEARD

MR BEARD: I am going to move over to my closing submissions on behalf of DAF. Now, the way I am intending to structure these closing submissions is, very broadly, in the way we have structured our written closing, so I am going to deal with matters in two broad parts. The first part, which will certainly take all of today and probably a chunk of tomorrow, we will be looking at the evidence and the issues in relation to overcharge. So I am going to work my way through looking at the econometric issues, theory of harm matters, claimant-specific evidence and then I am going to pick up issues on law, points on causation, independence, in the light of those submissions.

THE CHAIRMAN: Your volume 1?

MR BEARD: Volume 1, exactly. Then volume 2 I will deal with from tomorrow through into Thursday morning.

THE CHAIRMAN: Okay.

MR BEARD: So that is the way I am going to deal with matters. Without further ado, I am going to move on to the econometrics. Now, obviously, we have four issues that are rather key in relation to the econometric analysis: issues on exchange rate and currency, the global financial crisis issues, the emissions fixed effect issues and then the validity or otherwise of the before/during analysis.

Unlike Mr Ward, I am going to take a reasonable amount of time in relation to working through these issues, so I will go relatively slowly, certainly on the first couple. I apologise if that is too slow and, obviously, if you want me to move along faster, I will. But I am going to start then with the exchange rate issues.

THE CHAIRMAN: I notice you have, I assume deliberately -- you are starting with econometrics before theory of harm.

MR BEARD: Yes.

THE CHAIRMAN: Is that on the basis that that was the order in which it was considered?

MR BEARD: Well, no. I am not making any presumption there. I think Professor Neven gave evidence that he was thinking about the two things alongside one another when he was preparing these materials, but we recognise that the theory of harm can be seen as a complement to issues on econometrics, but, since we all recognise that the evidence in relation to the regression analysis is critical to the question which this tribunal is focused upon, which is was there an effect and, if so, what was the level of any adverse effect, it seems rather important one way or another to deal with it in some detail.

It does not really matter whether it comes first or second, but I think it may well assist if we look at the econometrics and then look at the theory of harm because in a way what we need to look at is the extent to which the theory of harm is a complement to the econometrics, which was the way that Professor Neven put it.

THE CHAIRMAN: But it also could be if you came -- if you had a theory of harm before you start on the econometrics, which I imagine probably both experts did, it can shape the way you look at the econometrics and the big issues in that.

MR BEARD: Well, I think -- up to a point I think is the issue here because I think one needs to look at what was actually done in relation to the econometrics and to what extent the positions taken were actually justifiable in relation to the overall analysis that is carried out, rather than saying were they trying to steer in one direction than the other. Therefore that is why in part I want to start with the more objective, I suppose one might see this, econometric evidence and look at the modelling and the problems with the modelling that, in particular, Mr Harvey's approach has because I think there are some fundamental problems with Mr Harvey's analysis which are very, very significant and have huge impacts on the overcharge estimate that he puts forward, never mind when we get to Professor Neven's position.

Of course, in relation to issues of causation, of course, the burden lies with the claimants, we know that, but even when we are into issues of quantum, although there is a lot of talk about the broad axe and we do not shy away from the tribunal wielding a broad axe where it is appropriate, I think it is also important to bear in mind that we do have an awful lot of data and analysis in relation to the econometric analysis and therefore we need to be slightly cautious about just wielding broad axes in the context of that sort of analysis. I am not saying it gives some final answer and that broad axes are not to be wielded in certain parts, but I think it is important to have that in mind.

THE CHAIRMAN: Yes. I mean there are exchange rate and GFC and these are difficult issues.

MR BEARD: Yes. We are not shying away. I think to lapse into the terrible cliches of the X factor -- I mean, we have all been on multiple journeys in relation to understanding these issues, I think. Overall one has been on a journey where one starts off sceptically about the idea that there could be no effect of the infringement, but more particularly --

THE CHAIRMAN: I do not think we are like X Factor judges!

MR BEARD: I am not even going to go there, sir. That would be quite wrong. That could be for a side discussion at some point amongst the teams, I am sure.

Let me then move to the exchange rate problems, if I may. I am going to take you, if I can, on a journey in relation to it. It may well be a slightly slow journey but a journey nonetheless. The reason it is so important is because Mr Harvey is putting forward his econometric analysis to justify and support Royal Mail and BT's case both on causation and quantum. But if one looks at the issues that he raises and the way he has gone about consideration of exchange rates, if we are right about this issue -- and we say we plainly are -- it actually eliminates all of the overcharge that he puts forward in relation to the before/during period. So that is the very high overcharge that he puts forward, which is around 11.6%. That just is wiped out if we are right about the exchange rate issues.

In relation to the during/after analysis, even on

Mr Harvey's account, we would be moving from what he says is 6.7% down to 4.2% and that is in circumstances where he would still be maintaining his GFC three-year dummies, which obviously I will come on to and say why that is wrong too. So these issues in relation to exchange rate are clearly very important.

Now, Mr Ward in his submissions, both in opening and in closing orally but also in his written submissions, tried to portray this issue as two experts sort of picking different sorts of restriction in the way that you deal with exchange rates in the model and you can kind of pick one or the other. It was sort of six of one, half a dozen of the other. We say that is just wrong. There is a fundamental flaw in the way that Mr Harvey carries out his analysis. Professor Neven has referred to it as imposing a straitjacket in relation to the operation of the regression and I will try to explain why that metaphor gets used. But it does not matter what the metaphor is in these circumstances. The key point is that Mr Harvey's approach involves converting all UK truck prices, not costs -- leave that for a minute. I am just focusing on prices -- it involves converting all UK truck prices into euros and using the weekly exchange rate between pounds and euros; okay?

Now, as I say, I do want to work through this slowly and what I want to do is go back to the basic framework of the regression. Now, I apologise in advance to Mr Ridyard, who is cryingly familiar with these sorts of regression equations, but I think it is actually helpful to look at what a regression equation is doing and what the form of regression equation in this context is doing.

Now, broadly speaking, the form of the regression equation is not different between the two experts and, sir, I am just going to, for explanatory purposes, pick up the form that Professor Neven has used. So could we go to {E/IC11/19}? If you bear with me one moment, I just want to get my hard copy of that which I forgot to do. (Pause)

This is in the section of Professor Neven's first report on overcharge where he is explaining how regression works. In fact, if we could just go back a couple of pages from page 19 to page 11, {E/IC11/11} -- sorry, page 10, my mistake, {E/IC11/10} -- you will see at the bottom there, 2.4, "Background on regression analysis". I am not going to go through all of this, but this is actually a very useful introduction, certainly from my point of view, to how one carries out regression analysis. The basic proposition:

"Regression analysis is an approach used to estimate the relationship between one variable of interest (the 'dependent' variable) and several variables which are expected to affect the variable of interest ... through the estimation of a regression model."

It allows for statistical inference, namely an assessment of whether the relationship is unlikely to be due to chance. Then Professor Neven sets out some very simple models here just to explain how regression works.

If we could just go back then to page 19, {E/IC11/19}, which is where Professor Neven sets out the basic relationship, the basic regression equation that he is dealing with here. Now, on the left-hand side you have got a log number, but it is critically the dependent variable. It is the invoice price. That is what we are interested in studying here through the econometrics.

What we are interested in is what does the econometrics tell us about the relationship between invoice price and various other factors. The other factors are put on the right-hand side of the equation. Now, we can leave to one side, on the right-hand side, a, which is a constant, which is a basic proposition that is put in to this sort of equation. We leave that to one side. Then we have got a gamma and infringement t. Now, what that is is the infringement variable. This is what we are interested in: how much does that variable correlate with the invoice price? That is what we are really interested in studying here. The gamma is just the coefficient on the infringement variable. Then the next term that we have is beta, which is, again, just a coefficient, and then we have a log of the MLO costs.

So what we are putting on the left-hand side of the equation is the variables, the explanatory variables, for the left-hand side of the equation. So we have constant infringement variable of the coefficient, coefficient with MLO costs, so obviously there we are looking at to what extent do the MLO costs data explain or correlate with the invoice price on the left-hand side, and the coefficients here will tell us how much explanatory value, how much correlation, we are having with the invoice price.

Then if we carry on through the equation, we have another Greek coefficient constant and then we have X. Now, X here is technical characteristics, and that is a set of variables governing the trucks sold in the UK. Actually we can see this if we go over the page to page 21 -- sorry, two pages on, {E/IC11/21}, because what I am running through is what is set out in the report. But:

"Xijt stands for a set of explanatory variables related to the technical characteristics of each truck. Technical characteristics are important for capturing differences in the willingness to pay of customers for a truck. The characteristics included in the model are:

"Horsepower ... as one would expect an increase in this to lead to an increase in the purchase price of a truck.

"Cabin type ...

"A dummy variable [for] ... rigid or a tractor ..."

Because you have fundamentally different characteristics between a rigid truck and a tractor truck.

So if we then go back to the equation, so what we have got is infringement, costs, trucks characteristics. Then we come on to Z, and Z is a collection of demand variables. Again, one can see those are explained in broad terms back at page 21, {E/IC11/21}, and it is actually "a set of explanatory variables that capture the evolution of market demand over time. These variables are discussed in more detail in subsequent sections, and can be classified into two main categories".

(f) then explains variables based on DAF data. Then (g), if you go on, {E/IC11/22}, "Variables obtained from public sources". So there is a whole collection of variables that are being tucked into the equation under that Z.

So if we go back to page 19 again, {E/IC11/19}, what we are seeing here is the equation, left-hand side invoice price, and then looking at whether or not the infringement variable correlates with it, whether or not the costs correlate with it, whether or not the truck characteristics correlate with it and to what extent and then a collection of demand variables; do they correlate with it? So what you are thinking about is how are those prices being affected by or correlated with changes in demand under that collection of Z variables, changes in the characteristics under the set of X variables, in relation to the costs under the MLO costs variables or by reference to the infringement control variable.

Then you have a couple of other terms included there. So you have alpha j, which is fixed effect for modified truck series and emissions standards, so that is another explanatory variable that is included, and then the next variable along is fixed effects per quarter and then the final term is actually an error term in relation to all of this.

Now, I am not remotely going to get into the maths of how all this is modelled, highly complicated programmes taking all of the data that we have. If we just think about the during and after analysis for the moment, it is taking all of the data that we have on all of the invoice prices for all of the trucks in that period and all of the MLO costs data which we have at truck level and all of these demand variables and all of these truck characteristic variables and the other matters and asking how closely they correlate and provide an explanation of the invoice price.

THE CHAIRMAN: So they are all meant to add up to the invoice price?

MR BEARD: Effectively. So I think the residual error term -- the idea of the regression modelling is that the residual error term is as low as possible and therefore what you want to do is specify the regression so that you are capturing the explanatory effects of these different variables. But if you mis-specify a regression, in other words you miss out a key factor, then obviously, in those circumstances, something else could be explaining the changes in invoice prices and your regression is not going to capture it.

So what Professor Neven and his team have done in designing this regression is try to capture what are likely to be the key factors that could affect invoice prices: costs obviously. Changes in costs, one would expect changes in prices. No issue there, for example, so obvious why costs would be in; truck characteristics. As we have already explained, the willingness to pay depends on what sort of truck you are actually buying; demand. If demand is higher, then it is likely that, all things being equal, the invoice price that can be charged in relation to a particular truck will be higher.

So what you are trying to do is control for all of those different factors and using a data set that crosses the during period and the after period, and that is obviously important here. So you are trying to put together an equation that captures the factors that could influence prices and you are doing it during and after because you are looking at the after period and saying, "Well, how do these factors affect prices during the after period and what does that tell us about the situation of effect during the infringement period?", because that will then inform the coefficient on that infringement variable.

THE CHAIRMAN: So if this is working properly before the infringement period, all the other variables that you have taken account of should add up to the invoice price?

MR BEARD: I am not going to say "add up to" because it is not quite, but it will provide -- if you have fully and precisely specified a regression equation -- and I do not think any economist would ever say that you can perfectly specify a regression equation -- but insofar as you can do your best to get there, then what you would find is that the coefficient values across the variables will explain, correlate with, the invoice price.

THE CHAIRMAN: So using the equals sign is not completely accurate then?

MR BEARD: Well, I am just slightly concerned --

MR RIDYARD: I think it is because the last term, the error term, just picks up everything which has not been explained by everything else, so it will always be equals because the error term is just the stuff that you cannot explain with the things that you have on the right-hand side.

THE CHAIRMAN: But the other side you cannot explain is potentially in the infringement or not?

MR BEARD: No, because you are picking up -- what you are trying to identify is -- because you are using during and after, what you are trying to identify is the extent to which the infringement was causing invoice prices or, rather, is correlated with invoice prices under this regression during the infringement period; in other words, what the regression would be picking up is a differential effect of the infringement variable during the period and after the period because that is what during and after is doing, exactly.

THE CHAIRMAN: Yes.

MR BEARD: Now, I am sorry to have laboured that exercise but I think it is important --

THE CHAIRMAN: Sorry, can I just say, does Mr Harvey adopt pretty much the same approach then?

MR BEARD: Yes, in terms of the equation form, it is pretty much identical. I can provide the references to you if you want.

THE CHAIRMAN: Yes.

MR BEARD: I am grateful to Mr Bourke. For his before/during equation, it is at {E/IC2/69}, and for his during/after equation, it is {E/IC2/73}.

THE CHAIRMAN: Thank you.

MR BEARD: The reason I have gone through this is because you have this explanation in the document about the different variables. Obviously I am going to come back to Professor Neven's regression, but it is just looking at the form of it that is important for these purposes, what we are doing and why in relation to all of this.

Just going back to where we started, what we are interested in is what happens, how are the matters that are identified on the right-hand side correlated with what you are identifying on the left-hand side, and what you are concerned about on the left-hand side are the prices that people in the UK paid for trucks. Now, that is the dependent variable. The dependent variable is prices in pounds for trucks. That is what you care about here. That is what this whole regression is trying to do. It is trying to --

THE CHAIRMAN: There is nothing in there about exchange rate, is there?

MR BEARD: Well, there is nothing there about exchange rate so now I am going to come on to what Mr Harvey does and I will come back to what Professor Neven does. Exchange rates feature in Professor Neven's exchange rate in relation to the MLO costs data because of course some of the costs -- a small part of the costs were incurred in pounds in the UK and a lot were incurred overseas. So that variable, if you are going to put it in a single currency, you have got to make sure all of those costs are dealt with on the same basis.

THE CHAIRMAN: So that is converted into pounds?

MR BEARD: So that will be converted into pounds and I will come back to that. But what he is doing is converting into pounds the costs that are being felt in the UK that are affecting the UK pricing. That is what he is doing, and it is on the right-hand side that he engages in consideration of the exchange rate.

But what Mr Harvey does is completely different and this is why it is not six of one and half a dozen of the other. He takes the left-hand side and says, "I am going to run my regression not in relation to pound prices but in relation to euro prices". So rather than asking all the explanatory variables on the right-hand side to try and explain or correlate with pound price changes, he says, "No, no, no, no. I am going to convert them all -- all those prices into euros and then I am going to ask the explanatory variables to try and explain those euro prices". This is crucial. What he then says is, "If those explanatory variables cannot explain that -- the cost, the demand, the truck characteristics and so on, if they cannot explain those euro prices, then I am going to attribute all of that other correlation to the infringement variable". That is what he does.

Why does Professor Neven refer to this as a "straitjacket"? Well, what he is doing -- the reason he refers to this as a "straitjacket" is because of what

Mr Harvey does with the left-hand side dependent variable, because what Mr Harvey does is he says, "This is how exchange rates affect prices. It is through a weekly changing euro exchange rate". That is what he does. He says, "I will impose on the model the requirement that the dependent variable, the price, is subject to the specific exchange rate control that I am imposing", which is this weekly change in prices or weekly change in exchange rates. It might not always change, but it certainly can.

The problem with that is -- and the reason why Professor Neven refers to it as a "straitjacket" is you have effectively baked the exchange rate effect at this weekly rate into the prices, so you are essentially saying assume DAF changes its prices in the UK on a weekly basis in response to the euro/pound exchange rate and then, as I say, ask how the explanatory variables explain those assumed prices, because we know the actual prices are charged in pounds but Mr Harvey is carrying out the whole regression in euros. Then, as I say, if you see any differences, Mr Harvey treats that all as infringement effect.

Now, we say that is just fundamentally wrong when the dependent variable that you are looking at here is prices in pounds and what you are interested in doing is identifying whether or not the explanatory variables on the right-hand side are explaining pound prices. I think it is important to be clear what Mr Harvey actually does with this euro exchange rate. What he is saying is that, for every percentage change in the exchange rate on a weekly basis, you change the price by exactly the same amount. You assume that to be the case.

The effect of what Mr Harvey does is that he is changing the prices on a weekly basis that he feeds into the equation and he is requiring the margin that DAF earns, the margin that DAF earns on each truck, in euros to remain constant. That is what he is doing by this exchange rate imposition on the left-hand side of the equation. He is doing this even though the pound/euro exchange rate at certain points was fluctuating wildly.

SIR IAIN MCMILLAN: Can I ask a question?

MR BEARD: Please.

SIR IAIN MCMILLAN: Is Mr Harvey doing that because DAF at the European level is accounting for its income, its expenditure and its profits in euro and he needs to take account of that and also, when Mr Ashworth passes up the chain for authorisation for pricing a particular contract, that his bosses in the Netherlands are going to be thinking in euro and he has to take account of that, which he thinks Professor Neven has not? Is that --

MR BEARD: Let us take it in stages. Yes, that is part of Mr Harvey's account as to why he does this, that is true. I am going to come back and work through that evidence and explain why that is not the case.

But I am just focusing on the very brutal approach that Mr Harvey is actually applying to the prices because we say that, yes, on some of the approval mechanisms there was reference to actual exchange rate. We are not denying that at all. But what we are also saying is there is no basis for saying that that meant that actual prices in pounds were fluctuating on a weekly basis to follow the euro.

So I will come back to why the reasoning he gives does not stack up, but I think it is really important to look at just how severe the constraint is, because it is one thing to say, "Well, there was consideration in the approval chain of actual exchange rates from time to time in relation to what was a minority of trucks sold in the UK". That is one thing and we accept that. It is another to say, "And that means that you change every truck price from pounds to euros rigidly on the basis of this weekly exchange rate", because even in relation to -- and I will come back to this -- even in relation to the approvals process, they are not saying, "Oh, no, no, and the decision we took was, because of the exchange rate, we must move the pound price by absolutely that particular weekly exchange rate". They took them into account, yes, no doubt about it, but there is not evidence that they were actually moving each price in this way that Mr Harvey's mechanism does.

SIR IAIN MCMILLAN: Thank you.

THE CHAIRMAN: Can I ask, you said that the effect of Mr Harvey converting into euros was to keep the euro margin constant.

MR BEARD: Yes, that is what it does. That is what he does. It is a product of the way that he operates the control. I do not think it is disputed. I do not think there is any issue here.

THE CHAIRMAN: Can I just understand that, then? So we assume the pound strengthens, so the price in pounds is worth a lot more in euros -- yes?

MR BEARD: Yes.

THE CHAIRMAN: -- but the euro costs remain the same --

MR BEARD: Yes.

THE CHAIRMAN: -- so they are making a bigger margin?

MR BEARD: No. On Mr Harvey's model you drop the pound price effectively. That is what he is assuming. He is assuming that, in those circumstances, the pound price in fact would be lower.

THE CHAIRMAN: Why is he assuming that?

MR RIDYARD: He is assuming, if you like, that the pound price should be lower, so if it is not, then, as the chairman says, the margin goes up.

MR BEARD: Exactly. For his regression he is assuming the pound price should be lower, and that is why he is keeping the margin --

THE CHAIRMAN: Because of this immediate pass-through?

MR BEARD: Yes.

We just say this is all made up and I am going to come on to why the evidence just does not bear any of this out in relation to price changes, which Sir Iain is referring to, but also in relation to margins that you have just picked up, sir.

THE CHAIRMAN: But is this a point of principle and is it sort of dealt with in economics literature, as to what you do when costs are incurred in one currency and prices are in another? I assume it comes up quite a lot.

MR BEARD: Well, yes, because normally the approach is you make sure that there are relevant considerations of the change in pricing fed through into the costs explanatory variable, which is precisely what Professor Neven does.

THE CHAIRMAN: But you are saying that where -- you always convert into the dependent variable; is that right?

MR BEARD: Well, you are asking yourself -- you just start with the question, "What are we trying to do here?". We are trying to understand what correlates with changes in pound prices. I mean, that is just the fundamental question that we are tackling here. We know all the trucks were sold in pounds, no issue. Then the question is: how do you best use the econometrics to explain, show, the correlation between different explanatory variables and that explanatory variable?

We have not encountered a situation where an econometric analysis was run, as Mr Harvey has tried to, which is to say, "Okay, well, we will take the dependent variable and we will completely change it round by this constrained exchange rate mechanism". So I am not sure that you are going to find economic literature that deals with this because it is so orthodox to look at the costs issue -- because that is how the exchange rate feeds through. We will come back to it when we deal with Professor Neven's analysis, but we are talking about the costs here. We are talking about the costs being incurred in euros.

The other factor is the one that Sir Iain has identified, which is these questions of approval, but they do not go anywhere close to saying that you keep margins steady throughout -- euro margins steady throughout or that you move prices on a weekly basis following the exchange rate.

I am sorry, Mr Ridyard?

MR RIDYARD: I mean, you are saying -- if there was a definitive textbook answer to this question, then would it -- I mean, I am sure Professor Neven would have referred to the textbooks and shown it to us. The fact that you are explaining it from first principles and you are doing a nice job and everything and it is all clear -- the fact that you are explaining it from first principles, does that not suggest that there is not a single right answer to this complicated problem of how you deal with exchange rates and Professor Neven's approach may be better than Harvey's or it may not and obviously you are making the case, which is fine. But I think the chairman's question was: is there an answer off the shelf that predetermines how this thing should be specified?

