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**IN THE COMPETITION**  
**APPEAL TRIBUNAL**

Case No: 1403/7/7/21

Salisbury Square House  
8 Salisbury Square  
London EC4Y 8AP

Friday 14<sup>th</sup> February 2025

Before:  
Ben Tidswell  
Dr William  
Bishop  
Tim Frazer

(Sitting as a Tribunal in England and Wales)

**BETWEEN:**

Dr. Rachael Kent

**Class Representative**

v

Apple Inc. and Apple Distribution International Ltd

**Defendants**

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**A P P E A R A N C E S**

Mark Hoskins KC, Tim Ward KC, Michael Armitage, Matthew Kennedy, Antonia Fitzpatrick,  
(Instructed by Hausfeld & Co. LLP) On behalf of Dr. Rachael Kent

Marie Demetriou KC, Brian Kennelly KC, Daniel Piccinin KC, Hugo Leith, Hollie Higgins  
(Instructed by Gibson, Dunn & Crutcher UK LLP) On behalf of Apple Inc. and Apple  
Distribution International Ltd

Friday, 14 February 2025

(10.30 am)

PROFESSOR LORIN HITT (continued)

Cross-examination by MR ARMITAGE (continued)

THE CHAIRMAN: Good morning, Mr Armitage. Good morning,  
Professor Hitt.

Thank you.

MR ARMITAGE: Good morning, Professor Hitt. I just have  
a few more questions for you about Steam, then a couple  
of short miscellaneous topics, and then I will hand over  
to Mr Ward on incidence.

So could we start at paragraph 379 of your second  
report {C3/4/213}.

A. Paragraph 379?

Q. You make the point there that:

"Some app transaction platforms also charge for  
app review: for example, Valve charges a \$100 fee, which  
includes game review, for each game that a developer  
transacts on Steam."

So you are seeking to distinguish there between  
Steam and the App Store, which does not have a separate  
charge for App Review; yes?

A. Not necessarily distinguish, just point out that there  
are a variety of fees that can be charged.

Q. Okay. Can we just look at Mr Holt's fourth report,

1 paragraph 60(d) at {C2/11/22}. Do you have that on the  
2 screen, Professor Hitt?

3 A. Yes.

4 Q. So you see Mr Holt is addressing this point:

5 "Professor Hitt does not establish that this fee is  
6 intended to compensate Valve for its investments that  
7 ultimately result in transactions on Steam. In fact,  
8 Valve reimburses developers this fee if they exceed a  
9 certain volume of sales and, in those cases, the fee  
10 cannot be deemed to compensate Valve. The stated  
11 purpose of the \$100 fee is to prevent 'abuse by people  
12 looking to exploit [the] system' of direct publishing  
13 through Steam, not to compensate Steam for its  
14 investment in the Steam ecosystem. Moreover, this fee  
15 is 'recoupable'. That is, Steam returns the fee to the  
16 developer once the corresponding title has billed at  
17 least \$1,000 from paid downloads or in-app purchases on  
18 Steam."

19 So the stated purpose of the fee is to prevent  
20 abuse; yes?

21 A. According to Mr Holt, yes. That is what he said.

22 Q. Yes, according to Steam, I think. He is quoting from  
23 Steam?

24 A. I would have to look at the source, but I will take his  
25 word for it.

1 Q. Okay, and it is reimbursed once the relevant game has  
2 billed \$1,000?

3 A. Yes, I think I recall that.

4 Q. So that is going to be pretty de minimis, is it not?

5 A. Well, yes and no. I do not -- again, I do not know the  
6 distribution of sales on Steam, but a very large  
7 fraction of developers earn relatively small amounts on  
8 the App Store, so that could affect a significant number  
9 of participants, although \$1,000 is not all that much  
10 revenue, I will agree with that.

11 Q. I think you said earlier you are not really drawing  
12 a distinction between the App Store and Steam in  
13 relation to this fee anyway, is that right?

14 A. No, I think that is right. I think -- I understand what  
15 Mr Holt is saying there. I do not think it really goes  
16 to the point that I am making, which is simply there are  
17 many fees that can be charged.

18 Q. Okay. Then the last topic on Steam. Yesterday  
19 afternoon you made the point that data on Steam's  
20 effective commission rates are not available here. Just  
21 for the Tribunal's note, that was Day 22, page 231,  
22 line 25. {Day22/231:25}

23 You know that Mr Holt referred in his report to  
24 a finding in the *Epic v Apple* case that Steam's  
25 effective commission rate was 10.7%, which he refers to

- 1           in his third report; yes?
- 2       A. I know that reference to it. I have some commentary on  
3       that as well.
- 4       Q. Okay. You did not respond specifically to that point in  
5       either your reports or the joint expert statement, did  
6       you?
- 7       A. I do not believe so. I think I have mentioned Steam's  
8       commission schedule as being what it is --
- 9       Q. Yes.
- 10      A. -- and that, you know, I think during the hot-tub we had  
11      a discussion on why that 10.7 I do not think means what  
12      he is using it as.
- 13      Q. Yes, indeed. You said in the hot-tub {Day14/35}, around  
14      line 10, than the 10.7% figure "cannot be true". Those  
15      were your words?
- 16      A. Well, it cannot be Steam's average commission, given  
17      their schedule, and also now that I have additional  
18      information, for example I got an opportunity to look at  
19      the US class action report, and it is -- that number  
20      would be very inconsistent with the numbers that are  
21      publicly reported in there, which show the Commission at  
22      least 22%, depending on how you factor in free  
23      transactions, and the opposing expert said the number is  
24      closer to 27 -- over the period that --
- 25      Q. Okay.

1 A. -- he analysed.

2 Q. Okay. There is no analysis though of Steam's effective  
3 commission rates anywhere in your reports, is there?

4 A. That is correct. I know what the schedule is, but I did  
5 not have, and I do not believe anybody has, data that  
6 gives you the distribution of sales which would be  
7 necessary to compute the effective commission rate.

8 Q. Okay. Moving away from Steam, just a couple of  
9 miscellaneous topics, if I may. I want to start by  
10 going back to something you said yesterday. Could we  
11 look at page 196 of yesterday's transcript at line 4  
12 {Day22/196:4}.

13 So, sorry, at the top of the page, I put to you that  
14 you were quick to point out issues with the comparators  
15 Mr Holt relies on but that you do not present the  
16 comparative picture in your report.

17 You said:

18 "I did not try to do -- it was not something I tried  
19 to do which is go through point-by-point as has been  
20 raised here." And then you said, "I have a general  
21 understanding of the App Store as viewed as a high  
22 quality transaction platform."

23 Then elsewhere yesterday you referred to having  
24 worked with Apple for many years. Is it fair to say it  
25 is that experience, working with Apple over many years,

1           that provides the source of the general understanding  
2           you have of the App Store as a high quality transaction  
3           platform?

4       A.   Yes, in part.  Also keep in mind that my area is  
5           information technology economics.  I have actually been  
6           looking at the evolution of app stores since app stores  
7           really existed, actually even -- you know, Steam went  
8           back in the 2000s.  So it is my general understanding,  
9           and there are certain facts that I think are  
10          particularly important.  I think yesterday I cited the  
11          fact that it is understood that the App Store monetises  
12          at a much greater rate than other mobile platforms, for  
13          example, and that would be consistent with it as well,  
14          and that is based on hard data.

15       Q.   It is your understanding that the App Store is perceived  
16           as safer than the other app transaction platforms?  
17           I will turn up your report on that point,  
18           paragraph 77(d), which is {C3/4/54}, "Safety and  
19           privacy".

20       A.   Sorry ...

21       Q.   Paragraph 77(d) of your second report.

22       A.   Okay.  (Pause)

23       Q.   Do you have that?

24       A.   Yes.

25       Q.   You see at (d), "Safety and privacy":

1            "I understand that the App Store is considered safer  
2 than other app transaction platforms because it  
3 centralises transactions and the app review process."

4            If you look at the footnote, you say:

5            "Apple considers that the centralisation of app  
6 distribution on the App Store permits tightest  
7 controls."

8            Then there is a reference to some -- a page from  
9 Apple's website on that point.

10           Presumably you would agree that a public facing  
11 document about how safe the App Store is, according to  
12 Apple, is not in itself a particularly probative piece  
13 of evidence?

14        A. No, that is just simply describing it. If you take  
15 a look the next footnote down, you can see something  
16 that is a little more data-driven, which is the  
17 observation that there seems, despite the fact that  
18 Apple has a very, very wide public footprint, relatively  
19 small amounts of malware appear on iOS Devices compared  
20 to other devices that use it, you know, there are more  
21 open ecosystems.

22        Q. So the reference to the Apple website is just the  
23 description of the point?

24        A. It is a description of the thing -- of the things that  
25 I think they attribute greater security to, and it seems

1           plausible that could. The ultimate test, of course, is  
2           empirical. I think that my statement that it is  
3           considered safer would be consistent with my  
4           understanding of what the technical experts have said,  
5           notwithstanding the fact that all platforms are exposed  
6           to all sorts of nefarious actors and no protection is  
7           100%.

8           Q. On that point we touched on child safety yesterday. You  
9           said you had not done any detailed investigation into  
10          issues about children being exposed to adult content,  
11          but you emphasise that Apple restricts adult content  
12          which is not uniformly true for other platforms.

13                 Just to pick up one further point on child safety,  
14                 can we call at {D1/838}, please. Have you seen this  
15                 before?

16          A. I do not recall this. Again, I may have seen this, but  
17          I do not recall it.

18          Q. Okay. I think the stamp suggests it was disclosed in  
19          the US litigation. Can you see it is an iMessage  
20          exchange between Eric (FEAR) Friedman and Herve Sibert?  
21          I think "FEAR", rather than being Eric Friedman's middle  
22          name, refers to something called the Fraud, Engineering,  
23          Algorithms and Risk unit, is that a familiar acronym to  
24          you?

25          A. I do not recall this, but we can take a look at the

1 document.

2 Q. We understand that Mr Friedman was head of that unit.

3 Can we just go to {D1/838/17}. Can you see at the  
4 top that Mr Friedman is comparing Apple and Facebook in  
5 relation to safety and privacy issues and describes  
6 Facebook in a slightly colourful way? Then he says:

7 "Our priorities are the inverse ... which is why we  
8 are the greatest platform for distributing child porn,  
9 etc."

10 Then Mr Sibert questions this and says:

11 "... is there a lot of this in our ecosystem? I  
12 thought there were even more opportunities for bad  
13 actors on other file sharing systems."

14 Mr Friedman confirms his view below that.

15 Then and over the page, {D1/838/18}, at the top:

16 "... we have chosen to not know in enough places  
17 where we really cannot say."

18 You said you did not recall whether you had seen  
19 this exchange at the time when you wrote your reports?

20 A. Yes, this is not a document -- I do not recall this  
21 document. I may have seen it but I have no  
22 recollection.

23 Q. Okay. Because you make an assertion in your report  
24 about Apple being safer than other transaction  
25 platforms, and I think we made the point yesterday,

1 really you have given one side of the picture in  
2 relation to the quality issues that you identify and  
3 have not done only proper comparative investigation of  
4 whether there are similar issues in relation to your  
5 client?

6 A. So -- well, first of all, I do not think this document  
7 moves the needle in that respect. I mean, engineers can  
8 speak about a lot of things and, given the context,  
9 I think they are referring a comparison to Facebook,  
10 which is not really a transaction platform and certainly  
11 not one of the counterfactuals here. But more broadly,  
12 for example, I have read the technical expert reports  
13 and described the processes that Apple conducts,  
14 particularly App Review, that should lead to greater  
15 levels of security, and also the statistics, for  
16 example, on malware and such.

17 But, sure, there is a lot of information out there,  
18 but I would say that my take on the collection of  
19 evidence is that Apple is generally viewed as a safer  
20 transaction platform than those that are more open.

21 Q. Well, let us go back to paragraph 77(d), just on the  
22 point about malware. Do you still have that open  
23 {C3/4/54}?

24 A. Yes.

25 Q. You mention a footnote in relation to a study by Nokia.

1           Then in the next footnote you cite a couple of articles  
2           about malware on the Windows Store. I think that is the  
3           same thing as the Microsoft Store, is not it? That is  
4           your footnote 86.

5           A. Yes, that is talking about the Microsoft Store.

6           Q. You appreciate there is evidence in this case of malware  
7           issues in relation to the App Store; yes, discussed by  
8           the security experts?

9           A. Yes, I think there is malware in all platforms, and my  
10          understanding is that there seems to be less on Apple  
11          platforms generally and iOS in particular.

12          Q. You have not done a detailed comparative analysis of the  
13          prevalence of malware on the App Store, as opposed to  
14          malware on the Microsoft Store, for example, have you?

15          A. Detailed, no, but there are certainly references in my  
16          report where I do examine those comparisons, and I think  
17          it is consistent with my overall view that Apple is  
18          viewed as being somewhat safer due to the closed  
19          ecosystem, but, again, all platforms have malware. That  
20          is part of the deal.

21          Q. I mean, you cite some press articles here about the  
22          Microsoft Store, but really your approach to these  
23          alleged quality issues is just anecdotal, is it not,  
24          Professor Hitt?

25          A. No, so I have a general understanding, I have reviewed

1 the materials from the technical experts, I have  
2 specific quotes that are in existence that support --  
3 that are related to these points and support the  
4 assertions that I am making, but I understand that the  
5 relative evaluation of things like security is really  
6 more in the realm of the technical experts, but I do not  
7 believe anything I have said is inconsistent with what  
8 I have understood to be described there.

9 Q. No, but you give a one-sided picture, because you cite  
10 articles about Mr Holt's comparators but you do not look  
11 into the position in relation to the App Store?

12 A. I do not believe so, no. I have considered the totality  
13 of the evidence and my understanding generally, from  
14 having looked at the totality of the evidence, is that  
15 Apple is viewed as a safer transaction platform. I gave  
16 some examples in the documents of some of the reasons  
17 why I believe that is the case.

18 Q. Okay.

19 I have got two more topics, both are very brief. In  
20 the hot-tub you mentioned a number of times that the PC  
21 platforms only implemented lower commission rates  
22 part-way through the claim period. Do you remember  
23 making that point?

24 A. Yes.

25 Q. It is also a point you make in paragraph 206 of your

1 third report.

2 A. I have made that point, yes, in my report. I will agree  
3 with that. We can look it up, if you think that is  
4 important.

5 Q. I do not think we need to. I can do it at a level of  
6 generality.

7 You appreciate, do you not, that the Class  
8 Representative is relying on these matters as evidence  
9 of what happens when prices do become subject to the  
10 forces of competition; yes?

11 A. Yes, but I think that characterisation is highly  
12 incomplete, let me put it that way, that simply because  
13 Epic decided that they would enter in this way to  
14 support their, you know, first party distribution and  
15 the other things that they were trying to accomplish,  
16 that by itself, I think Dr Singer's characterisation  
17 is -- competition breaking out, I think is without any  
18 reasonable foundation.

19 Q. Well, I suggest to you the fact that you started to see  
20 competitive pressures emerging only part-way through the  
21 claim period is simply irrelevant?

22 A. No, it is not irrelevant, but you have to think about  
23 PC -- the PC distribution has been around since the  
24 early 2000s.

25 Q. Indeed.

1       A. There is no barrier to creating PC app distribution  
2       stores, certainly in late 2015 and beyond, and so the  
3       fact that this -- I think I made this reference earlier,  
4       that the underlying conditions that would enable  
5       competition have been present for a very long period of  
6       time. There is no barrier to anybody setting up a PC  
7       transaction platform, and a number have, including other  
8       first party distributors, like EA. So the idea that  
9       simply the first time -- when Epic comes in, somehow  
10      magically that is the precipitating event that  
11      competition has broken out; I do not think that is  
12      a reasonable characterisation of the situation in the  
13      industry.

14     Q. A final, again, very short topic. You know that when he  
15     is analysing comparators, Mr Holt also places some  
16     reliance on the fact that Apple has reduced its  
17     Commission to 15% in relation to certain programs; yes?

18     A. Yes, I think that fact is true and I understand that  
19     Mr Holt has considered that.

20     Q. Yes. For example, it is one of a number of factors he  
21     gives in support of his view that 15% is the most likely  
22     counterfactual commission rate for the App Store. Do  
23     you recall --

24     A. Can we take a look at the passage?

25     Q. Yes, sure {C2/10/125}. That is Mr Holt's third report,

1 paragraph 340. Do you have that on the screen? It is  
2 340(d).

3 A. Okay, yes.

4 Q. So you see he gives a number of reasons in support of  
5 his view about the 15% figure, and at (d):

6 "Apple already charges 15% commission rate for  
7 certain transactions, suggesting that incremental  
8 transactions on the App Store are profitable to Apple at  
9 a 15% commission rate."

10 You do not dispute the point about profitability, do  
11 you, or do you say that is just a matter for the  
12 accountants?

13 A. I think the accountants have arrived at that conclusion  
14 and so -- and I would agree with it, but I think this is  
15 not an economic comparison. A competitive price is not  
16 the one that -- is not any price that is profitable, it  
17 is the price dictated by market forces --

18 Q. Just in relation to -- sorry, did you have something  
19 else?

20 A. Yes, and the idea that there might be different market  
21 forces in different kinds -- that face different kinds  
22 of (inaudible) absolutely consistent with my market  
23 definition, and inconsistent, for example, with  
24 Dr Singer's.

25 Q. Just one last point. In relation to developers who are

1 eligible for the discount program and are only paying  
2 the 15%, Apple is still providing the same core services  
3 to those developers, is it not, in relation to app  
4 distribution and so on?

5 A. The general technical infrastructure is similar. They  
6 may use different services to a greater degree, but it  
7 is generally the same framework.

8 Q. There is no difference in the value of the services it  
9 provides to developers paying 15%, as opposed to  
10 developers paying the 30% headline rate, is there?

11 A. So, again, these services may be more or less valuable  
12 to different developers, and the appropriate, you know,  
13 next best alternatives may also be different. But  
14 certainly the technical infrastructure that supports all  
15 this I think is generally common.

16 MR ARMITAGE: I do not have anything else. I think Mr Ward  
17 will have some questions for you about incidence.

18 Cross-examination by MR WARD

19 MR WARD: Good morning, Professor Hitt. We are indeed going  
20 to talk about incidence.

21 Now, yesterday you said:

22 "I believe the incidence is zero."

23 That is {Day22/230:12}, and what we are going to do  
24 is look at the reasons you put forward for that. But,  
25 before we do, I want to start with some of the things

1           you left out of your analysis. We are going to start  
2           with the *Spotify* decision. If we get that up on the  
3           screen, it is {AB6/54}.

4           Now, as you know, this was the fruit of a five-year  
5           investigation by the European Commission, starting  
6           in 2019, and using its compulsory powers. I am sure you  
7           realise that?

8           A. I am aware of the investigation in the (inaudible).

9           Q. Indeed, the earliest expert report I have for you from  
10          the United States is 2021, but you must have been  
11          instructed for some time before that, were not you,  
12          before you put pen to paper?

13          When did your instructions for Apple start?

14          A. In this case or --

15          Q. No, generally, in the other cases where you have acted  
16          in relation to the App Store?

17          A. So I think we do not have -- in the US, I do not think  
18          we have the same instruction process, but I was retained  
19          in the vicinity of, I think, 2020 -- I may be getting  
20          that off a bit -- to work on the consumer class action  
21          in the US.

22          Q. We are going to look at some of your evidence in that  
23          class action. But throughout the period, then, you have  
24          been acting for Apple, the *Spotify* investigation has  
25          been running?

- 1 A. I think that is factually true.
- 2 Q. You must have been made aware of it by Apple, weren't  
3 you?
- 4 A. I was aware of it generally. I do not think there was  
5 any specific attention paid to it.
- 6 Q. You would accept that music streamers like Spotify, and  
7 the others discussed in the decision, are within the  
8 Class for the purpose of this litigation?
- 9 A. Yes.
- 10 Q. You probably now are aware that it contains important  
11 information not only about incidence, but also about  
12 Apple's own view about incidence. Do you recall that?  
13 We are going to come to it.
- 14 A. So I understand there is some discussion about what  
15 Apple's view is.
- 16 Q. Good. We will come to it shortly.
- 17 Now, of course, Apple has been operating the  
18 App Store now for about 17 years, starting in 2008, and  
19 would you agree that it is likely that Apple would have  
20 a view about the incidence of the App Store Commission  
21 on the downstream market?
- 22 A. I think they may have a general understanding. I do not  
23 know the extent to which they have done systematic  
24 analysis.
- 25 Q. Indeed, correct me if I am wrong, but there is nowhere

1 in your reports that you record any views Apple have  
2 stated about what the level of incidence is on the  
3 downstream app market?

4 A. I do not recall citing to any of that. I think I rely  
5 exclusively on my own analysis for those points.

6 Q. Yes. Well, on Wednesday, when Mr Hoskins was asking you  
7 about this, you said it was not within your assignment  
8 to respond to the Spotify report. That is  
9 {Day21/135:19}, but then you were asked to look at it  
10 for the purpose of your fourth report, which is the one  
11 that was served on the Saturday before trial, and that  
12 is {Day21/137:2}.

13 Can we go now, please, to Dr Singer's second report  
14 {C2/8/135}. This was the report served on 14 May. We  
15 will see there, at paragraph 277, he puts the *Spotify*  
16 decision squarely in play, and let us read what he says  
17 about it:

18 "A recent study by the EC in its Apple/Spotify  
19 decision found that, between at least June 2015  
20 to March 2024, incidence rates for subscription  
21 purchases for music streaming providers in the ... (EEA)  
22 (including the UK) were between 90 and 95%. Such  
23 subscriptions comprise Relevant Subscription Purchases  
24 to the extent they were purchased by UK-based iOS device  
25 users. By way of context to that decision, in 2014, to

1 cover for additional costs incurred due to Apple's  
2 Commission, Spotify started offering in-app  
3 subscriptions and raised its prices ... (from 9.99 to  
4 12.99) ... In its decision, the EC noted that this  
5 'corresponds to a pass-through rate of 90 to 95% of the  
6 Commission, depending on the applicable VAT rate in each  
7 country. Several music streaming service providers,  
8 including [the following names] similarly increased  
9 their subscription fees ... compared to the price ... in  
10 other channels ... The European Commission further noted  
11 that 'app developers subject to the Commission have no  
12 other option than to pass it on'."

13 So even if you had not read it by then,  
14 Professor Singer -- Dr Singer, so sorry, put squarely in  
15 play not only the findings but some of the core  
16 reasoning of the Commission. Did you not look at the  
17 decision at that point?

18 A. I do not recall having looked at it. Again, because it  
19 is a decision by a group, or I do not have access to the  
20 raw data, and now upon my review of it I understand how  
21 they reached that conclusion and I would not change any  
22 of the opinions that I have.

23 Q. Well, you say that it is a decision of a regulator.  
24 Sorry, that is not your exact words; "a decision by  
25 a group" is what it says on the transcript. But this is

1 obviously of the highest importance to the exercise that  
2 you are carrying out. You are not obliged to agree with  
3 it, but to simply fail to address it, Professor Hitt, it  
4 makes no sense at all.

5 A. No, I disagree. Dr Singer has produced a lot of  
6 material in his reports. I did not attempt to  
7 line-by-line respond to everything. I did not think  
8 that this was particularly prominent in the things that  
9 I needed to respond to so I chose not to do so. I have  
10 my own independent analysis where I know exactly what  
11 was done, where I can do causal analysis. It is not  
12 clear that the analysis that they -- the analysis, to  
13 the extent that it is analysis, was conducted in  
14 a causal framework, and so I am relying on what  
15 I have done.

16 But, again, I did not individually address every  
17 single point in Dr Singer's report. I addressed the  
18 ones I thought were salient.

19 Q. It is not some esoteric footnote, is it? This is  
20 clearly of the highest importance to the question of  
21 incidence. An independent regulator of the highest  
22 standing, who has carried out a five-year investigation  
23 and has produced a several hundred page report  
24 containing detailed evidence and analysis, reached  
25 a conclusion that is the absolute polar opposite of

1           yours, and you say that that is not particularly  
2           important for you to consider?

3           A. So it was not necessary to reach the conclusions that  
4           I had and, having now evaluated in greater detail,  
5           I have no reason to change my opinion either.

6           Q. You said a moment ago that you did not have access to  
7           the raw data, but of course Apple is your client. You  
8           could have asked Apple, could you not, for the material  
9           that lay beneath it?

10          A. So I have access to this -- I have access to all the  
11          App Store data, what I do not have access to is internal  
12          Spotify data, and that is -- you know, in particular  
13          that is one of the limitations in this litigation  
14          compared to some of the other ones I have been involved  
15          in, where there was not much third party discovery,  
16          which does place some significant constraints on what  
17          you could do, and in particular in the *Spotify* decision,  
18          there are some critical items that you simply --  
19          I simply do not have access to, that I could not have  
20          access to through Apple.

21                 In particular, there is an experiment which they  
22          claim relates to the steering issue. That is not on  
23          this point, but, for example, that is an example of  
24          information that only Spotify has that I am not able to  
25          evaluate.

1 Q. You did not even ask Apple for the information it could  
2 provide you with?

3 A. So I have an enormous amount of information from Apple  
4 on the App Store side and I do not -- and I did not  
5 attempt to gain access to third-party discovery. I did  
6 ask for whatever we had available on third-party  
7 discovery as part of this litigation --  
8 (overspeaking) --

9 Q. What is absolutely --

10 A. -- and that is -- I used what I was -- I had available.

11 Q. What is absolutely clear from what you are telling us is  
12 you saw this on the face of Dr Singer's report, you  
13 decided it was not particularly important, and you did  
14 not even ask Apple for the underlying material or the  
15 unredacted version of the decision?

16 A. So, yes, I did not ask Apple for the unredacted version  
17 of this, but I have access to all of Apple's data in  
18 terms of the App Store itself, and I also asked at  
19 various times for any information we had about  
20 third-party discovery, and it was not available, and  
21 that would encompass, for example, internal data about  
22 Spotify.

23 Q. Let us have a look at what we can learn about the  
24 *Spotify* decision, had you chosen to look at it at that  
25 time, because what I am going to put to you,

1 Professor Hitt, is even the redacted version explains  
2 quite clearly why the Commission has reached the view it  
3 has, albeit that some details are withheld.

4 So let us turn now, please, to it. It is  
5 {AB6/45/69}. Thank you. This is -- in fact if we go to  
6 the previous page, you can see, on page 66 {AB6/45/68},  
7 the heading is, "Impact of the Anti-steering Provisions  
8 in the music streaming services market".

9 Going to the top of the page, it starts to explain  
10 the evidence:

11 "... Spotify initially decided not to offer in-app  
12 subscriptions ... because of the 30% commission fee,  
13 which would have forced [it] to charge a higher price  
14 ... or take 'a 30% hit on its already constrained  
15 margins'."

16 Then it explains -- obviously there are some  
17 redactions. Then it explains in 213 that Spotify  
18 decided to increase its price in order to cover its  
19 additional costs "stemming from the Commission fee".  
20 Well, that is incidence in action, is it not,  
21 Professor Hitt? That is incidence.

22 A. So I will take at face value that Spotify made the  
23 choice to increase their commissions. First of all,  
24 that is not a causal relationship, in the sense that  
25 there was not a change, it was a static decision to do

1 so. Spotify is of course, you know, capable of choosing  
2 how to charge any -- choosing whatever price it believes  
3 is appropriate for their business.

4 I will also note that a lot of this is based on  
5 a very non-economic argument, which is that they have to  
6 recover things like that. Their profit maximising price  
7 does not require they break-even in every market, and in  
8 fact they operate in a way that is inconsistent with  
9 that.

10 So I think, you know, part of my -- again, this was  
11 in the response in Hitt 4 which we do not have in  
12 evidence, but the idea that you have to increase -- you  
13 have to increase this fee in order to break even I think  
14 is not an economic argument --

15 Q. Okay, so --

16 A. -- and is inconsistent with their own conduct.

17 Q. So you do not like the analysis of the  
18 European Commission after a five-year investigation, but  
19 of course what could have assisted the Tribunal is if  
20 you had chosen to address it in your report, rather than  
21 just ignore it. Do you not think that would have been  
22 of assistance?

23 A. I cannot judge what would be of assistance. I think the  
24 analysis that I did is based on a causal framework,  
25 using detailed data that is not simply from a single

1 participant, and in fact I think there is discussion in  
2 my reports also on this point generally, that if you  
3 look in this market broadly you will see that in some  
4 cases, like Spotify, the prices are higher when you are  
5 operating on the iOS platform. In some cases they are  
6 not. In some cases they are higher for some products  
7 and not for others.

8 So this is not a systematic result. It is one  
9 vendor.

10 Q. We are going to come to all of the things you have just  
11 said in that long answer, but the starting point is I am  
12 just putting to you, this is obviously causal, Spotify  
13 decided to increase its price to cover for its  
14 additional costs; but you do not agree. That is fine.  
15 We will move on.

16 Then at 214 it explains what the level of the  
17 increased costs were and as it says:

18 "... corresponding to a pass-through of 90 to 95%  
19 ..."

20 Then over the page {AB6/45/71}, it talks about what  
21 other providers did and it summarises its findings at  
22 220, please, which is on -- that is it. Thank you very  
23 much.

24 220:

25 "In view of the low margins in the music streaming

1 business, these providers had to pass on the 30%  
2 commission ... rather than absorbing [it]. As a result  
3 [that is causation], their subscription charges on iOS  
4 are higher than the ones they charge on their websites."

5 So that is, again, causing higher prices, also known  
6 as incidence, is it not?

7 A. Well, that is an assertion that they believe it is  
8 incidence. As a result is not a causal analysis. That  
9 is their conclusion. Second, as I noted, I think,  
10 before, it is not unusual for online businesses to  
11 operate at a loss for the purposes of generating  
12 customer acquisition, and since these -- you could think  
13 of these fees as being somewhat a customer acquisition  
14 cost, that would not be out of line with normal  
15 behaviour. I do not think there is any required  
16 constraint that these firms operate at a profit in every  
17 particular market, especially when they are trying to  
18 acquire new customers.

