IN THE COMPETITION APPEAL TRIBUNAL

Case No. 1251/1/12/16-1255/1/12/16

Victoria House,
Bloomsbury Place,
London WC1A 2EB

9 March 2017

Before:

THE HON. MR. JUSTICE ROTH
(President)
MR HODGE MALEK QC
DERMOT GLYNN

(Sitting as a Tribunal in England and Wales)

BETWEEN:

GENERICS (UK) LIMITED
GLAXOSMITHKLINE PLC
(1) XELLIA PHARMACEUTICALS ApS
(2)ALPHARMA LLC
ACTAVIS UK LIMITED
MERCK KGaA Appellants

- and -

COMPETITION AND MARKETS AUTHORITY Respondent

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HEARING

A P P E A R AN C E S

Stephen Kon and Christopher Humpe (instructed by MacFarlanes) appeared on behalf of the Appellant (Generics UK Limited).

James Flynn QC (Brick Court), David Scannell (Brick Court) and Charlotte Thomas (Brick Court) (instructed by Nabarro) appeared on behalf of the Appellant (Glaxosmithkline PLC).

Robert O'Donoghue QC (Brick Court), (instructed by Clifford Chance) appeared on behalf of the Appellant (Xellia Pharmaceuticals APS (1) Alpharma LLC (2)).

Sarah Ford QC (instructed by MacFarlanes) appeared on behalf of the Appellant (Actavis UK Limited).

Ronit Kreisberger (instructed by DLA Piper) appeared on behalf of the Appellant (Merck KGaA).

Jon Turner QC (Monckton), Marie Demetriou QC (Brick Court) David Bailey (Brick Court), Thomas Sebastian (Monckton), Ravi Mehta (Blackstone) and Elizabeth Kelsey (Monckton) appeared on behalf of the Respondent

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THE PRESIDENT: Good morning. We want to resume just to clarify a few things coming out of the discussion that we had the day before yesterday, for which purpose, if you have before you, ladies and gentlemen, your joint statement of 20th January. {I/1/18}.

If you go there to page -- internal page -- you remember we are using -- page 16. Point 9 on page 16:

> "The starting point for analysing competitive effects of any business practice is to establish realistic counterfactual scenarios."

To which we happily have unanimous agreement and I take it, Dr. Majumdar, you would not dissent from that, would you?

DR. MAJUMDAR: No, sir.

THE PRESIDENT: Good. So we do have unanimous agreement. Then, point 10:

> "The 'ongoing litigation' counterfactual [in the literature] refers to entry at the expected entry date under continued litigation. The expected entry date depends on the probability of the success of the patent challenge and the remaining patent life."

Again, happily, that commands unanimous agreement, but can I just seek clarification of what you actually mean because "expected entry date" was referred to by Dr. Jenkins in her evidence and she explained that there is a construct and I think gave the example, if there is a ten-year patent life and the probability of success for the patentee, the originator of the litigation, is 80%, then the expected entry date is 8 years.

Is that what you mean here, or do you mean that if the patentee on the balance of probabilities would win the litigation, then it is ten years? I just was not clear what -- in what sense you are using the expression that you are all agreeing to.

Dr. Jenkins can you perhaps start and then we will make sure everyone else is --

DR. JENKINS: It is the first of those, the construct.

THE PRESIDENT: So it is the construct.

Is that also, Professor Shapiro, your understanding of how it is being used here?

PROFESSOR SHAPIRO: Yes, with the following clarification: in that example, the counterfactual would be a 20% probability that there will be immediate generic entry and an 80% probability there will be no generic entry during the ten-year life of the patent.

THE PRESIDENT: When you say immediate generic entry, it would only be when the litigation concludes, would it not?

PROFESSOR SHAPIRO: That is correct so --

THE PRESIDENT: That may not be immediate.

PROFESSOR SHAPIRO: -- in the models we are treating the litigation -- the time period for the litigation to be resolved as very quick.

THE PRESIDENT: But it could well be a year?

PROFESSOR SHAPIRO: Fair enough. That is not how the models simplify that, but if there were -- if it would be a year until litigation were resolved and there would not be entry at risk prior to that, then, everything that is at issue is going to start a year from now anyhow and that is therefore when the analysis commences.

THE PRESIDENT: Yes, that it is the construct and Dr. Stillman, is that your understanding as well?

DR. STILLMAN: It is.

THE PRESIDENT: Thank you. That is very helpful.

We asked you on Tuesday near the end of the discussion about point 6, which is back on page 12 of the joint statement, {I/1/14}, where the proposition is:

> "In cases where the value transfer takes a non-cash form, the pay-for-delay inference still applies, but further analysis is required to reach a conclusion regarding the expected impact of the settlement on customers."

I think that you explained, and one can perhaps look at this in the transcript at page 78, if we could bring that up. {TR/7/80}. One sees in that transcript, it starts about -- sorry. A question from me about point 6 at lines 6 to 8 where I refer to Professor Shapiro saying:

> "... it may be necessary to determine whether the arrangement comprising the value transfer could be expected to lead to a meaningful increase in competition, which would predictably benefit customers."

That is taken from your comments, Professor Shapiro, under that point 6 and I asked you to explain that a bit. As one sees further down, at lines below there you explain your answer, in some such cases one might need to take a view about patent strength.

My question is this, in asking this question of whether it could be expected to lead to a meaningful increase in competition that would predictably benefit customers, one has to have in mind a counterfactual, if one is asking for would an arrangement bring a benefit; what is the counterfactual that one should use in making that determination? Is it the construct that we have just been discussing, namely, the expected date of entry, or is it the situation beforehand of no generic entry at all? What is the benchmark or counterfactual that we use in considering that question? Perhaps I will ask Professor Shapiro first, because I think this was a discussion with you.

PROFESSOR SHAPIRO: Thank you, yes. Firstly I should clarify, this is question -- that in the discussion of the non-cash value transfers, which is what we are now talking about, all of my answers in the joint experts' statement referring to cases that involved non-cash but do not involve cash, I have a separate analysis of the two. So this is purely non-cash. We were not -- I was not addressing hybrid circumstances, I would view them separately, the cash and the non-cash, just to put things -- just to be clear about that.

Cash, we have talked about previously. So if we are talking about a non-cash agreement and my paediatrician example here; there are two counterfactuals that always apply in these types of cases. One counterfactual is an alternative settlement without the value transfer. The second counterfactual is ongoing litigation. You have asked about the status quo where there is, let us say, no generic competition.

THE PRESIDENT: Yes.

PROFESSOR SHAPIRO: That is not the counterfactual.

THE PRESIDENT: So when you are asking here whether the non-cash value transfer could be expected to lead to a meaningful increase in competition that would predictably benefit customers, you mean as opposed to those counterfactuals of ongoing litigation or alternative settlement?

PROFESSOR SHAPIRO: Yes, I do.

THE PRESIDENT: Right. You have clarified that you are talking about a pure non-cash value settlement. What about a hybrid settlement, which is what we have got here, what is the approach for that?

PROFESSOR SHAPIRO: So for a hybrid settlement I would look at the cash piece as we discussed cash payments, which are extremely difficult to justify in my view, but we talked about the analysis of cash. Then I would look at the non-cash piece in the way that that is articulated in the joint expert report and we have started to discuss where there is some additional analysis to be done to understand the nature and effects of the non-cash value transfer. If it is equivalent to cash, then we are basically back in the previous case.

THE PRESIDENT: Yes. If it is not, then -- if it is not equivalent to cash, then are we back to what you have just explained, namely, one looks at meaningful benefit as opposed to ongoing litigation or alternative settlement?

PROFESSOR SHAPIRO: Exactly.

THE PRESIDENT: Yes. Now, can I ask the other experts, because I am not sure that that is the counterfactual you all applied in looking at the benefit of the non-cash value or the supply agreements that were part of these settlements. Dr. Majumdar first.

DR. MAJUMDAR: Thank you, sir. So to be clear, the counterfactual that I have mentioned in my report and in the joint statement is one of the expected outcome of litigation. I discuss what happens in terms of competition relative to the no entry benchmark, not because I am saying that that is the counterfactual, but rather, because in my opinion, when one expects or sees a material increase in competition relative to the no entry outcome, then I do not think one can make a pay for delay inference or form this rebuttable presumption because one has to -- if one thinks the agreements are anti-competitive, then by definition, one has an expectation that, given patent strength, given the timing of entry if an entrant were to win the continued litigation battle and come in, there is an expectation that that somehow must be able to generate a sufficiently large gain to customers that would offset the immediate gain to customers that they get from the increment in competition relative to the no entry benchmark.

So what I am saying is, once you are in the world where there is an increase in competition with certainty, then, I think there is a lot of work to do before you could be comfortable that there is definitely an anti-competitive outcome. So that is why I would not apply the pay for delay inference and why I think that it is important as a starting point in understanding the impact of the agreement relative to the counterfactual because as a starting point, in my view, it is important to understand whether there is an increase in competition relative to that no entry benchmark.

THE PRESIDENT: Yes, Dr. Stillman?

DR. STILLMAN: First, with my focus on the NHS, as I explained in the note, the pay for delay inference does not arise, outside the value transfer it is not a relevant factor, I compare the actual gains to the NHS, which are real and with certainty, with the hypothetical gains that the NHS might have realised if the parties had engaged in an alternative form of settlement of the type that Professor Shapiro and the CMA say would not be a problem from a competition perspective and in that analysis, where again the size of the actual value transfer does not come into play, my analysis shows that the NHS is better off, in all likelihood, with the actual settlements than under these hypotheticals. So that is the starting point for me.

THE PRESIDENT: Better off compared to?

DR. STILLMAN: Compared to a counterfactual of a settlement on an early entry date but without a value transfer, in other words, the kind of alternative settlement that Professor Shapiro and the CMA have said would not raise a problem from a competition perspective. So in my core analysis there is definitely a concept of a counterfactual and the

counterfactual that I have modeled in my annex 3 analysis and supplemented in my first report on consumer welfare, is a counterfactual of independent -- agreed independent early entry at a compromise date without a value transfer.

Now, going beyond that, and now focusing on the impact on the prices paid by pharmacists for paroxetine, which is the focus of the CMA's analysis, when it talks about impacts on competitive process it always comes back and is measured in terms of the impact on the prices being paid by pharmacists for paroxetine, and I agree with Dr. Majumdar on this, that if you have an analysis that indicates that the pharmacists are receiving -- actually receiving lower prices as a result of the supply agreements in this case, to judge whether they are still -- whether the average price to pharmacists over time is nonetheless higher because of the agreements than it would have been in the counterfactual of continued litigation, one would have to compare the actual prices that we have observed, which are down from the pre-entry prices, with the probabilistic weighted average of the paths under litigation where one possibility is the generic wins, in which case, prices come down a lot; the alternative is that in the litigation is that the brand holder, the patent holder would have won, in which case the prices would have stayed at the higher level.

That involves counterfactuals, that involves issues of trying to estimate what would have happened in the litigation, it requires views on patent strength and it is an analysis that does not in a direct way involve the size of the value transfer in the settlement agreement.

THE PRESIDENT: That is what we have described as the expected -- the construct of the expected entry date?

DR. STILLMAN: Yes, I mean, I actually think for this purpose that I do not find thinking about the date as important as -- my construct would be slightly different in this context. My construct would be we know that we have the supply agreements and a certain reduction in the average price being paid by the pharmacist. There is some debate, not much debate, frankly, about the magnitude of that drop, but there is a drop. That drop would persist over the life of the agreements. We have a counterfactual of litigation, which perhaps takes a year and at a year's time we have then basically roughly two outcomes, brand holder wins, in which case prices stay high; alternatively generic wins, prices fall and then we have in that case then a probabilistic weighted average of those prices that we are sort of comparing then that level of prices with a -- starting about, say, a year hence, if that is the time of litigation, with the actual reduction of prices which began at the time of the supply agreements.

So that is the -- then there is lots of complications. One then has to ask over which period of time would you compare it? Does it go to patent end? Does it go to the end of the agreement? Does it go to the expected -- when we might think the patent might be overturned for some other reason? There are many other details and factors that have to be considered but that is in broad sketch the kind of analysis that I have in mind and it is an analysis where, again, the value transfer is really not a direct element of that analysis.

THE PRESIDENT: Yes. When you say the value transfer is not relevant, can one derive in practical terms a surrogate view of the outcome -- likely outcome of litigation or the parties' perception of the outcome of litigation from the size of the value transfer?

DR. STILLMAN: Yes, I think that is where the value transfer may be relevant in trying to draw some inference about what, in particular, the patent holder regards as the strength of its patent position.

THE PRESIDENT: You say the patent holder. As it is a negotiated deal, is it not both parties?

DR. STILLMAN: Yes, it is both.

THE PRESIDENT: Because if the generic thought the patent was very weak, they would not accept a small payment.

DR. STILLMAN: You are right, it goes both ways. I tend to think of it, when I think about this question, I look at a price and I say: how much would the patent holder be willing to pay, and I think in terms of well, that is going to be determined by the amount that is at risk and by the patent holder's assessment of the strength of its patent position. So that is the way I tend to organise my thinking on this question.

THE PRESIDENT: You accept it is really both parties -- the deal that the two parties come to --

DR. STILLMAN: Yes, of course, it takes two parties --

THE PRESIDENT: -- so it is both parties' perception of the outcome.

DR. STILLMAN: Again, I want to just remind you that at an appropriate time I have some observations about how that calculation might be done in this case, but I will wait for your invitation.

THE PRESIDENT: Yes.

Dr. Majumdar.

DR. MAJUMDAR: Thank you, sir. It was just to point out that on internal page 35 of the joint statement, I think the statement there at number 12 may set out the answer to the question that you posed, sir, in terms of what Dr. Stillman and I consider versus Professor Shapiro. {I/1/37}.

THE PRESIDENT: That is what you look at. You mean whether it is NHS or average prices, but I was thinking in terms of what the counterfactual is against which you are measuring the effect or benefit.

DR. MAJUMDAR: I see, sir. So here I would say the counterfactual is continued litigation and just perhaps to give an example, so, it is similar to what Dr. Stillman said, the way I see it is that if we have an increment in competition with certainty relative to the no entry outcome, then there is a material gain for direct customers. To understand whether there is an anti-competitive effect, one then has to say what would have happened had there been continued litigation.

THE PRESIDENT: Yes.

DR. MAJUMDAR: If the originator would have won, then, clearly consumers gain. If the originator would lose, then one has to firstly identify the probability of them losing. Secondly, given that the entrant wins one has to ask the question: when is it that they managed to get in?

In our case, for example, if entry would be December 2002, then, yes, the entry would win the litigation but actually by the time they got into the market it would have no effect, they may as well have lost. Then, thirdly, given that the entrant has got in, in a timely manner, does the entrant push down prices sufficiently to offset that immediate gain with certainty to competition? So we have this weighting of probabilities. So what I am saying is, to come to that view, the starting point is to ask the question: is there an increment in competition relative to the no entry benchmark? Because if there is not, then we do not have to worry about going through that complex exercise. However, once there is an increment in competition, then my view is because of these difficult steps that one has to take, understanding what is the patent strength, understanding what are the timing implications and then is timing sufficiently likely to occur to push down prices to a sufficiently low degree?

In my opinion those are very difficult steps to take which means that I would not make a pay for delay inference. I would think that one has to very carefully assess all those difficult questions.

THE PRESIDENT: But in assessing the patent strength, which is a shorthand for the outcome of litigation, because it may be the patent is strong but there is no infringement, but the generic winning, the patentee losing, do you agree with Dr. Stillman that one can use the size of the payment as a surrogate in broad terms for the parties' perception of likely outcome?

DR. MAJUMDAR: I would be cautious of doing so, sir. I do accept that, all else equal, a higher payment would be consistent with the originator considering its patent to be weaker. That is all else equal. However, Dr. Jenkins on Tuesday put forward a number of factors, confounding factors, you might call them, which make it difficult to draw a direct inference from the size of the value transfer to the originator's view of the patent strength. For that reason, sir, I would be very cautious about drawing that inference.

THE PRESIDENT: The factor you would rely on as relevant there -- what do you think is the fact she referred to that is relevant in being cautious?

DR. MAJUMDAR: For example, the risk aversion that Dr. Jenkins mentioned, in that scenario it may be that even if a risk neutral originator would have paid a lower amount, a risk averse originator may value certainty so greatly that they pay the large value transfer even though that is not reflecting what their actual view of their patent strength was, sir.

THE PRESIDENT: Yes. Anything else that is relevant?

DR. MAJUMDAR: Also, as I mentioned in this scenario because I think you have an entrant that is injuncted, and I do not dare to say I understand fully the law there, but my understanding is in that situation entry at risk would not occur and it may mean that in terms of timing, in terms of the ability of the entrant to get into the market, it may mean that it is less likely that the entrant would get in in time, ie, before December 2003 to have a material impact --

THE PRESIDENT: No, I do not think the interim injunction affects the outcome of the litigation.

DR. MAJUMDAR: Nonetheless, my point is the timing matters.

THE PRESIDENT: It is the risk aversions.

Dr. Jenkins, on this question, I take it you adopt the point about risk aversion?

DR. JENKINS: Indeed.

THE PRESIDENT: So you make that caveat. But subject to that, is there any other reason why the size of the payment is not a workable surrogate for the parties' perception of the outcome of the litigation?

DR. JENKINS: I think as Dr. Majumdar said, you have the value at risk, so it could also be differences in perceptions about the size of the underlying market opportunity between the two parties, that could be another explanation of why you observe a value transfer that is not a good reflection of the underlying view of patent strength.

It is also linked to risk aversion with the desire to bridge the gap between two parties' different views on how the market might evolve.

MR. GLYNN: Would it be relevant to think about which market you are considering, in other words, we are talking about the UK; if there was a global dimension as well, how would that come into your thinking?

DR. JENKINS: I think that might affect the risk aversion side of the picture and possibly -- it depends whether you think the different markets or what the situation in the different markets is and whether actions in the UK are likely to influence those or whether they have different frameworks such that you can consider their actions in court to be relatively independent across those different areas.

THE PRESIDENT: Yes, Professor Shapiro, I think there are two points, two quite separate points. One was that -- one point being made is that one looks at the effect of the non-cash value compared to the situation beforehand to see, does it bring any competitive benefit. If it does not, then you do not have to worry about it anymore. If it does, then you compare it with the counterfactual that has been agreed all round I think, namely, the outcome of litigation but -- or an alternative settlement, but it is said that involved so many factors that it is very difficult to do. That is the first point.

The second point is what is the relevance of the size of the cash payment, and is it a workable surrogate for the parties' perception of patent strength. They are two quite separate points.

PROFESSOR SHAPIRO: You have exactly outlined the two things that I wanted to respond on, thank you.

On the first point, so we are now in a discussion, let us assume that the non-cash value transfer has immediately created some meaningful benefits to customers in comparison with the status quo. Assuming that. We have heard, I think particularly from Dr. Stillman and Dr. Majumdar that they believe that this requires a balancing, an assessing of probabilities, a rather complicated set of steps in order to proceed. Let me direct the panel's attention to page 16 of the joint expert report with the internal pagination and Dr. Stillman's statement there {I/1/18}. In the middle of the page there is a sentence that begins:

> "If the total welfare 'pie'..."

I am going to read that if you do not mind:

> "If the total welfare 'pie' is essential essentially fixed and not affected by the settlement (because the total demand for pharmaceuticals tends to be highly inelastic with respect to price and ignoring avoided litigation costs), then this expected gain to the originator and the generic challenger ..."

He is referring to the fact that they found it profitable to enter into the agreement:

" ... implies an expected loss to some other entities in the 'supply chain'."

So, in a class of cases which includes this case, where we have a fixed total welfare pie because of inelastic demand, we have this additional logical link that is very helpful and simplifies the analysis.

In particular, as Dr. Stillman points out, the cause -- GSK -- well, I will refrain from talking about the particulars. If the patent holder and the generics find it profitable to enter into the agreement in comparison with the counterfactual, we can conclude that the other entities in the supply chain collectively are harmed. As he points out I think here -- well he does not say it, but the other entities in the supply chain are going to be the wholesalers and the generics, the customers. So, in this case, we do not need -- in that type of case, one does not need to get into the patent strength or the balancing that could arise in other cases. So that is my response to you on the first point.

Shall I go on to the second?

THE PRESIDENT: Yes.

PROFESSOR SHAPIRO: Okay. The second point was what can we make -- still in this general situation where there is immediate material benefits to customers from the settlements, the non-cash value transfer creates those benefits in the form of competition. What do we do, can we use the size of the value transfer in understanding the likely effects in comparison with the counterfactual.

THE PRESIDENT: Not the likely effects, it is understanding the parties' perception of what the counterfactual is, I think.

PROFESSOR SHAPIRO: I see.

THE PRESIDENT: The parties' perception of what would be the outcome of the litigation.

PROFESSOR SHAPIRO: Okay. Fine. We mean the same thing.

First point here, the counterfactual where there is -- let us focus on the ongoing litigation counterfactual here which I think is what you are asking about. With risk neutrality on the part of the patent holder, one can infer that the profits that are protected by the agreement times the probability of losing, as the patent holder perceived it, must be at least as large as the payment that was made, the value transfer.

I think I am in agreement here with Dr. Stillman that one looks -- one thinks about it in terms of from the patent holder's point of view, the probability to lose times the profit reduction that they would suffer if they do lose the case.

This does not tell us about how the generic company would perceive the strength of the case. We cannot make inferences about that, this is a one sided test because -- you look puzzled, so let me explain.

Suppose the generic company thought they had a very weak case. They might accept a rather low payment. We see a high payment. That tells us that the patent holder feared losing the case but it is consistent logically with the generic also being very fearful of losing the case from its perspective. It was happy to take a large payment; it would have accepted a smaller one.

So when we see the payment that is of whatever magnitude, we can make inferences about the patent holder's beliefs about the likelihood that it would win or lose the litigation.

THE PRESIDENT: I am puzzled only because -- I can see that is how far the patent holder would be prepared to go in settling but it is a process of negotiation. They will start with a lower offer. If the generic thinks it has a weak case it will take it, but the patentee is unlikely to offer its final sticking point at the outset, so I can see what you mean, that is where it would be prepared to settle but I would have thought if the generic has a weak case the patentee will get away with settling for less. That is why I say it reflects the two sides and equally, if the patentee thinks it has got a strong case but so does the generic in bargaining they might get it up a bit and the patentee might have to pay a bit more than it expected at the outcome. So that is why I say the deal struck at the end will be a reflection of both side's perception.

PROFESSOR SHAPIRO: I totally agree with you. Where one sees the deal struck will depend on how much the patent holder would be willing to offer, perhaps a high number, how much the generic would be willing to accept and we expect the actual payment to be somewhere in between.

When I first developed this theory and as it has been pursued in the literature, we, meaning the authors in this literature, have taken what actually is a lenient approach, or a cautious approach one might say, to these by assuming that the patent holder is forced to pay as much as it would be willing to pay.

If we assumed equal bargaining power, so as you are naturally thinking about, I believe, that the payment would be somewhere in between and reflect both parties' assessments, then, we might -- if we see a payment, we might think, well, the patent holder may be willing to pay quite a lot more which would reflect even greater fear of losing.