MR BEARD: No, I am not for a moment suggesting that -- if there was a textbook answer, we would not be here. But have we seen in any econometric analysis where, obviously, these sorts of issues arise -- have we seen models where there is a flipping of the dependent variable as the means to deal with exchange rates? We have not seen that, no one has identified that, whereas there are lots of cases --

THE CHAIRMAN: It is not really a question of principle; it is a point on what makes best economic sense.

MR BEARD: Yes, undoubtedly that is right. The only point I am making is we have not seen anything where -- obviously, sir, you are right, economic regressions are carried out in all sorts of circumstances, not predominantly in relation to competition damages claims but all sorts of ways of making all sorts of policy decisions, and of course there are lots of times when regressions are being considered where you do have cost inputs that are incurred in foreign currencies -- no doubt about that -- and obviously you also deal with multi-national groups making decisions about matters, which goes to the point Sir Iain is referring to. But that does not mean that we have identified any situation where a similar approach to Mr Harvey's was adopted.

But let us -- I am perfectly happy to accept we do not have a textbook answer and I cannot point to one economic principle and say, "And that tells you how this should come out". I cannot do that. What I can say is that the way in which Mr Harvey has gone about this is not justifiable in the circumstances of this case and it has a massively distortive effect.

Furthermore, as we will come on to show in relation to Professor Neven, what we see is that Professor Neven is able to deal with the subtleties of these issues, because the real problem arises for Mr Harvey that, because of the way that he has imposed this immediate pass-through on prices, he is not able to distinguish between an exchange rate effect and an infringement effect. He is just not able to do that in this regression analysis. That is the fundamental problem.

THE CHAIRMAN: If the exchange rate had gone completely the other way in 1997, would Professor Neven be arguing the same?

MR BEARD: Yes. It does not make any difference which way it moves.

THE CHAIRMAN: Well, it does in terms of the outcome in this case.

MR BEARD: Well, the extent to which you would have an identification problem obviously might -- would vary because, if you had an exchange rate that was moving in the opposite direction, you might not have the same level as -- I think they refer to it as "multi-collinearity" in relation to these issues, but I could see that that would be the case. But in terms of the mechanism that you would use to carry out the regression, Professor Neven would not do anything differently.

He is not doing this conditionally on the way in which the exchange rate moves. He is saying that this is the robust way to do the analysis. What he is then pointing out is that, because of the way that Mr Harvey has carried out the analysis and because of what happened with the exchange rate, you get these fundamental identification problems because you cannot control for the exchange rate in Mr Harvey's model. So I think that, mechanistically, is where we are.

Now, just to be clear, this conversion of prices, as I say, creates this identification problem, and I think Mr Harvey has accepted that the only way to cure that within his regression would be to include the exchange rate as an explanatory variable, but then he says, "I cannot do that because of the way I have changed the left-hand side of the equation".

Now, if I may, I am just going to pick up a couple of illustrations of the problems that this approach of Mr Harvey's causes. If you would not mind, I am going to just take it from our closings, so {S/10/10}, go down to paragraph 28. I am going to come back to -- actually, whilst -- sorry, let me just stick with this for a moment since it has come up. This is figure 7 in Professor Neven's report, second report.

THE CHAIRMAN: I am looking at the hard copy. I have noticed that it has not sort of come out in my hard copy version. I am not sure --

MR BEARD: No, it has not come out in mine, I am sorry. I thought the ones you had -- there are multiple sources. You can just look at it on screen for these purposes, if that is okay. I can give you the reference in his second report. Do we have it in there --

THE CHAIRMAN: No, it is all right. Do not worry.

MR BEARD: Because this goes back to the point that we are asking ourselves about: has Mr Harvey actually got evidence that the prices in euros -- his prices in euros approach actually reflects how DAF would price it in pounds? Now, what you have got on this plot is at the bottom you have got a yellow zigzag line which is the invoice price in pounds. It is an average invoice price -- it is not an individual truck type, it is an average invoice price. This is running from 1994, so well before the infringement, and through to 2005.

Then you have a red dotted line, which is the pound/euro exchange rate. You can see the pound/euro exchange rate falls significantly in 1994/1995, it bottoms out 1995/1996 and then, 1996, climbs upwards sharply. It is in the course of 1996 through into 1997 that we see this appreciation of the pound.

Now, what the blue line here shows is just an arithmetical calculation of the pound prices in the yellow line calculated -- recalculated using the market exchange rate, so all the zigzags will essentially match up in broad terms because it is just arithmetical. But what is interesting about this is, if Mr Harvey was right that DAF was effectively changing its pound prices, its yellow line, in response to changes in the exchange rate and keeping them steady on a week-by-week basis, you would actually see the gap between the blue line and the yellow line staying constant.

Now, obviously we do not see that at all in this graph. Mr Harvey says, "Yes, but after the infringement, all sorts of terrible things could have been going on so we cannot take any account of that". But, of course, what that ignores is the period beforehand when you do not have a steady gap between the euro price and the pound price at all. It starts off wide, narrows and widens again. That is simply not consistent with the approach that Mr Harvey's straitjacket applies. You are not getting -- in the period outside the infringement you are not getting pound pricing varying immediately by reference to the exchange rate. Because it is arithmetical, you would see that gap staying the same and you just do not see it.

MR RIDYARD: Sorry, can you repeat that? What are we not seeing pre-infringement?

MR BEARD: We are not seeing the gap between the two remaining the same because --

THE CHAIRMAN: In the before period?

MR BEARD: In the before period, because if it were true that the pound prices were being recalibrated on the basis of the weekly exchange rate, then you would see the pound prices being set with the same gap between the pound and euro throughout that period, would you not?

MR RIDYARD: What is the gap?

MR BEARD: Well, all I am doing is just illustrating -- well, we can just see from that the gap widens and tightens. All I am saying is that what we have got here is no evidence -- so obviously the gap then hugely widens with the increase in the exchange rate and so overall what you have got is no sense that the pound prices are being altered by reference to the euro exchange rate on a weekly basis.

THE CHAIRMAN: What you have got is you have got that big -- that widening of the gap just before the infringement period; yes?

MR BEARD: Yes, you have got a big widening there. You have also got the wider period right at the beginning as well, yes.

THE CHAIRMAN: Okay, but thereafter, from the start of the infringement, the gap looks like it stays pretty much the same.

MR BEARD: Well, I think that is not correct, I think, completely, but, in any event, what we will be coming back to is obviously how much that euro price is just tracking the exchange rate. I mean, what I am just referring to this for is just as another piece of evidence because I am going to come on to a couple of illustrations. We are asking ourselves, "Is there any basis for Mr Harvey's account which says actually DAF was changing its prices -- outside the infringement period, was DAF actually changing its prices on a weekly basis?" because, as Mr Ridyard corrected me earlier -- he said that during the infringement period what Mr Harvey was assuming was that they should have done that, and I am just looking at this and saying, "Well, actually, even before the infringement they did not do that. That is not what this material is showing us".

THE CHAIRMAN: They should have done it because -- to keep a constant margin --

MR BEARD: Yes.

THE CHAIRMAN: -- and that would be the effect of being in a competitive world, would it?

MR BEARD: Well, the question we are asking ourselves is: is there a basis for Mr Harvey assuming that in fact, outside the infringement, DAF did change its prices on a weekly basis by reference to the actual exchange rate because on Mr Harvey's --

THE CHAIRMAN: We know that did not happen, do we not?

MR BEARD: Sorry?

THE CHAIRMAN: I mean, that did not happen, did it?

MR BEARD: No, it did not happen. You see, if it did not happen when the infringement is not there, there is no basis for saying it should have happened during the infringement, and if you have got no case that it should have happened during the infringement, then the constraint that Mr Harvey is imposing is just groundless. That is the only point -- I say "the only point", but, I mean, this is further support for that. I am going to come on to other material, but since we just were passing that plot ...

If we then just go down, because it is not just looking at wiggly lines, Professor Neven also looked at some of the illustrations as to what this would actually mean. So if we look at paragraph 28, {S/10/10}:

"What Mr Harvey's approach means, in concrete terms, is that if on day 1 a DAF LF [standard model] 45/130 ... had a transaction price of £22,000 when the [pound/euro] exchange rate was 1.5/1, in Mr Harvey's regression the price of the Truck would be 33,000 [euros]. If it turned out that a second identical Truck was ordered a week later and, during that week, the Euro collapsed [the pound appreciated] so that on day 8 the [euro/pound] exchange rate was 2/1 [now, we are not saying this actually happened in precisely this way], the same Truck price in Pounds would be 44,000 [euros] in his regression."

So even though you had a week's gap, because of the change in the exchange rate, the price you fed into the regression would have altered by 11,000 euros. Then what you are asking the regression to do is look at whether or not the explanatory variables on the right-hand side explain that hugely higher new price. That is what Mr Harvey's approach involves.

THE CHAIRMAN: It also assumes the other way, so that if the pound collapses against the euro, you would assume that prices in pounds would go up; is that right?

MR BEARD: Yes. Yes, it is symmetrical. That is not -- but it is not something that comes out in the wash. It completely distorts these things because what you are looking at is the extent to which the explanatory variables on the right-hand side correlate with the left-hand side. So if you are changing prices in euros hugely higher upwards because the pound appreciates, that distorts the way in which the explanatory variables will be able to explain the dependent variable, but equally, if the pound falls, that will have a distortive effect as well and therefore it will distort the extent to which you get correlation between the variables. So it does not matter which way we are going. We are just illustrating it in one direction here. It is because you are creating these artificial numbers for the prices that you are trying to explain here.

THE CHAIRMAN: But if you are converting the cost from euros into pounds, but you -- are you not also making a similar assumption that -- I do not know -- that you have to account for that in some way if you want to keep a constant margin or --

MR BEARD: No, no, because if you translate the costs into pounds -- you can have a debate about what rate you do that at and I am going to come back to that. That is undoubtedly right -- but the difference is you then let the data speak as to the extent to which those costs influence or are correlated with the invoice price and you allow the other variables, the demand and truck characteristics, also to fulfil their roles in relation to that. The other thing that I am going to come back to is that, when you do it that way, you can also include an exchange rate control variable in the equation.

THE CHAIRMAN: This is because it is all the left-hand side and the right-hand side of the equation, where it comes in? That is what you are saying?

MR BEARD: Yes, essentially that is the critical thing in relation to this. In order to take this step of completely converting the left-hand side of the equation, you need really the most compelling evidence that you could make this huge assumption because it has such a radical effect on the way that the regression works and yet Mr Harvey just does not have that.

It is not to say exchange rates do not matter. They do matter, absolutely they do matter, and I will come on to deal with that, but you do not have the basis for making this huge assumption in relation to the left-hand side of the equation.

Yes, so the situation we have in that illustration is that, if it were to be the case that in the factual world, when the pound appreciates against the euro, DAF actually just left its pound prices at the same level across that week in the short term, which would mean it would make more profit, undoubtedly, or, you know, just decrease them less than the total amount of the exchange rate, what Mr Harvey's regression does is it attributes all of that effect, all of that increased profit, to the infringement, and that, we say, is just groundless. The idea that from week to week DAF was changing its prices by reference to the exchange rate and thereby keeping its euro margins constant is just not borne out.

MR RIDYARD: So what do you think should happen to prices when you have suppliers incurring costs in euros and selling products in pounds? When the pound appreciates against the euro, what would be your natural prediction about what happens to pound prices?

MR BEARD: I am not so bold as to make natural predictions. I am very content to let Professor Neven run his econometric equations to identify essentially what the effects are and what correlates with the pound prices because I do not think we can just assume some kind of level of margin, level of pass-through, in relation to these matters. What I will come on to do is I will show the evidence that internally what DAF actually used was the budget rate to translate its costs across from euros into pounds, so we do actually have a predominant answer in this case. But I am content to stay with Professor Neven's approach, which is to say, "Well, look, that is what the evidence about how these exchange rates affected costs and then fed into whatever margins the companies were able to hold on to from time to time". But he carries out sensitivities where he then includes exchange rate as an explanatory variable and, in those circumstances, he is essentially letting the data speak as to what the impact of the exchange rate is in relation to this, whereas Mr Harvey cannot do that.

MR RIDYARD: Yes. I understand that.

MR BEARD: Sorry, I am going to slightly labour this point because it is important. Professor Neven -- I will give you the references. Day 12 in the transcript, page 111, picking it up at line 17, {Day12/111:17}, he picked up this illustration that I effectively have just been talking to in relation to paragraph 28 and he said that if you have a sharp appreciation in the pound at the start of the infringement, this is particularly problematic.

"... the pound appreciated by about 8%, in a very short period of time. Now, the prices in pound could go down possibly by 4%. What Mr Harvey imposes is that they should go down by 8% ..."

Which means that if the prices do not actually go down by that amount, the prices do not go down, he is going to say that is to be picked up -- the difference is to be picked up by the infringement.

Then back to the question you were asking because Professor Neven was actually talking about the change at the beginning. This is why you get such a significant identification problem at the start.

We also know and the experts agree that, towards the end of the infringement -- we know that the end of the infringement coincided with an appreciation of the euro, a fall of the pound, and so we are going in the other direction. So we are dealing with the situation, sir, that you were contemplating, but because it occurs at the end of the infringement, actually that exacerbates the identification problem because that latter change results in relatively lower prices in the after period and, by failing to control for the exchange rate, what Mr Harvey is doing is essentially saying that the lower prices that you see in his model afterwards are due to the end of the infringement when actually it is just an exchange rate or could be just an exchange rate effect that is causing the difference at that point.

MR RIDYARD: But the pound's fall against the euro -- the big pound fall against the euro occurred during the infringement period, did it not?

MR BEARD: Well, there were other falls. There were other changes in the exchange rate.

THE CHAIRMAN: It was also bound up with the GFC, was it not?

MR BEARD: Yes. Look, this is not the only --

MR RIDYARD: No, but the point I am making is that, for the appreciation near the beginning, this chart is showing a big appreciation which corresponds to the start of the cartel period, so I think, you know, the direction of -- if there is a bias in the problem and what you are describing, then the direction of it is clear enough, but at the end it is not so clear because, if the main pound depreciation occurred in 2008/2009, that is still squarely during the infringement period --

MR BEARD: Yes, and I think there is further depreciation towards the end. I do not have it in my notes so I will come back --

MR RIDYARD: It is quite important to get the facts straight.

MR BEARD: Yes. But I am also recognising that what the appreciation at the start does is it exacerbates the problem with the identification issue.

MR RIDYARD: But it creates the identification problem because you do not know whether the explanation is the cartel or the exchange rate.

MR BEARD: No, you do not, that is true. It is particularly acute because of the confluence of the exchange rate and the start of the infringement period, I agree with that.

MR RIDYARD: That is what the identification problem is, is it not? It is the fact these two things happen at the same time?

MR BEARD: Yes, that is where it is particularly problematic. But I think the other point is that there is also a fall towards the end, but I will dig out the -- if we go to figure 1, {E/35/15}, if we could -- so Mr Ridyard is absolutely right that you get a very significant drop in the exchange rate during 2008/2009, during the global financial crisis. I think that is the significant drop, sir, that you are referring to.

MR RIDYARD: It was, yes.

MR BEARD: But the point I am making is that also, as you are crossing the threshold at the end of the infringement, you are also seeing it is smaller but you do also have a falling exchange rate across that threshold at the end of the infringement. Now, I am not saying it is as extreme as the issue at the start or as extreme as the drop that occurs during the GFC, I am not suggesting that at all, but it does actually coincide with the end of the infringement and therefore you are getting this changing exchange rate effect at the end as well, so it does have an impact in terms of an identification problem.

MR RIDYARD: I am not sure that is -- well, clearly it is right that in the first three months, whatever, it falls, but then it does go up quite a lot up to 2016, then it goes down again in 2017. So it is by no means --

MR BEARD: There is variability. I am not going to --

MR RIDYARD: It is quite a complicated picture. It does not tell anything like the same -- the story is not -- the source of the problem is quite different or the nature of the problem is quite different.

MR BEARD: I am not going to -- they are significantly different by degree, I completely agree with that, and obviously there are different levels of variability across that period that you are referring to. So I think that is undoubtedly right. I do not think I am demurring from the observation.

THE CHAIRMAN: There is quite a large widening of the gap as well in the post-infringement period, is there not, looking at particularly from sort of 2014 onwards? The point that you were making about the previous graph is the relevance of the --

MR BEARD: Yes, I agree. I am sorry, I should have also pointed to this one. Yes, so we are in a post-infringement period here, yes, it is the same observation.

THE CHAIRMAN: So how would that be explicable?

MR BEARD: How would it be explicable?

THE CHAIRMAN: That there is a widening of the gap.

MR BEARD: Well, because the pound prices are not moving directly with the exchange rate. That is what is going on here because, again, this is an arithmetic translation. So, sir, I thought the observation you were making was that this is further evidence of the fact that you do not get the constant margin across the after period, and that is absolutely right. What that illustrates is that you are not having the pound prices moving by reference to a weekly exchange rate because otherwise you get the constant gap.

THE CHAIRMAN: Right.

MR RIDYARD: I think if you want to draw our attention to the gap between the price denominated in pounds as against euros, would it not have been a bit easier to have -- rather than asking us to look at these two wiggly lines, to use one of your favourite phrases, would it not have been better to have taken one from the other and just plotted the difference so we could see what was going on more clearly?

MR BEARD: Well, I will certainly raise that with Professor Neven, yes. I see the point. I think Professor Neven has explained very fully in his report why it is that the straitjacket approach is not justified and is not appropriate in terms of the regression analysis and I am not going to qualify that.

What I have been trying to do in closing is draw on the materials we have got to try and illustrate these issues and I quite see that --

MR RIDYARD: I understand that. But you are drawing our attention to the previous chart, you are saying, "Look how the difference between these two lines does or does not ..." and it is actually just quite difficult to look at the two lines and to agree or disagree with what you are saying because --

MR BEARD: I see the point.

MR RIDYARD: There would have been a much easier way of doing it.

MR BEARD: I am going to turn this round. Mr Harvey has made a radical change to the way in which you operate the regression by changing the dependent variable on the left-hand side. Does he have a justification for doing so? None of this is helping him.

MR RIDYARD: I understand the criticism you are making, but I just think it would have been easier to agree or disagree with some of the points you are making if the difference between these lines had been plotted rather than getting us to do the sort of three-dimensional assessment.

MR BEARD: Yes, I am not demurring. More charts always welcome, I am sure.

I do want to move on to just another illustration that Professor Neven did provide, which is at {E/62/30}. Now, this is only an illustration, we completely understand that, but what this illustration does is it looks at an actual pair of trucks of the same specification. Now, Mr Harvey said, "Oh, you might not be able to rely on this because it is two different customers and therefore there could be different circumstances", but let us just look at what is going on here.

On this figure, at the bottom in yellow, you have the MLO cost in euros. That is set. Then you have got a green line, which is the invoice price in pounds. Now, this is not a theoretical invoice price in pounds. The two points are the actual prices of the trucks that are sold. So they stayed the same, so it was the same price -- January 1997 and October/November 1997 is what we are seeing here. Then above that we have got a wiggly line of exchange rate, and what this is illustrating is that, applying Mr Harvey's methodology to the left-hand side of the regression equation, what you do is you move the price that you are considering upwards in relation to the second truck. So whereas the first blue dot, just under 70,000 euros, is the euro/pound exchange rate in January 1997, for the same price in pounds, so the actual price that was paid by an actual customer in the UK, the euro price is significantly higher. It is around 75,000 euros. That is because of the change in the exchange rate.

Of course, what Mr Harvey's regression does is it takes these two identical trucks, and we entirely accept it is only an illustration, but this is what his regression constraint does, and it says that the first is at just under 70,000 euros, the second is at 76,000 euros, and essentially that difference, assuming all the other variables remain equal, will be all attributed to a positive overcharge bias; in other words, that change will be attributed to the infringement explanatory variable on the right-hand side of his equation. That is the case even though those two trucks were sold at exactly the same rate.

MR RIDYARD: At the same pound price.

MR BEARD: At the same pound price, I am so sorry.

MR RIDYARD: I think if Mr Harvey were in this conversation he would maybe say, "But what has happened here is this truck has become much more profitable because they are made in euros and sold in pounds", and therefore he would say that sooner or later you would expect competition between suppliers whose costs are incurred in euros -- as it has become much more profitable to sell these products, they would compete with one another and therefore there would be an adjustment in the pound price.

MR BEARD: That is exactly what I am going to come on to. I am going to come on to his margins analysis.

MR RIDYARD: Your point is that the pound prices are maybe sticky and do not adjust quickly enough to justify Mr Harvey's approach?

MR BEARD: Exactly, but it is more than that. Mr Harvey does not have any evidence to support the idea that there is no stickiness, whereas in those circumstances, to take this radical step -- because going back to -- we cannot say that it is prohibited as a matter of economic principle, but in order to take the step of converting your dependent variable into a different exchange rate, you need to have a proper justification for doing it. He has just made an assumption because he has not analysed anything to do with the stickiness of prices at all.

Now, it is fair for the tribunal to say, "Well, we do not like just looking at wiggly lines". We understand that. But Mr Harvey has not produced anything in relation to this sort of data analysis at all in order to justify this huge assumption he makes which has a vast impact on his regression analysis. For reasons that we will come on to when we look at Professor Neven's report, it is something that is contrary to actually the literature that exists in relation to how companies deal with exchange rate pass-on because there is a sense that there is going to be stickiness in relation to -- the expectation will be that there will be stickiness in relation to the passing on of exchange rates.