19 Q. Let us look at the next sentence which is also very  
20 important:

21 "Apple [your client] was fully aware of the  
22 difficulties of music streaming service providers to  
23 offer subscriptions in their iOS ... at the same price  
24 level ..."

25 But you are not -- you were not aware of that, were

1           you, because you did not read the decision and you did  
2           not ask Apple about its view on this topic?

3           A. So generally, you know, again, the best way to go at  
4           understanding what a causal analysis is is to not rely  
5           on views, because views can be formed for any number of  
6           reasons, but to actually analyse the data and see what  
7           actually has happened in a causal econometric framework,  
8           and that is what I have done.

9           Q. Let us turn now to page 172 {AB6/45/172}, where there  
10          are undoubtedly some redactions which are partly  
11          obscuring the meaning, but we can still get the gist.

12                     The heading here, towards the top, is:

13                     "the Commission fee level imposes a substantial  
14                     financial burden on music streaming [providers].

15                     "A 30%/15% commission fee is problematic for  
16                     developers operating in margins with thin margins and  
17                     high fixed and variable costs, such as music streaming  
18                     services. Due to the anti-steering provisions, music  
19                     streaming service providers are forced to either  
20                     increase their prices ... through IAP to iOS users or to  
21                     maintain the same price ... and absorb the loss."

22                     Then there is a redaction.

23                     Then 603:

24                     "In that period, the music streaming ... provider  
25                     ... (Napster) issued [a] press release ... 'Our

1 philosophy is simple ... an Apple-imposed arrangement  
2 that requires us to pay 30 percent ... in addition to  
3 content fees ... is economically untenable ... we would  
4 not be able to offer our service ...'"

5 Then after some more redactions, it concludes:

6 "Music streaming services are compelled to [pass it  
7 on]."

8 Then at 608 to 610, I invite you to just skim-read  
9 it, it explains the views of various providers. If you  
10 just skim that and tell me when you are ready. (Pause)

11 A. Which paragraph would --

12 Q. -- 608 to 610, please.

13 A. 6 ...

14 Q. 608 to 610.

15 A. Yes, thank you. (Pause)

16 Okay.

17 Q. This is all important information, is it not, about the  
18 first-hand experience of actual developers?

19 A. That is a claim you could make, yes, but, again, it was  
20 not necessary to reach the conclusions that I had, but  
21 certainly, you know, what people state is --

22 Q. Well --

23 A. -- not necessarily a causal analysis.

24 Q. Well, let us see what the Commission has decided on the  
25 basis of all of this information.

1           611:

2           "It is therefore unsurprising all major music  
3 streaming service providers in the EEA [all] actually  
4 increased their subscription prices for transactions  
5 concluded through the IAP, typically from 9.99 to 12.99  
6 ... compared to the price applied before ... and/or ...  
7 [in] other channels ...thus passing on the Commission to  
8 their iOS users in the form of a higher in-app  
9 subscription retail price."

10           That is exactly the issue that we are here debating,  
11 is it not?

12       A. I think it is related -- certainly related to that  
13 issue, yes.

14       Q. Then carrying on:

15           "This is the case for Spotify ... for Deezer,  
16 SoundCloud, Napster, YouTube Music and Tidal."

17           It explains they all put their prices up, triggering  
18 numerous complaints. But according to you, the  
19 incidence is zero even in this class, is it not?

20       A. So the evidence generally is that incidence -- the  
21 incidence rate is zero overall. Again, when you look  
22 at -- again, these are -- these are stated facts, but  
23 they include certain non-economic reasoning, and they  
24 have to do so. Again, if we will take Spotify, for  
25 example, Spotify has a deliberate strategy to not be

1 profitable. They could be profitable; they have chosen  
2 not to be because they want to grow their user base.  
3 That is a perfectly reasonable thing to do.

4 So the idea that you have to do this is not correct,  
5 at least not correct economically, and inconsistent with  
6 normal business practice here and -- (overspeaking) --

7 Q. Are you saying it is only incidence if --

8 A. Sorry, may I finish?

9 Q. Sorry, I did not mean to ...

10 A. The other thing I will note is that these price changes  
11 are not uniform, although I will not dispute that they  
12 observe the price changes for these. You will note that  
13 the -- you will note that some do and some do not. In  
14 fact, I have looked at the music streaming business as  
15 part of the examples I have seen and what you find is  
16 some actually increase the rate, some choose to keep  
17 their prices the same, and there are also examples where  
18 they will raise the price of one product but keep the  
19 same price for other products.

20 Finally, as a final note, there is nothing stopping  
21 companies from doing exactly what Spotify did, which is  
22 to transact elsewhere. They can continue to use the  
23 App Store, continue to do this, and they can go outside.  
24 So they are not obligated to transact through the  
25 App Store, and to the extent that they find that

1           valuable, you have to consider the possibility that the  
2           reason that they are able to charge that higher price in  
3           the App Store environment is because there may be higher  
4           demand there.

5           Q. What we are debating here, Professor Hitt, is a slightly  
6           narrower point than that, which is whether or not the  
7           incidence -- sorry, whether or not the Commission led to  
8           higher prices. This is saying clearly that it did, is  
9           it not, that it caused higher prices?

10          A. This is -- a handful of developers are making the claim  
11          that they raised the prices due to that difference. The  
12          fact that they are able to may be due to all sorts of  
13          reasons.

14          Q. Well, let us look at paragraph 614 now, please, on the  
15          next page {AB6/45/174}:

16                 "In its response to the Letter of Facts, Apple also  
17                 concedes that music streaming service providers 'pass on  
18                 Apple's Commission', even if it states they do it 'to  
19                 a different extent'."

20                 So there is your client, Apple, accepting that there  
21                 is a degree of incidence in this category of developer.  
22                 That is really important, is it not?

23          A. So I think you have mischaracterised this. If we look,  
24          actually look at -- (overspeaking) --

25          Q. I have just read it out, Professor Hitt.

1 A. Sorry, may finish my answer?

2 Q. Please.

3 A. So you note that this "pass on" thing is in quotes. It  
4 is my understanding, looking at the source material, at  
5 least on my read, that they are not adopting the idea  
6 that it is a pass-on. I think they are describing the  
7 process that the folks who produced this report  
8 described it as.

9 I do not think they are adopting the idea that it is  
10 pass-on. I think what they are describing is that the  
11 analysis that is done in here, that is how they are  
12 characterising it. If they wanted to say they believed  
13 it was pass-on, I do not believe it would be in quotes  
14 like that, and I reviewed -- can we take a look down at  
15 what that footnote references?

16 Q. I beg your pardon?

17 A. Footnote 862. Yes, I believe, if we look at that  
18 letter, I think in context that is at least my read of  
19 it. Now, again, different people can come to different  
20 conclusions about what, you know, what people are trying  
21 to convey, but the fact that "pass on" is in quotes  
22 indicates, at least to me, that they may not be agreeing  
23 to the concept of pass-on, they may simply be describing  
24 the observation that is being made by the folks who do  
25 the Spotify analysis.

1 THE CHAIRMAN: Professor Hitt, I am struggling a bit with  
2 that distinction. Do you mean that they are simply  
3 acknowledging a terminology point, or are you saying  
4 that they are actually disputing that there has been --  
5 if we just, for argument's sake, assume that there has  
6 been pass-on, are you saying that they are disputing  
7 there has been, or are you saying they are accepting it  
8 but characterising it differently, in which case it does  
9 not really matter, does it?

10 A. What I would say is they are acknowledging the claim and  
11 saying that what they are claiming to be pass-on varies.  
12 That is what -- I do not think they are -- at least it  
13 is not my read -- again, this could be -- different  
14 people have their different opinion. It is not my read  
15 that they have adopted the idea of this pass-on. What  
16 I understand, or at least is I think a reasonable  
17 interpretation, is that they are referring to this  
18 finding that, for example, Spotify raised the prices by  
19 30%. They are putting "pass on" in quotes to refer to  
20 that finding, and then making the point that to the  
21 extent that is whatever it is, be it pass-on or  
22 something else, that varies.

23 THE CHAIRMAN: So are you saying that they are not  
24 acknowledging the causal connection?

25 A. I think that is at least my read of the letter. Again,

1 different people can have different interpretations of  
2 this, but I think that is a plausible read of the  
3 letter.

4 MR WARD: Professor Hitt, I am going to put to you that the  
5 obvious common sense here is that the Commission is  
6 finding that the Commission is passed on to music  
7 developers and that Apple is conceding that that is  
8 true, albeit to a different extent to that which the  
9 Commission found, but you do not agree?

10 THE CHAIRMAN: Mr Ward, I do not want to take you out of  
11 your way, but it would be helpful to have a reference.

12 MR WARD: We were going to go to it for a different purpose  
13 later. I think it is all marked as confidential, but if  
14 we go to {D1/1467}, please. So sorry, {D1/1647}.

15 So the whole thing is marked as pink, which means  
16 the whole document has to be treated as confidential,  
17 but the paragraph that is referred to here is 206 and it  
18 is internal 59, but I am afraid I do not have the Opus  
19 page number. Could we try about 59 and we will see --  
20 60, there we are. Thank you so much.

21 So paragraph 206, which I do not dare read out, is  
22 the paragraph that is in fact referred to, we think, in  
23 this passage of the decision. (Pause)

24 A. Can we go to the next page {D1/1647/61}. (Pause)

25 Yes, I think --

1 THE CHAIRMAN: I just want to say I want to caution you. It  
2 may be that this is something we need to deal with  
3 later. I think it might be better for you not to give  
4 us an answer on this, because I rather suspect you will  
5 want to get into the figure 13, and so on.

6 I do not know if you are planning to go into a  
7 closed session?

8 MR WARD: I am hoping to avoid it. There is some more stuff  
9 that is marked as confidential that I intend to try and  
10 read out later, which is of an entirely general nature,  
11 and it is in documents that are marked as confidential,  
12 but it is merely an expression of general views about  
13 economic principles.

14 THE CHAIRMAN: Yes.

15 MR WARD: So I hope it will be all right. If we can avoid  
16 going into closed, that will be better.

17 THE CHAIRMAN: I agree with that. I think the way that ...

18 Professor Hitt, in many ways, I am not sure -- I am  
19 certainly not asking you any questions about this,  
20 because I can read this and we can take our view from  
21 it. If Ms Demetriou wants to re-examine you on it, then  
22 obviously -- and if you feel you strongly want to say  
23 something about it, then clearly we can come back to it,  
24 but I am just saying to you I think we are capable of  
25 reading it and --

1 A. Yes. I am good.

2 THE CHAIRMAN: But I can mark this down if anyone wants to  
3 come back to you later. If so, I think it should  
4 probably be in closed session.

5 Sorry, Mr Ward.

6 MR WARD: Thank you very much.

7 If we just go back now, please, to Spotify, which  
8 was {AB6/45/174}. I am just going to show a little bit  
9 more of it but we are nearly done. May we scroll up  
10 slightly, please. That is perfect.

11 So we have just looked at 614 which recorded Apple's  
12 concession. Then 615, there is a redacted paragraph,  
13 but I am going to take you to the unredacted version  
14 soon, but just to show you, it says:

15 "Although in relation to a different industry ..."

16 Then there is a redaction, and then the Commission  
17 says:

18 "This supports the finding that app developers  
19 subject to the Commission fee have no other option than  
20 to pass it on."

21 But we will come to the redaction which obviously  
22 you would not have seen without asking Apple for it.

23 Then at 619, having quoted some calculations that we  
24 cannot see, so, in fairness, you cannot test:

25 "The results of these calculations show that the

1 Commission fee constitutes a substantial financial  
2 burden ...

3 "The results of these [comparators] ... show the  
4 Commission fees [would be] ... the music streaming  
5 [services] would have to pay Apple ... over the lifetime  
6 of a subscription are of a similar magnitude and in some  
7 cases higher than the lifetime value of an equivalent  
8 subscription."

9 Then if we go, please, now, to page 176  
10 {AB6/45/176}, we can see the coloured graph is showing  
11 how many music streaming services there are within iOS,  
12 subscribers within iOS, and we can see it is a growing  
13 number.

14 Then if we read the text at 632:

15 "the Commission has calculated that, as of  
16 July 2023, more than 1.4 million iOS subscribers in the  
17 EEA of the main music streaming services other than  
18 Apple Music [eg the names] used IAP to subscribe.  
19 [They] typically have been charged monthly subscription  
20 prices that exceed those of Apple Music and also those  
21 of their chosen music streaming provider outside the iOS  
22 ... [Data in] figure 32 provides the results of ...  
23 calculations ... As explained above, higher prices  
24 charged by the main music streaming services other than  
25 Apple Music are a consequence of the necessity to

1 pass-on the Commission fee."

2 Professor Hitt, this is obviously extremely  
3 important material, is it not?

4 A. So I will accept your characterisation, but I do not  
5 think it was necessary to do the analysis that I did,  
6 since I do not have detailed access to the background.  
7 So I did what I did, based on the data I had available.

8 Q. This is powerful support that there was incidence at  
9 least for this very significant class of developers, is  
10 it not?

11 A. Well, you are characterising it as "powerful support".  
12 The assertion of this group, in what I would consider  
13 a non-causal framework, and I think it relies very  
14 heavily on some non-economic reasoning which I disagree  
15 with, for example the idea that you must pass on. I  
16 certainly agree the customer acquisition is a  
17 significant component of the cost structure of any of  
18 these businesses. That is absolutely correct. But that  
19 is one of the reasons why digital businesses are so  
20 difficult, you know. Why it can be difficult to make  
21 money in these industries is exactly that; and the fact  
22 that they are able to charge that higher price may  
23 reflect higher demand in the iOS channel.

24 So there may be consumers, for example, who prefer  
25 to transact in iOS because of the value they get from

1           doing so and that would justify that higher price.

2           Q. But the problem is in your report, in your evidence in  
3           this Tribunal, as far as I can find you do not consider  
4           the issue of incidence on music streamers in particular  
5           at all, do you?

6           A. No, I did not do a specific analysis to music streaming.  
7           To the extent that they are part of the ARS, they would  
8           be in the dataset for ARS.

9           Q. Actually a word search shows us that you do mention  
10          Spotify, in particular, in various other parts of your  
11          report but not when it comes to incidence. Is that not  
12          a very significant omission, Professor Hitt?

13          A. I do not think so. I think my incidence analysis  
14          includes, you know, music streaming to the extent it is  
15          within the auto-renewing subscription program. The  
16          framework I chose to do the incidence analysis is based  
17          on causal econometrics, and that is what I think is the  
18          most reliable for doing so.

19          THE CHAIRMAN: I think just to be clear about what is being  
20          said here, I think we have a situation where it is  
21          apparent that in the course of the Spotify investigation  
22          and decision quite a lot of work has been done on the  
23          relationship between music streaming developer prices  
24          and the Commission, and we have seen that just from the  
25          page which I did not ask you to comment on, but it was

1 very plain that there was at least some work being done  
2 by Apple about that relationship, and that obviously, as  
3 Mr Ward is saying, is pretty important empirical  
4 evidence about the relationship between prices and  
5 commissions and incidence.

6 It seems to me that it is hard to argue -- or maybe  
7 you do disagree, but it does seem to me that we have --  
8 at least Apple and the Commission have gone to the  
9 trouble of looking hard at that relationship for the  
10 purposes of the decision.

11 Now, I think what Mr Ward is putting to you is that,  
12 given that that all sits there and underlies what has  
13 been going on, it is in the least somewhat unhelpful  
14 that that information has not been presented to us in  
15 a way that we could use as evidence beyond what is in  
16 this decision.

17 Of course, I think the further point he is putting  
18 is that you, rather than anybody else, like  
19 Professor Singer, could have access to that because you  
20 could ask Apple for it. So I think that is what is he  
21 is putting to you.

22 A. Okay.

23 THE CHAIRMAN: There may be lots of answers to that, but I  
24 just -- (overspeaking) --

25 A. So let me parse that into three pieces.

1           Certainly this is an interesting analysis that has  
2           been done. I do not know the basis upon the data behind  
3           what they did, and it is not my general practice to  
4           adopt other people's work if I do not know exactly what  
5           they did.

6           Regarding the data, I disagree on the data point,  
7           because although I do have all the analysis on -- all  
8           the data on the App Store conduct, I do not have  
9           anything about internal Spotify data. In fact, that is  
10          one of the unfortunate things here, we just did not have  
11          third party discovery. Had I had third-party discovery,  
12          I certainly would have done a deep dive into Spotify  
13          because I think it is an interesting example of somebody  
14          who has been able to move outside the App Store and  
15          continue to distribute.

16          Then the third point is, I think Dr Singer brought  
17          it up, I view the -- in this context, certainly  
18          individual developers are welcome to do whatever they  
19          want with their pricing, including make a decision that  
20          the says: on iOS I am going to charge a higher price.  
21          So what my analysis is focused on doing is to try to see  
22          broadly what the general relationships are.

23          So certainly there is nothing stopping a Spotify or  
24          a title from doing this. It is my sense that it is not  
25          as uniform as it is characterised here, based on the own

1 analysis I have done, but certainly in aggregate across  
2 many different circumstances you do not see this effect.

3 So, yes, I think this is a data point. I do not  
4 think -- it does not move my conclusion on the overall  
5 sense of incidence, but certainly you can do so.

6 THE CHAIRMAN: Just to be clear again, I am not so much  
7 talking about -- we obviously can make what we make of  
8 the decision and what is recorded here, but I think the  
9 point I am making is a slightly broader one than that,  
10 which is that it is plain that underlying all of that  
11 there has been a certain amount of work that has been  
12 done on the relationship which Apple has access to  
13 because, as we have seen, it is apparent from that that  
14 there have been external consultants commissioned to  
15 produce things, and so on, and from our point of view it  
16 is actually unhelpful not to have access to that in  
17 circumstances where there is -- there is not an  
18 abundance of evidence about incidence in this case on  
19 the record. That is the real point, I think, that  
20 emerges from what Mr Ward is saying.

21 We cannot do much about that now, but I just want  
22 you to be clear that is that point, from my perspective,  
23 that is being made here.

24 A. Yes, and I think the only other thing I have in addition  
25 to say to that is I did ask for all third-party

1 discovery and it was not available to me for the  
2 purposes of this case. Had that been available  
3 I certainly would have used it. But in terms of the  
4 App Store data, that is certainly included in some of  
5 the analysis I did, although I did not do an independent  
6 separate analysis on Spotify.

7 THE CHAIRMAN: Thank you.

8 Mr Ward.

9 MR WARD: Sir, thank you.

10 Well, in fact, just to finish this topic, my  
11 solicitors did press Apple for some unredactions and  
12 some of the underlying data, and you might remember by  
13 the time we got to the PTR, after having quite broad  
14 refusals, we ended up getting consent to a limited  
15 amount of disclosure of that kind, one of which was the  
16 letter of facts document that you just looked at.

17 I am just going to show you, Professor Hitt,  
18 Gibson Dunn's letter which contains some of the  
19 unredactions at {CB4/78}.

20 This was the topic we were debating at the PTR, sir.

21 If we go to the second page {CB4/78/2}, we can see  
22 some of the recitals that we did look at, now in  
23 unredacted form. Of course this is confidential, it is  
24 marked yellow, it is confidential, so I will not read  
25 any of that out. If you see recital 220, which I drew

1           your attention to, Professor Hitt, "Apple was fully  
2           aware of the difficulties", and then perhaps just read  
3           what is in yellow. (Pause)

4           A. Shall I continue down to --

5           Q. Please --

6           A. -- or just recital 220?

7           Q. Yes, please read the footnote as well. That will be  
8           helpful.

9           A. Okay.

10          THE CHAIRMAN: Just so we understand, Mr Ward, are you  
11          saying that the material is in yellow was not available  
12          to you at all until 25 November?

13          MR WARD: That is right. The story here is that when the  
14          *Spotify* decision came out, there was a request for  
15          disclosure from my solicitors that was broad, and it was  
16          refused, and there was more correspondence, and what  
17          ended up happening was at the PTR -- I think by then it  
18          was agreed actually that this much would be given, and  
19          some of the supporting documents. So you were not asked  
20          to decide any issue by then. We were pragmatic. We  
21          moved on.

22                 What is in yellow in this letter is redacted from  
23          the public decision but has been unredacted by Apple at  
24          our request at the PTR. So what we are reading here in  
25          yellow is in the confidential version of the decision.

1           Obviously a lot more of the decision is redacted, but by  
2           this stage we were very focused on being pragmatic and  
3           trying to get something rather than nothing.

4   THE CHAIRMAN:  Yes, I see.  Thank you.

5   MR WARD:  Have you read the yellow parts here,  
6           Professor Hitt?

7   A.  Yes.

8   Q.  Thank you.  Just, as well, if we look at what is recital  
9           615, because you will recall I read this, and it was  
10          a bit cryptic without the bit that was ...

11                 So it is on the next page {CB4/78/3}.  Thank you.  
12          So unredacted form of the first sentence in recital 615,  
13          and I read the words:

14                 "Although in relation to a different industry ..."

15                 I also read the words:

16                 "this supports the finding that app developers  
17          subject to the Commission fee have no other option than  
18          to pass it on."

19                 So if we just read the bits in between, that would  
20          be helpful.  (Pause)

21   A.  Okay.

22   Q.  Thank you.  This links to two points we have already  
23          been discussing.  One is what does -- what was Apple's  
24          view, what did Apple know about consumer incidence.  One  
25          of the ways that Apple finds out about consumer

1 incidence of course is through developers, is it not?

2 A. That could be one way in which -- their interactions  
3 with developers I think are part of how they decide the  
4 business practices that they adopt -- (overspeaking) --

5 Q. Another thing that Dr Singer pointed to, but that you  
6 ignored, were developer statements of this kind, and  
7 I would like to just show you three now, just examples.

8 Could we go to {D1/941}. I will watch carefully for  
9 what might be confidential. Sorry, next page. Yes,  
10 thank you. {D1/941/2}

11 This is an email; the person who wrote it is  
12 confidential. It is addressed, you can see, to senior  
13 people in Apple, and the author, whose name I cannot  
14 read out but I can say is for Epic Games, says:

15 "... Epic will no longer adhere to ... payment  
16 processing ...

17 "... Epic is launching ... direct payments in  
18 Fortnite ... offering customers the choice of paying  
19 in-app through Epic direct payments or through Apple  
20 payments, and passing on the savings of Epic direct  
21 payments to customers in the form of lower prices."

22 So that is an email suggesting that the incidence  
23 is -- sorry, the Commission is relevant to the level of  
24 pricing, is it not?

25 A. So that is a claim being made by [ ].

1           Just as a general comment on this type of evidence  
2           and how I think about it, which is there is a difference  
3           between revealed and expressed preference. Many people  
4           can say -- one of the things that economists are very  
5           interested in is the fact that people do not always do  
6           things for the reason they say they do them, and so  
7           being able to distinguish that is a very important part  
8           of my empirical work, and I am very strongly in the  
9           revealed preference camp, look at what people actually  
10          did. I do not know if I can comment on what the  
11          "actually did" circumstance is here without violating  
12          something, but I am happy to talk about what they  
13          actually did prior to this event, but I think it is  
14          relevant to it.

15        Q. Let me just show you a couple of others, just for  
16          completeness {D1/1880}. This is -- sorry, this is  
17          completely marked as confidential, but that is okay. We  
18          can see who this was, and we can see that -- I think  
19          I can say what the general topic is.

20                Am I allowed to say what the job is of this person  
21          who is on the top line? Is anyone to going to object if  
22          I say which company he relates to?

23        THE CHAIRMAN: I do not think you need to do that, Mr Ward.  
24          We can all read it. A senior person at presumably --  
25          (overspeaking) --

1 MR WARD: At a company --

2 THE CHAIRMAN: -- a developer, is that right?

3 MR WARD: Yes.

4 If we look at the last two bullet points. (Pause)

5 Then moving on from that one, just for completeness,  
6 can I ask you to look at {D1/556}. Sorry, that must be  
7 a wrong reference {D1/566}. Thank you.

8 This is another email chain, and the company is  
9 definitely marked as confidential, and we can see, "Hi  
10 Matt", and this is internal Apple:

11 "Our business development contact at [X] just shared  
12 that [Y] is meeting with Tim Cook ..."

13 What this is about is the application of commission  
14 to a subscription service for a service that is  
15 otherwise physical goods.

16 If we go to the last page, please {D1/566/2}, in the  
17 fourth bullet point, which is not marked confidential:

18 "As we expected, they balked at the 30% rev share.  
19 They started talking about workarounds ... As our  
20 conversation continued, they seemed to start accepting  
21 they would likely need to pass the 30% along to the  
22 consumer. However, I doubt this will be the end of the  
23 Commissions discussion ..."

24 Now, I show you these, Professor Hitt, not to say,  
25 "Well, you are then. That proves that that particular

1 developer must have passed on incidence". I am showing  
2 you because what I am suggesting is it shows why Apple  
3 itself would have had valuable intelligence on that  
4 topic if you had chosen to ask them. Would you accept  
5 that?

6 A. I think for the way I approach things, that value is not  
7 that great, but certainly they do have information that  
8 is relevant.

9 Again, to the extent I am interested, I tend to  
10 focus on revealed preference methods where you actually  
11 analyse what people did in a setting. That is the  
12 emphasis I place on it. Again, I think this has  
13 interesting information in it, but, again, it is  
14 a specific circumstance and it is an expressed  
15 preference situation. So I could not do this -- I could  
16 not use this, for example, to do it in aggregate.

17 Q. I did not suggest you could use this for any form of  
18 quantitative analysis.

19 There is another source of information that you  
20 ignored in your reports as well. Can we go to {C25/42},  
21 please. Sorry, there is something horribly wrong with  
22 my reference {C2/4}. This is the report of Mr Howell,  
23 and, as you know, Mr Howell is proffered by the Class  
24 Representative as an industry expert, someone who is an  
25 app developer, and it is right to say that you do refer

1 to his evidence at various places in your report, but  
2 the part that you ignore, or one of the parts, I should  
3 say, is at {C2/4/42}. Could we go to that, please.

4 Thank you very much.

5 Here Mr Howell gives evidence about the way in  
6 which, in his experience, developers approach pricing.

7 He says:

8 "In my experience, iOS App developers certainly take  
9 the Commission into consideration when choosing  
10 a pricing strategy ..."

11 Then if we skim 88.1 down to about halfway down, he  
12 says:

13 "If the Commission [do you have that, about eight or  
14 ten lines down] and any incremental costs are not  
15 reflected in the prices of their relevant purchases, the  
16 developer will not have a sustainable business model.  
17 This could mean setting higher price points for each  
18 type of Relevant Purchase to maintain profitability  
19 after the Commission is taken."

20 Then over on the next page, paragraph 90 {C2/4/43}:

21 "If commission levels were lower, I would expect  
22 this to have an impact upon pricing decisions of ...  
23 developers."

24 But it is your case, if I understand it, that  
25 actually the Commission is irrelevant to the pricing of

1 developers, is it not? It will not change their pricing  
2 up or down?

3 A. So I would not say it is irrelevant. They have a choice  
4 of different ways to monetise which may affect other  
5 business decisions. What I can say is that based on the  
6 analysis I have done, there is no evidence that when you  
7 see a change in commission, developers respond in  
8 a systematic way, and that on average the incidence rate  
9 in every example we saw a commission change has been  
10 essentially zero or very close to zero.

11 That does not stop, of course, developers from  
12 pursuing any strategy they want for thinking about how  
13 the Commission relates to their prices. Some may choose  
14 to include it, some may choose not to do so, some -- and  
15 the reasons for why you might be able to sustain  
16 a higher price or a lower price depends on more things  
17 than just the Commission. It depends on things like,  
18 for example, relevant demand in different channels.

19 Q. But your case -- sorry, your view is that the  
20 developers -- the Commission simply does not change the  
21 prices the developers set. That is what zero incidence  
22 means, is it not?

23 A. So that opinion is based on all the empirical analysis  
24 I have done, which is largely unchallenged by Dr Singer,  
25 other than saying he does not consider it relevant --

- 1 Q. We are coming to that, do not worry.
- 2 A. -- and then at least four theoretical reasons why, at  
3 least for many developers that might be relevant here,  
4 that would be the case. But, again, developers are free  
5 to do whatever they want, but the data analysis and the  
6 underlying theory would be consistent with zero  
7 incidence in many of those circumstances, given the  
8 conditions that developers face in the App Store.
- 9 Q. Your case is zero across the class, Professor Hitt, that  
10 is what you explained yesterday.
- 11 A. So that would be consistent with my findings, that for  
12 a significant fraction of transactions there is no  
13 evidence. I cannot find any evidence of incidence. If  
14 there was evidence, that would be an empirical finding  
15 and it is not there.
- 16 Q. So on your view of the world the developers pay 30%, or  
17 let us talk about the effective rate which is more like  
18 25, they pay the 25 to Apple and that just makes no  
19 difference to their prices. That is your view, is it  
20 not?
- 21 A. So it could be one factor that enters in. Again, the  
22 pricing decisions are complex. It may be that that is  
23 a really great deal, it may be not such a great deal for  
24 certain kinds of developers. Developers may be able to  
25 price higher in iOS versus others because there is

1 higher demand, and for other kinds of apps that may not  
2 be the case.

3 What I am basing my conclusions on is the analysis  
4 of actual data, seeing what developers actually do when  
5 facing price increase -- a price change, in this case  
6 a decrease, and what we find is there is no incidence.  
7 I am not making -- that is the bounds of the finding and  
8 that is consistent with a variety of theoretical  
9 explanations that are consistent -- that have  
10 assumptions that are consistent with the way the  
11 App Store works.

12 THE CHAIRMAN: When you say that is the balance of your  
13 finding, obviously you present the evidence to us and  
14 you say that is the exercise I have done and it shows no  
15 incidence, but I think Mr Ward is pushing you further to  
16 say: are you therefore taking from that that there is no  
17 relationship between prices and commission and therefore  
18 no incidence, that is the application of your finding,  
19 or are you not making that suggestion?

