IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, ET AL.,	)	
	)	
Plaintiffs,	)	
	)	CV No. 20-3010
vs.	)	Washington, D.C.
	)	November 13, 2023
GOOGLE LLC,	)	9:30 a.m.
	)	
Defendant.	)	Day 39
	)	Morning Session

TRANSCRIPT OF BENCH TRIAL PROCEEDINGS
BEFORE THE HONORABLE AMIT P. MEHTA
UNITED STATES DISTRICT JUDGE

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Proceedings recorded by mechanical stenography; transcript produced by computer-aided transcription

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DEFENDANT'S:				
KEVIN M. MURPHY	9681			

P R O C E E D I N G S

COURTROOM DEPUTY: All rise. The Honorable Amit P. Mehta presiding.

THE COURT: Good morning. Please be seated, everyone.

COURTROOM DEPUTY: Your Honor, this is Civil Action 20-3010, United States of America, et al., versus Google LLC.

Kenneth Dintzer for the DOJ.

Jonathan Sallet and William Cavanaugh on behalf of Plaintiff States.

John Schmidtlein on behalf of Google.

THE COURT: Okay. Good morning, everyone. I hope everybody had a nice weekend.

All right. So we're ready to proceed with Professor Murphy?

MR. DINTZER: Your Honor, just to put the Court on notice, we have two housekeeping matters if the Court would want to hear them now or later.

THE COURT: We can or we can wait until -- but...

MR. DINTZER: One of them is going to be at some point, we just want to put the Court on notice, in our -- when we're on cross, we have a document that's disputed on confidentiality. We're happy to raise that after they finish.

THE COURT: I think we have some time before that happens.

MR. DINTZER: Thank you, Your Honor.

THE COURT: Is that the only issue? Because I thought you I understood you to say there's more.

MR. DINTZER: The other one is to let you know, we're going to need a closed session tomorrow, and so, again, we can talk about that later, but we just want to put the Court on notice.

THE COURT: Okay. Terrific. Thank you.

MR. SCHMIDTLEIN: Good morning, Your Honor. John Schmidtlein for Google.

Google calls Professor Kevin Murphy.

COURTROOM DEPUTY: Before you have a seat, would you please raise your right hand.

(Witness is placed under oath.)

COURTROOM DEPUTY: Thank you. Please have a seat.

THE COURT: All right, Professor Murphy, good morning.

THE WITNESS: Good morning.

THE COURT: Good morning and welcome.

THE WITNESS: Thank you, Your Honor.

THE COURT: All right, Mr. Schmidtlein, whenever you're ready.

MR. SCHMIDTLEIN: Thank you, Your Honor.

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KEVIN M. MURPHY, WITNESS FOR THE DEFENDANT, SWORN

DIRECT EXAMINATION

BY MR. SCHMIDTLEIN:

Q Good morning, Professor Murphy.

A Good morning.

Q Please state your name and spell it for the record.

A My name is Kevin M. Murphy. That's K-e-v-i-n, initial M, M-u-r-p-h-y.

Q What is your educational background?

A I got my BA in economics from UCLA in 1981.

I got my Ph.D. in economics from the University of Chicago in 1986.

Q And what is your current position?

A I am the Professor Emeritus at the University of Chicago, where I currently teach, even though I retired in July, I still teach, so I'm not sure how that works, but I'm still teaching.

THE COURT: Doesn't sound like retirement.

THE WITNESS: I still teach, so I'm actually teaching this quarter in Chicago in the econ department. For most of my career, I was in both the econ department and the Booth School of Business.

BY MR. SCHMIDTLEIN:

Q How long have you taught economics at the University of Chicago?

A I started teaching in 1983.

Q And can you explain to the Court, just to give a sense of the types of classes that you have taught over the years?

A I've taught -- mostly I teach price theory, which is the understanding of markets and competition. I've taught in both the business school and the economics department.

In the economics department, I've had the honor of teaching one of our flagship courses, which is Econ 301, which is the price theory course for Ph.D. students at Chicago. It was taught by Frank Knight and then Milton Friedman and Gary Becker. And I co-taught with Gary for a long time. And then when he passed away, I took over the course by myself. So I've been teaching that for a long time at Chicago now.

I also teach at summer camp in economics for Ph.D. students for around the country that covers, in a one-week period, the highlights of what we do in the price theory class.

I've also taught labor economics and public policy, which includes antitrust and things like that;

empirical methods. So a wide range of things over the years.

Q Have you won any awards?

A Yes.

I won the John Bates Clark Medal, which at the time was awarded every other year to an outstanding American economist at the -- under the age of 40, so obviously that was a while ago.

And I also won MacArthur Foundation fellowship and a few other things in economic.

I'm a member of the American Academy of Arts and Sciences.

Q Have you authored and had published peer-reviewed papers on economics?

A Yes, I have.

Q And can you give the Court just a rough approximation?

A I don't know. 65, 70, something like that, papers in economics.

Not all of those would be peer reviewed but many of them would be peer reviewed.

Q Have you been qualified to offer expert testimony by courts in antitrust cases?

A Yes, I have.

Q And have you ever been retained as an expert by

the United States Department of Justice or the Federal Trade Commission in an antitrust matter?

A I've worked for both the Department of Justice and the Federal Trade Commission. I've testified on behalf of the Federal Trade Commission.

MR. SCHMIDTLEIN: Your Honor, Google tenders Professor Kevin Murphy as an expert in economics and industrial organization economics.

MR. DINTZER: No objection, Your Honor.

THE COURT: All right. The Court will recognize Professor Murphy as an expert in economics and industrial economics.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, when did you first get interested in economics?

A Actually, I got interested in economics before my formal training in economics started.

Through high school and actually through college and even graduate school, I worked in a supermarket, and that sort of let me look at how things worked and how we set prices and how we marketed products.

And when I went to UCLA, I had originally was in mathematics, but I took a course in economics. I said, wow, this is really cool, it really helps me understand all those things we were doing in the grocery store and how the market

works. And I was fortunate enough to take some courses from some really outstanding economists at UCLA who emphasized using the tools of economics to understand the world, and that really caught my interest.

And then when I graduated from UCLA, I went on to Chicago. And then, you know, I was pushed to go to Chicago by the people at UCLA. I went there, and same thing, learned a lot about, from many of my professors there, how to apply economics, in particular, apply economics to data, look at the world, look at empirical observations.

And a lot of that data is numerical or datasets or analytics econometrics, or whatever, a lot of that data is qualitative. You know, how do I understand why the world works the way it does? Why do the institutions we see evolve? Those are the kind of questions I learned to think about when I was at UCLA and further on at Chicago.

Q Now, Professor Murphy, did you work with counsel to prepare slides to assist with the presentation of your testimony today?

A Yes, I did.

MR. SCHMIDTLEIN: Your Honor, may I approach?

THE COURT: You may.

BY MR. SCHMIDTLEIN:

Q Now, Professor Murphy, I've given you a binder with slides that we've marked as DXD37. Are these the

slides that you helped prepare to present today?

A They appear to be, yes.

Q Okay.

MR. SCHMIDTLEIN: Your Honor, as we've done with prior witnesses, there are certain slides that have redacted portions. Your Honor's binder is an unredacted set with red boxes.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, I'm going to try to remind you about the red boxes and will ask you to turn to the hard copies when we're referring to some of those slides, but otherwise the slides will be up on your screen.

A Okay. Thank you.

Q Professor Murphy, what was your assignment in this case?

A Yeah, I have a slide for that.

The first one was to analyze search competition and the role the challenged agreements play in it.

I would say the way I think about that is the way I would approach all the problems and the way I approach problems as I teach in my classes.

First, we want to understand the marketplace. And we want to understand, in this case, we're in a competition case so we want to understand how competition works in the search market, what are the key economic things that

underlie what we see and underlie really the questions that we need to ask when we think about the challenged agreements.

And a key aspect of that is what I think of and what we often refer to as the competitive process. How does competition work? And understanding both the implications of that but also why that came about and what we can learn from the marketplace about that. So we're going to try to understand the market and then analyze agreements in the context of that market. Then we're going to -- so the first part is really just that.

Then we're going to turn to assessing the specific aspects of the agreements. I've divided those into two parts. That's the agreements with browser providers and Android -- and OEM and wireless carrier agreements. So it's sort of the browser-provided view of the world, that is Apple and the independent browser providers; the search default agreements, that plays a major role obviously in the case here. And then we're going to turn to the OEMs and the wireless carriers and the Android agreements, including the MADAs and the RSAs.

We're going to evaluate those again, understand the competitive process. The key question really is have the challenged agreements harmed or enhanced the competitive process. That's really the question. Like, if you look at

these agreements, how have they affected things. And they could have the ability to harm that process or enhance that process. And once we understand the industry, we'll be able to try to make that evaluation.

And then we can turn to some of the procompetitive benefits that you might see, and particularly focus on the benefits that accrue in a search market. But that will be part of what we do.

Q Now, have you reached some opinions in connection with your assignment?

A Yes, I have.

So they've come in three broad areas. I'm not going to go through them here, because we're going to go through them in detail, no use previewing them.

So the three areas are really, my first conclusion, Google's browser default agreements enhance rather than harm the competitive process. So we're going to start by thinking about the competitive process and evaluating the impact that those agreements had on competition in that competitive process.

Next we're going to turn to the Android agreements and ask whether they are procompetitive. And I reach the agreements -- I'm sorry, reached the conclusion those agreements are indeed procompetitive.

Then I'm going to ask some further questions and

ask, nonetheless, do they these challenged agreements hinder the ability of rivals or incentives of rivals in Google to compete in the marketplace.

Q Can you explain for the Court the economic framework that you used for your analysis?

A Yeah.

So, again, I think we've talked about this, I'm not going to go through it too much more.

But the key question is, do they harm competition in search. We're focused on search here, and we want to know, do the agreements harm competition in search.

Although in order to understand search, we're going to have to understand some of the surrounding things like browsers and platforms, because obviously they interact closely with the search issues in this case because those are involved in the agreements.

But the focus, again, the most important part of this, is that we're going to focus on the competitive process. And it's important to think about how do these agreements affect competition, not how they affect competitors per se, right?

You want to ask, Do they harm the competitive process, and not so much, because a lot of times you can do things that make the market more competitive, and at the same time, that will reduce the success of some rivals,

particularly weaker rivals, right. You make it tougher -- it's tougher to survive if you're not as good.

So you don't want to confuse, you know, weak rivals not doing as well under some certain situation. It's definitely saying -- that tells me that it's less competition. Many times, that might be more competition. You really want to focus, again, on that competitive process.

Then I'm going to ask if they really are -- and then another important point, I'm going to ask whether the agreements are the outcome of competition. That is, when we think about the competitive process, the competitive process not only generates the prices and quantities that we see in equilibrium, but that competitive process generates the structures that we see. Why do people adopt the contractual form. The contractual forms we choose actually are part of that competitive process, and it's important to look at that, and I'll do that.

I'm next going to turn to foreclosure. A couple important things about foreclosure. One, you have to always have some but-for world. You have to think about, are they foreclosed relative to some alternative. You say, Well, Professor Murphy, what do you mean by foreclosure.

Foreclosure is about limiting the ability of rivals to compete, right. It's not about whether rivals win

or lose, it's about do they have the opportunity to compete.

Why do we care about whether they have the opportunity to compete? It's because competition is what generates benefits for society, generates benefits for consumers. So we're going to center our questions around how does this affect competition, and that's where we're going to go.

And as I said, we'll talk about here, the economic -- what is the impact, if any, of economically valid foreclosure on competitive rivalry. Is it -- does it -- how to affect competition because that's what competition and antitrusts are all about.

And, finally, we can ask if there is harm to competition, is that offset by some other efficiency. Okay? But that's distinct from the question of, does it enhance or harm competition, which is really that first step. How do these agreements impact the competitive process. That's the first step we're going to take.

Q All right.

Let's turn to your first opinion, Professor, that the browser default agreements enhance rather than harm competition.

THE COURT: Mr. Schmidtlein, I'm sorry to interrupt you.

Can I just ask a foundational, clarifying

question?

Are you -- I understand you to be doing this, but I'll just ask you to confirm. Are you taking, as a given, the market definitions that the plaintiffs have proposed?

THE WITNESS: I am -- my analysis is consistent with those market definitions. You can see I'm taking as given. Although some of what I'll do will shed some light on whether those are the right market definitions or not. That's not a focus of my analysis.

Nor does it matter for my analysis, because I'm going to be looking at how this affects competition between the general search providers. Whether that takes place in the context of a broader market or a narrower market doesn't really play into how this affects competition between them, although the existence of competition with the rest of the world, you might say, is going to turn out to show up in places. But it doesn't -- it doesn't depend on what I assume about markets.

THE COURT: Okay. Thank you.

BY MR. SCHMIDTLEIN:

Q Professor, can you summarize the key points that support your first opinion.

A Yes.

Actually, can I just go through them? I'd rather just jump right into them. Is that okay?

THE COURT: Sure.

THE WITNESS: I think it's just easier.

This is a roadmap of where we're going, so I'm just going to jump into number one.

Letter A.

Sorry, we're going to jump into A.

BY MR. SCHMIDTLEIN:

Q Okay.

A So let me go back here. Can I go -- I'm sorry, we're -- now I'll tell you what my first opinion is. I didn't want to go through all the slides.

So my first opinion is that browser defaults reflect partners' design decisions that enhance competition. So we're going to look at how these agreements affect competition.

So let's go to the first slide, okay? And the point of this slide -- and we're going pretty far back in time here. We're going back to 2000, 2001, 2003.

And what you see is the decision to have an integrated search functionality in a browser with a default search provider. In the first case, it was Netscape. The second case, it was MSN. The third case it was Google. It goes back far. Right? We're back here in early 2000. So this, this product design or this structure where you have a default search provider associated with a browser has

been around for a long time.

And what we'll also see is that it's not only been around for a long time, it's basically the universal design that people have adopted. That if you look at -- people have agreements not with Google and not just in terms of agreements with Google as the search engine. If you look at Internet Explorer using Bing or Edge using Bing or Brave using Brave search, the Silk browser using Bing. Mozilla at a time used Fire- -- I mean Firefox used Yahoo!. DuckDuckGo uses the DuckDuckGo search platform. The point is, this is a market outcome. This was the product of competition. And how do I know that? Because this happened basically across the board.