MR RIDYARD: I suppose -- I am not saying your point is wrong, but I am just saying that the counter-argument to this point would be that, as this product had become much more profitable over this period, you would expect, maybe not immediately but sooner or later, competition between the suppliers to bid down those prices to restore the margins. So there is a world in which there could be a logic to focusing on the euro margins rather than the pound margins. But I am not saying -- I understand your point, but I am just saying maybe it is a bit more nuanced than --

MR BEARD: So let us take it in stages. Yes, of course, one can understand that. There is a story that says, well, over time you would expect margins to be potentially attenuated, albeit that is actually quite a complicated assessment to carry out as to what should be the competitive margins and I am going to come back to that.

But I do want to dwell on this idea that the fact that there might be those sorts of theoretical issues that might exist further down the line that we are going to come on to, that does not mean that you have a justification for rigidifying your whole regression in relation to this. That is the problem. He makes it so rigid that, even if you do have those other intuitions, he is not capturing any of that. He has baked his structure so tightly and so hard --

MR RIDYARD: I fully understand what you are saying.

MR BEARD: But I am not going to leave the margin stuff. I completely understand that he has this other story which says, "Yes, but theoretically you would expect margins to be competed away". This is the story that he has when we look at his third report. If we could go to {E/IC52/53} --

THE CHAIRMAN: We should have a break at some point.

MR BEARD: Yes, but can I just deal with this point first, only because of the exchange rate. I am just taking it slightly out of order. Then I will recalibrate if I may.

THE CHAIRMAN: Yes. Please do.

MR BEARD: If we can just go back a page, {E/IC52/52}, you will recall that this is the bit in Mr Harvey's third report where he says, "Look, actually I would expect that, you know, they would not have wide margins and margins would narrow over time". Then he provides this graph on the next page, {E/IC52/53}, that we were just looking at, where he says, "Look at the MLO cost in euros and look at the invoice price that is charged". He says the gap between the two means that, as the exchange rate went up, what you saw was an increase in margins.

The theory that Mr Ridyard is -- I am not saying "putting forward" but just articulating is the idea that you would not see those margins, they are too large, and you get the margins reduced, and somehow that is an indication that there is something inappropriate going on here. But I completely understand the criticism of the wiggly line diagram that I was taking you to, sir, but with margins you have a very, very significant problem. You are dealing with differentiated products. It is not that there is some sort of assumption of what the natural margin should be. Mr Harvey has not said what he thinks the competitive margin should be in relation to this industry or in relation to DAF. Therefore, the fact that it is tighter at the beginning of 1995/1996 and widens does not mean that you can assume the wider period is a non-competitive margin. That is not an assumption that you can make because there are a whole range of factors that go into, even in competitive markets, margins being well above variable costs.

Economists say, well, you know, in perfectly competitive markets with non-differentiated products, margins will come down to just above the level of variable costs. We understand that, but that is not the real world and, to be fair to Mr Harvey -- and he agreed with Professor Neven -- you do not have an indication of what the appropriate margin would be. Indeed, in earlier proceedings, when espousing the importance of the econometric regression analysis, Mr Harvey deprecated the idea that you should use margin analysis because of the difficulties you have in identifying what a competitive margin would be.

So Mr Harvey says, "Well, this is a graphical analysis"; I mean, really what he is saying is, "I am assuming that those margins are super-competitive and therefore that is indicative of a problem here". But there are two points to make. Even if there were a story there, that does not justify -- that broad story does not justify the full constraint that he has put in place in relation to the left-hand side. He is trying to say, "Well, what I see here is consistent with the outturn of my regression analysis", but he is not actually saying, "I can justify the level and nature and rigidity of the immediate pass-through on prices". That is not what he says.

He did accept, as I say, that margins could vary for all sorts of reasons, including demand, changes to truck mix, innovation, all sorts of things.

THE CHAIRMAN: The trouble is we know this was not a competitive market from that point on.

MR BEARD: No, you know that there was an infringement. What you do not know, sir, is the extent to which -- in relation to particular tenders, particular deals, whether or not there was in fact competition in relation to these matters. We accept the infringement, we are not going behind it, but you cannot make the assumption that Mr Ward is constantly making, that this market is rigged, meaning that you necessarily ended up with higher prices. That is the very exercise that this tribunal is faced with.

MR RIDYARD: Of course.

THE CHAIRMAN: I follow that, but you are still -- I think what Mr Harvey is saying is that you cannot assume that the exchange rates would be sort of competed away for the exchange rate effect.

MR BEARD: Well, I think it is interesting in relation to this -- if we just go on to {E/1/100}. Just bear in mind what we have seen. We were looking at a chart that ran from 1995 through to 2003 but it stopped there. Now, what we actually see when we look across the period -- and those lines are obviously the period in the infringement -- is that it appears that margins were falling in 1995/1996, but we do not have the data for whether or not they were higher previously.

They do go up 1996/1997, they stay up higher for a couple of years and then they fall, and by 2003/2004, what you have is percentage margins back at the level in the prior period. Now, the difference between blue and green is the difference between the AS/400 data set and the MI data set, but that does not matter for these purposes. We are not criticising that because actually the MI data set is way more granular and you actually get more detailed information. But how can he possibly say, in these circumstances, that when you look across the period, what you have got is somehow super-competitive margins when what you have got is a huge change in the exchange rate, then a fall later on, but in relation to margins you are back in the mid-period at the level you were beforehand.

Of course margins then go along and then drop dramatically in 2008/2009, as we hit the global financial crisis, so we understand that and we are not sort of emphasising that aspect of it. But when you are doing the sort of eyeballing that Mr Harvey is engaged in, how can he say -- he does not have a sense of what the competitive margin is, he completely understands that, and then actually his own data shows that you were reverting to the pre-infringement period margins. Now, that is limited information because we say that doing this sort of margin analysis just does not get you far enough.

MR RIDYARD: Both the experts have said they should do a regression analysis which controls for a myriad of factors and therefore you should not just look at one at a time.

MR BEARD: Exactly. I am entirely there and we are not demurring. As I say, I am going to come back to Professor Neven's analysis. But the question we are asking ourselves is: does the material that Mr Harvey is putting forward in any way justify this radical constraint? You know, even when we go to the margin stuff that he is referring to, that is supposed to reinforce it, it does not -- even on his just total eyeballing approach where we say margins are not telling you stuff.

Now for a break?

THE CHAIRMAN: Yes, ten minutes.

(11.51 am)

(A short break)

(12.04 pm)

MR BEARD: Sir, I am going to deal with another couple of points before I move on to Professor Neven's approach. There is a point I slightly skipped over because I moved on to the margins discussion, but Mr Harvey and indeed Mr Ward, on a couple of occasions, emphasised this idea that Mr Harvey's constraint on the left-hand side is not a complete and immediate pass-through of the exchange rate. I think, as the philosophers put it, this is true but uninteresting in terms of the way in which this impacts on the radical nature of Mr Harvey's approach because, as I have re-emphasised a number of times, the problem is with what Mr Harvey is doing on the left-hand side of the equation.

Now, if we could just call up the equation I was using to begin with, which is {E/IC11/19}.

THE CHAIRMAN: This is to do with the UK costs?

MR BEARD: Yes, that is exactly it. You are ahead of me, sir. I will just deal with it briefly.

The situation is that Mr Harvey's constraint on the left-hand side is an immediate one, using the weekly rate, and it is complete in relation to prices. But then what Mr Harvey says is, "It is not complete and immediate overall because on the right-hand side of the equation you have the MLO costs and some of those are in pounds and therefore I transfer some of those using the weekly exchange rate into euros". Putting it loosely -- and those of an economic bent will tear hair -- but it is broadly saying that this is a slight offsetting approach. That is all that is happening and that is why it is not complete. It is still immediate, it is still using the weekly rate, it is still tethering the prices, but overall he is saying it slightly attenuates the approach. He is saying that for the reasons, sir, that you have identified, which is that a portion of the costs are incurred in pounds. It is about 27% overall, so it is very much the minority of the costs.

But the fact that a small chunk of costs are incurred in pounds does not alter the problem with what he has done on the left-hand side of the equation because what is going on there is this constraining of the exchange rate that is to be used, because I started off, it is the imposition of that exchange rate, not allowing the data to speak about its effect. So we are entirely content and we do not demur that overall it is high pass-through rather than complete in relation to this. Mr Ward tried to make a big thing in relation to this and say, "Oh, well, Professor Neven has changed his position". No, Professor Neven has always said in relation to pricing it is complete and immediate, and that is what is going on here. But none of this matters for the overall issue that we are dealing with.

THE CHAIRMAN: I think he accepted, did he not, that there was immediate pass-through, it just was not full?

MR BEARD: That is right. That is exactly it. I think Mr Ward tried to make a point about it, but Professor Neven just -- he accepts that. His point is not, "Well, it is incomplete"; it is just a fundamentally wrong way of doing this because of the way it fetters the operation of the regression.

I will come back to this, but Mr Bourke reminds me that Mr Harvey, I think, as I have said, recognised that he needs a stand-alone control variable for the market exchange rate to empirically assess the influence of the market -- of the exchange rate on prices, but he also accepts that he cannot do that because of the correlation between exchange rate and infringement. So I think that is -- I think Mr Harvey has accepted that he cannot introduce that variable and I will come back to it in a little more detail when I deal with Professor Neven because Professor Neven's model allows that to happen.

Before I do move to Professor Neven, though, I just want to pick up in relation, Sir Iain, to the points that you were raising earlier about something -- the factual situation so far as we understand it, because we understand that Mr Harvey and Mr Ward say, "Ah, yes, but DAF NV, a euro-focused company". I am not even going to go to the point that PACCAR is a US company and in the end, you know, we are not going to go to dollars, but -- you know, that is the way the money sweeps up. So let us leave that for a moment.

What we say is that the evidence shows that there is no basis for Mr Harvey saying margins were maintained at the same level in euros over time. Indeed, Mr Habets, actually in an answer to a question from Mr Ridyard, specifically is saying that DAF had a goal every year of gaining market share and it would drop its margins in order to do so. It is perhaps just worth turning it up. It is {Day7/20}. So that is Mr Ridyard's question and just picking it up at -- sorry, picking it up at -- we have just seen the bottom of Mr Ridyard's question -- in fact could we go back a page? I am sorry, {Day7/19}, just so you see it. I am not going to read it out.

(Pause)

If we turn over, {Day7/20}, and if you could just read down the page. (Pause)

THE CHAIRMAN: Do you want to go over the page?

MR BEARD: Yes, just to finish off if we may, {Day7/21}. Thank you. (Pause)

So Mr Habets is explaining there, "Look, we had market share targets, we would drop our margins, we would flex our margins". The idea that these margins were being kept at a flat level is just not -- there is no evidence for it at all. Without that evidence, the basis for Mr Harvey's radical change to the left-hand side of the equation just is not justified. But I am not just going to leave it at margins. We can also talk about prices because, of course --

MR RIDYARD: Sorry, before you go there, he is not saying that there is not -- I mean, he is not saying anything specific, is he, here about what the actual margin targets were or were not?

MR BEARD: No, he is not talking about the specific margin targets, he is not, but what he is saying is that they are willing to drop margins in order to win market share. Now, there is no suggestion there that he is talking about that in relation to exchange rate issues at all.

MR RIDYARD: No.

MR BEARD: He is talking about, "What is our primary goal? We want to get market share and volume. We will flex our margins in order to do it". It is not suggesting that there is some sort of constraint in relation to the margins that they are talking about. Obviously, he is being asked these questions in the context of the UK proceedings.

Now, the answer was a general one, I completely accept that, but if we are thrashing around to try and find material that supports Mr Harvey maintaining this margin assumption, we do not have it and we have Mr Habets, who was being asked these sorts of questions, saying, "No, no, no, we did drop our margins".

THE CHAIRMAN: But he did confirm that they thought about it in euro terms and by reference to current exchange rates.

MR BEARD: Yes, and I am going to come on to it in relation to pricing. But just bear in mind what Mr Harvey needs is justification for applying this level of rigidity in relation to margins through this pricing assumption and what we are saying is he has no evidence to support this idea that there were, you know, margins over time -- fixed margins over time effectively.

I think it is also worth picking up on the pricing issue because we are not demurring, as I said in response to Sir Iain's question earlier, that there were considerations of exchange rates and euros at DAF NV; no doubt about that. That is not the point. The question is: is that sort of evidence that we have got enough to justify effectively modifying all the pound prices? We say obviously not.

Just before I move to that, I would just provide you with a reference. I actually put to Mr Harvey -- this is Day 14, page 55, line 22, through to Day 14, page 57 at line 16, a series of documents which actually show DAF's margins in euros fluctuating. So those included approval memos for DAF customers and DAF's management accounts. I think Mr Harvey fairly accepted these were real-world examples of DAF not adjusting its prices to keep its margins constant.

Let us just pick up these points in relation to pricing. There are a couple of points that I do need to just potentially remind the tribunal of. Yes, in relation to DAF NV, there were considerations in relation to euros, but let us not lose sight of DAF UK because, of course, DAF UK is doing the selling and we know that the vast majority of trucks that we are talking about were sold by DAF UK without the need for any approvals anywhere up the chain, whether DAF NV or PACCAR. So it is worth just pulling out, I think, just as a reminder, {I2/30}.

Now, you may or may not recall this document but this is actually a screenshot from the order management system of DAF, the documents that the sales organisations in the UK look at, and of course all of that material you can see from the left-hand side, halfway down, that is all --

THE CHAIRMAN: This was put to Mr Ashworth, was it not?

MR BEARD: Yes. In fact he has a screenshot exhibited in his witness evidence and he constantly talked about pricing in pounds. He recognised that there were references from time to time to euros and exchange rates but he was talking about pounds. The point I am making is a very banal one, which is that halfway down on the left-hand side, what are all these numbers in? They are in pounds. All of this pricing consideration, when you were looking at the OMS system, this was all being dealt with in pounds.

As I say, when you are talking about the approach that is important and you are talking about the pricing that is being imposed, the consideration that is being faced by the sales organisation is consideration in pounds. What we know also is that, in this OMS system, the rate that was used to convert euro costs was this budget rate. That was an internal DAF exchange rate that was used. In other words, when there was a consideration of costs in the UK, what was the measure of costs that was being provided? It was costs by

reference to this budget rate. I will give you the reference because there is a guidance note that sets this out. It is at bundle {H/IC75}, in particular at pages 7 and 32.
THE CHAIRMAN: Sorry, just whilst we are on this one, the target margin is on the right-hand side, I think, about halfway down.
MR BEARD: Yes.
THE CHAIRMAN: The target margin?
MR BEARD: Yes, absolutely.
THE CHAIRMAN: That is in pounds obviously.
MR BEARD: Yes.
THE CHAIRMAN: It is 4.4%; is that right?
MR BEARD: Yes.
THE CHAIRMAN: That is the IKP target.
MR BEARD: That is the IKP target, that is right, and that is all in pounds.
THE CHAIRMAN: So how is that percentage worked out? How is the target worked out in pounds, if you see what I mean?
MR BEARD: I am sorry, how is the target worked out in pounds?
THE CHAIRMAN: Well, what does that represent, the target margin?
MR BEARD: Well, it is the margin in pounds for these purposes, but --

THE CHAIRMAN: So you need to know what the costs are in order to work out the margin?

MR BEARD: Yes. In order to be able to work out a margin, you have got the IKP cost that -- and then you have an IKP -- you have an IKP cost and then --

THE CHAIRMAN: So does Mr Ashworth have the IKP cost?

MR BEARD: Yes. If you look at the -- where I was just indicating currency halfway down that page, if you move three rows in, you see the cost price being set out there. That is of course all in pounds. So when I am talking about using the budget rate to translate any costs in euros, that is what is happening. The budget rate is being used to translate any costs that are incurred in relation to this truck in euros into pounds for that cost price.

MR RIDYARD: The cost here is the IKP cost --

MR BEARD: Yes, it is.

MR RIDYARD: -- so it is -- which obviously originates largely in euros and then it has whatever DAF NV chooses to put into IKP costs from one year to the next because it was -- IKP was used -- there is a cost basis to it, of course, sort of based on the MLO, but then there were these two ways of adding on to that before you get to the IKP margin, was there not?

MR BEARD: Well, you had an IKP cost that was calculated and then there was an IKP surcharge and then there would be an IKP target margin in relation to it.

MR RIDYARD: Yes.

MR BEARD: You are obviously right that the IKP cost is derived from MLO costs and it was only later in the period that -- the infringement period that the IKP cost and target margin began to diverge from the MLO costs. But the important thing here is that, when you are asking yourself what is the target margin, what is the margin, what are we talking about, we are talking about all of that in pounds having been translated by DAF using the budget rate. So it is not that the budget rate is some kind of ethereal mechanism that has been conjured up by Professor Neven; it is what DAF was internally using as the mechanism for deciding what costs to put into the order management system which then inform what goes to IKP target margin and so on.

THE CHAIRMAN: So the target margins were operating by reference to an out-of-date exchange rate effectively?

MR BEARD: Well, I think it is slightly dangerous to think of it as out of date. It is not the day-to-day weekly one, that is absolutely true. As Professor Neven showed in his material, it is essentially a lagged year rate. Yes, you can say on that basis "out of date", but I think it was explained that it is essentially a smoothing mechanism. That is what you are using it for.

MR RIDYARD: I can see all of that is true for what they do with the MLO because the MLO is a cost number that comes out of the system, but then when you go from the MLO to the IKP cost and then add on to that further the IKP margin, I mean, those are at the discretion of DAF NV and we do not really know how that was generated or what considerations went into those in detail. All we know is that it was an exercise that was done at DAF NV, depending on whatever their commercial objectives were from one year to the next.

MR BEARD: Yes.

MR RIDYARD: So it could incorporate all sorts of things that we cannot directly observe.

MR BEARD: No. Obviously, when you are setting target margins in relation to anything, as a commercial organisation, you are going to be taking into account a whole range of factors, that is absolutely true.

MR RIDYARD: Yes.

MR BEARD: But the question we are asking ourselves is: do we have indications that it is right to make this assumption that the pound prices were essentially being modified by a weekly exchange rate -- by reference to a weekly exchange rate? The answer is obviously not.

The reason I am taking you to this is this is what was being seen by the people that were doing the price negotiation in the UK. What is it that they are looking at? They are looking at pound prices. What are they looking at? They are looking at pound costs. How are those pound costs created? They are not created by reference to the weekly exchange rate. It is just not the case. There is not any basis for that.

So this idea that somehow -- leave aside what got approved, went up for a moment. If we just focus on what DAF UK had as its responsibility, which is the vast majority of trucks sold, what they are doing is looking at data on costs which is set by reference to the budget rate and they are considering IKP margins and targets that are calibrated using -- that have been set using those costs that have been set using the budget rate, not the weekly exchange rate.

THE CHAIRMAN: And they knew that obviously?

MR BEARD: Yes, they knew that. Well, Mr Ashworth gave plenty of evidence about budget rates and so on. The fact that the budget rate was important within DAF was obviously clear because it was what was used in relation to all of this pricing assessment for the purposes of negotiation with clients. So I am not sure there is actually a challenge to this.

I mean, the problem Mr Harvey has is that, once you recognise that actually the budget rate is being used here, it becomes less and less understandable why it is that you should make an assumption that you can constrain the left-hand side of the equation by using some other exchange rate. The same is true -- I will just provide a reference given the time, but in the pricing statement there are all sorts of references to the -- the pricing statement that the court ordered that we produce. Just for your notes, that is {C/18/24} -- there are all sorts of references there to the budget rate.

What this means is that DAF's use of the budget rate was meaning that DAF UK did not generally reflect short-term changes in exchange rates directly into its assessment of costs or its pricing in pounds. Actually there is no basis in the evidence that DAF UK adjusted its pricing in line with weekly movements in the actual euro/pound exchange rate before, during or after the infringement. Indeed I do not think the point was put to any of DAF's witnesses. Mr Habets explained in his witness statement -- I will just give you the reference to it, rather than calling it up -- at paragraph 36, so that is bundle {D/23/9}:

"Throughout my time at DAF NV, our mainframe systems (including OMS) have worked with fixed budget rates between currencies, which are set [manually] [and] ... cannot deal with actual, fluctuating exchange rates."

"Annually", I am sorry. I misspoke. "Set annually".

Just picking up the points about the approvals process, if we could just go to our closings at paragraph 44, so that is {S/10/15}, just so you have it for reference. The evidence showed that DAF NV did exercise a degree of control over DAF UK's pricing through the mandate structure, but that degree of control varied significantly over time and there was no evidence that that control required or imposed weekly shifts in pricing.

Up until October 1998 it was only DAF UK that was approving transactions. This theoretical involvement of euros just did not exist or the theoretical involvement of DAF NV just did not exist. Then we know from 1998 to 2003 it was actually only a very limited number of proposed transactions that actually went up to DAF NV for approval. So it is important to have this in perspective and it goes back to my earlier answer to Sir Iain, that you are now almost halfway through the infringement period and you are talking about a tiny minority of cases which are sent up for approval.

THE CHAIRMAN: I think all the relevant contracts were, were they not?

MR BEARD: Yes, that is absolutely true, we are not denying that, but we are obviously dealing with the regression here so specifically we are thinking about this market-wide because we are not talking about modifying in relation to one customer.

THE CHAIRMAN: No, no, I follow.

MR BEARD: That was still true from December onwards, but still only a limited number needed to be approved by DAF NV and Mr van Veen explained that corporate approval requests remained the exception rather than the rule. Of course, the ones that went up to PACCAR, which ironically would include in particular Royal Mail deals, those were sort of less than 1% of the deals in question.