So if we were to adopt an intermediate approach to bargaining strength, we would have a stronger inference about the patent holder's fear of losing the case and I did not choose to do that when I first developed this theory and other people have followed that in the literature.

THE PRESIDENT: You prefaced that by saying if we assumed risk neutrality. Dr. Jenkins and Dr. Majumdar make the point: well, the patentee might be risk averse and therefore be willing to pay quite a lot even though they thought the risk was small. How does that factor in then to what one can take from the size of the payment?

PROFESSOR SHAPIRO: Right. Again, I accept the point that if one is in this branch of the discussion we are now having, we are assuming there is a significant competitive -- immediate competitive benefit from the settlement and we are looking at the ongoing litigation counterfactual rather than the alternative settlement counterfactual. In that world and that line of analysis, I accept that it is -- if we had risk aversion on the part of the patent holder, we would, observing a certain payment, we would not be able to make as strong -- exactly the same inference about the probability of losing times the amount at risk.

The probability of losing times the expected loss, the probability of losing times the amount at risk could be somewhat smaller than the payment that was made depending on the degree of risk aversion.

I would say two things on that point. First, for large publicly traded companies, at least, the normal assumption would be that when they are making business decisions they are close to risk neutral, because that is what the shareholders should want because the shareholders already are diversifying their portfolios in how they purchase portfolio stocks to hold and they want the companies they invest in to make bets that on average pay off. They would not want the company to be run in a risk averse way. This is a standard feature of corporate finance and finance.

The second point would be that if one accepted risk neutrality as a reason to not apply this type of inference -- this is more of a policy point -- my own concern is that we would then -- might have -- it would be much more difficult to have effective NHS trust enforcement in this area and given the inherently dangerous nature of these agreements, I am concerned about that.

THE PRESIDENT: Yes, as you say, that is a policy point.

MR. GLYNN: There is a comment I think somewhere, Professor Shapiro, from one of the other experts, that the decisions may be taken by management rather than -- management acting partly in their own interests rather than fully reflecting the diversified shareholders' theoretical risk neutrality. You accept that?

PROFESSOR SHAPIRO: I do. I think in practice we certainly have agency issues that can arise and managers may be interested in their own career or short-term profits. I am

simply pointing out that one should be cautious about going too far with that argument because it is in fact not in the shareholders' interests.

MR. MALEK: You said at one point that whilst you can make an inference about the position of the patentee, you cannot necessarily make the same inference as to how the generic perceives the case. But surely if you are a generic and you are fairly sophisticated, you may make your own assessment of what the patentee may lose from early generic entry because that would be a lever in any negotiations. Is that a fair comment?

PROFESSOR SHAPIRO: I totally agree with that, plus, just to be clear, taking the generic company's perspective, they want to make sure whatever value is transferred to them is sufficient to compensate them for what they would expect to earn if they went to court and had a prospect of winning.

MR. MALEK: Yes. Thank you.

THE PRESIDENT: I think we have covered the --

MR. GLYNN: I think both Dr. Jenkins and Dr. Majumdar would like to come back, if they may.

THE PRESIDENT: Yes.

DR. MAJUMDAR: I was going to ask if I had permission to ask Professor Shapiro a question about a statement in his expert report.

THE PRESIDENT: I do not think that is appropriate, but if you want to come back on what has just been --

DR. MAJUMDAR: It is in relation to the benchmark for assessing competitive effects, sir.

THE PRESIDENT: It is on the first point. I think what inference, if any, and with what caution or degree of caution one should attach to the size of the payment point is dealing -- which was the second point: does anyone want to come back on that?

Yes, Dr. Stillman?

DR. STILLMAN: Yes. I just want to come back to the denominator of that equation. In other words, we have been talking about the amount of the payment and what can be drawn from the size of the payment but I think it is quite clear that to draw any inferences about the patent holder's view of its position, one needs to have an appropriate measure of the value at risk, what it would lose.

I just want to emphasise that when you are thinking about that downside of going to trial, losing, if you lose and independent generic competition breaks out, it is broken out for longer than the term of any particular initial settlement agreement. If you have an agreement of three years and then in a year's time it goes -- we have on the one hand an actual agreement of three years, alternatively we have litigation where a decision will be

reached in one year's time, and if in that litigation outcome we have the patent being overturned, that independent generic -- the consequences will go beyond a term of the actual agreement, they will go until the patent would end or until the patent would be overturned by some other reason.

Just when you are thinking about the amount that is at risk, it is not just one year's profit, it is not necessarily the profits over that the originator might have at risk over the life of the particular settlement agreement, it is the profits that they would potentially lose from the time of the decision until the time that the patent would naturally expire at patent expiry or alternatively, might be overturned because of some other generic coming in and challenging.

That means when you are thinking about scaling the payment, you do not just look at one year's profits, you do not necessarily look at two years' profits or three years' profits, you have to think about the number of years of profits that are at risk over the period of time that roughly the patent has to run, or more refined, until we think the patent might otherwise be overturned.

What I mean in this case is that if 50 million per year is the amount that is at risk, which by my calculations in annex 3 is the right order of magnitude, then, we do not look at the payment in an IVAX deal or an individual deal relative to 50 million, we look at it relative to 50 million times the number of years that the patent would have to run or alternatively, until we think the patent might otherwise come into play.

THE PRESIDENT: I am sorry why is it not the number of years -- I can see it is not just one year -- for the duration of the agreement?

DR. STILLMAN: Let us just use some numbers here. We have October 2001 the IVAX agreement. The agreement runs for three years to roughly October 2004. If the case is decided -- let us say we have litigation and the case is decided in October of 2005 and we have the generic winning and the patent is overturned -- 2002 -- 2001, so we have a 2002 decision date and the patent is then overturned, that patent is going to be overturned and GSK would face that very competitive environment for 2002, 2003, 2004, 2005 beyond the time of the agreement.

Because once the generic competition has broken out, you cannot put it back -- it is not going to end -- you do not really go back to the status quo anti at the end of the settlement agreement.

THE PRESIDENT: But the agreement does not protect you from the challenge at the end of the term of the agreement.

DR. STILLMAN: Correct, but then you have a new set of uncertainties so that is why it is even more complicated.

THE PRESIDENT: It is not guaranteed protection from that --

DR. STILLMAN: You do not actually have guaranteed protection period, because even if you settle with -- if GSK settles with IVAX, there is a possibility of a BASF or an Apotex or somebody else coming along, but I am just saying, when we think about the temptation to say 20 million is roughly the number that was paid in the IVAX deal. The skeleton -- the CMA skeleton, paragraph 24, sets out the numbers and those numbers seem about right, so if you used 20 million as basically the payment that GSK makes in the IVAX deal, you do not want to scale that relative to 50 million, which is the one-year amount at risk, you do not even want necessarily to scale it relative to two years or three years, you would have to scale it relative to the amount that GSK could potentially lose if it had the adverse effect in litigation.

THE PRESIDENT: Yes.

MR. GLYNN: In brief, you would look for something like the present value of the two numbers you are trying to compare.

DR. STILLMAN: You have the lump sum -- we have not worried about discounting, but yes, present values of course are important.

MR. GLYNN: Just in theory --

DR. STILLMAN: In theory, but we have, for all practical purposes, this takes away from the whole supply agreements and the impact of competition, but just thinking about the payments that are in gross terms, we have a £20 million payment from GSK to IVAX and then, against that, we have GSK, what is it getting? It is avoiding the risk of an adverse litigation outcome. The one-year consequences are about £50 million per year by my calculations in annex 3, table 11. If you were to -- that would certainly last -- it does not even certainly last the period of the agreement because there is still some possibility that during that agreement you could have another generic come in and overturn. Even there you have need to have some kind of expectation analysis to think about what is your real protection and your real protection kind of diminishes over time because over time it becomes more likely that there is another challenger coming in to overturn but the point is -- my point is it is not an agreement -- or the period as defined by the duration of the supply agreement, it is defined really by the time to the patent expiry but then with appropriate adjustments for, if you can -- it is very complicated, but various adjustments for the possibility of other challenges coming in in the meantime.

But the key thing is that it is not 20 against 50, it is 20 against 50 times a multiple.

THE PRESIDENT: We can see what you would lose if the generic comes in straightaway, that challenger and then everybody else and that is until patent expiry, is the point you are making, with the loss that they would suffer --

DR. STILLMAN: The losses they would --

THE PRESIDENT: If they lose the litigation and there is no agreement, so they get the certainty that they are not going to lose all the monopoly profits of the patent until expiry which is the risk if the generic fights the case and wins in a year's time.

DR. STILLMAN: I think we are saying the same thing.

THE PRESIDENT: That is the loss; it is not one year's profits.

DR. STILLMAN: We are saying the same thing. It is not one year's profits, it is the loss they are avoiding over the duration of the patent.

THE PRESIDENT: As against that, the protection they are getting is protection from that particular generic pursuing litigation over the period of the settlement.

DR. STILLMAN: Well, they are getting --

THE PRESIDENT: Because that generic -- they are not getting any protection from any other generic bringing litigation because they are not party to the settlement and they are not getting protection from that particular generic beyond the period of the settlement because it is free to bring a challenge afterwards. So it is a more complicated balancing act.

DR. STILLMAN: Yes, I actually would not --

THE PRESIDENT: Is that the point you are making?

DR. STILLMAN: I want to say yes, but I fear that that summary is really not exactly what I am saying. What I am saying is that the downside to losing at litigation to IVAX, the first deal, would be a multiyear consequence. That is the key point.

THE PRESIDENT: Yes, that is the one side -- that is the downside, I am just saying the up side -- I understand that. The up side is you are buying off that challenge from that particular generic for the period of the agreement.

DR. STILLMAN: Yes, we are saying the same thing.

THE PRESIDENT: You are not buying off any more.

DR. STILLMAN: We are saying the same thing and so therefore when you think about the -- we have on the one hand what you would lose -- either you have the full out independent generic competition profits with the rest of the patent expiry. What you would gain if you won at litigation would be not certainty of the status quo ante profits, but profits that would

be at around that level but have to be adjusted for the possibility -- adjusted downward for the possibility that in subsequent years there could be other generic challenges.

THE PRESIDENT: Yes. Do you want to comment?

PROFESSOR SHAPIRO: I think I largely disagree with what Dr. Stillman has just been saying. I would think of this on flow terms, year-by-year terms, rather than stock terms. What I mean by that is what GSK is purchasing, if they are making the payment, and getting IVAX to agree not -- to cease their efforts to take down the patent for three years, they are getting three years of restraint by IVAX. Period. Okay?

They are not getting ten years or whatever the remaining lifetime of the patent is, so that is not right thing to look at. If they want to purchase more years of restraint, they are going to have to pay more after this agreement ends.

So I would look at the amount they are paying per year to IVAX, in comparison with the profits at risk which I think Dr. Stillman said was 50 million.

THE PRESIDENT: In the first year, I think.

PROFESSOR SHAPIRO: Okay, I did not understand that.

THE PRESIDENT: I think what Dr. Stillman is saying is whatever the figures are, the amount at risk is the monopoly profit until patent expiry because -- is that right?

DR. STILLMAN: No, it is not right.

THE PRESIDENT: No, sorry, have I misunderstood you?

DR. STILLMAN: 50 million is the figure per year.

THE PRESIDENT: But if IVAX came in then so would everybody else and that would mean that would be the situation until --

DR. STILLMAN: And the difference on an annual basis is 50 million per year.

THE PRESIDENT: Yes. I thought that was what I was saying. I am sorry if I was not clear. That is what I meant to say.

PROFESSOR SHAPIRO: So if three years have been purchased, the profits would be £150 million over the three years and if 20 million were paid for this agreement alone, I would think the 20 over the 150 would be informative regarding a lower bound on the probability that GSK assessed that they would lose.

Now you have to add the other agreements as well, you cannot just look at one in this case, but if we are just analysing one alone, that would be the steps, and I think it is comparing those numbers. I believe Dr. Stillman says he does not want to compare those numbers.

DR. STILLMAN: No --

PROFESSOR SHAPIRO: Maybe I am mistaken.

THE PRESIDENT: I was asking about how one would approach a comparison if we thought it relevant. That was the point I was just trying to clarify.

DR. STILLMAN: Mr. President, just to clarify, I think 20 over 150 is a good starting place, I think there are other wrinkles to the analysis, but it is not 20 over 50.

PROFESSOR SHAPIRO: The 20 is what is paid over the three years of the agreement.

DR. STILLMAN: Correct.

PROFESSOR SHAPIRO: I agree with that.

MR. GLYNN: Really just to repeat my question, or a question on the line of the global dimension as opposed to the national dimension. How does that come into your -- if you are trying to draw an inference from the size of the payment, you have agreed that your basic argument is very clear. You have to modify it to the extent you want to take risk aversion into account, that is clear. How, if at all, would you modify it if you wanted to take into account effects in other markets than the UK?

PROFESSOR SHAPIRO: If there were adverse profit consequences in other markets, that would be something that I would expect GSK to be aware of and consider and therefore the total profits at risk would be greater than the profits just in the United Kingdom.

MR. GLYNN: Clearly.

THE PRESIDENT: It would affect the numbers?

PROFESSOR SHAPIRO: It would. My understanding would be if the UK patent went down, that would not necessarily mean the patents would be problematic in other jurisdictions but logically, I am agreeing with you.

THE PRESIDENT: Yes, Dr. Jenkins?

DR. JENKINS: Yes, so I just want to summarise my views on the question about what can you infer from a payment with respect to patent strength, but also if it is possible to go back to the first question about the counterfactuals because I did not get to comment on that one. I think I agree with all the discussion that has occurred so far, which is to say you see a payment value that is offered, it is clearly what the originator is willing to pay and there are at least three elements of that. One would be their view on their patent -- the strength of their patent and their likelihood of prevailing. The other is the value at risk, which I think is what Dr. Stillman was keen to reiterate that it is not just about one year's loss and it may include other areas as well depending on the likelihood that those are at risk, and then it will also be dependent on whether or not that entity has some risk aversion with respect to the shock that comes from losing that patent protection and the fact it is essentially a fixed-cost business and the managers themselves will be incentivised on short-term performance.

Against that you have the generic which would have its own view of the patent strength and I agree with Professor Shapiro that a generic who is thinking about a negotiation will likely see the originator with much more to lose and in that situation will be thinking to themselves how much do I think I can get out of this entity? More than -- they will in their mind have: what do you think is my best outcome given what I think will happen in the future but they will be looking to gain in that negotiation.

The value at risk for the generic will be a lot lower because that is a scenario in which you have got independent generic entry and they will be thinking: I might get some period quick to market in a litigation if I am really well poised, but I am going to face a lot of other people coming in.

Even with just those two things you can see that what constitutes a large payment, or may appear to be a large payment, may not be driven by a view that the patent is weak but these other elements of the consideration of the originator and the fact that the generic is seeking to take the best advantage of that negotiation.

MR. MALEK: Can I just add in one point that arises from Dr. Reilly's evidence. Would you also take into account other products that you have, so let us say you have a big sales force, could you take into account that: actually if we do not have this product then we can just focus on some of our other big branded products and appreciate that actually the losses may not be just a question of what you would lose on Seroxat but you may make more money on other drugs?

DR. JENKINS: What I think about that is I have not looked in a lot of detail on this but what I have seen is that the gross margin on Seroxat was very high for GSK, which means it did not have that much direct staff cost associated with the sales of it. Now, obviously, Dr. Reilly says they would be able to mitigate some of those. So the total revenue loss would not all be a loss because they would be able to move some of those staff to an alternative use, but there was a very significant contribution to the fixed costs of GSK. Now that, in my view, is all the invention that they are continuing to do. They are funding their R&D for the next drug from the successes of these drugs. Now, if they lose that they can find ways around that. It is likely to be seeking some sort of alternate funding. I do not think they are going to be able to bridge that gap from shifting some of their sales force around, so I think there is quite a big threat to the business and I think you see that --

MR. MALEK: I accept that, it is just another factor to put into the mix?

DR. JENKINS: Yes, exactly.

THE PRESIDENT: Then you want to say something about the counterfactual.

DR. JENKINS: Yes, I just wanted to go back to the two counterfactuals. I agree with that and I wanted to be clear that in the joint statement at item 10 {I/1/18}

THE PRESIDENT: On page?

DR. JENKINS: On page internal 16. That statement is phrased that:

"The 'ongoing litigation' counterfactual in the literature ..."

Is this construct. I will not repeat myself from Tuesday too much, but it is just really important that to reiterate that this is because the way you model decision-making under uncertainty and economics is often around this type of construct where you weight the two potential outcomes with the expected probability.

Now, in my view, there is a clear link between these two counterfactuals and that is why in the modeling, which is a codification of the intuition that sits behind the pay for delay inference.

So, in the stylised example we had, which is times zero, which I think to get over the earlier questioning about: well, you say it is today, but there will be -- you need the judgment, so if you think about it, the way the modeling works is we know the date the judgment will happen, that is our date zero and we know the patent has ten years to run from that date and then the patent holder thinks they have an 80% chance of success.

So the actual counterfactual is either entry or not entry and I think that motivates that discussion which is that is why we are drawn to think about a no entry benchmark because that is the scenario in which the patent prevails, that you do not have generic entry.

The alternative settlement you can see is a link between these two, because in the theoretical modeling what you say is, it should be the case, if we have this perfect world with perfect information and risk neutrality, that the two parties should agree on an early entry date at year 8. Right? Because that is the codification of the uncertainty between them. In my view that is the link between these two counterfactuals in the theoretical modeling.

That is why it is important to think about those real world examples and the real world facts that go into people's decision-making because the modeling and the inference depends on that alternative settlement being able to be delivered because that is what makes the uncertainty real, that that is something that would be able to happen.

If that is not the case then you are in a world which is you have this uncertainty and it is very hard to know how to judge that and you will be giving up some certain benefit today against just the possibility of benefits in the other world. If we think about that alternative settlement scenario, that is where the concerns about in particular asymmetry of

information, which mean that those two parties may not be able to reach that agreement with those benefits to customers in advance of patent expiry without the value transfer.

MR. GLYNN: Just one -- very briefly, if we can manage to be very brief with this, if you have the thought that it could be either this or that that you are comparing with, if you take the starting point that compared with the status quo ante there was some "increase in competition", and then you have "either/or" to compare it with, then would that not be a recipe -- I mean how would you possibly reach a decision in that case? Would you not have to reach a probabilistic view in order to make any conclusions?

DR. JENKINS: Yes, I agree that in actually making a decision, because we unfortunately do not have a crystal ball, but in terms of thinking about that, in a sense, yes, it is a difficult decision but it is a decision and a judgment that has to be made.

MR. GLYNN: But you have to take account of the probabilities in reaching that point?

DR. JENKINS: Yes, and you cannot infer from the presence of the value transfer some likely outcome as a result of that.

(Pause).

THE PRESIDENT: Yes, sorry, Professor Shapiro.

PROFESSOR SHAPIRO: So I disagree. I would just again emphasise when we have the fixed total quantity in the market with inelastic demand as per the statement I read from Dr. Stillman from the joint expert report, we do not need to get into these questions of probability in assessing patent strength.

The analysis is much simpler and we can infer directly from the profitability of the agreements to the companies that others in the supply chain are harmed, that being the customers. So while in many cases, Mr. Glynn, we would need to get into that type of analysis if we had a significant competitive benefit resulting from the settlements, that is not the case if one knows that there is fixed total quantity.

THE PRESIDENT: I think we have picked that up. What we will do --

DR. MAJUMDAR: Sorry.

THE PRESIDENT: Yes.

DR. MAJUMDAR: On that point, to come back to the risk aversion point. In that situation, the originator is actually in some senses loss-making because it is paying more than it should do in terms of risk neutrality which means that I do not agree that Professor Shapiro's inference works even with the fixed demand where you do have that risk aversion because it is -- if you see, in that case the originator pays too much given the risk because it values certainty so much. In that sense it is actually making a loss in risk neutral terms.

THE PRESIDENT: Paying too much but I thought Professor Shapiro was saying the amount it pays does not matter. It is only paying too much as opposed to what it should pay, you mean? When you say "too much", too much compared to what?

DR. MAJUMDAR: Apologies for being unclear, sir. My understanding of what Professor Shapiro is saying here is that when collectively the originator and the entrant are making a profit, one can just presume there must be harmful effects elsewhere in the supply chain and I am making the point that with risk aversion, the originator is paying more for certainty than it would do if it were risk neutral and in that sense, one can think of it as making a loss in terms of risk neutrality and hence Professor Shapiro's inference would not necessarily apply.

PROFESSOR SHAPIRO: I would just refer you to Dr. Stillman's statement. He and I agree on this point.

THE PRESIDENT: We shall take a 5-minute break. We will then want to review a few points. We will then give counsel, if they wish, an opportunity to question on any of these conceptual issues and it has been at a level of generality. We then want to move on to point 2 of the -- the issues covered by point 2 of the joint statement starting on page 28 {I/1/30}. I think on that point, when we embark on point 2, Dr. Jenkins, probably you are not involved in anymore. That is how we want to take things forward. So we will take 5 minutes now.

(11.45 am) (A short break)

(12.00 pm)

THE PRESIDENT: Before we move on to the next topic, what we would like to do, please, is to ask each of you individually just to identify for us, really by way of a checklist, as it were, what you think are the factual matters one would need to establish to decide whether these agreements harmed competition.

You need not elaborate on why. I think that relates to all that you have been saying but we just want to get from each of you separately what you think are the things we need to look at and perhaps make findings on.

So Professor Shapiro, can we start with you, please.

PROFESSOR SHAPIRO: Certainly. So, I would point to three elements that you would want to establish as factual matters -- we are now talking about this actual case, right?

THE PRESIDENT: Yes, absolutely.

PROFESSOR SHAPIRO: Just to be sure.

THE PRESIDENT: We are not going to decide any other cases. We have enough to grapple with here.

PROFESSOR SHAPIRO: The first element was the presence of cash payments from GSK to the generics, evaluating each agreement in the same fashion. The presence of a cash payment, and as I have indicated, that is a flag of anti-competitive effect.

Then, to see for the non-cash payment, is it economically equivalent to cash? In particular, I am referring to the transfers of restricted volumes. You will recall in the supply agreements. If it is economically equivalent to cash, then we add that to the cash.

MR. GLYNN: Sorry, just for the definition, would you define exactly what "economically equivalent to cash" means?

PROFESSOR SHAPIRO: Good. Yes. So what I mean by that is that the consequences in the market of the transfer of the restricted volumes are the same or very close to the same as a transfer of cash when it comes to the effect on customers in particular. I am going to -- when I say customers here I very much urge you to focus on the pharmacy level and so in terms of impact on the pharmacies and the prices there.

To put a slightly finer point on it, the key factual element, I would say is did the restricted volumes predict -- would they predictively lead to a meaningful reduction in price at the pharmacy level and then they would not be equivalent to cash, or if they would have no such effect and was simply the transfer of margins, or the sharing of monopoly profits, then I would call it economically equivalent to cash.