And it's also important that no other design really met the market test, right? It's not like we see some people use the defaults and a bunch of other people do something else. Actually throughout this period, defaults, it was the standard, that's what everybody did. Whether it was Google or whether it was people other than Google, whether it was when somebody's a small player or a big player.

As an economist, that tells me two things.

One, it must be creating value. Why do people do things? Because it creates value.

Number two, it tells me it's met the market test.

It's met the market test in a wide range of circumstances. So that's the two key lessons I take away from the history and what's come out.

Q As part of --

THE COURT: Sorry to interrupt.

MR. SCHMIDTLEIN: Sure.

THE COURT: Just to be clear, the early examples that you've identified on this slide, I just want to make sure I understand, those were not search bars as we think of them today; rather, they were locations where you could type in the URL and then navigate to a particular website, correct?

THE WITNESS: Well, it depends on which one you're looking at.

So, for example, if we go back, if you look at the Netscape, Netscape 6, search was integrated into the address bar. That is, you could type your search into the address bar and hit search, and then you would get a Netscape search engine's result.

In the case of MSN, you again would type it in to the address bar, and you could get search there, okay?

Or you could use the search button, and then something would pop up for the search button.

On Google -- I'm sorry, on Safari at the time, it was separated. You had like the address bar on the left,

and then you had a separate search box.

The point I'm making here is all those search functionalities came with a default provider. In the first case, it was Netscape; second case, it was MSN search; the third, it was Google, okay?

So that default design, which is going to -- we're going to talk about in a minute, which is an important aspect of the browser agreements we see, was present way back then and has continued to really be the design choice made throughout the industry.

BY MR. SCHMIDTLEIN:

Q As part of your work, did you examine the economic relationship between browsers and default search engines?

A Yes.

And the simple economic way to think about it, maybe this is intuitive for others and I'll try to help if it's not, which is browsers and search engines are strong complements.

And the simplest way to think about that is if I have a browser, to make that browser very useful, I need some kind of search mechanism. Otherwise, I've got to know where I'm going to go and type in the address. So a search is an essential feature of a browser.

Kind of like tires are an essential feature of a car. You probably don't want a car without tires. You

probably don't want a browser, in today's world, without a search engine, which is one of the reasons why it comes with a default. Right? When you buy your car, it comes with tires on it. Search -- a browser is probably going to come with search functionality built in. Okay. So they're very strong complements.

That creates an incentive for the browser makers to want to contract with the search providers to get that default search -- to make that search integrated into the core functionality of the browser, okay?

Now that -- I always teach my students this so I'm going to have to say that, that complementary always runs both ways. The fact that a search browser really works -- needs a search engine to work well, well, that means a search engine is very useful along with a browser, right, they're complementary in the other direction.

So if you have a higher quality browser, that's going to generate more traffic, which is going to benefit the search provider. Right?

So if I have my search engine installed on a higher quality browser, that browser is going to win more business and get more customers and get people to use the Internet more, all of those are going to get me more business as a search provider. So there's a strong incentive there.

But there's also an incentive for the browser provider -- I mean, I'm sorry, the search engine provider to create better browsers because creating a better browser is going to generate more use, which is going to come back and benefit me as a search provider.

And that's going to be particularly important because the monetization in this industry doesn't come from the browser, it comes from the search side of the market. And so the search providers are going to compete to partner with the browser makers as a way of promoting and enhancing the sales of their product.

And they may, and do in some cases, even just try to promote this browser side of the universe because that feeds back on to search. So we're going to need to talk about browsers here in our discussion of search and the interrelationship between search providers and -- and in the provision of browsers.

BY MR. SCHMIDTLEIN:

Q Do browser defaults convey potentially useful information to consumers?

A Absolutely.

And I'm going to focus here particularly on the defaults. And if you think about it, and this is related to what we talked about a bit ago, if you have that search default, your browser comes with a given search engine, and

particularly if it comes with a high quality search engine, that's going to provide your customers what we would call convenient, out-of-the-box performance, right.

I get my browser, I can use it day one. Maybe I'm a customer who's not thinking about browsers and searches, even independent ad angles, I just want to go on the Internet, find stuff I like and browse it. Having that out-of-the-box experience is going to be very valuable to the customer, which then, of course, makes it valuable to both the search provider and the browser provider. Having a default also allows the browser maker to -- make a recommendation basically, right.

And in our lives, when we buy goods and services, we often rely on the sellers to do a lot of the design choices and other things for me. When I go to buy a car, I don't know what piston design I want in that car. I count on the car maker to put the right pistols in there to make that car perform, and he has an incentive to do that because he wants me to be happy with the car.

So you can call it a recommendation, you can call it reliance, whatever you want to call it. You know, relying on the browser maker, in this case, to choose a good search engine is part of the game.

Q How does the browser default product design compare to what economists typically consider an exclusive

dealing arrangement?

A Okay.

Now, and this turns out to be quite important.

When we talk about search defaults, a key feature of a search default is that, like I just said, it's an out of the box, what -- the functionality out of the box, it's a recommendation. But because it's what I would call in economics a default, you have the ability to change to something else if that's not what you want.

And that's part of what drives the value for the browser provider, because he says, look, here's -- it works right out of the box. If that's all you want to do is open a box and use it, great, it's going to work, you're going to get search, you're going to be able to browse.

Secondly, I'm going to make a recommendation as to what you want so I'm going to recommend something, hopefully, that was good for you that I have an incentive to do that.

But, finally, if you're one of those customers who wants something else, you have other ways to get it.

And in the world we live in, you can do that by changing the default, but you also can do it by going through another access point; that is, access, you know, a search app if you're on a phone or switch browsers if you're on a desktop or on a phone, or use a widget if you're on a

device that has a widget on it. There's a lot of options that allow the individual consumer to make choices on top of whatever recommendation is made.

And that's going to actually turn out to be an important aspect, this ability of -- to choose something else even though you've chosen one -- the browser providers chosen something as the default. The ability of consumers to choose something else on top of that is what really separates from exclusive dealing, because in exclusive dealing, you say, well, there's only one option. If I go to the store, it's either this or nothing.

Here, there's going to be other alternatives. If I go with that browser, I can use a different search engine. If I buy an Apple phone, it comes with Google.

But if I want to search with somebody else, I can search with somebody else through a changing of the default or downloading an app or whatever else I want to do. Microsoft Windows comes with Bing.

But if I don't want to use Bing, I can use Google, I can use Yahoo! and I can do that either by changing the default or I can download a different browser or search app and whatever. And that functionality fundamentally separates this from what we would think of as a true exclusive.

Q Do default search arrangements allow for

competition among search providers including for the search engine that is not selected as the default?

A Yes.

And, again, this is an important contrast.

So I just talked about how a default is different from an exclusive from the consumer's point of view. It's also very different from a competition point of view, because when you have a default, you can compete to be the default, but even if you win the default or lose the default, you still compete for those same customers. If I didn't win the default, I'm competing to get them to switch to me on the device. Either change the default or download an app or whatever. So I kind of think about it as competition for the default and there's competition against the default, and that's for the person who doesn't win the default.

But winning the default, you're not home free either. Once you win the default, you've got to compete to keep the customers that come to you through the default. And if you think about Microsoft Windows, we're going to talk about this later, I mean, Bing is the only search engine that comes pre-installed on Windows, but they end up losing a lot of those customers to other search engines. So, you know, they have to compete against the others even though they won the default, or gave themselves the default,

in that case, it doesn't really factor that.

Q Professor Murphy, how do search engines compete based on price given that search engines are free to users?

A Well, again, you brought up an important point.

Search engines, because they're free to users, there's really no end-user price competition. I think you've probably heard about that, right. That when users are choosing among search engines, they're not saying, well, geez, it costs X dollars to get Bing and Y dollars to get Google, they're both free, they're both freely -- they're both free in monetary terms.

The availability of defaults, however, introduces a strong element of price competition; that is, because a number of people are going to use whatever -- the default search engine, and that'll vary depending on who you make the default. If you make something, a lot of people want -- a lot of people use the default search engine. If you make it something they don't want so much, fewer people use the default search engine.

But there's competition among the search providers to be the default, and that is price competition. So we see these payments, we see payments that Google makes, we've seen payments that Yahoo! makes, Bing makes, they make payments to compete for that default, and that constitutes the economics of price competition that defaults allow.

So when a marketplace that wouldn't otherwise be competition on price, defaults are a way to bring in price competition.

Now, why is price competition important, okay? Number one, it allows competition based on efficiency of production. Professor Whinston recognizes that one of the things that price competition does is allow you to compete based on whether you're more efficient.

Well, what do you mean by more efficient here? More efficient here really is your ability to serve the other constituency, in this case, the advertising side. If I'm better at advertising, there's more value created in the marketplace by me than somebody else. I'm willing to pay more to win that business because I can do a better job using those searches.

And price competition brings that into play. And from an economic point of view, that's important. Right? We want the low cost producers in general to be producing the products, those who produce the highest value should be producing the products. And that price competition brings it in.

So the payments associated with defaults are really the signal that that price competition is there. So you often heard people talking about payments. What role these payments played. Think of those as the sign of that

price competition that's there.

And what benefits do they have? They have the benefits that I just talked about. The direct effects of competing with one another for business, which is the hallmark of competitive process more generally. But also they flow through in various ways, just like all prices do. If you make something cheaper, what happens? People buy more, right?

And they not only buy more of this product, in this case, search, but because the way we're working here is, how do I get people to use more search? I make payments to a browser maker, I make payments to a platform supplier, and I'm working through those what we call complementary goods, right?

Normally if I want you to buy more of something, what do I do? I just give you a lower price of that product directly. That doesn't work here. You can't really incentivize the consumer directly through the price.

But if I generate more of a complementary goods, right, I give you a better browser, you're going to do more search, right, that's how I can compete for more search, and just like lower prices expand output, these lower price expand output too, and they're going to expand output not just of search but also out of these complementary products.

So we would say, here is the payments of a search

provider makes to a browser provider, that lowers the browser provider or they make them to Apple or anybody else who's a platform provider, that lowers the cost of browsers and devices.

In fact, it's had such a big effect in browsers, that browsers are free even though browsers don't directly generate that much revenue, right. That is, how can we support free browsers with lots of investment made in those browsers, because they can be monetized through search. So we're getting lower cost browsers and lower cost devices, and I'll talk about that more. When you have lower prices -- an important concept here is marginal costs, maybe I should talk about that.

Marginal costs, what does that mean? It means, I'm just not writing you a check. You know, when a search provider pays -- provide payments to an OEM or a browser maker or whatever, they don't just, here's a whatever-dollar check, please cash it in the bank. They pay it as a percentage of the search revenue generated, and that encourages them, the partner, to sell more search.

Now, if I'm a -- if I'm a browser provider, how do I sell more search. I do a better job making my browser, because then they're going to do more stuff on a browser. So existing customer base is going to do more search. And so that expands output of browsers and expands output of

search.

Q Did you examine any data that was pertinent to the question of browser pass-through of search revenue share payments?

A Yes.

THE COURT: Before we turn to that topic, I'm sorry. So I'm just curious to get your reaction, Professor Murphy to the point we've heard the plaintiffs make about defaults, which is that it's not so easy to switch.

There may be products for which switching is a little easier than others, but the data seems to show that it is difficult to switch, it's not so easy to switch, and as a result, occupying the default position really does create advantages over the competition.

THE WITNESS: I think it's clearly that the defaults have an impact. In some cases, a significant impact, you know, in terms of people's choices.

You know, I wouldn't focus too much on just the cost -- how hard it is to change the default, because a lot of the switching we see isn't involving change in the default. A lot of it is, I just move to another browser or I download a search app or do other things.

But what we also find is when people are incentivized to switch, that is, when they like the

alternative better than the one they have, we see a lot more switching.

So the idea that, you know, it's hard to switch, is, you know, there's some truth to that. But, you know, I -- you know, it does -- but it's also -- it also, though, the fact that people will use the default is not all about people not switching -- not -- the willingness to use the default is somewhat driven by cost of switching, but it's also driven by some of those other forces I talked about, like, you know, we always talk about, somebody I work with Janin, her dad, she says, you know, my dad, he doesn't want to switch, he don't care -- he doesn't trust himself. He's like, my thing works, I'm not going to mess with it, right.

So some of it is not just about cost of switching but it's this reliance we talked about before, really taking recommendation and do it. So they're both there.

But that actually creates an incentive for the platform maker or the browser maker to pick a good one, right, because, you know, Janin's dad might not know whether this is the best search engine over that search engine, but he's going to know that browser or that platform didn't work the way he wanted it to, and that cost is going to fall on the browser maker or the platform provider.

So, you know, I guess what I'm trying to say is it's not like you have these captive people who just will do

anything.

And we don't want to fall into the trap of thinking people who use the default don't care. In fact, those people may care the most, they just don't know what else to do, right.

So, you know, they actually -- so I wouldn't focus too much on the switching cost part. I really want to -- I really think it's important to recognize that there -- there are many other ways to switch, but a lot of this is not just about switching cost, it's about, really, the desire of people to let somebody else do the choice for me.

Like I said, you know, I let the car maker make lots of choices for me. If they told me, hey, Kevin, what do you want; no, please give me what you think is best. So that's where I would go with that.

BY MR. SCHMIDTLEIN:

Q Turning to Slide 17, and you can --

A It's redacted so I can't --

Q Yeah, you should look at the -- we've got tabs in your binder because there is a confidentiality issue around the chart in Slide 17.

But at a high level, can you explain how this supports -- or answers, at least for you, the question about whether there's some potential passthrough of browser payments.

A Yeah.

And I don't have to talk -- you have the full version so I can just talk in general terms.

What I'm looking at here is what happened when service -- margin of the service revenue went up. So the service -- services would be including the default payments, but it also includes other service revenue this firm was getting, that, again, reduced their marginal cost because if I sell another phone, I get more service revenue, so it incentivizes them to sell more phones. And so what we see is their service margins went up.