Now, during the financial crisis it is true, because of the drop in margins, many more did go up for approval. There is no doubt about that. But when we are looking at the question about whether or not you can apply this constraint throughout your regression, the idea that somehow the deals going up during the financial crisis changed the approach is clearly wrong.

The other thing I think to bear in mind is that what is said in the evidence is that the considerations of the actual exchange rate were on occasion taken into account. Now, they are taken into account. What is not being said is that the pricing is effectively being set by reference to the weekly exchange rate. There is not a rigidity to it. There is a big difference between taking stuff into account and saying, "This is how we treat the exchange rate". There just is not evidence to impose that rigidity that Mr Harvey imposes.

So even -- Sir Iain, even if we take it at its highest and we are looking at the global financial crisis and we are looking at those two years and we are saying, "Yes, yes, lots went up during that period, no doubt about it, because of the low margins because of the falls in demand", then in those circumstances of course there were considerations being undertaken by DAF NV who make their profits in euros, as you say, about euros. But that does not mean that you have got this sort of absolute rigidity that Mr Harvey has in relation to the pricing that he needs for this imposition.

MR RIDYARD: Just in relation to paragraph 44(a):

"Until October 1998, DAF UK had authority to approve all transactions."

Was there no oversight from DAF NV?

MR BEARD: I do not believe there was any oversight from

DAF NV, but I will double-check that. But I do not think there was in relation to that.

THE CHAIRMAN: There was no mandate structure at that time --

MR BEARD: No, there was not. I can confirm that, but I believe that -- I mean, DAF UK was operating much more autonomously. Obviously it was relatively soon after it had both come out of insolvency and also been bought, so ...

It says that the place where you can find the clarity in relation to that is actually at footnote 36, so that is a reference through to the pricing statement of paragraph 53.

Just very briefly, can we look at the claimants' closings on this? If we can pick it up at {S/9/167}, please. I am not sure why the first bullet is redacted. I am utterly bemused why that should be redacted.

THE CHAIRMAN: I am looking at the unredacted.

MR BEARD: Okay, fine. I am not going to make any complaint about it, but this one I simply do not understand, but anyway.

THE CHAIRMAN: Is it because it is a reference to a confidential report?

MR BEARD: It may well be, but there is nothing interesting here, as they say. I completely understand, when you are dealing with a document this large, you have to do some automaticity in relation to the blanking out. I am sure no one at BCLP would be thankful for having to go through it by hand.

So 429, the first one is about guidance notes. This was a recommendation that was said in the guidance note about converting price and cost data from budget rate into euro. You will recall that there was an exchange in cross-examination about this because actually Mr Harvey cited this but he cited an old version of the guidance. Then there was clarification, where he said, "No, no, no, actually I was meaning in relation to DAF NV". I can go to the guidance note if it helps. I will give you the -- let us go to it. {J2/IC498/3} please.

You see in row 2 there was a clarification in relation to it. Then there was further clarification later on. Can we just scroll down there, please? As to how these matters were dealt with -- and you will see at the top of the page the period 1994 to 2017 -- DAF UK had authority for certain transactions. It refers to the pricing statement that I just mentioned and UK reviewed and approved orders in pounds.

Then you have the point that I have already mentioned about pre-1998. Then there is a reference to what has gone on in relation to DAF NV. Of course, although we talk about euros, actually at the beginning of the period we talk about guilders, but I will not get into further complications there, just as I will avoid dollars.

Anyway, the point is that these guidance notes about converting price and data into euro for DAF NV, well, no issue there about doing that. We do not shy away from the fact that sometimes budget rates would have been used, sometimes actual rates would have been used, in relation to some of those transformations and considerations. The question is: is this sort of guidance note telling you that actually you have got this direct relationship between our prices and the weekly exchange rate? No, no, far from it. What it is explaining is predominantly in the UK we were using the budget rate.

Then if we go back to the closings, if we may, {S/9/167}, 429.2:

"DAF's witness evidence indicated that the most important pricing decisions involved assessing profits based on revenues and costs in euro, calculated using actual exchange rates ..."

I am going to assume that that is actually true. I am not sure -- I think it may be overstating the situation that actually it was not only using actual exchange rates that these considerations went on, but they were considerations and they were considerations of profits, but they were a limited number of transactions. If "most important" means the biggest or, you know, the lowest margin, okay, fine, but it does not tell you anything about whether or not you should be treating, for the purpose of the regression, the prices as being converted. That is dealing with the same point that I have already dealt with.

Then at 429.3:

"DAF's use of the budget rates on its systems was partly practical ..."

I think Mr Habets made that clear. It may well have been partly practical but it just does not matter. The question is what were they actually doing, and they were using the budget rate. They were not using a week to week rate.

SIR IAIN MCMILLAN: Can I?

MR BEARD: Please.

SIR IAIN MCMILLAN: At 429.2, where "DAF's witness evidence indicated that the most important pricing decisions involved assessing profits based on revenues and costs in euro, calculated using actual exchange rates", does that not conflict with your point, Mr Beard, that they were actually using the budget rate?

MR BEARD: Well, what is being said is that the budget rate was used to translate matters down into particularly euro costs into the UK.

SIR IAIN MCMILLAN: Was that because of a system constraint that could not adjust for actual exchange rates on a time series?

MR BEARD: It was partly the system but it was also partly the smoothing effect that you do not want to be flexing. So Mr Habets said, "Yes, actually our systems would not have been flexible enough to do an actual exchange rate", but as a business planning issue you do not necessarily want to be flexing prices all the time. So using a budget rate, which is set annually -- so you are taking the lag rate and setting it annually, you then are able to make your decisions that way.

Now, it is true that -- when some of the transactions were referred up for approval, it is right that some of the assessment was then done using an actual exchange rate to think about the profits in euros, as you said, but this was limited in terms of number but it is also taking account of that when you were deciding whether to approve a price that had been negotiated in the UK using the UK systems. So, yes, you use it as a cross-check, but that is not saying that you are feeding that actual exchange rate through into the prices, even in relation to those approval cases.

Actually, the statement there is overstating it because on occasions they use budget rate rather than just actual rates and so on, so it is wrong on so many levels, but it gets them nowhere close to the constraint that Mr Harvey is wanting to impose.

SIR IAIN MCMILLAN: Thank you.

MR BEARD: I am not sure whether or not -- so there is then a section here in the closings from 431 onwards where what the claimants seek to do is refer to evidence from Mr Habets and Mr Ashworth, but none of this evidence, even picking out their best bits, as it were, gets them anywhere close to a story that suggests that there was this constraint that Mr Harvey has imposed.

You will see at 432 there is the reference to Mr Habets saying prices were considered in euros using actual exchange rates. This is precisely the point I have just been picking up with you, Sir Iain. Yes, this did include Royal Mail and BT transactions, but it is taken into account and it is the minority of transactions. There was reference to the fact that the trucks commercial department used a GB/euro exchange rate when they were thinking about MLO margins for a given deal, but that is the same point essentially here.

Then if we go over the page and we are looking at Mr Ashworth, {S/9/169}, it says:

"He took into account the GBP-EUR exchange rate when making pricing decisions [he says] 'as UK customers bought in Pounds whereas DAF NV worked in Euro, the exchange rate in force at the time of any tender could have a real impact on the actual revenues received by DAF NV'."

Well, I mean, that is a statement of the obvious, with respect, but it does not tell you that somehow Mr Ashworth and the UK team were changing all their UK prices by reference to actual exchange rates; far from it. Mr Ashworth repeatedly explained how the budget rate was used. Then 433.2:

"In [the financial crisis] period, the value of the Pound fell sharply ... and then fluctuated ... As stated above, DAF NV worked in Euro, but trucks were sold in the UK ... In [that] period prior to 2008, I had generally been delivering 1.43 [euros] for ... £1.00 ..."

Then it fell almost to parity.

"This, and increased costs caused by the fall in the Pound's value, meant that we had to try to achieve higher prices for trucks, against a background of decreased demand."

Well, yes, obviously true. Completely unhelpful in terms of moving to some kind of constrained pricing mechanism for the purposes of the regression.

MR RIDYARD: That is directly saying that, in this instance, which is an extreme instance, the euro costs did come through to dominate the consideration or influence the considerations.

MR BEARD: Yes.

"... increased costs caused by the fall in the Pound's value, meant that we had to try to achieve higher prices for trucks, against a background of decreased demand."

That is undoubtedly right, but across the period of the global financial crisis, this would have fed through both in relation to actual rates and in relation to budget rate, of course, even on a lag basis. But he is saying, "Yes, there is pressure here. We are getting that sort of pressure. We do take it into account". But is it saying that you are moving prices on this sort of rigid week-by-week basis? Not at all. It is simply not saying that.

We will come back to it in a moment, but, of course, Professor Neven is actually controlling for these matters when he carries out his regression, which is the point I am trying to come to next.

So we say these attempts to pick up bits of evidence just do not get the claimants anywhere close. Let us move to Professor Neven's approach. I will try to move through this rather more quickly than I have dealt with Mr Harvey's material.

If we could, at the risk of unduly dealing with these things, could we go back to the equation that I pulled up? {E/IC11/19}, please. This is actually, as I said at the start, Professor Neven's specification of the regression and it is perhaps just worth moving down the page -- sorry, over the page, I apologise, {E/IC11/20} -- picking up the MLO costs. So this is the MLO cost variable on the right-hand side of the equation. It:

"... stands for the production costs related to materials, labour, and overhead associated with the production of truck i from series j at time t. These are either given directly in British Pounds or converted, as part of my analysis, to British Pounds in cases where some (or all) of these costs are given in Euros or ... Guilders. This will allow me to take into account the impact of the exchange rate on prices. By using the MLO costs variable in British Pounds, when the exchange rate changes, the MLO costs will change: the effect of the exchange rate is mediated through the cost. This means that the impact of the exchange rate will be inversely proportional to the share of costs incurred in GBP (ie the cost will change more the higher the share of costs originally incurred in Euro)."

That all makes complete sense. {E/IC11/21}:

"As the share of costs in GBP varies materially across truck series, this will need to be controlled for. Depending on the period of analysis, the MLO cost data is available at different levels of aggregation."

He goes on to talk about the level of granularity. So the point here is that Professor Neven does take into account the costs that are being incurred, in particular in Eindhoven, in euros, previously in guilders, and what he does is he includes those in the data that he is using in relation to the MLO cost variable. But the important thing he is doing, as he explained it -- and I am just going to quote from {Day12/124} -- he says, {Day12/124:11}:

"I am letting the data determine the amount of its pass-through [into UK prices] ..."

So this is lines 11 to 13.

So rather than a straitjacket, what he says is, "Look, I do this, take into account the exchange rate in relation to costs, and then I ask how much do those costs, including the exchange rate effect, correlate with the left-hand side with the dependent variable".

If we could just go back to page 118 in this transcript, {Day12/118}, so this was an exchange with you, sir, where I think there was discussion about how the models are estimated. He says, picking it up at line 10, {Day12/118:10}:

"I do not impose a coefficient. I do not impose a particular relationship. I let the model determine the impact of the exchange rate on the cost incurred in euro expressed in pounds, into prices in pounds, which is the economically sensible, you know, mechanism.

"The mechanism is that you incur costs in euro, the pound appreciates. In pound terms, your cost is going down. The question is: how much do you pass that on? That is what my model captures."

Now, Mr Ward sought to suggest that this was imposing a cost coefficient on the model. If we could just go to {Day14/110}. So Mr Ward and Mr Harvey's position is, "But hang on a minute, you use this budget rate and that budget rate is itself a constraint because you are saying what the exchange rate is". That is why Mr Ward said it was a coefficient of 0.8 and a one-year lag.

But if we just pick it up at -- there is a question, {Day14/110:11}:

"Would you accept that in substance your approach is indeed a restriction? It is a restriction that the maximum rate of exchange rate pass-through is just the cost coefficient, around 0.8, together with a one-year lag?

"Answer: No. I mean, what happens is that if this is not supported by the data, the coefficient is not going to be significant or the coefficient is going to reveal that the actual process of pricing is not consistent with this. That is very different from what Mr Harvey does, as we have discussed. I mean, Mr Harvey is actually imposing a coefficient of minus 1 with respect to the exchange rate. So I am not imposing a coefficient. I am letting the data determine whether my pricing model is supported by the data."

So, yes, he uses the budget rate, but what he is saying is, because of the way that it is being used on the right-hand side of the equation, if in fact the actual process of pricing is not consistent with his use of the budget rate to translate the cost across, then that will come out in the way in which the regression results. That, as he puts it, is letting the data speak.

So this is why it is not a six of one, half a dozen of the other issue here. So Mr Ward has tried to keep saying, "Budget rate mechanism, used in the MLO cost, it is a restriction and Mr Harvey uses a restriction so let us split the difference". It is not that sort of thing at all.

But I want to take it further than that because, because of the way that Professor Neven carries out his regression analysis, he is able to use control variables in relation to the exchange rate. So you will recall that Mr Harvey said, "Well, in order to be able to solve that identification problem, leaving aside the margins analysis, I would need to impose an exchange rate stand-alone control variable and I cannot do that". Professor Neven can because he is not imposing a coefficient on the left-hand side.

So if we could just go to {E/11/55}, please. Now, this is a range of sensitivities that Professor Neven carries out. The first is -- so this is his regression but using sensitivities. So column (a) is the outcome of his regression, where he uses the budget rate to translate the euro costs that are -- all of the euro costs that exist in relation to trucks into pounds using the budget rate. Then you have got three numbers and those relate to three different demand controls, using the average delivery lag, the order board or the tonnes per kilometre. They are just demand variables so they are a different category of variable that are used in the -- I think it was Z. I cannot remember whether it was Z or X, but it is one of those. That is what we are talking about in relation to the rows.

Then he said -- then he looks at (b) and he says cost converted using budget rate and then it says -- so he is still doing -- taking the Eindhoven costs for trucks and translating them into MLO costs in the regression using the budget rate, but then he is able -- because that is within the costs explanatory variable, he can add a freestanding explanatory variable relating to the budget rate. Then he can ask essentially, "Well, is it the budget rate itself that has explanatory value here, on the right-hand side of the equation? Is it the budget rate or is it the costs doing the legwork?". So he can actually test that. So he is including a stand-alone exchange rate variable and the exchange rate he is using there is the budget rate.

But then (c), he has got the cost converted using budget rate, so he is taking the Eindhoven costs and putting them into the MLO numbers using the budget rate, but then he is saying, "Well, hang on a second, maybe this is something where actually the actual exchange rate should also have an explanatory role. I will put that in as an independent explanatory variable". So if we think about the equation again, he is adding in as a possible explanatory variable the actual exchange rate.

So what he is testing there -- he is saying, "Well, look, I am doing this budget rate translation for costs but I can see that there might be a concern that I am missing something here in relation to the impact of the exchange rate, perhaps, for example, because the impact of the actual exchange rate does feed through in relation to the approval process -- perhaps that is what is going on, in relation to a minority of cases, but perhaps that is what is going on. If I include this actual exchange rate variable in there, then the coefficient will pick that up if that is a phenomenon that we are seeing".

He says, "Well, actually, no, you do not get any material change". So he has included a stand-alone exchange rate variable on the right-hand side of the equation in this sensitivity and said, "Well, look, does it make any difference? Is the actual exchange rate actually doing any work here?". The conclusion he comes out with is, no, it is not materially changing the outcome as compared with the budget rate analysis.

MR RIDYARD: When you are talking about the outcome here, you are talking about the infringement coefficient?

MR BEARD: Yes, the infringement coefficient. I am so sorry. All of these numbers are effectively the infringement coefficient numbers for the different demands in the rows. I am so sorry if that was not --

MR RIDYARD: That is okay. But the one where you use -- the budget rate reaches these negative numbers, I cannot remember what he said about that so maybe it is not critical to the current line of thinking.

MR BEARD: I think what he is concerned about there is that actually there is a mis-specification when you start controlling for budget rate, using budget rate, but I will come back to that.

THE CHAIRMAN: Just so I understand, so both on the right-hand side of the equation you have got the MLO cost converted using the budget rate --

MR BEARD: Yes.

THE CHAIRMAN: -- then you also have another variable doing the same thing?

MR BEARD: What he is doing is asking himself whether or not the budget rate itself is fulfilling some kind of explanatory role. That is what (b) is. (c) is different because (c) is using a different exchange rate, so really it is (c) that is important. Mr Ward said, "Oh, well, Professor Neven likes (c) because it comes out like (a)", as if it was some kind of chosen wine gum; you know, "I prefer the black one but I will just take (c) because it is convenient". No. The reason why Professor Neven explained that (c) is useful and interesting is because it is taking a different measure of the exchange rate and asking whether it has a separate explanatory force and therefore changes the way in which the infringement variable coefficient comes out.

THE CHAIRMAN: You say there is not much difference between (c) and (a)?

MR BEARD: No.

THE CHAIRMAN: It shows that it is not?

MR BEARD: Well, it is showing that this exchange rate, even when you are using the actual exchange rate as a stand-alone variable, it is not having a material impact, yes.

THE CHAIRMAN: I think Mr Ward said in relation to (b) that that -- because you are becoming so negative, it sort of undermines the whole process in some way.

MR BEARD: But I do not understand why. What negative outcomes in relation to coefficients mean is that there may well be problems in relation to the specification in relation to (b) but the difference in relation to (c) is that you are using different measures of exchange rate as your stand-alone variable.

It is perhaps worth just going -- thanks to Mr Bourke -- to {Day14/130}. Actually I think -- I do not know to whom credit should go for this reference -- Ms Mackersie. So these were questions being put about (b), I think, {Day14/130:18}:

"Question: That is quite all right. What we are seeing is dramatically negative coefficients here, are we not, minus 4.8, but that is precisely a control for the type of exchange rate conversion that you are doing, is it not?

"Answer: No, that is exact -- no. I think that introducing the budget rate to convert the cost plus introducing the budget rate as a stand-alone variable, I mean, does not reflect the way in which DAF operates because DAF operated by using the budget rate for expressing the cost and then was expressing concern with respect to the current rate. So it is essentially the third one, the (c), as you said that I like, that expresses the way in which DAF operated. You know, the fact that you get this negative coefficient, it suggests that there is an identification problem, you know, and I said that. I mean, there is an identification problem and I understand -- that is the important point -- I understand the source of this identification problem, which is, by the way, also arising in (e). This identification problem is essentially the consequence of what is happening in 2008, in which you have the depreciation of the pound at the same time as the financial crisis."

So what he is saying is that there is an identification problem that is being represented by those negative figures in (b) and he says it is a matter of the technical operation of the model. The reason you are getting that is because of what was happening in 2008 in relation to the depreciation of the pound at the same time as the financial crisis.

So it is a technical answer, I am not denying it, but he is explaining why it is you get those negatives. But he is also explaining why (c) is more reflective of how we understand from the evidence DAF operated because it captures the phenomenon that Sir Iain was referring to, which is the potential consideration of the actual exchange rate in relation to some of the transactions. You are then asking yourself, "If I have this as a stand-alone variable, does it change my infringement coefficient outcome?", and the answer is: not materially.

So if we can go back to the table, so {E/11/55}, we see (c). I think it is just worth also picking up (d) here because (d) is not using the budget rate at all. What (d) does is it says, "Well, okay, let us just see what happens when we operate this model actually using the actual exchange rate for the translation of costs from Eindhoven into the -- from euros into pounds". This is striking because what you do get is marginally negative coefficients but you do not get anything like Mr Harvey's coefficients coming out of it. So what he is doing is he is saying, "Right, I have got all this evidence about how the budget rate works. That seems to me to be sensible. In (c) I have got a sensitivity where I take into account the actual exchange rate as a stand-alone variable, the very thing that Mr Harvey cannot do, but I have gone further and I have actually gone to getting rid of the budget rate entirely and pushing the costs through -- the MLO costs through from euros into pounds using this actual weekly rate".

THE CHAIRMAN: That is without any stand-alone variable?

MR BEARD: Yes, that is without any stand-alone variable, that is correct. It is a different sensitivity.

THE CHAIRMAN: Professor Neven accepted, I think, that Mr Harvey could not actually use a variable.

MR BEARD: He cannot use a stand-alone variable.

THE CHAIRMAN: Because of the way he structured --

MR BEARD: Yes, I think that is exactly right. Because of the way that Mr Harvey has structured his regression, both Mr Harvey and Professor Neven accept it is impossible to put in place a stand-alone explanatory variable for the exchange rate.

The principal sensitivity that I want to focus on here is (c), where it is clear that Professor Neven -- already having explained how even just using the budget rate, it is not a constraint as Mr Ward was putting it, that is just a misunderstanding -- but he then puts in a stand-alone exchange rate variable and tests it that way. So he is able to do precisely what Mr Harvey was not.

Then he goes a further step and looks at (d), which is using a completely different rate for the translation of costs, but he is not getting any sort of positive coefficient coming out in those circumstances, which is just reflective of how, because Mr Harvey has straitjacketed the left-hand side of the equation, he is getting remarkable results that are just not tenable in these circumstances. But, in any event, the key point here is that, unlike Mr Harvey, Professor Neven, because of the way he structures his model, can test for exchange rate effects using a stand-alone variable.

So when Mr Ward starts talking about flexibility of models and saying that Professor Neven's model is not flexible, it is just not right. He is misunderstanding what actually Professor Neven's model can do, both in relation to the budget rate mechanism in cost but also by introducing a stand-alone exchange rate variable.

I am conscious of the time.

THE CHAIRMAN: Okay. We will break now for lunch. 2 o'clock.

MR BEARD: Thank you.

(1.04 pm)

(The short adjournment)

(2.00 pm)

THE CHAIRMAN: Yes, Mr Beard.