20 A. That would be consistent with it, but I would not reach  
21 that result absent the empirical -- I would not reach  
22 that conclusion absent the empirical findings. So it is  
23 not something I am asserting and said, yes, I believe  
24 this is the way things are. I am saying that is the  
25 result that is consistent with the data.

1 THE CHAIRMAN: So, hang on, let me make sure I understand  
2 this. I am sorry, Mr Ward, I want to make sure  
3 I understand it.

4 MR WARD: No, of course.

5 THE CHAIRMAN: You are saying that for a number of reasons  
6 that -- and no doubt Mr Ward is going to ask you  
7 questions about it -- there is, if you like, a theory  
8 about what the position might be, and the empirical data  
9 confirms that. It may not matter which order you do  
10 that in, but you are saying there is a consistency  
11 between your theoretical view of it and the empirical  
12 data. But is not the conclusion you then reach, as  
13 Mr Ward is putting to you, that there is no incidence?

14 A. That is the conclusion that I have, based on all the  
15 thing I have looked at. There could be circumstances  
16 where this exists. There is just no support for that  
17 anywhere.

18 THE CHAIRMAN: Yes. So you are not excluding the  
19 possibility that some developer might do something for  
20 particular reasons, but you are saying the conclusion  
21 that you draw is that, as a matter of generality, there  
22 was no incidence?

23 A. Yes, I think that is fair. That is fair and very  
24 precise.

25 THE CHAIRMAN: Yes, that is very helpful. Thank you.

1 MR WARD: Just to finish this point before we have  
2 a break --

3 THE CHAIRMAN: Just so you know, I was contemplating we  
4 might break a bit later. I am happy to do it whenever  
5 suits you, but if we are going to go through to 1.30, it  
6 is probably better to break a bit later.

7 MR WARD: I think at the rate we are going, we probably will  
8 need to go to 1.30. I have very much in mind that at  
9 1 o'clock, if we do not need the extra time, I will  
10 spare everyone the pain, but let us see how we are going  
11 at 1 o'clock.

12 THE CHAIRMAN: Yes. Well, if it is convenient, why not keep  
13 going for another 10 or 15 minutes.

14 MR WARD: I shall. Thank you, sir.

15 Just before we close this point off, if we look  
16 again at what Mr Howell said and what you ignored. He  
17 says on {C2/4/42}:

18 "If the Commission and any incremental costs are not  
19 reflected in the prices of their relevant purchases, the  
20 developer will not have a sustainable business model."

21 Just to remind you, on Day 9, page 38, line 16  
22 {Day9/38/16}, he said:

23 "For most of us, the cost of running the business is  
24 about equal to the revenues."

25 It struck a chord with me yesterday, Professor Hitt,

1 because you said something very similar.

2 At Day 22, page 82, line 12 {Day22/82:12}, you said:

3 "Revenue is very close to profit for many of these  
4 developers."

5 What I am really putting to you is a bit of  
6 practical reality, that in those circumstances the  
7 developers just cannot simply ignore the fact that Apple  
8 is taking 25 or 30%?

9 A. So, in general, costs can factor into pricing, I would  
10 not disagree with that. But, again, you know, what your  
11 equilibrium price is depends on things like your cost  
12 structure and supply and demand, and so I will not  
13 disagree with that.

14 I disagree with your assertion that I ignored  
15 Mr Howell's report. I read it. He is speculating about  
16 basic microeconomics. I have actual empirical data of  
17 what happens when the Commission rate changes. For the  
18 purposes of the issue here, which is would prices have  
19 been markedly different had it been 15 rather than 30,  
20 the best available evidence I have is that there would  
21 be no change given what I have seen in the empirical  
22 data, and it is entirely based on that empirical  
23 outcome.

24 Q. So what you call speculation obviously we are  
25 characterising as expert evidence. But the more

1 important point, though, is the inextricable logic of  
2 your position is that even if Mr Howell says that  
3 developers consider this, at the end of the day Apple  
4 taking 30% of their money makes no difference at all to  
5 their price setting, and they should just disregard it;  
6 is that not right?

7 A. So, again, it is a factor, but, again, consider that the  
8 price they set -- there is a reality that developers  
9 have to acquire customers somehow, and if it was -- if  
10 customer acquisition was uniformly lower everywhere, you  
11 might expect, for instance, that they could charge lower  
12 prices. But they are facing a reality where they have  
13 to acquire customers, that costs money, and there are  
14 many different channels to do so, and they can, for  
15 example, even those operating on iOS, have the options  
16 to go elsewhere, and some have chosen to do so, like  
17 Spotify.

18 That, I think, is an abstract principle. All of  
19 these factor in. If we are talking about what would  
20 happen if the rates were 30 rather than 15, all  
21 available empirical evidence suggests that there is no  
22 reaction. There are many reasons why that might be the  
23 case, and that is what my report is based on.

24 Q. Have you finished?

25 You called it a factor, but it is a factor that does

1 not actually alter prices for apps on the App Store,  
2 according to you; is that not right?

3 A. Based on all the empirical analysis that I have done,  
4 the Commission rate would not, for example, and I will  
5 talk the specific thing: if you reduce the Commission  
6 rate by 15%, the most likely effect on developer pricing  
7 would be zero based on the actual analysis of the data.

8 Q. You appreciate our case is it is a factor that must be  
9 taken into account and recovered, rather than allowed to  
10 simply erode those revenues. You do not agree?

11 A. I do not agree with the logic of "recovered". So the  
12 idea that -- so companies in the long-run have to  
13 operate at a profit, or have to find somebody who is  
14 willing to buy them and find a cross-subsidy to continue  
15 to allow them to operate not at a profit. It is not  
16 unusual in any way for online businesses and digital  
17 product companies to sustain significant losses over  
18 time as part of their business strategy to grow their  
19 customer base, so the idea that it has to be recovered  
20 is not necessarily right.

21 Again, the data analysis that I have done is  
22 consistent with the idea that there is no evidence that  
23 a change in commission would have a material change in  
24 price, but that could vary by developer. It could go  
25 up, it could go down, it depends on developers, and

1 nobody here has presented a complete theoretical model  
2 as to what that relationship is.

3 Q. You have not presented any evidence that what is  
4 actually happening here is that all these downstream  
5 developers are absorbing Apple's charge and then  
6 operating at a loss, have you?

7 A. No, that is not what I said. What I said was that the  
8 simple idea that you have to make a static profit in  
9 every channel is not necessarily consistent with the  
10 behaviour of actual firms in these markets. I think in  
11 the long-run they all have to be profitable, and they  
12 may choose to configure their businesses in various ways  
13 to achieve that, but the idea that you are constrained  
14 in the short run to break even, that is a hard  
15 constraint. It is inconsistent with actual developer  
16 behaviour.

17 Q. Is not the reality that this is a cost element that has  
18 to be recovered?

19 A. Again, you know, the costs are factored in to the profit  
20 maximising strategy, keeping in mind that the next best  
21 alternatives may be very, very similar. So to the  
22 extent that, for instance, a developer has a choice of  
23 offering a price in the iOS ecosystem or some other  
24 ecosystem, what we are observing is that given current  
25 circumstances, when faced with an actual change, they do

1 not seem to respond. That is the empirical result.

2 You can construct theoretical models of how that is,  
3 but nobody has done a complete model that would explain  
4 what that relationship is, and I have presented and  
5 discussed various models that give you that result, and  
6 empirical results that give you that result, and that is  
7 the scope of my report.

8 Q. So it sounds like what you are suggesting, and forgive  
9 me if this is wrong, is some kind of speculative  
10 analysis that there is sort of cross-subsidation between  
11 channels, where a developer takes a big hit from Apple,  
12 but somehow makes enough money in some other channel,  
13 absolutely not increasing its prices of iOS Apps, and  
14 therefore somehow soldiers on, even operating at a loss.  
15 Is that what you are saying?

16 A. No, they can do -- first of all, what I am saying is the  
17 idea -- and I will just use Spotify as an example.  
18 Spotify has taken a deliberate strategy where they are  
19 not operating at a profit when they could. So the idea  
20 that that is a hard constraint is not right.

21 Now, how -- this is a very complicated market, where  
22 developers have many choices of how they choose to  
23 monetise, and coming up with a comprehensive model that  
24 exactly explains behaviour, I think is very challenging.  
25 What we can do, however, is we can look and see what

1 developers actually did when faced with price changes,  
2 and when we do those experiments, you consistently find  
3 that on average, and the most likely event, is that they  
4 do not change prices. That is what I know.

5 What you might theoretically expect is something  
6 that is -- I think there is reasons that -- why you  
7 would get that result. I do not think anybody has  
8 offered a comprehensive model on how developers behave  
9 that would be inconsistent with that, and this is again  
10 a very complex setting. So I think, you know, a fair  
11 amount of weight should be placed on the actual  
12 empirical observations of what people did.

13 Q. Is it not really just a cost that has to be recovered  
14 that would go on the balance sheet against the revenue,  
15 when trying to decide what the profits were?

16 A. So, again, you know, basic microeconomics, cost enters  
17 in the profit maximising equation, across all the ways  
18 in which -- and they make choices as to how they  
19 configure their business, based on what that -- based on  
20 that cost in the various channels that they can  
21 potentially use.

22 What I found is that -- again, I agree that is  
23 something that is considered. It is a very complicated  
24 relationship, and that is why I think it is very  
25 informative to see what developers actually do when

1           faced with changes in commissions, and what they do is  
2           they largely leave things the same, and that on average  
3           there is no net change. That is an empirical  
4           observation, and that accounts for the reality of the  
5           market you are working in.

6           Q. Talking about what developers actually do, let us go to  
7           {D1/304.1}, please. This is a Form 20-F for  
8           King Entertainment, which is the developer who makes  
9           Candy Crush that Apple's counsel took Dr Singer to and  
10          it is, I think, for 2014. If we go to page 122, please  
11          {D1/304.1/122}, here is the consolidated statement of  
12          operations for King Digital Entertainment. You can see  
13          that these are in US thousands.

14                 So the revenue is stated at 2 billion-odd, and the  
15                 cost of revenue is stated at 700 million-odd. Then  
16                 there is profit at the bottom of 500 million. Can we go  
17                 to page 142 {D1/304.1/142}. These are in notes to the  
18                 statements. Thank you very much. Just right at the  
19                 bottom, it says:

20                         "[accounts] recorded as cost of revenue relate to  
21                         direct expenses incurred in order to generate revenue  
22                         from games. Cost of [revenue] primarily includes  
23                         amounts charged by platform distribution partners, [and  
24                         then] payments for third party licensed intellectual  
25                         property [which we are also going to come on to later]

1           ... related to audio content ..."

2           What we see here is a very large and successful and  
3           indeed profitable developer, treating amounts charged by  
4           platform distribution partners, which would presumably  
5           include the App Store, as a cost, in its P&L, that it  
6           has to net off against its profits. Do you agree with  
7           that?

8           A. Yes, absolutely. I also agree that customer acquisition  
9           costs are a significant portion of the cost structure  
10          for an online business. I agree with that.

11          Q. Is the obvious inference not that they are going to seek  
12          to recover that through their pricing, just as Mr Howell  
13          said?

14          A. Well, so if it was an obvious inference, you could  
15          demonstrate that empirically, and in this particular  
16          context, we have done empirical investigation to it, and  
17          so I think if you -- you can speculate as to what  
18          developers would do or not do, but we can actually look  
19          at what they do actually do, when they are faced with  
20          this decision.

21          So I think that is a useful way, especially in very  
22          complex environments like the one we are talking about,  
23          to see how actually developers would behave, and what we  
24          find is that they do not appear to react.

25          Now, I do not believe King in particular would be

1           within this sample of -- unless they are offering --  
2           I guess they might be to the extent they offer  
3           subscriptions.

4       Q.   We are not aware that it is.

5       A.   Certainly amongst the ones we are able to study, I think  
6           that is the finding we get.

7       THE CHAIRMAN:   Just a quick question.   Normally you would  
8           expect, would you not, that an entity that treated  
9           something as a direct cost would put that into its  
10          profit maximisation exercise, and therefore it would  
11          directly affect price?

12      A.   Yes, I think it is -- I think it is certainly  
13          a consideration.

14      THE CHAIRMAN:   As a matter of theory, putting aside the work  
15          you have done, and you are saying that that is not  
16          actually the theory that should apply here, because of  
17          the best alternative that might be available, and other  
18          pricing mechanisms, is that right?

19      A.   I think so.   So simple microeconomics says, as I think  
20          is reasonably characterised by how you said, which is it  
21          is certainly a factor you consider in your  
22          profit-maximising price, and certainly I will absolutely  
23          agree that distribution costs are a big part of it.  
24          This is a very complicated environment.   What people  
25          actually do is not necessarily what --

1 THE CHAIRMAN: No, I understand that. I am just asking you  
2 about -- actually, I suppose what I am trying to get at  
3 is where you depart from the, if you like, basic  
4 conventional theory and why. So if the basic theory  
5 says, if you put in the profit maximisation, and of  
6 course it does not ad valorem charge, which I think  
7 would suggest even more so that it would go into that  
8 exercise; and so my question is: why would you -- and  
9 I think what you are saying is that your empirical  
10 evidence actually demonstrates the opposite of that, so  
11 where is the theoretical basis that supports the  
12 proposition? That is the question I am asking, if that  
13 is clear.

14 A. So I think you see it correctly. There is two empirical  
15 findings. One is the small one, that Spotify does not  
16 necessarily need -- is not constrained to operate at a  
17 profit. The second point is all the incidence things.

18 So at least four reasons. I think -- it is in my  
19 report, there is at least four reasons why you might  
20 expect developers to not pass on changes in commission  
21 rates. Zero marginal cost goods, or very low marginal  
22 cost goods. Constraints from external competition, so  
23 developers competing against other developers who do not  
24 pay these commissions. They may be constrained by them  
25 sufficiently.

1           If we are thinking about a unilateral change in  
2           Apple's Commission, then you have to think about how  
3           they might respond in a world where many developers --  
4           I will not say which ones -- but some of the ones we  
5           have been talking about appear to have a preference for  
6           uniform pricing across channels, and so they may not  
7           want to re-optimize the whole system because of that.  
8           That would also give you that explanation.

9           THE CHAIRMAN: (Inaudible) same point, yes.

10          A. Then the fourth explanation we offer is in fact this is  
11          a multi-part complex pricing scheme, where they are  
12          trading off what they earn in commissions, versus what  
13          they earn in advertising, versus what they earn in the  
14          real world. You can get an environment where -- when,  
15          for example, commission rates change, the response is to  
16          actually use more commission services, because it  
17          becomes relatively more attractive than some of the  
18          other ones.

19                 So, for example, if the Commission rate goes down,  
20                 you might actually raise your prices because now  
21                 commissions are good and may be better than your optimal  
22                 online advertising rate, because now you keep more of  
23                 it.

24                 So I think those are at least four reasons that  
25                 would be consistent with this. Some or all of those may

1           apply to different developers at different rates, and so  
2           that is -- I do not think that is a departure from  
3           regular theory. In fact, this is sort of standard --  
4           you know, some of these zero marginal costings are  
5           standard result in -- if you have a proper incidence  
6           model.

7           So I think that is the -- you know, it is a complex  
8           environment. I think the empirical work gives you  
9           insight as to what actually happens, but you can  
10          speculate about other things, but again, there is  
11          theoretical support, as I described, and then there is  
12          the empirical support.

13         THE CHAIRMAN: That is helpful. Thank you very much.

14         MR WARD: Just for reassurance, we are going to be coming to  
15          all four of those reasons in due course.

16         THE CHAIRMAN: I know you are. Mr Frazer has a question.

17         MR FRAZER: Yes, I would just like to come back to the  
18          empirical work, and I understand it is based on your  
19          observations of what actually happens, following changes  
20          in the rate of commission, so in order to -- for you to  
21          be able to determine if there is a causal connection  
22          between a change in price and a change in commission; is  
23          that correct?

24         A. Yes.

25         MR FRAZER: My question is: are those observations based on

1           reductions in commission --

2       THE CHAIRMAN: I just wonder if we -- I think before you  
3           answer that, Professor Hitt, I am sure that Mr Ward is  
4           going to deal with that. I wonder if we might just wait  
5           a bit and do that in the way he wants, and then  
6           obviously if you are not satisfied, we can come back to  
7           it, because I suspect -- it may serve to cut down your  
8           cross-examination, but it may make it harder for you.

9       MR WARD: I can certainly assure you we are coming to that  
10          topic.

11       THE CHAIRMAN: That is helpful.

12                We will take a break for ten minutes. Just to say  
13           to you, I think it might be more desirable from the  
14           point of view of the room, rather than less desirable,  
15           for you to go to 1.30, unless it is inconvenient, if  
16           that means that you do not finish as late this  
17           afternoon.

18                I just make that point that I would rather you use  
19           the time there, I suspect, and we let people get away,  
20           particularly if we are still going past 4.30.

21       MR WARD: I am very happy with that, sir.

22       THE CHAIRMAN: Then you give it away -- particularly since  
23           we are going to have an hour for lunchtime. I do not  
24           know if people generally agree with that, but that  
25           certainly would be my preference. I would not encourage

1           you to go short this morning, is the point.

2       MR WARD: Understood. Thank you, sir.

3       THE CHAIRMAN: Do you want to say something?

4       MR PICCININ: Yes. Just briefly, sir, this is just a point  
5           really out of fairness to the witness. Several points  
6           have been made this morning about why Professor Hitt did  
7           not ask for data from Spotify underlying the *Spotify*  
8           decision.

9           Now, Professor Hitt has already said that he did ask  
10          for third-party data to the extent that it was  
11          available. This is a point, request for data, that has  
12          not been made before today, at least as far as I am  
13          aware, but if it had been, we could have told them that  
14          Apple does not have the data. As Mr Ward probably  
15          knows, it is quite common in European Commission  
16          investigations for sensitive third-party material, like  
17          this, to be dealt with in a data room context, rather  
18          than being provided --

19       THE CHAIRMAN: I do not think that is really -- that is not  
20          the full extent of the point that is being made,  
21          certainly not from my perspective the point that matters  
22          here. The point that I was making to Professor Hitt,  
23          and I am not expressing -- this is no criticism of him  
24          or indeed necessarily of Apple, I am just making the  
25          point that it is apparent from what little we have seen

1 of what the subject matter of the *Spotify* decision was  
2 that there must have been quite a lot of work done by  
3 Apple on the question of the connection between  
4 commissions and prices. We can see that just in the  
5 confidential document, we saw just a flash of that, and  
6 it seems to me that that information, if it was in front  
7 of the Tribunal, would be quite helpful.

8 Now, there may be all sorts of good reasons why it  
9 has not happened. All I think we were doing -- as far  
10 as I am concerned, all we are really doing is airing  
11 that issue with Professor Hitt.

12 Now, it may be that Mr Ward is going to go further  
13 and say that as an expert, he had a duty to go and  
14 squirrel that out. Obviously if he does that, we will  
15 deal with that, and you can deal with the response, but  
16 I do not think you need to pre-empt that now.

17 MR PICCININ: Sir, I understand that, and I was not  
18 referring to your questions, so much as the questions  
19 from Mr Ward. It was put to Professor Hitt on a false  
20 basis that he could have obtained this information from  
21 Apple, which he could not have.

22 THE CHAIRMAN: I think he answered that by saying: I asked  
23 for the third-party disclosure and I was told -- I was  
24 given what I was given. As you say, there may be  
25 perfectly good reasons for that, and I am sure that is

1 his answer to the question.

2 MR PICCININ: Indeed. I just wanted to make sure that the  
3 Tribunal was aware, because obviously Professor Hitt  
4 does not know, not having been involved in the  
5 investigation, whether Apple did or did not have the  
6 information.

7 THE CHAIRMAN: Well, yes, although I think Mr Ward would  
8 say, in response to that, and I am trying to shorten  
9 this conversation, rather than lengthen it, I think he  
10 would say that Professor Hitt has shown perhaps less  
11 curiosity about it than an expert might. Now, as I say,  
12 that is a matter for submission later on, but the point  
13 has been made, and we can argue about whether that is  
14 right or wrong. I am not expressing a view on that, but  
15 I do think he is making that point as well.

16 MR PICCININ: I understood that.

17 MR WARD: Sir, that is a fair encapsulation of my point.

18 Thank you.

19 THE CHAIRMAN: We will take our ten minutes and resume at  
20 15 minutes past. Thank you.

21 (12.05 pm)

22 (Short Break)

23 (12.15 pm)

24 THE CHAIRMAN: Yes, Mr Ward.

25 MR WARD: Thank you, sir. Before we turn to your natural

1 experiments, I want to talk about the one that Dr Singer  
2 relied on and that you dismissed, and that was to do  
3 with the change in the pricing tiers following the  
4 change in VAT law, if you recall? Let me remind you.  
5 If we go to {D1/296}, please.

6 This is an Apple document about App Store repricing;  
7 decisions, GBP and various other currencies. If we turn  
8 now to page 3 {D1/296/3}, this is "Apps and In-Apps:  
9 United Kingdom". It talks about a change in exchange  
10 rates, and then "VAT increasing from 15% to 20%":

11 "Retail prices increase by 10% (average) with Tier 1  
12 increasing from £0.69 to £0.79".

13 If it is helpful to see it, Professor Singer has set  
14 out all of the tiers at {C2/8/142}. If we just go to  
15 that, please. Thank you very much. You can see each of  
16 the tiers, 0.69, 1.49, 1.99, and so forth, and then the  
17 revised price following the VAT increase.

18 It is right to say that you make the point that what  
19 we are looking at here is, of course, a change by Apple  
20 of its own pricing tiers. Is that not fair to say that  
21 that was at least one of the points you made in your  
22 report about this?

- 23 A. Yes, I think that is fair. I think that is the primary  
24 reason why I think this may not be informative, but,  
25 yes, I make that point.

1 Q. But I want to go back, really, to the topic we have been  
2 talking about, which is what Apple thinks about  
3 incidence, because does this not reflect an assumption  
4 on Apple's part that developers will put their prices  
5 up? Because what it has done is take the existing tiers  
6 and increase them, rather than assuming that the VAT  
7 increase would simply be absorbed by the developers.

8 A. I do not know if you can make any inferences about what  
9 Apple would decide. What they have done is to try to  
10 equilibrate these price tiers which are actually set  
11 globally, so that they are on the same basis. That is  
12 my understanding of what they are trying to do.

13 Q. When you say it is global, just to remind you, if we go  
14 back to {D1/296/3}, this was a table for the  
15 United Kingdom and then if you go to, I think, the next  
16 page {D1/296/4}, you will see Denmark, and then the next  
17 page {D1/296/5}, Sweden and so forth. So actually it  
18 recalibrated for a range of different currencies, rather  
19 than just making an identical change. But what I want  
20 to show you now is another document which, if we  
21 understand it rightly, is part of Apple's thinking in  
22 making this change.

23 This is {D1/242}. Thank you. It is called "Tax &  
24 Foreign Exchange Update", "iTunes & App Store  
25 Impacts", August 2013. If we just go to the overview,

1 I will ask you if you have ever seen this before. It is  
2 the next page, "Overview, "Taxes":

3 "As digital goods become more prevalent, governments  
4 around the world are establishing or revising taxes  
5 through local laws ... The following are expected future  
6 tax changes..."

7 Then the second bullet is "EU VAT rates", which is  
8 obviously what we are interested in.

9 If we go to page 3 {D1/242/3}, it says:

10 "Decisions:

11 "Pricing for EUR, GBP, SEK and DKK".

12 Does this look at all familiar to you?

13 A. I have seen a variety of documents that look like this.

14 I do not know if -- this particular one, but I have seen  
15 presentations that look like this.

16 Q. Good. If we now go to page 34 {D1/242/34}, please.

17 Thank you very much. This is "Appendix 3: UK Pricing  
18 (GBP)". If you look at the first couple of lines, you  
19 can see these are the proposed changes, which I believe  
20 are the ones that took effect. But what I want to show  
21 you now is slide 13 {D1/242/13} which is headed,

22 "Conclusion". Thank you. It says:

23 "Raise prices in 3 out of 4 currencies using  
24 existing methodology..."

25 Then:

1 "For Euro ... [which we are not interested in]"

2 Then points about price bands. Then it is bullet  
3 point 4:

4 "The following analysis assumes demand for apps is  
5 inelastic when making small price changes. This is  
6 historically evidenced by prior app store price  
7 changes."

8 Then it gives the result for the United Kingdom,  
9 which is indeed what we see implemented.

10 So I am just going to put to you really the obvious,  
11 that this shows that Apple decided it could increase its  
12 price tiers on basis of its understanding and experience  
13 that demand was inelastic. Would you agree?

14 A. I think that is something that is on the slide, so

15 I think that must have been part of the consideration --

16 Q. So obviously Apple is expecting that these price  
17 increases can be given effect without too much detriment  
18 to demand; agreed?

19 A. That would be consistent with the limited price  
20 elasticity.

21 Q. Can we go now back to Mr Howell's evidence. This is  
22 {C2/4/42}, please. We looked at this before, but at  
23 paragraph 88.1, in the first sentence, he says:

24 "Larger ... developers will have a sophisticated  
25 price-setting methodology which takes into account

1 factors such as estimated demand elasticity..."

2 So what we see here, Professor Hitt, is Apple taking  
3 the view that prices can be increased because of  
4 inelastic demand; apple taking the view that an  
5 ad valorem tax can be passed on in the form of higher  
6 prices. Would you agree?

7 A. So I think I cannot go beyond what they actually stated,  
8 which is that they stated on the slide that -- again,  
9 what -- the actual full detail of what they were  
10 considering is a little unclear, but the idea that the  
11 demand might be inelastic. Now, of course, if that were  
12 indeed the case, and developers actually faced that,  
13 developers would also be able to unilaterally have  
14 increased their price.

15 So I do not know much more you can say than that,  
16 except that that was something that was mentioned on the  
17 slide, and it was a consideration that they accounted  
18 for when they made these VAT changes.

19 Q. Is this not rather supportive of the proposition that  
20 developers would also pass on the Commission?

21 A. Well, I think that is a separate issue which you can  
22 actually study directly. So, indeed, there is many  
23 other implications of very limited demand elasticity  
24 that I do not think we fully explored, but that would  
25 suggest that developers possibly are underpricing their

1 apps and could have unilaterally increased them.

2 Q. Well, it is a helpful example, is it not, of an  
3 ad valorem charge going up, and Apple proceeding on the  
4 basis it would be passed on because of inelastic demand.  
5 Would you agree that much?

6 A. Well, let us be precise about what it was. Apple faced  
7 an increase in the ad valorem tax. They have adjusted  
8 the price tiers in this complicated pricing environment  
9 to match -- to be consistent, you know, with their  
10 overall view of where those tiers should be.

11 In terms of thinking about incidence, my main point  
12 of departure is this is not a developer choice.  
13 Developers are setting price tiers. Apple is adjusting  
14 those price tiers. This is not as if, for example,  
15 developers faced a shock and then made a decision  
16 independently.

17 Q. If Apple is taking, let us just choose a random example,  
18 price tier 3, and assuming that an app on price tier 3  
19 will pass on the ad valorem charge, of course it does  
20 not have to, it can change tiers, but that is the  
21 implicit assumption in all of this, is it not?

22 A. I do not think -- I do not know if I would characterise  
23 it as pass on. Apple is changing a tier. That price  
24 will go up. This is in response to the VAT, but it is  
25 Apple making the decision as to where they think the

1 right place for these price tiers should be, which is  
2 a different decision than, for example, a developer  
3 facing a change in their commission and responding to  
4 it.

5 Q. But it reflects an assumption by Apple about how  
6 developers will respond to this VAT increase, does it  
7 not, otherwise it would just leave it to the developer?

8 A. Well, this is not a totally unconstrained pricing  
9 environment. Apple uses a price tier structure and,  
10 again, the full reasons for that, I only partially know,  
11 I do not know the full rationale for it; but this is  
12 a situation where Apple provides the existence of these  
13 price tiers. They are responding to VAT by making that  
14 adjustment. Again, it is Apple making that decision.  
15 That is the right way to keep their price tiers  
16 consistent with their view of the way pricing works.  
17 Again, developers may have a choice to make some  
18 adjustments after the fact, but this is Apple making  
19 a decision.

20 Q. You heard in the hot-tub, Dr Singer said that in fact  
21 this led to 70% of developers, as he put it, riding up  
22 with the change, and that is {Day15/43:9}, and  
23 I immediately accept that you have not seen the working  
24 of that, and it was not in Dr Singer's reports. So  
25 I will simply ask you whether you have any idea whether

- 1           that is correct?
- 2           A. I have no idea whether that is correct.
- 3           Q. You have not -- even though you think these VAT
- 4           increases are uninformative, you did not carry out any
- 5           analysis of that kind yourself?
- 6           A. No. Again -- so I considered doing it. It is very
- 7           complicated to figure -- so one of the challenges of
- 8           doing that properly is to figure out what goes to what,
- 9           and what the developers do, so you end up doing this
- 10          very large individual matching exercise. But I think
- 11          that the main point in the thing that I -- my primary
- 12          point, again, not to keep saying the same thing, but it
- 13          is that this really was a choice by Apple to change the
- 14          tiers, and I think that is sort of fundamentally
- 15          different from any reasons than -- developers
- 16          experiencing a direct change in their costs and
- 17          responding.
- 18          Q. Now we are going to talk about your natural experiments.
- 19          It is right, is it not, that each of these concerns
- 20          a reduction from the 30% Commission?
- 21          A. That is correct. Apple has not raised Commission rates.
- 22          Q. You appreciate that the Class Representative's case is
- 23          that the primary counterfactual does not involve
- 24          a reduction; it is just a world where the restrictions
- 25          never existed. That is the Class Representative's case,

1           you understand that?

2           A. That is my understanding that that is the Class  
3           Representative's position, as reflected in Dr Singer's  
4           analysis, yes.

5           Q. There is obviously a debate between the lawyers, as much  
6           as anything, about which is right, and obviously I am  
7           not asking you to express a view.

8                     I want to just show you, though, the joint experts'  
9           statement. So this is {C4/7/30} and it is proposition  
10          73. Here it says:

11                    "The Class Representative alleges that the  
12          Commission is artificially higher than it would have  
13          been absent the ... Restrictions."