MR. GLYNN: Thank you.

PROFESSOR SHAPIRO: If you see these elements that you the cash and the cash equivalent in the form of transferred margins, and you also see agreements on the part of the generics to refrain from their efforts to independently enter as part of these agreements, then, those are the key things to look at and there are a lot of other things that my counterparts here would want you to look at and I do not think they are essential or even relevant.

THE PRESIDENT: If the answer to your second question is that they are not equivalent to cash, they did predictably lead to a meaningful reduction in price, you would say, to pharmacies -- I am not sure you would say the NHS, but anyway, whatever the parameter. If the answer is no -- the answer is, sorry, yes, it did, then is there something else we would need to look at?

PROFESSOR SHAPIRO: Okay, so, first, just to be clear whether you need to go down that branch. In my view and I think I probably made this clear in the previous hour, if you

accept that the demand for paroxetine in the UK is not at all sensitive to the price charged to pharmacies, the price that pharmacies pay for the drug, then I think that is sufficient to find that these are cash equivalent, the transfers of quantity. That requires some economic steps, okay, but I view that as sufficient based on the underlying economics.

But if you do not find that the demand is so inelastic or you do not accept the economic analysis that I believe is convincing, then I would say you have two ways to go. One you could be -- how do I put it? I guess -- then you would I think need to look more closely because then you would have determined that the agreements had an immediate, let us say, non-trivial favourable impact on the price at the pharmacy level. Obviously that is something that we are trying to -- is a goal of competition policy.

So I am certainly not going to brush that aside. If you find that, I would still look, given the nature of these types of agreements, if you want to go down that path and explore effects on that branch, I would look for -- to understand why, if that was true, how that is consistent with these agreements being profitable for the parties who entered into them.

In other words, if you have come to this conclusion that the pharmacists got a benefit, a meaningful benefit, that is a lower price. So how did the companies make more money while the price went down?

You would want to square that circle or solve that puzzle before you would then, I think, be willing to accept that there was a pro-competitive element here. I should say and then I will stop --

THE PRESIDENT: Two ways to go; that is one. I think you said two ways to go.

PROFESSOR SHAPIRO: Thank you so much. The other way to go would be more of a policy direction I guess and I do not want to go outside of my bounds as an economist testifying before you, which you could take the view that these are inherently dangerous types of agreements and you do not -- the possibility of some of these benefits, you might think, look, that is still not enough, I am very worried that the big game here is to have real generic competition. We know that that will dramatically lower prices and even if we saw maybe a 5% -- let us imagine this where we say the pharmacists received a 3-year 5% price drop, you might still say: that is not convincing to me because true independent generic competition I know will likely lead to a 70% price drop and that was forestalled and it is hard to know the probabilities but I want to protect that and these agreements by their nature are inherently dangerous, so you might brush aside, if you will, this smaller benefit.

Again, that to me is -- I don't want to go again out of my bounds here, this is something that you -- you might want to consider that route, but that is, I would say, going beyond the strict economics and into the role -- it is above my pay grade.

MR. MALEK: Can I just understand, this further analysis, so if we do not accept your analysis on the non-cash payments, ie that they are not economically equivalent to cash, you go down these other avenues, but is it your case that you do not have that analysis in respect of the cash payments?

PROFESSOR SHAPIRO: Correct.

MR. MALEK: I just want to understand what you were saying.

PROFESSOR SHAPIRO: First off, the cash payments, I think you see them -- I do not really think there is a defence for those. This is an anti-competitive payment. If the other payments are cash equivalent, then they get treated likewise, but even -- maybe I was not clear enough I think. Whatever you determine on the non-cash part, that does not justify the cash part for the agreements.

MR. MALEK: Yes, I think I understood you. I think your evidence is clear on that, I understand.

PROFESSOR SHAPIRO: Thank you. I was going to close and say there are a number of details that I know you are spending your time on and the other experts here are delving into, such as wholesaler margins, such as the beliefs the parties had about their prospects of litigation. None of those things, in my view, do need to reach, there are some more, I did not list them, I do not think you need -- I do not think the case requires that complexity and it is why I did not list them in the elements that I thought were key.

THE PRESIDENT: I am just trying to understand what you said is more a policy question. We cannot, as a court, make policy, but if we took the view that there is a gain but it is small from the agreements, it is not trivial but it is small, and as you say, the gain from the originator losing the litigation would be very large and one allows for the time element and so on, are you saying, at that point, we cannot do any sort of balancing? That that is not something we should try to do, it is then just a policy question?

PROFESSOR SHAPIRO: First point --

THE PRESIDENT: In your understanding, it is no longer susceptible to any kind of economic assessment?

PROFESSOR SHAPIRO: I did not mean that and I should say when I said "policy" I meant to be broadly speaking, what I would include the legal systems and judges not just legislators or Parliament, okay.

No, I think it is amenable to economic analysis and we have been talking about some of that, which is you could in principle think -- I would think of it the following way, which is suppose you had a sense of the probability that GSK would lose. We do not know that, I understand that and it is somewhat subjective, there were different beliefs, but we can get some sense of that from whatever you see in the record and the payment, the presence of the payment.

At a fairly high level, somewhat crude maybe, but I think useful, I would say consumers, let us say pharmacies, would, in the event of independent generic entry, they would get large benefits. We have a sense of what those are from what GSK felt was at risk and from what later happened when there was independent generic entry, which is not totally unexpected. So you could get a sense of the magnitude of the prize, if you will, for consumers and for competition, and multiply that by the probability, admittedly rough, okay, and say that is what was lost or deferred due to the agreements and then you have in hand by assumption some benefits that pharmacists got, some modest, but not trivial price reduction by assumption.

You could say: this small amount is not enough to make up for the large benefit that could have been had with a decent probability. You could do that, okay, I do not know whether you want to go there but that is a sensible type of economic analysis and where I would say we move -- in my mind -- from what I can tell you as an economist to what judges, courts have to do is where the burden of proof is going to lie on that. What I have said my writings is that because of the inherently dangerous nature of these types of agreements, I would put it upon the defence to say that they generate enough benefits to make up for the (inaudible) competition.

THE PRESIDENT: Yes, we understand that, but to do that exercise then we would also have to consider in a high level way some sense of probability of success and amounts lost or amount of benefit? You have to do that exercise, we would need to do that.

PROFESSOR SHAPIRO: Yes, weighing the probability times the prize to consumers.

THE PRESIDENT: The prize and the points we were talking about earlier.

PROFESSOR SHAPIRO: Yes, we were talking about it. I do not think you need to go there in this case.

THE PRESIDENT: No, I understand that, because we would not reach this stage.

PROFESSOR SHAPIRO: Right. And if you do go there or if somebody goes there in another case, I would think you would definitely want to make use of the information from

the fact that -- the magnitude of the payment that was made. It is important information in that type of analysis.

THE PRESIDENT: I think that is okay. I think we will just go down the line, I think.

Dr. Majumdar.

DR. MAJUMDAR: Thank you, sir. I think there are four areas --

THE PRESIDENT: We are not expecting to you respond, we are just getting your view.

DR. MAJUMDAR: Thank you. I think there are four areas where I would look. The first one is to ask whether there is a material increment in competition relative to the no entry benchmark and there I would measure that with respect to direct customers. So here that is wholesalers and pharmacies. So that is the first point. That is your gaining competition with certainty.

The second point would be -- I think you have called it, sir, the probability of success. So here it would be to establish a view on a reasonable range for patent strength. So I think we all agree that it is difficult to define this precisely, however, I think one could arrive at a reasonable range for patent strength. There I would acknowledge that the size of the value transfer would add some information. I would also suggest that one would need to take into account what I have called these confounding factors, namely risk aversion or indeed the possibility that a value transfer was made for considerations in other markets as well.

Of course, there would also be factual evidence as well that would inform your view on the reasonable range for patent strength. That is the second point.

The third that I would look at is the range for likely entry. So this is a range for the entry date. If the entrant is successful, when would the entrant come in and, finally, if the entrant is successful, and comes in, in a certain period of time, what would be the impact of that entrant?

The first point was what is the gain to competition with certainty? The second point was what is the probability of success for the entrant? The third and fourth points give you the prize, the value of the prize of the entrant coming in and then, I think, with those four components you have the ability to weigh, again, the immediate gain to consumers or direct customers with certainty versus the expected gain should litigation have continued.

THE PRESIDENT: Thank you. That is extremely clear.

Dr. Jenkins.

DR. JENKINS: Yes, I will try not to repeat too much of Dr. Majumdar's items, but I probably agree with many of those.

THE PRESIDENT: If you agree with them, you can just say: I agree with all four, or whatever.

DR. JENKINS: I would say you start by looking at the agreement itself and the agreement in the round. So the cash payment and the other benefits that come from the agreement with respect to the nature of any entry, however restricted. So you need to understand that. Also the duration of the agreement and what happens at the end of that agreement. So in this case, because it was deferred, it neither closed out the option for the generic to dispute the patent, nor did it agree a specific date of entry. So it was in that area of both sides still not giving much on what their views were on the likely strength of the patent.

I think you look first of all at all those aspects and look at them in the round. Then, in terms of you want to think about the scenarios in the different counterfactuals. So the first counterfactual is that the -- rather, the first factual is with the agreement in place and there I would look at benefits to both patients and NHS and then the pharmacies and wholesalers and the parameters I would consider would be the price, the quality of the product, which will be different, so I think there was some evidence with which I would agree that parallel imports are less attractive to patients because of the packaging not necessarily being in English.

There may be benefits to both patients and pharmacies from better availability through the new arrangements; there will be new distribution arrangements. There are also benefits to the NHS which are in terms of the price paid by pharmacists and also the triggered changes to the reimbursement approach which also has an impact on the NHS's bottom line. I think all of those things are relevant benefits to take into account when assessing the agreement in the factual.

You would then want to look at the counterfactual, so in the scenario in which the generics did enter early or in the event that you had no entry and there I agree with the items raised by Dr. Majumdar about what you would be interested in looking at there.

You then will need to think about a judgment of the range of success in the litigation and I would say you need to think about that both from what does it look like the generics' perception was of that and what was the brands', and also what were their perceptions of the market size, and that is in order that you can then conclude, does it look like there was a common understanding between the two parties in the negotiation? That informs you about the asymmetric information or symmetric information in that situation.

Then I also say you would need to draw some conclusion on the level of risk aversion of the originator and that would relate to how big was this product in their overall range, how important to them was it, what was the timing, what were people discussing at the time contemporaneous to their decisions in terms of those risks? You could also investigate that

through asking questions of the management at the time that the agreements come to light. I think that is all on my list.

THE PRESIDENT: Dr. Stillman.

DR. STILLMAN: The first thing I think we need to consider is the importance in this analysis of the effects of the agreements on the NHS. The CMA, when it takes actions in the pharma sector, routinely describes its actions as being for the benefit of the NHS. I think it is appropriate to be considering the effect of the agreements on the NHS and as you know, my analysis, which I do not think has been challenged, shows that the NHS was made better off by these agreements.

Second, if we move away from that framework, and focus on the prices paid by pharmacists, I agree that one of the threshold issues is the impact of the supply agreements on the prices paid by pharmacists. I do not think there is too much disagreement. It seems to be in the area of 3% to 4%. There will be further discussion of that, but I think that is clearly a relevant parameter. I think you also, in thinking about counterfactuals, need to consider patent strength and we have had a lot of discussion about how one might use the terms of the settlement to draw some inferences about patent strength. I am sympathetic to that although it is a complicated exercise and there are various issues that need to be considered, including risk aversion and I believe, as Dr. Majumdar said, obviously there is a lot of factual evidence on this as well.

Those are the three things that I put down on my list. I also, sort of consistent with the spirit of Professor Shapiro's remarks, jotted down two things that I think probably are not that relevant but I wanted to mention anyway. That is we had a lot of discussion on Tuesday about agreements, about when they have payments, when they include restrictions on competition, we talked about agreements that had a payment and include a restriction on competition. We tended -- and I think the discussion of restriction on competition on Tuesday at times was insufficiently precise. I just want to make the point again that we really cannot regard the fact that a settlement eliminates the risk of an adverse litigation outcome, adverse from the point of view of the patent holder obviously, beneficial from the point of view of others, but the fact that a settlement eliminates the possibility of the patent being overturned in litigation is something that cannot be regarded as a vice of a settlement in and of itself because any settlement does that. Any settlement that ends ongoing litigation has that characteristic.

Similarly, for a settlement to be acceptable to an originator, the settlement must include some kind of restriction on the generic firm's ability to enter. There must be some kind of

limitation on their ability to enter, otherwise again the originator would not participate in the settlement.

The fact that we see, as an aspect of the settlement, an agreement by the generic that it will not enter or cannot enter immediately without challenge by the patent holder is hardly a surprise. That is going to be an element of any settlement and in and of itself it cannot be regarded as a vice. I think those are the points I wanted to mention.

THE PRESIDENT: Thank you very much.

I think we will ask if any of the counsel want to cross-examine. I think, I am afraid, there is no alternative because of the recording arrangements, which are fundamental to having a transcript to you coming up to a microphone here. I know you might prefer to stay where you are, but it just, I am told, technically does not work, I am sorry.

MS. KREISBERGER: Sir, we have had discussions on our side and we would suggest the following order. I am going to ask just a few brief questions followed by Mr. O'Donoghue, and then Ms. Ford will ask some questions and Mr. Flynn for GSK will go last on our side.

THE PRESIDENT: Those would be questions to Professor Shapiro presumably?

MS. KREISBERGER: That is correct.

MS. DEMETRIOU: Sir, on our side, I have a few questions for Dr. Jenkins, and Mr. Turner has a question or two for Dr. Majumdar.

THE PRESIDENT: We would ask that you do not overlap in your questioning from the appellants, there is no benefit in going over the same ground twice.

Ms. Kreisberger, as I understand it, you go first. Questions by MS. KREISBERGER

MS. KREISBERGER: Professor Shapiro, I just have a few questions for you. You drew a distinction on Tuesday, helpfully for us, between the work you did back in 2003 and the later work you have done and you have written about on the broader pay for delay inference which you say is the inference which applies in this case, on these facts, and you say that broader inference does not make assumptions about risk neutrality, symmetric information and efficient bargaining. I can take you to the transcript if that is helpful, Professor Shapiro.

PROFESSOR SHAPIRO: I recall saying that.

MS. KREISBERGER: You are happy with that. I wanted to explore that a little bit. So if we turn to appendix C of your first report, the reference in the bundle is H1, 59 to 60. {H/1/59}. Helpfully we see there your later writings referenced, so on this page we have at number 15 your article which was written in May 2015 and if we just go over the page {H/1/60} we have number 16 there, that is your 2014 article.

You wrote both articles with the same three authors, Professor Shapiro: Edlin, Hemphill and Hovenkamp, and it is fair to say they are consistent with each other?

A. I hope so.

Q. That was my understanding, but I am going to turn to the 2014 article because the 2015 article has a lot of equations in it, so we will stick with 2014.

So that is in the bundle at {G4/79}. Again, that is setting out the broader pay for delay inference, it does not rely on the assumptions we talked about. You deal in that article with a critique of your work that appears in the list.

THE PRESIDENT: Sorry, G4?

MS. KREISBERGER: Sorry, {G4/83/1}.

THE PRESIDENT: Not bundle G, bundle G4?

MS. KREISBERGER: Thank you, sir, I am grateful, {G4/83/1}. That is the one.

Professor Shapiro you deal there with a critique of your work in the literature. I think that is why it is called "A reply to critics". Is that right, Professor Shapiro?

PROFESSOR SHAPIRO: Is what right, I am sorry?

MS. KREISBERGER: In that 2014 article "A reply to critics", you deal with a critique of your inference which appears in the literature?

PROFESSOR SHAPIRO: That is part of what is handled in this article, yes, that is right.

MS. KREISBERGER: Thank you. The article you mainly reference there is an article which we have in the bundle, bundle {G4/79/1} and that is an article called "Activating *Actavis*: A More Complete Story".

That is an article by four authors: Harris, Murphy, Willig and Wright, which was written in 2014 as well.

Do you have that there, Professor Shapiro? You are happy with that?

PROFESSOR SHAPIRO: I do not know that I have the Harris article.

MS. KREISBERGER: It should appear on your screen in front of you.

PROFESSOR SHAPIRO: I see, I was not looking at the screen. I see it now in front of me, yes.

MS. KREISBERGER: That was the article you were responding to later in 2014?

PROFESSOR SHAPIRO: Yes, that is correct.

MS. KREISBERGER: Thank you. These four authors summarise your broad inference, the inference in the later work, it is this first page, it is internal page 83. It begins at the bottom of the first column. They refer to you and your fellow authors. And your proposal that:

"... once the plaintiff has established that 'the claimed infringer has agreed to abstain, in some respect, from [competition] using the patented technology' for some period, the plaintiff in its prima facie case must then value the consideration from the brand to the generic and establish only that the value of such consideration exceeds the brand's litigation costs avoided through settlement."

That is a summary of your broad inference that we have been discussing.

PROFESSOR SHAPIRO: That sounds right.

MS. KREISBERGER: So to paraphrase -- please correct me if you do not agree with any of this -- these authors challenge your underlying assumptions, as this article goes on, and we can have a look at that, because they say that if you have risk aversion and a form of information asymmetry, you can have a subset of pro-competitive settlements and that is the analysis that Dr. Jenkins draws on?

Just for your note, we can flash it up on the screen, she refers to this article at footnote 22 of her second report and that is bundle G --

THE PRESIDENT: I do not think we need to bring it up, do we? I mean, she is referring to that.

MS. KREISBERGER: She refers to this article. Thank you, sir. The debate, just to clarify, the debate between you and Dr. Jenkins in the evidence does draw on this literature?

PROFESSOR SHAPIRO: Do I have a copy of the Harris article here or are you just showing it on the screen?

MS. KREISBERGER: On the screen. I do not know if you --

THE PRESIDENT: Would you like a copy of ...

PROFESSOR SHAPIRO: I probably will not need it. My recollection is that this article has a -- some analysis about early entry agreements in particular, so I just wanted to put it in context. I believe that is the thread of the literature that is being addressed here, are the early entry agreements.

MS. KREISBERGER: If it is helpful we can turn to paginated page 4 of this document, so it is internal page 86 and 87 {G4/79/4}. They set out there, you can really see from the headings:

"Reverse Payments May Permit Settlements that Enhance Consumer Welfare."

In the paragraph above they discuss the brand's risk aversion, very much like the conversation -- the discussion we have had this morning, and then they go on to posit the issue of information asymmetry. I will in a moment come onto your summary of what they say so it should be entirely uncontroversial.

THE PRESIDENT: I think Professor Shapiro was just making the point from memory which he wanted to check that this agreement was discussing his theory and inference in the context of early entry agreements. Is that right Ms. Kreisberger, he wanted to check that?

MS. KREISBERGER: That is right.

THE PRESIDENT: You accept that? That is accepted, yes?

PROFESSOR SHAPIRO: Yes, and now that helpfully someone has supplied me with the whole article, my recollection is correct. That is what this particular back and forth regarding that thread of the literature is about, so I think we all understand now.

MS. KREISBERGER: And they are responding Professor Shapiro to your work which deals with early entry agreement so that is why it focuses on that.

PROFESSOR SHAPIRO: My 2003 article?

MS. KREISBERGER: Correct. If we then turn to your response at {G4/83/7}. That is the one. Again, just summarising. You say in short you agree that theoretically, at least, the examples posited provide a convincing justification. So what you say is:

"These can be pro-competitive settlements."

So Professor Shapiro if you look at the second paragraph on that page you say:

"... [the] example creates a settlement region that is pro-competitive under the dual benchmark standard."

Then you go on to say these are very particular assumptions but if you take these assumptions as read, you agree that in theory there is this subset of pro-competitive settlements where there is a risk averse brand and there is asymmetry between the parties.

PROFESSOR SHAPIRO: In the context of early entry agreements, that is --

MS. KREISBERGER: I think that is understood by everyone here, thank you, Professor Shapiro.

PROFESSOR SHAPIRO: Good.

MS. KREISBERGER: We then come on in the next paragraph, so that is the paragraph above "Conclusion", and you make a different point, you say the problem with what they suggest is although in theory it can lead to pro-competitive settlements, in practice, that is not an equilibrium because you say:

"... the defendants will always seek to delay entry (moving out along the Ray of Delay) for as long as they can get away with, and split the monopoly profit."

So this is where your ray of delay argument comes in, as a response to this critique based on risk aversion and information asymmetry. Do you agree with that Professor Shapiro?

PROFESSOR SHAPIRO: I do.

MS. KREISBERGER: Thank you. If we just turn to the joint statement which is at bundle {I/1/22}. We see there statement is 1(ii)(c)6.

THE PRESIDENT: Sorry what page are you on?

MS. KREISBERGER: 22 of the joint statement.

THE PRESIDENT: Internal page?

MS. KREISBERGER: Internal page 20.

THE PRESIDENT: Internal page 20, and the paragraph on the page is?

MS. KREISBERGER: 6. It is the last statement, the last point on the page.

Professor Shapiro, that picks up the same point. So the statement is, in the models relied on by Dr. Jenkins the joint profits are maximised if they can reach an agreement that delays generic entry until the expiration of the patent. That is your ray of delay point, is it not, Professor Shapiro?

PROFESSOR SHAPIRO: Yes, it is.

DR. JENKINS: Then in the next sentence you go on to say:

"If the two firms can bargain efficiently and do not face any anti-trust limits, they will reach an agreement that delays generic entry until the expiration of the patent."

PROFESSOR SHAPIRO: I am sorry, where are you reading from now?

MS. KREISBERGER: Second statement of statement 6:

"If the two firms can bargain efficiently and do not face anti-trust limits, they will reach an agreement that delays generic entry until the expiration of the patent."

PROFESSOR SHAPIRO: I see that.

MS. KREISBERGER: Do you see that? You say below:

"I agree with this statement."

PROFESSOR SHAPIRO: Yes, I do.

DR. JENKINS: You say:

"The second statement [the one I have just read out] follows since efficient bargaining maximises joint profits."

Do you see that Professor Shapiro?

PROFESSOR SHAPIRO: I do.

DR. JENKINS: So your argument on the ray of delay is predicated on efficient bargaining. If the parties bargain efficiently they go all the way out to patent expiry. That is your ray of delay?

PROFESSOR SHAPIRO: That is correct. In these models, I am going to say again, in these early entry models that are in the literature and that Dr. Jenkins includes in her second report.

MS. KREISBERGER: Unless I have misunderstood something, your response -- I accept it is early entry -- your response to the criticisms that your model assumes risk neutrality and information symmetry, and therefore overlooks this area of pro-competitive settlements, which Dr. Jenkins gives evidence on, that is based on your response to that, your ray of delay response is based on the parties bargaining efficiently?

PROFESSOR SHAPIRO: In the context of this entire discussion, which is irrelevant for the current case.

