FEDERAL TRADE COMMISSION

COMPETITION AND CONSUMER PROTECTION
IN THE 21ST CENTURY

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FEDERAL TRADE COMMISSION

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WELCOME AND INTRODUCTORY REMARKS

MR. BUTLER: Welcome to George Mason University and Antonin Scalia Law School. My name's Henry Butler. I'm the Dean of Scalia Law. It's a real pleasure to have you here today for this conference on Competition and Consumer Protection in the 21st Century. George Mason and Antonin Scalia Law School is a particularly appropriate place to be teaming up with the FTC. We have a long and glorious history of antitrust scholars, consumer protection scholars on our faculty.

Going back to my first day on the faculty in June of 1986, where Bill Kovacic and I started the same day, we added Tim Muris, Bob Bork, gosh, Doug Ginsburg, on and on, Ernie Gellhorn, an incredible group of people over the years. Today we have an incredibly strong groups of economists. We have 11 Ph.D. economists on our faculty, as well as several folks with Ph.D.s in finance and accounting. So a very strong, business-oriented place.

But in addition to that, a great connection with the FTC over the years. Of course, Josh Wright is on our faculty, Tim Muris, who I mentioned earlier, an incredible group there, but currently we have Bruce

Kobayashi is the head of the Bureau of Economics; James Cooper is over at the Bureau of Consumer Protection, working on privacy issues; Bilal is here somewhere. Bilal is one of our mainstays on the adjunct staple and an alum of the school. So it's a long list of connections with the FTC, and it's really great to welcome all of you here for this in-depth probing of the relationship between competition and consumer protection as our economy evolves.

So it's with great pleasure that I now turn things over to Commissioner Chopra. Have a great three days. I look forward to meeting you.

(Applause.)

WELCOME AND INTRODUCTORY REMARKS

MR. CHOPRA: So thank you, all, for being here, and I also want to thank our host and all the staff and others who put all of this together. It is a lot of work, and I hope it will pay off big.

Last month, the Federal Trade Commission hearings focused on the state of play of competitiveness of the U.S. economy and the application of antitrust law. In this and future hearings, we will focus specifically on platforms and digital marketplaces and the implications of big data, algorithms, and artificial intelligence.

As we turn our focus to digital marketplace concerns, I think we should approach this inquiry with three major questions in mind: First, what are digital marketplaces and how do they compare to other marketplaces? Second, what are the role and implications of mass data surveillance in these marketplaces? And third, how do privately established rules and regulations promote or distort the competitive process on these marketplaces?

Now, in my view, the FTC's core role -- and government more broadly -- is to make sure that our markets are working, free of anticompetitive lies and distortions. This role protects two key groups, both buyers and honest sellers, and safeguarding the competitive process is a prerequisite for prosperity.

Government has long sought to create laws and regulations that structure and facilitate marketplaces that work. Laws that safeguard an individual's ability to contract and possess property are foundational to functioning markets. This is recognized not only here at home, it's also universal. The universal declaration of human rights declares that "no one shall be arbitrarily deprived of his property."

Now, these foundational laws are supplemented by others that promote free and fair markets. In our country's own history, many cities and towns established public marketplaces for butchers, bakers, farmers, and fishers to sell their products. By bringing together all buyers and sellers in one place, buyers would be able to easily compare products and prices, and sellers could count on a steady stream of customers. Local government could more easily enforce standards for health and safety, weights and measures, and other protections. Buyers would know that their food wasn't spoiled and the scales weren't rigged, protecting the competitive process.

Now, in today's economy, digital marketplace platforms carry the potential to facilitate ideas in commerce by bringing together market participants, leveraging the market power of network effects. This is exactly what the internet promised, a dynamic market with low barriers to entry and a level playing field. Digital marketplaces connect buyers and sellers of goods and services. Like the farmers and fishers at the public market, sellers offer their goods and buyers can compare and purchase. Just as cities and towns would facilitate craft markets or spice markets, these digital marketplaces can focus on specific goods and services, like books or hotel rooms.

Other marketplaces include sellers of all types, including creators of content, news, and works of art, including photography and video. These marketplaces also enforce their own rules and regulations for sellers and creators. Some digital marketplaces focus on individually provided services. Other marketplaces help to facilitate the reduction of economic spoilage by connecting, say, drivers and riders going in the same direction or households with an extra bedroom or couch with travelers. This has been described as "the sharing economy," though they have since developed into major marketplaces connecting buyers and sellers of fissured labor.