Now, if they hadn't been passing that through to customers, you'd expect their overall margin to go up because now they're making more money on the services and they didn't pass it through, so their margin should be rising. But we see their overall margin basically stayed fixed.

And how did the overall margin stayed fix? Because the device margin went down.

Now, this is what you'd expect to see if there was substantial passthrough.

Now, it's also possible that they didn't -- there was no passthrough going on here, it was just a coincidence. When the service revenue went up, it happened to be device margins went down, so they held overall margins constant.

But as an economist, I would say, coincidence is not my favorite explanation; that, in fact, this seems to suggest, and I think suggests pretty strongly, that there is passthrough going on in the world here.

THE COURT: And when you say "passthrough," how does that manifest, in terms of lower price for a device?

THE WITNESS: Yes.

Yeah, it would be lower device prices in this case.

Now, if you think about carriers, there could be passthrough on all kinds of dimensions. So, for example, they might give you a better data plan because they want you to do more search. So that would accomplish both lowering the cost of the phone but also encouraging more search, which would get them more revenues if they've got a search revenue deal.

So passthrough on a carrier case could be a little more complicated. In the device maker case, it's likely to be on the device.

And I'm not just looking at -- I want to make clear, I don't want this to be misleading. I'm not just looking at default revenues here in the service margin. Service margin is going up for other reasons. They sell other things other than search.

But the passthrough question should be the same,

right? Are they incentivized to lower the device prices as a way to attract more service revenue. Economics would say because my marginal cost goes down.

Now, economic theory is very clear here. If I'm a competitive firm or a group of competitive firms, even more so, a bunch of -- a bunch of carriers competing against each other, you're going to get substantial passthrough, probably a high level of passthrough.

For -- you might say, a particular firm might be a very strong market position, I don't want to say who this is, but they might have a very strong market position. But economics is clear there too, they will pass some through. And actually, economics tells me, they pass -- may pass more or less than the competitive marketplace would.

So there's nothing about being a strong market position that says you won't pass it through because passthrough is not driven by, you know -- it's driven by, I've got lower costs, I want to expand output because those are more profitable sales than they used to be.

And that's equally true for a monopolist as it would be for a competitive firm, you want to expand output.

BY MR. SCHMIDTLEIN:

Q Did you examine evidence from the record as to the relationship between browser revenue share payments and

browser innovation?

A Yes.

And the example I wanted to link up on that is from a -- Mozilla, so I can't talk about this.

In the case of Mozilla, as I said earlier, remember, they don't sell browsers, they give their browsers away.

So -- and 89 percent of their revenue comes from search revenue share that they're getting. So they're getting -- most of them -- most of the thing that supports their investment in the browser is coming because they're able to partner with search providers, and that incentivizes them and allows them, really, to create a better browser to attract more customers, get more use from their existing customers.

So it plays an important role in expanding and improving the complements for search, in this case, browsers, and that expands output in search as well.

Q Now, Professor Murphy, the Court has heard arguments from plaintiffs in this case that Google winning default agreements has weakened rivals and harmed their ability to generate effective search competition.

Do you agree with that?

A I don't, but there's a couple of different elements of that. I'm going to talk about one of them now,

and I'll talk about one of them later.

The first thing, I want to talk about how these default agreements actually enhance the competitive process by actually allowing even weaker rivals to put significant pressure on the stronger producer, in this case, Google. Remember, you know, I think it's -- everybody agrees, Google has higher quality and also the lower costs.

So the fact that Google wins a lot of the business isn't surprising from an economic point of view. If you have higher quality at lower cost, you're probably going to want to win a lot of business. But part of the competitive process, even weaker rivals put a constraint on stronger rivals.

And browsers -- I mean, sorry, default agreements, because they enable partners, platform providers like Apple, browser providers like Mozilla, to switch to the -- the threat of switching to the rival, and remember, this gets back to your question, Your Honor; you said, Well, what about the fact that a lot of people follow the default?

Well, the fact that a lot of people follow the default actually allows the partner to create a lot of price competition between Google and its rivals by threatening to switch to the rivals.

Now, the rivals may not win; in fact, they probably won't win. Why? Because in a competitive

marketplace, the guy with lower costs and better quality is probably going to win most of the business.

But that doesn't mean those rivals don't generate a lot of competition, and the price competition enabled by defaults really enhances their ability to create competition. So if you didn't have price competition, if Google's better than Bing and the others, then Google wins? There's no -- the other guys are sort of stuck, right, they don't really generate competition.

But if you have the default and the browser provider or the platform has the ability to threaten to switch to the rival, then Google can still win and probably will still win, but they have to pay for it, just like a firm has to lower price in the face of competition in your regular, everyday marketplace. So even weaker rivals can generate competition.

And testimony in this case actually says that. I mean, if you go back and look at Mr. Tinter's testimony and Mr. Nadella's testimony, you know, if you just read what's here, it's -- it just jumps off the page at you, right, that they recognize that, you know, they've done a lot to create competition.

And these defaults are a key part of that; that is, that price competition engendered by the default is what they're talking about here.

And so remember when I talked earlier, this.

THE COURT: I'm sorry to interrupt.

Can I ask you a question?

THE WITNESS: Sure.

THE COURT: You've described this as evidence of competition or the ability of a smaller competitor to constrain, in this case, Google.

I think what the plaintiffs would say is it's evidence of Google's ability to just simply pay more. Google's in a position to certainly pay more than a DuckDuckGo and maybe not Bing but certainly more than a DuckDuckGo or any smaller rival, in part because of barriers in entry, and, two, because Google has the ability to just simply pay more, given its size and the length of time over which it's had these defaults.

THE WITNESS: Well, I would say it's not so much ability to pay, and you can kind of see that in the context with Microsoft. Right? There's no question, Microsoft has the ability, they have the funds, right. The one thing Microsoft has, a lot of money, and they have the ability to compete.

Why does Google win? Why are they willing to pay more? One, they have the lower costs. They monetize better.

Two, they have a product that the department

prefers. So it's not surprising. In fact, under competition, with or without -- you know, standard marketplace, I have Guy A, lower cost of production, people like his product better, he's probably going to win, but he's going to have to offer a deal good enough that the people don't want to go to the other guy. That's no different here. That's exactly what happens in this case.

Now, you asked about like DuckDuckGo and stuff. Well, DuckDuckGo, in my mind, is really not -- they're not trying to compete to the broad marketplace, right? That is, the default is really not their game because -- I don't see DuckDuckGo as a default competitive competitor because they're more of a niche player, they predict go for in -- but they're able to do that in the current version. I'll explain why when we get to some of the other things later.

But, again, this gets back to a fundamental thing where I started. When you think about competition, you want to think about, are people excluded from competing, because it's the ability to compete that generates the benefit for the consumers. If consumers get the best price -- product but get it at a lower price than they would, then that's an indication that these things are providing competition.

What you'd be worried about is that they can't do that, they can't constrain Google's pricing. But the defaults are not inhibiting their ability to constrain

Google, they're actually enhancing their ability to constrain Google.

I'm going to get to later whether the results that come out of the default then subsequently lead these players to be less -- or weaker competitors. That question I'm going to come to in a bit.

But in terms of like just thinking about how does that agreement itself impact the competitive process, I think the evidence is clear, it's making competition more brisk. As I said before, when you make competition stronger, often that will cause weaker rivals to be less successful.

THE COURT: If the competitors are largely, as you've described them, stalking horses who are able to influence price but not ultimately win the competition, is that really a competitive market in your view?

THE WITNESS: Well, the question is, is, do our consumers getting the benefits of competition.

If that spurs Google to improve their products, right, Google continues to have an incentive to improve their products, competitors are still improving their products, it's not so much the outcome of who wins what, it's do the benefits -- this is a process that generates the benefits that flow through this for competition. And we're going to get into that this afternoon.

But remember before, I talked earlier that under a default, there's two kinds of competition? You have competition for the default but you also have competition given the default.

And so incentives are driven by both, you can do both. And, you know, unlike an exclusive where you'd have competition for the exclusive, but once you have the exclusive, you're done. Here, really, the default is adding another dimension on competition without eliminating the other one. So you're still going to have incentives to compete against the default, and Google is going to have incentives to compete against those competing against the default.

And if a better rival with a better concept comes along, they're going to do what Google did years ago, which is compete aggressively, build themselves up, and eventually win the default or win in some other way. So this doesn't prevent the better rival from winning at the end of the day, but it allows for competition even in a case where rivals are weaker.

BY MR. SCHMIDTLEIN:

Q I believe you anticipated one of our questions.

Do default browser agreements exclude competitors from the competitive process?

A Yes.

And a couple of questions, a couple of things here.

I'm going to take a step back and talk about some evidence that I haven't talked about yet, but I'm sure is -- I know for a fact has come up in court, so I'm going to talk about two things.

If two pieces of evidence that you might not quite figure out how to put together, one is if you look at switching from the defaults that we have today, the Google defaults to a choice screen, very little effect, and I'll show you some evidence that says it's extremely small, whatever effect.

That sort of says, you know, if you measure, like, the impact that these agreements, relative to a world without these agreements, the impact on rivals' success is actually quite small, right, because you can use a choice screen of saying, what would the world look like today if we didn't have defaults, right, you know, because -- you know, again, stepping back, the fundamental claim in this case is that these agreements prevent consumers from accessing rivals.

And if that were really the issue, you would think switching to a choice screen, where they clearly have direct access to the rivals, would make a substantial difference.

And what we see is it really doesn't. We're going

to see a bunch of other evidence that says, doesn't seem to be access is really the question.

So that's the message you take away from the choice screens, it's really no evidence of lack of access, and we have a bunch of other evidence along that line as well.

But then at the same time, you have to juxtapose that with switching who has the default, not switching from default to choice screen, but switching from default to default has a much bigger effect. And the plaintiffs and I agree on that, that a switch, like you said earlier, changing who has the default makes a big difference; moving to a choice screen, very little difference.

But the thing I would say, if you're thinking about impact on rivals, you should think about the choice screen, because that's relative to a world without defaults. If you think about generating competition, that's default versus default. So these agreements create a lot of competition, but at the end of the day, relative to a world without defaults, have a relatively small impact on rivals.

It also tells us that what Google pays is not what they're paying for the ability to exclude rivals, but really it's a product of that competition, right?

Why does Google pay so much? Not because, relative to a choice screen, they would get a lot of extra

business but because the browser partner can threaten to switch to the rival, and so those large payments we see are an effect of competition, they indicate the competition created by the default, okay.

So that's really the message of those two pieces of evidence. Seeming contradictory evidence, but they fit together very well once you understand how defaults work and how you think about competition.

Q Professor Murphy, let's turn to your next -- the subpoint for your first opinion, which is "Google has won competitions for browser defaults based on quality and price."

What does that mean from an economic perspective?

A You know, we've talked about this a lot so I'm not going to go too in-depth in it.

Really, competition is fundamentally in marketplace about quality and price. When you go to decide which car to buy or which television set to buy or, you know, any other decisions you make in your life, you think about how good is the product, how much does it cost me.

And through this price competition, we have Google and others competing for customers, both directly, mostly there on quality, right.

Most of the competition I make, they have a consumer choose me versus the other guy since I'm not paying

them, it's going to be quality.

But competition through the intermediaries, which is also competition for customers, because, right, the customers come along with the intermediary, that is going to be based on quality and price.

And competition on product quality and price is good because it allows for what happens in markets generally and more efficient allocation of incentives to expand output.

Q And did you see evidence in the record that supports the notion that Google won, for example, the Apple deal based on quality and price?

A I do.

This is two statements, one of which we have -- one of which I can talk about which is the Eddy Cue statement.

And he's basically saying, why did you choose Google? He said he chose Google because it was the best for his customers.

And a focus on their customers is what exactly you'd expect. Just like that car maker wanted to design a car that I would like, apple wants to provide a product to its customers that its customers like. It's not a surprise.

Q Did you also find evidence in the record from Mozilla that supports this opinion about Google winning on

quality and price?

A I do.

Mitchell Baker from Mozilla, I have several quotes here, I'm not going to go through them in detail, basically making the same statement.

Although for Mitchell Baker, we have a little piece of other evidence because they switched to Yahoo! at some point, right, whereas Apple's been using Google throughout. Although they have experience with the other browser provider -- other search providers because they also give them promotion on their platform, but Mozilla has the most direct of setting Yahoo! as the default, which they did.

And say here they talk about how they were unhappy with the results they got from Mozilla when, I think, between '14 and '17, they switched to Mozilla -- I mean, sorry, switched to Yahoo! for a while. And then they switched back to Google, I think because of the dissatisfaction they had with Yahoo! was the testimony.

Q Have you seen evidence in this case that even though Google has won defaults for a number of years, that browser developers continue to evaluate Google's search quality against rivals?

A Yep.

Again, this one is redacted, so I can't say too

much about it; but here's an example of a particular browser maker who ran an experiment, and his experiment where they took some of their users and switched them to Bing and kept other users using Google.

And they did that in a kind of randomized way so then they could compare what happened with Bing users to what happened with the Google users.

And, in general, they found less satisfactory results with the Bing users, I guess is the bottom line. But it also tells me they're continuing to evaluate, what's our alternatives out there, is Bing where we want to go with this.

Q What does Google winning browser defaults tell you about competition in the market?

A Well, so the fact that Google wins based on price and quality is what you would expect if the market is competitive, right.

Now, it doesn't tell us to prove it's competitive, but you shouldn't say, well, geez, Google has won all these deals, doesn't somebody tell me it's not competitive. If you have a producer that has the highest quality and the lowest cost, an industry like this where there's no capacity constraints, you might expect, in fact, them to win a large share of the business.

But, secondly, it doesn't foreclose rivals. And

when you want to think about foreclosure, again, why foreclose the ability to compete. It's not necessarily about are rivals more or less successful. Have I reduced their ability to compete in the marketplace or foreclose their ability? Are they locked out of the competitive process? Are they an integral part of the competitive process? So foreclosure is going to compare the actual world we see with an economically sound but-for world.

What I mean by economically sound is something that would arise in competition. It doesn't make any sense to compare what we have to some thing that would never come up because people would never pick it even if I change -- got rid of these, I've got to compare it to something that would occur if these -- right, something that would actually happen in the marketplace.