MS. KREISBERGER: Okay, but if we just go back to the transcript which is at {TR/7/70}. Lines 15 to 23. If I just read that out, you say:

> "It is true that in some models in the literature those assumptions [the three assumptions of risk neutrality, symmetric information and efficient bargaining] are made ... [for instance] in my 2003 paper... That is correct. But the broader ... or pay for delay inference I have [been writing] about more recently, and building on those models but not relying just on those models, does not make any of these assumptions. "It is as I described to you ... it is simply noting that the originator ... finds it worthwhile to make this payment in exchange for a restriction ... [the] originator ... may have different information than the other side. The whole point is they may not bargain efficiently and may end up in court and may be risk averse, certainly."

Professor Shapiro, which writings are you writing about -- that you are referring to here -- because if this is a reference to your 2014 paper you do, as I understand it, rely on bargaining efficiency to respond to the critiques that are made of your models? Have I misunderstood that?

PROFESSOR SHAPIRO: No, you are quite correct about that. As you pointed out the 2014 paper was in response to models about early entry that were in turn building on my 2003 work. If you look instead at the 2013 paper, for example, which really lays out where we laid out this is the paper, it is called "Activating *Actavis*", it is referred to in appendix C to my first expert report, number 17 on the list there in appendix C, there is a discussion of risk aversion there on internal page 20 and it indicates that the risk aversion is not an argument that -- we call it -- let me check here -- we say these are arguments that defendants are likely to offer but are precluded. Risk aversion is one of them, along with some patent law and policy arguments.

MS. KREISBERGER: Sorry, Professor Shapiro, that is not the point I am putting to you. The point I am putting to you is that your answer in relation to risk aversion and information asymmetry is the ray of delay argument which is based on parties bargaining efficiently, one of the assumptions you say you do not rely on.

If you take that away, you cannot assume that the ray of delay, perfect profit maximising bargaining that takes you down to patent expiry, you cannot rely on the ray of delay to say that actually the subset of settlements referred to in the critique of your work will not take place in practice. We will not observe them in practice, because in fact, one will always see parties bargaining efficiently to the ray of delay. Do you contradict that in your literature?

PROFESSOR SHAPIRO: No. So I think you are mixing up two things. I have been, I think, consistent and I hope clear that in this literature with the early entry agreements, I initially assumed risk neutrality. People pointed out correctly that we could get different results without that and we had this back and forth including the 2014 article in response to that and that is reflected, I think, as well in the joint expert report.

In the joint expert report, I am responding to material that Dr. Jenkins has provided that is about just those type of agreements, early entry agreements.

I have said in my second report and my joint expert report and now I believe here in front of the Tribunal, I believe that is -- I am not relying on that analysis, that is not the type of agreement we have here. So when the question came up on Tuesday, was I assuming risk neutrality, etc, for my analysis of this agreement in this case, the answer is no and that is correct.

MS. KREISBERGER: I am still not aware of writing that you refer to which does not make any of the three assumptions. Are you saying that you have written in recent years, not in 2003, and you make no assumption; your model does not rely on efficient bargaining as well as risk neutrality and symmetric information?

I want to be clear for the Tribunal. Is your evidence that you do not rely on efficient bargaining for the inference that we see in your 2014 paper?

PROFESSOR SHAPIRO: In the 2013 paper and then the longer 2015 paper, discussing the *Actavis* inference, as we call it there, what I am calling the pay for delay inference here, it is the general inference we are talking now to a broader audience, lawyers, policymakers; the 2014 article is narrower because it is responding, as you pointed out, to other threads of the literature to the early entry agreements and the model. So, yes, the more recent, two of the three -- the 2015 article is longer, so it has both the model and other broader discussion.

The 2013 article is not particularly key to the model in the early entry agreements and so I would point there, first, we wrote that following the Supreme Court's *Actavis* decision in the US to discuss how we thought the economics and how the cases might play out following that as the lower courts would be dealing with that decision.

MS. KREISBERGER: Just to be clear. Are you saying in your 2013 article, you do not accept that there is a subset of agreements under which one would observe pro-competitive settlements based on your model where you have a risk averse brand and information asymmetry because you do accept that in your subsequent 2014 article. You accept -- and as I understand it, Professor Shapiro, all your models rely on a move from monopoly to duopoly within the lifetime of the patent. So when you say early entry is a subset, are there any other models of which I am not aware? I understand they rely on a move from a monopoly to a duopoly within the lifetime of the patents.

PROFESSOR SHAPIRO: The 2015 article considers multiple generic entrants, so it is not just duopoly.

MS. KREISBERGER: With that amendment, I accept that, but it is a move from monopoly to duopoly or a greater number of entrants within the lifetime of the patent?

PROFESSOR SHAPIRO: So the models?

MS. KREISBERGER: The models.

PROFESSOR SHAPIRO: The formal models that go back to my 2003 article, those are about early entry agreements, yes. There is no dispute that, as a technical matter, if you can carefully craft theoretical examples of this sort, by assuming risk neutrality, and bargaining inefficiency and some other things, and what I think we state very clearly I hope again in all the articles, but especially in 2013 and 2015 articles, is that it is our view, that this is me and my co-authors now, that the ability of theorists to construct those examples does not, in our view, undermine the utility of the inference.

It might at best offer a defence in certain limited circumstances and then in 2013 we offer our view that risk aversion is not a defence under US law at least, as we interpret the *Actavis* decision, but of course that is a legal question not strictly an economic one.

MS. KREISBERGER: Let us just keep to the economics because of course we are not bound by *Actavis*.

PROFESSOR SHAPIRO: Of course.

MS. KREISBERGER: Your only economic answer to risk aversion, I want to be very clear for the Tribunal on this, your economic answer, as I understand it from these writings, is that, yes, there is a theoretical possibility that one might see pro-competitive settlements based

on your model, where there is risk aversion -- you are shaking your head but you do say that in the articles. I can take you to that if that would be helpful? Sorry, are you disagreeing?

PROFESSOR SHAPIRO: None of that applies when it is just cash and cash equivalents and there is no early entry. It is completely irrelevant for this case but --

MS. KREISBERGER: Let us take it step by step. You said on Tuesday that you have written about a broader inference more recently. So let us not get distracted by 2003. We put 2003 to one side.

We look at your broader inference. A critique has been made of it which says: okay, sure, sometimes you have a payment that results in, let us call it, an anti-competitive settlement because you get entry later, but sometimes if you look at real world considerations, you have entry earlier, okay?

THE PRESIDENT: What actually are you driving at, Ms. Kreisberger, because we are not quite clear where this is all going? We can get into a detailed parsing of four lengthy academic articles, working out which is responding to which on which assumptions and try and work them all out. I am not sure that that terribly helps us on the issue that we are facing in this case.

If you think it is helpful for the Tribunal to read the 2003 article, the 2013 article, the 2014 critique and the 2015 article and work out which assumptions are which, we may have to do that. But it does seem a rather long way away from what we are dealing with here.

If your question is, what is Professor Shapiro referring to when he says in the answer that you have pointed to in the transcript, the broader pay for delay "I have written about more recently", but not relying just on those models, does not make any of those assumptions, what is he referring to, which article is he referring to? Perhaps let us get that clear for starters. What was your reference there?

PROFESSOR SHAPIRO: The 2013 article primarily "Activating *Actavis*" and I would say, although I need to check, portions of the 2015 article as well because that was longer and went into more detail.

THE PRESIDENT: As I understand it, you are saying that was not the article that was responding to the Willig etc criticism. It is those two articles that are being referred to. Now, if you are putting to Professor Shapiro that actually there is nothing in the 2013 article that fits with that answer, make that point, but otherwise I am not quite sure what this is all about.

MS. KREISBERGER: If I might then in a sort of nontraditional cross-examination just put it in context.

Dr. Jenkins has explained in her evidence that there are these three aspects of real world negotiation and Professor Shapiro said in terms on Tuesday that those assumptions are not relevant to the inference that he is proposing now. I do not understand that to be the case based on these writings because, if we take it step by step, the critique that is made is: factor in risk aversion, information asymmetry, you get pro-competitive settlements. The answer which is given is, if the parties bargain efficiently, one gets to patent expiry.

So Professor Shapiro's response to the risk aversion information symmetry critique, put forward by Dr. Jenkins -- so this is relevant to these proceedings -- the response relies on the parties bargaining efficiently. Now, if the parties do not bargain efficiently, there is no reason why one does not stay within the triangle of pro-competitive settlements.

THE PRESIDENT: I think if you just put that question. It is a question in the context of this case, not of the previous academic writing, because we are concerned with this case. If you say that because of the points made by Dr. Jenkins, the inference therefore does not apply here, I mean that is the question for us. It is not whether it defeats the early entry agreements discussed by Professor Willig.

MS. KREISBERGER: All of the writings, as I understand it, concern the same type of agreement, I think we need to be clear about that. There is not a strand in Professor Shapiro's literature that deals with non-early entry agreements. So we can put that to one side. But Professor Shapiro has given evidence to this Tribunal that his writing does not rely on these three assumptions which are central to our case.

PROFESSOR SHAPIRO: Sorry, that is exactly the opposite of what I said. If you look at the transcript here, I said there are models in the literature, those assumptions are made, such as in my 2003 paper, in the (inaudible) of economics, that is correct. I then said but the broader pay for delay inference that I have written about more recently, and now I will add that I am applying in this case, does not rest on those assumptions. That is what I said and I have now said it twice.

THE PRESIDENT: In other words, some of his writing is based on early entry agreements but some of it is broader and this case is not an early entry agreement case. So that is what his evidence is and, as I say, if you want to say that is wrong, we would have to go through each article but I am not sure it helps.

MS. KREISBERGER: I think we do unfortunately have to go to the articles because --

THE PRESIDENT: How is that going to help us?

What the articles covered and how they covered them, we are going to reach a view on the evidence we have heard and as applied to the agreements we are faced with. Whether an

early entry agreement may or may not be pro-competitive or whether there may be types of early entry agreements that are pro-competitive, and whether that was exclusively discussed or the discussion was wider, the articles are not evidence in the case.

MS. KREISBERGER: Sir, I think they are because they are referenced in Professor Shapiro's report and he said on Tuesday, "the broader inference I have written about more recently".

MR. MALEK: What I understand is there is a world of difference, according to Professor Shapiro, between what we are dealing with today and an early entry agreement.

For my part I do not get a huge amount of benefit going through the bones of these various articles as opposed to hearing the experts and reading their reports and looking at the facts of this particular case. But it is a matter for you.

MS. KREISBERGER: Let us put it this way, I think it needs to be clear whether Professor Shapiro accepts, in relation to the inference that he advocates the application of to these facts, whether the arguments and the evidence adduced by Dr. Jenkins is a response to that inference.

So you accept that there is the opportunity for pro-competitive settlements, where one sees risk aversion, information asymmetry. I understand you say these are not early entry agreements but if your response is one will never see it because of efficient bargaining, then, it is a relevant consideration in the case. We, of course, say that this is a form of early entry.

PROFESSOR SHAPIRO: Is that a question?

THE PRESIDENT: Let us take in stages. Do you see a distinction between these agreements and early entry agreements?

PROFESSOR SHAPIRO: Very much so, sir. I mean the early entry agreements, the reason they were tricky and I guess modeling them was sufficiently novel and interesting that it warranted a publication in a peer review journal in 2003 was because an early entry agreement, under that a generic firm gets to enter before the patent expires, free and clear. We all know that is a very significant benefit to consumers as opposed to not being able to enter until the end of the patent.

So that, on its face, people naturally said, well, there is some benefits there, how do we analyse these? Even though cash was paid. People did not know how to do it.

That is not what we have here. It is drastically different. Even my counterpart experts here, they are not claiming that these -- they claim the settlement agreements, the supply agreements created some benefits, okay, and we are going to address that. We have addressed that. But it is not of the magnitude or the nature of an early entry agreement.

My analysis here, as I have indicated now pretty clearly, shows that the value transfer here were equivalent to cash. So we do not need to get into any of that at all. So it is dramatically different than an early entry agreement and that is why I have taken the view quite clearly, I think, especially in my second report, that Dr. Jenkins' critique and indeed this whole line of questioning is irrelevant.

MS. KREISBERGER: At least we can agree I think that the articles are therefore irrelevant. You are not suggesting that the inference you set out in 2014 and 2015 is relevant because you accept that that inference relates to early entry agreements; so you are not relying on those articles now?

PROFESSOR SHAPIRO: I am relying on them. The general inference is not confined to the early entry date. The models relate to early entry date. If you look at the 2015 article, so I have that here in front of me, there is a section 2 that is called the "*Actavis* Inference". You can read that. That is one of the papers I was referring to, the more recent writings. It describes the general inference that the Supreme Court has made and relating that to the underlying economics and actually the *Actavis* case itself was not an early entry date case and the court was speaking very generally and not about early entry agreements.

So this is a broad inference and that is the second article that I was referring to on Tuesday.

MS. KREISBERGER: I am happy to leave it there.

THE PRESIDENT: We are not going to decide the case on what is said in the articles. I have to confess, I am sure they are very interesting and worthwhile but I have not read them. I will decide the case, and I think my colleagues also, on Professor Shapiro's evidence to us. It may be that he is drawing on the articles, I mean he is expressing a consistent view, but we are going to form an assessment of the view he has expressed in evidence in the critiques and challenges that we have heard from the three other experts, but not on what Professor Willig wrote or what Professor Shapiro said in response.

You may seek to make the point that when he says "I have discussed this in articles", his articles were narrower in fact than what he said here. Maybe you are right, maybe you are not, but I do not think we need to decide this.

MS. KREISBERGER: Sir, I can leave it there.

THE PRESIDENT: Thank you very much. We better break for lunch. We said we do not want too much cross-examination on this area because we do need to move to part 2, even though on one view of Shapiro's evidence point 2 is irrelevant, but we certainly wish to explore it and consider it and there are issues that arise under it and they are more closely based on the facts.

So I just say that by way of a general aspiration regarding to what is coming from Mr. O'Donoghue and Ms. Ford, Mr. Flynn, Ms. Demetriou, and Mr. Turner, which is quite a cast list if we want to move on to point 2.

2 o'clock.

(1.05 pm) (The short adjournment)

(2.00 pm)

THE PRESIDENT: We are a bit concerned about time. We can sit until 5 o'clock today. We would emphasise that of course the issues that have been canvassed one could cross-examine on for hours because they are broad conceptual issues, there is no end of questions one can debate and go into about, but to do that with each party defeats the whole purpose of having concurrent evidence in the way we have and the Tribunal really having identified what we think needs to be explored and asking such questions as we think helpful and relevant to get evidence that will assist us in deciding the case.

So we would ask in this part of the expert evidence cross-examination by counsel is really just to follow up any particular point that they feel has not been clear or reliably covered, but not to go over the whole ground again.

We think, therefore, it is appropriate to say the three opponent counsel who want to now ask questions, Mr. O'Donoghue, Ms. Ford, Mr. Flynn, that you should have half an hour between you. That works out 10 minutes each. If you want to give up a bit to your colleague, that is fine and that the CMA, the two counsel for CMA, equally should have half an hour, which takes us until 3 o'clock.

Then as I say, we want to move to point 2 and we will sit until 5.00 pm. We leave it open for you to consider overnight whether the current proposal, which is that after lunch tomorrow we should move on to the areas covered by the second joint statement, which concerns Ms. Webster, Dr. Majumdar and Dr. Stillman, does that need two and a half days, which I think is what is currently allotted or would it be adequate to start that on Monday and keep all of tomorrow for part 2 of the first statement, which is what we are moving on to. I do not think we need to decide that now but you might want to think about that when we see where we have got to when we rise at the end of today because that will give us more time for part 2 and more time for any cross-examination of part 2, which is much more fact-specific. So with those words of warning, Mr. O'Donoghue. Questions by MR. O'DONOGHUE

MR. O'DONOGHUE: Two very quick questions. The first question, it is entirely conceivable, is it not, that your pay for delay inference could lead to a situation where the inference finds

liability but in a damages action the generic is found to be unlikely to have entered but for the agreement? My question to you is, if that is the case, it does not suggest your inference is very good, does it?

PROFESSOR SHAPIRO: Well, I guess let me make sure I understand your hypothetical. So the subsequent finding would be that the generic maybe would have had difficulties producing the product, so it might not be able to enter?

MR. O'DONOGHUE: On a balance of probabilities, for whatever reason, would not have entered.

THE PRESIDENT: I think the point being made is this, that you use pay for delay inference and decide that this agreement is anti-competitive for purposes of upholding a decision of the CMA or the CMA in its decision used that, subsequently, someone, the NHS, say, bring a damages claim and for that they would have to prove on the balance of probabilities that prices would have come down, ie that generic entry would have occurred. I think that is the basis, as I understand the question.

MR. O'DONOGHUE: In other words, as I understand your pay for delay inference, it is an inference that someone has likely or almost certainly been delayed, but if in a damages action where one would need to show this in the balance of probabilities, that is not in fact the case and the inference is useless, is it not?

PROFESSOR SHAPIRO: Well, no, I do not think so. If I understand the term "balance of probabilities", it is not one I am so familiar with. Is that more likely than not?

THE PRESIDENT: Exactly.

MR. O'DONOGHUE: Yes.

PROFESSOR SHAPIRO: So the way I would think about that would be, if that is your rule for a damages action and the inference might say: well, there was one-third chance beforehand that the generic would enter, and I would view that -- eliminating that entry as an anti-competitive act, let us suppose it is a simple case where the cash was paid and the generic then agreed not to enter it. Later on, it was found that -- suppose this was all very clear, it was a one-third chance, I would still view that as definitely anti-competitive, so no, I would very much dispute your assertion that the inference would be useless. I think you are telling me that there is something about your damages rules that would not enable the injured party to on average collect the harm that was caused to them because of this balance of probabilities rule.

MR. O'DONOGHUE: But I mean, forget about pay for delay. If we had another rule of anti-trust that was based on a so-called rebuttable presumption and we saw in practice and experience

that it never led to damages on a but for analysis, it would not be a very good presumption, would it?

PROFESSOR SHAPIRO: Well if it never led to damages -- I guess if you imagine --

MR. O'DONOGHUE: Or rarely did.

PROFESSOR SHAPIRO: Okay, or rarely. So imagine you have many cases over time with different actual probabilities of entry, and any one of them, where it was more than 50%, the damages would be found, if I understand the rule. If you had most cases fell below the 50% threshold, I would still -- I am resolute, I would still view this as anti-competitive even though many times generics were kept out and only had one-third chance of coming in. The consumers on average would still be harmed. Anti-competitive process would still be harmed. I think the inference is still useful and accurate.

MR. O'DONOGHUE: Thank you. Questions by MS. FORD

THE PRESIDENT: Yes, Ms. Ford.

MS. FORD: Professor Shapiro, I would like to discuss a different factual scenario that has not actually been explored so far. I would like you to assume a generic takes certain steps towards independent entry, so it sources a product and it gets a marketing authorisation and infringement proceedings are commenced against the generic by the originator company and then there is a material change in the merits of independent entry, so it becomes clear that the merits of entry are not nearly as strong as they had been previously.

THE PRESIDENT: Sorry to interrupt you, when you say the merits of independent entry, do you mean the likelihood of success in the case?

MS. FORD: I do, yes.

THE PRESIDENT: So material change in the expected outcome of the case.

MS. FORD: Assume that the generic then takes the view that in the light of that change in the merits, they no longer want to pursue independent entry and that actually they want to settle the infringement litigation, and they reach that view independently in the light of the change in the merits. When the generic approaches the originator undertaking and engages in negotiation, it is right, is it not, that that generic would have an entirely legitimate incentive to try and maximise the value of the settlement that they obtained from the originator undertaking in those circumstances?

PROFESSOR SHAPIRO: I suppose it depends on what you mean by the word "legitimate". I would take it as more or less axiomatic that setting aside competition limits, the generic would try to maximise the return they can receive either by continuing with litigation if necessary but particularly if they feel weak in that stance, still trying to

negotiate as effectively as they can to get, let us say, as much money as they could out of the branded firm. So I take that as axiomatic in terms of how people bargain. "Legitimate" then brings in some other baggage in terms of what we would make of certain agreements, so we would need to talk about that more for me to respond to that part of your question.

MS. FORD: Let us assume that the generic settles the litigation with the originator on terms which entail a value transfer from the originator to the generic. In that scenario, that agreement does not harm either consumers or the competitive process because the generic had already resolved not to enter anyway. Would you agree with that?

PROFESSOR SHAPIRO: So let us see, I think you are talking about the case where the generic is bluffing, am I understanding you right? The generic is absolutely not going to enter but they want the patent holder to believe they would so they can extract some money.

MS. FORD: Has resolved to settle the litigation and now it is seeking to negotiate the most favourable settlement they can with the originator.

PROFESSOR SHAPIRO: Resolved to settle, I don't understand that. I could understand if you told me the hypothetical was the generic has decided that if they cannot get a settlement they are not going to enter it. If that is what you mean, I understand that. Is that what you mean?

MS. FORD: Yes, they are willing to settle including possibly not on the basis of their value transfer and so they are no longer pursuing their independent entry.

PROFESSOR SHAPIRO: Okay, they are willing to settle not on the basis of a value transfer means they would settle for nothing if necessary.

MS. FORD: They would.

PROFESSOR SHAPIRO: I would say we would ask, in this case, I think that the logical completion of your hypothetical is that the patent holder still fears that the entry will take place and that is why they are willing to pay some money, right.

In that case we would have differences of view on this point. I would -- so what is your specific question then in this context? I am sorry, I lost that.

MS. FORD: In that circumstance, that agreement does not harm either consumers or competition because the generic has already resolved not to enter anyway?

PROFESSOR SHAPIRO: I think it does harm the competitive process in competition, for example, in this case given that the patent holder, at least fears a generic entry and fears having its patent invalidated, for example, would be willing to offer something and if they are not transferring, let us say, cash, they might very well offer a royalty term that could be

pro-competitive. So certainly in an alternative settlement arrangement it could be more competitive and that would be lost due to the cash transfer.

MS. FORD: If we assume, for example, that the generic enters an alternative settlement and it does not accept a value transfer, the competitive process is not going to be any better off in that circumstance simply on the basis that it has not accepted a value transfer because still the generic had no intentions of entering anymore anyway. Merely taking away the value transfer from that equation does not make the settlement any more competitive.

PROFESSOR SHAPIRO: It could very possibly do so. I would disagree with your supposition there. Suppose there was a royalty agreement instead of a cash payment. That might very well be attractive to the generic company because it could then compete on that basis and that would benefit consumers, that would be an actual pro-competitive outcome from the alternative settlement.

MS. FORD: But if the generic is prepared to settle for nothing -- as I understand, you are assuming that there will be an alternative settlement that has pro-competitive benefits. That is the presumption on which you are --

PROFESSOR SHAPIRO: I think we were talking about an alternative settlement, without a value transfer and you can specify in hypothetical what you imagine that to be, but I suggested the possibility of a royalty arrangement instead and that could certainly be pro-competitive and that would be an alternative way of settling from both parties' point of view rather than a cash payment.

MS. FORD: Just moving on to a slightly different point. You have explained that your pay for delay inference does not apply where the patent holder receives something in exchange for the reverse payment, something of sufficient value to justify the reverse payment?