MR BEARD: Thank you, sir. I am going to try to finish off relatively briefly on econometrics to do with the exchange rates and then obviously I will need to accelerate a little bit through, but hopefully that will not be too painful.

Can we just have a screen -- fab, we have it up there already. We have table 9 up there, {E/11/55}. So we were discussing the sensitivity in (c) and I just need to briefly deal with the contentions that the claimants have made that somehow Professor Neven was not applying a like-for-like approach in relation to exchange rate sensitivities because he -- I think the contention is that Professor Neven applied a freestanding exchange rate variable in relation to his analysis but did not do so in relation to Mr Harvey's. But the problem we have is, as I have adverted to earlier, that Mr Harvey's approach does not admit of a workable mechanism where you introduce a freestanding exchange rate variable that can deal with the problem on the left-hand side of the equation.

Now, there was a discussion about what could be done here and I will come back in a moment to these issues. One of the things that is said against Professor Neven in relation to (c) is that somehow this is a mix and match approach, that you are using the budget rate to translate the MLO costs and then you are including a stand-alone explanatory variable in relation to the actual exchange rate. With the greatest of respect to the other side, that is just not a criticism. You are not here trying to match out the exchange rate you used for the MLO costs with some kind of explanatory variable. What you are doing is asking whether or not the exchange rate, the actual exchange rate, the weekly exchange rate, has an explanatory value in circumstances where you have carried out a regression using the budget rate to translate the costs. You are not trying to match them off.

The problem is different for Mr Harvey. Because he changed the whole of the left-hand side of the equation using the actual exchange rate, he absolutely needs a freestanding exchange rate weekly rate variable on the other side in order to be able to see what explanatory value that particular variable has because otherwise you have the identification problem. But he recognises he cannot do that practically. It does not work. So in theory you can add these things, but, in practice, because of the multi-collinearity problem, it does not work. So he cannot add a freestanding variable of that sort and make his regression meaningful.

THE CHAIRMAN: How do you explain those negative coefficients?

MR BEARD: Which ones?

THE CHAIRMAN: (b) and (e).

MR BEARD: (b), I think that was the point that we picked up before the short adjournment. What this is showing is that you have got an identification problem when you are using the budget rate as a freestanding explanatory variable with the budget rate as the MLO cost transmission mechanism. I took you to the passage that Professor Neven gave in oral testimony where he explained that the reason for this identification problem arises where you have a depreciation of a pound occurring at the same time as the financial crisis in

2008, so he has actually looked at why it is that you do get these problems. I think the reference is {Day14/130-131}.

THE CHAIRMAN: Does it show that the equation in some way is not really working properly?

MR BEARD: No. No, it does not show that the equation is not working because, as Professor Neven said, "Well, I can understand why it is you are getting these negative outcomes because I can look at the technical problem that I have got in relation to these two parameters, so it is not telling me that there is a problem with the model overall". Yes, it is a technical answer that Professor Neven gave but he says, "No, I can understand why I am getting those negative answers in relation to the use of the budget rate as a stand-alone variable in my model".

There is a limit to how far I can take this because obviously it is a technical answer to do with the way that the model is functioning, and what he is identifying is -- he is saying, "No, I can understand why you get this output in these circumstances".

But just to go back to what is said about Professor Neven doing mix and match in relation to (c), that is just misunderstanding what he is trying to do there. He is taking the evidence he has got about the use of the budget rate for the translation of costs but then trying to identify whether there is a separate explanatory force to the weekly exchange rate which he is testing by including a separate explanatory variable. It is precisely this question of whether or not it is the weekly exchange rate which is driving changes in prices or is correlating with changes in prices that Mr Harvey cannot do because of the way that he has structured his equation.

Now, Mr Harvey did try running a mix and match, as they put it, analysis where he uses his own model but then adds a freestanding explanatory variable on the exchange rate using the budget rate, if you remember. It is worth perhaps just picking it up. It is in their closings at paragraph 474 so I think that is {S/9/186}. Here you will see that what is said is, "Well, Mr Harvey ran this sort of mix and match sensitivity", but Professor Neven says, "Look, mix and match is the wrong approach. It is not have you got the same things on both sides; it is what have you got on the right-hand side as your explanatory variables that matters", and he was testing for weekly exchange rate. But then Mr Harvey says, "Ah, yes, but, look, I control for the budget rate as an explanatory variable and my results do not change", which he suggests means that actually his regression is somehow robust. Professor Neven criticised this -- I think this is quoted over the page -- as being superficial and, with respect, it is actually with good reason.

If we go to Day 14 of the transcript, picking it up at page 135, this was a section where Professor Neven was being cross-examined by Mr Ward about this notion of mix and match. You will see it at the top, {Day14/135:7}:

"Question: You have taken the benefit of column (c) [line 7] for your own model and you have condemned Mr Harvey to non-robustness by taking the approach in column (e)?"

Professor Neven says, {Day14/135:10}:

"[No] I am testing the two models and I am testing the robustness of the identification strategy in the two models, which does not imply that I necessarily have to use the same variable in order to do that. I mean, precisely a like-for-like comparison requires that you understand the identification strategy."

Then it goes on. If we actually just skip down to page 138 -- sorry, can we go back to page 136? There is then an along question from Mr Ward, and picking it up at line 12, {Day14/136:12}:

"Answer: Again you are making a comparison which is precisely not like for like because the model of Mr Harvey and mine undertake the identification differently. Actually, what is interesting precisely with respect to this table of Mr Harvey, you see that the overcharge is not changing. What he is doing there, it is essentially introducing the budget rate as a stand-alone variable in this model in which you have the dummies for the financial crisis; okay?

"If you have dummies for the financial crisis, if you look at the data, there is no change -- there is only one actually, one change in the budget rate which is happening outside the -- during the period which is used for identification. Okay, let me be clearer. The period that is used for identification here is the period of sales of the Euro 5 trucks ... I mean, in the model of Mr Harvey where you introduce dummies for 2009, 2008 and 2010, you are taking this data out, so essentially what you are using is -- I am sorry, are you okay?"

I think Mr Ward may have been coughing perhaps. It is not picked up on the transcript but it is simply being expressed.

MR WARD: Luckily over video.

MR BEARD: {Day14/137:8}:

"Answer: So essentially what I am using is --

sorry, what is used by Mr Harvey is the data before 2008 and the data after 2010. If you look at the changes in the budget rate in that period that is used for the identification, there is only one, so there is no variation in the budget rate. He is not adding anything."

In other words, the reason it is a superficial modification is because it is not adding a variable that is in any way able to be explanatory because there is only a single change during the relevant period of identification because of the way that Mr Harvey does it in the light of the global financial crisis dummies which wipe out the period 2008 to 2010. So not only is the criticism of mix and match wrong, you actually have to look at the sensitivities depending on the strategy that has been adopted.

THE CHAIRMAN: You are saying it would have come out differently if he had not used the dummies for the GFC years?

MR BEARD: I think that is right. I think that is the implication of Professor Neven's -- I do not want to give evidence on his behalf but his position is that in order --

THE CHAIRMAN: Because there was more variation in the budget rate --

MR BEARD: There is more variation and therefore there is something for the model to bite on. If you have no variation, it cannot bite because these models are looking -- as I think both experts accepted, it is variability that is very important in these circumstances. That is why it is referred to as a "superficial check" because it is not actually doing anything, it is not adding anything. So that is why it is important.

In any event, what is critical here is not to get too concerned about this criticism of mix and match because it is not the right criticism when levelled at a regression that is carrying out the sensitivities as Professor Neven is, because you are doing something completely different with Mr Harvey. Therefore, this like-for-like criticism, mix and match criticism, does not make sense.

Just for your notes, the test that Professor Neven carries out in relation to Mr Harvey shows that, if you do insert an exchange rate control variable into his during/after analysis models, using euros, you find that the overcharge coefficient, the infringement coefficient, drops from 6.7 to something like minus 5.7, and he says, "Look, this is just creating a massive identification problem". That is evidence of the identification problem.

So we are back where we were essentially saying, "Look, Mr Harvey does not have justification for the radical strategy it adopts, Professor Neven adopts a much more rational strategy and then carries out sensitivities", and saying, "Oh, well, your sensitivities are not just budget rate for budget rate, they are budget rate with a freestanding variable for the exchange rate", is not an adequate criticism of Professor Neven. But more than that, it does not rescue Mr Harvey. It does not solve the problems that Mr Harvey has.

So, as I say, I have given you the reference to the material from Professor Neven. It is in his second report, table 1. Just for your notes, it is in {E/35/16}, which shows that, where you introduce a control variable in Mr Harvey's during/after analysis, an exchange rate control variable, it effectively undermines the robust -- it shows that you have a severe identification problem. He also tests it in relation to the before/during model, and that is at {E/35/50}.

Now, I should just finally deal with a couple of other matters that Mr Harvey sought to rely on. He sought to rely on a couple of additional tests he ran in his third report. Now we are definitely into the weeds of sensitivities here and it does not change the fundamental points, but just to cover these off. In Mr Harvey's during/after model, he converted prices using a budget rate instead of the actual exchange rate and suggested that did not materially affect his results.

Now, on the face of it, that sounds like it is doing something quite significant, but Professor Neven said this was not informative because Mr Harvey was still constraining the relationship between the price and the exchange rate. Rather than using the actual exchange rate, he was constraining the price using the budget rate, but it still has the same fundamental problem. You are still imposing the coefficient on the pricing and deciding how the prices are going to move rather than testing it.

So Mr Harvey, in response to that, said, "Well, I will reduce the level of pass-through and use a lower coefficient", because initially he started with one to one. So he used a couple of alternative coefficients, one at 88% and one at 94%. Now, I recognise that moving to the budget rate and constraining the prices on the left-hand side using the budget rate is a different kind of straitjacket. It is still a straitjacket. Then these further variants that he is putting in, saying coefficient of 88%, coefficient of 94%, it is the different straitjacket but with half a hand essentially becoming free. It is still wrongly constraining the pricing side of the equation; in other words, you are not letting the data speak in relation to the price movements.

Just for your notes, Professor Neven picks up that in a joint expert statement. It is in row 5H(iii), and that is {E/IC78/48}.

There was one point that I actually missed this morning when we were talking about margins and so on that I ought to just cover off before I move on. There was a mention by Mr Harvey at one point that he had done a margins regression. I do not know if you recall this at all. It was a very passing reference and it is a very passing reference in his report. It is only referred to in his first report and it is a very limited regression. To be fair to Mr Harvey, he does not set stall by it and he does not use it when he is carrying out his interpretation of margins that we were referring to earlier, but I thought I should mention it because Mr Ward did.

Mr Harvey, in cross-examination, recognised that this margin regression was not actually analysing what competitive margins would have been like, and just for your notes that is {Day12/66:5-9}. As I say, it is not actually relied upon in the sections of his report dealing with that graphical analysis, as he called it, that we were referring to yesterday. Just for your notes, the passing reference is in one report. It is at paragraph 4.94(i) in his first report. But the problem with that margin regression -- and I think Mr Harvey accepts it -- it imposes a fixed one-to-one relationship between prices and costs.

So in those circumstances the idea that you are carrying out any meaningful regression of margins is very difficult to understand and, to be fair to Mr Harvey, he does not seem to stand behind it. It depends on essentially making very significant assumptions about how these things work.

I was just dealing there with the vestigial end of the sensitivities analysis and so on, but you have the main points in relation to the exchange rates and currency regression: Mr Harvey has gone at it the wrong way round.

THE CHAIRMAN: Can I just ask one factual question in relation to that?

MR BEARD: Of course.

THE CHAIRMAN: The IKP targets, how frequently were they changed?

MR BEARD: We will double-check, but we think Mr van Veen said it was annually changed and then you had these target margins that were set overall and then they were dispersed effectively for different trucks, different countries and so on. There was a whole exercise involved in setting them, but it was done annually, as I recall. We will double-check that but I think that is the case.

THE CHAIRMAN: So it was not any more frequently than annually?

MR BEARD: I do not think so, no. I have utter faith in those that have just passed me that message and that is my broad recollection as well, but we will double-check the evidence.

THE CHAIRMAN: Obviously that is a means of control from NV to what is going on in DAF UK?

MR BEARD: Yes, it is a way of influencing things. That is why -- I think the evidence is clear on that.

THE CHAIRMAN: They would obviously take into account if there was any sort of dramatic shift in exchange rates?

MR BEARD: It depends, I think, what you mean in relation to that because you have obviously got a situation where it depends on what one is talking about because, obviously, IKP costs, certainly during the early period, were based on the MLO costs and there is an extent to which translation of those costs into IKP for the UK would be done using the budget rate. Then there is a surcharge, if you recall, and then there is the margin. I think one has to be a little bit careful because the margin is a percentage on top of the IKP costs, so you can be flexing target margins, in other words that percentage --

THE CHAIRMAN: Well, that might be responsive to exchange rate changes.

MR BEARD: The target margin -- well, the margin could be responsive to -- well, it is not responsive. I suppose it is the consideration -- yes, it is how you are setting these things. You could take --

THE CHAIRMAN: Taken into account.

MR BEARD: Well, you could take a vast range of things into account, but in doing that you are going to be taking into account the costs component because, obviously, there is a target margin above costs plus surcharge, and so -- I am not actually disagreeing with you, sir. It is just that how these things might feed in might be different for the different elements of the IKP I think is the issue there --

THE CHAIRMAN: Okay.

MR BEARD: -- because you are dealing with costs as well, but we will confirm that -- possibly overnight, but yes.

So, as I say, exchange rate is very important, very wrong by Mr Harvey, has a huge impact, wipes out the before/during, radically reduces the during/after coefficient.

I want to next move on to the financial crisis dummies that Mr Harvey deploys because, again, we say he has just gone badly wrong in relation to his treatment of the financial crisis. Again, this has a very significant effect. Obviously, with the financial crisis we are only talking about during/after period. We are not talking about before/during, just given the dates of the financial crisis. But we actually know from Mr Harvey broadly what the impact is because he said in cross-examination that when he had first carried out his during/after analysis, just treating the financial crisis as a demand effect, he got a 1% to 2% overcharge; in other words, infringement coefficient --

THE CHAIRMAN: Yes.

MR BEARD: -- whereas obviously we know that, once he includes those dummies, we get around 6.7 from Mr Harvey, so it has a very significant impact on the during/after analysis.

THE CHAIRMAN: And trying to understand why that was?

MR BEARD: Well, yes. He says -- I think the point we make is we are not doubting that he did that first and went away and tried to understand what was going on. His initial intuition was looking at these things as demand matters. Now, he then had concerns about whether or not that was true and says he was testing it, but I think we simply say, well, his initial intuition that you are dealing with demand matters is actually correct, and we will be coming back to that.

I want to deal with four features of the way in which Mr Harvey -- or four dimensions of the approach of Mr Harvey in relation to the global financial crisis. So the first couple are concerned with what it means for his regression analysis. So the first one is going to be that the removal of large chunks of data operating in the regression model, stopping them having any direct effect, this undermines the functioning of the model and has implications for the robustness of Mr Harvey's analysis and, in particular, the fact that you are effectively taking out the direct effect of a large chunk of data during the period but you are not doing it across the threshold of the infringement.

The second point I want to deal with is actually the duration of the dummies and the sort of arbitrariness of the length of the dummies because, if you remember, there was some testing done in relation to whether or not you treated 2010 as a full year or half a year and it makes a big difference and there is not a justification for how Mr Harvey has dealt with those issues.

The third point I want to pick up is actually just some of the factual assertions that are being made by Mr Harvey and Mr Ward which are said to underpin this approach, that somehow the financial crisis -- there is evidence that the financial crisis was having more than a demand effect. I will work my way through the various heads of evidence that Mr Ward and Mr Harvey referred to or those on the team on the other side have referred to because there is quite a long list now in the lengthy closings.

So I will deal with those three in relation to Mr Harvey and then I will turn and deal with how Professor Neven has dealt with these issues in relation to the global financial crisis.

So let us just deal with the first of these heads, so it is the removal of large chunks of data having any direct effect. What these dummies do is effectively they switch off various truck purchases from having any direct effect in the consideration of the regression for during/after. We can pick it up, if we may, at {Day13/51:10}. So this was Mr Ridyard just asking Professor Neven about the dummies, {Day13/51:16}:

"How do we interpret the -- what use is being made of the observations [during] those years [when the dummies are on]?"

Then Professor Neven explains, {Day13/51:18}:

"... when you introduce dummy variables, say for 2008, 2009, 2010, you are essentially excluding the observation for the sake of the identification of the infringement. This is what I mentioned earlier, that by introducing these dummies, the population of trucks before the infringement -- sorry, the population of trucks during the infringement, before the end of the infringement, which is used for the identification of the infringement, this population of trucks is reduced by half, and that is, I mean, essentially because if you introduce a dummy for a particular year, the only way to identify an infringement would be for the observations for which this particular dummy takes the value of 1 [because it is just an on/off switch] -- would be to have trucks during and after the infringement, but we do not have any. You know, in 2008 all trucks are during the infringement period, in 2009 all trucks are during the infringement period and in 2010 as well.

"So by introducing these dummies which basically impose a premium or a discount, if you want, on all prices in those years, since you do not have any variation which would be associated with the infringement in those years, you cannot actually use them for the estimation of the infringement."

So he is explaining the significance of this. This is the direct effect. We recognise that there is a residual role for these trucks in relation to other -- definitions of other variables. But the key thing is that, for the purposes of identifying the infringement, you are essentially switching these things off.

If we could just go back to page 33, {Day13/33} -- I think we probably do not need to deal with that. I will just move on, but thank you.

If we could go back to page 52, {Day13/52}, this is Mr Harvey and you see, picking it up at line 19, {Day13/52:19}:

"The way the infringement effect is identified uses two sources of information. One is the variation in prices over time and it is correct that, by dummying those years, the regression removes that variation over time in those years."

That is the critical thing. So I think there is no dispute about the direct effects. Mr Harvey then refers to the second source of information, {Day13/52:24}, being "variation between prices, costs and other things and the trucks are used to help with that, so it sort of

..." This is the indirect effect. So the trucks are taken out of the regression effectively for the purposes of identifying the variation over the years but they are still used to help identify other variables.

THE CHAIRMAN: So the overcharge is an average over the whole period --

MR BEARD: Yes.

THE CHAIRMAN: -- from 1997 -- the whole of the infringement period?

MR BEARD: Well, we are just dealing with the during/after, and so that is from 2007 to -- 2004 to 2011. So --

THE CHAIRMAN: Then they are added together to get an overall average, are they not?

MR BEARD: Well, Mr Harvey has an 11.6% before/during analysis.

THE CHAIRMAN: Right.

MR BEARD: Then he has a 6.7% during/after analysis.

THE CHAIRMAN: Right.

MR BEARD: I think he then says, "Well, as a broad arithmetical average of the two figures, you are around 10%". He just jams them together. I am going to come on to the different approach that Professor Neven has, which is he does during/after, where you have got the robust data, and then he does before/during/after because he is so concerned about the quality of the data of before/during. The point that is made against me there is that is just jamming two things together and I will explain why that is not the case.

THE CHAIRMAN: But just in terms -- so in the during/after period, Mr Harvey, by using the dummies, he is taking out three years of figures that would feed into the average for that period --

MR BEARD: Yes.

THE CHAIRMAN: -- that whole period?

MR BEARD: Yes, that whole period. Now, just to be clear, the number of trucks you are dealing with in the during/after analysis, they do not stop at the end of the infringement because of course the clue is in the name.

THE CHAIRMAN: Yes.

MR BEARD: So you are taking out the chunk of that three years -- you are right -- for the average overcharge being imposed on them, but there is -- I have to be fair in relation to this regression -- there is a bigger universe of trucks that one is dealing with than just up to the end of the infringement, yes, for the regression.

Now, the key thing here is that, because you are doing this during/after analysis, what you end up doing is fundamentally undermining the degree of variability you have in the during period. As has been repeatedly said, the way that these models work is that they are capturing changes in these various parameters by reason of the variability of the different data parameters they are focused upon. That is how they generate the coefficients that are providing the levels of correlation on the right-hand side of the equation, by looking at these variations of different parameters over time. That is what the complex maths is doing in the background.

Now, Mr Ward somewhat blithely said last Thursday, "Well, this is a problem in theory but not in practice", because he said, "Well, look, do not worry unduly about these things because you still have quite a lot of trucks in the during period that are relevant to this, this analysis". Indeed at one point he said, "Oh, well, it is only 10% of the number of trucks you are taking out", but that really is -- it is not correct. 10% is of the whole period number of trucks, not just in relation to the during/after. But, more particularly, in relation to the during/after period, what is critical is what is going on with the Euro 5 and EEV specification trucks because those are the ones that are sold during and after the period.

So what Mr Harvey is doing is excluding 55% of all of the trucks from the during period which are directly used to assess the infringement variable in the regression analysis, in the during/after. So needless to say, creating this huge three-year blind spot for himself in this during/after analysis is highly problematic.

Could we just go to {S/10/36}? If you could just scroll down so we could see the -- it is not a complete blind spot but it is certainly slightly blurry. But what you can see here is that you are taking out the three years of data in the run-up to the end of the infringement, but, more particularly, although it looks like, to the left, you have got lots and lots of trucks being referred to, because it is the order board, in fact the ones that are taken out during that blind spot amount to over half of all the trucks that are relevant to the infringement identification in this during and after analysis.

We can see this again, if we may, in a different presentation, {E/35/23}. So this is a plot talking about margins, but it is Euro 5 trucks sold in the UK. Here you see the problem. The yellow period is essentially the blurred period we have just seen, and essentially what Mr Harvey does is looks at these Euro 5 trucks, because they are the same basic specification for during and after, they are the ones that are driving the infringement variable assessment, but he wipes out as a direct consideration all of those yellow dots. So all of that material, up until the infringement ends, is switched off in his analysis. So that is the sort of scale of the blind spot you are imposing in relation to this.