14                    Then the last four lines:

15                    "... the relevant Incidence to assess is how  
16          Relevant Purchase prices have been affected [where it]  
17          ... has increased, moving from a low (competitive)  
18          commission to a high (supracompetitive)..."

19                    Dr Singer says he agrees with that, and then in the  
20          last two lines:

21                    "Assessing pass-through in the reverse direction may  
22          lead to attenuated results given 'sticky pricing'."

23                    You say you disagree, and you say:

24                    "I understand that estimating harm in this matter  
25          requires assessing the impact of a decrease in App Store

1 Commission rates on prices paid by consumers."

2 But you have already accepted that of course that is  
3 not indeed the Class Representative's primary case, is  
4 it?

5 A. No, that is my understanding, yes. I think that the  
6 relevant comparison is a decrease, but I understand that  
7 is inconsistent. Yes, there is both the economist  
8 debate and the lawyer debate going on here, so I can  
9 accept that that is the Class Representative's position.

10 Q. Would it not have been helpful to the Tribunal to  
11 address that alternative legal case, obviously not to  
12 express a view on the law, of course, but rather than  
13 insisting that decrease was the right approach, to  
14 actually engage with the case the Class Representative  
15 is running?

16 A. No. So I certainly considered Dr Singer's arguments  
17 along these lines.

18 Q. Okay.

19 A. So I definitely engaged with it. I have opinions as to  
20 why I think my natural experiments are informative in  
21 the environment which he describes.

22 Q. The general point that Dr Singer is making here, prices  
23 are sticky downwards, it is unclear to me whether you  
24 accept that proposition as a matter of generality; in  
25 other words, they are slower to fall than they are to

1 rise?

2 A. So it is something that has been observed in some  
3 environments. I do not think we have any affirmative  
4 evidence that it has been observed here, but there are  
5 studies that have done things on sticky prices. A lot  
6 of it is in sort of the macro-econ literature, but I do  
7 not think Dr Singer -- other than identifying this as  
8 a possibility, I do not think Dr Singer has actually  
9 provided any incremental support that prices are sticky,  
10 or that there are asymmetric effects, but it is  
11 something that exists in the literature.

12 Q. Well, we are going to look at an example of just such  
13 a stickiness. Can we go to {D1/931.1}, please. This is  
14 something that the European Commission produced on the  
15 effect of the interchange fee regulation, and Dr Singer  
16 referred to this in the hot-tub again, I think. Are you  
17 familiar with this at all?

18 A. I have reviewed this document, yes.

19 Q. Good. So you appreciate that what happened is -- in  
20 fact, if we go to page 88, we can see exactly what  
21 happened {D1/931.1/88}. Thank you.

22 This is in the EU. In the third paragraph it says:

23 "... interchange fees on consumer debit and credit  
24 ... transactions within the EU were capped under the IFR  
25 [Interchange Fee Regulation]. As of 9 December 2015,

1 interchange fees were capped at 0.2 of the transaction  
2 value for ... debit cards ... and 0.3 ... for consumer  
3 credit cards ..."

4 So ad valorem.

5 If we go to page 168 {D1/931.1/168}. Towards the  
6 top of the page it says:

7 "The interchange fee regulation required an  
8 assessment of pass-through from merchants to consumers."

9 They look at five Member States, and in the second  
10 paragraph they say because it is very difficult to  
11 measure directly, it is calculated on the basis of the  
12 food retail sector, supplemented with qualitative  
13 evidence.

14 If we go to page 175 {D1/931.1/175}, we can see what  
15 the result was. So it says:

16 "The estimation results confirm that cost changes  
17 are, to a large extent, passed through to consumers ...  
18 [but] the results for the food retail sector show that  
19 cost increases are consistently passed through on  
20 a larger scale than cost decreases. On average, cost  
21 increases in the [Member States] of interest are nearly  
22 fully passed through ... at 90, whereas only 66% of cost  
23 decreases are passed through."

24 Then it says:

25 "This is in line with the literature on cost

1 pass-through."

2 Such as Bergman and Hansen and so forth.

3 So this is obviously in a different context, but  
4 this is an example of stickiness, is it not?

5 A. I think it is an example of asymmetric pass-through in  
6 this particular (inaudible), sure, and that is what they  
7 find.

8 Q. Indeed, and it is notable, is it not, that what we are  
9 actually talking about here is the pass-on of an  
10 ad valorem charge?

11 A. Yes, but in a completely different product with very  
12 different economic characteristics, sure, but I will  
13 agree with that.

14 Q. I am not absolutely sure where we are, whether you are  
15 prepared to accept that when we look at your natural  
16 experiments, the fact that they are decreases is  
17 relevant to their probative value?

18 A. So I am happy to address those points, I do not think it  
19 changes any of the final conclusions in them, but,  
20 again, this is something that Dr Singer raised  
21 relatively late in the game, he has no direct support  
22 that it applies in this particular market, but I will  
23 agree that there exist markets for which people have  
24 done these studies where you do get asymmetric  
25 pass-through, although I will note even in the direction

1           that I think is correct you get significant pass-through  
2           in here, and we do not find that here, which is one  
3           indication why, for example, this study might not be --  
4           the underlying economic conditions might not be the same  
5           in the markets that I am studying -- well, in the  
6           product -- let me say products -- (overspeaking) --

7       Q.   You say he raised it late.  Can we go to {C2/8/139}.  
8           This is Dr Singer's second report.  Sorry, let me be  
9           clear.  I do not want to make an unfair point,  
10          Professor Hitt.  By raising it late, if you mean the MIF  
11          study, well absolutely.  If you are talking about the  
12          issue of stickiness, then I just want to remind you it  
13          was raised by Dr Singer in his second report.

14       A.   No, I believe he mentioned it along the way, and has now  
15          increasingly placed greater emphasis on that point.

16       Q.   I think -- let us have a look at the emphasis he does  
17          place on it.  Because if we look at 285, he raises the  
18          issue of stickiness; app prices may be sticky downwards,  
19          but also at 286 he explains that there is empirical  
20          evidence that:

21               "... incidence from cost reductions differs from  
22               incidence in cost increases.  In the economics  
23               literature, this is known as asymmetric cost  
24               pass-through.  In the presence of asymmetric  
25               pass-through, price responses to cost reductions are not

1 as readily observed as price responses to cost  
2 increases, and, if they do occur, may require sufficient  
3 time to reliably measure the incidence."

4 He cites a number of sources for these propositions.

5 So it is not just -- I mean, Dr Singer did not  
6 invent this idea, did he; it is well founded in the  
7 literature?

8 A. Yes, it is a behavioural, empirical kind of result, but  
9 yes, sure, that exists for certain products. Again,  
10 a lot of it has been studied in sort of, you know,  
11 retail commodity products, like, you know, foods and  
12 beverages and stuff like that, but, yes, that is right,  
13 it is something that exists.

14 Q. It is a relevant consideration here, is it not?

15 A. I think so. Again, you know, it does not fundamentally  
16 change the conclusion that the most likely effect is  
17 zero, that, you know, whether there is -- and that --  
18 well, I can say a variety of things here, but, again,  
19 you know, a lot of this debate would be on the  
20 magnitude, rather than the existence of, although  
21 I understand that some of these studies do describe that  
22 as well, but I think the fact that we get a zero result,  
23 whether it is, you know, 66% of zero or 90% of zero,  
24 that is still zero.

25 Q. Okay. There is another high level point I want to make

1 about the natural experiments which concerns a form of  
2 steering, and of course the word "steering" is being  
3 used in these proceedings in many different ways so  
4 I will do my best to be clear. This is a point that  
5 Dr Singer made in his third report, paragraph 232. Just  
6 for the transcript {C2/15/116}.

7 But the point, as you know, is that in the  
8 counterfactual as envisaged by the Class Representative,  
9 there would be alternative service providers for iOS App  
10 developers within the iOS ecosystem, and of course we  
11 are talking about incidence; this is therefore on the  
12 assumption that we have won at least part of the case on  
13 abuse and indeed market definition.

14 So the assumption in the Class Representative's case  
15 is there would be alternative service providers, and  
16 Dr Singer's point is there is an incentive for  
17 developers to steer customers towards providers with  
18 lower commission, and indeed there is a benefit that  
19 both the developer and the customer can only achieve if  
20 they go along with them.

21 Now, of course, there is a debate between you about  
22 whether or not this strictly resembles an ultimatum  
23 bargaining game, but what I am putting to you is that in  
24 broad terms this kind of incentive would exist, would it  
25 not?

1       A. So there is, if you have -- if you face different prices  
2       in different channels, the incentive exists to consider  
3       the other possibilities. There are a lot of reasons  
4       why -- we actually already live in that world where  
5       developers have alternatives for engaging in  
6       distribution and so forth, and so that is one, I think,  
7       reason why I do not think this is dispositive regarding  
8       the various results.

9               The second thing is Dr Singer has merely invoked the  
10       idea of the steering, and this says: therefore, because  
11       of steering, without anything -- any other support,  
12       other than this, you know, sort of micro -- you know,  
13       textbook economics argument, he does not have a model of  
14       it, that this explains the results.

15              So I disagree that he has provided support for the  
16       steering hypothesis, but I acknowledge that that  
17       incentive is certainly present in a very simple model.

18       Q. Of course the extent to which that operates outside the  
19       iOS ecosystem is something you debated with Mr Hoskins.  
20       I am not going back to that, I am just going to focus on  
21       steering as it could exist within the iOS ecosystem if  
22       the Class Representative's counterfactual were to exist;  
23       in other words, alternative service providers.

24              Would you agree that your natural experiments do not  
25       capture this effect because they are based in the

1 actual?

2 A. So I will agree that they are based on the observation  
3 of the actual world. I will disagree that the  
4 discussions we had in the market definition section are  
5 not relevant, because many of the ways in which  
6 developers can respond involve, for example, shifting --  
7 like Spotify did, shifting to a direct distribution  
8 model, or they can respond, you know, direct  
9 distribution, other platforms, there is a variety of  
10 ways they can respond, and those are present in the  
11 actual world.

12 But in Dr Singer's very, very narrow definition of  
13 steering, for which he does not any provide any support  
14 that that is how much different, or if it is different  
15 at all, with what is currently present, that would be  
16 the case, I can agree with that.

17 Q. Let us look again at Spotify. This time it is  
18 {AB6/45/229}. This is from a part of the decision which  
19 is dealing with the remedy for Spotify's -- for Apple's  
20 anti-steering abuse.

21 Could I ask you to just read, if we go down, I think  
22 it is eight lines into this paragraph, it starts with  
23 the words, "The decision has also shown ..."

24 Do you see those words about eight lines down?

25 A. Yes, thank you.

- 1 Q. Do you mind reading to the bottom of that paragraph.
- 2 (Pause)
- 3 A. Okay.
- 4 Q. So you can see that what is happening here is the
- 5 Commission is making the point that developers need to
- 6 be allowed to put external links or buy buttons or
- 7 something within the iOS App to enable users to make
- 8 effective choices between different purchase options.
- 9 Would you agree that is the gist of what it is saying?
- 10 A. That is what they are saying -- that is what they are
- 11 claiming here, yes.
- 12 Q. If we go, please, to {D1/961.1}, I hope we have
- 13 a screenshot from the Epic website. But can we turn to
- 14 the second page of this, please {D1/961.1/2}. If we
- 15 zoom in there slightly, we can see "Epic direct payment
- 16 on mobile". This is after Epic had broken free of
- 17 the -- of iOS payment. It says:
- 18 "How do you want to pay? Apple App Store, Epic
- 19 direct payment."
- 20 This is just an example of the kind of buttons that
- 21 the Commission is talking about.
- 22 Of course, at the moment, the developers of course
- 23 cannot currently do this, can they, within the rules of
- 24 iOS?
- 25 A. No, and I believe that Epic was actually fined

1 a significant amount in the US for doing exactly this.

2 Q. Would you accept that what the Commission is saying here  
3 in *Spotify* is options wholly outside the app do not  
4 enable users to make properly effective choices?

5 A. So I think that is the claim they are making. I think  
6 that is an incomplete view of the way the world is  
7 currently. I am happy to expand on that, if you would  
8 like?

9 Q. I think you have debated those issues with Mr Hoskins.

10 But in contrast, at least, if you would accept this,  
11 in the counterfactual, without anti-steering rules,  
12 developers would be able to effectively steer users to  
13 lower prices from within the app, would they not?

14 A. Okay, so I think now is a good time to directly engage  
15 with some of these claims.

16 So the steering that is at issue here is very  
17 specific and it is this call to action issue. One thing  
18 that is prohibited is calls to action within that app.  
19 Essentially -- and we have talked about this, I think,  
20 in my reports, and we had some exchanges in the market  
21 design thing as well, where Apple does not permit people  
22 to say, "Hey, I am about to" -- you are about to buy  
23 something, this exact thing, this Epic thing, right?  
24 "You are about to buy something, come over here and get  
25 a lower price". They do not allow that. That is

1 absolutely right. I do not think that is a particularly  
2 unusual restriction if you compare it to, like, regular  
3 retail. You know, we can set that aside -- that opinion  
4 aside for second.

5 This does not stop a Spotify, for example, from  
6 advertising, from building a connection with the  
7 consumer and direct marketing to them in various ways.  
8 So there are lots and lots of other ways in which you  
9 can do so, but I will agree that what is not permitted  
10 is what is shown here. That is the one thing, and  
11 I think that is where I would differ about the  
12 effectiveness.

13 Spotify, if I recall correctly, has something like  
14 \$1.5 billion marketing budget. You would think they  
15 could reach customers in other ways, so that this  
16 doesn't have to be the only way to do so in order to be  
17 able to direct the customers, for example, to their own  
18 website to purchase a Spotify subscription.

19 THE CHAIRMAN: When you say Epic was fined for this, what do  
20 you mean by that?

21 A. So Epic was fined -- again, you would have to read the  
22 direct decision, so I am doing this from memory, but  
23 Epic did pay a fine in the US as an outcome of this --  
24 of evading the App Store.

25 THE CHAIRMAN: A regulatory fine or civil proceedings?

1 A. It was one of the outcomes of the *Epic v Apple* case --

2 THE CHAIRMAN: So there was a financial consequence of --

3 (overspeaking) --

4 A. Yes, there was a financial consequence to Epic for this  
5 whole free Fortnite exercise.

6 THE CHAIRMAN: So you are suggesting that there was  
7 a contractual constraint, but you are not suggesting  
8 there was a regulatory constraint?

9 A. No, this is purely a contractual constraint. Sorry if  
10 that was ambiguous. This is a contractual constraint of  
11 the terms of service on the App Store.

12 THE CHAIRMAN: Thank you.

13 MR WARD: Just to be clear both to Professor Hitt and to the  
14 Tribunal, we show this simply as an example of what  
15 these kind of things --

16 THE CHAIRMAN: I understood. I just did not want there to  
17 be any suggesting lurking that there was somehow some  
18 sort of a regulatory problem or, if there was, we ought  
19 to understand it.

20 MR WARD: The question of the extent to which any of these  
21 things, like Spotify, are really a constraint on Apple  
22 is obviously something that has already been debated in  
23 these proceedings.

24 Let us look now at your individual natural  
25 experiments. Can we go to {C3/4/233}. Can we zoom in

1 slightly on exhibit 35, please.

2 A. 233?

3 Q. Sorry, Professor. So this is your second report and it  
4 is page 233. Are you there?

5 A. Yes.

6 Q. Great. Thank you very much. This is exhibit 35. I am  
7 just going to read out the heading of it:

8 "App developers did not reduce prices for the vast  
9 majority of products in response to lower commission  
10 rates due to Apple's partner programs and policies."

11 So this is being used by you to prove a negative,  
12 and, of course, we made the point in opening that the  
13 opposite of that is the positive, namely that 6 to 32%  
14 of developers did reduce prices as a result, and that is  
15 just the arithmetic of your right-hand column.

16 Now, this came up in the hot-tub and what you  
17 pointed to was your difference-in-difference analysis,  
18 if you recall, and we are going to look at that in  
19 a moment.

20 A. Okay. Is there a question?

21 Q. There will be. Well, I can tell you what I am putting.  
22 I am putting that this does indeed show that some  
23 developers did reduce their commission in response to  
24 the lower commission rates, to use the language of your  
25 heading.

1       A. Yes. So the way you should interpret it in response  
2       here is, again, maybe perhaps inartful, but I do not  
3       think I would make the claim it is a causal link. What  
4       it says is that before versus after, you observe these  
5       changes, and -- so that is right, there were some  
6       fraction of developers who, ex post, raised their  
7       prices. That is true. Whether that is -- so what  
8       this -- I think when we had this discussion in the  
9       hot-tub.

10       The way I interpret this is that most of the time  
11       kind of nothing happens. Sometimes the prices go down,  
12       sometimes the prices go up, but most of -- and the  
13       number tabulated here is the combination of prices went  
14       up or prices did not change.

15       To get at whether or not this is causal -- this is,  
16       you know, temporarily proximate. Whether it is causal,  
17       I think you would need to look either at the actual  
18       diagrams for the ones I cannot do, diff-in-diff on(?),  
19       or the diff-in-diff, which accounts for the fact that  
20       prices are going to go up, prices are going to go down,  
21       just because developers do all sorts of things, and that  
22       is just a natural market outcome.

23       So to try to distinguish the normal level of changes  
24       from the changes that may be causally related to this  
25       program requires additional analysis. I think this is

1           informative on its own, but I do not think it -- it is  
2           not intended to be a causal relationship.

3       Q.   Well, I used the words "in response to" only because  
4           those are your words in the heading to exhibit 35.  You  
5           are saying it only works in your direction but not in my  
6           direction?

7       A.   No, it works in your direction but, again, I think the  
8           causal claims are based on the diff-in-diff and the  
9           review of the individual charts that are in the back for  
10          NPP and VPP where we cannot do the diff-in-diff.  But  
11          certainly I think it works -- I do not disagree that  
12          13 -- for example, small business, 13% of developers  
13          reduced their prices, and 32% -- well, that is a small  
14          numbers issues, but 32% reduced their prices following  
15          it.

16       DR BISHOP:  You are setting up difference-in-difference as  
17          a kind of gold standard, which is fine, but that does  
18          not mean that other evidence is not evidence.  You  
19          cannot make the best the enemy of the good surely?

20       A.   So, no, I think that you need to look at all this.  So  
21          I think the most useful interpretation of this is a lot  
22          of the time developers do not do anything.  Now, when  
23          they do do something, now we need to figure out, okay,  
24          is it causally related or not?  I think the  
25          difference-in-difference is a better way to answer that

1 question.

2 MR WARD: We are going to go to the difference-in-difference  
3 in a moment, but just to make clear to the Tribunal  
4 something you said there during one of your answers,  
5 there is no diff-in-diff for either Video Partner or  
6 nEws Partner Program, is there?

7 A. Yes, we can talk about why I think that could have  
8 a causal interpretation, but we do not have a  
9 diff-in-diff for those two, that is correct.

10 Q. So there is no diff-in-diff, so what we actually have is  
11 just the stark fact that, to use your language, in  
12 response, but I know you do not like that now, there was  
13 in fact a reduction in those two categories following  
14 the price reduction?

15 A. I think that you can read this as in the news partner  
16 program, 32% of developers in the post period had  
17 a price reduction. We can take a look at them and see  
18 how consistent they are with the pass-through model, but  
19 yes, that is an empirical fact.

20 Q. What we will do now is just look briefly at your  
21 diff-in-diff analysis at appendix 13. It starts on page  
22 {C3/4/665}. I am only going to go to a couple of points  
23 in there. It is quite lengthy so, because of time, I  
24 will take two brief points.

25 The first one is on the next -- page 667 {C3/4/667}.

1 It is just that you say something here which is an  
2 inevitable feature of this kind of analysis at  
3 paragraph 4:

4 "The regression shows that app developers on average  
5 do not reduce consumer prices in response to  
6 a decrease."

7 Indeed, footnote 3 expands on that:

8 "While the regression shows that on average app  
9 developers do not reduce prices, the regression results  
10 do not mean that all app developers change their prices  
11 by the estimated coefficient."

12 So that does allow for the possibility indeed that  
13 some developers did reduce their prices, even in this  
14 category. Would you agree?

15 A. Yes, it does allow for that possibility, but on average  
16 the causal relationship is zero. Some went up, some  
17 went down, but on average the causal relationship is  
18 zero. Then combine that with the previous, the most  
19 likely reaction is to do nothing.

20 Q. If we go on, now, please, to page 680 {C3/4/680}. This  
21 is the analysis for the auto-renewing subscriptions, or  
22 at least one of them. Here you have a series of  
23 coefficients. In fairness, I think you mentioned this  
24 in the hot-tub, Professor Hitt.

25 A. Yes.

1 Q. What we see in the lifestyle genre, so that is rows 7, 8  
2 and 9 in this table, we see a price coefficient of minus  
3 0.185 with two stars of statistical significance.

4 A. Right.

5 Q. So in that -- we can see it is based on about half  
6 a million observations. In that category, your  
7 diff-in-diff analysis did show reduced prices, did it  
8 not?

9 A. In that analysis, which is just one of many, even for  
10 that. So this is analysis of that genre, in that time  
11 window. But I will agree, if you look at pretty much  
12 all the other coefficients, I think this is right, you  
13 will correct me if I am wrong, I think that is literally  
14 the only one that was negative and significant of all of  
15 them. Again, most of them are zero, a few are positive  
16 and significant, I do not make too much from that, but  
17 that is the case. But, yes, of all the analyses  
18 I have done, including all the robustness checks,  
19 I think this is the one I saw that was negative.

20 Q. So that does support a finding of incidence, at least in  
21 that genre, does it not?

22 A. In that time window. This is also the kind of long-ish  
23 time window as well. I think it is not the one I  
24 focused on, which is the six month plus or minus, so  
25 I think that is a little less strong, but, yes, that

1           would be consistent with -- if this were the ideal one  
2           within this genre, that is some evidence that is there,  
3           but it is the only one of many, and when you take it in  
4           aggregate, I think there is not strong evidence to  
5           suggest that there is positive incidence.

6           Q. One of the sources we looked at a little earlier about  
7           price reductions was suggesting that where there is  
8           a cost reduction, it may take longer for prices to fall.  
9           Would you agree with that?

10          A. I think that is a claim here. Again, you have to be  
11          careful about differences in product. You know, things  
12          that have -- and the timing of when these studies are  
13          done. So I think that is a finding of those studies,  
14          I want to look very closely at that, because in digital  
15          products where you get a lot of flexibility, I can  
16          literally go in and change my price if I want to.

17                 So the kinds of things that would give you that  
18          result may be less so in digital than it would be, for  
19          example, in food and beverage where you have shelf tags  
20          and things like that.

21          Q. Let us now look at the individual programs briefly. Let  
22          us start with the small business program.

23                 This is only for developers who make less than  
24          \$1 million in the previous year, is it not?

25          A. Yes, that is correct.

1 Q. So -- and of course, according to your data, this claim  
2 is mostly concerned with large developers, is it not?  
3 There is a relatively small number of large developers  
4 who account for the value of the claim?

5 A. So -- I do not want to recite that statistic, but, yes,  
6 there is a handful of large developers that represent  
7 a significant share of all revenue, but, again, this  
8 is -- I understand the claim is all developers.

9 Q. It is.

10 A. I am going to do a natural -- every natural experiment  
11 I can do, I did.

12 Q. I think -- I hesitate, but I think from recollection,  
13 Dr Singer has a class -- a statistic that it is 3.2 --  
14 the small business program is 3.2% of the value of the  
15 claim. It is very small. We will check later whether  
16 I got that right.

17 A. So I will have to reconcile that with mine. That  
18 statistic may be computed in a kind of unusual way.  
19 I think the small business program is the second largest  
20 of the four programs that I have done, and the reason  
21 why I think we depart -- again, I will have to look  
22 exactly at the computation, and I may not be able to do  
23 it live, but the small business program does represent  
24 a single digit percentage, but it is a high single digit  
25 percentage of commerce.

1           I think Dr Singer's figure, and I do not know if  
2           that is the one you just cited, averages in the period  
3           in this case, that is not -- where the program was not  
4           active, right, so I think you have to make -- just to be  
5           apples to apples, it is, you know, a more than 5%-ish  
6           kind of percentage, but it is -- again, that is the  
7           right order of magnitude, but if you average in all the  
8           time in this case prior to the small business program,  
9           we are going to get a lower number.

10        Q. For what it is worth, the statistic that I actually did  
11        manage to remember is {C2/15/118}. This is Dr Singer's  
12        third report. At the bottom of paragraph 234, the last  
13        four lines, he says:

14                "... consumer spending on iOS Apps in this program  
15                is only 3.2 percent of overall spend..."

16                In fairness, he is not clear about which time period  
17                he is using, but, either way, this tells us this is not  
18                of great significance in the claim before the Tribunal,  
19                is it?

20        A. So it is -- I think, if I recall correctly, and, again,  
21        we can clean it up after the fact, but I believe that  
22        the figure he is using does average that in there, and  
23        so we are now talking about -- let us call it somewhere  
24        between 5% and 10%. Maybe I can even get you the actual  
25        figure, because I think it is in the report. If you

1           want to point me to it, I am pretty sure this figure is  
2           in the report.

3       Q. I cannot do better than that.

4       A. I think my number is slightly higher but, yes, you  
5           should not think it is much -- it is not above 10%. It  
6           is a high single digit percentage.

7       Q. Okay. Well, let us talk about three points of more  
8           generality that do not depend on -- two more points of  
9           generality that do not depend on the exact share. The  
10          first one is about how the program works. Can we go,  
11          please, to {D1/1003}.

12                Now, this is actually -- if we go to the next page  
13                {D1/1003/2}, this is the press release that announced  
14                it. The first page tells us it was exhibited by  
15                Mr Schiller, and it says Apple announced it and so  
16                forth.

17                In the last line, it says:

18                "Developers can qualify for the program and [the  
19                next page {D1/1003/3}] ... reduced 15 per cent  
20                commission if they earned up to US\$1 million ... during  
21                the previous ... year."

22                That is the point you and I just discussed.

23                If we go to the bottom of the page, please, it  
24                says -- it gives a few more details in bullet points:

25                "Existing developers who made up to US\$1 million in

1           2020 ... can qualify..."

2           Then it is the second bullet point:

3           "If a participating developer surpasses the US\$1  
4 million ... the standard commission rate will apply for  
5 the remainder of the year."

6           So what this is telling us is that if a small  
7 developer is successful, gathers momentum, they will  
8 have to put their prices back up again, will they not,  
9 if they passed on the reduction in commission?

10       A. So you can outgrow the SBP, that is true, and if you are  
11 not subject to one of the other commission programs.

12       That is correct. You can outgrow it. Again, you have  
13 to think -- I would not necessarily adopt your  
14 "successful" language because, again, this is just  
15 App Store revenue. There are many developers, for  
16 example, that monetise heavily on advertising, and so  
17 they could be quite successful. They just happen to not  
18 have more than a million in App Store revenue.

19       Q. My simple point is this: it creates an obvious  
20 disincentive to pass on this reduction, if you may find  
21 yourself back in the world of 30% commission?

22       A. Again, that involves a complicated set of behavioural  
23 decision-making things. I can envision a world where  
24 developers may not want to change their prices, or you  
25 could also envision a world where developers do. So it

1 depends on their readiness to change prices as their  
2 cost structure appears.

3 What we typically see, though, is that, you know,  
4 again, there is not a whole lot of reaction to these  
5 kinds of changes, so the default seems to be do nothing,  
6 but, again, yes, that is a possible incentive, although,  
7 again, we do not have established whether they act on it  
8 or not, and how many do.

9 Q. Just pausing for a moment, sir. It is 1 o'clock. I  
10 definitely would like the extra 30 minutes, just to  
11 confirm.

12 THE CHAIRMAN: Yes, good.

13 MR WARD: Thank you. Then the third point I have on this is  
14 really about context, and this goes back to what Dr  
15 Singer was talking about in the hot-tub, and of course  
16 we are talking about December 2020, and this was around  
17 the time of what he called raging inflation, to use his  
18 language. That is {Day18/37:1}. But we also heard from  
19 Mr Schiller that this was introduced as a part of the  
20 response to Covid which of course had started in  
21 the March of that year.

22 Now, would you agree that those are extraordinarily  
23 tough and uncertain -- environment for a small  
24 developer?

25 A. Well, tough. That is an interesting point, because

1 I think the demand for apps actually went up very  
2 substantially during Covid, as people were kind of  
3 confined to their homes, but, yes, there are unusual  
4 circumstances here, and that is one of the reasons why  
5 you use something like diff-in-diff, that controls for  
6 those kinds of things.

7 Q. But the general point that Dr Singer is making, and I am  
8 going to use his quite memorable words:

9 "You have to be very generous to your customers to  
10 give them a discount because you have enjoyed to some  
11 cost savings."

12 I should say, in those circumstances; would you  
13 agree with that?

14 A. Sorry, what was the exact quote?

15 Q. I will read it again:

16 "You have to be very generous to your customers to  
17 give them a discount because you have enjoyed some cost  
18 savings."

19 He means in this particular context. You have  
20 inflation, you have Covid, Apple is giving you 15%  
21 discount as long as you do not breach \$1 million. It is  
22 pretty bullish, is it not, to say the right response  
23 here is to pass that straight on?

24 A. I think that is just pure non-economic speculation.

25 So -- and indeed, I think certainly conditions -- first

1 of all, that is pure non-economic speculation. Second,  
2 to the extent that -- yes, one of the reasons for using  
3 diff-in-diff is to deal with things like this which are  
4 temporal shocks, as economists say, which is when things  
5 change in a certain time period, that is what  
6 difference-in-difference is intended to accommodate.  
7 That is one of the benefits of using that framework.

8 Sure, that would apply to the small business  
9 developers. It would also apply to the people who are  
10 just above the small business threshold, and that is  
11 what the diff-in-diff makes the comparison for.

12 Q. Indeed, you did not carry out the diff-in-diff dealing  
13 with a comparison between the small developers and large  
14 developers, did you?