PROFESSOR SHAPIRO: Okay, so, yes, if the entire value transfer can be explained by other reasons, having nothing to do with restriction on competition, then the inference would not be triggered.

MS. FORD: If we assume that the generic entrant is subject to an injunction or an undertaking not to enter the market, and in return for that, the patent holder has given a cross-undertaking in damages whereby it undertakes to compensate the generic entrants in the event that the court finds that actually they have been kept out of the market wrongly, that is a contingent liability on the part of the patent holder. It is right, is it not, that there would be value to the patent holder of procuring the discharge of that cross-undertaking in damages?

PROFESSOR SHAPIRO: Yes, that is correct, particularly if the patent is weak.

MS. FORD: So that would be a legitimate explanation for a payment from the patent holder to the generic?

PROFESSOR SHAPIRO: Well it could be, in principle. Yes. It would be the amount that would be owed times the probability that the patent would be invalid, so that the injunction had improperly harmed the generic.

MS. FORD: Sir, those were my questions. Questions by MR. FLYNN

THE PRESIDENT: Thank you.

Yes Mr. Flynn.

MR. FLYNN: Thank you, sir.

Professor Shapiro, good afternoon.

PROFESSOR SHAPIRO: Good afternoon.

MR. FLYNN: It is right, is it not, that your work in this pay for delay area starts from a proposition that consumers are entitled to the level of welfare that would have resulted if the litigation had continued to a conclusion?

PROFESSOR SHAPIRO: In the models that I have done, that is the comparison of consumer surplus that is applied, that is correct.

MR. FLYNN: That is what you explain in your early articles and you refer to it as a "property right"?

PROFESSOR SHAPIRO: Yes, I put that in quotes and I notice since -- that is what, 14 years ago, I wish I had not done that because that triggers all sorts of things I did not intend. I simply meant it was a welfare standard, but that is what I wrote, that is correct.

MR. FLYNN: It is a form of welfare standard but it is not a legal entitlement.

PROFESSOR SHAPIRO: No, I never meant to imply that.

MR. FLYNN: And it is a view of the consumer welfare standard that you consider a desirable result? It is a policy question really, is it not?

PROFESSOR SHAPIRO: Right, so as is often the case in economics literature, I am applying a certain welfare standard and I did that in my 2003 article and I think I explain there that this is often how we evaluate agreements among competitors, is we see whether they harm customers in comparison with some alternative or counterfactual. So that is what I was doing.

MR. FLYNN: You do it on a probabilistic basis, as has been discussed earlier today?

PROFESSOR SHAPIRO: Yes, in the models.

MR. FLYNN: But in the application of the theory that you are recommending or suggesting in your evidence is the appropriate one for the Tribunal to take here, there is no need actually

to work out what that level of consumer benefit is, that amount of consumer welfare on the probabilistic basis in circumstances where you say, as I understand what you are saying, that if the payment made by the originator is sufficiently large compared with avoided litigation costs, the originator has bought out any chance of independent entry and so you do not need to get into patent strength or working out when entry would have taken place. You bypass those levels of valuation, do you not?

PROFESSOR SHAPIRO: No, that is not right. In the models there is early independent entry. We have been talking about the early entry models. So the agreement that has been analysed does generate meaningful consumer benefits. The result, the advance in the literature was to show that one does not need to assess the patent's strength in those cases to infer that consumers are harmed according to the standard we were talking about earlier with the auxiliary assumption of risk neutrality.

MR. FLYNN: If you do not have to evaluate the patent's strength, the actual level of the chance that has been bought out is essentially unknown, is it not? It could be, I think you said in your evidence on Tuesday you said even a moderate chance, I think is what you referred to there.

PROFESSOR SHAPIRO: Well it is true, you do not know the probability, but you do know that the probability that the patent holder would lose times the profits they would -- loss they would suffer that that is at least as big as the unexplained payment and so that is actually better from a point of view of using this theory because the probability times the harm is the expected harm to consumers.

So we really do not -- we care less about the probability as such than the product of these two things, the probability times magnitude of harm and that is what we can infer from the size of the payment.

MR. FLYNN: That is what you infer from the size of the payment, but looking at it from the other perspective, because there is no need for the Tribunal or a Competition Authority to make an actual assessment of the patent's strength, we do not know that we have not got the data or the assessment of the level of chance of the originator winning or the generic winning.

PROFESSOR SHAPIRO: The theory says you do not need to go down that path but as we have had in discussions earlier today, since you know that the probability of the patent holder losing times the profit loss they would suffer is at least as big as the payment, if you have an estimate of one of these variables, such as the profit loss, then you can also figure

out something about the probability. That is not needed for the basic theory but it comes out of the theory.

MR. FLYNN: But at the end of the day, the application of the theory in these circumstances does not lead to the consumer getting the level of welfare that would have resulted from continued litigation, because you simply do not know about the patent strength, you cannot evaluate whether the originator had a good chance, a moderate chance, you simply do not know. You are inferring from the size of the payment that that must equal, as you say, expected profits times probability of losing. That is the inference you draw but you have not got anything to match with it on the other side.

PROFESSOR SHAPIRO: I am not sure I understand the question to be honest but I will say that if this inference is applied and enforced accurately, let us say, then the agreements that will still pass muster would not involve these value transfers or payments and so consumers would end up not being harmed by the agreements, which was the assumed goal of the policy.

MR. FLYNN: Thank you. Just on the size of the payment itself, is it not right that there may be other factors at play which will go into a determination of how much to pay and not just confidence in the patent, there are other factors that an originator may take into account from its perspective?

PROFESSOR SHAPIRO: You mean in real world settings there may be some other factors that are not in the model?

MR. FLYNN: Yes, in real world settings that might lead to infringement decisions being taken by competition authorities, for example.

PROFESSOR SHAPIRO: I am sorry, I do not understand.

MR. FLYNN: I am saying that the size of the payment that the originator makes, I suggest, is not simply limited to taking a view on its confidence in the patents and let me give you some examples. Your work was originally in the context of the *Hatch-Waxman Act*. An originator there may have a strong incentive to pay off a generic challenger, however strong its patent may actually be?

PROFESSOR SHAPIRO: My model was not based on the particulars of the *Hatch-Waxman Act* in the United States, that is not right.

MR. FLYNN: I am not saying it is limited to that, but those are factual circumstances which you certainly would have had in mind and in those factual circumstances it is right, is it not, that an originator would have an incentive to pay off a generic challenger however strong its patent might actually be?

PROFESSOR SHAPIRO: I do not see why that would be true. What are you thinking of? If you could explain that more I could respond better.

MR. FLYNN: Let us try another one. Do you consider that an originator might place any value on its ability after settling one particular case to be able to continue to assert its patents in subsequent cases?

PROFESSOR SHAPIRO: Well, certainly, I would think so. As opposed to if the patent had been declared invalid or not infringed in the first action?

MR. FLYNN: As opposed to forms of settlement that might make that more difficult.

PROFESSOR SHAPIRO: It would make it more difficult for the patent holder to assert against other parties?

MR. FLYNN: Yes, certainly.

PROFESSOR SHAPIRO: Well, I think usually both parties want the patent holder to assert against others and certainly if the patent holder would be agreeing to limit its assertion efforts that would be giving something up but that is not something I have seen. I would not think that would be in the joint interests of the settling parties.

MR. FLYNN: It might simply be in the interests of the originator, particularly if it considers that it has a strong patent. It would want in future circumstances, in future -- in the event of future generic challenges to be able to continue to assert its patents.

PROFESSOR SHAPIRO: I absolutely agree, I am saying that I would expect the first settling generic to also want the patent holder to assert against other generics and in fact, we often see provisions where, in patent licences, where the licensee obligates the patent holder to continue to assert against others in order to protect the rights of the licensee as secured.

MR. FLYNN: The originator may have more difficulty doing that if it allows either early entry, which will suggest to any generic that they should come in on that date whether they are infringing or not, or indeed a royalty if it is prepared to licence under the patent, that will send out a signal of weakness to the generics at large.

PROFESSOR SHAPIRO: Well, it is certainly true that depending on what other third parties can observe, they may make inferences or update their views about how they would do in a litigation against the patent holder. That depends often, for example, on whether it is a matter of validity or infringement because the validity issues tend to be common unless one defendant has private information about prior art or something, while the infringement issues tend not to be or not as much.

THE PRESIDENT: Just on the point of royalty, I think it was put that there is a disadvantage to the patent holder settling by way of licence to the generic in royalty because that would send out a signal to other generics that the patentee has less confidence in their patent. I think that was one part of the question. Do you agree with that?

PROFESSOR SHAPIRO: Not much. I would put it this way. If you observe a patent holder has licensed -- normally these licences are private information, you do not normally know the rate at which the licence -- just in terms of business reality -- what sort of signal, you would obvious the licence. You might think: oh, the patent holder might very well licence to me on the same terms that they would licence to this other person but you do not know what they are. There is definitely some signals to be had, but they may be pretty weak or unclear depending on the fact patent.

MR. FLYNN: But such signals as these may send, the patent holder is less likely to be willing to send them the stronger it considers its patent to be?

PROFESSOR SHAPIRO: I do not see that, no. I think the patent holder, if the patent holder is very confident in the patent, then they will not give up much in terms of value or they will be more inclined to go to court and the signals would be less important because they have confidence they are going to win anyhow.

MR. FLYNN: Thank you very much, Professor Shapiro.

THE PRESIDENT: Can I just ask you, Mr. Flynn asked you about other factors you might take into account, an originator might take into account in settling, I think it was his first question and you said what sort of factors might they be?

If the originator knew or believed that this generic who was negotiating with it for settlement was the only one that is likely to be able to source supply as opposed to a situation where it thought: well, there might be four generics trying to get in, is that the sort of factor that might affect the amount it is prepared to pay?

PROFESSOR SHAPIRO: Yes, I would think so. Because if you know there is four stacked up, how much do you pay to the first one because you are not really protecting your monopoly position, you still have a reasonable chance it is going to be eroded, or at least the threat is there.

This goes to the point that we had a conversation about earlier, what you pay to the first generic, you are only getting protection from that generic's efforts. Suppose you think in a year or two it is quite likely that some other generic is going to prevail and your patent is going to go down anyhow, you would pay for protection for a year or two, but that is all you

can get and after that the game is going to be up. So the presence of the subsequent generics would definitely influence how much you pay the first.

THE PRESIDENT: Yes, thank you.

MR. FLYNN: So it would be less likely to settle, the stronger the view you had of the strength of your patents in those circumstances?

PROFESSOR SHAPIRO: No. See the settlement is all about on what terms. If you have a strong patent, you will not give up very much. That is clear.

MR. FLYNN: What I am suggesting to you is that you will not want to give up the right to assert your patents in those future challenges and you would attach a value to being able to continue to do that.

PROFESSOR SHAPIRO: Absolutely. I think we covered that before. I totally agree the patent holder does not want to give up the right to assert its patent against subsequent infringers and I would not expect the first settling alleged infringer to have any problem with that.

THE PRESIDENT: Thank you very much. Thank you all three for having kept to time.

Is it Ms. Demetriou you are going first? Questions by MS. DEMETRIOU

MS. DEMETRIOU: So Dr. Jenkins, I wanted to follow up on a couple of points from the evidence you gave the Tribunal and the first issue I want to look at, you touched upon in your evidence on Tuesday and again a little bit today. That relates to the approach that you say the Tribunal should adopt to the proper counterfactual.

On Tuesday you submitted that the Tribunal should adopt an either or counterfactual and you will recall Mr. Malek put you to the scenario that where the originator and the generic company both take the view that there is a 45% chance of the court finding the patent invalid, you said that in those circumstances the court would rule in favour of the patentee and so there would be no restriction of competition relative to that counterfactual. Do you recall that or do you want to go back to the transcript?

DR. JENKINS: No, I recall that.

MS. DEMETRIOU: You sought, I think, then to go on to distinguish that situation from market sharing agreements because you said that, as I understood you, market sharing agreements do not have the uncertainty of the patent being valid or invalid. Is that a fair summary of the evidence that you gave?

DR. JENKINS: Yes.

MS. DEMETRIOU: I want to take a hypothetical example of a market exclusion agreement with no patents involved at all. Let us say Apple, for example, decided to try to enter the market

for cars and Apple had, let us say a 45% chance of entering the market -- of successfully developing a product and being able to enter the market and then Ford paid Apple to stop its efforts and to stay out of the market for cars. In those circumstances too, are you saying that there would be no restriction of competition because the most likely counterfactual is that Apple would have failed to enter the market anyway?

DR. JENKINS: No.

MS. DEMETRIOU: But do you not accept that in that scenario too there is also uncertainty as to the outcome?

DR. JENKINS: Yes, but it is a different form of uncertainty.

MS. DEMETRIOU: Why is it different?

DR. JENKINS: Because in that situation of, as you put it, Apple, entering the market in that situation, I think the uncertainty is more about how successful will it be, what sort of impact will it have in the market. Whereas in the patent case -- I hesitate to use the Schrödinger's cat example, but it did cross my mind last night when thinking about the case -- it is something that is true or false, the patent is valid or it is not valid, but what we do not know is what the answer to that is because it has not been ruled upon. In that sense it has a very binary character, the patent, whereas when we are talking about a standard market sharing agreement, yes, we can be uncertain exactly how big is the market, how far is -- how successful is someone going to be and there will be uncertainty around that, but the Ford in this situation has no right to assert against Apple a reason why they can stay out of the market.

They must face that competition when it comes and that to me is very different from a situation where an originator has a patent which they can assert but the uncertainty is about whether it is valid or not.

MS. DEMETRIOU: So if we tweak the facts a little bit of my hypothetical example and let us say that Apple wants to enter the market with a driverless car and that depends on legislation being brought into force in, say, five years' time but it is making lots of efforts to develop this car but, in fact, whether it would be able to enter the market depends on this legislation either materialising or not. So, in those circumstances, if Ford paid Apple to stop and cease its efforts, would you say that that is anti-competitive or not?

DR. JENKINS: I think the question of whether you would observe harm to consumers would depend on the outcome of that legislation.

MS. DEMETRIOU: So if the legislation is in five years' time and it is all going to be debated, but Ford pay Apple to stop all of its research and development now and stop even trying to

enter that market, are you saying that you have to wait to see in five years' time before forming a view as to whether that is anti-competitive or not?

DR. JENKINS: No, I think that you can, in that situation, see that there may be some benefits from Apple in this situation continuing to get itself ready to be able to enter the market, but the question of whether or not it will be able to enter the market would still be dependent on this outcome and you can then draw a judgment on that.

THE PRESIDENT: One can see that whether it will actually have an effect or would have an effect will depend on the legislation in five years' time, but what is the benefit that you see and why is it -- I have not quite followed what -- are you saying it is not anti-competitive?

DR. JENKINS: In this scenario, as I understand it, you are not actually going to get a benefit in the market at the time because until the legislation is resolved you do not know.

THE PRESIDENT: If it comes through.

DR. JENKINS: If it comes through. So you have the fact that in the hypothetical that was given there is still some work that needs to be done for that entity to be ready to enter the market at that point in time.

THE PRESIDENT: Yes. If they are paid to stop and give up, then you know they will never enter.

DR. JENKINS: They may enter once the legislation --

THE PRESIDENT: No, if they get a payment from Ford not to continue their research and development, give it up, then that means they would not develop the car, they will never enter, whatever happens with the legislation?

DR. JENKINS: In this scenario, as I understand it, we are being asked that the hypothetical is one in which Apple which is our generic is being asked to cease all activity until patent expiry, the point at which the legislation comes into force and that is one of the scenarios that you gave yesterday, which is the extreme scenario. Where we have the type of agreements --

THE PRESIDENT: We will just stick to that. That was the question. Would you regard that as anti-competitive? That agreement?

DR. JENKINS: I think equivalent to the answer I gave yesterday which is yes, against a benchmark of what would be expected to happen, the expected consumer welfare, I said yes against that counterfactual that is anti-competitive but against the counterfactual of does it have an actual impact in the market, that would still depend on the 0/1 outcome of the legislation.

THE PRESIDENT: I am sorry, I am sure it is my fault, but I have not quite picked it up. We know the chance of the chance of the legislation passing is 45%. That is, I think, the

question, as I understood it. They are being paid to give up their research and development and not work on producing the car. We do not know whether they would ever be able to enter because there is only 45% chance of the legislation passing. That is the situation.

DR. JENKINS: I think in this hypothetical, obviously, the fact that Apple is continuing to innovate may have all sorts of benefits, right, and therefore may have spillover benefits and would be likely to generate potential gains to consumers in other markets. But if ultimately they could not enter with their product, then at that point it will -- unless their entry -- unless their activity, sorry, prior to legislation has an impact on Ford's behaviour, which could be another part of the hypothetical, then you are not going to see any benefit to consumers during that period of time.

MS. DEMETRIOU: Are you saying that if you leave aside -- so just leave aside spillover benefits and things like that, because I am not interested in that, but just look at their efforts to enter, are you saying that in circumstances where they are making efforts to enter but you do not know whether they are going to enter because the possibility of legislation being passed in five years' time is uncertain, that that agreement is not anti-competitive; is that your position?

DR. JENKINS: I said that in terms of what do you think it will -- can you identify what the harm to consumer welfare in that market is, that is if --

THE PRESIDENT: I think we are asking you whether it has an anti-competitive object, not whether you can prove harm to consumers. Not whether you can prove any effect, but is it in its nature anti-competitive in what it is intending to do?

DR. JENKINS: So again here I think that would be anti-competitive in its nature because Apple again does not have the right to -- sorry, Ford does not have the right to exclude Apple's activities from its own action because of that legislation, whereas in the patent case, the brand has the right to exclude because of the innovation it has undertaken in the past. Whether it has the right or not, it has been given a right which is to say: in order to reward you for all the difficult innovation you went through, you can have the right to have exclusivity for a certain point of time.

MS. DEMETRIOU: I think we will leave that there. I want to turn now to look at the factors: risk aversion, asymmetry of information and bargaining inefficiency and you say in your reports that those factors can lead to various results and I just want to look at a couple of them.

One point you make is that those factors could have prevented the parties from reaching an alternative pro-competitive agreement if GSK had not been permitted to use value transfers and that is something you develop in your first report.

I want to consider with you a simple form of alternative agreement and the type of agreement that I want to look at is one in which GSK provided more volumes to the generics instead of making the cash transfers, and in posing this question, I want to make absolutely clear that we do not of course accept that transferring fixed volumes to the generics is pro-competitive or was pro-competitive in this case at all, we do not accept that, but it is of course a necessary part of the appellants' case and so for the purposes of this part of our discussion I want to assume for a moment that it is correct.

If the appellants were right that transferring volume from GSK to the generics increases competition, then an agreement that provided additional volumes instead of the cash transfers would have been more competitive, would it not? That has to be right?

DR. JENKINS: Yes.

MS. DEMETRIOU: So the only way in which you can say that these agreements are not anti-competitive relative to an alternative settlement counterfactual is if the parties could not have actually reached agreement on more volumes in place of cash.

DR. JENKINS: Yes.

MS. DEMETRIOU: So I just want to turn up a couple of documents and take you to them. Could we go to {L/11/1} please. This is the Alpharma agreement and you can see the date of the agreement, 12th November 2002. Do you have that on your screen Dr. Jenkins?

DR. JENKINS: Yes.

MS. DEMETRIOU: If you look at clause 2 you can see there that is the clause which provides that GSK will provide IVAX with £500,000 worth of product to allow IVAX to supply Alpharma with those quantities under the agreement. Do you see that provision? You will have seen it before.

Then, if we go --

DR. JENKINS: I think it is 500,000 packages? Is that --

MS. DEMETRIOU: It is 500,000 --

THE PRESIDENT: That is right. It is 500,000 packs, and each pack is 30 tablets, I presume.

MS. DEMETRIOU: That is right. Then if you go to clause 6, which starts at the bottom of the page. Let us just read clause 6. It says:

> "GSK shall provide immediate access under signature of a confidentiality agreement to Alpharma of information relating to GSK's products in three therapeutic areas

(cardiac; antibiotics and neuro-muscular blockers) being candidates for divestment in the UK by GSK. Alpharma shall have an exclusive period of three months from the date of this agreement to evaluate such products to indicate its interest and sign a Heads of agreement for the potential purchase of such product(s). Such potential purchase shall ensure the transfer to Alpharma of value in an amount of at least £500,000 failing which an alternative means to achieve such transfer shall be agreed." {L/11/2}

This is an obligation to transfer at least £500,000 worth of additional value to Alpharma and then the parties are going to work out how to do it by reference to which products. Do you see that?

DR. JENKINS: Could you just flick back to the other page so I can read the first clause. Yes, okay.

MS. DEMETRIOU: Now if we could go please to bundle {L/12/1}. What we have here is an amendment to the Alpharma agreement that we have just looked at and if you look at the date at the top of the document it is 14th November 2003. If we go to point (ii) that says that:

"The supply shall be for 620,000 packs..."

So it has gone up from the 500,000 packs:

"The parties acknowledge that in consideration of the supply of this volume of Product the requirement for GSK the requirement for GSK to transfer to Alpharma value in an amount of £500,000 as provided by paragraph 6 of the Settlement Agreement shall be extinguished."

That is the paragraph 6 we just looked at.

So this is an example, is it not, of the very thing that you say might have been impossible. So what the parties are doing here, they are replacing an obligation to transfer £500,000 worth of value with an obligation to supply an additional 120,000 packs, are they not?

DR. JENKINS: They are.

MS. DEMETRIOU: There is no reason, is there, to think that the parties could not have reduced the cash component of the settlement agreements and increased the non-cash components. There is no suggestion here that they are struggle to put a value on the non-cash components, is there?

DR. JENKINS: I think that is very hard to conclude from these two agreements a year apart to know what went on in the intervening time that enabled them to come to this different agreement.

MS. DEMETRIOU: But this looks on its face, does it not, like they are valuing the non-cash component of the agreement?

DR. JENKINS: Yes, they are valuing it but that does not invalidate the concerns I would have.

MS. DEMETRIOU: Let us move on to the last topic. A further point that you make is that your three factors might explain why the parties might make an agreement that they believe to be pro-competitive relative to the litigation, even though they would earn higher profits from an anti-competitive agreement. In other words, you say that these factors might lead the parties to act against their own commercial interests by failing to maximise their joint profits. That is one of the points you make.

Again, I want to understand a little bit how that might work in the context of these agreements. If the parties had thought that these agreements were pro-competitive relative to the litigation, then it must have been that they would have resulted in a material increase in competition and decrease in price relative to the status quo and that can only be, can it not, because the volumes of paroxetine supplied were high enough that they would lead to competition and price cuts. Would you agree with that?

DR. JENKINS: Okay, so you said a lot of things there.

THE PRESIDENT: Yes, can you break it down, Ms. Demetriou. You say first of all there are three factors. Remind us what are the three factors you are referring to?

MS. DEMETRIOU: The three factors which are the risk aversion and the asymmetry of information and the bargaining inefficiency. So I think a point that you have made in your second report in particular is that these agreements -- that these factors that you identify, the three factors, might explain why -- might lead the parties to act against their own commercial interests and their own commercial interests would be to maximise their joint profits. So you say that these factors might lead them instead of maximising their joint profits, instead to reach a pro-competitive agreement.