More particularly what you are doing is wiping out all of the assessment of variability that you would get during that period, which, of course, may be particularly significant because you are dealing with a period where there are significant changes in relation to demand and indeed in relation to prices, and therefore it is the sort of variability that helpfully informs any regression analysis. So what we have got is a small number of trucks in essentially 2006/2007, nothing for three years, and then we have got the trucks after the infringement that we are looking at.

THE CHAIRMAN: Mr Beard, if it was the case that for some reason during this three-year period the rules which normally dictate how prices are set were suddenly thrown out of the window and all sorts of crazy things happened, then it would be appropriate, would it not, to take them out of the equation? It is a shame to lose observations, but could it be argued that, yes, it is a shame to lose observations, but if those observations are fundamentally misleading because they refer to a price-setting mechanism which does not apply in the two blue periods here, then the least bad thing to do is to throw those observations away and just concentrate on the good observations in the two blue periods?

MR BEARD: Well, if you have that very clear story that shows, you know, these are just completely out of whack for completely other reasons and the whole pricing methodology had changed, then there may well be a reason why you are concerned to remove outlier observations, and that might be across a duration. I can see that. But you would need the clearest and most compelling reason to just be taking them out in these circumstances. This would not be a marginal issue.

But the problem you have then is you might take them out but that does not mean that the remainder of your regression is robust. It may just destroy your regression analysis in those circumstances.

MR RIDYARD: Well, then you have to decide what you do then.

MR BEARD: Yes, then you have to decide what you do with it, I agree. But you cannot necessarily hold on to the regression, you have to look carefully about what it is then telling you. But I go back to the primary point, which is you would -- if you are going to switch off a whole swathe of data when it is providing you with all of this information -- and we are talking about trucks being sold here. I mean, they remain trucks of a similar sort -- you are going to need a very, very compelling case as to why you switched them off.

Fundamentally, we are not saying that there are never circumstances where you eliminate data from a regression analysis. Absolutely not. That would be crazy. But what we are saying is: have you got the compelling story to say "We eliminate all of these" in circumstances where it has a very, very significant impact on the way in which the analysis is to be carried out?

MR RIDYARD: Whether it has an impact or not is not determinative, is it?

MR BEARD: No, no, it is not. It is --

MR RIDYARD: It is whether it is right or wrong that is determinative.

MR BEARD: Of course you are right. I am not demurring. I will accept that that was a jury point.

THE CHAIRMAN: This graph is showing, what, that there is a steeper sort of gradient when you take out the yellow?

MR BEARD: Yes. I am not focusing on this for the gradients and margins. I am just looking at this literally for dots, because this is to do with margin calculation which we are not in the territory of. It was why I went to the other diagram first. But I just thought this brings home -- because what this shows is the dots represent the actual truck purchases that are fed in, so for these purposes you can kind of ignore the lines.

THE CHAIRMAN: It is showing the mass of the trucks?

MR BEARD: Yes, it is the mass and the blind spot, where the blind spot arises in the scale of it, which again goes to why it is you need the most compelling reasons why you would just wipe these things out. So I am not demurring from Mr Ridyard's proposition. If you have really compelling reasons, then, understood, that may be the way that you have to go, but you do not here.

THE CHAIRMAN: I think everyone is agreed that the GFC was a pretty big moment.

MR BEARD: Yes, it certainly was, but in terms of demand impact. What I am going to come back to -- I am going to come on to the factual material in a minute, but the basic point is that what is really striking about what happens in DAF is they did not change their approval mechanisms. More stuff went up, yes, true, because the margins were much lower and that was how the structure worked. But what is really striking is none of that actually changed. They did not radically reshape the way they did their pricing. That was not what was going on. They stuck with the hierarchy of progressing things upwards. They have the approvals process, they considered those issues and, yes, they sold fewer trucks and, yes, they sold them at much lower margins. All of that is true, but that is a function of demand.

So we are nowhere close to the situation that Mr Ridyard is contemplating or positing -- sorry, I am not suggesting he is saying this applies here -- of a completely different way of pricing trucks at all. I mean, it is actually striking that DAF stayed with the methodology that it had before and it had afterwards, but I will come back to that.

It is right -- as well as just highlighting the blind spot effect, just worth noting that this has a significant impact on the demand controls. Because it has an impact on the variation that we have, it does have a significant impact on demand controls.

If we can just look at Professor Neven's second report, {E/35/26}, please. This is Professor Neven carrying out an assessment in relation to the impact of the dummy variables. You will see in relation to column 1 that when the year dummies are included, which are 2008, 2009, 2010, the DAF UK sales volume coefficient is 0.004, which is a very small magnitude. That is the demand variable essentially. I am sorry, Mr Harvey's specification. I apologise. Thank you to

Mr Bourke.

Now, if you remove the demand variable, it makes no difference to the infringement variable effectively. You can see that at the top because you have got 0.069 as the coefficient and it moves to 0.070 in column 2. But if you remove the dummies, which is what happens in column 3, you get a vast jump in the demand dummy. I think Professor Neven referred to it as being almost ten times larger. I think it is actually about eight times larger, but it does not matter.

So the point I am making is that the operation of the dummies actually has an impact on the way in which the whole regression is functioning and the demand variables are functioning here; in other words, as Professor Neven put it, the use of the dummies mutes the impact of the demand variable and it is clearly therefore distortive of the regression more generally.

It is worth just bearing in mind that if you remove the dummy variables, what you see at the top is the infringement coefficient dropping from 0.069 or 0.070 down to 0.013. So that is just indicative of the extent to which the imposition of these dummy variables has a significant impact on these issues.

Now, Mr Ward in closing said it was a virtue to exclude this period because the effect of the financial crisis was atypical. Obviously this is going to be flawed on a number of levels. Essentially he is saying that if the financial crisis was different from being a demand phenomenon, then we would see different outcomes in relation to the impact of demand, but of course that is just purely circular. It is just assuming what you prove but referring to demand variables. It is also problematic because in fact it is not recognising the extent of the impact on the demand controls.

Professor Neven has explained what all of this means. He is saying there are two periods impacted by what has been done here. The period before the crisis had high prices, the year dummies mean that demand cannot operate properly, and this means the infringement variable picks up the difference between the high prices before the financial crisis and the lower prices after the end of the infringement. Just for your notes, that is {Day13/32:16}.

Then the second period that is impacted is obviously after the end of the infringement because there are low prices during that period because of weaker demand, but, because the year dummies prevent the comparison just across that infringement threshold, Mr Harvey is attributing the lower prices to the infringement variable because of the operation of the dummies; in other words, what he is broadly doing is comparing what was happening in 2006/2007 with what happens after the infringement, when in fact we saw during the global financial crisis prices dropped and therefore it might be natural that this is all part of the pattern of prices that then continues after the infringement period and he misses out that.

I have just been signalling. I am not yet dealing with the further problem -- the further issue that Mr Ridyard highlighted, but I am just talking about the very significant consequences of this approach to the overall econometrics.

The second point I want to pick out, though, is important. It is the arbitrariness of the duration of these dummies because they simply exclude calendar years. If we could just go to {E/35/35}, just a few pages on here -- I am not sure we need to -- given the time, I am not going to work my way through all of that. But what you see at the bottom is the first half of 2010 comparison, so what you see is the potential impact here of using the first half of 2010 rather than the whole of 2010 on the overall effect on the infringement. You can just see that at the top. You see the infringement coefficient is 0.028 when you are using the full year for 2010, but as soon as you -- you know, you stick with Mr Harvey's full-on dummies, switching everything off as direct contribution, but you only do it for the first half of 2010, your infringement coefficient drops to 0.006 in the second column. Sorry it is right at the top, sir. Does that make sense?

THE CHAIRMAN: Yes.

MR BEARD: In other words, if you do a little bit less switching off, it makes a vast amount of difference.

THE CHAIRMAN: So if you are switching off half of 2010, why does that affect years 2008 and 2009?

MR BEARD: That is a question -- it is partly to do with the interaction of all these elements, but I am going to -- over the next short adjournment I am going to confirm the answer to that one because that one is well beyond my econometrics pay grade.

THE CHAIRMAN: Well, it may be that we do not need to consider it, but difficulty in understanding.

MR BEARD: I will come back to that. But I think the key thing is what is the outturn infringement coefficient that you are getting, and the point is that your outturn infringement coefficient is vastly different if you are only switching off the first half of 2010. Of course we are talking about the financial crisis and there is not a good reason why you should be thinking about the financial crisis actually operating in the second half of 2010. Yes, people were recovering, yes, it was difficult. I am not suggesting anything else. But even on Mr Harvey's account there is not a justification for the switching off of the second half of 2010.

If we can just go to the transcript that dealt with this, picking it up at {Day13/46}. Professor Neven is answering at line 7, {Day13/46:7}:

"... Mr Harvey's approach, which is that the results that he gets are also very sensitive to whether he introduces a dummy for the full year of 2010 or not.

"Mr Ridyard: Yes, I was ... going to ask [about] that ..."

Then Professor Neven explains this and goes to this table and explains the table.

If we can read down and then go on to page 47, {Day13/47}, what you see is -- if we could go to page 47, thanks very much. Then Mr Ridyard asks the question of Mr Harvey. If we could then just go on to 48, {Day13/48}, and stop at 11, before we get to the charts about the blue dots and the red dots.

Essentially, Mr Harvey does not have any good reason why he takes out the whole year and, given how important this obviously is to the way in which the during/after analysis works, you need to have a proper and clear justification why you are taking out an additional six months. That is the point that is being made. In essence, this approach that he has adopted is arbitrary. What it does is it applies a full notional financial crisis effect across three years, wipes out all of that data and then completely vanishes on 1 January 2011.

THE CHAIRMAN: Similarly you are starting on 1 January 2008. Is that the right time to start?

MR BEARD: No, it probably is not, but I think that what Professor Neven has done is just tested whether or not there is a sensitivity if you actually flex the -- taking what we think is the wrong way of doing things, which is just switching all these -- using the dummies to essentially switch off all these trucks during these three years. What he is showing is that, if you actually focus more closely on what the parameters of the financial crisis were that you are asserting is so important, even if you had drawn it back six months, you have completely changed the outcome.

The reason that that is not unreasonable is because, when we look back at the dates of the financial crisis, the focus was in 2008/2009 and the idea that you should just assume it runs through to the end of the calendar year in the following year is just not -- there is no basis for it. Mr Harvey, to be fair to him --

THE CHAIRMAN: I suppose there is no discernible change in the way DAF was responding to the financial crisis. That is what he is saying essentially, is it not, that there is --

MR BEARD: If that is what Mr Harvey is saying, then he is in deep difficulties because if there is no discernible difference in the way that DAF is responding to the financial crisis, then that undermines the existence of the dummies in the first place because you only get the dummies -- Mr Harvey's whole case is you have the dummies because they are doing something completely different.

THE CHAIRMAN: Yes, from before the GFC. So when do they change back?

MR BEARD: Well, they do not. There is no change. The problem is this is all a myth. Yes, they suffered pain during the financial crisis, but they were not doing something different. That is why Mr Harvey cannot identify some kind of break point because there is not one. That is why it is arbitrary in these circumstances.

Let us just look at that evidence, if we may, that Mr Harvey and Mr Ward seek to rely upon to suggest that the financial crisis had some impact above and beyond demand. I think it is important to bear this in mind.

In the regression analysis that is being applied, of course you do have these demand variables. It was one of the things I took you to when I was showing the right-hand side of the equation. You have a series of variables that are considering demand and Professor Neven uses different demand variables: order board, delivery lag, tonne per kilometre; different demand variables to test these things. So he is not just picking one.

It is worth just picking up what Mr Harvey's original reason for this radical approach was. If we go to {E/IC1/80} -- so this is his first report:

"The decision to include the dummy variables for 2008, 2009 and 2010 [so this is at 4.41] was driven by a combination of DAF's explanations and empirical evidence. In relation to controlling for economic conditions in my during-after model, I note that DAF has stated that 'it is particularly important to control for demand because the financial crisis, which occurred towards the end of the infringement ... caused an unprecedented and enduring fall in demand. As a result, it may be difficult to separate the effect of the crisis (which led to lower demand and hence lower prices ...) from the effect of the infringement'. DAF's characterisation of the fall in demand as 'unprecedented and enduring' indicates that it is appropriate to explore whether additional controls for economic conditions are required during this period."

But to the uninitiated and perhaps actually for the initiated as well, to rely on this as a basis for saying "No, no, no, this is not about demand" is frankly difficult to understand. Yet it does say "unprecedented", it said it was very big and it said it was "enduring", but it is about demand.

Then we go to 4.42:

"DAF's witness evidence indicates that the economic situation was markedly different between 2008 and 2010, for example stating that 'in 2007, DAF was still at the peak of its sales, but in the autumn of 2008 the market crashed, demand fell and we went from producing around 200 trucks a day to 35 to 50 trucks a day' ..."

Well, again, this is -- sorry, if we can just scroll down so we can see whose evidence this is from. I think this is Mr van Veen. Demand fell.

If we can just go back up so we can see -- thank you very much.

"... 'sales of trucks in the UK in 2009 and 2010 dropped significantly as a result of the financial crisis … from ... 13,000 ... to ... 6,000 ...'. DAF’s Pricing Statement states '... By way of example, demand for DAF Trucks was very high in the years leading up to 2008, but the number of new orders declined significantly in early 2009 (and customers also cancelled existing orders) due to the effects of the financial crisis. As a result of the decline in sales in this period, DAF/PACCAR accepted lower sales prices in order to 'rebuild' DAF's order board and ensure that it continued to manufacture Trucks."

But again that is just reflecting what Mr van Veen has said that is cited above, and this is the pricing statement. It is all about demand, so --

THE CHAIRMAN: I do not think that Mr Harvey is denying that demand is a factor -- is a huge factor, is he?

MR BEARD: No, he is not denying it is a huge factor. I am not saying that. What he is saying is there is something enormously above and beyond demand and he is relying on these quotes to support the idea that something completely different was happening during the global financial crisis. All we are pointing out here is the basis for this radical step that he has taken is referring to these materials, all of which are concerned with saying, "Well, there was a huge drop in demand".

MR RIDYARD: Suppose he is saying that because of the demand fall, that changed the way in which DAF did its pricing so that observations about pricing -- I am not saying this is my view --

MR BEARD: No, I understand where you are going, sir.

MR RIDYARD: But he is just saying that because of -- there was such a big fall in demand, it led to a complete reset in the way in which pricing was done -- obviously you are going to bring us to that evidence.

MR BEARD: I am just going to his first report where he puts in place these variables -- these dummies, and he says, "Why am I doing it?" -- I have just taken you to the paragraph where he says, "Why am I doing it?".

MR RIDYARD: Yes.

MR BEARD: Then we go to the empirical evidence, it shows DAF's sales volumes to be markedly lower in those years. If we just flick over the page ...

MR RIDYARD: Yes, well, figure 2 does show very low numbers in those three years, yes.

MR BEARD: Yes, they are low numbers. There is no doubt about it.

Going back to the point which we were discussing earlier, which was, "Do you have a basis for essentially wiping out all of these figures on the basis of this material?", it specifically is talking about falls in demand and lower volumes due to falls in demand and it does not say that there is some kind of completely different approach being adopted here. That is not what is being said here at all. There is no evidence for that.

So the hypothesis you are putting forward is not justified by this material, and this is where he baked in these dummies. That is the justification for it and it is simply untenable. That is not evidence of some completely radical change in the way that the market was working for DAF.

MR RIDYARD: But it could be a lead-in to such evidence.

MR BEARD: Well, it could be, it could be. It is all pregnant with possibility. But let us go to their closings and see what they actually rely upon in relation to this. Let us go to 533, so this is {S/9/209}. Pick it up at 532. This is under the heading, "The justification for Mr Harvey's approach". Now, the reason I went to that report is because that was the justification for Mr Harvey's approach. We say in his first report there was simply zero basis for saying that there was more than demand that needed to be considered in relation to the financial crisis. But now let us look at how it is put in closing. So if we pick it up at 533:

"Empirical evidence shows DAF's sales volumes were markedly lower [as read]."

Well, that is just the point that was made previously. If you have a drop in demand, you will have lower sales volumes. There is no magic there. Indeed Mr Harvey uses sales volumes as his demand control variable.

The second point -- then he goes into 534 and there is a new list of ten factors. Well, the first is not new. It says -- it is referring to the quote about "an unprecedented and enduring fall in demand". But, as I have already indicated, the clue is in the words there. It is demand.

Then we go over the page, {S/9/210}, and we are in 534.2, "A significant drop in production". Well, this is just saying the same thing over again. If you get a drop in demand, you make fewer trucks to meet the demand. It is not telling you anything new.

534.3, there is "A significant drop in sales". This is just breaking up the quotes that we saw previously and treating them as if they are new pieces of information or they are significant each in their own right. They are not.

"A significant drop in sales" is because there was a drop in demand; "Customers cancelling orders", yes, referred to because there was a drop in demand; "DAF's Decision to accept lower sales prices in order to 'rebuild' its order board ...", well, of course, if there is a drop in demand, you would expect that, in order to be able to build up an order board, you are going to have to offer lower prices. That is the basics of the economics here. If you lose demand, you are going to have to price more in order to make sales -- price lower in order to make sales. That is what happens in markets.

"... paying more attention to visibility information when making pricing decisions ...", here this is 534.6:

"... 'visibility information was particularly relevant in unstable situations'. As the Tribunal noted, Mr van Veen's evidence explained that DAF would not take the visibility reports or order board information into account at all when considering proposed transactions at times when production was regular."

Okay, fair enough. Fair enough.

THE CHAIRMAN: What is fair enough? What do you mean?

MR BEARD: That there was an unstable period, they would look at visibility reports. But let us just go to Mr van Veen's actual evidence, {D/24/20}. If we could just scroll down the page -- sorry, if we could just go back up. I am sorry. I just want to pick it up in paragraph 83:

"When the production was regular and we had between

8 to 16 weeks of visibility (ie all production slots ... were filled), I would consider that to be a steady situation and did not need to take the visibility reports or order board information into account ..."

This is all Mr van Veen.

"... when considering proposed transactions (ie visibility was not at levels which either increased or decreased DAF's willingness to accept deals at low margins, unlike the situations described at paragraph 82 above). However, our industry was often unstable. In principle we aimed for more orders above better margins with a view to growing DAF's market share. However, the balance between volume and margin shifted depending on whether production slots were filled ... In such 'unstable' situations, visibility information was particularly relevant and we would attempt to regulate the production fill."

So the bit that is quoted by the claimants is the final sentence, to which I say: absolutely, fair enough. But what is missing is that here it is being relied upon as some kind of exceptional situation whereas what Mr van Veen specifically says in evidence is "Our industry was often unstable". He is not distinguishing the financial crisis --

THE CHAIRMAN: Even though he goes on in 84 to say -- he refers to the period prior to 2003, I am not sure why, and after 2007, ie GFC. Those were the unstable periods in which they did look at visibility, order board information. Is that not what he is saying?

MR BEARD: No, I do not think that is right. I think that is because of the period when he was responsible for these matters. So what he is saying is, "I can speak to the situation in 2003 to 2007, which is when I had responsibility, but I think the same situation would have applied pre-2003 and post-2007". That is what he is saying in 84.

THE CHAIRMAN: So he is not identifying when there were periods of instability?

MR BEARD: No, he is not. He is saying, "often unstable and then I would use visibility".

MR RIDYARD: Were there other periods that customers cancelled orders to such an extent because the norm for DAF was to make to order.

MR BEARD: Yes.

MR RIDYARD: Here, in GFC, there was a situation where customers cancelled orders, so there was suddenly --

MR BEARD: There was stock.

MR RIDYARD: Yes, there was stock. So were there other periods when there was stock hanging around?

MR BEARD: I do not know that we know that there were periods when there was stock. I do not think that was something that any of the witnesses --

THE CHAIRMAN: Mr Ashworth mentioned it and said --

MR BEARD: No, Mr Ashworth mentioned it in relation to the GFC. I think Mr Ridyard's question is do we know whether there were other periods of stock, and the answer was I do not think he was asked that question so I do not think we know that.

Just to take that into account, picking up on the cancellations point, Mr Harvey accepted, quite fairly, he had no sense of the scale of these cancellations or the level of stock that is being talked about. This was something he picked up after Mr Ashworth's evidence. As we saw, cancellations had been referred to previously but it was not separately considered and there is no sense of what the scale was or how this -- even if you have cancellations, how that turns this into a totally different situation from one where you have got a drop in demand. I mean, okay, it is a very significant drop in demand, no doubt about it, we are not departing from it, but the idea that Mr Ashworth says, "Well, we had cancellations and that meant we had stock which we had not previously had because we are generally a build to order firm" -- he was not asked whether or not there had been other periods when they had had stock, but leave that to one side. There is no sense of the scale of it.

Going back to the point I made earlier, if you are going to do this sort of exercise where you wipe out the operation of these years effectively, you need to have very clear and very compelling reasons to do so, and they are now fixing on this tiny issue where they do not have any sense of scale about it and they did not actually ask questions about it beyond that question to Mr Ashworth and Mr Harvey quite fairly accepts he does not have any information in relation to it.

So that is visibility information. So 534.6, {S/9/210}, is actually from a witness who is talking about a period pre-financial crisis, talking about the importance of visibility issues and talking about how they were often unstable and therefore went to look at visibility reports.

I go back to the point I made earlier. What this is showing is just how they did not change the way they operated in relation to pricing and consideration. It is the same visibility reports that we are talking about, 2003 suggesting pre-2003 as well, but 2003 to 2007, and then this is being relied upon as something important for the GFC, and we are saying, "No, no, no, it is the same throughout".