In my mind, the current world is the outcome of competition in two big ways. One, the choice of defaults. Remember we talked where we started, the use of a default structure is basically ubiquitous in this industry through time. Tells us it's the product of competition and it creates value, right, so that's part of it.

The economics of why we have defaults is creating value out of the box, give people the ability to switch, create a -- you know, create more complements, strengthen the complements that exist. You got all those elements.

Also, create that price competition that we talked before. Why you have contractual defaults, where you don't just pick somebody to be the default. You make search providers compete to be the default. That price competition is, again, part of an indication of the competitive process.

THE COURT: I'm sorry to interrupt.

I've alluded to this earlier, but can you give me a sense of what your -- how does what I think everybody here agrees are fairly substantial barriers to entry. It costs a lot of money to build a search engine, it costs a lot of money to maintain a search engine. And so how do what are substantial barriers to entry play into your analysis?

THE WITNESS: Well, I think I try to evaluate that in two ways. One, do the people that are in the marketplace, can they compete aggressively? And can they constrain the current market participants, right.

So for them, it's not so much barriers to entry because they're already in.

THE COURT: Right.

THE WITNESS: Then I ask the question, what incentives does somebody have to get better if they come into the market. You know, if I have that better mousetrap, can I come in and get better.

I'm also going to look at a third thing, which is do people in the market today have incentives to help people

come in, right. That is, does somebody like Apple have the ability to create competition and maintain competition in the marketplace. I'm going to look at that too, which can help overcome some of those barriers, right. You could partner with somebody.

And, indeed, the evidence in this case is, you look at the back and forth between Microsoft and Apple. That was a big part of that discussion, right. Like, you know, hey, can you meet our needs instead, help you, and not so much enter in that case but expand, that is, get better.

And as it turned out, they didn't go down that road, but that was competitive threat that was in the marketplace even at least as much as switching just to Bing specifically, but also following that process of facilitating their expansion into the marketplace or even Apple thinking about hey, I could -- I might be able to do this for myself, you know, how does that play in. I'll talk that too.

So all those things are, these things don't really prevent that.

THE COURT: Right.

What about new entrants? I mean, you referred to already existing players, but what about new entrants, the cost of -- or the barriers to entry to new entrants in this market?

THE WITNESS: You know, I think a couple things.

One, I think a new entrant would try to do kind of a couple ways. If you're thinking about how entry would occur. One would be: Differentiate yourself in some way. That way I don't have to take the existing incumbents head-on, I can develop an alternative.

And, you know, and as I'll show you like with Apple, there's a lot of room that's outside the default at Apple. There's a lot of the search that doesn't go through the default that even if I don't even -- false is not my game, I can't play that game yet. There's a lot of volume there to be had. So that seems part.

And, you know, Windows, you know, Google's, who was on the outside, wins a lot. People are willing to move away from the default on Windows and use something else. Windows isn't as important as it used to be, but it's still a good size chunk of the market.

Google doesn't have the default on Windows. Somebody could compete there. So you've got space on Apple, you've got space on Windows. And you could start modest and get bigger and then eventually compete for the default.

I would think differentiation would be probably a key part of that. Kind of hard to take on the incumbent head-on. That's usually not your best strategy, because if you're worse, you're probably not going to get very much.

Now, this again is where the price competition comes in, though, right? If I would value growing, getting the volume and growing, that price competition will allow me to buy my way in, right.

Maybe I'm not as good today, but I could be better in the future. Absent price competition, nobody is going to go with me today. I'm not as good. Who's going to choose me?

But if I think I could get better in the future, the ability to buy my way in through price competition actually would enhance the ability of somebody to enter, right, because if you say, Look, without the price competition, you could have more of a chicken-and-egg problem. I can't get me -- you to adopt me, but if I don't get adopted, I can't compete.

Price competition helps cut down the problem by actually allowing me to buy my way in. So I get some success maybe by differentiating, and then I buy my way in through the default and compete for the default through offering a better deal where I'm going to collect on that in the future when I get better.

So I would say this price competition actually can facilitate entry.

THE COURT: Sorry, Mr. Schmidtlein.

MR. SCHMIDTLEIN: No. Thank you, Your Honor.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, let's go on to the Sub-Point C of your presentation here where you critique some of Professor Whinston's opinions.

A Yeah.

Actually, I start with a quote here from Professor Whinston, and it's probably even just worth reading it.

And it says, "If Apple believes" -- and there's some ellipses there. So, "If Apple believes... that Google is the best search engine for users of its Safari browser, does choosing Google to be the default harm consumers?"

His answer, "It can. I mean, that's the essence of my opinion, so, yes."

So to me, this is like saying, Apple's choosing what they think is -- he's assuming that Apple's choosing what they think is best for them and best for their consumers. That's the premise of the question. And he's saying, Well, that could be harmful to consumers.

And one can construct models and frameworks where that's the case. But that's really overriding what we normally rely on in the marketplace, is people to make choices based on what's good, what they -- better product, better price, telling me I shouldn't choose that because it's bad for consumers is, to me, problematic.

And, secondly, it's probably not bad for Apple's consumers, because Apple is thinking about its consumers when it makes those design decisions, right? Apple's all about pleasing its customers.

Q Now, have you examined some of the grounds or the bases that Professor Whinston cites as a reason for ignoring or dismissing some of these outcomes of competition?

A I do. There are three separate ones. Maybe there are more, but there are three that I directly address.

Number one is that Google's competitive success reflects promotional arrangements prior to Professor Whinston's relevant period. And his period is 2014 on, so this would be things that happened before 2014.

The idea here is, and I think you heard him, Professor Whinston comments, he often said, Well, that's a -- current qualities. But those qualities would have been different had Google's conduct changed.

So one element of that is that the qualities of the rivals and other things that we saw in 2014 were a product of something that happened earlier. In particular, the same kind of promotional arrangements we see here, okay.

The second one, is that browser partners lack sufficient incentives to promote search competition. This is -- I think, referred to the externality argument. Competition isn't -- externality is associated with

competitional [sic] interest.

That one -- and then I'm going to get to a broader question, a general question. Should we think of Google's browser defaults as exclusive dealing? Do they -- and what I mean by that, and this is important, is, when we talk about whether the default agreements are exclusive, it's not a semantic question. It's not like, you know -- it's not a Webster's Dictionary question. What do we call it? Because what we call it at the end of the day isn't the question.

The question is, economically, do they act like exclusives? Do they have the characteristics that we think characterize exclusive dealing and, therefore, can be thought to have similar effects to exclusive dealing. So that's going to be our third question.

Q All right.

Let's turn to your first issue that you've just run through here about Google's prior success and what relationship that had to promotional agreements.

A Yeah, this is going to -- this section should go pretty quickly. I'm sorry if I'm going slow, but anyway. The first section should go pretty quickly.

Four key areas we're going to look at, and this is going to be looking at data.

And I should say, you'll notice kind of an approach I tended to take, which is, I look a lot at the

marketplace and what the outcomes are and what I can learn from that marketplace. We're going to keep doing here. That's kind of my methodology.

So A, most pre-2014 search took place on Windows PCs, I think everybody knows that.

Most Google users navigated to google.com.

So in the early days, pre-installed access points and stuff weren't as big a deal, right, because most people just -- when you wanted to search, you went to google.com or Yahoo!.com or whatever you went.

Microsoft, it turns out, had virtually all the pre-installed browser defaults in the early 2010s, so the period right before this. And Google's success on Windows reflects its success in search. It's not a product of Chrome. I think that's one allegation Professor Whinston makes.

So let's just start with the first fact. This is search usage shares by operating systems. This is really just to make the point that Windows PCs accounted for the vast majority of search if we're looking in that pre-2014 period, right. It gets down, in 2014, to about half. In the -- 2011, it's quite a bit higher. I'm sure -- I think I could say -- hopefully I haven't --

Q You're good.

A Okay. I'm not giving specific numbers.

And if you go back even further to pre-2011, those numbers are going to be even higher, that -- this downward trend.

So Windows was most of the story in search back in the early part of the period.

Q And did you evaluate the extent to which Google obtained search queries from sources covered by defaults in some of the early days of search?

A I did.

So the next chart, this one is not redacted so I can talk directly about it.

This is where Google gets its search queries. So the pie chart on the left is where Google got its search queries at that time.

The preinstallation agreements with browser providers, that would be -- largely Mozilla would be that orange area.

Preinstallation on OEMs would be the red area.

And other Google Search volume, most of that would be toolbars and other deals with ISVs. So those would be the three areas.

Collectively, that preinstallation part is about 20 percent, okay?

As I'll show you in a minute, Google was getting -- and if you just focus on the issues in this case,

that's the independent browsers and PC OEM preinstallation, that's about 15 percent.

As I'll show you in a minute, Google at this time had about 80 percent of the search on Windows PCs. So we would have expected them to win 80 percent of that volume anyway, probably. So 80 percent of that 15, they would have got anyway.

20 percent of that PC, of that volume is what we would call incremental, the extra amount. If they got 100 percent on those devices, that would be 20 percent of the 15 percent. So it's about 3 percent of Google's volume would be attributable to preinstallation. So the idea that Google's success reflects that preinstallation, that's, you know, not very well supported by that.

Q Did you also look at some of the data regarding Microsoft's preinstallation deals and the extent that they got distribution in some of these earlier days?

A Yes.

And I have a graph here for 2011.

Q And I'll caution you, this one has been asked to be redacted.

A Yep.

So I'm not going to go in too much details.

Pretty clear picture. Microsoft shown in red.

And this is as of 2011, and you can see

Microsoft's share of preinstallation.

And, you know, if you looked in earlier years, it would have been lower, because they had picked up a lot of preinstallation in the time period up to this. I just want to make sure it's clear I'm talking about 2011 here.

But you can see that in contrast to Google, Microsoft had a substantial amount of preinstallation at this time.

Q What does this next slide tell you about Google's share of search queries on Windows PCs over time?

A Yeah.

Well, it shows me -- this is where I got that 80 percent figure I used just a minute ago. So if we go back in the early years, Google's share of search is 80 percent. In contrast, their share of preinstallation is down here.

And this is -- and if you think about it, if they -- since they have 80 percent share overall, you'd expect them to win most of that preinstallation anyway. So the incremental would be quite small during this period and basically goes away by the time we get to 2016 or so.

Q Now, did you also conduct an economic analysis of the extent of Bing's defaults on PCs during this same time period?

A I did.

This one I can't talk about as much.

This gives Bing's share of preinstallation.

And I should mention that this is cases where we can verify they're preinstalled by looking at the deals they had with OEMs.

There's a bunch of really small makers of PCs called -- people called white box makers and the like. I don't know whether they had deals. They're in the -- I didn't include them, they're -- so in some ways, this is conservative.

I should also mention that the preinstallation shares of -- is of PC shipments because I can't link that up to searches. So if you want to make these comparable, you've got to be thinking like, well, PC shipments are a pretty good indication of searches.

But given the contrast here, I don't think that's the critical issue. The critical issue is, they had lots of preinstallation but, nonetheless, were much less successful in getting search usage.

Q Now, there's been a suggestion made in the case by the plaintiffs that Google's success on Windows is attributed to Chrome's success and not necessarily a desire to use Google Search.

Did you evaluate that claim?

A I tried.

And let me show you. I've got this chart here. And, again, it's blocked out, so I can talk generally.

You know, when you look at the end of the graph, the right-hand side of the graph, you'd say, Well, geez, Google -- there's a lot of Chrome on Windows PC, and Google gets a lot of the search on Windows PC. So it sort of seems like, well -- and we know they get a lot on Chrome, right, virtually all the Chrome volume is going to be Google Search.

But if you go back to the beginning, back to 2009 and 2010, Google's share was about the same, and there was no Chrome back at the beginning. So clearly Google's success on Windows predates Chrome.

Secondly, over time, as Chrome's share grew, if Google's success was being driven by Chrome you might expect Google's success to go up with it. Google's success stayed about the same.

Hopefully I didn't do too much detail there. Please tell me if I'm going too far on the data side.

MR. SCHMIDTLEIN: Your Honor, we're about to turn to another subject matter or a subopinion that's going to take a little bit. Would this be a good time to take a break?

THE COURT: Sure.

All right. So it's a little after 10:55. So why

don't we resume at 11:15.

Professor Murphy, I'll ask you not to discuss your testimony with anyone during the break.

THE WITNESS: Thank you.

THE COURT: Thank you, sir.

COURTROOM DEPUTY: All rise. This Court stands in recess.

(Recess from 10:56 a.m. to 11:17 p.m.)

COURTROOM DEPUTY: All rise. This Honorable Court is again in session.

THE COURT: Please be seated, everyone.

Whenever you're ready, Mr. Schmidtlein.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, Professor Whinston has offered the opinion that Google's distribution agreements create externalities that harm consumers.

Did you evaluate that claim?

A Yes, I did.

Q And can you just explain for the Court your understanding of the externality argument?

A Okay.

It probably helps first to talk about what an externality is if that's not already known.

Basically, the idea of an externality in economics is when I take an action, that affects other people out

there that are not transacting with. So obviously when I go to the grocery store, it affects me and the guy on the other side of the counter, but we take account of that in our transaction.

The idea of an externality is there are other people that might be influenced. Classic example, pollution. I pollute, you know, other people bear the consequences of my pollution, and obviously I bear the consequences of theirs. So that's the classic externality.

When we -- Professor Whinston is talking about competitive externalities, that externality is not about pollution but about the flow through on my effect of the marketplace.

And so first thing you realize that those kind of externalities are all over the place. When I intermarket and I raise the demand for an input, that raises the price of inputs often. If there's upward sloping supply, more demand raises prices. That benefits the sellers on all the transactions they were already making, not just my transactions, and makes the buyers -- other buyers in the market pay more. So those kind of what we call pecuniary externalities that affect the prices that other people get, they're everywhere. They happen in competitive markets, imperfectly competitive markets. All kinds of markets.

So those kind of externalities are not unique. He

focuses on here the particular question of whether, when somebody like Apple makes a decision, how it affects other people, not just them.