15 A. No, the contract -- the three control groups, which  
16 I think -- you know, as diff-in-diff designs are done  
17 are pretty close to the best things you can do. They  
18 are close to what is called regression discontinuity  
19 analysis, which I happen to really like -- is that we  
20 either look at people who qualify but did not adopt, so  
21 these are presumably developers who face similar  
22 circumstances, but chose not to adopt. That is one of  
23 them.

24 Then the other control -- the other important  
25 control group -- then we did later adopters, people who

1 had not adopted yet, but later adopted. That seems like  
2 it is pretty close. Finally, the one that is kind of  
3 like a regression discontinuity thing, where you compare  
4 developers that are just above the threshold to ones  
5 that are just below. Unless something dramatically  
6 changes at \$1 million other than the Commission, that is  
7 a good control group.

8 So I think the control groups we chose were chosen  
9 to be able to isolate the causal effect on the small  
10 business developers, not to make contrasts with larger  
11 ones.

12 Q. Let us look, please, at {C2/4/42}. This is Mr Howell's  
13 evidence again. Can we look at 88.2:

14 "For smaller iOS App developers, their pricing is  
15 typically determined by reference to existing comparable  
16 apps. For example, a small iOS App developer of  
17 a calculator ... might look at similar iOS Apps in the  
18 App Store to identify the appropriate price."

19 So this suggests, does it not, that they may well be  
20 influenced by the prices of larger developers?

21 A. I certainly agree that apps compete against other apps,  
22 and that is a consideration, and that may constrain your  
23 behaviour. That is true. (Pause)

24 I will also note that that is at odds with many of  
25 Dr Singer's claims, but -- at least his underlying

1 models, but I strongly believe that apps do compete with  
2 each other, and that is a consideration, but, again,  
3 that is why we do these kinds of empirical exercises.  
4 It is a big complicated world. If we observe what  
5 people actually do in an appropriate framework, I think  
6 we can draw some, you know, useful inferences about how  
7 they would behave in other circumstances.

8 Q. Let us go to auto-renewing subscriptions. Now, this  
9 deals with recurring subscriptions, and you mention  
10 genres like entertainment, health, fitness and  
11 lifestyle. So that would include, for example, a home  
12 workout app or a dating app, would it not, for example?

13 A. Yes, subscription -- I think that is fair, that  
14 particular -- the subscription apps, dating apps, in  
15 particular, are very heavily dependent on subscriptions.

16 Q. It would also include, of course, the music streamers,  
17 would it not?

18 A. It would also include them as well.

19 Q. Where we have already seen a finding of incidence of  
20 over 90%.

21 Now, the way that this worked is that there is a 30%  
22 commission for the first year, but just 15% on renewal  
23 after the first year. That is right, is it not?

24 A. That is correct.

25 Q. I think it is common ground that developers cannot offer

- 1 a lower price for the renewal period?
- 2 A. Yes, I think there is -- I think there is an explicit  
3 restriction that you are not allowed to price  
4 discriminate in that way.
- 5 Q. So if developers choose to cut their prices in response  
6 to the reduction in commission, they will lose on the  
7 initial purchase, will they not?
- 8 A. So, yes, they would be offering a lower price to all  
9 subscribers in the expectation that some of them would  
10 subscribe -- would continue their subscription after the  
11 first year, so their effective commission over the life  
12 cycle is lower but, yes, they would be offering  
13 a reduction in price to everyone who subscribed, even  
14 those who might terminate in the first year.
- 15 Q. So it would only make sense if you expected a good  
16 enough rate of renewal to compensate you for that, would  
17 it not?
- 18 A. Yes. I mean, I think that was the whole purpose of the  
19 program, is to encourage developers to do things that  
20 would encourage ongoing subscription, and many of the  
21 types of apps we are talking about may be things where  
22 you may expect people to continue year to year. Videos  
23 in a certain(?) world, but music streaming would be  
24 another one. Some of these lifestyle apps as well.
- 25 Q. But it is obviously a disincentive to giving the

1 discount that you are counting on getting enough money  
2 back through enough years of subscription to forego the  
3 revenue in the first year, would you agree?

4 A. That is a very strange way to frame things --

5 Q. I can only apologise.

6 A. The reason I find that strange is because you can  
7 envision developers being able to be -- able to look  
8 forward in time, and recognise that the effective price  
9 that they are -- they charge is going to be some blended  
10 average of the first-year people and the multiple-year  
11 people, and that is a reduction, and we can actually  
12 compute that number and it is on the order of --  
13 a little more -- somewhere between -- actually, let me  
14 be precise and get the numbers here.

15 But the ... they can look forward and see this and  
16 so, for example, you know, you are looking at reductions  
17 effectively somewhere in the order of 5 to maybe  
18 a little more than 10%. It is not the full 15, but  
19 certainly developers can look forward and see that, and  
20 so they are making a decision on that basis.

21 Q. Professor Hitt, that is obviously a factor, is it not,  
22 in whether developers decide to cut their prices?

23 A. I think, absolutely, I think there is -- I mean lifetime  
24 value is certainly a consideration in this, and  
25 I think -- but the idea that a developer is incapable of

1 looking past the first year, especially when they are in  
2 a program where the idea is to try to get them to renew,  
3 I think is not quite right, but certainly it is a -- if  
4 you look across a population of consumers, you are not  
5 going to get the full 15%, you are going to get  
6 something less, and the analysis identifies that.

7 Q. It is not my point that they are incapable, it is rather  
8 that they might look and they might not fancy taking the  
9 risk; would you agree?

10 A. I suspect -- risk? So, again, I think if you think  
11 about developers being willing to consider lifetime  
12 value, which is the kind of consideration you would want  
13 to have, and in fact that kind of consideration was used  
14 in the *Spotify* decision, if you think about developers  
15 being able to look forward and consider the lifetime  
16 value of a customer, then certainly they would want  
17 to -- they would factor this into that calculation, yes.  
18 It is -- again, people can do anything they want, but  
19 certainly normal economic reasoning must be that you  
20 look forward and say how much am I paying, what can  
21 I expect to get back, and that is going to factor in  
22 that renewal commission at the lower rate.

23 Q. I am so sorry, just give me a moment. (Pause)

24 Forgive me, Professor, just give me a moment.

25 (Pause)

1           Your analysis is about the immediate period after  
2           the policy was introduced, is it not? If we go to  
3           {C3/4/241}.

4       A. The core analysis that I focus on is plus or minus  
5           six months. I go as short as a month and as long as a  
6           year after the program.

7       Q. So it was an entirely new proposition for developers at  
8           that point, obviously, was it not?

9       A. So the existence of auto-renewing subscriptions was  
10          present before the --

11       Q. But the reduction?

12       A. The reduction, yes, that was an event that applied to  
13          anybody offering -- automatically applied to anybody who  
14          was offering an auto-renewing subscription.

15       Q. I just want to show you an email from one very large  
16          developer at {D1/657}. Now, let me just make sure what  
17          I can and cannot read out. Actually, sorry, this might  
18          be the wrong email. I am so sorry. If you just give me  
19          a moment. I am sorry, this is a wrong reference,  
20          entirely down to me. (Pause)

21                I think it is my mistake. Can we get that back  
22                {D1/657}. Can we go down to the next page {D1/657/2}.

23                Yes, it is right at the bottom, here. No, this is still  
24                not it. Can we go to the next page {D1/657/3}. Ah,  
25                here is the one I wanted.

1           So the difficulty I have is the name of the  
2           developer is -- the person who sent this is treated as  
3           confidential, but if we scroll down to the end of this  
4           email, so probably on the next page {D1/657/4}, we see  
5           his name and what his title is and the developer group.  
6           Do we see that?

7           A. Yes.

8           Q. I hope the Tribunal will be familiar with which type of  
9           app this was. If we go back, now, to the previous page  
10          {D1/657/3}, actually it is not too much of a secret  
11          because this is not redacted. It says in the  
12          penultimate bullet point:

13                 "Dating as a category is episodic. The average  
14                 subscriber stays only four to five months. As a top  
15                 grossing partner we are never able to take advantage of  
16                 the 15% rev share since the intent of our apps is  
17                 actually to have people meet and leave our apps."

18                 Then it contrasts it.

19                 So obviously this is just one very large developer,  
20                 but I am simply making the point that there are good  
21                 reasons why these particular reductions might not be  
22                 passed on. Would you agree?

23          A. So that may be the case. Again, the average subscriber  
24          stays for four to five months, however in expectation --  
25          that is a mean. There is a distribution, right, and so

1           some of those will carry over to further. So I will  
2           agree that if your mean is four to five months, you are  
3           probably going to get less of an average reduction too  
4           and it may be less salient for them, but certainly it is  
5           a reduction and, again, Dr Singer's models, that, you  
6           know, in part I am responding to, do not make any  
7           distinction between the level of reduction. This is an  
8           expected commission reduction, even if it might not, for  
9           example, hit Match Group as well -- sorry. It might not  
10          hit them as much as it might hit others.

11         Q. Okay. Let us talk about the Video Partner and  
12          News Partner together, as I really have just one broad  
13          point for you that applies to both. In both cases, what  
14          happens is that Apple offers an inducement in the form  
15          of lower commission to join the program for certain TV  
16          and news services that meet its requirements. Sadly not  
17          CAT TV, but other TV and news services. If you sign up  
18          for this, you form part of Apple's own TV and news  
19          offerings, so your product will come through Apple's TV  
20          platform and app and its news app; yes?

21         A. Yes.

22         Q. So in each case what you are being offered as  
23          a developer is a reduced commission for your own app on  
24          the App Store but also the prospect that there may be  
25          some cannibalisation of customers away from your own pay

1 wall sources, even on the App Store. Would you agree?

2 A. Yes, I would not agree necessarily. So I have not  
3 studied the extent to which that might actually be the  
4 case, but, yes, I will agree that the VPP and  
5 News Partner programs both come with some additional  
6 conditions to try to encourage increased value on the  
7 platform.

8 Q. So it is a particularly complex decision, is it not,  
9 whether a developer would offer reduced prices in the  
10 light of the reduced commission and not something one  
11 can generalise from?

12 A. Well, I think it is generalisable to the extent it is --  
13 so I think it is a value of two reasons. One is it does  
14 certainly apply to the category as a whole and, second  
15 to the extent that other apps may have the same  
16 attributes of it, it might extend beyond there and,  
17 third, the reason for doing it of course is there are  
18 limited examples of where you have commission rate  
19 changes, so study them all.

20 Q. Okay. Let us now move on to your four economic  
21 realities, as you call them, which you pre-viewed to the  
22 Tribunal shortly before the break. This is {C3/4/263}.  
23 The first one is about zero or minimal marginal costs.  
24 At 468, you say:

25 "Zero or minimal marginal costs are common for

1 products in digital markets ..."

2 At 487:

3 "When app developers have exactly zero marginal cost  
4 for a product, textbook economics says that they will  
5 not change consumer prices in response to a change in  
6 the Commission rate."

7 Then over the page, at 489 {C3/4/264}, you say:

8 "An app developer with minimal (rather than zero)  
9 marginal cost would also ... not reduce consumer prices  
10 ..."

11 At 490:

12 "The economic literature recognizes zero or low  
13 marginal cost ..."

14 Now, the importance of this is that -- sorry, let me  
15 step back. Your view is the Commission itself would not  
16 be treated as a marginal cost by a developer, is it not?

17 A. So let us be very careful here. So it is my view that  
18 that would not meet the standard definition of marginal  
19 cost, but Dr Singer and I disagree on that. Where  
20 this -- but where this is really, really important to  
21 make a distinction is if you model it as something that  
22 is a percentage charge on revenue, rather than treating  
23 it as a fixed fee, that is where this result holds. So  
24 whether you call it marginal cost or not, if you  
25 actually model it the way it is assessed, which is as

1 a percentage of revenue, this result holds.

2 Q. We are absolutely going to come on to that shortly, but  
3 let's look first though at joint experts' statement  
4 {C4/7/31}, just to understand what the disagreement  
5 between you and Professor Singer is. It says the  
6 Commission is a marginal cost. This is the proposition  
7 you are being invited to agree with or disagree with.

8 A. Sorry, what number?

9 Q. {C4/7/31}. Do you have that?

10 A. Yes.

11 Q. Thank you:

12 "the Commission is a Marginal Cost. It is distinct  
13 from other per-unit Marginal Costs that ... App  
14 Developers may incur."

15 Professor Singer agrees and he says it:

16 "... is an ad valorem marginal cost, similar to  
17 a VAT. That is, the Marginal Cost is dependent on the  
18 sale price, while a per-unit marginal cost is flat  
19 regardless of sales price."

20 You say you disagree:

21 "the Commission rate is not a marginal cost.  
22 Marginal cost is defined in textbook economics as the  
23 change in the total cost of producing an additional  
24 unit."

25 So, in your analysis, because it is not a cost of

1 production, it is not a marginal cost, is that fair?

2 A. Yes, I think -- so, again, let us be very careful. Two  
3 distinctions. One is I do not think it meets the  
4 definition of marginal cost, but, regardless, if you  
5 look at how it enters the model, whether you call it  
6 a marginal cost or not, the zero marginal cost -- the  
7 result I get follows directly from the fact that it is  
8 applied on revenue, not whether or not I have defined it  
9 or Dr Singer has defined it as a marginal cost. I do  
10 not think it meets the condition based on my  
11 understanding of textbook economics.

12 Q. Let us look now, please, at {H1/4.1}. Now, this is  
13 entirely marked as pink at the moment and it is your  
14 deposition in the -- I assume I can describe what it is.  
15 Sorry, I was about it to embark trustingly. I will be  
16 absolutely clear with my friends what I am going to do.  
17 I am going to be looking at two of Professor Hitt's  
18 depositions to look at what he says is a level of  
19 generality about marginal costs. That does not involve  
20 any specificity about any evidence of any kind. If that  
21 is objectionable, we will have to do it in closed  
22 session, but most of that is going to come a bit later.

23 MR PICCININ: I understand the issue, sir, is that these are  
24 covered by the Protective Order because they are  
25 depositions rather than in open court.

1 THE CHAIRMAN: I think, in order to respect the position, we  
2 will have to do it that way. It may be that that is --  
3 it is up to you how you want to do it, but it probably  
4 would be better to do that --

5 MR WARD: Well, can I propose this, sir: I want to make one  
6 very short point that I can do now by pointing and then  
7 later, probably after lunch, judging by the time, I am  
8 going to do a bit more detail and we will go into closed  
9 session and then the problem is solved and there need  
10 not be any difficulty.

11 THE CHAIRMAN: What we might do is go straight into closed  
12 session immediately after the short adjournment.

13 MR WARD: I may see whether that -- if you just give me  
14 a moment. I am going to come to it pretty quickly so  
15 let us see if I can get all the way there before 1.30.

16 THE CHAIRMAN: You do want you can, yes.

17 MR WARD: All I was going to do, Professor Hitt, was ask you  
18 to look at page 19 {H1/4.1/19}. You say -- I will not  
19 read it out -- something at lines 17 to 21 on page 19.

20 (Pause)

21 A. Okay. Line 19, yes.

22 Q. Have you read that? Sorry, to line 21, 17 to 21.

23 A. 17 to 21. Yes, okay.

24 Q. Would you agree that the Commission is an incremental  
25 cost of one additional purchase?

1       A. So, again, I think this can -- this is consistent with  
2       incremental production cost. I do not think I put the  
3       qualifier on there, but that is the way I think about it  
4       and it is what it is.

5       Q. Okay. As you said beforehand, you said to the Tribunal  
6       a moment ago, what really matters to you is that in your  
7       world an ad valorem cost, however you describe it, can  
8       be ignored for the purpose of pricing. Is that fair?

9       A. Not ignored. If you model it, if you build an economic  
10      model along the lines of the types of models that  
11      Dr Singer has proposed and you model it as a percentage  
12      of revenue, you get the result that the incidence rate  
13      depends on marginal cost and when marginal cost is zero,  
14      incidence is zero. That is true for both the logit and  
15      the linear.

16     Q. If we look very briefly at the mathematics you are  
17     talking about. It is {C3/8/229}, which is appendix 5 to  
18     your third report. I will invite the Tribunal to read  
19     this at its leisure, but the gist of this mathematics --  
20     and this is, in fairness, talking about  
21     Professor Singer's -- Dr Singer's models, so I am taking  
22     it out of that context now and talking about the point  
23     you raised a few moments ago.

24             The gist of this, as I understand it, is that as the  
25     Commission is an ad valorem charge, pass-through would

- 1           be a function of per unit marginal costs?
- 2       A.   So I do not like the per unit marginal cost
- 3           ad valorem/marginal cost discussion. Marginal cost is
- 4           marginal cost so I will adopt your language without
- 5           adopting it, but, yes, the marginal cost of production
- 6           would be -- is a function of that, which would be --
- 7           which in these models is treated as a fixed number.
- 8       Q.   One can see that perhaps most easily in words, rather
- 9           than equations, at {C3/8/235}, so page 7 of this
- 10          appendix.
- 11       A.   I will actually grab my report and do it off paper. Go
- 12          ahead and ask.
- 13       Q.   I am just going to put down a bookmark now that there is
- 14          something that is confidential that I would like to --
- 15          actually, I am going to -- I can deal with this in open
- 16          actually.
- 17                Your point is that because these charges are
- 18                ad valorem, they would only be passed through to the
- 19                extent there was also, in my language, not yours, per
- 20                unit marginal costs?
- 21       A.   Yes, using your terminology, which I think -- where is
- 22           it labelled on here? This is not on this -- oh, at the
- 23           top of the page, in 19, MC, that is marginal cost, which
- 24           is a fixed number per unit.
- 25       Q.   Okay. So it becomes very important, in your world, to

1 understand how much fixed per unit marginal cost there  
2 is?

3 A. Well, yes and no. So think about what this is being  
4 used for, which is to say I have observed zero  
5 incidence. Are there reasons why that might be the  
6 case? One reason why that might be the case is that the  
7 marginal cost of production for the thing for measuring  
8 incidence on is close to zero. That is one use. If you  
9 believe that is the case, maybe it extends beyond that.

10 Q. What I want to do now is look at your expert report in  
11 the US proceedings. This is not a protected document,  
12 as I understand it, but if it is, we will just have to  
13 stop and go after lunch. {H1/2.1}. Can we go to the  
14 first page at then my friends can confirm. I think this  
15 is all an open document, is it not, subject to any  
16 marking? It has not been marked pink. It is 1.28. So  
17 I do want to respect their concerns in this area.

18 THE CHAIRMAN: I think it sounds like it is fine. Just go  
19 ahead.

20 MR WARD: Okay. Well, let us go to this. This is your  
21 expert report, dated August 2021, and we can see it is  
22 in the Apple iPhone Antitrust Litigation and the Cameron  
23 Litigation. I think the first one is a class action by  
24 consumers and the second one is a developer, or do  
25 I have that the wrong way round? It is certainly both.

1 A. There is some procedural history. It may be after the  
2 developers -- actually Cameron -- ah, I do not know. It  
3 was both and then the developers settled. So this was  
4 somewhere along the way.

5 Q. Sure. We can see, I think, if we go to page 11,  
6 internal, paragraph 14 {H1/2.1/11}, we can see what the  
7 state of play was at the time under, "Allegations"?

8 A. Yes, this was earlier on. I think was before the  
9 developers had settled.

10 Q. So it is 2021 and it says it relates to two proposed  
11 classes of consumers of the App Store:

12 "... the subset of consumers who have made paid  
13 transactions ... and the subset of developers who have  
14 engaged in paid transactions."

15 So your report is addressing both.

16 Then if we turn, now, please, to page 175  
17 {H1/2.1/75}, what we can see is a heading that says,  
18 "Professor Economides cannot assume that every developer  
19 has low marginal costs". We think that  
20 Professor Economides was the expert instructed by -- who  
21 contended there was no pass-through by developers; in  
22 other words, he was for the developers arguing that the  
23 Commission stuck with them.

24 A. That I do not recall, but, yes, he was -- so I was  
25 addressing the question of whether or not this would

1           give you uniform zero pass-through across an entire  
2           class --

3       Q.   Yes.

4       A.   -- by itself.  That is what -- that is the issue that  
5           was being addressed here.

6       Q.   Then he says -- you say at 355 -- I just want to make  
7           sure I am going to the right place.  If we go back to  
8           346 on page 168 -- sorry, paragraph 346 {H1/2.1/170}:

9           "Professor Economides, on the other hand, calculates  
10          his alleged damages to developers on the assumption that  
11          developers do not adjust consumer prices in response to  
12          his assumed lower commission rate ..."

13          In other words, he was arguing on behalf of  
14          developers that the Commission sticks with the  
15          developers.

16          At the bottom of that paragraph, he gives one of his  
17          reasons is that:

18          "... marginal costs for developers are typically  
19          small, which means that developers do not have  
20          incentives to reduce {H1/2.1/171} prices in the but-for  
21          world ..."

22          Which is rather similar to what you are saying here.

23          If we go to paragraph 175 -- page 175 {H1/2.1/175},  
24          you join issue with Professor Economides.  At 355, you  
25          say:

1            "... while Professor Economides is correct that  
2 developers with low marginal costs are unlikely to  
3 pass-through lower commission rates, he makes the flawed  
4 assumption that every developer has low marginal costs  
5 and therefore would not pass-through a lower commission  
6 rate. In reality, marginal costs vary across app  
7 developers, and [individual] inquiry would be required  
8 ...

9            "Contrary to Professor Economides' assumption, some  
10 app developers may face meaningful marginal costs. For  
11 example, music streaming apps may face marginal costs  
12 for each ... subscription, depending on the royalty  
13 arrangement ..."

14            Now, as we have already discussed, you do not  
15 mention music streamers at all in this context in the  
16 present case, do you?

17 A. No, I think I may have had some --

18 Q. Well, you do not.

19 A. I do not recall. So there may -- at various times  
20 I have done a comparison of different music streaming  
21 apps and whether they offer the same price or  
22 a different price. I do not recall if I did that here,  
23 but, otherwise, that would be the only place.

24 Q. But your evidence in front of this Tribunal does not  
25 include any statement that some app developers may face

1 meaningful marginal costs?

2 A. So I think the four examples I gave are not mutually  
3 exclusive and I would agree that some app developers do.  
4 In fact there is some discussion in my report, very  
5 specifically -- we would have to locate it -- where  
6 I more or less say that there are circumstances where  
7 you can have (inaudible) marginal cost. For example, if  
8 you licence content on a per-unit basis, that would be  
9 definitely a marginal cost.

10 So the example, I think, that was being anticipated  
11 here is if you use -- I do not know if this is a thing  
12 in the UK, but in the US there is the compulsory music  
13 licence that has -- if you do a stream, you pay  
14 a certain amount and that is based on the number of  
15 streams, or at least it was at one point. Turns out,  
16 contrary to what is written here, that I was -- that  
17 Spotify does not actually use that scheme, but  
18 I understand that others might, and that would be  
19 a marginal cost that would be relevant to those  
20 developers and I think I mentioned that in some of the  
21 discussion of digital currencies, for example.

22 MR WARD: Sir, that would be a convenient moment in fact.

23 We are about to go to closed material.

24 THE CHAIRMAN: Yes, good. Thank you.

25 So we will take a slightly longer short adjournment

1 and resume at 2.45.

2 MR WARD: I would say that that puts me on track, albeit not  
3 with time to burn.

4 THE CHAIRMAN: Including some re-examination?

5 MR WARD: Including re-examination.

6 THE CHAIRMAN: That is very helpful.

7 MR WARD: Thank you.

8 THE CHAIRMAN: Thank you.

9 (1.34 pm)

10 (The luncheon adjournment)

11 (2.45 pm)

12 THE CHAIRMAN: Mr Ward.

13 MR WARD: Sir, we do need to be in closed session, even  
14 though I cannot see it will take more than ten minutes.

15 THE CHAIRMAN: We have paused the live stream. Is there  
16 anybody in the court who is not in the confidentiality  
17 ring? No, good. In that case, we are in closed.

18 Professor Hitt, we are in closed, so anything goes.

19 (In Private)

20 (In Public)

21 MR WARD: What we discussed this morning is the importance  
22 in your world of whether a cost is viewed as per unit or  
23 ad valorem, for whether or not the marginal cost would  
24 be passed on. We talked about that in your appendix 5,  
25 did we not?

1       A. Yes. That is one of points of having done that  
2       derivation, is to demonstrate that it critically matters  
3       how you -- whether or not the Commission is ad valorem  
4       or not in those kinds of conclusions.

5       Q. I am so sorry, I just want to make sure I have not made  
6       a terrible mistake coming out of closed session. No,  
7       no, it is fine.

8               What I want to do is take a step back from the maths  
9       and the theory and look at this from the perspective of  
10       a developer. Let us think about a developer who has  
11       made £1 million worth of sales on the App Store, and  
12       Apple has deducted £300,000 at source and remitted  
13       £700,000.

14              Now, if I understand your evidence correctly, it  
15       makes a big difference which of these next two things we  
16       have. If the developer thinks of this as a lump sum of  
17       £300,000 out of 1 million, then they may at least pass  
18       on some of it, depending on the demand curve, but if  
19       they think of that sum as 30% of 1 million, they would  
20       only pass on to the extent they have other per unit  
21       marginal costs, and the basic reason for that is the  
22       equations in appendix 5. Is that a fair summary?

23       A. So -- I do not think so. So keeping in the realm of  
24       what these models -- these models are abstractions of  
25       the world, I did the derivation in response to

1 Dr Singer's claims there, and also to point out the  
2 extremely well-known observation that if you have zero  
3 marginal costs and percentage commissions, that you will  
4 get zero pass-through.

5 I cannot speak to what is going on in developers'  
6 heads. They can do anything they want, but if we are  
7 talking about what the underlying economic theory is in  
8 these models, that is the conclusion you reach.

9 Now, I do not solely rely on the economic theory;  
10 I rely on the empirical results as well. The fact that  
11 economic theory and actual practice might differ is one  
12 of the reasons why I happen to -- I am an empiricist.  
13 I like doing those comparisons, and so my analysis does  
14 not rely on that. What it does is explains that that  
15 could be an explanation for these things, and to the  
16 extent that that explanation is relevant in other  
17 settings, it might extend.

18 Q. You have no evidence of any developers actually thinking  
19 in this way, do you?

20 A. I do not think that is something I would have enquired  
21 on. Again, it is a well-established theoretical model.  
22 I have empirical support that incidence is zero, and  
23 then I am thinking about how that meshes with the  
24 existing known theoretical literature, and also  
25 responding to Dr Singer's claim that it is a theoretical

1 prediction, which is not correct.

2 Q. Let us go to {H1/2.1}. The next page, please  
3 {H1/2.1/2}. This is the witness statement we looked at  
4 before lunch, which is not protected, from your report  
5 of August 2021, where you were facing, in part,  
6 a developer claim against Apple.

7 A. That is correct.

8 Q. Can we go, please, to page 177 {H1/2.1/177}. What you  
9 say -- the headline is:

10 "With pass-through, developer profits will change in  
11 different ways ... leading to differential damages..."

12 You say:

13 "Even if a developer faced lower transaction prices  
14 in the but-for world, the extent to which a developer's  
15 profits would be higher but-for Apple's conduct, and  
16 therefore the quantum of damages, will depend on the  
17 degree to which the developer reduces consumer prices in  
18 response."

19 Then at 361, you say:

20 "Pass-through ... will vary from app to app based on  
21 the specific circumstances ... Examples demonstrate that  
22 while some developers choose to pass-through differences  
23 in transaction costs, others do not. Comparing the price  
24 on the App Store, which would be subject to Apple's  
25 Commission rate ... to prices ... outside ... can show

1 variation in whether developers pass-through Apple's  
2 Commission rates to consumers.

3 "362. Some developers have chosen to pass-through  
4 Apple's Commission rate by charging higher ... prices."

5 Then you give various examples.

6 This is a long way from your evidence in this case,  
7 is it not, that there is no pass-through, and it all  
8 depends on it being an ad valorem charge?

9 A. Let me separate the two things. I will agree that the  
10 language used here suggests pass-through. I think  
11 I have had the opportunity to do much more causal work  
12 on this now, and my current evidence relies on the  
13 collective observation of these, you know -- the  
14 analysis that I have done, which is, you know,  
15 several years later I have had the opportunity to do  
16 more work here, and I think the conclusion I reached  
17 here, in this case, in particular, that the most likely  
18 action is no change and that the -- in the  
19 difference-in-difference models, you do not get a causal  
20 effect, I think is robust.

21 Again, I think we discussed similar things here.

22 A couple of things I will note is, you know, these are  
23 not causal, these are connecting the two together; and  
24 the second is, I think if we go to the next page  
25 {H1/2.1/3} -- Maybe it is not here.

1           I think this is using the observation that sometimes  
2 developers do increase their charges. I believe  
3 elsewhere, there is examples where they do not. I think  
4 that is consistent. Developers can make choices -- make  
5 different choices under different circumstances, but the  
6 causal analysis is consistent with my current opinion.

7       Q. We are going to come to your -- there is a version of  
8 this in your current report we are going to come to, but  
9 I think what you are saying, Professor, here, is that in  
10 these proceedings, where the claimants are  
11 end-consumers, you say there is no pass-through, but the  
12 evidence you gave in a claim brought by developers that  
13 there was pass-through is just wrong. Is that what you  
14 are telling us?

15       A. No, I think it is -- this observation was more about --  
16 you know, again, as I have had the opportunity to think  
17 more about it, the causality issue does become more  
18 relevant here.

19           The analysis that I have done, again, I am very  
20 clear as to what I think it shows, is that the  
21 difference -- the pure difference analysis indicates  
22 that the most likely reaction to a commission rate  
23 change is zero, and that the difference-in-difference  
24 analysis and the subsequent analysis of what else you  
25 can observe is consistent with the zero pass-through,

1 and that that may extend to a significant portion.

2 I think that is -- my conclusion is the best  
3 estimate is zero. That is -- again, this is as my  
4 thinking has been evolving on this and relying more on  
5 the causal evidence.