THE PRESIDENT: Is that right, pausing there?

DR. JENKINS: I would phrase that slightly differently, which is that for risk aversion it is that what matters to the originator is certainty and profits and therefore if you are risk neutral you just maximise the expected value of your profits. If you are risk averse you actually do not maximise the expected value of your profits because you will trade certainty for some of those profits so it is still in your commercial interest, it is just your commercial interest is not purely about expected profits.

In the case of inefficient bargaining, similarly, I am not saying that is not in people's commercial interests. All I am saying is the simplified models which say: efficient

bargaining, everyone will delay all the way to patent expiry, you do not observe that. Indeed, on this agreement, on its face, they did not agreed to patent expiry, they only agreed it for three years and that is not because these people are -- I am not saying they are doing something for the good of the world in that pro-competitive, it is in their commercial interest to have that negotiation and that could be for a whole range of reasons why they want to get that agreement at that time and we have discussed some of those this morning.

MS. DEMETRIOU: Let us focus for a minute on asymmetry of information. I had understood you yesterday to be saying that that factor in particular might lead the parties to make an agreement which is actually pro-competitive compared to the counterfactual of continuing with the litigation?

DR. JENKINS: The issue with asymmetric information can mean you cannot get an alternative settlement agreement because the two parties do not effectively agree on what the value is they are debating over, because when you do it as an alternative settlement without any value transfer, what you are doing is having to agree: when I give you this amount of product, or when I give you a year extra in the market, I as the originator think I am transferring x amount of value. The generic may consider that is only worth y amount of value and if you do not agree on those numbers, then you -- because I am not willing to offer you more than two years or 500,000 packs and on the other side I am only willing to accept three years or 600,000 packs. Whatever the increment you are bargaining over, if you do not have money, then the value you perceive of those can be something you cannot agree on.

Under asymmetric information, what value transfer gives you is the ability to smooth out those disagreements by using cash, which is an agreed measure of value between the two parties.

MS. DEMETRIOU: But I think I am putting to you a slightly different point which as I understood from your evidence on Tuesday, and also from your second report, that the parties might end up actually making an agreement which is pro-competitive because of these three factors that you identify.

DR. JENKINS: That is correct. So it is possible to get it solely with asymmetry of information between the parties. In general it is more the case, if you have asymmetry of information and a risk averse originator, that combination together is the one that is most likely to get pro-competitive outcomes in the market.

MS. DEMETRIOU: I just want to focus for a moment on this idea of a pro-competitive agreement in the context of these agreements. So the point that I was putting to you in too

compressed a way is that if the parties had thought that these agreements, if they had believed that these agreements were pro-competitive, so relative to the litigation, then that must have been that the agreements would have resulted in a material increase in competition and decrease in price relative to the status quo because the volumes of paroxetine supplied were high enough that that would have led to competition and price cuts, is that right? Do you agree with that?

DR. JENKINS: The terms of the agreement overall -- to be pro-competitive do give material benefits.

MS. DEMETRIOU: That would have been all about the supply of these volumes, right, so that is the only thing that could have led to competition?

DR. JENKINS: That is right, but also the timing of that because this agreement was immediate entry under these authorised arrangements as compared with whatever time period you would have had entry in a world where you had taken away the ability to have a value transfer.

MS. DEMETRIOU: So if that is the case, so if the parties believe that the volumes of paroxetine were such that that would have led to price decreases, then they would have earned higher profits, would they not, if GSK had paid more in cash and less in supply of paroxetine?

DR. JENKINS: Yes, I think that is right.

MS. DEMETRIOU: So my question to you is, well why would they not do that? Why would they not maximise their joint incentive and pay more in cash and less in supply of paroxetine?

DR. JENKINS: I think that is my point that when you observe it in the real world --

MS. DEMETRIOU: Yes.

DR. JENKINS: So why possibly did that happen? Maybe the generics wanted entry. They wanted to be in a position such that they knew that BASF and potentially Apotex, other people, were active there. The terms of this agreement enabled GUK to get distribution going without having to continue that litigation.

MS. DEMETRIOU: Can I ask you to tie it -- so you are now positing a factual scenario. How does that relate to these three factors? Which of these three factors that you rely on, so asymmetry of information, bargaining inefficiency or risk aversion, do you think would have been material here to have caused that?

DR. JENKINS: Here it would be the inefficient bargaining aspect of it. In the way you have presented it, both sides -- and potentially asymmetry of information. In the theoretical model you have both sides having this clear view of what is the interests of both sides.

Now it may be that the generic had different interests that related to building its network of distributors in the UK and hence -- and that was not well understood by the originator. So they have different views of the value of this and that is why the generic valued more the getting access to the market through the authorised entry agreement. That would be an example.

MS. DEMETRIOU: Is there any other example? You have just offered an example of -- and I can understand that -- the generic puts a higher value on the volumes of product than, say, GSK does.

DR. JENKINS: No, than say the money that GSK would pay them and how much money it is worth to GSK to pay that.

MS. DEMETRIOU: Is there anything else that could have led the parties to have not acted in that way in accordance with their commercial incentives?

DR. JENKINS: So inefficient bargaining. In order for GSK to get that outcome that you have suggested, which would be full lock out or less product being supplied or any of these things or no product being supplied and just full lock out, maybe they would have had to wait a really long time and maybe they were nervous about that and they wanted to resolve the litigation for all sorts of reasons. They were not patient enough.

THE PRESIDENT: Ms. Demetriou, you are going to have to wrap up.

MS. DEMETRIOU: One final question on this point, which is can we not infer from the fact that the parties agreed to supply paroxetine in the settlement that actually they did not think those supplies would give rise to competition?

DR. JENKINS: No.

THE PRESIDENT: Mr. Turner you have 10 minutes. Questions by MR. TURNER

MR. TURNER: I only have one point of questioning for Dr. Majumdar.

This morning the President asked each of you for a factual checklist of the key things that you thought should be resolved in assessing these agreements as economists, and Dr. Majumdar I think the first thing that you alighted on was that you said you should look to see whether there is a material increment in competition relative to a no entry benchmark. Yes?

DR. MAJUMDAR: Yes, that is correct.

MR. TURNER: And that you would measure that by reference to direct customers? Could you turn to page 3 of the joint statement please {I/1/5} and what you say there. I have a very short conceptual point. In the middle of page 3 you say that the standard practice is:

"... to presume that where direct customers gain, there is unlikely to be harm further down the supply chain ..."

The reverse, therefore, is presumably also true: where direct customers lose, there is likely to be harm further down the supply chain. That is right?

DR. MAJUMDAR: Well, what I say here I think we are just reading the first part of the statement. So what I say here is my focus has been on direct customers because it is standard practice to consider direct customers. I then go on to say that that standard practice does not rule out taking into account --

MR. TURNER: Benefits.

DR. MAJUMDAR: -- benefits further down the supply chain which would be consistent with what Professor Shapiro described on Tuesday as looking at consumers at all three levels.

MR. TURNER: We will come to that, but could you just answer my question, that where direct customers lose, there is likely to be harm further down the supply chain?

DR. MAJUMDAR: That is the normal presumption in terms of standard practice. So the point is with standard practice, one says if the direct customers have higher prices, then those higher prices will probably be passed on to some degree and hence further down the supply chain there will be harm. The flipside is if they have lower prices, then they will be passed on to some degree and there will be gain further down.

MR. TURNER: Let us go on to your next proposition in that paragraph. You say it is not clear to you that:

"...this standard practice would rule out the possibility of taking into account beneficial effects further down the chain in exceptional cases where it is clear that those are material and derived from increased competition resulting from the Agreements."

What I would like to do again is to turn that proposition linguistically inside out. If it is clear on the evidence in the case that there are harmful effects further down the chain, and that those are material, and those are derived from reduced competition, resulting from agreements, you would agree that it is possible to take those into account as well; yes or no?

DR. MAJUMDAR: So in exceptional cases that seems logical. But let me explain the statement because this is in the context of a number of -- a series of questions in the joint statement, so I think it is important to put that into context. So the question was really the role of the NHS and the extent to which the Tribunal might take that into account. The point I was making was that although I did not explicitly consider the NHS, in exceptional cases, where there is a clear link in this case because increased competition among manufacturers

triggered a change in the drug tariff which caused a gain further downstream, I said that was an exceptional case because there was a clear link between an increase in competition at the manufacturer level and a direct benefit straight down to somewhere else in the supply chain and for that reason it is an exceptional case, but for that reason I thought it could be taken into account even though it is not something that I myself considered. That is the context of the statement.

MR. TURNER: Yes, it is. Returning to the theory. If we focus on wholesalers and pharmacies, where pharmacies sometimes direct customers as they were with GSK, sometimes indirect customers, if an incumbent monopoly supplier makes an agreement which the evidence shows is both expected and designed to avoid any beneficial impacts from competition on prices to the pharmacies, presumably that should be taken into account as part of your economic analysis.

DR. MAJUMDAR: Sorry, would you mind repeating that question one more time, please?

MR. TURNER: Of course. If an incumbent monopoly supplier makes an agreement and the evidence in the case shows that it is both expected and is designed to avoid beneficial impacts from competition on prices to the pharmacies, that should be taken into account as part of your economic analysis?

DR. MAJUMDAR: My economic analysis says that we should focus on direct customers and I have defined those to be wholesalers and pharmacies and so if there is a direct adverse impact on pharmacies, then in my context I would take that into account as well.

MR. TURNER: More specifically the answer to my question, where there is evidence that the agreement is expected and designed to avoid beneficial impacts from competition on pharmacies, that should be part of your analysis as well?

DR. MAJUMDAR: I am not sure as an economist that the intention is something that we look at. I look at what is the -- from an ex ante perspective I say given the structure of the agreements do I expect it to put downward pressure on price to wholesalers or downward pressure on price to pharmacies. I think you are asking me to think about what did the people have in their mind when they struck this agreement and I am not sure that is something that I as an economist can opine on. I would simply look at: there is a supply, agreement, there is an increase in volume, does that or does that not put downward pressure on price at the wholesale level or the pharmacy level. That is how I would think --

THE PRESIDENT: You look at what is objectively the anticipated effect, not what is subjectively in the minds of the parties?

DR. MAJUMDAR: Exactly.

MR. TURNER: Finally, what was objectively the situation would also include looking at the design of the agreements in context and what they were likely to achieve so far as pharmacies were concerned?

THE PRESIDENT: When you say the design of agreements, you mean the terms?

MR. TURNER: The terms of the agreement in their context?

DR. MAJUMDAR: Yes, so the design of the agreement is that there is a volume cap, for example, so I would take into account that, for example, the GUK agreement had a cap of 750,000 packs and that would be something I would consider when assessing my expectations of whether it would give rise to downward prices.

MR. TURNER: Thank you.

THE PRESIDENT: Thank you very much. Thank you for keeping to time. Dr. Stillman, you get off lightly.

DR. STILLMAN: I do today.

THE PRESIDENT: I think that concludes that part of the concurrent evidence.

We will therefore move on to what is covered by point 2 of the joint experts' report which starts on page 28. That is covered by Professor Shapiro, Dr. Stillman, Dr. Majumdar. It is not part of Dr. Jenkins' evidence. Dr. Jenkins, you are therefore released, thank you very much for your reports, your oral evidence and your contribution to the joint statement.

I think we will take a 5-minute break. You can rearrange yourselves again.

(3.12 pm) (A short break).

(3.25 pm)

THE PRESIDENT: So we move to part 2 which starts on page 28, the anticipated and actual effects of the agreements on the competitive constraints, first by GSK in competition to supply pharmacists and/or wholesalers. {I/1/30}.

That is phrased in terms of pharmacies and wholesalers and we appreciate, Dr. Stillman, you have emphasise the point that the relevant test is the NHS. We have not lost sight of that, because we do not always refer to it --

DR. STILLMAN: Thank you.

THE PRESIDENT: -- but this is looking at it a different way. If we could pick up, Professor Shapiro, what you say at the bottom of that page 28, where you say in the last few lines:

> "The evidence presented by the CMA indicates that GSK expected the paroxetine sales made by IVAX and GUK to displace parallel import volumes of the 20mg product at prevailing parallel import prices ... This is the key to the analysis ... After

[they] ...have been displaced ... reductions in the price of paroxetine could not cause them to fall further."

The "them" in that statement is a reference to what?

DR. STILLMAN: Parallel imports.

THE PRESIDENT: Parallel imports. After they have been displaced, but wouldn't cause them to fall further because they have gone, as I understand it, and you cross-refer to your first report at paragraph 80 to 85. Could we just look at that which is in our bundle {H/1/24}, internal 21. I think one starts really at paragraph 82 or perhaps at really at the end of paragraph 80 above {H/1/20}:

"Therefore, in the model, the relevant combined quality from IVAX, GUK and Alpharma to consider is the amount in excess of the parallel imports that were coming into the UK prior to these agreements."

Then you go down to talk about parallel imports and you say the starting point is examination of the volumes and you talk about the 770,000 packs given to IVAX and then GUK's 750,000, Alpharma 500,000 in the first year. Then you go on to say, you give the dates of the agreements. In paragraph 84 {H/1/21}:

"I understand that in the 12 months prior to IVAX's entry ... parallel imports accounted for 1.38 million packs ... IVAX and GUK's combined volume ... was 1.52 million packs ... during this same period GSK sold 3.32 million packs..."

You therefore go down in 85 to say therefore:

"... no significant price decline could be expected prior to entry by Alpharma in February 2003".

So that is prior to Alpharma coming in. Then in paragraph 88 you say:

"Therefore, the three supply agreements together could only possibly be expected to use paroxetine prices to fall if the supplies allotted to IVAX and Alpharma together exceed the level of parallel imports that they displace. As noted above, IVAX and Alpharma's combined allowance was 1.27 million packs of ... paroxetine ..."

I did not follow that because you have explained above at paragraph 84 how IVAX and GUK's combined volume was 1.52 million packs and then you have got a further half a million through Alpharma, so by that point you get the third addendum to the agreement and the total goes up, if I have added up correctly, to 2.02 million packs.

So that is the total then that is being supplied to the three generics together, which is significantly more than the quantity of parallel imports in the 12 months before the agreement, so I am struggling to follow how you worked this out because it seemed that in

fact what is being granted is significantly more than the 1.38 million packs that came in by parallel imports. Do you see my difficulties?

DR. STILLMAN: I believe I do.

THE PRESIDENT: Can you help me on that please?

PROFESSOR SHAPIRO: I believe I can.

I am just going to give a proviso here that all this becomes irrelevant when we factor in the inelastic demand for paroxetine.

Set that aside. I think I should apologise for some lack of clarity. If you think of the scales, we have the parallel imports which as I think you have just said -- we said was --

THE PRESIDENT: You say it is 1.38 million.

PROFESSOR SHAPIRO: Thank you. 1.38 million. Then, we have got the three components in the different supply agreements that add up to significantly more than that all told, and that led to your puzzle, I believe.

Let us take the GUK piece alone, which was the 750,000 packs.

THE PRESIDENT: Yes.

PROFESSOR SHAPIRO: The point of this subsection that begins at paragraph 86 is that the profit guarantee clause neutralised that portion of the packs that were supplied in total in terms of GSK's pricing incentives. In other words, having nothing to do with parallel imports, because GSK had to compensate GUK for any drop in price, for any shortfall in price that they would receive, that would undo in this model at least and I think in reality, any incentive that GSK might otherwise have to lower price because they faced additional -- because GUK was putting additional volumes onto the market.

So there is two arguments that are working in tandem. One has to do with parallel imports and that is relevant with respect to IVAX's and Alpharma's quantities. The other argument is to do with GUK's quantities which we just said was the 750,000 packs. That is neutralised, or any effects are neutralised by the profit guarantee clause. So once those are neutralised, I will say take those off the table, we are then comparing the remaining volumes to IVAX and Alpharma against the parallel imports and that is what I talk through here.

THE PRESIDENT: I see. I think I understand. You refer to that in footnote 22. So you are really combining two things.

PROFESSOR SHAPIRO: Yes.

THE PRESIDENT: The effect of the price guarantee clause on the GUK volumes and then the IVAX and Alpharma by reference to the parallel imports volumes, is that right?

PROFESSOR SHAPIRO: That is correct.

THE PRESIDENT: Because there is no price guarantee clause for either of those two.

PROFESSOR SHAPIRO: Right. So just to make sure it is very clear, if you take the GUK 750,000 packs, set those aside in the analysis in the sense those are not going to have a competitive impact in terms of giving GSK any incentive to lower the price because of the profit guarantee clause. So those are put aside. Then we have IVAX and Alpharma which are 1.27 million packs but then it grows, I guess, because Alpharma gets the additional 120,000 packs to 1.39 and that is basically at the level -- prior level of parallel imports, 1.38. So the IVAX and Alpharma will then be displacing the parallel imports and that is the second prong of the argument.

THE PRESIDENT: I think I now understand what you are saying there, we do of course see a significant reduction in what has been described as the residual demand, not simply displacement of parallel imports, the volume of Seroxat goes down very significantly more, does it not?

PROFESSOR SHAPIRO: It does, because the overall demand has gone down for reasons having nothing to do with these agreements, so is my understanding.

THE PRESIDENT: Pause a minute. I thought what we see is it is not about the overall demand but because of these total quantities coming in -- leave aside competitive pressures on GSK or pricing incentives or anything, but simply in terms of the volumes being sold of Seroxat, that goes down significantly as a result of these agreements because the generics displace the parallel importers and then as you have just acknowledged the volume supply to the generics becomes significantly more than the parallel importers, they then start displacing Seroxat sales?

PROFESSOR SHAPIRO: Absolutely, yes. This was by design or put it this way, from my way of thinking at least, completely inevitable and predictable, and it is part and parcel of if you have got a company sharing its monopoly profits by allowing others to sell certain volumes, then the originating company, their share will fall because the others are picking up some of that share. In this case, that is significant in total because the three supply agreements together add up to significantly more than the parallel imports had been prior to the IVAX agreement.

THE PRESIDENT: Yes.

MR. MALEK: You are saying the intention is that the size of the cake is intended not to go small, it is the same size of the cake but it is just being shared out?

PROFESSOR SHAPIRO: Exactly. The way I would think about it, there is a cake, your word, and wedges are being distributed to the generics, not happily, I am sure, but that is the deal, and so it is expected and understood that a couple of those wedges will displace parallel imports, so they will not come at the expense of Seroxat sales but there is a third one, wealth, and that is part of the sharing of the monopoly profits.

MR. MALEK: So there is no intention on your hypothesis of being real competition between GSK and the generics in those circumstances?

PROFESSOR SHAPIRO: That is correct. I think that the intention is very much to find a way to transfer margins and value in order to achieve a settlement, in order to stabilise the Seroxat prices.

MR. MALEK: Yes.

THE PRESIDENT: Yes.

Yes, Dr. Stillman?

DR. STILLMAN: I disagree both on theory and on the facts, so let me start with the theory. The entry of IVAX by itself amounted to about a 16% expansion in the total output on the market. We had, as you saw from paragraph 84 of Professor Shapiro's first report, a starting point of about 1.38 million packs of parallel imports and 3.32 million packs from Seroxat implying a total of about 4.7 million. You start from that initial spot and now we add on to the market 770,000 packs from IVAX. Now, that by itself is going to require a new equilibrium. It is going to change the market equilibrium. It does not have anything to do with the size of the allotment to IVAX relative to parallel imports. If we start from a market equilibrium with parallel imports and we have Seroxat supplies, if we add in 770,000 packs from IVAX, even if they are fixed supplies, that is going to change the market equilibrium. What it is going to do, and just sort of building on some of the things Mr. Sellick was saying, because it is authorised generic and in English language labels, it will probably have an effect first on the parallel imports, you will find pharmacists being interested in picking the authorised generics and reducing their purchases to parallel imports, however, because it is less expensive, it is going to cause these pharmacists also to be reducing their purchases of Seroxat, a more expensive product. So you are going to find a shift in shares from that IVAX entry by itself, in which the entry of IVAX causes the share of parallel imports to come down and some reduction in the share of Seroxat, which is what we see in the marketplace prior to any decline of demand -- for the total amount of paroxetine which does not take place until about August of 2002.

What we know from the data are that GSK's share drops by about 10 percentage points, from about 70% of paroxetine sales to 60%, between November 2001 and August of 2002, before this decline in demand. The increase in supply from IVAX and then GUK beginning in May of 2002, takes a larger portion of the parallel imports. It has a disproportionate effect on the parallel imports, but there are effects on both Seroxat as well as parallel imports and all of this is taking place, notwithstanding GSK/GUK profit agreements, notwithstanding the facts that these combined volumes, how they stack up against the parallel imports. The entry of this product is changing the market equilibrium in a predictable way and resulting in a shift in shares away from Seroxat towards authorised generics and then a reduced proportion of parallel imports.

THE PRESIDENT: If I may interrupt you, I think we can see Dr. Majumdar in his report, which is in bundle {G/6/36} internal 35 has got a colour graph which personally I found quite helpful, where one can see -- this is in market shares, the point you are talking about, by volume -- that the effect of the entry of IVAX -- it shows it by date, so one can see how the parallel imports are getting squeezed and what happens to the Seroxat market share.

MR. GLYNN: I, too, if I may say, found that chart very clear and helpful. Just for clarification, there is no question from the other experts that it is a mistake or misleading in any way? This particular chart we are looking at?

DR. STILLMAN: This matches my data as well.

PROFESSOR SHAPIRO: I am not suggesting it is in error.

THE PRESIDENT: We are all agreed that --

PROFESSOR SHAPIRO: I would only -- this is a footnote really -- the shares that we see here, the movement away from GSK and towards the generic are larger than would have been expected because the overall market declined, but that is a side point as far as I am concerned. I am not suggesting the data are in error.

DR. STILLMAN: I need to jump in, if I may, on that, because it is agreed in the second experts' report that the market demand did not start to decline until August of 2002. So this idea that what we are seeing with the decline in GSK's shares is due to a decline of demand is not correct.

PROFESSOR SHAPIRO: Even after August 2002?

DR. STILLMAN: I am referring to August of 2002, between October 2001 -- rather November 2001 and August of 2002 there is a 10 percentage point decline in GSK's share.

PROFESSOR SHAPIRO: I am not quibbling with you about that Dr. Stillman, I was saying that it would be the further right portion of this figure, just interpreting it, you should be aware of that since it is in shares, that is all.

THE PRESIDENT: Yes. We can see how the generics are taking share from first the parallel importers and a bit from GSK and then the parallel importers are squeezed out even more from GSK.

DR. STILLMAN: It is about a two-thirds, one-third split, so it is not insignificant. In other words, the share gained by the generics is about a two-thirds, one-third split between taking it from parallel imports versus taking it from GSK.

MR. GLYNN: Does it also follow from that that the average price that is received by GSK would have fallen as a result of these brand equalisation deals that we are hearing about?

THE PRESIDENT: I think we are going into that with Ms. Webster, and -- I think the actual effect on -- is that right? That is covered in that part of the evidence.