As I said, they're customers because Apple's transacting with those customers. Apple is going to take a lot of account on the benefits that their customers get, but the real question is about other people.

Q Did you evaluate specifically Apple's incentives as they relate to Professor Whinston's externality claim?

A Yes.

And the idea here -- yes.

So, basically, here we're talking about Apple. Clearly, a large volume of search goes through Apple, I can't say what the number is, we can actually see what that number is, combining iOS and Mac OS, substantial volume of search today flows through Apple devices.

And, therefore, anything that happens in the search marketplace, products get better, prices get cheaper, whatever, payments get bigger, Apple has an incentive to take account of that, a pretty significant one because they're one of the major players in the marketplace.

They also have the ability to affect what happens because they're a major player in the marketplace, right. We already talked about that a little bit in terms of Apple's ability, for example, to sponsor an entry or

something like that. So Apple has both an incentive and ability to affect outcomes in a marketplace.

Professor Whinston also says, well, Apple's incentives might not be perfect or right because they're an intermediary, they're not the final customer. But in this regard, Apple has much more incentive to promote competition than an individual customer would, right, because they're a big buyer, they're a big participant, and they're going to internalize, is what we call it, a lot more of those effects than an individual customer would who's not going to think about those things, he's just going to think about his own particular choices. Apple has got a broader view of how what they do affects things generally.

Secondly, Apple has a large -- therefore, Apple has a large stake in what happens on the competitive front. And we saw that earlier with Mr. Nadella's quote, where he talked about Apple has an interest in playing one of us off against the other and having two suppliers that they can play off against one another. So people in the marketplace recognize that and Apple recognizes that in their discussions.

One more thing, though. Professor Whinston's claim that there's an externality, though, says, well, don't other people benefit when Apple does something?

And the answer is, well, some people benefit, some

people lose. A lot of the benefits Apple gets are private benefits. I improve my bargaining position vis-à-vis Google. That may mean no overall gain in an economic efficiency, just I can get more and Google gets less. So that can create an excess incentive, really, to do these kinds of things, right.

And the classic externality example, you didn't even need imperfect markets. If you had a big buyer, he might be willing to pay to get an inefficient producer to come in the marketplace because that'll raise supply and lower prices. Overall, that's a loss. But he benefits because he gets a lower price. So it's not clear the externality is even going the direction Professor Whinston talks about. So that's kind of what economics informs us.

Q Did you consider the evidence in this case and the question of whether externalities, in fact, impacted browser developers' decisions?

A Yeah.

This is another separate question, right.

So let's assume there's an externality, it's either positive or negative, whichever way it thinks. The question is, would Apple's decision be different if they took account of that externality.

And in this case what we see Apple doing is using a design of default arrangement, whatever contractual

defaults, in this case, with Google. Given that that's the market structure that's arisen all over the place throughout history, there's no reason to believe that they would have done something different had they internalized any externalities.

Secondly, given that they chose, by their own account and by the evidence, the highest quality search engine, okay, in attractive terms, there's no reason to believe they would have done something different there due to any internalization of externalities, positive or negative.

And Professor Whinston reaches this conclusion that externalities are important by referring to an economic literature, where there's no other reasons to have these kind of deals. But we know in this industry, there are other reasons to have these kind of deals. We know this is what everybody has done throughout time and that tells us they create value.

THE COURT: What do you mean "these deals?"

Do you mean the --

THE WITNESS: Browser default deals.

They have -- that's been the ubiquitous outcome to the exclusion of other things, right. People haven't done other things.

So when you see somebody doing this, you shouldn't

jump and say, well, must be an externality-wise doing that. But he's using a literature that those other reasons are shut off and, therefore, if you do it, the reason you to it in those models is because of these externalities.

So I would say based on the evidence, I don't think any reason you can conclude the externalities of this type played any role in those decisions. I don't see Apple doing anything I would expect -- I would not expect them to do there was -- absent externalities or if they internalized externalities.

THE COURT: I'm sorry, I may have missed it.

Can you recap for me once more what you understand Professor Whinston to be referring to as presumably negative externalities?

THE WITNESS: Yeah, he's saying, if Apple makes a different decision, buys from Bing, say, rather than buys from Google, that that'll benefit all the other participants in a marketplace, because Bing will be stronger. And he's pointing to only that side.

And, you know, there may be some benefit, probably would be some benefits to other people, but a lot of the reason Apple does that decision is not just -- they may not even use -- it may be inefficient to use Bing. There may be a net loss there where they are doing this mostly to improve bargaining position vis-à-vis Google. And if that's why

they're doing it, because they can get a shift value from Google to themselves, they could have an excess incentive to do it. That's my point.

There may be this externality. But that's not the only thing going on. There can be more than one. In fact, Professor Whinston has contributed to that very literature that talks about these incentives going the other way. He has a paper with Mankiw on could be excess of entry. He's worked in the area of specific investments, where he say people will often want to maintain an outside option even if it's of no economic value just to improve their bargaining position.

So the idea we know which way this externality runs, I think, is we don't. We don't know which way it runs, and indeed Professor Whinston has contributed to literature that tells us that.

BY MR. SCHMIDTLEIN:

Q Did you see evidence that Apple's choice of Google as the Safari default was explained by a desire to share in monopoly profits?

A No, I don't.

Again, the choice they made makes perfect economic sense, given the realities of the market today. You don't need any appeal to, this would change anything in the marketplace.

Secondly, in general, it's in Apple's interest to have more competition in the marketplace, because they get better deals, it improves their bargaining position, for example, with Google.

So having a, you know, lessening competition is probably working against Apple, not in favor of them. So the idea that they're kind of here to preserve a monopoly is at odds with a lot of what we see here.

And there's certainly no evidence that that's what's going on. Because they're sort of the victims of the monopoly in some sense, right, not just the -- they're on the other side, they're buyers, right, they're buyers in this case. So more competition.

Indeed, Professor Whinston, elsewhere in his report, says that if there were more competition, payments to Apple would go up. Well, that's at odds with the view that Apple wants to prevent that competition through these payments. So, again, I would say there's no evidence to support that theory. One can build theories along that line. I don't see anything here that makes me think those theories are operative.

Q Does Professor Whinston's externality argument have the potential to harm competition?

A Absolutely.

And to me this is one of the major things.

As I told you earlier, these kind of externalities, the decisions I make affect others through the marketplace, are every where, they happen all the time.

And if you tell market participants you can't do what's in your best interest, even if there's no desire to affect competition, even if there's no effect on market outcomes that you're looking to exploit, if you tell Apple -- this goes back to his original quote.

If you go to Apple and say, look, I know you like Google best, I know they're offering the best deal but you can't take it or Google can't offer it, that's interfering with the competitive process and I don't know where that would stop, because these externalities are everywhere.

Q Let's turn to your next argument, No. 3, Google's browser defaults are not exclusive.

Did you evaluate the question of whether Google's browser defaults were, in fact, exclusive agreements?

A I did.

And I'm going to start really with a quote from Professor Whinston in a paper he did with Doug Bernheim, a very well-known paper on exclusive dealing.

It says, "A manufacturer engages in exclusive dealing when it prohibits a retailer or distributor who carries its products from selling certain other products." So basically if you sell my products, you can't sell other

people's products. So they're not in -- if I'm in a store, they're not in a store. That's basically the idea of an exclusive.

The key characteristic of exclusive dealing arrangement is that the terms of the agreement prevent or in the case of what we'd call a de facto exclusive, largely prevent customers from accessing rivals through that intermediary.

And one of the questions I'm going to ask is, Do the challenged default agreements have that effect, do they act like an exclusive does in that they prevent rivals from accessing customers through the intermediary agreement.

Q Can you summ- --

A So, again, this is not a -- it's not a semantic question, right. The key feature of an exclusive is you can't access my rivals at that same store. You might be able to go to another store, but you can't -- in this store, you can't access them.

And we want to ask, Do these defaults act like that. What's the economic evidence? Evidence from the marketplace tell us whether these are effectively exclusive.

Q And can you summarize some of the evidence that you're going to walk through with the Court on this question of whether Google's browser default agreements are exclusive?

A Yeah. I'm going to look at three different things, or really two things and then talk about the last one.

So first one is kind of more qualitative. We're going to evaluate whether, in fact, partners can and do promote search rivals on the same browser or on the same devices. We're going to look at that first question, which, you know, do people actually do that.

Secondly, do people switch to alternatives on the same browser and/or device. That is the empirical evidence. What is the outcome -- what does the outcomes tell us about whether they're blocking users from access -- I mean, sorry, blocking rivals from access.

And so this is all -- this is going to be empirically based on what we actually see in the marketplace, because if these are exclusives, we should see them look like exclusives.

And if they don't look like exclusives, then we need to think about that before we move on and talk about the implications of these types of agreements.

Q All right.

Can you explain to the Court what this Slide 47 depicts.

A It's actually a quite simple slide.

It basically just shows some of the promotion of

rival search providers that happen on Safari for iOS.

The screen on the left is the favorites screen on the Safari browser as it comes on the iOS device when you open it.

And on the favorites screen, you can see, you've got Bing there, Google there and Yahoo! there. This is not about changing the default, this is just about right on that favorites screen, you have a bookmark or whatever for Bing and another one for Yahoo!, along with Google. That's on the favorites screen.

The screen on the right, and I know you've seen this so I'm not going to go through it, is actually the screen you go if you want to change the default, and that you go to the settings and do that.

You've already heard enough about that, I'm not going to go through that in great detail. That's the change.

But the left one is the promotion you get even for someone who doesn't change the default; you can just access those directly through the favorites.

Q Now, the Court has heard evidence of Apple having promotional agreements with non-search -- or non-default search providers. How were those agreements relevant to your opinion? And, again, I'll caution you about the redacted slide.

A Here -- and this is like the things we just looked at, right. That's part of the promotional arrangement they have. It says, Look, Google has it default, but even on a Safari device, or even on the Safari program, we're going to promote rivals through that favorites screen, for example, or through the changing of the default. So those are two important pieces.

And this is just a timeline that shows how long Apple has had those agreements with the various providers. I can't talk about the details, but you can see they've had agreements with some of these other providers for quite some time now, running back a while.

Q How did --

THE COURT: Sorry to interrupt.

I suppose one of the arguments the plaintiffs will put forward is, Look, there's promotion and then there's promotion.

You can put a Bing icon on the search page. That's fine. That's something that the agreements permit -- excuse me, the favorites page -- but apple, for example, is prohibited from promoting it in any other way, encouraging users to use Bing, striking a deal with Microsoft to direct customers to Bing, teaching people how to shift.

In your view, does that change your view about whether this constitutes either an exclusive or de facto

exclusive arrangement?

THE WITNESS: Two things.

One, I think some of those facts aren't actually correct.

So, for example, historically they had an agreement with Microsoft and with Yahoo! that would allow them to prompt users, if they went to a Bing -- Microsoft property or to a Yahoo! property. So they do have the ability to prompt you.

THE COURT: All right.

THE WITNESS: They can't just --

THE COURT: Yeah, I don't think that --

THE WITNESS: Apple's not --

THE COURT: -- happens now, but I think maybe --

THE WITNESS: No, I agree, historically that was true.

But the fact that that was historically true -- and you could say, Well, why did they stop? Well, they stopped because that turned out not to be a good experience.

THE COURT: Right.

THE WITNESS: But if I had a browser that people -- I mean a search engine that people liked, one would presume Apple might have gone in a different direction because they, at one time -- and that was under an agreement, right.

Apple can promote others. In fact, Apple can preinstall other people. They could put other people on the phone. So there's nothing in that agreement that says you couldn't have a Bing search app on the phone. What's restricted is what happens on the Safari default.

But also, remember, you have those bookmarks. People say, Well, the bookmark isn't worth much. Well, Apple -- Google actually gets a fair amount of volume through that bookmark, much more than either Yahoo! or Microsoft get. And I'm going to get to that in a second and show you quantitatively how important both those non-Safari searches are and how important those other ways of accessing within Safari are.

So I think I'm going to show you different things that might say, Wow, empirically, this characterization of, there's the good stuff and the bad stuff, doesn't necessarily characterize the way the world works, and we're going to have some numbers that actually helps play that out.

Another thing to remember, this is what happens in the actual case where rivals historically haven't been that good. If they were better, Apple would have an incentive to give them even more.

So -- and the contracts don't prevent lots of forms of promotion that Apple could do.

BY MR. SCHMIDTLEIN:

Q How does Mozilla's implementation of the Firefox browser relate to your opinion about whether Google's default agreement is exclusive?

A Yeah.

Now, if we look at Mozilla, this is what happens. When you kind of open up the search in Mozilla, you can see that this -- not only could you change the default to access an alternative search provider, when you go to do a search, you can access an alternative -- they're right there on the screen.

So you could say, Oh, search with Bing or search with DuckDuckGo, right. In other words, what you would do -- you could do it really two ways. You could click down at the bottom and then type your search, or you could type your search and then click at the bottom. Both of them work.

They would allow you to search with an alternative search provider without changing the default at all. So they're right there. This doesn't even involve changing the default on the browser. This is just standard the way it comes on Mozilla.

Q Has Mozilla also had a history of promotional agreements with non-default search providers?

A They have. Again, I can show you the picture.

I can't really talk much about it, but you can see that Mozilla had a history.

But also, this is not just non-default, because they made Yahoo! the default, remember. There was a period where Yahoo! was the default. So this is...

For the other ones, these are non-default promotional agreements. The period for Yahoo! was when they switched the Yahoo! default.

Q Now, how does the presence of app stores affect whether browser default agreements are classic exclusive dealing agreements?

A Well, I mean, certainly they don't fit literally within that classic description, because, remember, the classic one is, you can't sell -- you can't go through that store. And if you view the device as the store, you can clearly go on the device because you're in The App Store.

It also interacts with other forms of promotion that you might make because you tell somebody, Hey, try Yahoo!, they can just go get it in The App Store.

And one thing we know about phones, guys download lots of apps. I give my phone to my grandson, it comes back with seven more apps on it, you know, so --

THE COURT: None of which you probably want.

THE WITNESS: He's probably six years -- he's six years old so, I mean, he could download apps, you know.