6 Q. Let us move on to the next of your four economic  
7 realities. This is {C3/4/270}. This is your second  
8 report. What you talk about here is that some app  
9 developers face competition from other app developers  
10 who do not pay Apple any commission, and at 503, you  
11 give the example -- sorry, are you with me?

12 A. No, I have -- I see what you are reading. Again,  
13 I prefer to do things on paper. Just take a moment for  
14 me to catch up.

15 Q. Page 270 of your second report.

16 A. Sure. Okay.

17 Q. So you say you have to compete with developers who do  
18 not pay any commission.

19 The first example you give in 503 is an app that  
20 monetises using in-app purchases -- sorry, an app that  
21 monetises using in-app purchases, competing with an app  
22 developer that monetises via in-app advertising.

23 At 504, you say they would lose customers if they  
24 were to increase their prices on account of commission;  
25 yes?

- 1 A. Yes.
- 2 Q. Just summarising your view. So we have to be talking  
3 about an example of a sector where advertising could at  
4 least be acceptable, like social media, for example,  
5 would we not, but you heard Mr Howell's evidence that  
6 there is potential for advertisements to be annoying.  
7 So, in essence, if someone has decided to compete by  
8 paying the Commission and forgoing the advertising  
9 revenue, they are competing on quality, are they not?
- 10 A. So I think it can be conceived that way, yes. They are  
11 making a decision as to -- again, you create an added  
12 value and you try to capture that back. Some of that  
13 value might be captured through direct payments. Some  
14 of that might be captured in other ways where you earn  
15 revenue, utilising consumer attention, for instance,  
16 which might be a source of disutility. So, yes, you  
17 could conceive that that is -- there are trade-offs  
18 between all of these mechanisms, and developers try to  
19 figure out the right balance for them.
- 20 Q. I am told the live stream is still not on, I am afraid.
- 21 THE CHAIRMAN: Keep going. We can wait for it.
- 22 MR WARD: Thank you. So if they are competing on quality,  
23 it is entirely consistent with them also charging a  
24 higher price, is it not?
- 25 A. So I do not have any -- so I have not done an analysis

1 of this, but it seems plausible that developers, for  
2 example, might trade a commission sale against  
3 advertising. I would agree that that could be -- that  
4 is certainly a trade-off they can make.

5 Q. If we are talking about developers who are only on other  
6 kinds of platforms, is it not right that most of the big  
7 developers are going to be on all the platforms, are  
8 they not, and just addressing the consumers who are also  
9 on that platform, so captive iOS consumers, for example?

10 A. So, again, I think the answer is many large developers  
11 multi-home; I think that is a fact. Again, the issue  
12 is, though, and I think again this goes back to some of  
13 the things in market definition, which is you have apps  
14 like Netflix or Spotify that can be on iOS and not have  
15 to monetise on iOS, and so I think that is an important  
16 distinction here, given that the Commissions are only  
17 levied when you choose to monetise in certain specific  
18 ways. But I agree that for the most part, large  
19 developers, you may expect in many cases them to be on  
20 multiple platforms and perhaps all of them.

21 Q. Let us move on to your third point -- your third  
22 economic reality, which is at {C3/4/273}. This is to do  
23 with uniform pricing across channels. So this is very  
24 redolent of something else that we have discussed.  
25 Actually, no, that was -- but here we see you say, at

1 the bottom of the page, paragraph 510:

2 "App developers that transact through multiple  
3 platforms or through their websites can (and many do)  
4 choose to set a single price..."

5 But then you say:

6 "When ... prefer setting a common price ... they  
7 will likely not change the single cross-platform  
8 consumer price ... in response to changes in  
9 commission..."

10 It is obviously speculative, because you say "will  
11 likely", but is it not the case that if a developer sets  
12 a single price, they will have to recover their  
13 distribution costs across all of the platforms?

14 A. Well, I guess this is this idea of recovering  
15 distribution costs. I think they set -- they may choose  
16 to set a profit-maximising price across all platforms  
17 simultaneously, so certainly that is a consideration,  
18 and that in some cases, for various other  
19 considerations, that profit-maximising price -- they may  
20 choose that to be uniform for various reasons. So I do  
21 not think I am disagreeing on that, but maybe there is  
22 an implication I do not understand.

23 Q. Well, let us look now at your exhibit 45, which is on  
24 page 275 {C3/4/275} because one of the things you are  
25 deploying against the suggestion that there is incidence

1 is an analysis you did, exhibit 45, of all the top 50  
2 subscription apps, about whether the pricing is uniform  
3 on the App Store and other channels.

4 We can see that you have in row 2, "Percentage with  
5 Uniform Pricing", and I am going to concentrate on the  
6 second column, "App Store and Website" is 50%, and then,  
7 over the page {C3/4/277}, you do the same exercise,  
8 exhibit 46, for VPP and NPP, and we see the comparable  
9 figure, which is row 3, is "Percentage with Uniform  
10 Pricing", "App Store and Website", 53.1%.

11 So you are advancing here as an argument against  
12 incidence that half of the developers have uniform  
13 pricing, roughly?

14 A. Yes. The way to read this is theory suggests that that  
15 could be a reason why there is no incidence, and then  
16 I use data to figure out whether or not the  
17 pre-conditions for that theory to be true are actually  
18 present, and those were the numbers -- the numbers you  
19 quoted were a subset of the things that I used for that  
20 analysis.

21 Q. Both of these -- really three categories of app that you  
22 looked at, the subscriptions, VPP and NPP, are all  
23 categories which have some degree of reduced commission,  
24 are they not?

25 A. Well, so this one, this exhibit 46, is a supplement to

1 the incidence analysis for these products. So that is  
2 why that was done. So that is strictly true, because it  
3 is providing further support for that point that when  
4 you see zero incidence, you also see, at least half the  
5 time, uniform pricing. So that is absolutely true.

6 Q. It was a simpler question. Both of these involve  
7 reduced levels of incidence. We have talked about it  
8 already. Sorry, commission, forgive me. We have talked  
9 about it already. Exhibit 45 is subscription, where  
10 there is the reduction of commission in the second year.  
11 Exhibit 46 is VPP and NPP, where there is a reduced  
12 commission if you join the Apple program, yes?

13 A. Yes, so 45 I think is very consistent with the question  
14 you have, and 46 is specifically addressing the  
15 analysis. So, yes, it is true for them as well but the  
16 --

17 Q. You did not --

18 A. -- purposes of these are slightly different.

19 Q. You did not choose to examine the situation of any apps  
20 that paid the full 30% commission on all purchases, did  
21 you?

22 A. I am trying to think back. (Pause)

23 I cannot recall if we did this for games at one  
24 point or another. I do not believe we did it here.

25 Q. If you did, you kept it to yourself.

1 A. Yes, I may have done that in the past, but I did not do  
2 it in this case.

3 Q. By implication --

4 A. So far as I recall.

5 Q. -- it follows that for half of these apps, roughly,  
6 there were price disparities between the App Store and  
7 the website, does it not?

8 A. Yes, that follows.

9 Q. We had a look at your workings, because you do not  
10 actually set this out, and I want to just show you just  
11 a handful of examples.

12 Can we go to {D1/1594.1}. This is all from your  
13 exhibit. This is LinkedIn Premium, and you can see from  
14 the Apple logo this is from the App Store, and it says  
15 £40.99 per month.

16 A. Okay.

17 Q. Then if we go to {D1/1594.2}, we see this is from the  
18 LinkedIn website, and I think you must need to scroll  
19 down a little bit more to see it. Here we are, yes.  
20 The price is one month free trial and then pay £34.99.  
21 So there is quite a big disparity there, is there not?

22 A. So I will agree that subscription apps often give free  
23 trials. That is part of the analysis I did of  
24 subscription apps.

25 Q. If we go to {D9/1594.3}, we see the Guardian Newspaper

1 on the App Store, 74.99 per year.

2 Then at {D1/1594.4} we see, if you look in the box  
3 there, it is £70 per year on The Guardian website.

4 Just one more {D1/1778.1}. This is Flo Premium,  
5 which is a period and cycles tracker. That is on the  
6 App Store, £29.99 a year.

7 Then if we go to {D1/1778.2}, we see on its own  
8 website it is a trial for £1, and then in very small  
9 underneath we can see then £24.99 every month.

10 Well, I am putting it to you, Professor Hitt, that  
11 you are deploying against the Class Representative that  
12 half of these websites had uniform pricing, but what is  
13 to be found in your exhibit is plenty of websites where  
14 in fact there is reduced pricing where the Commission is  
15 not paid. Would you agree?

16 A. Yes. In fact you can find examples that go both  
17 directions. But, yes, there are examples in there.  
18 That is what -- again, roughly, in these various  
19 exhibits, about half have uniform pricing. Where they  
20 do not, sometimes it is higher, sometimes it is lower --

21 Q. So this economic reality is entirely consistent with the  
22 Class Representative's case on incidence, is it not?

23 A. If it were causal, that would be -- that would be  
24 consistent, but there is nothing -- again, developers  
25 are welcome to set whatever prices that they want across

1 different websites. It is also consistent with other  
2 stories, for example, different levels of demand, or it  
3 is consistent with the story where they recognise that  
4 there is an opportunity, for example, to directly  
5 contract with consumers and avoid the Apple Commission,  
6 and they have the opportunity within the existing rules  
7 to attempt to do so.

8 Q. Well, it is always evidence against the Class  
9 Representative, but never -- the flipside can never be  
10 evidence for the Class Representative, can it, on your  
11 version of reality?

12 A. No, I think that is unfair. You are asking me to  
13 explain why I have reached the conclusions I did. I am  
14 explaining why.

15 Q. Let us look at your fourth economic reality, which is  
16 page 278 {C3/4/278}. You previewed this one to the  
17 Tribunal.

18 521, bottom of the page:

19 "Many app developers use both in-app purchases and  
20 in-app advertising to monetise their apps. These app  
21 developers choose a mix of in-app advertising and in-app  
22 purchases."

23 This is the bit that one has to read slowly:

24 "When commission rates fall, these app developers  
25 may reduce their reliance on in-app advertising and

1 raise prices on in-app purchases ..."

2 So the argument here is that lower commission in the  
3 counterfactual might actually lead to higher prices;  
4 yes?

5 A. Yes, that is a theoretical possibility.

6 Q. A theoretical possibility. Would you agree that it is,  
7 to put it mildly, quite counter-intuitive that lower  
8 costs might lead to higher prices?

9 A. No, I do not -- I think it actually has a fairly  
10 straightforward explanation, in a world where there is  
11 multiple ways of monetising, that changing of the  
12 Commission changes the relative benefits of different  
13 types of monetisation, and so by lowering the Commission  
14 you make charging directly much more attractive than,  
15 say, in-app advertising which, as you noted, before,  
16 some consumers may not prefer, and that is how -- that  
17 is the driver of the result.

18 I would not say it is counter-intuitive, it is just  
19 an illustration of the fact that there is multi-part  
20 pricing here, or at least multiple ways in which you can  
21 earn revenue, and that they may trade off each other.

22 Q. To be clear, your report contains no evidence at all  
23 from even a single developer that they have ever thought  
24 this way in practice?

25 A. So I have not done an interview of developers on that

1 point, certainly. What I am saying is that is an  
2 underlying economic theory, and the pre-conditions for  
3 that theory hold in at least some of the circumstances.  
4 That is there. The extent to which it manifests, that  
5 is not something I am able to determine, but it  
6 certainly is consistent with theory, and remember, you  
7 know, at the heart of this is, sitting back -- is the  
8 incidence results which I showed, which show how  
9 developers actually behave, and I am suggesting there  
10 are theoretical reasons that are consistent with the way  
11 they have chosen to behave, and that is what being  
12 discussed here.

13 Q. There is no suggestion in your report that you even  
14 asked Apple if they were aware that behaviour like this  
15 has ever taken place?

16 A. Again, you know, it is -- I am an empirical economist.  
17 So many people say they do things for many possible  
18 reasons, and my approach to doing empirical work is, to  
19 the extent I am aware of those things, I will certainly  
20 incorporate it into my thinking, but certainly I think  
21 the way I like to personally approach things is to  
22 actually use express preference of what they actually  
23 do, what we can learn from what they actually do,  
24 because often in many cases why people do things or what  
25 they say they will do is not actually what they actually

1 do. Whereas at least this we can observe, we do not  
2 have to worry about that interpretation issue.

3 Q. This is entirely speculative, is it not?

4 A. So I think it follows the standard economic reasoning  
5 process, which is I have an empirical result. I am  
6 thinking about why that might or might not be consistent  
7 with theory. I have a theory that is consistent with it  
8 and, to the extent I can, I have tried to at least  
9 examine whether the pre-conditions of that theory are  
10 true, and they are in some circumstances, and that is  
11 what I have done, which is consistent with, you know,  
12 normal economic work.

13 MR WARD: Thank you. Well, at 3.25 on Friday of week 5, we  
14 are going to go to the formal models, I am afraid.

15 In terms of time, I am doing okay, I think is how  
16 I would put it. I am conscious of all that has been  
17 said about the pressures on time. So let us see how we  
18 can do, and at 4.15 I will see if I have to raise the  
19 white flag, but if I may just continue and see how we  
20 get on.

21 THE CHAIRMAN: We probably should take a short break.

22 MR WARD: I am so sorry, that totally slipped my mind.

23 THE CHAIRMAN: Actually the live stream apparently is  
24 working fine for audio, but if we get someone in here  
25 they will get the camera back as well, which I am sure

1           they will all appreciate, being able to see you on a  
2           Friday afternoon.

3           MS DEMETRIOU: Sir, that only leaves us 15 minutes for  
4           re-examination. I am afraid we need a bit more than  
5           that.

6           THE CHAIRMAN: I am sure we can accommodate that. How much  
7           time? Do you have a sense at the moment?

8           MS DEMETRIOU: We are splitting it, so I need to liaise, but  
9           I think I probably need 15 minutes ... and about the  
10          same.

11          THE CHAIRMAN: I think we can definitely manage that.

12                  Mr Ward, you will need to be finished at 4.15 to  
13          make that --

14          MR WARD: Well, sir, I am not sure I can be. Because I  
15          think 30 minutes for re examination is, frankly,  
16          extreme. Obviously Professor Hitt, with the greatest  
17          respect, has given very long answers. I have gone along  
18          as quickly as I can. I do have 15 minutes in the bank  
19          of goodwill, so --

20          THE CHAIRMAN: I think --

21          MR WARD: 45, if I can offer that as a bid, which will take  
22          us to 4.30.

23          THE CHAIRMAN: Well, I thought you told me you thought you  
24          would be finished by 4.15.

25          MR WARD: It has gone slower than I hoped. That is the

1 truth, sir. That really is the truth. I got some false  
2 hope from yesterday when we went along at quite a clip.

3 So if I can just crave the indulgence of that extra  
4 15 minutes, we can do this in an orderly manner.

5 THE CHAIRMAN: The trouble with that, Mr Ward, is that you  
6 are squeezing ... and maybe they do not need 30 minutes.

7 MR WARD: It is an awful lot, sir.

8 THE CHAIRMAN: It is an awful lot, but he has been giving  
9 evidence for a couple of days.

10 What I am going to do is rise and we will try to come back  
11 within ten minutes. We will come back at 25 to.

12 MR WARD: I will do my best to compress.

13 THE CHAIRMAN: If you can just have a think about that, and  
14 also if you can have a brief conversation about -- a  
15 realistic conversation about how you are going to count  
16 the time up. If you can agree it, then fine. If you  
17 cannot, then I --

18 MR WARD: I will assure my learned friends that I will go as  
19 quickly as I can that is consistent with my obligation  
20 to put my case.

21 MS DEMETRIOU: Sir, that is not quite good enough, because  
22 Mr Ward had the option of starting at 10 o'clock, and he  
23 said that he did not need to start early.

24 THE CHAIRMAN: Well, he did not have the option of that,  
25 because I said we were not going to do that, because we



1           because I gather there are a couple of timetabling  
2           issues. So let us get on then.

3       MR WARD: I will do my best, and I will put some references  
4           on the transcript rather than take you to some  
5           documents.

6       THE CHAIRMAN: Understood. Thank you.

7       MR WARD: Professor Hitt, you appreciate that Dr Singer's  
8           view is that these models provide a reasonable  
9           approximation of demand across the Class as a whole, not  
10          a perfect representation, but you do not agree, do you?

11      A. So I will not address -- so reasonable, if you mean  
12          reasonable to the extent that they are informative at  
13          their relative pass-through rates, no. I think that is  
14          where we depart as to whether or not this provides  
15          information on that question, which is the reason he is  
16          doing it. I do not think they are informative.

17      Q. Both of these models are concerned with testing the  
18          shape of the demand curve overall for the Class as  
19          a whole. Behind that is an economic theory that the  
20          level of incidence can be inferred from the shape of the  
21          demand curve, and you do not dispute that principle, do  
22          you?

23      A. The theoretical prediction of incidence can be inferred  
24          by the shape of the demand curve under those models --

25      Q. Please --

- 1 A. -- which are derived in my report, and he derived  
2 versions of.
- 3 Q. But you have not put forward any positive view at all of  
4 the shape of the demand curve, have you?
- 5 A. No, I have not. I focused mostly on the impact of low  
6 marginal cost, because I do not believe the shape of the  
7 demand curve is well-defined.
- 8 Q. Let us go to {C3/8/127}, please. This is your third  
9 report, and you are dealing here with the linear demand  
10 model. As you know, the linear model draws on a paper  
11 by Professor Hausman and Gregory Leonard which contains  
12 the insight that a linear demand curve implies a rate of  
13 pass-through of 50%, at least in the case of a monopoly?
- 14 A. Yes, I believe -- well, I have done the derivation.  
15 Again, per unit at marginal cost as well.
- 16 Q. You make three objections to Dr Singer's reliance on  
17 this at paragraph 249. Firstly, each product is sold by  
18 a monopolist developer. Secondly, the Commission  
19 operates as a flat tax. Thirdly, that there should  
20 indeed be linear demand. I am going to try to deal with  
21 these as quickly as I can.
- 22 Startling with monopoly, can we go to {C4/7/34},  
23 which is the joint expert statement, where this point is  
24 dealt with at line 85. You say, about whether or not  
25 there is competition in the downstream markets:

1           "I have no opinion on how vigorously developers  
2 compete with each other and this is not part of my  
3 assignment and none of my opinions depend on this."

4           Well, this morning you said "I strongly believe that  
5 apps compete with each other". That is an opinion, is  
6 it not?

7       A. Yes, to the extent to which, though, that is not  
8 something I have covered, whether it is -- well, I would  
9 not think it is approximated by monopoly, but what the  
10 right competition model is, that is not something  
11 I have done. But certainly apps compete against other  
12 apps.

13       Q. What you said in the joint expert statement is not true  
14 then, is it?

15       A. No, that is -- I do not think so. What I said was I do  
16 not have an opinion as to the extent of competition.  
17 I believe competition is present.

18       Q. Then in the joint expert statement, still in line 86,  
19 you say, the second paragraph of your answer -- sorry,  
20 to look at the proposition:

21           "Dr Singer's finding that pass-through would be 50%  
22 if a developer faces linear demand requires the  
23 developer to be a monopolist."

24           You say, second paragraph:

25           "Dr Singer's claim that 50% incidence rate holds

1 under linear demand is unsubstantiated and is in direct  
2 contradiction to the paper he relies on [Leonard and  
3 Hausman] ... which requires the firm to be a monopolist  
4 for the incident rate to be 50%."

5 Dr Singer's answer is:

6 "The linear model serves as a lower bound."

7 The Hausman paper is at {C5/42}. I am going to be  
8 very quick with this, given the time. If we go, please,  
9 to page 2 {C5/42/2}, and we look at the second paragraph  
10 there, just bear with me while I make sure I have given  
11 you the right reference. In the second paragraph it  
12 says:

13 "We demonstrate that so long as demand curves have  
14 the expected shape, the minimum amount of marginal cost  
15 savings passed on by a monopolist in terms of lower  
16 price is one half of the cost savings. Competition will  
17 lead to a higher proportion."

18 By "expected shape", Hausman and Leonard mean linear  
19 or convex. So what Hausman and Leonard are saying is  
20 that this 50% is a lower bound for a linear demand in  
21 a monopolist and more would be passed through in  
22 a characteristic convex demand curve and with  
23 competition. Do you agree?

24 A. That is what the paper says, yes.

25 Q. I will invite the Tribunal to read the paper to the

1 extent they would find it illuminating.

2 Of course, I think it is common ground that in  
3 perfect competition, firms price at marginal cost; yes?

4 A. Yes. Marginal cost equals average cost equals price.

5 Q. So Dr Singer's point is that you have a monopoly case  
6 here in Hausman and Leonard and a perfect competition  
7 case and they provide an upper and lower bound for  
8 pass-through. Do you agree?

9 A. So under the other assumptions they have, you can get 50  
10 to 100 in here. I'll also note that you can zero if it  
11 is ad valorem -- an ad valorem commission, and marginal  
12 cost is zero, you get zero. I think Dr Singer claims  
13 185% for his pass-through calculation or something in  
14 that vicinity.

15 So this one gives you those two numbers, but  
16 certainly there are -- there is a lower lower bound if  
17 you allow for zero marginal cost.

18 Q. There was some discussion of perfect competition,  
19 particularly in the hot-tub. I am not going to put to  
20 you that the downstream app markets are perfectly  
21 competitive, but would you accept his point that the  
22 atomistic nature of those markets does point to them  
23 being highly competitive?

24 A. So, no, because I do not think you can reasonably  
25 characterise it as atomistic. You have a limited number

1 of very large developers. That is not an atomistic  
2 market. You might have -- there might be other models  
3 that are appropriate there. It is also the idea of  
4 mixing the antitrust boundary, which is likely broader,  
5 because we are defining markets in terms of app stores,  
6 with the nature of competition among app developers,  
7 which may be more localised, but again that is not  
8 something I specifically investigated.

9 Q. So would you accept that they are at least reasonably  
10 competitive - the downstream markets?

11 A. I would certainly say that there is some degree of  
12 competition within -- amongst app developers. In fact,  
13 that is one of the benefits of having a centralised  
14 market, is to encourage that kind of competition.

15 Q. Going back to your report at {C3/8/128}. Your second  
16 criticism is that the proposed incidence rate is only  
17 true if Apple's Commissions were a flat tax. It is not  
18 true if they were ad valorem. We have already discussed  
19 this at great length. I put to you there is no evidence  
20 to suggest this would make any difference in the real  
21 world. Do you agree?

22 A. So, again, if you read the entire paragraph, what I am  
23 pointing out, that with the ad valorem commission and  
24 the marginal cost at zero, that lowers the lower bound  
25 to zero. That is the only point I am making here.

- 1 Q. Now, you have not constructed a model based on  
2 ad valorem commission, have you?
- 3 A. I have rederived both of Dr Singer's models using that  
4 structure. It is, I believe, in appendix 5 of Hitt 3,  
5 where I demonstrate that result. So I am not sure what  
6 you are referring to, but certainly that has been  
7 derived explicitly.
- 8 Q. Dr Singer's point is that the model, based on per unit,  
9 is a reasonable estimation of real world outcomes,  
10 particularly where markets are reasonably competitive.  
11 Would you accept that?
- 12 A. I do not think that that argument follows. It is  
13 plausible for -- so if we are talking about treating  
14 commission as ad valorem or treating app developers as  
15 positive marginal cost, both of those -- the Commission  
16 is ad valorem, that is the world we are operating in,  
17 and it is likely that at least for some kinds of in-app  
18 purchases, as we discussed before, if marginal costs are  
19 zero, that would get you a lower bound of zero.
- 20 Q. Let us turn now to page 136 of your report {C3/8/136}.  
21 This is a test that was discussed very briefly with  
22 Dr Singer. What you did here was tests on the  
23 goodness-of-fit metrics of the models. Both of these  
24 tests involve taking variables out of the models, do  
25 they not? The first one involves taking out the fixed

1 effects, and the second one involves taking out the  
2 price.

3 A. That is not really how this is done. What this is, is  
4 this is a variance decomposition. So you take the whole  
5 model, and then you can investigate the portion of the  
6 variance explained, the R-squared, that is due to the  
7 fixed effects versus the portion that is explained by  
8 the cross-sectional variation in prices.

9 Q. I was simply trying to summarise --

10 A. Sorry, time series.

11 Q. I was simply trying to summarise what you say on  
12 paragraph 261, perhaps I mischaracterised it, but we  
13 will look together at the bottom of page 134 {C3/8/134}.  
14 You say:

15 "In Exhibit 5, I present the goodness-of-fit  
16 measures for ... Dr Singer's [regressions] ... but  
17 excluding price as an explanatory variable ... I also  
18 present..."

19 With a goodness-of-fit measure that is -- sorry,  
20 I have mischaracterised this. Excluding price, which is  
21 the first one, and then the second one, within adjusted  
22 R-squared, is you take out the power of the fixed  
23 effects, do you not?

24 A. Well, fixed effects are differenced out within model, so  
25 what you do is you basically difference the model, and,

1           you know, if something is constant in two points in  
2           time, that subtracts to zero so that removes it.

3       Q. But what you do not do here is propose any additional  
4           variables that would improve the explanatory power of  
5           the model, do you?

6       A. No, that was not -- that was not my attempt. I was  
7           addressing the explanatory power issue because Dr Singer  
8           highlighted that as an explanation for why he believed  
9           his model was reliable, and I am pointing out that I do  
10          not think that is a complete story.

11       Q. Of course when Dr Singer derives his results from these  
12          models, he is relying on the entirety of the variables  
13          that they contain, is he not?

14       A. Well, I do not think he is really deriving his results  
15          from these models. He estimates two models, says:  
16          demand curve slope down; and says: well, it can be both  
17          linear and logit; which of course are mutually --  
18          require different sets of assumptions, and would  
19          characterise the market in different ways.

20       Q. His point is that even if you set aside R-squared, which  
21          you have essentially engaged with here, both models  
22          generate coefficients that are correct in sign, of  
23          reasonable magnitude and high statistical significance.  
24          So they all -- almost all have three asterisks, high  
25          level of statistical significance?

1       A. Well, you are going to find almost anything is going to  
2       have high level statistical significance when you have  
3       35 million observations. So that is not dispositive.  
4       I do not believe he did any tests to indicate that these  
5       were plausible, other than the fact that they had the  
6       correct sign. I think I point that out as well.

7       Q. But his point is that if you -- if you wanted to test if  
8       the relationship he identified between price on the one  
9       hand and quantity and market share on the other was  
10      explained by something else, the orthodox way to do it  
11      would be to suggest additional control variables, but  
12      you have not done that, have you?

13     A. No, and that was not my intention. My intention of my  
14     review of this analysis is -- one I responded to is  
15     goodness-of-fit claim; and second is the point that  
16     price is not very -- price is not playing very much role  
17     in here; and then the third broad point is that to the  
18     extent that he is passing these lines through here with  
19     35 million data points, almost any downward-sloping  
20     line will fit through there and likely show  
21     statistically significant coefficients.

22             So this does not discriminate the shape. I could  
23     draw a line through it. I can draw a curve through it,  
24     but as long as the demand curve slopes down and I have  
25     enough data points, you are going to find significant

1 coefficients. It does not say whether this is, you  
2 know, linear or logit or something else, is the right  
3 answer.

4 Q. You appreciate his point is that both of the models are  
5 a reasonable approximation, not perfect approximation,  
6 of demand?

7 A. Again, reasonable compared to what? If you are trying  
8 to say, it is -- you know, I can use the mathematics  
9 behind linear demand or the mathematics behind logit  
10 demand, it does not discriminate between those two  
11 things, and perhaps others that have downward sloping  
12 demand curves.

13 Q. In terms of the shape of the demand curve, you  
14 appreciate it is the combination of the price and the  
15 fixed effect which support the finding the linear demand  
16 curve is a reasonable approximation?

17 A. So I agree with the point of correcting for fixed  
18 effects. What my comment is is that price plays very,  
19 very little role in this, and that -- that more or  
20 less -- and he does not -- again, this does not  
21 discriminate between, for example, a linear demand curve  
22 and a logit demand curve, which have very different  
23 assumptions and very different implications for what  
24 incidence would be.

25 Q. So the fixed effects are controlling for the time in

- 1 variant characteristics, are they not?
- 2 A. Yes. I think that is correct.
- 3 Q. If you think about the genre of game, that means it is  
4 controlling for the difference between buying, say, 200  
5 coins for a game, for example, and buying a complete  
6 game, like Call of Duty?
- 7 A. Well, he -- I think that is -- yes, you are -- so it is  
8 taking account that some games have -- or some products,  
9 and he does it at the product, not the app level, some  
10 products have higher quantity than others at similar  
11 prices, but that is what the fixed effect is.
- 12 Q. It is not surprising then, is it, that the fixed effects  
13 actually are powerful explanatory factors? They are  
14 capturing the characteristics of those individual  
15 transactions?
- 16 A. Certainly. There is a distribution -- a wide  
17 distribution of the sales of these apps, and so the  
18 fixed effects will pick that up; my point being that  
19 most of his claimed good fit is due to the simple fact  
20 that some games sell -- games or whatever you want, sell  
21 more than others, not that price is providing a strong  
22 degree of explanation here.
- 23 Q. When we are thinking about the actual shape of the  
24 demand curve, we are thinking about the linear demand  
25 curve, we saw earlier that Hausman describes linear or

1 convex demand as typical, and linear demand as a lower  
2 bound. You are not suggesting the demand curve is  
3 actually concave, are you?

4 A. Well, I do not know what its shape is. I would presume  
5 it is probably not.

6 Q. Let us now turn to the logit model. Again, going back  
7 to the joint experts' statement. If we go to {C4/7/35},  
8 you make two criticisms of the logit model that are  
9 specific to it.

10 You say in proposition 87:

11 "Dr Singer ..."

12 Do you have that, Professor Hitt?

13 A. I am just catching up. Yes, I have caught up.

14 Q. It is proposition 87 at numbered page 35. You say:

15 "Dr Singer calculates each product's market share  
16 within the genre. Contrary to what he claims, [he]  
17 treats [them] as markets. Moreover, and absurdly, he  
18 treats each App Store product such as virtual currency  
19 bundle as a firm."