DR. STILLMAN: Certainly the actual magnitudes are something that will be discussed with Ms. Webster and Dr. Majumdar as well. In terms of the theory, one would expect these shifts in the marketplace, this new competition, to be putting some downward pressure on the individual suppliers' prices as well as on the overall price, in other words, there is a mix effect when you have a decline from Seroxat and people are now at the pharmacy level buying more of the authorised generic and parallel imports, that is going to result in a reduction of the average price being paid by pharmacists. When one goes through the theory, one would expect there to be as well some reaction on the part of the parallel importers and on the part of GSK to pricing and that I have to say we do not see much of and that is the spot where when I think through the theory and I think through what is going on here, the data behaved very well with the theory when it turns to shares, but there is not, I think it is quite clear, any appreciable reduction in GSK's price, and nor do you actually see a reduction of any consequence in the parallel import prices as well over the period.

THE PRESIDENT: That is probably a right point to turn to Dr. Majumdar, because you suggest -- and that is just over the page, facing page 29 of the joint statement -- that you would expect from this that it will have an effect on the parallel import price {I/1/31}.

DR. MAJUMDAR: Yes, sir. If I may answer that question and comment on Professor Shapiro's comments at the same time.

Firstly, just to set the context. We are talking here about a dominant firm model. Just to be clear on my views on the model, I have some reservations with it because of the absence of the wholesale sector, so that is not in the model and there is an assumption in the model that

everyone charges the same price. I just wanted to raise those two important assumptions for the Tribunal.

Moving on from that context, there are two points raised by Professor Shapiro. The first one -- to answer your question, sir -- is Professor Shapiro says that because in his view the CMA indicates one can proceed on the basis that there is this sort of sequential displacement at the price of parallel imports, that is to say there is an assumption in Professor Shapiro's approach that when the generic firms come in, each additional pack of generic paroxetine just displaces parallel import at the price of parallel import, so by assumption there is no downwards pressure on price.

Now, there are two points, as I say, firstly, that is a result he, in my view, is obtaining by assumption. The first point is that as has already been discussed by Dr. Stillman, there is agreement among the experts and the CMA that there is or there was indeed an impact of parallel imports not only -- sorry, an impact of the entrants' products, not only on displacing parallel imports but also Seroxat.

The first assumption on which Professor Shapiro relies is not valid in my opinion because the data do not support that assumption. Once we remove that assumption, Professor Shapiro seems to me to agree that this model, absent that assumption, does predict that the only way to displace parallel imports is by putting the price down. That is the standard textbook model as Professor Shapiro would seem to agree at point 6.

In my opinion he is relying on an assumption that is not borne out by what we observe in the data.

The second point made by Professor Shapiro relates to the profit guarantee clause where he says that it entirely neutralises any downward pressure on GSK. There are two points here that I would like to make, and I will try to make them quickly and then we can perhaps come back if we need to. The first point is what the profit guarantee clause does is it says, if GUK lowers its price to wholesalers, bearing in mind GUK by and large sold to wholesalers, then what GSK will do is it will refund it the difference provided that GUK's price is between £8.45 and £12.25, so there is a large range within which GUK can lower its price without suffering a loss in margin.

For GUK, that is a pretty powerful incentive to sell its entire volume allotment because it can lower the price, sell its product without suffering a reduction in margin. That is a powerful incentive to put downward pressure on GUK's price.

Now, there is a flipside --

THE PRESIDENT: Powerful incentive to sell its volume?

DR. MAJUMDAR: At a lower price. So you can imagine, sir, a situation where a wholesaler goes to GUK and says: I have been offered a fantastic deal from a parallel importer, 10,000 packs, and GUK might think: I think you are bluffing but actually I will go for it anyway because if I lower my price, GSK is going to make up the difference. It is powerful pressure to put prices down then.

Now Professor Shapiro raises another aspect of the profit guarantee clause which is that if there is a one-for-one relation between the price that GSK charges and the price that GUK charges, and it is important here to emphasise that GSK is setting a price to pharmacies and GUK is setting a price to wholesalers. What Professor Shapiro says is if GSK believes that if it lowers its price by £1 then GUK will also lower its price by £1, so it is a one-for-one link, then any downward pressure is entirely neutralised. I agree with that in that very special case where there is this one-for-one relationship.

However, as soon as one breaks that link and says there is not a one-for-one linkage, then the downward pressure reemerges. It will not be quite so great as if there were no link at all, but as long as it is not a one-for-one link and it is less than that, then there is still a downward pressure on the price of Seroxat.

PROFESSOR SHAPIRO: May I step in now?

THE PRESIDENT: Yes, because I would be grateful if you explained and expanded on what you say at footnote 22 about the working and impact of the profit guarantee clause.

PROFESSOR SHAPIRO: Let me start there, but I would like to come back to some of the other things that Dr. Stillman said.

First, having read the agreement and the clause in question, it does require that GUK sell the product at normal commercial prices, something to that effect, in order -- I am pretty sure I am correct in interpreting this that since GSK was giving this guarantee, they did not want GUK to be just selling the product very cheaply and then GSK would have to make them whole. That would be not in their mutual interests. So GSK was protecting themselves. So this notion that GUK could just -- would have a strong incentive, I think Dr. Majumdar called it, to unload its product to below prevailing prices, I do not think is faithful to the actual clause which I do not have in front of me now but we can find.

Furthermore as pointed out in I guess my second expert report, this would be pretty unfriendly to GSK in that they would -- in having to make whole on this because GUK had been essentially giving the product away cheaper than they normally would have in normal commercial terms and that would, if nothing else, make it less -- it would reduce GSK's incentive to renew the agreement. Furthermore, we do not see this, in fact we do not see

GUK dumping all of its product quickly. We see them selling it steadily, in fact with the ex post data. So that is in response to one of Dr. Majumdar's points.

His other point about the one-to-one relation, I think he said he agreed in the model in theory that if there were a one-to-one linkage between GSK's price to pharmacy and the resulting GUK price, then this neutralisation or offsetting that I talked about would apply, if I understand it correctly.

That is exactly how this market works. It is clearest from the Alpharma evidence that they are pricing at the pharmacy level, what they have to do to match either parallel imports, let us say, and then they are backing out the standard wholesaler margin in order to figure out what they can get from the wholesaler.

That is exactly the one-to-one relation that does lead to the complete neutralisation that I talked about earlier. Furthermore, that is exactly what one would predict if you just used -- if you take the dominant firm competitive fringe model, it is true it does not have wholesalers in it but if you add -- easily enough to the model -- if you added that some of the suppliers need to purchase a distribution service as part of the cost and there is a competitive distribution service and I do not think there is any question that wholesaling is a competitive business, the model goes through completely unchanged. Everything is exactly the same. It is a detail that would not normally be in the text books because it is not very interesting theoretically but totally can be accommodated here and would imply one-for-one, so long as the wholesaling business is competitive and I think we have evidence that that is the case and evidence of this one-to-one relationship in fact.

So that is relating to the GSK/GUK profit guarantee clause. Let me go back, if I can pause, to what Dr. Stillman said, which I think is critical. He has emphasised that there really was a significant shift in share away from Seroxat towards other -- towards the generics and we saw that coloured chart. That is absolutely not in dispute. As I said, in response to your question, sir, that was by design. Observing that shift does not allow us to distinguish between sharing the monopoly profits by giving a piece of the cake to one of the generics and whether we have got real competition. It is just not helpful in terms of distinguishing those two which are the critical hypotheses on the table.

What is useful to make that distinction? Prices. The driver of Dr. Stillman's model, the dominant firm fringe model, which he brought in and I embrace fully here, is the prediction -- I do not agree with the prediction but the question is will the dominant firm, which in this case is GSK, will they lower their price as a result of allocating fixed quantities to other firms, the generics?

We observe in fact that they do not. Seroxat prices are unchanged. There is some discussion about whether it moved by 1% and so forth, but you look at the charts, they are unchanged, it is steady. The model would predict that and that is what we see. It is also what GSK expected, by the way.

How do we wind this up with the parallel imports? My point there was where Dr. Stillman said this part of the evidence does not quite fit for him. I have to say it fits beautifully from the standard theory of dominant firm competitive fringe with the other features we have included here.

In particular --

MR. GLYNN: May I interject just a small point of clarification. If the price we are concerned with, GSK's price, is an average one of their direct sales, if I can call it that, and the generics or parallel import prices that the wholesalers or retailers have had to pay, if through these brand equalisation deals they average it, then does that leave us still with the dominant firm model as relevant or does GSK in some sense become a price takeover rather than a price setter in this market?

PROFESSOR SHAPIRO: That is exactly where I am going. The price we observe for Seroxat is a blended price, which is the higher price they can get on non-contestable prescriptions and the lower price where they are matching -- let us start with matching parallel imports before the generics come in.

So what it is is the domestic firm setting the price for the closed non-contestable, and then they are matching the parallel import price. It is effectively the limit pricing model where you have got a very highly elastic -- I will say perfectly elastic -- supply of parallel imports at a certain price. Parallel imports are an arbitrage opportunity, so they have a very elastic supply. We see that in the data that as demand grows, parallel imports grow without price going up.

If you take the model and simply add the feature which I think is absolutely correct that there is an elastic supply of parallel imports at a certain price, then everything falls into place, everything fits rather beautifully.

Yes. GSK matches the parallel import price at the price they can bring it in, the parallel importers, so their blended price, it is a combination of the Seroxat higher closed price and the matched price, the parallel imports. They had made a decision earlier, right, to match with the brand equalisation deals. To do that matching for a segment of the market where there was another segment where they were not having direct business relations with the

smaller accounts and so the parallel imports were not choked off by the brand equalisation deals there. They came in and that was the situation prior to the agreements.

MR. MALEK: What do we take from the fact that there is no dramatic fall in price when you have the generics taking the product? How does that feed in with the parallel importers? Why could they not lower their price even more, or is there some constraint on their own buy-in price before they sell it on?

PROFESSOR SHAPIRO: The parallel importers could not respond to lower prices. You see this in some of the evidence. Simply they have an arbitrage opportunity, you know, it is purchasing it in France or whatever, and some transport and other costs, and so in the view of the economist, there is an elastic supply, it means they can bring in quite a lot at a certain price but if price goes down, so the arbitrage opportunity evaporates, they go away. So we do not see them lower the price. If you look at -- there is a figure, 3.1, page 169 of the decision, shows that the parallel import price did not fall and then the parallel imports as -- they declined in sales and then evaporated.

MR. MALEK: That would -- I would take from that they are not able to get the product sufficiently cheaper to bring it in, is that right?

PROFESSOR SHAPIRO: Yes, I think that is exactly right. Let me put it slightly differently. There is a certain price at which they can get the product, let us say France. They can get quite a lot of it at that price and bring it in. If the UK price falls below the level that that is a profitable arbitrage opportunity, they will not send it here anymore, so that is why once the price falls, they are gone. They cannot lower the price because they cannot make money at a lower price.

So if you then accept this elastic supply by the parallel imports and now you ask -- everything else falls into place. So GSK, when the generics come in, they say: well, look, we are going to displace parallel imports not entirely, I agree with Dr. Stillman, but what price do they have to charge to do that? A little bit below the parallel imports because the parallel imports cannot respond. So a little bit below. This is what you see in the documents at the time, right? The companies all expect -- the evidence is very consistent on this, how they valued a lot of the quantities and what Mr. Reilly expects in terms of everything going on is the generics will essentially match the parallel import price and displace them and we see they displace some Seroxat sales too, I am not disputing that. It is not a completely sharp thing, but here is the key, nobody has an incentive to price below that.

The generics have to come in just a little bit below the parallel import price to get the sales and GSK, they have no incentive to lower the price either of Seroxat and they do not, and everybody saw this was coming. So we have a very nice alignment between all the documents at the time, what the companies thought was going on, which certainly one wants to look at; what the dominant firm competitive fringe model tells and predicts what would happen if you assume elastic supply of parallel imports, so they cannot lower the price which fits with the data and you assume that the generics are paying a standard margin to the wholesaler just as part of the cost of doing business, they have to match the price of the pharmacy level and the wholesalers get their margin as part of that.

Everything fits perfectly and this explains why these transfers of quantity were equivalent to cash.

THE PRESIDENT: Dr. Majumdar?

DR. MAJUMDAR: Thank you, sir. Professor Shapiro has made a large number of points. I shall try to address them as succinctly as I can.

I think the first -- and this is an important issue -- is to remember that there are two levels, there are wholesalers and pharmacies. What Professor Shapiro said in relation to GUK and their profit guarantee clause, he said: well, actually I do not see any evidence of GUK dumping its product.

But if we are interested in understanding the impact on GUK's price, why do we not just look at its price. So we are talking about ex post data now. It has been mentioned. On the CMA's own numbers, GUK's price fell by 14% compared to the price of parallel imports. This is on the CMA's own numbers.

THE PRESIDENT: GSK's price --

DR. MAJUMDAR: GUK.

THE PRESIDENT: I am sorry, GUK.

DR. MAJUMDAR: Apologies if I said GSK. GUK's price fell. This is the price to wholesaler because the wholesalers are GUK's direct customers, it fell by 14% relative to parallel imports --

THE PRESIDENT: When you say fell, you mean they charged 14% less than parallel imports?

DR. MAJUMDAR: Correct.

THE PRESIDENT: They were not charging anything before then, no product.

DR. MAJUMDAR: Exactly. So GUK entered the market. Its weighted average price to wholesalers, its direct customers, was 14% below the weighted average price of parallel imports over the same period.

MR. MALEK: Can you give me the reference in the decision to that?

DR. MAJUMDAR: The decision does not cover that, because the decision only covers the prices to pharmacies, sir.

MR. MALEK: Where do we get that figure?

THE PRESIDENT: You say this was established by the CMA?

DR. MAJUMDAR: Yes. This is established using the CMA's numbers. So this is a point of agreement in the second joint statement, let me find the reference for you, sir.

MR. MALEK: Okay.

DR. MAJUMDAR: It is at point 25 in the second joint statement on page 51. {I/2/51}. The statement is:

> "For the period in which GUK was active ... the weighted average price of Authorised Generic paroxetine sold to wholesalers was 16% lower ..."

I said 14%, it says 16%. So it was a material reduction. Ms. Webster, the CMA's expert says:

> "I agree that these numbers can be calculated using numbers presented in the CMA Decision."

She does not agree that they are informative but there is no dispute that the implication of the numbers used in the decision is that the price to wholesalers fell in this case by 16%, so that is an important point.

MR. MALEK: But does she not point out that the numbers are based on the estimated PTP of parallel imports, that the CMA believed to be overstated, which she agrees? So there has to be some sort of adjustment. You are saying she has agreed these figures, I don't think she has.

DR. MAJUMDAR: If her maximum sensitivity is that the price of parallel imports is overstated by 5% and in that case --

MR. MALEK: Whatever it is.

DR. MAJUMDAR: -- I disagree with that strongly, but I am sure we will come onto that on Monday or Friday. I disagree with that strongly. Nonetheless, even if one accepted that in my view extreme sensitivity, then, one would still observe a reduction in the price to wholesaler of 10% to 12%, something of that order of magnitude, a substantial price decline on the CMA's own numbers here flexed by an extreme sensitivity.

So this is an important point which, as I say, is missed because of the focus on the price to pharmacy.

So then we ask ourselves why did this large reduction in price to wholesalers occur?

Professor Shapiro is arguing that wholesalers are perfectly competitive in effect. His working assumption is that any mark-up wholesalers obtain, any revenue they obtain is exactly offset by their costs.

Now, I disagree that that would be my expectation. The reason is, where wholesalers negotiate with the entrants, where they negotiate with GUK, for example, then, it would only be in the most extreme scenario that the wholesaler would be left with its fallback option. So the wholesaler's fallback option if it does not get supplied by GUK is to buy parallel imports. What Professor Shapiro says is that GUK would offer the wholesaler a price some tiny, tiny amount below the price of parallel imports, that is to say GUK has the entirety of the bargaining power. It has all the bargaining strength and it leaves the wholesaler really no better off compared to buying parallel imports. What I say, sir, is that is quite an extreme approach to take.

If you permit wholesalers to have some negotiating strength, it doesn't have to be the upper hand in the bargain, but some negotiating strength, then they will be able to negotiate some price reduction relative to their alternative of purchasing parallel importers and that is what we see in the data.

So, once we move away from this extreme assumption of wholesalers engaging in perfect competition, in my opinion, Professor Shapiro's arguments start to unravel. So we already explained now how the absence -- once we move away from perfect competition among wholesalers we can explain how wholesalers were able to get lower prices than parallel importers. A very important point.

The second point I want to emphasise -- now we are moving down to the next level of the supply chain, so we have explained that wholesalers benefited from a material reduction in price. Then we move to the next level of the supply chain --

THE PRESIDENT: Just to be clear about, what you are saying is that the wholesaler negotiating with the generic, with GUK, its only bargaining power is to say we will buy from parallel importers? If it is going to buy Seroxat, GUK knows that is more expensive, so that is the only lever it has?

DR. MAJUMDAR: Correct, sir. It is the only lever it has got, in fact, the wholesaler could not buy Seroxat because it was sold directly to --

THE PRESIDENT: GSK was selling direct to pharmacy by this point. So is it effectively by skilled negotiating and bluffing that they are able to get GUK to come down 10%, 16%, whatever it is?

DR. MAJUMDAR: That is what the data seemed to suggest, sir. If one thinks about this intuitively, when the entrants obtained their product, the bargaining pie per pack, if you like, substantially increased. So with parallel imports it may be that the price of buying in parallel imports was quite high such that there was not that much of it, if you like, a bargaining pie available to negotiate over.

But when the entrants got their product, they were supplied this product at £8.25 per pack, substantially lower than the price of parallel imports, which means you have this large amount of what you might call bargaining pie per pack. I am not saying wholesalers had the upper hand in the bargaining, but if they had some bargaining strength and they take some amount of that relatively large bargaining pie, then they will get a material price reduction and that, sir, is the implication of the numbers in the CMA's decision. As I say, my calculations are undisputed, sir, in terms of the calculations.

So that is important. Now, what happens in the next level in the supply chain? Wholesalers will keep some of that gain for themselves and they will pass on some of that gain to pharmacies. Wholesalers will lower the price to pharmacies. This will create competitive pressure for GSK because now the entrants' product are sold at a price below the price to pharmacy of parallel imports, below the price to pharmacy of Seroxat.

What does one then see? One sees switching -- this is what you have seen in the chart, sir -- away from Seroxat to the lower price generic products. This is important, sir. This is why I wanted to emphasise that in the dominant firm fringe model it is assumed that everyone charges the same price, so to then say: oh, the price of Seroxat did not fall very much, if one assumes everyone charges the same price, that is incorrect because in practice, even if the price of Seroxat did not fall very much, because the price of the entrants' products when sold by wholesalers to pharmacies was lower than the price of Seroxat, that is why we see the switching and that is what causes again the reduction in price at the pharmacy level as well.

So we have two effects. We have a reduction in price of the wholesalers, some of which is passed on causing a reduction in prices to pharmacies.

None of this is properly captured in the dominant firm model and yet these are really important points for us to understand the impact on competition relative to the no entry agreement.

THE PRESIDENT: Before going back to Professor Shapiro, can I just understand a couple of things you said about the wholesalers. They now get, as you say, a choice between the PI

suppliers and the generics. In your report which we had open for the chart at page 12, I think it is internal page 12. {G/6/13}.

DR. MAJUMDAR: Yes.

THE PRESIDENT: When you say there, the second bullet:

"Wholesalers compete in selling to pharmacies ..."

That is compete with the parallel importers, or is that what you are referring to? That is what you have just been describing, is it?

DR. MAJUMDAR: When selling to pharmacies, wholesalers will be competing with other wholesalers and they will also be competing with GSK. So GSK sells directly to pharmacies, and so wholesalers also sell to pharmacies and the point I am making, sir, is because wholesalers obtained a lower price of paroxetine as a result of the supply agreement, that gave them the ability to lower the price to pharmacy of the entrants' products which in turn caused pharmacies to switch from Seroxat to the entrants' products which is what we see in the chart, sir, and in turn caused competitive pressure to go up, ie the competitive pressure faced by GSK to go up.

So there are three customer benefits occurring. There is the gain to direct customers, ie wholesalers at the wholesale level, that is the first gain which in and of itself is to my mind sufficient to say that competition has gone up. There is the second effect where wholesalers pass on lower prices to pharmacies, which is an additional gain experienced at the pharmacy level and when pharmacies switch away from Seroxat to the entrants' products, that is what they experience that gain, and then, third, to the extent that the price of Seroxat falls, there is a third gain as well.

Now the CMA has focused on that very final part, the price of Seroxat, but what it has not really looked at are these other prior points, ie the gain by wholesalers and the gain by those pharmacies that switch to the entrants' products.

MR. MALEK: Dr. Majumdar, where do you get the necessity for GUK to price its product 16% lower than the parallel imports?

DR. MAJUMDAR: No, GSK did not --

MR. MALEK: I said GUK.

DR. MAJUMDAR: Why did it do that, sir?

MR. MALEK: Why was there a necessity for doing that. Why do you have to price it 16% lower than the parallel import, if the parallel import price is correctly calculated?

DR. MAJUMDAR: So the -- well, in the case of GUK, one possible explanation would be the profit guarantee clause, sirs, which as discussed, it could lower its price and GSK would make it whole. That would be one reason.

We know that GUK had the largest market share by the end of the period of the three entrants at 27%, so it was certainly keen to sell its product.

THE PRESIDENT: It would sell all its product because it is less than -- it and Alpharma they were guaranteed selling their product because they are going to be cheaper than Seroxat?

DR. MAJUMDAR: Sorry, sir, I do not think anyone is guaranteed to sell their product. They have the price --

THE PRESIDENT: The demand is inelastic, is it not, for paroxetine in the market? It is not a price-sensitive demand, that is common ground, is it not?

DR. MAJUMDAR: Yes, sir, but in order for the entrants to sell their products they have to sell -- given that they sell via wholesalers -- they have to sell at a price to wholesalers that is low enough to induce those wholesalers to charge a price that is low enough to get pharmacies to switch away from Seroxat to the entrants' products, sir.

THE PRESIDENT: Going back to Mr. Malek's question, you can see they might have to undercut the parallel importer a little, although one bears in mind that the market prefers GSK's source product and there is a disinclination to take parallel imports, overcome if the price is cheap enough, so they have to match it or go a bit below, but what is the explanation for saying it is as much as 15%, 16% or even 10%. That is a dramatic reduction?

DR. MAJUMDAR: It is, sir, but I must emphasise this is very much the implication of the CMA's own figures. So even if one disputes the price of parallel imports, one still has a decline in price of 10% to 12%.

THE PRESIDENT: But as an economist how can you explain it?

DR. MAJUMDAR: As an economist this goes back to my bargaining story.

THE PRESIDENT: The bluffing by the wholesaler?