Then we have got 534.7, going back to {S/9/211}, if we could:

"Increased drives for cost savings by customers such as Royal Mail."

This is just recapitulating what "lower demand" means. It means people are saying, "Well, look, I am not going to pay as much for the trucks that you make". That is what "lower demand" means. So the fact that they are on cost drives is just another feature of the demand situation.

"Significant volatility in the pound to euro Exchange Rate."

Well, we have already had a discussion about the fact that there was volatility at all sorts of points in relation to the pound to euro exchange rate. Yes, there was a significant change in the pound to euro exchange rate during the GFC, but that does not make the GFC special, nor does it justify putting in place these dummies because, of course, what you should probably be doing is controlling for that exchange rate change. The fact that Mr Harvey has baked in a mechanism where he cannot properly deal with that does not mean that you then use two wrongs to make some kind of right. It is just not a relevant consideration here. It is all back to front.

534.9:

"All Deals Requiring Approval of DAF NV."

Well, I have made the point. Yes, that is true, but that is because they maintained the system that they had in place with the hierarchy of approval. They did not change it.

Then the last one, 534.10, {S/9/212}:

"[It changed] its approach within its Marketing and Sales Department from focusing on the IKP Cost Measure to the MLO [cost] Measure when approving sales."

But this is just because the margins were getting so low that they were concerned about the costs being recovered or whether or not costs could be recovered in relation to it. But, again, this is just a reaction to much lower demand and it is not changing the whole way you do the pricing. You are still using the MLO costs measure and indeed, of course, we know that IKP cost measures were built out of MLO cost measures. Obviously, there was a departure over time, but during the first part of the infringement period of course IKP was just an increment above MLO in any event, so those MLO cost measures were effectively being taken into account in relation to IKP costs all the way through the infringement period.

THE CHAIRMAN: By DAF NV, because they knew it.

MR BEARD: Yes, sure. Although actually -- yes, but it does not matter for these purposes.

THE CHAIRMAN: We ought to have a break at some convenient time.

MR BEARD: Can I do two more minutes if that is --

THE CHAIRMAN: Yes.

MR BEARD: -- because I think I am reaching the end of the third point which is in relation to Mr Harvey and then I will pick up on Professor Neven after the short break.

THE CHAIRMAN: Yes.

MR BEARD: I think the only other factor that was highlighted was at 537. So 535 is picking up these points that Mr Ashworth made about completed trucks being cancelled, which I have dealt with. Then 537, {S/9/213}:

"... Mr Harvey explained that, from [an] ... economic perspective, suppliers may take a different approach to cost recovery in periods of extreme low demand ..."

Then we have Mr Harvey putting himself in the position of someone making pricing choices.

Now, we deal with this in our written closings, just for your notes at paragraph 75(e), and the quick answer to this is there is no support in the factual evidence for Mr Harvey's theory that DAF was suddenly focusing on a different cost measure, a different costs approach, based on wasted labour or overhead costs during the financial crisis. That is not the case. Yes, they were looking at MLO costs given the low margins, but it is not a completely different way of doing things.

In those circumstances, given what sort of compelling evidence you would need to have in order to say, "No, no, demand does not do this. The global financial crisis just did something completely different. We must wipe out all of this data. There is no justification for it", after the short break I will deal with Professor Neven's approach very briefly.

THE CHAIRMAN: Ten minutes.

(3.17 pm)

(A short break)

(3.29 pm)

MR RIDYARD: Mr Beard, can I try you out on a quick question before you get going, then? Some time ago now you took us to table 3 -- sorry, it is in the reply expert report of Professor Neven, table 3, so it was page 26 of that report, {E/35/26}.

This is the one where Professor Neven compares how things would look -- yes, how things look with or without the three years -- the dummy variables in the three GFC years.

MR BEARD: Yes.

MR RIDYARD: You asked us to look at the impacts on the demand control, and I think, in the first column of this table, which is where -- that is where the dummy variables are present -- we see that the demand control has this 0.004 coefficient, but in the third column of this table, where we do not have these three dummy variables, you find the demand effect is eight times higher.

MR BEARD: Yes.

MR RIDYARD: So does that comparison give us cause for reflection or concern in a way because is that not showing that, when you include those three years, it transforms the effect that demand has on prices? So could that be interpreted as saying that when you include those three years, you get a completely different picture about how demand influences price and so, in a way, that could be sort of justifying Mr Harvey's approach of taking those three out of the equation because he would be saying that this might indicate that you get an atypical picture when you include those three years and, when you take them out, you get a different picture.

MR BEARD: Well, I think the point -- I think that would be -- first of all, I would check with the economists overnight, but I think that is not necessarily right because, in circumstances where what you are asking yourself and what Professor Neven is asking himself is does the removal of these trucks have an impact on other of the variables, it is not clear that that means that actually those variables -- that the period you are dealing with is suggesting that there is more than demand going on. What it is suggesting is that you are missing out the proper appraisal of demand, which I think is what Professor Neven then goes to explain in 2.40, which is what he is drawing from these elements when he is comparing columns 1 and 3, because you see that, at 2.40, he says:

"When Mr Harvey's main demand control variable is removed from the estimated model while leaving everything else unchanged ..."

So he is comparing column 1 and column 2 at that point.

"... the effect of the infringement remains materially unchanged."

So if you take the demand variable out completely, you end up with the same approach. Then he is explaining why:

"When the financial control dummies are removed while leaving everything else unchanged ...

"The estimated coefficient associated with the demand control ... increases materially -- this is consistent with the fact that the main demand control used by Mr Harvey is now able to capture variations in price driven by demand more effectively."

So what he is saying there is, because of the blind spot you impose, you are actually fettering the ability of the variable to capture the demand effects. I think it would be turning that the wrong way round to say, "Well, that means that actually there is something more than demand effect going on there". What Professor Neven is saying is, because you have put in place that blind spot, you are just not capturing what is going on in terms of demand effect across that period at all and that is how you should interpret these figures. That is the analysis that he is setting out here.

MR RIDYARD: He may well be right and I am not in any way, you know, jumping to conclusions about this --

MR BEARD: No, understood.

MR RIDYARD: -- but one hypothesis here would be that the difference between columns 1 and 2 is just showing you it does not make much difference whether you include -- outside the GFC period it does not make much difference whether you include the demand control or not because the demand has a very small effect on price anyway, so that explains why columns 1 and 2 give you very similar results. But when you include the GFC years, when you remove those GFC dummy variables, suddenly you get a transformed impact of demand on price, and that is maybe suggesting that during the GFC period demand was having a -- obviously demand was having a bigger pro rata effect on price during the GFC period than it was outside of it.

In a way that could be taken to justify Mr Harvey's approach of saying that those three years are so unusual and creating such a different demand effect that it is appropriate to take them out of the consideration.

MR BEARD: Well, with respect, I think that would be not a tenable conclusion because I think the answer lies in the way, sir, that you just put it, that if it is true that what this is showing is in fact that demand was having a bigger pro rata effect during the GFC period, then that is something that the demand control variables will be picking up.

MR RIDYARD: Not if it was different in kind, during and outside.

MR BEARD: Well, I think what this is showing is that the variability in prices used to estimate demand is being taken up by the dummies. That is what Professor Neven is saying. It is saying that there is nothing above and beyond demand here. You cannot --

MR RIDYARD: The dummies can only take out the effect of demand during the three dummy years.

MR BEARD: Yes.

MR RIDYARD: The dummies cannot do anything to anything outside of the dummy years.

MR BEARD: No, that is absolutely true. That I think is accepted. But I think what is being said is that, because it is such a significant blind spot in relation to the trucks that are essentially driving the regression, that that is showing that those dummies are absorbing the demand. But, also, the idea that you can assume from this that demand which is different in kind is something that one cannot draw from this sort of analysis, there is not -- there is demand and we do not understand on what basis you can say, "No, no, it is a different kind of demand that is not being captured by the variations in the demand variables that Professor Neven is using", because of course he uses a multitude of demand variables.

I think what is also important is that of course it is eliminating the variability of the data over time and therefore having a significant impact, which I think is the central concern that Professor Neven had articulated in relation to the impact on the demand variables.

MR RIDYARD: I do see that objection, okay. Right, we will have to mull it over and think about it.

MR BEARD: I will ask those behind me overnight whether or not I have missed key elements in relation to it, but I think that -- I understand the hypothesis that you are putting forward, but I think what you are having to do is make a whole series of assumptions about what is driving this number that are not open on the basis of the data available.

MR RIDYARD: Okay. I just thought I would put it to you for consideration.

MR BEARD: No, no, no, it is very helpful. Sorry, that was not in any way --

MR RIDYARD: I am happy to be put straight if I have gone on the wrong --

MR BEARD: No, it is very helpful to have the questions so that we can endeavour to answer them. I am not going to pretend I can deal with them all.

I do have answers to three questions though. First the chairman's question about table at {E/35/35} and about -- this is table 6. Can we just call it up to prompt our memory? So this was the question, sir, that you raised about why there is an effect on the 2008 and 2009 coefficients. I am going to, almost I think robotically, but certainly not with any sophisticated technical understanding, provide the answer. The answer is that because you have an extra six months of variability in demand in relation to the situation where you only switch off in 2010 for six months, the model estimates a higher coefficient for the demand variable in the equation. That was the Z in the equation, the demand variable. That means that the year dummies are then recomputed using the higher Z coefficients. That is a product of the mathematical modelling and that is why it occurs. It is because you get more variability during that last six months and it feeds back into the modelling, but I do not think -- there is no significance to be attached to those variations.

There was a question about the timing on target margin setting. A reference that may be useful, the IKP cost was set annually, Mr Habets provides that evidence at paragraph 20 of his statement. Just for your notes, that is {D/IC23/5}.

Mr van Veen, at paragraph 32 of his statement, which is {D/IC24/8}, talks about the setting of target margins. He does not specifically say they were only set annually, I should be clear, but it is all part of the annual forecasting process that he sets out there.

I think it goes without saying, but I am sure that it is understood, that, for the purpose of any of this modelling that we are engaged in, none of this target margin material is separately fed in as some kind of analysis, I think. This is -- I did not think -- I did not understand that to be the position.

Then the third one was just a reference. I am sure you have it, but picking up the point on stock and cancellations. I think Mr Ashworth's evidence was that it was very unusual in DAF's business to have stock, but he was not -- he did not say and he was not asked whether or not it was somehow unheard of. Just for your notes, it is {Day7/33:18}. That is entirely beside the point that we say, well, you know, it is still a demand issue.

Just so you know -- I am sure Mr Ridyard will be aware -- but it is important to note that the cancellations will also be captured in the order board demand variable that Professor Neven used because, if something gets cancelled off the order board, you change the order board measure and that is fed into the regression using that demand characteristic; okay?

So with those questions, I will just move on very briefly on -- I have been dealing with why Mr Harvey's approach to the global financial crisis is fundamentally not justified and has a radical impact, but I just want to touch on Professor Neven's approach.

First of all, as is obvious, his primary position was, "Well, look, this is really all about demand", for the reasons that we have been articulating, and he certainly did not see any factual material that justified the wiping-out of these three years.

Now, Mr Harvey suggested that Professor Neven's demand controls do not control adequately for the financial crisis and at one point -- I will just provide you with a reference to it. It is dealt with in the claimants' closings at paragraph 555 -- Mr Harvey says that he runs a sensitivity analysis that removes all observations for 2008 to 2010 from Professor Neven's model. He says, "Well, this leads to an increase in the overcharge". Now, that is essentially doing the same dummying exercise that he did but in relation to Professor Neven's models, and Professor Neven simply says, "Well, you are just translating the same problem across to my model that clouded yours". So we say that does not assist in any way.

But the third point that was raised was about Professor Neven actually exploring -- engaging with what Mr Harvey had done in relation to GFC dummies and he said, "Well, look, let us have a think about this. Let us see what it is that you could do which is not asymmetrically taking out a whole chunk of demand and specification, but looking at when you have got extreme demand, either very high or very low, and see whether or not one can analyse that situation". That is the blue and red dots diagram. Can we just go to it? It is {E/35/30}.

Professor Neven explained that what he used in this modelling was non-linear demand controls; in other words, they dealt with matters (inaudible) the top and bottom end.

So he explained that if you maintain this hypothesis of non-linear effects that Mr Harvey is doing, he needs to estimate non-linearities and he has to estimate to what extent changes in demand may have a non-linear effect on prices, but still allowing the demand variables to play a role. Of course this is not something that Mr Harvey did because he just switches all the direct controls off.

Now, in response to the question from, Mr Chairman, you to Mr Ward during the course of Day 21, Mr Ward said that the way that this model works is it switches off all the blue and red dots, just clears them out. With respect to Mr Ward, he is not right about that, that is not how this model works, because what effectively is happening is that blue dots before and after the infringement period, which falls in -- as you know, the borderline is in 2011 -- they are actually compared against one another in this modelling and the red dots against one another, so they are not switched off. So it is not removing all of these estimations -- these data points, but it is trying to adopt a non-linear approach to the regression analysis.

So it is not doing what Mr Harvey does, which is just removing dummies for the direct infringement observation purposes. It is doing something more subtle effectively than that. But, equally, what it is doing is it is doing that across the entire period of the MI data; in other words, running from 2004 right through to 2018. So you are getting a picture that the regression can effectively present to you, doing during and after, without just an asymmetric exclusion of data.

Obviously, this is in relation to the LF trucks exercise, but you actually see some very significant demand spikes and troughs aside from the GFC spike, which obviously -- or trough, rather -- which occurs in 2008. You have the pre-GFC growth in demand and then you have the fall-off in demand from that spike, 2008 through to 2009. So actually what this is showing is actually you do have significant fluctuations in demand for the LF trucks across the period, not just by reference to the GFC, and that you can control for this in a non-linear manner using Professor Neven's modelling.

It is worth noting that when these sorts of demands dummies, this more subtle modelling, is used in relation to Mr Harvey's during/after model, the effect of the infringement declines materially down to around 0 to 1%.

So Professor Neven carried out his analysis using demand controls, not dummying out the three years, but did then run this cross-check, which is not trying to just switch everything off, not dealing with things asymmetrically, but is actually trying to grapple with a non-linear regression model to try and assist, and it shows that actually, as soon as you do that rather than doing the switching off, you get a much lower overcharge even on Mr Harvey's approach.

THE CHAIRMAN: So this is doing this on Professor Neven's model? This is not using Mr Harvey's model; is that right?

MR BEARD: It is done on both, I think, in fact. It is actually done on Mr Harvey's as well.

THE CHAIRMAN: Well, Mr Harvey has taken out those years, has he not?

MR BEARD: Yes, yes -- no, no, sorry. It is without the -- it is using his model apart from the GFC dummies. I am so sorry.

THE CHAIRMAN: So it is just substituting this for that.

MR BEARD: It is using this methodology rather than just wiping out the three years approach. That is what he has done in relation to it.

So Professor Neven is looking at it and saying, "Look, if I take your modelling and instead of blanking out three years, what I do is I do a non-linear regression dealing with the top and bottom of demand differently", then, you know, recognising there might be something going on when you are dealing with extreme levels of demand or very low levels of demand, then --

MR RIDYARD: Would it be accurate to say that, instead of using dummy variables for each of those three years, he uses a dummy variable for when demand is unusually high and a dummy variable for when demand is unusually low?

MR BEARD: It depends what you mean by "dummy variable". I mean, I think that what he is not doing is switching those off so it does not have the same extreme effect. My understanding of the specification of this regression is that --

MR RIDYARD: What I mean by "dummy variable" is a variable that has a value of 1 or zero, 1 when something happens and zero when it does not happen, and that seems to be what he is doing.

THE CHAIRMAN: He calls it a "dummy variable".

MR BEARD: He does call it a "dummy variable", but I think the way in which -- I think that is fair in terms of the definition, but I think the way in which the regression works is it does still continue to refer, before and after, the blue dots and red dots.

THE CHAIRMAN: So in that period 2009 to 2011, it is all red dots, I think.

MR BEARD: 2009 to 2011, yes, I think that is predominantly right. Periods of low demand.

THE CHAIRMAN: So those periods are effectively taken out then?

MR BEARD: Can we just go to our closing at paragraph 95 because I do not want to misstate this? It is {S/10/38}. So I think at 95 -- I think Professor Neven is explaining in relation to this modelling that there is a fundamental difference between the non-linear demand dummies, so they are dummies, but the non-linear demand dummies, and Mr Harvey's year dummies because under the former -- and this is just taken from the transcript which is footnoted below:

"You are not taking the observations out because what you see is that you have periods of low demand and periods of high demand both during the infringement period and after ... so you can actually use these observations in order to estimate the effect of the infringement."

You can see in relation to 96 that there is a reference to red dots and blue dots before and after. Then, by contrast, Mr Harvey's year dummies effectively remove the observations for the purpose of the identification. So I think my concern is that, whilst I am agreeing to dummies, I think that there may well be a technical difference between what is actually being done in relation to the red dots and blue dots and what is being done by dummying zero and 1, and I think it is because they are non-linear dummies here. But I will check that overnight because I fear I am straying into territory where, you know -- dealing with non-linear regression analyses, I may not be perhaps the best qualified person to comment.

In any event, the point I make in relation to that is that what Professor Neven was trying to do was -- although he does not see the concern as valid, he certainly does not see it as justifying the fundamentally flawed approach of just wiping out the three years. He did actually look at using some other methodology to try and take account of supposedly radical higher or lower demand, but do it during and after, and carried out an analysis both in relation to his modelling but also Mr Harvey's. It was the

Mr Harvey figure that I was giving, that when you carry out this symmetric non-linear regression analysis that covers both during and after, Mr Harvey's overcharge coefficient falls radically.

I am going to move on, unless there are further questions in relation to global financial crisis, to emissions. This is the emissions standard fixed effect issue. Both experts use emission standard fixed effect variables. They disagree on how the results should be interpreted. Mr Harvey's position has been that all of the premia identified in emission standard fixed effect should be attributed to the infringement, as you know. He said no margin increase could be attributed to product enhancements that you get when you get a new model truck that complies with a new emission standard.

I am going to pick up four main points in relation to this. I want to look at the experts' agreement that higher specifications will earn higher margins. I can deal with that briefly. Then I want to look at some of the empirical evidence. Third I would like to consider the position of Euro 2 and EEV premia particularly because we think those are instructive in suggesting how one should interpret this. The fourth point I will just touch on is the unchallenged evidence on the truck enhancements that DAF introduced with its new model trucks.

So just briefly on the higher specifications earn higher margins, I probably can deal with this fairly quickly. Professor Neven, you will recall, gave the example of manufacturers earning higher margins on more powerful trucks in comparison with less powerful trucks. Not surprising. You get higher margins in more highly specified products in this market. Now, Mr Harvey did accept the point that trucks may attract a higher margin because of additional features, but he still maintained his position that all of the emission standards fixed effect premia should be attributed to the infringement and nothing to the product enhancements.

Now, in his oral closings Mr Ward tried to switch this round and make it sound like Professor Neven had ignored the possibility that the infringement could be the cause of the premia, but I think that is just unfair to Professor Neven. If we can just go to {Day13/80}, this was a line of questioning from you, Mr Chairman, where the question is being asked by Mr Ridyard, {Day13/80:4}:

"So you get a higher effect on margins when a new emission standard arises in the infringement period than when outside?

"Professor Neven: That is what I am trying to do.

"The Chairman: What are we assuming about the coordination that there was from the decision?

"Professor Neven: Yes, I mean, taking the decision for what it is, the decision itself could be a coordination and we are trying to see --

"The Chairman: A coordination on the premia --

"Professor Neven: Yes, exactly.

"The Chairman: -- to be charged on the new emission? Right. So we are assuming that there was coordination in that respect?"

Professor Neven makes very clear, {Day13/80:18}:

"We are taking the Commission's decision for granted and they are referring to an infringement and we are -- in particular with respect to the passing-on of cost [and that would be cost in relation to emissions], and we are asking, 'Is it in the data?'".

So this is Professor Neven making very clear he is just taking the decision at face value.

If we go back, please, to {Day13/72}, this is the bit that makes it very strange, given Mr Ward's position. You see, picking it up at line 21, {Day13/72:21}, Mr Ridyard:

"Thank you. That is helpful.

"So then we are on to -- Professor Neven, I will address this one to you, this whole question of willingness to pay, which we did touch on briefly already ... this morning. I suppose just as a general point, does the interpretation that the premium is due to willingness to pay -- does that exclude the possibility of it being an effect of the infringement?

"Professor Neven: No. Of course. I mean, you could have sort of two explanations, one in terms of the effect of the infringement, the other one in terms of the willingness to pay. You know, they can add to one another."

So the idea that Professor Neven was ignoring this possibility is just something of a bizarre one. Professor Neven has always been concerned with the possibility that it could be an infringement effect or it could be a willingness to pay effect. But that of course brings me to my second point, which is Professor Neven tested whether the data showed that the emissions standard fixed effect premia resulted from the infringement. You will recall how he did that. The logic of it was relatively straightforward, although the execution, as is so often the case, is less so. But the intuition, it was straightforward.

Professor Neven said, "Look, there are two channels for this infringement identified by the Commission to have effect. One channel is the general information exchange related to gross list prices and so on. That you can think about, could that have an effect on transaction prices, and the other is the specific coordination relating to the passing-on of emissions costs". So two mechanisms, both of which are said to be going through to affect transaction prices. It is around {Day 13/93} that he discusses this.

Then what he says is, if you switch off one of the channels in the regression, the other one should pick up the infringement effect from it. So what he does is he switches off the emission standard fixed effect and tests what happens.