20 Now, of course it is right that Dr Singer has not  
21 performed a market definition exercise on the downstream  
22 app markets, but his point is that using Apple's own  
23 characterisation is a reasonable enough approximation  
24 that it is still informative. Would you accept that?

25 A. I do not think that is the case. I discuss this in my

1 report and, in particular, some of these genres mix  
2 together some very different things. So lifestyle  
3 includes, for example, locating children and dating apps  
4 which are --

5 Q. Would you agree that is a particularly diverse category  
6 that you have fastened upon?

7 A. Well, there are many different kinds of games and so  
8 forth and, again, these genres, first of all it is the  
9 developer who chooses the genre. Apple sets them out  
10 and the developer chooses the genre. Also I think it is  
11 reasonable to believe that some games and some services  
12 are closer to others than others are. It is not one  
13 generic set of apps that are all basically the same.

14 Q. Now, your other criticism was that he treated each  
15 App Store product as a firm. Can we turn to {C2/17},  
16 please, at page 12 {C2/17/12}. Thank you. I want to  
17 make sure I have given you the right reference. Yes.

18 He says at the bottom of the page:

19 "A given developer's share is calculated by summing  
20 the quantity of iOS Apps that a developer shares in  
21 a category, dividing this by the sum of quantity of all  
22 apps in the same category. The developer's pass-through  
23 is calculated as 1 minus the developer's share. I use  
24 developer shares rather than iOS App shares (or  
25 individual purchases) in my calculation because

1 incidence in determined at the level of developers.  
2 This is conservative compared to if I had used the app  
3 shares."

4 Do you accept that?

5 A. I would have to go back and look at his back-up. I do  
6 note, though, his fixed effects are done at the product  
7 level, not the app level.

8 Q. Okay. Right. 4 o'clock.

9 A. Or developer level, for that matter.

10 Q. The very light matter of the IIA assumption, the  
11 independence of irrelevant alternatives.

12 I am going to say something very dangerous that  
13 starts with the words "in broad terms". In broad terms,  
14 this means that when a product is removed from a market,  
15 consumers will choose substitutes in proportion to their  
16 relevant market shares?

17 A. You got it.

18 Q. Great. This much at least.

19 I am going to just deal with three points on this  
20 very briefly. First, Dr Singer's point is that this  
21 does not have to be strictly true in all cases for the  
22 model to be informative. Would you accept that?

23 A. I do not think there is an economic reason why that is  
24 true. You know, it is commonplace to test these  
25 assumptions and to not use models that fail these

1           assumptions. But he can -- that is an assertion of his.  
2           I do not think it -- I do not agree. Maybe I will leave  
3           it at that.

4       Q. Okay. Then if we now go, for my second point, back to  
5       Dr Singer's supplementary report {C2/17/8}. Hopefully  
6       it is the same document we already have open. Thank  
7       you.

8           He explains, picking up the last few words:

9           "IIA can be inferred from a well-specified model  
10          without further testing. By 'well-specified' ... I mean  
11          one that can measure the relationship between the  
12          independent variable and the dependent variable and  
13          which is consistent with economic theory. One widely  
14          used textbook [Train] on logit notes that IIA 'can be  
15          interpreted as a natural outcome of a well-specified  
16          model'."

17          Then he also observes:

18          "Economists frequently use the logit demand curve  
19          without implementing any direct tests of IIA."

20          Do you agree with those propositions, at least in  
21          the abstract?

22       A. I think the first one, it is possible. I think that is  
23       an incomplete description of what Train said, but  
24       I think if you have a well-specified model, it is more  
25       likely to be the case. His model is not well-specified,

1 for reasons I described, but that I think is more likely  
2 to be the case, and that there do exist papers that do  
3 not test IIA. They tend to be -- the ones I was able to  
4 identify either tended to be fairly homogeneous  
5 products, like peanut butter, or situations where you  
6 are working with simulated data, so you can generate  
7 your underlying data to comply with the unusual  
8 restrictions that are implied by IIA.

9 Q. Of course, you do disagree with Dr Singer about whether  
10 it is well-specified. That is what we have been talking  
11 about. One point he made when asked questions by  
12 Mr Piccinin is that although in theory you could ask a  
13 vast -- you could add more control variables, there  
14 wasn't the data, and the model can be perfectly  
15 well-specified without adding additional variables.  
16 Would you accept that?

17 A. Sorry, what -- I think I missed something in the middle  
18 of that question.

19 Q. I said that you can -- the model can be well-specified  
20 in this case without adding any more variables. Would  
21 you agree with that?

22 A. So, no, I do not -- the reason -- I will give you the  
23 reason that appears in the joint statement. So one of  
24 the things he assumes in that model is there is  
25 a constant coefficient within a genre, and one of the

1           ways you can check whether or not the model is  
2           well-specified is you test whether or not that -- that  
3           is what is called linear restriction. Everything in  
4           that genre has to have that characteristic.

5           You can test that by, for example, allowing for  
6           different groups within a genre, and I did that for  
7           video streaming, and you find you get a different  
8           coefficient. When you get a different coefficient of  
9           a subset in your broader regression, that is a violation  
10          of linear restriction, and that indicates your model is  
11          not well-specified.

12         Q. Well, this test that you have just mentioned about video  
13          streaming, as far as we can recall, this was not  
14          actually put to Dr Singer when he was in the witness  
15          box, so he has not had a chance to address this, other  
16          than what he says in his supplemental reply.

17                 So I am going to show you his answer to that point,  
18                 and that is at {C2/17/11}. There are some confidential  
19                 names and numbers that do not matter for the purpose of  
20                 this:

21                         "I disagree."

22                 So he is talking about your test, where you split  
23                 the entertainment genre into video streaming and  
24                 non-video streaming, which is what you were just  
25                 referring to, and he says:

1 "I disagree this analysis informs substitution."

2 He makes the point that one app that we will not  
3 name has a price coefficient that we do not read out,  
4 and then he says:

5 "On the other hand, non-VSA apps have other  
6 coefficients."

7 What he says is:

8 "Professor Hitt's analysis informs how much share an  
9 iOS App loses in response to a price increase but does  
10 not inform to whom the share goes and by how much."

11 Then he says in the next paragraph, lines 3 and 4:

12 "A proper test of the IIA assumption would evaluate  
13 whether this [share] was acquired by alternative  
14 entertainment apps in proportion to their shares."

15 So what he is putting to you, and none of this was  
16 challenged, is that this just is not a useful test.

17 Would you agree?

18 A. So I can agree with portions of what Dr Singer said, but  
19 I will go back to the point he made, which is the basis  
20 he is claiming, that his model is -- it is not necessary  
21 to test IIA, is that it is well-specified. That is  
22 violated. So if that is violated, any test of IIA you  
23 would do subsequently to that would not be reliable  
24 because the tests of IIA require the original model to  
25 be unbiased estimates of the coefficients.

1           So if it does not pass my test, you do not even have  
2           to get to the later thing. It is not a well-specified  
3           model.

4           Also note that I did -- you know, we had a little  
5           side debate about alternative IIA tests, which I also  
6           did.

7       Q. That takes us to the now infamous Hausman test, which  
8           actually of course has nothing whatsoever to do with  
9           Hausman and Leonard paper we have been talking about,  
10          which I hope is apparent to everyone.

11          This appears in the joint experts' statement and it  
12          is {C4/7/36}. We see it at the bottom of the second  
13          paragraph. After you have talked about this VSA test,  
14          you say:

15          "I get qualitatively similar results ([eg the] model  
16          does not satisfy the IIA assumption) when I exclude the  
17          top app by consumer spend within each genre."

18          That is the Hausman test, is it not?

19       A. You exclude it, and then you do a Hausman test of the  
20          two models you get, to see if you have coefficient  
21          stability when you remove a portion of the apps and it  
22          fails the test.

23       Q. Well, I am going to talk to you about three points  
24          arising from this. Can we please turn to {D1/205.1}.  
25          This is an article from a publication I confess is new

1 to me, called Statistical Horizons, and it is by  
2 Professor Paul Allison. Is it right that  
3 Professor Allison is one of your colleagues in  
4 Pennsylvania?

5 A. I believe he teaches at the University of Pennsylvania.  
6 He is not an economist, as far as I know. I believe he  
7 is a sociologist.

8 Q. I see. He talks about the Hausman test and let us look  
9 at what he says. Firstly, at the bottom of the page, he  
10 says, this is about IIA:

11 "Several tests have been proposed to test this  
12 assumption. The two most common are ...  
13 Hausman-McFadden ... and ... Small-Hsiao ..."

14 I believe we are talking about Hausman and McFadden:

15 "Both employ the same general strategy: for each  
16 alternative, delete individuals who chose that  
17 alternative and re-estimate the model for the remaining  
18 alternatives; then construct a test comparing the new  
19 estimates with the original estimates."

20 That is the Hausman test, is it not?

21 A. Yes, well, the Hausman test, the novel part of the  
22 Hausman test is how you compute the variance of that  
23 estimate, but that is broadly right.

24 Q. Now we will hear something that perhaps Dr Singer may  
25 have had in mind when he was in cross-examination:

1            "In our voting example ... we could exclude the  
2            people who voted for Perot and estimate a binary logit  
3            model predicting Clinton vs Bush. We could then test  
4            whether the binary coefficients were the same as the  
5            multinomial coefficients. We could also exclude the  
6            people who voted for Clinton and re-estimate the second  
7            equation by binary logit. Again, we could compare the  
8            binary coefficients with the multinomial coefficients.  
9            And, finally, we could redo the test with Bush as the  
10           excluded category.

11           "Here's what's always bothered me about tests like  
12           this: since Perot was on the ballot in every state, how  
13           can we possibly get evidence of how people would vote if  
14           he were not on the ballot? It hardly seems sufficient  
15           to redo the analysis after excluding people who voted  
16           for Perot. The people who remain still had Perot as an  
17           option when they cast their vote for Clinton or Bush."

18           Do you accept that criticism?

19           A. I think this is not typically the way econometrics  
20           papers read. That is what he said. This is not  
21           a formal proof of anything, in contrast to, for example,  
22           the specification test in econometrics where the Hausman  
23           and McFadden paper, which are actually in the journal,  
24           I think in *Econometrica*.

25           So this is, you know, casual reasoning. I do not

1           have reasons to disagree with it, but it is not the way  
2           you typically do econometrics.

3       Q.   What is put really is it is a reason to doubt that this  
4           test will in fact prove what it sets out to prove, is it  
5           not?

6       A.   So I will agree with that, but this is not -- you know,  
7           Jerry Hausman is a classic economist, publishes in  
8           Econometrica. This reads like an opinion piece.  
9           I think this -- again, just a relative impact to this,  
10          I think this paper has something like 1400 citations.  
11          Jerry Hausman's seminal paper on how to do the Hausman  
12          test is like 28,000. Hausman and McFadden is about  
13          4,000. Econometricians like me routinely use the  
14          Hausman test for doing this.

15                So I think, you know, if we are comparing the  
16                preponderance of what has got a stronger academic  
17                foundation, I think I would side with Jerry on this one.  
18                But, yes, that is what he says here.

19       Q.   On the next page he makes a point that might be slightly  
20           more to your taste. In the second paragraph, numbered  
21           3, he says:

22                "Simulation studies by Fry and Harris ... and Cheng  
23                and Long ... have shown that both Hausman ... and the  
24                Small-Hsiao test perform rather poorly even in large  
25                samples."

1           Are you familiar with that work?

2       A. I am aware -- familiar with some of the simulation work  
3       that has been done in certain contexts, yes. I may not  
4       have read all these, but, yes, I am familiar with the  
5       general idea of simulation studies in this context.

6       Q. It says at the end of the paragraph:

7           "Based on their results, Cheng and Long went so far  
8       as to say that 'tests of the IIA assumption that are  
9       based on the estimation of a restricted choice set are  
10      unsatisfactory for applied work'."

11           Do you accept that criticism?

12      A. If we could go down a little bit on the page?

13      Q. Sorry, it was on page 3 --

14      A. Can we scroll down a bit more?

15      Q. Yes, by all means.

16      A. Yes, again, I think you are lining up Jerry Hausman, who  
17      is sort of one of the key econometricians now against  
18      a paper in sociological methods and research. I think  
19      in preponderance I would go with Jerry on these things,  
20      but I do understand there have been simulation studies  
21      that have investigated Hausman test. It is widely used.  
22      I use it extensively in my work, and I got it from Jerry  
23      himself, so I am pretty convinced it is a very effective  
24      way of doing specification tests.

25           But people can have all sorts of opinions. I think

1           you just have to weight this by, you know, the relative  
2           credibility of the opinions.

3       Q. Can we go now to {C3/9/6}. This is your, as it were,  
4           distilled version of your fourth report, the one that is  
5           in the bundle, and this is where you explain after --  
6           there was obviously a row between you and Dr Singer  
7           about what the Hausman test did or did not show, and at  
8           the end you say in the last four lines:

9                   "... as Stata explains, 'When the difference in the  
10                   variance matrices is not positive definite, a  
11                   Moore-Penrose generalised inverse is used'."

12                   I read those words without comment.

13                   Then you say:

14                   "In other words, Stata implements a workaround for  
15                   a known issue with the Hausman test which allows me to  
16                   test for and strongly reject the IIA assumption."

17                   This is where, at the end of a rather long day, I am  
18                   going to have to stick my neck out, because you do not  
19                   say here, of course, what the results were that you  
20                   actually found. You heard in the hot-tub that  
21                   Professor Singer said that parameters were stable in 20  
22                   out of 28 of the genres, and that is Day 15, page 55,  
23                   line 20 {Day15/22:20}, and I am now going to find out if  
24                   you agree with Dr Singer's observation.

25       A. Well, so two things. One is I do not think that is

1 something he disclosed to me, but the way you do the  
2 Hausman test, it is a parameter stability test. His --  
3 this test rejects that in his data, and that is the  
4 ultimate test. To the extent that he is relying on this  
5 extremely large sample size to get identification, to  
6 the extent he is concerned, you know, you are going to  
7 have the same large sample size will tend to be  
8 sensitive to small differences here.

9 But it fails the classic test, and rather than  
10 address that problem by building a more generalised  
11 model, he is arguing with the test. That is not common  
12 practice.

13 Q. Well, here -- we have argued with the test. But here we  
14 are not arguing with the test, we are talking about the  
15 results. I did not detect from your answer whether you  
16 agree with Professor Singer that the parameters were  
17 stable in 20 out of the 28 genres when the Hausman test  
18 was conducted?

19 A. So that is not something I did. However, the whole  
20 point of the Hausman test is to figure out how much  
21 difference actually matters, and when this test -- that  
22 is the Hausman -- the original Hausman paper going way  
23 back, "Specification tests in econometrics", and the key  
24 result for that is how you compute what is a big or a  
25 small difference. When it fails that test, that is

1 a big enough difference to reject the null hypothesis  
2 that it is satisfied.

3 Now, he can present auxiliary things that says,  
4 well, I think they are close enough. But the whole  
5 purpose of doing a Hausman test is to actually figure  
6 out whether statistically that difference is enough, and  
7 it fails the test on that comparison.

8 Q. His point is that if the parameters are stable in 20 out  
9 of 28 genres, the result of this test is, in truth,  
10 entirely inconclusive.

11 A. That does not follow. Again, the reason you do these  
12 Hausman tests -- so you run two regressions, you see if  
13 the coefficients are the same, and then the big question  
14 is how big a difference is enough difference? That is  
15 the question the Hausman test answers, and it has a very  
16 specific answer: if it outside, just like you do  
17 coefficient tests for hypothesis testing, this gives you  
18 the test for whether two regressions are too far apart  
19 to be considered the same and it fails the test. That  
20 is it.

21 You can look at the coefficients and say think they  
22 are close, but the whole purpose of this test is to  
23 figure out statistically what is close and what is not  
24 close, and it fails the test.

25 MR WARD: Sir, at 4.12 I have no further questions. Thank

1           you.

2           THE CHAIRMAN: Well done. Thank you very much.

3                               Re-examination by MS DEMETRIOU

4           MS DEMETRIOU: Professor Hitt, I want to go back a couple  
5           of days to market definition and dominance. Sorry,  
6           I know that you have covered lots of the topics. If we  
7           can pull up the transcript, please, for Day 21, page  
8           124. This should come up on the screen in front of you,  
9           just to show you the context of the question.

10                    If you look at line 22 {Day21/124:22}, at the bottom  
11           of the page, do you see that, Mr Hoskins is saying:

12                    "The CMA specifically considered the extent to which  
13           Apple might be constrained by users moving purchases  
14           from within the native app to other platforms at  
15           paragraphs 4.176 to 4.178 of its report."

16                    Then if we go now to page 126 of the transcript  
17           {Day21/126}, you point out here that you discuss this  
18           issue in your report.

19                    Then if we go to page 130 {Day21/130}, this is just  
20           to show you the context and remind you of how this  
21           cropped up. It was then said to you, if you look at  
22           line 7:

23                    "You do not address any of the seven reasons that  
24           the CMA put in its report, do you?"

25                    I then stood up, you can see on the transcript, to

1 say that Mr Hoskins should identify the seven reasons so  
2 that you could address them, and Mr Hoskins then  
3 clarified, we can see at the bottom of the page, and if  
4 we go over the page, that all he was asking you was  
5 whether you had referred to those paragraphs of the  
6 CMA's report in your own reports.

7 If we go to line -- if we stay on this page and we  
8 look at your answer at lines 8 to 14 {Day21/131:8-14},  
9 you said there that you did not set out to rebut the CMA  
10 report or comment on their analysis, but you did look at  
11 some of the data that they had that you thought was  
12 useful for the purposes of reaching your conclusions but  
13 you do address similar points in your reports. Do you  
14 see that?

15 A. Yes.

16 Q. I want to go back to the CMA's seven reasons and if we  
17 go to {AB6/25/129}. We can take it from paragraph 4.175  
18 at the bottom of the page. If we go over the page --  
19 you see there it says:

20 "Reasons for this include ..."

21 If we go over the page {AB6/25/130} we see some  
22 bullets, and the first bullet is that there is evidence  
23 that the same content is not always available across  
24 native apps on mobile devices and other platforms.

25 I just want to take you to something in your report.

1           If we go to {C3/4/172}, please. We see exhibit 26. Can  
2           you explain broadly what this table shows and, in  
3           particular, whether it is of relevance to the point made  
4           by the CMA that we just looked at?

5           A. Right. So exhibit 26 was the result of a manual review  
6           for top apps in general, top game apps and top video  
7           streaming apps, and what my research team and I looked  
8           at was whether or not they offered digital content for  
9           purchase in various channels, and what you see for the  
10          top 25 apps by consumer spend, they offered digital  
11          content for purchase --

12          Q. Do not say the figures.

13          A. Sorry. They offered digital content for purchase a  
14          large fraction of the time, and that there is also  
15          a similar large fraction of the times where you can  
16          acquire it through other channels, including outside of  
17          the iOS App and through a web browser.

18                 Then we did a further analysis to see whether or not  
19                 you can transfer the content into iOS, and that is  
20                 available the majority of the time from the web browser,  
21                 and a very, very, very large fraction of the time from  
22                 other apps to the iOS.

23                 So basically it just says a lot of content is  
24                 available on multiple platforms and that content can be  
25                 moved across, at least for the largest apps, making that

1 the capability available.

2 Q. Perhaps it is an obvious point, but just relating that  
3 to the CMA's first bullet, which is to say there is  
4 evidence that the same content is not always available  
5 across native apps on mobile devices and other  
6 platforms, what would you say to that?

7 A. I would say that across 1.3 million apps, that is  
8 certainly -- that is almost certainly going to be true.  
9 But when you start talking about the ones we were able  
10 to study, that is pretty much not correct, that most --  
11 when you start talking about the apps that most people  
12 use, those are widely available on multiple platforms,  
13 and the content can be transferred as per either -- as  
14 per, say the Multiplatform Rule.

15 Q. Thank you. If we go back to the CMA report, please,  
16 {AB6/25/130}, the second bullet now, so the second  
17 bullet says:

18 "Different devices may have different use cases from  
19 a user perspective such that even when users access the  
20 same content through other devices this does not mean  
21 they are substitutes but rather complements ..."

22 That is a point that Mr Singer has made. I am just  
23 going to show you -- you have addressed it in various  
24 places, but I am just going to show you one of places  
25 you have addressed this in your report. If we go to

1 your third report at paragraph 179 {C3/8/96}. So  
2 paragraph 179. I will just let you have a look at that  
3 yourself. (Pause)

4 Perhaps we can have the next page up side-by-side on  
5 the screen {C3/8/97}.

6 A. Right.

7 Q. So this is just one of the places you have addressed the  
8 point Dr Singer made about -- he said that they are  
9 complements, rather than substitutes. Looking at this,  
10 do you consider you have addressed the substantive point  
11 made by the CMA in that bullet?

12 A. Yes, and it is really sort of two interrelated points.  
13 One is that you could use an app on iOS without having  
14 to transact on there, so the idea that that is not  
15 possible I think is not right. Also that developers do  
16 indeed make it possible to transact through multiple  
17 channels, and we have evidence that consumers actually  
18 do so when enticed to do so for various reasons.

19 Q. Let us go back to the CMA, page 130 {AB6/25/130}.  
20 Looking at the third bullet this time. So the CMA is  
21 again suggesting here that the number of consumers who  
22 are able to switch between mobile devices and games  
23 consoles may be limited. The first question is: do you  
24 consider that it is necessary to show that the majority  
25 of consumers are able to switch between platforms?

1       A. So, no, I would not say it is the majority. I think the  
2       point I make is that many consumers have many potential  
3       devices and most consumers have at least one other  
4       channel and perhaps several other channels in which to  
5       transact.

6       Q. You looked at patterns of consumer spending. Let me  
7       just remind you where that is. If we go to your third  
8       report {C3/8/94}, first of all, and look at exhibit 3,  
9       just remind yourself of exhibit 3. Then I am going to  
10      show you paragraph 174 which is on page 92 {C3/8/92}.  
11      (Pause)

12                So if you just read again and remind yourself of  
13      what you said at paragraph 174.

14      A. Okay.

15      Q. So looking at these paragraphs of your report, do you  
16      want to comment further on the CMA's reasoning in the  
17      third bullet?

18      A. Can we go back --

19      Q. Can we go back to that, yes. That is tab {AB6/25/130}.

20      A. Right, so I think the broader point is, number 1, that  
21      consumers have many devices upon which they can  
22      transact. Games consoles are one, and a significant  
23      number of consumers have game consoles, but they also  
24      have many other places they can transact. They have  
25      PCs, they can use web browsers, and so forth.

1           The second point is even if that was -- even if they  
2           had a limited number of places to transact, the revenue  
3           is very, very concentrated, and so even the movement of  
4           a relatively small number is a significant constraint on  
5           Apple's ability to charge, say, an excess price in their  
6           channels because those consumers potentially can go  
7           elsewhere.

8           Q. Thank you. Then looking on the same page that we have  
9           up on the screen at the CMA's next point at  
10          paragraph 4.176, the CMA says in the second sentence:

11           "The evidence we received from app developers  
12           suggests that only a subset of mobile apps offer users  
13           the option to purchase the same content outside the  
14           native app, eg through a website, and then use it within  
15           the native app."

16           First of all, the CMA is here saying that it  
17           received evidence from developers on this. Do you know  
18           how many developers, or which developers and how large  
19           they were?

20          A. I have no idea. I mean, we did a study of the largest  
21          developers both by downloads and by usage, and you saw  
22          from the figures before, you see a very large number are  
23          available on multiple channels, and just the general  
24          sense is that -- well, you see a very large number there  
25          on multiple, what I'm calling transaction platforms.

1 Q. Let me show you two further pieces of evidence in your  
2 report. So the first is in your third report,  
3 exhibit 4, so that is {C3/8/95}. It is again  
4 confidential so let us not read the figures. If you  
5 just remind yourself what the exhibit is doing and then,  
6 once you have reminded yourself, let me know and I will  
7 show you one other thing.

8 If we go to your second report at paragraph 180  
9 {C3/8/97}. The second report. I am sorry, your second  
10 report.

11 A. Paragraph 180, yes.

12 Q. We have it on the screen as well. Going back to the CMA  
13 again if we can please, so that is paragraph 176. Can  
14 you just, in light of these parts of your report, can  
15 you comment on the sentence I just showed you, so the  
16 second sentence?

17 A. So in addition to the fact that at least for the largest  
18 developers that is not true, at least for the ones I was  
19 able to manually investigate; it is very hard to scale  
20 that. You also have a significant amount of  
21 concentration in developers and that developers have  
22 access to tools that enable -- that facilitate this.  
23 So, you know, given that a significant fraction of all  
24 revenue is from many large developers, they certainly  
25 have the resources to do so, and there is, in addition,

1 the technical resources I think we were talking about,  
2 Unreal Engine, products like that, that enable  
3 developers to actually target multiple platforms, at  
4 least reduce the cost of doing so.

5 So it is feasible, it is technologically possible,  
6 and, again, you know, the developers who you would be  
7 most concerned about, the ones that represent  
8 a significant fraction of revenue, certainly have the  
9 resources to do so and they do.

10 Q. Thank you. Then we see in the second part of that same  
11 paragraph in the CMA report, the CMA talks about  
12 friction experienced by user and also anti-steering  
13 rules. I just want to show you some parts of your  
14 reports relevant to those points.

15 Can we go to {C3/4/110}, so this is your second  
16 report, paragraph 184. I just ask you to remind  
17 yourself of what you have said there and let me know  
18 when you have. (Pause)

19 A. Okay.

20 Q. In the same report, please, page 134, paragraph 227  
21 {C3/4/134}. (Pause)

22 A. Okay.

23 Q. Then your third report this time, so {C3/8/97}. This  
24 time it is paragraph 181. So just, again, perhaps we  
25 can put the next page side-by-side here so we have them

1 both on screen. Just remind yourself of what you said  
2 there. (Pause)

3 A. Okay.

4 Q. So in light of these paragraphs, do you consider that  
5 you have engaged with the substantive point made by the  
6 CMA about steering -- anti-steering and friction and, if  
7 so, could you summarise your response to it now?

8 A. Yes. So with respect to frictions, one of the issues is  
9 that frictions are, in many cases, under the control of  
10 the developer. They have opportunities to, for example,  
11 if they would like to enable consumers to move across  
12 channels, they can issue digital currencies which are  
13 usable on multiple devices, they can have  
14 device-independent accounts. So developers have the  
15 ability within the existing framework to facilitate  
16 shifting across channels. And as we discussed earlier,  
17 consumers also have many different devices, and so to  
18 the extent that they are on these other devices at  
19 various times, the friction there is reduced. So  
20 I certainly addressed the friction point.

21 With respect to the anti-steering point, developers  
22 have the ability to offer their content or not offer  
23 their content for sale on different transaction  
24 platforms, including iOS. Certain large developers,  
25 such as Spotify, have chosen -- and Netflix -- have

1 chosen not to make their content available on iOS but  
2 they still can gain the benefits of the use of the iOS  
3 App, and they can still distribute their content to iOS  
4 users. Clearly they are able to move customers from one  
5 place to another.

6 In addition, developers can -- there is a number of  
7 different ways in which developers can reach consumers.  
8 Again, customer acquisition costs and advertising is a  
9 significant portion of many developers' cost structures.  
10 They certainly can make those investments to targeting  
11 consumers in various ways to encourage them to go one  
12 place or another. The fact that they cannot do it at  
13 the point of sale on an iOS App is not restricting the  
14 ability to do so in any number of other ways that they  
15 can do outside the iOS App.

16 So the idea that steering is prohibitively difficult  
17 I think is inconsistent with the way developers have  
18 behaved, and also with the reality of the ability to  
19 target consumers in many other ways.

20 Q. Thank you, Professor Hitt. If we go back to the CMA now  
21 {AB6/25/132}, please. The next page, anyway, sorry,  
22 {AB6/25/131}, and we look at 4.177. The CMA there says  
23 that this is supported by data received from some of the  
24 developers that answered our request for information  
25 which shows the revenue generated in 2020 from native

1 apps is several times higher than the revenue generated  
2 through other channels.

3 So, first of all, did you receive that data and do  
4 you know who the app developers are that the CMA is  
5 referring to here?

6 A. I do not know who they are referring to. I certainly  
7 would not have access to Google. I would have access to  
8 Apple if I knew who the developers were. But since I do  
9 not know, I cannot validate that, and certainly I do not  
10 have any third-party production that shows the  
11 distribution on other channels of Spotify or other  
12 developers that might operate -- Roblox for example  
13 would be another one that can operate on multiple  
14 channels.

15 Q. Would it be important to understand whether the  
16 developers are large or small, or any other  
17 characteristics, in order to decide whether this  
18 evidence or this point is important?

19 A. I think that certainly is potentially salient. Larger  
20 developers have the ability -- have the resources to  
21 participate on more channels, and certain kinds of apps  
22 are more amenable to this. For example, games and  
23 digital currencies are highly fungible across platforms  
24 unless either the platform owner or the developer has  
25 chosen not to make so that. That might be more

1           difficult for other apps.

2           So in the world of digital currencies or, say,  
3           subscriptions those are pretty fungible. There might be  
4           other things that are less so. So knowing who it is I  
5           think is important.

6       Q. Then 4.178, so, again, looking here in the middle of the  
7       paragraph:

8           "Therefore, most users using the native app to  
9           purchase content to be used in the native do not use  
10          another channel."

11          So the CMA is again focused on most users. Briefly,  
12          what do you say about that?

13       A. So one thing -- so one is I am not sure that is  
14       accurate, and so without further information I am not  
15       sure I can validate that, but second is in many cases as  
16       I think we saw, we were discussing earlier as well, in  
17       an environment where consumers are, you know, both using  
18       and consuming content on various platforms, in the  
19       absence of a strong incentive, for example,  
20       significantly different prices, they are likely to  
21       transact on the platforms that they are on, but when  
22       they are on multiple platforms and if they had  
23       a significant reason to do so, they may re-allocate  
24       that, and that part of that discussion is why I think  
25       substitution is possible, is they are already on

1 multiple platforms, developers are already serving  
2 customers on multiple platforms, and when faced with an  
3 adverse change of conditions, we have shown, for  
4 example, the Epic example, they are able to move.