DR. MAJUMDAR: Yes, sir. It could be bluffing or it just could be a straightforward negotiation. If one has -- as I say, effectively what happens is the size of the bargaining pie has gone up because now the entrants buy in -- effectively GUK supplied at £8.45, which is a much lower price than parallel importers. So the bargaining price, if you like, defined by the £8.45 and whatever it sells at, that is the amount of surplus -- the bargaining by it. What wholesalers -- if they just obtain a small percentage of that, they could potentially get a material price reduction. They are just negotiating some of the available bargaining pie for themselves, sir. It is as simple as that. Let me put it an alternative way.

If you assume that the entrants only undercut parallel imports by a tiny, tiny amount then implicitly you are assuming the entrants have all of the bargaining strength which to my mind would be an extreme assumption. I am simply saying that a more sort of balanced assumption is to assume that they had some negotiating strength and then were able to get some reduction in price. How much of a reduction then becomes an empirical question which we identify by looking at the CMA's dataset.

MR. MALEK: Let me get this right because I want to make sure we are looking at the right levels at the same time. Are you saying that the wholesalers were getting this product from GUK at a price 16% lower than they could have got the same product from the parallel importers?

DR. MAJUMDAR: That is very much, sir, the implication of the figures used in the CMA's decision, yes.

MR. MALEK: You are not looking, for example, that this price is 16% lower than the cost of parallel importers to pharmacies, you are saying the wholesalers themselves were getting it 16% lower than they were getting it -- they could have got it from the parallel importers?

DR. MAJUMDAR: I can explain it in another way, sir, if it would help.

MR. MALEK: Is that right?

DR. MAJUMDAR: Absolutely. Let me explain this in another way. It relates to the CMA's own assumptions on wholesaler mark-ups. What the CMA says is that when wholesalers sold parallel imports, they would mark them up by about 5%. When GUK sold -- when wholesalers sold GUK's product, the CMA says that they were marked up by 20%, so that is a lot more than the mark-up on parallel imports.

Now, how did these higher mark-ups arise? It was not because there were higher prices charged to pharmacies. No one is arguing that. So how then did these higher mark-ups arise? The only way they could have arisen is where the wholesaler retained the product at a lower price, otherwise it would not have been possible to obtain the mark-ups that the CMA said they obtained.

MR. GLYNN: And their willingness to do so would have been constrained by the provision in the agreement, which Professor Shapiro is pointing us to earlier, that they are in some obligation to try to sell at the normal commercial price or some concept like that?

DR. MAJUMDAR: I do not know the extent to which there was a binding obligation on GUK to charge any particular price.

As I say, sir, I am merely going on the data undisputed, my calculations are based on the figures in the CMA's decision.

MR. MALEK: The thing is, there are different ways of looking at it. Maybe the figures are not quite right or maybe you are using them in a not necessarily inappropriate way, it could just be a mystery. We will probably get down to this in detail when we deal with the second joint statement.

THE PRESIDENT: Would you expect such a large fall in price to happen?

DR. MAJUMDAR: I do not think theory necessarily tells us how much of a price fall they would be expected to obtain because that depends on relative bargaining strengths. Therefore, as an economist I say if theory does not precisely tell us, I will look to see what the data tell us, sir, and as I say, the implication of the CMA's mark-up assumptions is that they did get a better price.

THE PRESIDENT: So that is on the wholesale. Just before turning to Professor Shapiro, you also said this would, and I think you say it in your passage in your report, at the next but one bullet:

> "... the preceding ... dynamics could induce GSK to lower the [price to pharmacies] ... to stem the loss of share to the Entrants' products."

Just picking that one up. GSK would have realised, would it not, on making the agreements, they are giving them the volume to the generics, they are giving them a price they know the generics are going to sell it below the Seroxat price, are they anticipating they are going to get into price competition with the generics? Would they do that?

DR. MAJUMDAR: Sir, in terms of -- again, this goes back to a kind of mindset question, so I do not know --

THE PRESIDENT: I am not sure it is a mindset question, Dr. Majumdar. I think it is saying look at the agreement and take an objective view, what is the rational expectation one can have if here a monopoly supplier is giving a certain volume to someone else and saying: well, you can sell it on this market, we know, everyone knows they are going to have to sell it at a lower price than the branded product. Is it rational that by doing that they are wanting to enter into price competition with them?

DR. MAJUMDAR: It is possible that they did not expect the impact to be as great as it appears to be looking at the data. As I say, one looks at the data and I do not think it does tell a consistent story because we do see so much switching away from Seroxat to the entrants' products. It does tend to suggest, sir, that they were priced to attract -- to induce those pharmacies to switch.

Now your question, sir, is why would GSK permit that to happen.

THE PRESIDENT: No, my question was different, I am sorry. I am saying it seems to me blindingly obvious, but I may be naive about this, that in giving that volume to the generics, the generics are going to sell that volume at a lower price than Seroxat and therefore they will be switching from Seroxat to the generics to that extent. That seems to me, in this market with inelastic demand, that everyone must have realised fully that is what is going to happen. So my question is, would it be rational for GSK to then be doing this on the basis it is going to be responding to those lower prices by reducing its price?

DR. MAJUMDAR: I think, sir, my answer to that is it is not only GSK that is determining the amount of product the entrants are getting. If the entrants are negotiating for themselves higher quantities then it may be, sir, that ideally GSK would not have given them as much as it did because by giving them that amount it did create additional price competition. However, the entrants were keen to get hold of those higher volumes, negotiated for them and that is what has caused greater competition than ideally GSK would have liked, sir.

PROFESSOR SHAPIRO: Could I get in?

THE PRESIDENT: Yes.

PROFESSOR SHAPIRO: Thank you. So I very strongly disagree with a lot of what has just been said. I take great exception with the economic analysis. I regret that we are doing this late in the afternoon, because I think this is quite important at this stage, but here we are.

THE PRESIDENT: We have got tomorrow morning as well.

PROFESSOR SHAPIRO: I am going to slow down a little bit because it is tricky, particularly -- there is a lot of economics here, there is a model behind it, but it is fundamental. What I want to convey, we will take as much time as we need, is that my previous statement about the dominant firm competitive fringe model, the story I told, Dr. Majumdar has said: no, Professor Shapiro is leaving out this thing, and that other piece, and the wholesalers and the whole thing. The more closely we look the more the pieces mesh together in the way I am presenting this. It is not that I have ignored anything, it explains all the things, including the question you asked, Mr. Malek, all the pieces. So let me start, and I will do some of them.

First, in the model all the products are identical so they all sell at the same price. We have a twist here, right, which is in reality, the Seroxat is not exactly the same as the generic, is not exactly the same as the parallel import. There are some quality differences, would be the term I would use, as perceived by the customers.

Paroxetine commands some premium because it is the brand and known, and the generics, as I understand it, would also be slightly more attractive than parallel imports because they do not have the packaging issues. So does the model somehow fall away or become less useful? Not at all. All we do is conceptually just think of these as quality adjusted prices. So the price of generics, for example, is somewhat lower than Seroxat, because it is not quite as attractive to customers. Once we have these quality differences, everything goes through in the model normally with quality adjusted prices.

That is important when you start to interpret the price evidence ex post because what we do see by design and expectation is a shift away from Seroxat sales towards generics. Because generic is not quite as good in consumers' eyes, it is going to sell at a slightly lower price, so even if we have no change in quality adjusted prices, as the generics' share goes up we will see a slight decline in measured prices, because the generics are a larger share of the market. So in the joint expert report I said the best price to look at is the weighted average price at the pharmacy level and I would just add, yes, but you also need to realise that over time there is a change in the mix and so the quality adjusted price changes over time and the quality adjusted price are not the same as in the measured price and you would expect some small reduction in the measured price because of the increase in generics that does not reflect additional competition, it does not reflect additional benefits to the pharmacies, it just reflects the fact they are buying more generics and less Seroxat in the mix.

So the first point was simply all this discussion about quality and how the products are not exactly the same, completely accommodated in the model and has some implications in terms of interpreting the ex post price evidence that I just mentioned.

Second, switching. Dr. Majumdar uses the word switching and it is certainly true that pharmacies switched over time from Seroxat to generics and they also switched from parallel imports to generics. He is using the term as I hear him to imply that that means there is competition. That does not follow.

The fact that the generics were allocated these fixed quantities, it was completely predictable both by the business people at the time and by an economist looking at this that there would be a shift in share and switching in the sense, but that does not imply there is price competition or competition and we will come back to that, but the shift in share is in fact, in my view, the sharing of the monopoly profits and the transfer of margins, not the creation of competition.

MR. GLYNN: May I just ask, the process by which the shift takes place could fairly surely be described as a competitive process. I mean, there is competition between the wholesalers

and between the parallel importers and the generics for the business. I was thinking about competitive process, there is a material increase in the competitive process somehow.

PROFESSOR SHAPIRO: I would put it this way -- that is a fair point -- let us talk about the generics displacing the parallel imports, which is a lot of it -- it is very obvious. I would definitely call that a form of competition, okay, no problem with that. For reasons in my previous statement, as I said maybe an hour ago, because of the parallel import elastic supply for the arbitrage opportunities, that competition did not lead to any meaningful reduction in price. It was predictable that switching would occur without meaningful reductions in price and therefore benefits to the pharmacies.

I would not resist calling it competition.

MR. GLYNN: Without some reduction in price we do not how much it would be until we have gone further into just how elastic the supply of parallel importers was, for example.

PROFESSOR SHAPIRO: That is fair. The way I think about it is it is a really very elastic supply of parallel imports and that is consistent with the ex post pricing evidence, it is consistent with what people expected at the time in terms of the displacement. Dr. Stillman raises a fair point: if it took a significant reduction in price to kick out the parallel imports then that would be a different situation. That does not seem to be the case, okay, but that is an important question for you to look at factually. So that is the switching.

Now, the wholesalers. As Dr. Majumdar has emphasised, the CMA's data in the decision indicates that the price to wholesalers for GUK was significantly below the price that the parallel importers had set. I think you asked why, what is behind that.

So here is the answer. The generics all recognised, everybody recognised, that they need to match the parallel import price at the pharmacy level in order to displace the parallel imports. As I was just saying, pretty much right at that, a few pennies below that perhaps. That was their business judgment, that is how everybody saw the market working. They used wholesalers to get to the pharmacies, so they have to pay the wholesalers for that service.

The wholesalers in this trade have some standard mark-ups which are considerably higher for generic products and lower for parallel imports and for branded products. So they have a higher mark-up -- just the rules of thumb, they do this based on large portfolios of drugs. They are moving hundreds of drugs. They do not do this under -- it would be impractical. So they have standard mark-ups, and it is true that the mark-up that the wholesalers charge to a generic is higher than to parallel imports. So this is the answer to your question, sir.

When Alpharma said: we have to match the parallel import price at the pharmacy level they then said: all right, we are selling through wholesalers, so we will give them their normal cut, and that cut was larger than it had been for parallel imports. So even though they are matching the price at the retail level, they are offering a lower price at the wholesale level because the margin the wholesale is charging is higher for them than it had been for parallel imports.

That does not reflect, in my view, the bargaining power of wholesalers. It reflects the standard mark-ups that are done on large portfolios of drugs from a very competitive wholesaling business. So that is perfectly consistent with the model that I have been articulating which is there is a competitive wholesale activity, there are certain prices they charge for distributing different types of drugs. That is a cost of business from the point of view of the generic, they paid that cost and matched it to pharmacy level and then they did not get quite as much themselves because they had to pay the wholesalers this cut, and the wholesalers received their standard competitive cut which is larger for generics.

The notion that there was bargaining here and that the wholesalers were able to capture a share of the bargain, this is, I think, very much mistaken, I strongly disagree.

Dr. Majumdar pointed to the 8.45 price that the generics pay and said: well, there is a lot of profit to be had from that drug because 8.45 is well below the price you can get. That is true. That was the transferred margin. That was the profit that the generics were given as part of the deal with GSK. But that is not to be bargained with with the wholesaler. If the wholesaler tries to get some of that, you go to another wholesaler. The wholesaler gets their standard margin here. I do not think anybody would say if the GSK transfer price had been £5 instead of £8 something, that the wholesalers would have gotten more of that. I can't imagine anyone in the industry would say that. The wholesalers are competing against each other. If there was one wholesaler, the only one you could go through, maybe they could get a piece of that, that would an issue, that would be a problem from the generics' point of view. That does not make sense in a competitive wholesaling industry.

I think I have answered your question about why they offered the lower price to the wholesalers. It is perfectly consistent with matching prices at the pharmacy level.

All the pieces fit together, like I said, I think rather beautifully. I think the main -- I would focus your attention on this question: at the pharmacy level did the generics have to significantly undercut the price of parallel imports in order to displace them?

In other words, think of a generic going to the pharmacy, indirectly through the wholesaler, but trying to sell at the pharmacy and they pretty much offer just a little bit better deal than the parallel imports and displace them. That is the story. I believe that is correct.

Or was there an expectation, a reasonable expectation they would have to offer a significantly better deal to the pharmacy in order to win that business and move the product that they had? I think all the evidence here lines up to the fact that they did not have to offer a materially better deal and that is why these transferred quantities -- everybody at the time who was looking at this, what did they do? Particularly the generics, they are trying to work out how money is being transferred to us, how much value? And they are trading off dollars and quantities. The example that was given earlier about Alpharma and the discharge of the additional £500,000 of obligation that GSK had to Alpharma, a perfect example. £500,000, they gave 120,000 packs. It is a little over, it is like £4.20 per pack. How did Alpharma figure that that was worth £500,000? They see this when they initially negotiated all the deals. They are looking at the margin -- what they can get selling to the wholesaler compared with the 8.45 that they are paying, that is their margin. How did they figure out what they can get from the wholesaler? They match the pharmacy price and they back out the standard wholesale margin. It is exactly equivalent to cash transfer.

THE PRESIDENT: May I ask one follow up and one additional point that I am not sure you responded to. The follow up is does it follow from what you are saying that therefore the wholesaler is going to be better off because it is now getting its larger mark-up on the generic than it did with the parallel importer where it got the smaller mark-up, even if the price to pharmacy is pretty much the same, the wholesaler is going to benefit if it keeps that entire larger margin which I think is one of the points Dr. Majumdar was making?

PROFESSOR SHAPIRO: Assuming there are no significant differences in cost for the wholesaler of moving one versus the other, which I would not expect them to be particularly large, then I think that is correct. The way I think about it is the standard wholesaler mark-ups, we have rules of thumb, like I said, for obvious reasons. It just so happens that these generics have a higher mark-up. What happened here is this is a very high priced generic. Generics are usually cheaper. This is a high priced generic because it is basically been priced close -- at the parallel import price for Seroxat. So from the wholesaler's point of view, this is a nice thing. They are moving more of this generic, they get the standard mark-up on a higher price. It happens to be described in terms of per cent of price. If it were dollar per unit, the thing wouldn't happen.

THE PRESIDENT: Or even pounds per unit.

PROFESSOR SHAPIRO: You got me on that one.

THE PRESIDENT: So if one is looking at lower prices to wholesalers, which is one of the points Dr. Majumdar -- I think you are accepting, there is that "benefit"?

PROFESSOR SHAPIRO: I am accepting that. The way I prefer to think about it. I think that is the facts that we have described. The way I think about it, sir, is that the wholesalers, because of the standard -- the generics, because of the standard way the distribution markets work, had a higher cost of distribution than the parallel imports because the wholesalers charged them, let us say, 20% rather than 3% to 5%. That was a slight drag on this whole scheme, if you will. In other words, by transferring the margin to the generics, the generics essentially had to pay an extra cost to the wholesalers. It look a little bit away from the pie that was available to GSK and the generics because the wholesalers got a cut there. That was a slight drag on the overall joint profits but it was still well worth it because they avoided independent generic competition.

THE PRESIDENT: Yes, thank you.

Then the additional point was Dr. Majumdar also spoke about this being a competitive constraint on GSK. You did not respond to that point, I think.

PROFESSOR SHAPIRO: Thank you, I had enough notes but I think I did not have that one.

So, look, GSK knows that the generics will sell their allocated quantities. Everybody knows that. Unless, basically, things go in a very weird direction and the price falls below 8.45 and the deals are all off, but assuming things hold together, that is what is going to happen, and this is what the dominant firm model fully takes account of. That reduces the available demand left for GSK, but it is not leading to any price reduction. That is what the model is telling us, particularly with the inelastic demand, but even without that, because of the displacement of parallel imports and the GSK/GUK profit guarantee clause.

I guess to be more -- just to make sure I have directly answered your question, there is no reason for GSK to lower their price, let me put this way, what is in it for them? They are not going to get these guys, the generics, not to sell their quantity. They cannot get them out. They are going to sell their quantity.

Once parallel imports have been displaced by the generics, there is no parallel imports to displace so what would GSK get for lowering their price? Nothing in terms of extra volumes. It is not possible. Now, in the standard textbook model, lowering the price would increase the total demand for the product, so there might be something there, it would need to be tested empirically. Here we have all agreed that is not the case. So there is no

incentive for GSK to lower their price. GSK did not plan to lower their price. Nobody thought they would. When they valued the quantities being transferred they used prevailing prices, the model says that is not going to happen and GSK did not in fact lower the price of Seroxat, it all lines up.

MR. GLYNN: Except to the extent that these brand equalisation deals meant a reduction in the average price following from a shift in the share of different sources of supply.

PROFESSOR SHAPIRO: Right. So that is unrelated, I think, to these agreements.

MR. GLYNN: Well, yes, it is.

PROFESSOR SHAPIRO: Excuse me?

MR. GLYNN: Indeed, I agree.

PROFESSOR SHAPIRO: So that would be a reason why we would expect to see the Seroxat price fall a bit over time as there are more contestable prescriptions and I know Ms. Webster addresses that point. So that, if anything strengthens the CMA's case here because even if there were a small observed price decline of Seroxat, which is disputed, some of it would be attributable to this point and having nothing to do with the agreements.

DR. STILLMAN: Mr. President, may I speak? It has been a while.

THE PRESIDENT: Yes.

DR. STILLMAN: I want to just observe one thing. As this discussion has continued, we have moved a long way away from where we started which was basically suggesting that a relevant consideration was the volume allocated to the three generic entrants relative to parallel imports. We are away from that completely and we are into what I think is more appropriate territory, namely thinking about a model where we have to consider the elasticity of the parallel imports and as Professor Shapiro is suggesting, if you had a highly elastic supply of parallel imports, you would not expect to see much price response, price reaction, resulting from the entry of the generics. I agree completely with Mr. Glynn that one would need to understand more precisely how elastic that supply is because you would take -- it would require some reduction in price in order to displace the parallel imports but I agree that it is an empirical question and we do have the apparent empirical fact that there was not much of a change in price. That is just to note that, but we are on different terrain than we started off this afternoon.

A second point I want to make is that, as I said, an hour and a half ago, whenever it was, one of the things that one would predict would be a shift in shares. Professor Shapiro says: of course, that was to be expected given the nature of the agreements. Nonetheless, we do see, as one would expect, a shift in shares and that did result in a reduction in the average

costs paid by the pharmacists, and as we go to a point in the joint statement on internal page 6.12, which Professor Shapiro responded to, or actually elaborated on, what we had agreed on in statement 12 --

THE PRESIDENT: Sorry, internal page 6?

DR. STILLMAN: External page 8.

{I/1/8}. Maybe you just want to read the statement and Professor Shapiro's agreement. He has modified that agreement during his remarks this afternoon, but I want to comment on that also. But this is the starting point. We had great that the price that one could use to assess the competitive effects at the pharmacy level was the weighted average price in the market, taking into account the price of Seroxat, the prices at which entrants' products were sold to pharmacies and the parallel import prices.

What Professor Shapiro said a few moments ago is one also needs to consider that when one is having some substitution away from Seroxat to generic supplies that there is a difference in quality and that somehow should be taken into account in the calculation. I would simply observe that when one is looking at the pharmacy level, pharmacists are getting the same reimbursement price from the NHS whether it is a generic or Seroxat, when the drug is being supplied pursuant to a prescription that specifies paroxetine as opposed to being a branded prescription.

So from the point of view of the margin, the financial margin that the pharmacist is realising, it is better off when its average costs are down. Simple point.

We then say is there not, on the other hand, some quality issue to be taken into account because that price difference exists for a reason and why is it? It must be the patients are preferring Seroxat to the generics' supplies. I would say if we want to go down that path then we ought to start thinking about impact on final consumers and what kind of effect there is on the patients. Is there to some extent to which these agreements have had a negative effect on patients very marginally because of the reduction of Seroxat are now being more supplied by generics; but once I am down to final consumers I am looking at the patients and the NHS.

THE PRESIDENT: Thank you. We certainly do want to go on to consider the effect on average price of paroxetine because it seems to me it follows from the shift in the mix of what is sold on the market, there is less Seroxat, there is more generic or there was what was parallel import and a lot more. Now it is generics, it is going to change the average price in some ways.

That is one aspect we want to look at. I think we will need to also revisit a little bit this question of understanding the significance of wholesalers that Dr. Majumdar devotes most of his report to. I think we will come back to that tomorrow morning.

Has counsel reached any view about the second stage of the experts evidence? That is to say the matters covered by the second joint statement and whether it is important to have two and a half days or whether two days will be sufficient?

MR. TURNER: Sir, I have notified my colleagues of the CMA's position which is that we can fit the cross-examination of Dr. Majumdar and Dr. Stillman on the ex post pricing matters within a day and so there should be no problem from our point of view starting that cross-examination next week and therefore that gives more time for the hot tub.

THE PRESIDENT: That will give you more time to cross-examine on this part tomorrow. Mr. Flynn and your colleagues, you of course are only cross-examining Ms. Webster, would a day be between you sufficient?

MR. FLYNN: We had not -- that was something you suggested we might reflect on overnight, sir, and I am afraid --

THE PRESIDENT: You have not had a chance to do that. Think about it. We think that might be desirable but we will not decide that now.

MR. FLYNN: I hesitate to suggest it, but might it, in any case, be possible to start a little earlier tomorrow?

THE PRESIDENT: We are not very keen on that for various reasons. We prefer to start at 10.30 am. But if that is slightly affected by this -- you have not had a chance to think about it.

MR. KON: I can confirm that Dr. Majumdar is available on Monday morning because originally he was going to be available solely tomorrow afternoon. So we would have a stronger preference for Dr. Majumdar to be cross-examined on Monday morning.

THE PRESIDENT: Yes, I had not realised there was a problem about Monday.

MR. KON: There is not.

THE PRESIDENT: I do not know Ms. Ford and Mr. O'Donoghue if you are able to express any view? You have not talked to Mr. Flynn yet about the cross-examination of Ms. Webster.

MR. FLYNN: Perhaps we should talk straight after court and try to send a message to the Tribunal this evening, sir.

THE PRESIDENT: If you can do that. We think it would be sensible not to -- I appreciate there is a lot of detailed stuff, as it were, in the other areas, but I think there is a little more to deal with on this part and you may wish to ask questions on it and we will be quite compressed. Whether we start at 10.00 or 10.30 we have to finish by 1 o'clock.

MR. FLYNN: I entirely understand. I suggest we have a word straightaway and we will send a message.

THE PRESIDENT: Let us leave it open but we will start at 10.30 am tomorrow.