If Mr Harvey were correct that the price premia captured by the emission standards fixed effect results from the infringement, then the removal of the emission standard fixed effects from the models should lead to that infringement variable increasing, but Professor Neven's tests all show that removing those emission standard fixed effect variables, as he put it, delivers a very similar infringement effect on price which is close to zero and not significant.

If we could just go to our written closings, {S/10/44}. This is a reproduction of table 8 from his second report. Now, this is Professor Neven running his tests in relation to his before, during and after analysis. Just for your note, he also did it in relation to the during/after model and gets equivalent results. That is at {E/35/95}, but we will just stick with this one.

If we just briefly work through it, {S/10/44}. So we see on the left-hand side column 1. This shows the baseline model, including all of the emission standard fixed effects which are set out: Euro 2, 2 LP, 3, 4, 5, EEV, 6. As you will see, the estimated overcharge, using that -- you can see at the top it is 0.007 or at the bottom it is 0.7%; the same thing.

Now, column 2 then removes all of the emission standard fixed effects and we can see that the infringement variable is broadly unaffected, is the way that he put it. It goes from minus 0.7% to minus 0.5%.

I am sorry, I think when I read out those numbers before I missed out the sign. My apologies. But it goes from minus 0.7 to minus 0.5. If the emission standard fixed effects were capturing an infringement effect, then we would have expected the infringement variable should capture that when the emission standard fixed effects are removed.

Then in columns 3 and 4 what he does -- in 3 he removes Euro 6 trucks -- this is sort of an abundance of caution in case the claimants were alleging that Euro 6 trucks might be tainted -- but then the infringement coefficient or the estimated overcharge is still very small at 0.7%.

In column 4, instead of doing Euro 6, he does Euro 5 and EEV trucks and removes those, even when they are sold outside the infringement period. Again, you get a very low overall estimated overcharge.

Professor Neven's conclusion is that this empirical analysis suggests that the hypothesis that these emission standard fixed effects are due to coordination is just not consistent with this evidence.

Now, Mr Ward, in his closing, made a couple of points about this. First of all he said it did not work because he did not have a counterfactual with only clean trucks. Well, if you take out both Euro 5 and Euro 6 trucks, you end up with no after trucks so you cannot do during/after or before/during/after. So what Professor Neven did was he took them out separately and serially, which is what you have got in points 3 and 4.

So he is doing the absolute best he can without essentially blowing up the whole regression analysis or indeed it would have the same effect on Mr Harvey's because, if Mr Harvey is saying that you have got no untainted trucks after the cartel period, which is not what he is saying, to be fair to him, then he would not be able to do his during/after analysis either.

The second of the criticisms was what is referred to as "omitted variable bias". Here we are straying into some technical arguments that Mr Harvey raised in his second report to criticise Professor Neven. Just for your notes, the issue is raised at {E/IC28/61}. Professor Neven strongly rejected this argument. His response is at {E/IC62/37-38}. The omitted variable bias issue, it was not discussed in the hot tub and actually Mr Ward, in his oral submissions, accepted he did not cross-examine Professor Neven on that omitted variable bias issue.

So we stand by Professor Neven's position in relation to that. But there was a sort of variant that then developed which was -- I will call this the "other variables issue". This is the argument that, although he had not omitted a key variable, actually the infringement dummy is not the closest substitute variable for the emission standard fixed effects. In other words, when you switch off the emission standard fixed effects, the next closest thing that any impact would move to was not the infringement effect, which is part of the basis for Professor Neven's thought experiment that drives this analysis.

Mr Harvey said, "Well, that could be because the infringement dummy was fixed over time and other variables which vary over time may be more likely to pick up these effects when you switch off the emission standard fixed effects". Now, I should say, Mr Harvey had done absolutely no analysis in any of his reports in relation to this and he has not tested this proposition and what Professor Neven has shown is effectively that, carrying out sensible tests, you do find the supposed emissions effects are not seen in the infringements.

Instead, what he is identifying is that these supposed emission standard fixed effects, they are not being seen in the infringement because they are in fact being captured by costs and the truck series dummies potentially. Now, in relation to costs, that is very far from surprising because what we are talking about here is the cost increment that you have when you move from one model of truck to another.

What you are asking yourself is: is there an increment on that increment which is due to the overcharge? That is what you are trying to capture through this exercise. But it is all about a situation where, inevitably, there is going to be an increase in the cost of these vehicles pretty much inevitably, and in practice there was.

So it is not that shocking that if there is not --

when you carry out this switching-off process, that actually it is the costs variable that is picking up the slack. So, in those circumstances, this other variable concern that Mr Harvey is identifying we do not see because, okay, the infringement variable is fixed over time, yes, costs do vary over time, but there is also a logic to why it is that the costs variable would be picking this up, and it is not a fair criticism to say, "Well, you are testing this, you pick it up in the cost -- the variation in the cost variable, but you cannot treat that as valid because actually it could be going across the infringement variable. It is only not being picked up there because it is fixed over time". Actually there is a logic to why it would be picked up in the cost variable.

MR RIDYARD: Is that not supporting Mr Harvey's concern with this approach because Professor Neven's premise on this whole thing was that, if the emissions effect is going to be picked up by anything, it will be picked up by the -- if you remove the emissions effect, it will be picked up by the infringement variable, and now we are saying the thing that was most correlated with the infringement -- sorry, with the emissions effect is the cost variable and therefore it is going to be picked up by the cost variable. So if it is a cartel effect, it is going to be hidden into the cost effect by -- in error rather than being picked up by the infringement variable, as was originally posited by Professor Neven.

MR BEARD: Understood, but Professor Neven is saying, "Yes, but look, there is a reason why you see it in costs variables -- in the cost variables, but you cannot then assume that you have got an infringement effect in relation to those matters". I think the point that is being made --

MR RIDYARD: By the same token, it is undermining the original valiant attempt by Professor Neven to say, "Well, maybe there is a way of testing whether the infringement -- whether the emissions effect is an infringement effect".

MR BEARD: No, we cannot get away from the cost issue.

Then in relation to the truck series, these are designed in such a way that they should not pick up any effect in relation to emissions standards. This is, just for your notes in relation to Neven 1, at paragraph 2.22(h) and I will provide the Opus bundle reference in a moment.

The fixed effects capture the impact on prices of unobserved differences between truck series that do not vary over time and, this was actually an issue that Professor Neven discussed when being cross-examined by

Mr Ward, {Day14/186} and {Day14/189}. Professor Neven explains that he defined the series differently from Mr Harvey and that is why the truck series do not capture the effect of the emission standard fixed effects when those are removed from the model. So that criticism in relation to that other variable is not a valid one.

Those were the two candidates that were identified as picking up the fixed effects, so we are not avoiding the costs concern but we are saying that this is overblown in relation to this and that it is the most sensible approach to the analysis of whether or not there are emission standard fixed effects in circumstances where, as I am going to come on to, we have other evidence that suggests there is a high willingness to pay for new model trucks given all the developments that are also included.

I am grateful to Mr Bourke. The reference to Professor Neven's first report, {E/IC11/22}.

Before I move on to that sort of factual material and the other premia, Euro 2, EEV and so on, it is just worth touching on the test that Mr Harvey carried out. He argued that his series effect and truck characteristics controls captured the difference between trucks. He said he controlled for certain differences between trucks and they just did not have any significant bearing on the emission standard fixed effects premium. I mean, it was a point that Mr Ward came back to in oral closings.

But Mr Ward, in his oral closings, failed to recognise the critical -- I do not know whether it is a concession or just recognition by Mr Harvey that the tools he was using do not pick up the nature of the improvements that you would associate with a new emissions standard model. If we could just go to {Day13/91:2}, so this is Mr Harvey:

"The limitation of the analysis is that a specific list of improvements associated with the new emission -- trucks with new emission standards we cannot control for in the modelling, so you are left with attempting to sort of interpret the changes and whether they would be regarded as improvements and indeed would be regarded as marginally enhanced improvements as well."

Then, sir, you asked the question:

"When it comes to your estimation of the infringement effect, you are saying that all of the unexplained increases in margins that arise when a new emissions standard comes through -- all of that ... is attributable to the cartel?"

I interpolate nonetheless, and Mr Harvey says "Yes".

So the key thing is that these tests and controls that Mr Harvey is referring to, they just cannot capture the specific improvements that you are talking about when you are talking about a new model. So whilst his controls might pick up a different cab model, differentiate between different models of cab, one is a sleeper and one is not a sleeper, what it does not do is pick up the difference between sleeper version A in a Euro 4 truck and sleeper version B in a Euro 5 truck which has been hugely improved; the space, ergonomics and comfort and so on. Those dynamics cannot be controlled for and therefore his tests are just not picking up the things that would drive these sorts of premia when you shift model.

It is not that one is just merely speculating about these issues. I do want to just touch on Euro 2 and EEV. Euro 2 trucks were introduced before the infringement began and they fall outside the finding in the decision and so on. But the interesting thing is that Mr Harvey found that the prices of Euro 2 trucks were on average 9.4% greater than the prices of Euro 1 trucks, so there was a big step up in price between Euro 2 and Euro 1. Of course, this premium, this almost 10% premium, it simply cannot be the result of the infringement. It can only result from either an increased willingness to pay on the part of truck buyers or from higher costs. That just validates Professor Neven's hypothesis that willingness to pay probably has a very significant role to play in relation to what the value of these premia are and to what they can be attributed.

The point is equally strong, we say, in relation to EEV trucks. Mr Harvey -- EEV trucks were trucks brought in around the time of Euro 5, shortly afterwards, but there was a premium on those of 14.7% as compared with Euro 3 trucks, I should be clear. Now, we say the EEV trucks are not covered by the infringement even though they were introduced during the infringement period. That is because we say that the decision is only covering trucks introduced where the technologies were required by those particular standards and they are not mentioned in the key part of the decision.

The important thing here is that these trucks were not a required standard; in other words, it was not the law that you had to have EEV trucks after a certain time. Whereas with Euro 3, Euro 4, Euro 5, Euro 6, there were deadlines, you could not buy anything other than new Euro 5 trucks after a certain date, for example. EEV trucks were not. They were voluntary. Therefore, where they are voluntary, if you are seeing a premium in relation to the introduction of this new model, this is a strong indicator that it is just the willingness to pay of customers for that premium that is driving the premium rather than any notional infringement effect because they are not mandated in the circumstances.

I should also mention Euro 6 trucks, where there was a premium in relation to Euro 6 trucks as well, even though they were all introduced outside the period of infringement.

So what we are seeing is we have got econometric analysis that is trying its best to identify whether or not the premium we are identifying should be attributed to willingness to pay or the infringement. Now, Professor Neven recognises that there are limitations to what he is putting forward but also says, "The best material I can put forward on the econometrics is indicating actually this is a willingness to pay issue"; we are seeing situations in relation to either pre-infringement trucks or voluntary standard trucks where there are significant premia; and we have also got the basic proposition that I started with, which is more sophisticated products will, in this market, generate higher margins, which is linked, of course, to the fact that there is good evidence that what DAF was trying to do within each new model was put forward a whole configuration of changes that would encompass the new emissions technology but also deal with a range of other benefits to customers.

Now, in his oral closings, Mr Ward referred to new emission standards as nasty things that people did not want. I am not going to question Mr Ward's green credentials. He is a man of great virtue, but he is just mischaracterising the issue here because it is not the emission standard itself that is critical here. It is what the new truck model was that was compliant with the emission standard that matters. That is what is key for this question of whether or not the premia are actually reflecting a willingness to pay because it is not you could go along and say, "I would like a Euro 5 standard compliant truck but with no changes as compared with Euro 4 in terms of comfort and other features". It did not exist. As Mr Borsboom set out in his evidence, you had these long projects with very long lead times and an awful lot of engineering, where they put together a whole package of changes that would make the new model more attractive, more sophisticated, more desirable and cover the emission standard.

Essentially, Mr Ward is really ignoring this uncontested evidence about the extent to which DAF was investing significant resources in making sure that the new model trucks were more highly specified with a whole range of new and enhanced features. It is wrong not in relation to these situations to -- not to go to {I1/462.2}, which, as the tribunal will remember, is the celebration of DAF's Euro 4 XF truck winning International Truck of the Year, entitled "Road to Glory". That road to glory was not all about mere Euro 4 standard compliance. As the article goes on to describe, it is to do with restyled cab, engine with a whole range of benefits, transmission improvements and chassis refinements. The feedback from drivers in terms of drivability, the way in which engine braking worked, in-cab comfort and potentially low cost of ownership are all important factors here.

The fifth paragraph in fact, if we can just scroll down, specifically talks about the claims that the engine is also 4% more fuel efficient than the Euro 3 predecessor and also has extended service intervals as well as the improved engine braking.

Now, we refer to that because this is the new model Euro 4 and, yes, it is meeting the standard, but it is doing so much more.

THE CHAIRMAN: This is like the X Factor for trucks!

MR BEARD: It is and I have been on a journey. I am not even going to refer to the fact that there are some marvellous videos available proselytising about the virtues of these different trucks. That would be wrong. But I will instead, on a much more mundane level, refer to appendix 2 of Professor Neven's second report, which you can find at {E/35/120}, which sets out and refers back to witness evidence referring to the table -- this is a summary table of enhancements and new features introduced by DAF's new emission standard compliant trucks models and it works its way through these matters.

THE CHAIRMAN: Presumably all the manufacturers were trying to do the same thing.

MR BEARD: Yes, of course, no doubt. That is how competition works.

THE CHAIRMAN: We know there was coordination in relation to emission standards -- the introduction of emission standards and --

MR BEARD: Well, we know that there was coordination in relation -- the findings in the decision do relate to coordination in relation to the passing-on of cost emission standards and there were issues in relation to timing. We accept that --

THE CHAIRMAN: Specifically in relation to emission standards.

MR BEARD: We are not trying to go behind any of that. But the question is, where you have carried out econometric analysis and you have said, "Look, we do see premia in relation to these emission standards, the emission standard fixed effects", are those driven by the infringement or are they being driven by willingness to pay?

THE CHAIRMAN: Well, willingness to pay is because they had to buy trucks that complied with Euro standards, subject to your point about EEV, but all the other manufacturers of the same trucks that were compliant with the Euro standards were in the cartel --

MR BEARD: Well, not all of them, but yes.

THE CHAIRMAN: -- so they have got to buy their trucks from somewhere.

MR BEARD: Yes, that is true. They have got to buy their trucks from somewhere. The question is, when you have got an increasing cost, that all of these manufacturers -- and there will be different costs for different manufacturers because they have different technological solutions, they have different decisions that they take in relation to engineering and comfort. All of them will have increased costs, there is no doubt about it, in relation to these models. The question is: is there, in the end, actually an incremental effect of those exchanges in relation to those emission standards premia?

But what we say is: hold on a second. What we have identified is, the more specified a truck is, the higher margin you are going to be able to charge for it. That goes back to the very basic propositions about, you know, horsepower for trucks and so on. You are getting more specified trucks being made available. The question we are asking ourselves: in the counterfactual world, would these trucks have been cheaper in relation to this range of changes where they are desirable for individuals and individuals will exhibit a higher willingness to pay in relation to more sophisticated trucks?

THE CHAIRMAN: You are saying there would be no difference?

MR BEARD: Well, we are saying we cannot identify that difference by reference to the econometrics, and what we are saying is that Mr Harvey's approach which says, "No, no, no, this is all just an infringement effect", is just groundless because it is undoubtedly true that you have increased willingness to pay, it is undoubtedly true that these trucks are not nasty, they are better, they are improved, and I am just going to come on briefly to deal with fuel efficiency --

THE CHAIRMAN: Why were they coordinating in relation to the passing-on of costs of these emission standard changes?

MR BEARD: Well, they undoubtedly should not have been communicating about those costs. In the circumstances, they may well have thought that obtaining that sort of information was useful. Does it mean that in the end the prices that they were charging were higher than in the counterfactual? That is the exercise we are engaged in. So they might have hoped it made a difference but it does not mean that it actually did.

The point we are analysing here is have you got a basis for saying, "Actually, when you got these highly specified new trucks that actually deliver a whole range of other benefits and there is an additional premium for that, is that premium different in the actual world from that which it would have been in the counterfactual world?". We say actually because these trucks are so sophisticated, because the econometrics does not indicate that you have got some sort of attribution to the infringement variable, that in those circumstances you certainly cannot assume that the whole of these premia, as Mr Harvey does, must be attributed to the infringement.

THE CHAIRMAN: But you put it all down to willingness to pay?

MR BEARD: Well, we do not have evidence that any part of the infringement decision is attributable -- any part of the infringement is correlated with the premia that we are identifying in relation to emission standard fixed effects. But I go back to where I started. Professor Neven recognised that there could be two possible accounts in relation to these issues. We are not demurring on that. What we have done is we have tried to do our best in relation to the econometrics, the comparators with Euro 2 and EEV and then looking at this willingness to pay issue through the perspective of consumers who are seeing much, much more sophisticated trucks each time.

Just to pick on one issue, we have got the fuel efficiency issue. Both experts accepted in their oral evidence that increased fuel efficiency was a benefit to customers. Mr Giles of Royal Mail specifically also accepted that increased fuel efficiency would be a benefit to Royal Mail for which they would be willing to pay more. In his oral submissions Mr Ward tried to argue that fuel efficiency only made problems worse, not better. He referred to Mr Borsboom's evidence. If we could just go to {D/IC25/4}. I will be finished briefly, but I will probably be about three or four more minutes, if that is okay.

At 13 he said:

"Customers for trucks do not [buy for] emotional reasons ... They buy ... because they have a business case ... Whilst the Emissions Standards set the pace for product development ... customers didn't place a value on DAF having to make changes ... they expected us to comply ... Customers are mainly concerned with up-time ... and the total cost of ownership ... (which includes other costs such as fuel, insurance, depreciation [et cetera]). It is worth noting that without other drastic technology changes to the vehicle, meeting the relevant Emissions Standard requirements would generally have led to an increase in weight, a deterioration (not an improvement) in fuel efficiency and therefore an increase in total costs of ownership."

This is I think what Mr Ward was relying upon to say, "Well, it got worse, not better", but that is precisely wrong because exactly what Mr Borsboom and his team were doing was:

"That meant that DAF's vehicle development projects were complicated by the need to wrap up new legally compliant technology with [consumer] enhancements to the trucks as a whole (including fuel efficiency, attractiveness and comfort for drivers)."

Then he sets out further in paragraphs 39 to 40 how customer demand had a bearing on project timing.

So Mr Borsboom's evidence was not that DAF only improved fuel efficiency to the extent that it offset the increased weight caused by new emission standards. He is referring to fuel efficiency as one of the enhancements which improved the truck overall for customers, and we have just seen, going back to the Euro 4 material, how one of the key selling points was it was actually an improved fuel efficiency vehicle. Now, obviously people are going to be willing to pay more for enhanced fuel efficiency when you are looking at the overall cost of the truck.

So those factors, which are the particular goal of the technologists and engineers, the project teams at DAF, when they are introducing these new trucks, mean that they are looking to put in place a set of enhancements that will increase customers' willingness to pay for these vehicles.

MR RIDYARD: But they are also competing with one another. One thing that I continue to find very puzzling about all of this discussion is what is the underlying model of how we think pricing and competition works in this industry, absent the cartel. You know, you make the point, "Well, you tend to earn higher margins on higher-spec products". I can understand that if you are looking at a cross-section of products at a point in time. But if all products are getting better and better and better all the time, which I presume trucks are because all other vehicles -- passenger vehicles obviously are doing that -- are you saying that therefore manufacturers are earning higher and higher margins all the time and that margins are just inexorably increasing without any limit on the --

MR BEARD: I am not going that far, no.

MR RIDYARD: That does seem to be the premise on which you are talking here.

MR BEARD: No. What I am doing is I am just looking at the premia that we are identifying in relation to the infringement period. I am not trying to come up with a broader story about the trajectory of margins after the period of the infringement.

MR RIDYARD: I do not think you can really avoid coming up with a view on that because we see a premium, we see that margins are increasing and, you know, one explanation is that that is a naturally occurring competitive phenomenon and the other explanation is that that is arising from the cartel. That is why of course it is very important, where possible, to try and find cases, you know, which Professor Neven has tried to do, where you can say, "This is untainted by the cartel and it still occurs", and we look at that evidence carefully. But nevertheless, I just -- there just seems to be something odd about this underlying premise that margins will inexorably increase because products are improving. There has to be some competitive constraint on that --

MR BEARD: Some ceiling to that, yes. Even Apple cannot keep moving the price of an iPhone. I see the point. But what I can provide you with is the evidence of things like Euro 2, where we are dealing with a situation where there is no suggestion it is affected by the infringement period and yet we are seeing significant premium being applied in relation to Euro 2.

MR RIDYARD: Do we have cost information on Euro 1 v Euro 2?

MR BEARD: I do not think we do have the cost information.

MR RIDYARD: So we cannot know what happened to premium, can we? We might have the prices but we cannot know what happened to margins.

MR BEARD: No, that is fair. EEV obviously I have referred to and Euro 6 I have referred to.

MR RIDYARD: We are looking closely at those because those are the only differentiators really between possible cartel effects and non-cartel effects.

MR BEARD: As I say, we also have what DAF is actually endeavouring to do in terms of the modification of each model in order to make it more attractive.

MR RIDYARD: I know, but so is Mercedes and so is Iveco. Everyone is trying to do that and trying to impress their customers.

MR BEARD: Understood.

Well, I will consider those issues further overnight and come back tomorrow. I am going to move on briefly to before/during and the reliability of that model and then theory of harm and claimant-specific evidence in that order.

THE CHAIRMAN: Okay. 10.30 tomorrow then.

(4.33 pm)

(The hearing adjourned until Wednesday, 29 June 2022 at 10.30 am)

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