5 I think that is consistent with my market definition  
6 substitution story and inconsistent with the idea that  
7 this would be otherwise difficult.

8 Q. Then the final -- the seventh point is at 4.179. So the  
9 CMA there says that these movements of users would  
10 provide a weaker or no constraint on the non-price  
11 aspects of the App Store. Do you have anything to say  
12 about that?

13 A. Yes, I think Dr Singer and I have debated this exact  
14 point and I would say that the fact that consumers of  
15 multiple devices, developers choose to participate on  
16 multiple transaction platforms, that there are rules in  
17 the App Store that when combined with developer choices  
18 can enable developers to serve consumers on multiple  
19 platforms with exactly the same content. It all goes to  
20 the point that it is feasible and perhaps likely,  
21 including the natural experiment I talked about before,  
22 that an adverse change in conditions would be met with  
23 a shift in consumers to a different platform with more  
24 favourable conditions, and that is part of the  
25 discipline I think that justifies the market definition

1 I had. Also, even if it is not within that market, it  
2 certainly plays a role as a competitive constraint.

3 Q. So thinking back to Mr Hoskins' question, he said that  
4 you did not refer in your reports to the CMA's views on  
5 this issue. But looking at what those views are, do you  
6 consider you have engaged with the substance of the  
7 CMA's views?

8 A. No, I think that is correct. I did not reference these  
9 specific reports, because again I was not asked to  
10 specifically rebut the CMA, but these issues came up  
11 throughout my report and I believe I have addressed all  
12 of them at some point, including in significant debates  
13 between me and Dr Singer on for example the last point.

14 Q. To turn the question around and looking at the  
15 conclusion the CMA expressed, do you consider that the  
16 CMA has engaged sufficiently with the evidence you have  
17 analysed, for example on the apps in exhibit 26, and on  
18 the concentration of developers and users in App Store  
19 commerce?

20 A. Yes, so I am -- based on my read of the CMA report, I do  
21 not believe the CMA has conducted the same kinds of  
22 natural experiment analyses that I have done, for  
23 example, the Fortnite example, and certainly I do not  
24 believe they have engaged with this idea that developers  
25 are very asymmetric and consumers are asymmetric and it

1 would not take very much movement in either developers  
2 or consumers to have a significant effect on the  
3 revenue, and as a result you do not have to have  
4 everybody move, you do not have to have everybody  
5 switch, but if you had the people who were the most  
6 important, at least in terms of revenue generation, do  
7 so. That could have a significant -- that plays a role  
8 as a significant constraint. For those reasons I think  
9 their (inaudible) is incomplete.

10 Q. Thank you. I am going to move across to Steam which is  
11 something Mr --

12 THE CHAIRMAN: Ms Demetriou, you have been going quite  
13 a while, and actually I have to say that a lot of  
14 this -- it is perfectly legitimate re-examination but it  
15 is already quite repetitive. We have heard an awful lot  
16 of this before. It is up to you, but we did I think  
17 agree that you were going to let Mr Piccinin get up and  
18 do something, and you are going to need to sit down in  
19 whatever time we agreed you were going to sit down,  
20 which I think was in about ten minutes' time, so I want  
21 to give you that warning.

22 MS DEMETRIOU: That is fine. It was important because it  
23 was repeatedly put to Professor Hitt that he had not  
24 cited the CMA.

25 THE CHAIRMAN: It is a matter of judgment for you, but I am

1           telling you that you will not get extra time for  
2           Mr Piccinin. He said he had 15 minutes and at the  
3           moment he does not.

4           MR PICCININ: I have a bit less than that.

5           THE CHAIRMAN: I am just warning you that at ten to ...

6           MS DEMETRIOU: Warning heeded, sir. Thank you.

7                     Steam, I am moving to Steam. So Mr Armitage asked  
8           you about this. If we go to today's transcript, [draft]  
9           page 5. So lines -- I think the pages have moved since  
10          I got my reference, but you were talking today about the  
11          average commission depending -- Steam's average  
12          commission depending on whether or not you take account  
13          of Steam keys. Do you remember that discussion? I just  
14          want to show you the evidence we have in the bundle at  
15          {D1/1804.1}. So this is an expert report filed on  
16          behalf of Valve, Steam's parent company, in proceedings  
17          in the US. If we go to page 81 -- have you seen this?  
18          I can take it quite quickly if you have seen it before.

19          A. Yes, I have seen this report. It was brought to my  
20          attention and I reviewed it.

21          Q. All right. Let us go straight, please, to page 85. We  
22          have here an exhibit and the dotted line is the  
23          effective commission calculated on behalf of the Class  
24          Representative in that case. So it is around 27%  
25          excluding Steam keys; yes?

- 1 A. That is correct. That is the estimate.
- 2 Q. The coloured lines, they are all based on different  
3 assumptions, but they do take account of Steam keys. If  
4 we go over the page -- sorry, I think it is probably two  
5 pages on, so there you see these are taking account of  
6 Steam keys and you can see a sort of coalescing around  
7 the 20% mark?
- 8 A. Yes, that is correct.
- 9 Q. So the questions I want to ask you is -- so the question  
10 I want to ask you is: can you comment on how Steam keys  
11 relate to Apple's ecosystem? So how would you calculate  
12 an effective rate for Apple that corresponds to the  
13 Steam key rate?
- 14 A. Yes, so in order to make -- so in order to make that  
15 comparable, you have to bring in zero price  
16 transactions, which is a significant fraction of all  
17 transactions on the App Store. So things like under the  
18 Reader Rule or the Multiplatform Rule and so forth you  
19 would be averaging zeros for those. So when we see 20  
20 or 22% on this chart, the blue lines I think are the  
21 most conservative treatment of Steam keys, the actual  
22 commission is going to be more than that. If you  
23 factored in the zero price transactions that Apple  
24 facilitates, Apple's Commission would be very much lower  
25 than this, given the very large number.

1 I have not done that calculation, but knowing  
2 something like 90% of all commerce on the App Store  
3 occurs outside the App Store, according to the analysis  
4 group report, and the vast majority of transactions are  
5 free, you would have a significant reduction in Apple's  
6 effective Commission if you were to factor that in.

7 MS DEMETRIOU: Thank you very much. So it is now over to  
8 Mr Piccinin. Thank you.

9 Cross-examination by MR PICCININ

10 MR PICCININ: Professor Hitt, just a few questions about  
11 incidence. You were asked quite a number of questions  
12 about the *Spotify* decision earlier today and about rates  
13 of incidence for music streaming developers. I wonder,  
14 do you know roughly, and I am not asking for an exact  
15 percentage which might be confidential anyway, but  
16 roughly how much of the commerce in this case relates to  
17 music streaming?

18 A. Low single digit percentages. A few percent. I am not  
19 sure of the number off the top of my head but it's on  
20 that order.

21 Q. That is enough for my purposes. Obviously the  
22 Commission found that there was pass-on for music  
23 streamers in the *Spotify* decision. On the hypothesis  
24 that the Commission is right about that, can you please  
25 explain to what extent you think that that conclusion

1 should be read across to other categories of developers?

2 A. Right. So, again, at least some of the music streaming  
3 apps may be in a situation where they are facing  
4 positive marginal cost, and so that I think does make  
5 them somewhat distinctive. I think the other thing  
6 I will note is that the music -- at least the music  
7 streaming, and also similarly situated video streaming  
8 apps, many of them are very large, they have the ability  
9 to take advantage and shift customers across channels.

10 So to the extent that they are continuing to operate  
11 on the App Store, you also have to consider the  
12 possibility that they view the demand on the App Store  
13 to be relatively high. But these services can still  
14 serve consumers through their iOS App, they do not  
15 necessarily have to monetise there. So the prices that  
16 might be reflected there might in part be increased  
17 demand as well.

18 Q. Moving on. If we could see page 45 of the [draft]  
19 transcript today. You were asked some questions around  
20 the middle of the page about an email from [ ], and  
21 Mr Ward put it to you that the email was suggesting that  
22 commission is relevant to level of pricing and you can  
23 see that at the bottom of the page. Do you see that?

24 A. Yes, in that context.

25 Q. Then if we just go on to [draft] page 46, lines 8 and

1 following, you said you did not know if you were able to  
2 comment on what Epic actually did.

3 I am conscious that you do not want to say anything  
4 that is covered by a Protective Order in the US so  
5 I just thought I might show you something from the  
6 public judgment so you know what is in the public  
7 domain.

8 If we go to {AB5/7/12}. If you can just read the  
9 paragraph at the bottom of the page to yourself.

10 (Pause)

11 A. Right.

12 Q. I just wonder if you can comment on what Epic's actual  
13 behaviour tells you about the relationship between  
14 commission and the level of pricing at least for Epic?

15 A. So it is my understanding, and I think this is implied  
16 here, again I do not know what information might exist  
17 before, but Epic maintained common pricing across  
18 channels, up and through the Hotfix. That is what is  
19 implied by this paragraph and that is something I was  
20 aware of. I do not know how far back it goes but I do  
21 not have the evidence to suggest it was anything other  
22 than that. They charged the same price on multiple  
23 platforms and that is what is implied at least by this  
24 paragraph.

25 Q. The next topic. You were asked a number of questions

1 about your evidence in US proceedings. If we can just  
2 bring up one of those {H1.2.1/175}. We were looking at  
3 paragraph 355 before. You can see that you said there  
4 that there would be a need for individualised inquiry to  
5 determine whether a proposed developer or class member  
6 had low or high marginal costs. Then in the next  
7 paragraph you can see you gave the specific example of  
8 music streaming as one that might have high marginal  
9 costs.

10 I wondered, could you please explain to us why it  
11 was relevant, if you know, in the context of these US  
12 proceedings, for you to consider whether damages would  
13 require an individualised inquiry?

14 A. Oh, certainly. So these were US class action  
15 certification motions. One of the key issues is, is  
16 there sufficient commonality of the impact on the class  
17 and can you do that assessment on a class-wide basis.  
18 So to the extent that there are segments of consumers  
19 sitting in the class that may face different  
20 circumstances than others, that is directly relevant.  
21 So, for example, if there were differences for the music  
22 streaming apps and there were consumers who were -- who  
23 mostly -- that was maybe perhaps what they mostly spent  
24 money on, they might be differently situated than other  
25 consumers, and that would be something they would have

1 to be able to address to claim that they have shown  
2 a common method.

3 These kinds of analyses are in that spirit, just  
4 thinking about the extent to which their experts have  
5 provided a common method to assess injury to the class.

6 Q. Mr Ward on this topic said, no need to get it up, that,  
7 your evidence in front of this Tribunal does not include  
8 any statement that some app developers may face  
9 meaningful marginal costs, and you said you thought you  
10 did.

11 This is the only instance of this party trick that  
12 I am going to play. We are going to have to do the rest  
13 of it in closings, I am afraid. If we go to {C3/4/59}  
14 and look at footnote 113, just read that to yourself.

15 (Pause)

16 A. Yes, that is why I could not find it. It is in the  
17 footnote.

18 Q. Now, I suspect -- I hope you know, Professor Hitt, that  
19 in the UK as a matter of law in these proceedings it is  
20 actually enough for the Class Representative to prove  
21 damages on an aggregate basis even if the quantum of  
22 damage varies significantly within the class. Could you  
23 please comment on how the fact that some developers in  
24 these sorts of categories may have significant marginal  
25 costs fits into your analysis of the best estimate of

1 class-wide harm in this case?

2 A. Sure. So I think that some may have -- actually one  
3 thing I have learned subsequently, just to note this,  
4 I think I commented on this, is that I do not believe  
5 Spotify is one of those that fits into that condition.  
6 But to the extent -- you know, again -- so the way my  
7 analysis on incidence comes out is that if you think  
8 about what is the most likely thing for a developer to  
9 do, it is to do nothing when faced with a different  
10 commission, that seems to be the case, and that what the  
11 average effect on consumers is based on a  
12 difference-in-difference analysis is zero.

13 That does not stop individual developers from making  
14 various kind of choices, but the  
15 difference-in-difference analysis seems to suggest that  
16 at least in the areas where I was able to study that  
17 nets effectively to zero.

18 That is true for the preponderance -- essentially  
19 almost all of the analyses that I have done, with  
20 I think the one exception that was pointed out, and that  
21 is just one of many and only one time period of many.

22 So the overall result I take from my  
23 difference-in-difference analysis is the best estimate  
24 for the average incidence is zero, based on the  
25 available data we have.

1 Q. The last question, and it is just one question on the  
2 regression analysis. So you remember there was some  
3 discussion of the commentary in your third report on the  
4 fact that the price variables in Dr Singer's regressions  
5 were adding very little explanatory power, and if I can  
6 summarise what Mr Ward was putting to you, with no  
7 disrespect. Effectively he was saying: never mind that,  
8 there is lot of explanatory power coming from the fixed  
9 effects.

10 My question to you is: could you please comment on  
11 the relevance of explanatory power of the fixed effects  
12 on the one hand, versus explanatory power of the price  
13 variables on the other hand, for determining the shape  
14 of the demand curve.

15 A. Right. It is the relationship between price and  
16 quantity that is relevant. The fact that -- and that is  
17 the price variables effect. The fact that some apps  
18 sell more than others for all sorts of other reasons  
19 does not really tell you what the shape of the demand  
20 curve is. That really was my critique of Dr Singer's  
21 claim. He said, you know, because we have a good fit,  
22 we have established -- we have been able to demonstrate  
23 the price-quantity relationship. But in fact his good  
24 fit has nothing to do with that, it has only to do with  
25 the fact that some apps sell more than others.

1 MR PICCININ: Those are my questions.

2 THE CHAIRMAN: Professor Hitt, we are finished with you.

3 Thank you very much. It has been a long week, I know.

4 We are very grateful for your evidence. Thank you. You

5 are released from the witness box.

6 THE WITNESS: Thank you. Nice meeting you all.

7 (The witness withdrew)

8 Housekeeping

9 THE CHAIRMAN: Right. Do we need to talk about timetabling

10 for the last week? I have seen a CMA letter, so there

11 seems to me there are some issues about the CMA's

12 position, and I gather there is still some question

13 about how we are going to divide up time, is that right?

14 MR KENNELLY: Yes.

15 THE CHAIRMAN: Or has that been sorted out?

16 MR KENNELLY: We can put to one side I think for the moment

17 the exact allocation of time between Apple and the Class

18 Representative and focus only on what we do with the CMA

19 for the moment.

20 THE CHAIRMAN: Yes.

21 MR KENNELLY: We have written to the CMA, having seen the

22 letter that Tribunal got last night or first thing this

23 morning, with a compromised position. May I just --

24 THE CHAIRMAN: Well, is it agreed? Is the CMA here?

25 MR KENNELLY: They are not here.

1 THE CHAIRMAN: I have to say, well, I mean, if we do not  
2 know whether they are accepting a compromise then we  
3 cannot really --

4 MR KENNELLY: They have not accepted our compromise. The  
5 position is as you have in that letter from the CMA. It  
6 is the CMA's position.

7 THE CHAIRMAN: The one thing that actually you can help me  
8 with a little on this, there seems to be a suggestion in  
9 the letter that the confidentiality issues -- the  
10 production of a non-confidential version of the Class  
11 Representative depends on your review. I understand you  
12 will want to have a look at it. But is that really --  
13 is that really the constraint here, because presumably  
14 we accept they did a decent job, and if they get it  
15 wrong, the worst thing that has happened is it has gone  
16 to the CMA and we make a suitable order that it can be  
17 adjusted or something. That does not seem to be  
18 something we should be bothered about.

19 MR KENNELLY: Indeed. In fact in relation to producing  
20 non-confidential versions we have offered to give our  
21 non-confidential submissions at 10.00 am on the Thursday  
22 so that is earlier than we had initially said.

23 THE CHAIRMAN: That is very helpful.

24 NEW SPEAKER: Also to give the Class Representative's  
25 submissions which we will review by 8.00 pm on the same

1           day, but by then, according to what the CMA wanted, they  
2           will have spent their time reviewing our submissions.

3   THE CHAIRMAN: Can we not just leave it at 6.00 pm on the  
4           basis that if anything is wrong --

5   MR KENNELLY: I am sure we can --

6   THE CHAIRMAN: I just do not see why we need to bother about  
7           it. I think we can be really clear that if it goes to  
8           the CMA and you have to ask them to replace it with  
9           another document, I am sure that that is not going to  
10          cause anybody anxiety, is it?

11   MR KENNELLY: I am sure we can manage that.

12   THE CHAIRMAN: Can we leave it, I mean I think it's very  
13          helpful that they get yours at 10am, and can we leave it  
14          that the Class Representative will produce theirs by 6pm  
15          which they say they can do, and you will have until 8pm  
16          to register any objection with what's gone over.

17   MR KENNELLY: So I am -- no one is kicking me in the shins  
18          yet but we are making these enormous efforts --

19   THE CHAIRMAN: I understand all that. I appreciate this is  
20          very compressed and not ideal but we are sort of where  
21          we are.

22   MR KENNELLY: Indeed. But the real vice in what the CMA has  
23          proposed to you is the idea that they will pop up in the  
24          middle of our oral closing with their own oral  
25          submissions, and that is the real problem we have with

1           their proposal, and they say they need to do that  
2           because they want 24 hours between their written  
3           submissions and their oral submissions.  If they do  
4           their written submissions by Monday, then they will get  
5           the 24 hours and still be able to give their oral  
6           submissions immediately after Dr Kent and before we get  
7           on our feet.

8       THE CHAIRMAN:  What we do not know is whether -- if -- well,  
9           if you are right that it is not the right thing to do,  
10          we will come back to that, we do not actually know  
11          whether they would prefer to have shorter time between  
12          closings and the hearing -- and their submissions or  
13          a shorter time to prepare closings than 24 hours.  
14          That's the problem, isn't it -- I am very reluctant to  
15          impose that choice on them if we do not know what their  
16          preference is.

17       MR KENNELLY:  We told them -- everything that I am offering  
18          to the Tribunal today, apart from the 6.00 pm opposed to  
19          8.00 pm, we have offered to the CMA, and we were told we  
20          were going to have this debate and we said please do  
21          come and attend and they are not able to attend.

22       THE CHAIRMAN:  To be fair on a Friday afternoon I can  
23          understand that it is not straightforward.

24                 Let me just step back a little bit.  I absolutely  
25          get the point that it is not very helpful.  I am just

1           doing some rough calculations without getting into the  
2           question of who has what time which I hope you can sort  
3           out yourselves although I am very happy to tell you what  
4           I think the answer is if that would be helpful. But  
5           without getting into all of that, it is pretty obvious  
6           that if -- it is quite difficult to see circumstances.  
7           I assume some time, certainly by Wednesday, you are  
8           going to be on your feet doing your closing.

9           MR KENNELLY: Indeed.

10          THE CHAIRMAN: So are you suggesting that they should be  
11           here before Wednesday morning?

12          MR KENNELLY: Yes, the idea is that on Wednesday morning,  
13           after the -- after Dr Kent has finished her closing, the  
14           CMA do their two hours, if that is what they need,  
15           immediately before we begin, and we are happy to share  
16           our time and Dr Kent's time for the purposes of those  
17           two hours. So we can take an hour from our time and an  
18           hour from Dr Kent's.

19          THE CHAIRMAN: In other words, you are saying you want to  
20           shift it forward 24 hours.

21          MR KENNELLY: Yes, indeed. So they do their oral  
22           submissions before we begin. That still puts us in some  
23           difficulty because we will be hearing them immediately  
24           before we get on our feet, but it is preferable to us  
25           hearing them after we have made submissions about the

1 CMA's position which we will be doing necessarily in the  
2 first part of our oral closing.

3 THE CHAIRMAN: I can understand the point and it certainly  
4 occurred to me it is not ideal for it to be broken up.  
5 The truth is I do not think there will be any surprises  
6 in the oral submissions. If there are they will be  
7 relatively marginal.

8 I do understand where you are coming from.  
9 I understand the point. The logical flow would be,  
10 I think, to have them before you have to deal with it on  
11 the basis, I suspect, there is going to be more, in what  
12 they say, that you are going to want to deal with and we  
13 might as well get it upfront but I am just very  
14 reluctant to force that on them without them being here,  
15 and I do think we might have to push this off to  
16 correspondence.

17 MR KENNELLY: First of all, sir, I am happy to come back on  
18 Monday morning. The last person you want to see on  
19 Monday morning is me but I am happy to come back if you  
20 want to give the CMA a chance to come and make oral  
21 submissions to you.

22 THE CHAIRMAN: I cannot do it on Monday morning and I do not  
23 particularly want to do it, I do not want to have  
24 another hearing. There is no reason why this cannot be  
25 dealt with by paper.

1           I think the question is, you know, if we say to them  
2           we would really like them here Wednesday morning, do  
3           they think they can sensibly and feasibly do that, and  
4           I would like them to answer that question, and we can  
5           write and ask them or you can write and ask them, but  
6           let us find out the answer to that.

7           MR KENNELLY: We can ask them again. We have already asked  
8           them and we will say the Tribunal has asked them the  
9           same question. Perhaps they will reflect on it.

10           To be very clear about the unfairness, you say no  
11           surprises, but to be clear, there is disruption to us in  
12           having to break our oral closing to hear from the CMA.  
13           It is unfair because necessarily we are addressing their  
14           position on which we do not agree. We know this is  
15           already from seeing their oral submissions in the  
16           skeleton of these proceedings. We will address those in  
17           the first part of our submissions. Then we stop to hear  
18           them for two hours. Then we have to respond immediately  
19           on our feet to what they say in the middle of our oral  
20           submissions. That is really unfair and disruptive to  
21           us.

22           THE CHAIRMAN: You will have the rest of Thursday and a  
23           little bit of Friday morning I suspect, so it is not  
24           that unfair, Mr Kennelly.

25           I think this is a perfectly fair point, that it is

1 not an ideal flow, and that is my concern. I do not  
2 think it is unfair. I think you are perfectly capable  
3 of dealing with it. We are perfectly able to understand  
4 the consequences of being broken up, but it is not  
5 ideal, I think we can all agree that.

6 Why don't we ask them, just push them again and ask  
7 them if there is any way they can -- I mean, the  
8 difficulty is that I suspect even -- the way that  
9 I looked at this timetable I thought there was a decent  
10 chance you could get on on Tuesday, and I am not sure  
11 that the Class Representative -- if the Class  
12 Representative is given an allocation of time which is  
13 broadly equal, it is a matter for them as to how much  
14 time they spend in reply, but I am not sure you can be  
15 assured you are not going to be on your feet by Tuesday  
16 afternoon. I do not think we can ask the CMA to be  
17 going by Tuesday afternoon. So it may be part of this  
18 is we need to work out how the Class Representative  
19 wants to split the time that they have got allocated for  
20 them.

21 MR KENNELLY: Well.

22 THE CHAIRMAN: You are obviously still having that  
23 discussion.

24 MR HOSKINS: We have not been to this since before the  
25 trial, but the point I made was I cannot tell you now

1           how much I need in reply before I have heard what is  
2           said by Apple. It is impossible to do that. You could  
3           lay down just a scaler if you want, to say you have this  
4           time and you have that time, that is fine, but I cannot  
5           give you a sensible input how much I need in reply, not  
6           having heard their closing submissions.

7       THE CHAIRMAN: Well, I think that is quite a difficult  
8           position, is it not, and I completely understand the  
9           practicalities, but the simple fact is that we are going  
10          to have to know and we will want to know who is getting  
11          up and sitting down when, and you are going to get an  
12          allocation of time, and I know you are still arguing  
13          about how that works, and I am happy to arbitrate on  
14          that.

15       MR HOSKINS: That is what I am suggesting. What I am saying  
16          is if you want me to help you do it --

17       THE CHAIRMAN: Shall I tell you --

18       MR HOSKINS: I am inviting you to say this is my  
19          suggestion --

20       THE CHAIRMAN: I think what I am going to do, so we are  
21          absolutely clear, we will rise in three minutes time  
22          because we have some time constraints, so let me give  
23          you what I thought might be an easy way of managing  
24          this, and then I am afraid I will send you away to have  
25          another go to see if you can make it work. I am

1 available to deal with it on the papers but I'm not  
2 going to have another hearing on it though.

3 So it seems to me you have ten sessions of two and  
4 half hours each. That is 25 hours. If you give two to  
5 the CMA, that is 23 hours. My suggestion was that we  
6 recognise that you have more to do, the Class  
7 Representative's side. We give you 12 of those 23,  
8 which leaves Apple with 11. But if Apple reaches  
9 a conclusion it needs an extra hour we will find that.  
10 We will manage to do that, bearing in mind, let us not  
11 forget we are going to have some disruption I am afraid  
12 on Thursday 27. But if you think you need another hour  
13 maximum, that will be available somehow and we will find  
14 it.

15 Basically you can have 12 hours, although I am  
16 working on the basis it will be 11 for you unless you  
17 think you really need it. That strikes me as being  
18 quite a lot of time for closing arguments and I really  
19 will push back on any suggestion that anybody needs more  
20 than that.

21 If you do that, then it seemed to me that the way  
22 that is likely -- I just assumed, this is a complete  
23 assumption, and if you think it is wrong you need to say  
24 so. You might want to spend three hours on Friday with  
25 your reply which would give you all day Monday and

1 four hours on Tuesday, in which case you are going to be  
2 up on Tuesday afternoon, in which case we are not having  
3 the CMA on Tuesday afternoon.

4 So that's the reality of it. If Mr Hoskins says  
5 I do not need two hours, then that is fine, I do not  
6 need three hours, I need two, but I rather suspect that  
7 is not how it is going to work.

8 So I am not sure we can take it much further other  
9 than leave you with that conundrum and see whether you  
10 can make it work, but I do not think there is any point  
11 asking the CMA to turn up on Wednesday morning if you  
12 are on your feet on Tuesday afternoon.

13 MR KENNELLY: May I address you very briefly on that. You  
14 have assumed it is impossible for the CMA to make its  
15 submissions on Tuesday afternoon, but if one recalls  
16 what the CMA is doing in this part of the case, they are  
17 producing a 20-page written document on the law which  
18 they can speak to immediately, but the point they make  
19 in their letter is they want some time to put their  
20 submissions in then speak to those submissions. They  
21 could speak to those submissions on Tuesday afternoon  
22 having lodged them on Monday. They are submissions on  
23 the law and not on the evidence.

24 So really it is possible for the CMA to do that.  
25 They have not said it is impossible. We are responding

1           to the CMA's written and oral submissions immediately,  
2           so if we can do it, so can they.

3       THE CHAIRMAN: Well, they have not been in this case for  
4           seven weeks and they are resourced in a somewhat  
5           different way. I am afraid I do not buy all that. The  
6           reality is from our point of view we want to have them  
7           here, we want them to have time to deal with it  
8           properly, and they are telling us that they can do it  
9           Thursday morning but it is more difficult for them to do  
10          it earlier. I am prepared to accept that to try and  
11          make it work we should push them a bit harder, but  
12          I think asking them to come on Tuesday afternoon is  
13          actually not going to be reasonable or sensible and we  
14          do want to get the best out of them.

15                So by all means ask them, but if they push back and  
16                say no, I am not going to be pushing that match harder.

17                So I think you just need to get -- think about some  
18                other ways dealing with it, and there are other ways of  
19                dealing with it. You do not have to start with market  
20                definition. I know that is not particularly helpful.  
21                But, well, you know, that is where we are. That is the  
22                problem, is it not?

23       MR KENNELLY: So you have my point. It is not necessarily  
24           where we are. The CMA is speaking to the law.  
25           Regardless of their resources, they should be able to

1 speak to their legal points as soon as they put in their  
2 written submissions on the law, and they must be  
3 following at least the legal points that have arisen  
4 during the trial.

5 THE CHAIRMAN: Let me put it this way. I would have thought  
6 there is a decent chance that you are going to spend  
7 a decent amount of time before you get to market  
8 definition because you have some things to deal with.  
9 You have to deal with facts, with some of the law,  
10 before we really get into the question of it.

11 So maybe that gives you little bit of flexibility.  
12 I do not know. I think you need to go away and have  
13 another go it, if I may say so.

14 Let me put it this way. It would be great if you  
15 could agree something that worked. If you cannot,  
16 I will make a decision about it. I understand all your  
17 points about the practicalities of it and I am  
18 sympathetic to it. I am not unsympathetic, but there is  
19 going to have to be some compromise all around on this  
20 to make it work.

21 We are all able to deal with this. We have -- in  
22 many ways it would have been much more helpful to have,  
23 Professor Hitt give evidence before Professor Sweeting  
24 but we understand that was not the way it worked  
25 practically and we managed that.

1 MR KENNELLY: We will approach the CMA again and we may have  
2 to approach you again, but you will get the positions in  
3 writing.

4 THE CHAIRMAN: I do not mind if you come to me if you cannot  
5 do it but it would be much better if you could sort it  
6 out.

7 Can I just raise one other very quick thing. As you  
8 would have picked up, I am sure, from the website, if  
9 you are following such things, we have Merricks in here  
10 on Wednesday, Thursday, Friday, in this court. Can  
11 I ask you, please, to make sure by Wednesday morning all  
12 your professional personal stuff is out. The Opus stuff  
13 can stay in here. Everything else needs to go so that  
14 it is clear for them.

15 Is there anything else, he said with trepidation?

16 MR KENNELLY: Nothing else from us.

17 THE CHAIRMAN: Good. Of course if you need anything you can  
18 correspond.

19 Can I just say thank you very much. It has been,  
20 I think, a real exercise to get to this point. We have  
21 got all the evidence done, a bit tight in the end, but  
22 it was a real tribute to all your skills that we got the  
23 evidence done on time, so we are very grateful.

24 We look forward to your books and seeing you all on  
25 Monday, 24 at 10.00 am. Thank you very much.

1 (5.05 pm)

2 (The hearing adjourned until Monday, 24 February 2025 at

3 10.00 am)

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