And, you know, people download apps they use once or rarely, and these are things that they use every day. If they wanted to go get them, they could find them in The App Store.

I'm not saying that that solves all of the issues, but that's certainly an option that's there in The App Store.

BY MR. SCHMIDTLEIN:

Q Now, I think you made reference of this a moment ago in responding to the judge's question. Did you also examine the extent to which users of Apple devices search outside of the Safari default? And, again, this is redacted information, but can you describe that at least at a high level?

A Yeah.

So, again, I can't talk to figures, but you can see the dark green is the searches on Apple -- on iOS, and this is for iOS. If I did Mac, it would be more extreme even than what I'm doing here. So this is on iOS.

On iOS, you can see that a fair number of searches go through the search default, but a lot of searches don't. I can't give you the numbers, but you can see clearly, there's a large amount of search that doesn't go through the search default.

A fair amount still goes through Safari because

you can see some goes through the Safari bookmark for Google. You can see the number there. Remember that bookmark, we said, Well, maybe that's not very good real estate.

Well, you can see how much Google's getting in that bookmark, even though they're the default, right. So if they weren't the default, presumably more people would go to that bookmark. So Google's getting a fair amount through that bookmark.

How many people are going to google.com? Or, you know, that's -- or through Chrome? That's not through Safari, that's other things on the device.

We got how many are going to the Google Search app.

We got how many are going to other browsers, okay.

Organic searches going to, I mean, I'm sorry, organic searches in other browsers.

And then we have other rival non-default search, because rivals don't get the default search here by definition under the default. They can switch to default and they would get others, right, but they would get volume through a bunch of other places.

The key point here is it's not like people just use the default, they use a lot of other things, and they use Google on a lot of other things even though Google's

available as a default.

Q And you intuited my next question.

For users that searched outside the Safari default, did you examine where they searched?

A Yeah.

In keeping with your -- Your Honor, with your question before, think about it as there's the good shelf and the bad shelf, right, that's kind of the characterization people made.

So we're going to look only at the bad shelf. I'm going to put that in quotes obviously, and we're going to say when people reach for the other shelf, what do they grab? The answer is, they overwhelmingly grab Google, which, if that was the bad shelf, nobody wanted to go there, it's hard to believe why people who have access to Google on a good shelf would be reaching down to the bad shelf.

Now, what we don't see is a high amount of reaching down when they do reach down and grab in the rivals, okay? And you will think, since the rivals aren't available on the top shelf, they should -- a lot of people should -- a lot of it there should be grabbing it here, given that a lot of the people go to the shelf anyway. What we see don't see is much choice there at all.

This suggested lack of access is not the issue.

That dovetails what we found when we saw the

choice screen evidence. Remember, we said, okay, choice screen, lack of access. That's why Google's rivals don't do well. Put on the choice screen. Doesn't change much.

Here, fits with that same evidence.

Indeed, in this case, in contrast to most exclusion cases, we've seen no real evidence that there are people who would like to use rivals but don't, right? If you think that the issue is distribution, people want to use me but I can't get distribution, you'd expect to see evidence that people are trying to find the rivals.

Indeed, I know you've heard this, but I've -- you know, when I talk about this with my wife and stuff, I always think it's funny. The number one search term on Bing is Google.

If you look at the other way around, people on Bing, I mean -- on Google are looking for Bing. Now, if they were looking for Bing, you'd expect it to show up. It shows up way down the list. It's somewhere between Hobby Lobby and AutoZone in terms of how often people look for Bing on Google. So the choice screen, this evidence from the Apple devices, says it's not so clear those second shelves are so -- are the issue here.

Q Does the fact that search default agreements shift some degree of browser or search usage among search engines mean that default agreements are exclusive?

A No.

I mean, again, if it was really a true exclusive, than when party A had the default, they'd get 100 percent; when party B had the default, they'd get 100 percent, right. If it was really pure classic exclusive, we'd see 100 and 100, depending on who has it, okay?

Now, if you said, well, it's 99 in one and then one in 99, well, it's pretty much looks like exclusive to me. So we're going to look and see what happens when you shift and whether it seems to approximate what we see with what you'd expect under exclusive dealing.

So I have two comparisons here, one of which I can talk about and one of them I can't.

So the one on the left is looking 2013 to 2021 and comparing Bing's -- this is on Windows, this is Bing's success versus Google's success.

Bing has -- they're not only the default on the browser, they're the only preinstall default on these computers, right. They're the exclusive preinstallation on Windows, and they get 14 percent. Google, who doesn't have the "exclusive," gets 78 percent.

Now, if I covered up the label and asked you who has the default, what would you think? You'd think the guy with the green bar has the default because he's getting most of the volume. But in this case, the guy with the default

is only getting 814, doesn't look like an exclusive. Very different than what you'd expect if a default really amounted to an exclusive, okay?

The one on the right, looks for Yahoo!, you can see kind of the same story. Not as extreme, but you see kind of the same story. This is when Mozilla switched the default.

If you were to look on mobile, you'd see a somewhat higher for Yahoo! but still the majority would be going to that, more than the majority would be going to Google. So you really see that these things don't look like defaults in this case where, in this case, Bing or Yahoo! had the default.

And now if you look at the shift of share, and these are numbers from what Professor Rangel put forward. If you look on Mac, where Google has the default, you can see what Bing gets. If you look at Windows, where Bing has the default, you can see how much share shifts. Non-trivial. Defaults matter, but certainly not something that would approximate what you'd expect of a shift of who had the exclusive, okay? Kind of makes think, these don't look like exclusives.

The one on the right, Yahoo!, same story. Shift is modestly bigger but pretty much in the same ballpark. Again, you see not -- you don't seem like these look like

exclusive deals.

Q Now, have you considered whether defaults impact usage on mobile devices to a substantially larger degree than desktop computers?

A Yeah, I did.

I know this has been a major area that people have been talking about, and most of the -- a lot of the discussion has been on the willingness of people to change the default, saying mobile screens are smaller, hard to change the default, as compared to a PC where the screen is bigger, for example, keyboard could also play a role in that.

But remember, there's another part of it, though. The way you can shift is not about changing the default. You can also download an app. And we know that on mobile, app downloads, as I mentioned with my grandson, are pretty ubiquitous, and downloading apps is not hard and people do it all the time on mobile devices.

So we also know that people rarely switch away with Google when they're the default, but that doesn't tell me that's the default they're doing that because there's a strong preference for Google and, in fact, the choice screen sort of says, it really wasn't the default, it was really the preference for Google that was driving that to a large extent, okay.

So here I'm going to look at mobile devices, the data I have are for Windows Mobile, okay?

Windows Mobile back in 2010. You can see that in this case -- I can talk about this bar, right?

Q Correct.

A I can talk about this bar.

This is a case where, by and large, Bing had the default. There's some Sprint devices where they may not have had -- I think it was Sprint, may not have had the default. But if you take those out, it changes the numbers very modestly. Basically Google gets the vast market of the volume even though Bing had the default.

So basically if you had to take a conservative way to take Sprint out, Sprint accounts for about 20 percent of the devices at this point. If you -- I'm forgetting whether it was Sprint or Verizon -- doesn't matter -- I think it was Sprint -- you take them out, it's about 20 percent. If you take out 20 percent, all of that is Google.

Then the rivals' amount doesn't change so it still totals about 8 percent. But instead of 8 of 100, it's now 8 of 80, which makes you go from 8 to 10, so it really doesn't change.

So even though these guys had the default, they didn't retain much of the business. And this is on a mobile device in 2010.

Q Now, did you also evaluate here Professor Whinston's assessment or analysis of Bing's share on mobile phones -- on Windows phones in 2016?

A I did.

I mean, I think 2016 is a little tough year to look for Windows Phone because Windows had really fallen way off by then, right.

Windows Phone was pretty big actually before 2010, but by the time we get to 2016, Windows phone is tiny, it's like less than half a percent of shipments. And so I don't think that's as helpful. It still shows Google gets a fair amount. But, again, I think that's very nonrepresentative. So I, you know --

I'm not saying these data are perfect. I'm saying, I think these are more useful than what he put forward.

Q Did you look at evidence of default search usage on BlackBerry RIM devices?

A I did.

Q What does this slide depict?

A Again, this, in the case of RIM, it's kind of interesting because who had the default was not determined by the device but by the carrier.

So we had three different groups of carriers. Verizon had a Bing default, by and large. There are a few

devices that may not have been Bing default for Verizon, I think, at that time.

AT&T and T-Mobile had a Yahoo! default.

And Sprint had the Google default on RIM devices.

What you see if you look at the picture is you see that regardless of who had the default, Google got the majority of the business.

And, indeed, on the devices that had either Bing or Yahoo! as the default, the vast majority of people searched away from that default, probably in these days mostly by going to google.com because that's where a lot of people went. I don't know particularly where they went, but this time period those kind of organic searches were pretty popular.

Q Even if these agreements are not considered exclusive, did Google nonetheless receive some positive economic benefits from winning browser default agreements?

A Oh, yeah.

I mean, I think they -- I wouldn't say just some. I think they receive a fair amount of benefit from signing those agreements.

Number one, they got incremental users, that's what we've talked about up until now. When you win the default, you're getting -- those users who would move back and forth, move to you. So winning the agreement gave

Google volume by shifting users to Google.

The other way is because you're getting a rev share payment, like we talked about before, that incentivizes the carrier or whoever to do -- generate more search, sell devices that get more search, encourage their customers to do more search, improve their devices all kinds of ways, because it increases their incentive to get more search volume because more search volume means more dollars for them.

Google also, we talked about the endorsement going the other way. When somebody puts Google on their phone or Bing on their phone, that gives the search provider an endorsement. I mean, sorry, gives -- yes -- and that endorsement is valuable to Google, right. It's not only valuable to the customers, but it's valuable to the consumer. When somebody chooses Google, it says, hey, that's another partner who thinks Google is the best.

Finally, it helps align incentives. When you have a default agreement, the RSA payments that would come along with that default agreement give partners an incentive to improve their browser, improve their device, whatever it is, again, to get more search.

Q All right. Let's shift gears here and talk about your critique of Professor Whinston's foreclosure analysis.

Can you describe at a high level why you believe

Professor Whinston's foreclosure analysis is economically flawed?

A Yes.

Okay. So I'm going to go through three aspects of it. First I'm going to explain why coverage is not a good measure of economic foreclosure.

Again, foreclosure is restricting the ability of rivals to compete. And when you have an agreement where people can compete within -- against the default, for the default and all that, coverage is not going to be a very good measure of how much you've restricted. You might have enhanced their ability to compete, not restricted.

And there's something I failed to talk about earlier that's really important to bring up at this point, and that's the point that defaults are particularly effective at making weaker rivals stronger competitors. You might think that seems weird, okay? But here's why.

Relative to what exclusive. Let's say I have an exclusive, and there's a bunch of customers who shop at that store who don't really want my product, they want the other one. Well, then as a lesser -- weaker rival, I'm not going to be able to compete for the default if there's no way the store is going to throw Heinz ketchup out and make me the only ketchup because too many people want Heinz ketchup.

On the other hand, when you compete for a default,

the people who really want the other product can still get it. So that makes the partner more willing to go with the rival, right. That is, they don't have to alienate all their customers by going with the weaker rival.

So in an odd way -- so it's counterintuitive in some way. The ability of people to switch away actually makes the rival stronger as a competitor, because he doesn't have to satisfy everybody, because the way a default works is you only have to satisfy the people who are willing to go with you. The other people can still get the other thing if they want it.

So when you have a default, it's very different than an exclusive in terms of its competitive impact, because that default can actually help the rival actually put more pressure on Google than they would otherwise, or whoever.

You see how it's working? It's like when I have to compete for everybody, if a significant chunk don't want me, I'm out, I can't really compete for that. And that's what the literature talks about.

But with a default, there's sort of a safety valve there that if they don't -- if the customer doesn't want me, they can go with the other guy, the stronger competitor, and I can still compete, and that guy will give it to me, the business, if I compete strong enough and win, right?

But even if I lose, I can put a lot of pressure on Google, because my -- the rivals -- the partner's threat to move to the rival is much more credible under a default arrangement than it would be under an exclusive.

THE COURT: Even under that analysis, doesn't that shrink the market over which there's actual competition?

THE WITNESS: No, because, remember, with the default, there's still competition with and against the default.

THE COURT: Right.

THE WITNESS: So you haven't gotten rid of that aspect.

If I lose the default, I can still try to win business by making my product better, get them to use me rather than Google.

THE COURT: Right.

But in your ketchup example, say it's a Heinz versus a generic, a grocery store is never going to pick the generic.

THE WITNESS: As an exclusive, never.

THE COURT: Right.

THE WITNESS: Never.

But they can give shelf space.

THE COURT: So how is it then actual competition for the default which you described earlier?

THE WITNESS: I would say ketchup, probably not, okay?

But they don't use defaults in ketchup, right? Ketchup don't have defaults.

In the browser case -- I mean, sorry, the search engine case, we can see it.

Remember Mr. Nadella's discussion, you know. They were there with Apple saying, God, go with us. We're not going to keep all those customers. We're going to keep enough, though, that we're willing to do a deal and pay you a lot of money to do that.

At the end of the day, Apple goes to Google, and, Hey, I got Microsoft here as an option, you know, why does Google win? Well, they're better, lower cost, they're probably going to win, but they're going to have to compete on price to make -- to win.

So, you know, probably the generic ketchup ain't a very good competitor, but in this marketplace, the evidence is Bing has been a lot, and the payments that Google make reflect that competition, you know, that -- that -- Apple is able to say to Google, Hey, you want this business, I've got options, you know, I've got to get -- I've got to get more.

Even Mozilla. Mozilla's -- you know, you say, well, that's Apple, they're huge. Mozilla, they play Google off against the rivals too. They even switched to the rival

at one point, right. So that stalking horse element is enabled by the default, because when Yahoo! switched to Google, a bunch of people switched back.

And if all those people had had to leave Mozilla if they still wanted Google, Yahoo! never would have won, right. It really is, the default structure really enhances the ability of rivals to compete.

It's kind of self-adjusting in a sense. If I can compete for a lot, then I can put a lot of pressure. If I can compete for some, I can put more pressure.

The other thing, if you look at a company like Apple, it's not just about the default. I can compete for the bookmark. I can compete to have a contract where they let me refer or encourage people, when they go to my site, to change the default, right. You can do those things.

Now -- and Apple did that for Yahoo! and Microsoft, and if you look in the mid-2010s, Yahoo! had a fair amount of success on iOS devices. I really can't even discuss the numbers, but they had a fair amount of success because they were doing those kind of promotional things with Apple.

Now, ultimately that didn't play out, but if they had had a better product that maintained a good user experience, my -- you know, and I don't have a crystal ball, but I don't see any reason why Apple wouldn't have continued

or even expanded their ability to do that. It was really cut off, in my mind, because of the user experience, and that's what Eddy Cue testified to.

BY MR. SCHMIDTLEIN:

Q All right.

Professor Murphy, let's talk -- or turn to your first point here that deals with this question of whether coverage is an appropriate measure of economic foreclosure.

Can you explain whether you think coverage is a valid measure for foreclosure in this case?

A Well, I know that people use coverage in cases of exclusives. It's not really the bottom line as to whether there's foreclosure or not. I think the simplest way to use it is if coverage is low, then there can't be foreclosure because there's still enough left available, right.

It doesn't mean that if coverage is above that, there's automatically foreclosure, right? Those are different kind of -- you know, you could call it a safe harbor, whatever you want to call it. It's kind of more definitive in one direction than it is in the other.

But in this case where you're talking about defaults, because there's competition even after the default is issued, coverage is even less informative than it might be otherwise. So I would say coverage is not a useful measure here.

And Professor Whinston, in his report, actually agreed. But I don't want to put words in his mouth; he can say however he did.

But my understanding was he agreed at that point that coverage wasn't a good measure, and he's tried to find ways to overcome some of the shortcomings with coverage.

But his method -- and we're going to get into his method here in a bit -- is essentially to say, Well, it's not an inclusive because you can compete against the default but you can't compete in the store in a case of exclusive. He tries to make an adjustment for that difference.

But to me, that's kind of like trying to slam a square peg in a round hole. Once you sort of say it's not like an exclusive, I'm not quite sure how you can use the coverage measure you might associate with an exclusive to tell you something about a non-exclusive.

You just -- I don't think the fit is good, and I'll explain why.

Q Did Professor Whinston offer a new foreclosure theory during his trial testimony involving a hypothetical superior search rival to Google?

A He did.

And his hypothetical superior search rival was Super Duck, as I understand it, okay.

Q How do you respond to Professor Whinston's new

foreclosure analysis?

A Well, I do -- what I've done is kind of try to dig in and see what it -- how -- what's the logic, how does it work, what's going on there.

And I don't know how well, Your Honor, you followed what he did on Super Duck. I'll try to explain how I see it.

THE COURT: I was here so --

THE WITNESS: Okay. I'll try to explain it, and Professor Whinston can correct me if I mischaracterize what he was trying to say.

But here's how I see it. He said, there's half the market, 50 percent, that's not even covered by the default agreements, so that half is kind of over here, and Super Duck clearly can compete with that, and he assumes Super Duck is Super Duck and he's going to win, he's going to win that 50.

But he says also because you can compete against the default agreement, not just for the default agreement, that even if Google, in that case, or the stronger firm -- the weaker firm held -- remember, Google is now the weaker firm in the Super Duck world, right, because Super Duck is Super Duck and Google is just lowly Google. So Google's over here.

Super Duck wins the 50. They can also win some of

the other 50. So unfortunate, it's 50 and 50, right, because it makes your discussions harder, but this is the 50 that's covered by the default agreements.

He says -- based on the data he looks at, he claims Super Duck can win 17. And, therefore, the stuff that Super Duck can't win, the 33, which is the rest of that 50, is foreclosed because Super Duck can't win.

First thing I would say, they're not really foreclosed. The fact that Super Duck wins 17 doesn't mean Super Duck can't compete for more, right, because there's no hard -- it's not like you hit a wall at 17 and say, Well, done.

What's Super Duck going to do after they won 17. They're going to be, I'm going to -- I'll be Super-Duper Duck. And if I'm Super-Duper Duck, I'm going to win some more of that. So I don't know why 33 is foreclosed when Super-Duper Duck could go for -- cut it 10, 30, 27, whatever, I don't know. They could compete against even further.

More importantly, they're competing for that rest. Even if they don't win it, they're putting pressure on the incumbent to prevent them from winning more, right. That is, that 17 is not a fixed number. They're competing -- even if they end up winning 17, they're putting pressure to try to win the other 33.

So the idea that -- from a competitive standpoint, not what they won but what they can compete for, it's not clear that 33 is off-limits. Super-Duper Duck can win some more. Super Super-Duper Duck could win even more. Right.

So the idea that somehow that 33 measures foreclosure, to me, is kind of off base, right. I don't understand why that is a measure of what's foreclosed.

Secondly, if you think about what happens once Super Duck comes in, he runs the table, he gets the 50, he wins the 17.

Well, next time that -- even if he can't push into that 33 anymore, once that agreement comes up, who's going to win the default? It's going to be Super Duck. He's better by definition. He's going to outcompete Google for that 33.

So it's not that 33 is off-limits. He can compete for that, both against it before he competes for the default, and for it once he gets the default. So nothing is really off-limits to Super Duck.

And if you think about a world where Super Duck can win 67 percent right upfront and then compete for the rest when it comes up, I don't know how in the world you'd call that foreclosure. How could Super Duck be foreclosed? They could win more than half the market off the bat and compete for the rest.

But there's a second part here that sort of points out incredible inconsistency, sort of, in the plaintiffs' exposition, because think about what they're saying. They're saying that the fact that Super Duck can't win that 33 against the weaker rival is evidence of -- that these contracts foreclose.

On the other hand in the actual world, they're saying Google, i.e., Super Duck, should be restricted in its ability to compete for that 33 percent. Well, the very thing -- and we should let Bing win that 33 percent or help Bing or somebody else win that 33 percent.

So the very thing they're saying constitutes foreclosure they say is promoting competition in the actual world, right, because in this picture, the 33 that Super Duck can't win is an evidence of, well, there's foreclosure there because Super Duck can't win it even though they're better.

But then they go to the actual world and they say, if -- we don't want Google to be able to compete to win that 30, we don't want Super Duck to be able to win that 33, we want that to be able to go to Bing or somebody else. Well, wait a minute, was it foreclosure or is it preserving competition? Which one is it?

I guess they're saying it's both. That it's an indication of foreclosure and it's also an indication of

what they want to do it preserve competition. So if the bad thing is Super Duck can't compete for that, why are we trying to prevent Super Duck from competing for that.

And, again, efficiency would be the better provider, Google in the real world, Super Duck in the but-for world, is going to be able to win and compete and win that. That's part of the competitive process and would mean there's no foreclosure.

Now, the way I see it, and this is contrast the way I've talked about so far, right. So, again, here's how I see the world.

Say, Whinston's assumptions, 100 percent. Super Duck comes in, runs the table on the first 50 percent because it's open, they just win the 50. They win the 17, too, competing against the default.

Now, what's going to happen when that contract comes up? They're going to win that too.

Does the default matter? Yes. Why?

When Google -- Super Duck won the first 50, they didn't have to pay a dime. When they won that 17, maybe they paid something to get promotion and other things to compete against the default.

But how do they win that default? How do they win that last 33? They have to compete. That is Google is not just going to give that up and say, hey, I give, you know,

you can have it, they're going to compete. So Google -- so Super Duck is going to have to compete on price to win that, and that benefits consumers. That's price competition at work.

So the way I see it, Super Duck should come in, they're going to win the 67. When the deal comes up, they're going to win that too, but they're going to have to pay to win it and they're going to have to pay precisely because the rival can -- the partner can threaten to stick with Google, right? So that's exactly how competition works.

So, remember, you asked me earlier about an entrant. Well, in this case, the entrant is going to come in, but consumers are going to get even more benefit from that entry because he's going to have to pay to win that last 33 percent. He ain't going to get that for free. But that's competition at work.

Does that make clear how I see Super Duck?

THE COURT: Yeah, I do. I understand. Thank you.

BY MR. SCHMIDTLEIN:

Q On your slide here, you have an adjusted Slide 38 on the right. Can you explain what that is?

A Yeah.

This is like a completely separate issue so we should like stop, stop. We -- this is all conceptual

discussion we had, now we're going to dig into numbers and say, well, what about his numbers.

And, again, if you think about where these numbers come from, I don't know if you remember, it comes from primarily two sources, Maps, and Google on Edge. Those are -- there's some other numbers in there but that accounts for the vast majority of it. Also a little bit Microsoft's estimates.

You know, me, and this is just maybe my approach, I tend to look at actual market evidence to try to draw what I can from market evidence, and that was really evidence from documents and people's estimates of what might happen and things like that. I'll say, well, let me see what actually happens.

So two sets of evidence I would put forward. One is Windows. That is, how much of this -- how much of the 50 percent would -- how much would somebody who -- Super Duck be able to win based on how much Google was able to win on Windows.

What it says is that red part, the part that Super Duck wouldn't be able to get, is probably like 18 percent, something like that, that is what Microsoft was able to hold on to on Windows, where they had exclusive preinstallation, okay?

Another way to do it would be to take something

like the Firefox experiment on Yahoo! and think about that as estimating what fraction of the 50 percent, because now we're just talking on that particular browser, right. So it would be like his maps estimate but use the real-world evidence from -- uh-oh -- I messed up.

Q That's okay.

A Well, everybody knows they switched to Firefox.

So based on -- if you do the numbers from there using mobile or overall numbers, you're going to get a number basically in that same range --

THE COURT: Right.

THE WITNESS: -- okay?

So I think the bigger critique is the first ones I gave about the conceptual ideas.

But even if you were going to go down this road, I think the numbers are small. And even under his view of the world, you wouldn't call that foreclosure even if you're just counting equivalent coverage using the Super Duck methodology.

BY MR. SCHMIDTLEIN:

Q Did you agree with Professor Whinston's reliance on Apple Maps replacing Google Maps on Apple devices?

A I did not.

And, again, part of this is just how I look at the world and how I try to get evidence. But the other part is

just thinking about whether the Apple Maps is an analogous experiment to what we're interested in doing.

And there's three key differences that I point out here that actually Apple Maps wasn't really a default, because you can't change.

When they switched to Apple Maps, Apple Maps is the default map app, you can't change that back to Google, okay? And so that -- it's not a default, it's hard-wired, okay? That's my understanding. I'm not a computer scientist, but that's my understanding of how it worked.

Secondly, the functionality of a map's not quite like a browser, right. There's a lot of ways in which you use a map is different than a browser.

And particularly the web-based services that you can use, if you don't use a default, are a lot more similar to what you get with the default on a browser than it is on a map.

Basically the way I think about it, if you go to Google, if you do search on Google through the default or through the Google search app or you go to google.com, the search engine you're using is the same, right, whereas the functionality of a map is a little different between an app and a browser-based service.

Finally, if you look at what happened at the time, at the time Apple switched, Google didn't have an app.

There was no Google Maps app available on Apple devices. It took time for that to come around. So that really made it difficult for people to switch right back to Google on an app basis because they didn't have the app, right, they would have had to do something through the browser instead.

In contrast in search, GSA and Chrome are right there in The App Store, always are, okay? So I don't think it's what I would have looked at.

Now, Professor Whinston looks at -- you know, his major claim is that, well, Google relied on it, right, that Google used that number.

But be careful when you think about that. It's true Google used that number and they had this 70 percent figure. But when they were negotiating with Apple, they agreed to a rev share of 36 or something.

Q Careful. Careful.

A Sorry, they agreed to some rev share quite a bit less.

That's my fault. I'm very sorry.

They agreed to a significantly lower rev share.

And so Professor Whinston likes to say, well, they should have had a very precise estimate if they were going to base a billion-dollar decision, they didn't need a very precise estimate. If they had concluded it was less than the number they used, but still substantially greater than

the number they were agreeing to, precision wasn't the question, right.

So the idea that we can infer they had a precise estimate, I think is incorrect, because the deals they were doing weren't conditional on that number being exactly right or even close to right, right? In other words, there's a lot of headroom between those numbers and what the deal they were doing.

So it's fair to say they used those numbers in their analysis, but to say that, well, they must have a very precise or good estimate I think is incorrect as a matter of economics because, you know, I go to the grocery store and I see bananas are 69 cents a pound, I don't have to figure out whether I'd be willing to pay a dollar or a 1.50 or 90 cents. So if I think, yeah, I'm willing to pay quite a bit more than 69 cents, I'm going to grab them bananas and I don't need a precise estimate, right?

Even if it was a big decision, if I'm sure I'm within the range of what I'm willing to do, I don't need a precise estimate. And the deals they were doing were a long ways away from these estimates.

So I think it's fair to say they looked at these things, they evaluated these things, but to say that they needed a precise estimate, I think, is incorrect. Nothing in their decision-making depended on this number being

precise.

THE COURT: I'm sorry, what are you comparing in terms of the final rev share number and the estimate that Google is using in that the study?

THE WITNESS: Well, the rough math, the simple math is just to compare the two numbers directly.

THE COURT: Right, but they look like different numbers. In other words, one is a rev share, the other is a percentage of loss.

THE WITNESS: Right.

But they turn out to be kind of the same thing, because you can say, look, I either pay a rev share -- it's easiest just to think about, let's say, you were paying a rev share of 50 and you thought about losing half the business, but you wouldn't have to pay for the half of the business that you keep, then you could say, well, if I pay the rev share, I get 50 cents. If I don't pay the rev share, I get 50 cents, because I get all the money on half the business.

If it was 90 -- if it was 20 cents you would lose, you'd say, well, geez, if I pay the rev share, I pay 20 cents out of the hundred. If I don't pay the rev share, I get 80. Well, 100 minus 20 is equal to 80 so it balances out. Now that's the simple math. So simple math is you can just compare those two numbers.

Now, if there are other benefits you get by getting the deal, endorsement or whatever, then your willingness to pay on the rev share could be higher than that because you're not only getting the business benefits, you're getting these other benefits, growing the pie or whatever else it is. So kind of think of that, the shift number as a lower bound on what I'd be willing to pay in some sense, right?

THE COURT: Okay.

THE WITNESS: Assuming I have other benefits. That's kind of the simplist way, and if you're using a rev share, you should use a net number, not the gross number, because that's what you pay, because you pay something minus the net.

THE COURT: Right.

THE WITNESS: Okay.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, did you also look at and evaluate Professor Whinston's reliance on Google's search share on the Microsoft Edge browser as part of his foreclosure analysis?

A Again, this is a number I would not use. And basically the reason is, the vast majority of users are switching away from Edge, right, they're moving to Chrome, they're doing something else. The guys who are left are

sort of more likely to pick Microsoft.

So the idea that this isn't good evidence of what a broader population of people would do, I think is very suspect. This is what economists call selection bias. The group I'm looking at is very selected, and that's not likely to be representative of the -- of a broader population. So to me, I would not recommend using a number like that.

Q Now, I want to go back.

We've talked a little bit about what you referred to as sort of the new Super Duck example. I want to go back and talk a little bit about the actual hypothetical alternative world that Professor Whinston identified in his report. And in particular, did Professor Whinston actually identify a but-for world for his foreclosure analysis?

A He did not, at least according to his own testimony.

He admitted that the ideal thing to do was to do it through a but-for world. But, as I understood his testimony, he said he wasn't looking at a but-for world because he didn't really know what the but-for world would be so he thought of these as more thought experiments.

And -- but, as I said before, if you're going to do a but-for world, you want to think about, well, what would that world look like if you're proposing it.

Now, in my case, I'm looking at the world and I'm

saying the actual world is the but-for world because I don't see these things as anticompetitive.

He's sort of saying, No, here's some things that could have happened. He's not saying they would have happened. And what I'm going to try to do is ask the question, Would these things have happened.

Remember when I talked about evaluating foreclosure in a but-for world, it had to be something that would emerge in competition, and I'm going to try to show you why I don't think either of these alternatives he proposes would be something we'd expect to emerge under competition.

Q And can you just summarize here what the alternatives that Professor Whinston identified in his trial testimony?

A Yes.

He considered two primary alternatives, or I think these are really the two he did consider.

One is what he calls unconditional revenue share payments, which I don't think he ever fully defined what "unconditional" means.

In the most extreme case, that would be saying -- Google going to somebody and saying, Here, here's the rev share, whatever volume I get, I get, it's completely unconditional on anything, okay? That would be the literal

definition of unconditional rev share. The other one, what he considers is offers conditional on parity.

So I'll make an offer, I'll pay you this rev share, as long as you give me at least as good a placement as you give somebody else. Kind of an MFN-type view of the world, but not an MFN on dollars but an MFN on --

THE COURT: Placement.

THE WITNESS: -- placement, yeah.

Okay. Those are the two that I understand he's putting forward.

And so when I think about the parity one, there's all kinds of definitions one could use what parity means. I'm not even quite sure how to define it in some cases, but I'm going to think about it like a choice screen. I'm going to bid to be on a choice screen because a choice screen is some notion of parity, okay?

BY MR. SCHMIDTLEIN:

Q Okay.

Have you considered the economic feasibility of Google agreeing to an unconditional revenue share payment?

A Yes.

And basically the biggest problem I see with unconditional revenue share payments is really at odds with basic economics, particularly for a firm like Google.

Because if they make an unconditional rev share offer, Apple could decide or the partner could decide to not give them any promotion, in which case Google gets the business they would have gotten anyway, right. They didn't get anything for it. They got what -- the business they might have gotten anyway. And if they're not getting -- or then Google is being paid for nothing. They're not going to do that.

But even more importantly and more fundamentally, you know, when I sell stuff to the grocery store, I might just give them a discount to sell more stuff because I know one of the ways I'm going to sell more stuff is I'm going to get a lower price on the shelf and more consumers are going to buy it.

But remember, there's none of that kind of analysis here, right, because the rev share payment -- the rev share payment is to get performance, get them to do something, give me a bookmark, put me in a default. In his hypothetical, give me a choice screen, right. So you're going to condition it on receiving it.

I sort of think of it like a billboard. I want to get a billboard at the baseball stadium. Well, I'm not going to go to the billboard provider and say, Here, I'll give you a 10 percent rev share in my sales in Washington, D.C. in exchange for putting -- and then if you want to, put

up a billboard on the outfield, I'm going to say, No, I'll pay you to put up the billboard. Maybe I'll pay you with a rev share. But I'm going to make you -- the contract is going to be to put up the billboard.

THE COURT: You're not going to pay for something that you may or may not get?

THE WITNESS: Exactly. That's why I don't like the unconditional.

And that's particularly true for somebody like Google, who you're going to make a lot of payments even if he doesn't do anything because you're -- you're -- you've got a lot of customers in you. A lot of people would choose you.

Even if it makes the other guy the default, a lot of people are going to choose you. And you're still going to pay? You know, he kind of did everything he could to move stuff away from you, but you're still paying him.

And the other key observation is, if you look at this industry, and this is blanked out, I'm looking at other providers, and they don't have this problem nearly as much as you, Google, does, because they don't have as many organic customers that would have used them anyway.

But even they specify what they're going to get. They say, Hey, we'll pay you. We'll pay you to give us promotion, but we're going to get the X, Y, or Z that we're

going to get in return. So conditionals is kind of the right story.

You know, when you look at contracting as happens in the world and all kinds of other industries, you know, kind of an unconditional payment, like say I run a store and I've got a worker and my store closes at 10:00, and I want him to stay till 10:00, right, because if he leaves early, I'm in trouble. And I don't try to find a wage rate that'll make him want to stay till 10:00, right. I don't say, Okay, $15 an hour, he'll stay till 10:00 and I'll get what I want.

THE COURT: Pay him till 11:00.

THE WITNESS: Yeah, or I'm going to tell him, Stay to 10:00 and I'll pay you $15 an hour.

That's all I'm saying is these kinds of things where you're trying to get them to do specific things, you're -- you're going to find it in your interest to specify the actions. Unconditional payment's a very poor way to do.

And even if you get something, it's a problem, right? Let's assume I would make 100 sales without promotion, and that sale would go to 40 -- 140, and I say, I'm willing to pay you 20 percent rev share for that, 20 percent rev share to get to 140, okay?

So now he doesn't do all the stuff you wanted. He does some, you get 110. Now you're paying 20 percent of 110

to get 10 sales. The problem is you're paying on all of them, you're not just paying on the incremental sales you're getting.

And one answer would be to try to estimate the incremental sales and pay only on those, but that's not an easy contract to write because it's hard to figure out what your incremental sales are, just like it's hard to figure out what it takes to get the guy to stay until 10:00.

THE COURT: That's what I was going to ask, which is that if you assume that -- given Google's position in the market, that under any of these browser agreements, it's going to retain some percentage, could you foresee a world in which Google's only paying for the incremental searches that arise as a result of a rev share agreement?

THE WITNESS: I think it's hard.

I mean, that's the problem, is it's kind of like the classic contracting problem.

In a particular case -- in a case where there are lots of things you're trying to get somebody to do, these kind of price-based systems work pretty well.

But when you have specific things, like, I want you to give me a default, I want you to give me a bookmark, I want you to do this, that -- I even want you to put me on a trade, whatever it is, specifying it just makes a whole lot of sense, because, again, it's not like the wholesale

retail world where you say, Oh, I'll give you a discount. Even if you don't give me any promotion, that's going to give me sales because customers are going to get a lower price, they're going to buy more.

Here you're really contracting for specific elements of promotion. And to me, it just makes a lot of sense to say, the efficient contract in that world is to put that in the contract. Trying to find a price that makes it work is hard.

THE COURT: Right.

Even if that contract price is far greater than what you would pay just for incremental sales? Or incremental -- in this case, incremental users?

THE WITNESS: I'm not sure Google does pay more than what they get. I mean, they get -- remember, why do they get incremental sales? Because the guy could switch the default to somebody else.

THE COURT: Right.

THE WITNESS: So if that competitive dynamic means that Google gets a fair amount of incremental sales from winning the default, relative to a choice screen, they might not be getting more -- many incremental sales, but that's not the world they live in, right.

They live in a world in which the guy could give the default to the other guy, and, therefore, there's a lot

of incremental sales at stake precisely because those default agreements create a lot of competition with even a weaker rival. Everything we've been kind of talking about kind of weaves together.

MR. SCHMIDTLEIN: All right. Is this a good time?

THE COURT: Is this a -- I thought he had a second point he was going to add on top of it but maybe not.

MR. SCHMIDTLEIN: No, no. We're going to next talk about the choice screen as the other alternative, which I'm happy to -- we have a few slides to deal with on those, Your Honor, and I'm happy to go through those to get to Slide 77 if you want to close the loop on that.

THE COURT: Why don't we go ahead and then finish up that point and then we'll break for lunch.

BY MR. SCHMIDTLEIN:

Q Professor Murphy, did you find a choice screen to be an economically valid but-for world?

A No.

And, you know, when I talked about the unconditional payments, one of the key motions was for the search provider, it's not really providing them with something that they really need, right.

And when I talk here about the choice screen, it's really more focused on the partner and what they would want.

And the basic rationale is it's not really a good

decision from their point of view in general, and that's why we haven't seen it emerge in the marketplace, right. We haven't seen partners saying, Oh, let's have choice screen. I know they discussed it at a few points in time, but it's never really emerged as a marketplace alternative.

And secondly, and it's not emerged as an alternative with Google or other search providers, right, it just doesn't show up. And it's even rarely discussed. I know there's been some documents that mention choice screen, but it's hardly at all -- unlike the stalking horse, which is an ever present of the marketplace we see, the choice screen is an alternative that just rises very rarely.

And one of the reasons it doesn't is, one, you know, we've had testimony that it's not a great user experience. Both Mozilla and Eddy Cue from Apple said, you know, That's not good for a user, not what our users want.

And, you know, the discussions we had before kind of help point that out, that, you know, they want to be able to recommend to the users what's a good search engine. They want to have the best thing out of the box.

And secondly, they find a choice screen somewhat cumbersome in terms of setup of the device and the like. You know, because people are making that decision when they just want to start using their phone.

Now, they have to put some other things in there

like what language you want to use and stuff like that because I don't want to try to use German on my phone, right, that's not going to work too well. I don't speak German, so it's going to be hard, right.

So, you know -- but the choice screen hasn't proven. For me, one of the things us it hasn't emerged in the marketplace, that tells me it's got some problems.

But also economics tells me they're probably going to get less revenue because it's not worth as much to bid to be on a choice screen as it is to be a default, so it's a stronger bidding process to bid.

In fact, if you think about somebody like Microsoft, getting on a choice screen isn't worth that much to Microsoft, right? Because they get next to -- next to Google, they're not going to get many choices.

The thing that's really worth something to Microsoft is to get on a device where Google is not there. Right? The choice screen is not such a great idea for them.

So in terms of the partners, we have the -- Eddy Cue from Apple and Mitchell Baker from Mozilla saying, Choice screen is not what we wanted.

And if you think about the discussion when a choice screen did come up, what was the answer? It doesn't work for us, we're not getting the incremental sales, right? That was the answer about the choice screen.

That's exactly what economics tells us you'd expect the answer to be, right?

When they say, well, that's Google, they used their market power to squash choice screen.

But these other guys, they don't choose the choice screen either, right? The other players in the marketplace haven't chosen the choice screen.

Another reason why you wouldn't see a choice screen per se, because let's assume I set up a choice -- I have a choice screen, and then I go to Google and say, hey, pay to be on this choice screen.

You know what Google is going to say? You're going to have a choice screen and not put me on it? You're going to tell your users Google Search is not one of the choices they can make?

Doesn't put the partner in a real good -- it's like giving the generic ketchup the default, right, or the shelf space. It's not a very good threat against Google, because giving Bing the default is not as bad, because then people know they can change it back to Google.

But if you have a choice screen that claims to give the choices, not putting Google on it seems like a pretty bad option, it's not a very good choice screen if it doesn't have Google. That really weakens your ability to bargain with Google.

BY MR. SCHMIDTLEIN:

Q Would you expect a choice screen to enhance overall competition in search?

A No. For the reasons we talked about. Less price competition, worse design from the user's perspective.

Finally, the evidence we're going to look at in a bit tells is it wouldn't switch much to rivals either. So it really doesn't have any of the -- doesn't have a whole lot going for it.

That's it, right?

MR. SCHMIDTLEIN: All right. Your Honor, I think we're at a logical breaking point for now.

THE COURT: Okay. So we've reached Slide 76. Okay. Great.

THE WITNESS: Sorry, I didn't go slide by slide.

THE COURT: That's fine. I just wanted to make sure I was confirming where we were.

Okay. Terrific. Let's take our lunch break now. We'll resume at 1:40.

Professor, I'll just ask you again not to discuss your testimony with anyone over the break, all right? Thank you, sir.

I'll ask you to step outside for a moment.

All right. Mr. Schmidtlein, what's your current thinking in terms of timing for the rest of the day?

I mean, I've contributed to the longer examination, I appreciate that, but...

MR. SCHMIDTLEIN: Yeah.

No, I think a lot of the concepts that were discussed this morning, I think, will facilitate a faster direct in the afternoon. And so I'm hoping that we will -- we're certainly going to get done today.

THE COURT: Right.

MR. SCHMIDTLEIN: But I'm hoping we're going to be pretty close to being done hopefully by around the 3:00 or so break. We'll see how quickly we can move things along.

THE COURT: Okay. All right. I was just curious.

Okay. Anything before we adjourn?

MR. DINTZER: Not from the DOJ Plaintiffs, Your Honor.

THE COURT: All right. Thank you, all. We'll see you shortly.

COURTROOM DEPUTY: All rise.

This Court stands in recess.

(Recess from 12:40 p.m. to 1:40 p.m.)

C E R T I F I C A T E

I, William P. Zaremba, RMR, CRR, certify that the foregoing is a correct transcript from the record of proceedings in the above-titled matter.

Date: November 13, 2023

William P. Zaremba, RMR, CRR

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