These marketplaces also develop and enforce rules and regulations, including ones that set prices and assess trust and character. Now, of course, there are many differences between public marketplaces with butchers and bakers and today's digital marketplaces. The first key distinction relates to data. Now, unlike the family who shopped at the fish market or who tuned in to a television program a generation ago, participation in a digital marketplace is not always an anonymous experience where you can browse for free. Marketplaces are monitoring individuals, families, and businesses, harvesting data in ways that we might not recognize or even understand.

This goes far beyond what buyers are looking at and can include where they were when they looked at offerings or content, who they were with, and more. For sellers, data about the prices they charge, the way they deliver goods and services, and many other attributes are ingested. Now, this surveillance can include collection of data completely unrelated to what is needed to participate in the marketplace. Devices and appliances in our homes collect sensory data about our daily activities, but how much of this collection is for the functioning of the device and how much is it purely for monetization or sale?

Marketplace operators develop software and algorithms to analyze this data at scale to make inferences about individuals and groups. Machine learning, including Bayesian network and deep learning, aid in the development of artificial intelligence, which helps to mimic the human brain and fully understand the habits, biases, and motivations for buyers and users on a marketplace.

The internet of things, or IoT, helps to collect even more sensory data from our daily user activities, making artificial intelligence and predictive analytics sharper and more powerful. Now, this cycle of learning offers significant gains to some, but harvesting data is not like mining gold. Those who were the first to collect at scale may have a major advantage. This aggregation and analysis of data has huge value, and the information asymmetry that may be implicated by this raises a number of questions about the competitive landscape.

Marketplace operators can monetize the data that has been surveilled in many different ways. The most basic way is targeted ads. A more advanced way is for the marketplace operator to have a financial stake in a seller's offering or to directly compete with sellers of the same product or service. One scholar, Shoshana Zuboff, has described this economic model as "surveillance capitalism."

The inferences drawn from the analysis of mass data collection can be stunningly effective. Many of us have surely been in a situation where you have a private conversation about something and later see an ad delivered to you for that product, and many wonder whether their phone is spying on them, but even if your conversations aren't being recorded and analyzed, the analysis of other data collected on us can be just as predictive of what is truly on your mind or even what you have just said. These inferences can even be used to inform individualized pricing.

Here is where our existing model of thinking about markets truly breaks down. Whether selling a basket of bread or a basket of bonds, a buyer now needs to think if they are being charged a higher price compared to someone else browsing for that same product. If information is critical to dominate markets and Congress has tasked the FTC to safeguard those markets from unfair methods of competition, we must be sure we understand how marketplaces work, including their structure, their data collection methods, and their business arrangements.

I think several lines of inquiry demand further study, including collection practices, how do marketplace operators collect, store, and secure data? To what extent are participants aware of the extent of what data is being collected? How do operators assemble data on nonparticipants through the use of "shadow profiles" or similar inventories? How frequently do operators mark content to match it to specific devices, as in fingerprinting, for the purposes of data aggregation?

Property rights. When a content creator uses a platform to distribute their work, who truly owns this content? When sellers distribute their product or services through a marketplace, who owns data about the transaction? Who has the right to sell or share this data? And perhaps more simply, who owns your online identity?

Predictive analytics. What is the range of data that feeds algorithms? What third-party data are combined with other data to draw inferences about marketplace participants? What is the role of machine learning? How do operators safeguard against bias, against protected classes under housing, employment, and credit discrimination laws?

Monetization. In what ways do operators create economic value from the analysis of data? In what ways can this data be used to engage in exclusionary conduct? How is the data used to develop personalized pricing and what are the implications of this for competition?

The second distinction relates to the regulations or rules imposed by the marketplace operator. Public marketplaces in the United States were typically operated by cities and towns, so regulations were subject to the democratic process with theoretically the competitive process and the public interest in mind. For example, with bread, there might have been a standardized size for a loaf to help buyers compare and sellers compete.

Regulations might have governed the allocation of stalls and safety inspection requirements for meat and produce. Pricing for stalls may have covered the cost of operating the marketplace with subsidies or surpluses coming from or going to the town treasury or to improve the marketplace. Regulations might have also sought to ensure the market maintained popularity and reaped the economic benefits in the virtuous cycle of network effects.

Digital marketplaces, of course, are not operated by the public, so the regulations are developed by their owners, usually governed through terms of service. Like the public marketplaces, today's digital marketplace regulations might seek to standardize certain procedures to promote scale and comparison shopping, while also taking steps to ensure that sellers are honest.

However, a key difference is that some regulations and rules might seek to serve the private interests of the marketplace operator. For example, their regulations might preference the goods and services on offer where the operator competes with other sellers. Their regulations might also forbid marketplace sellers from offering their goods at a lower price on another marketplace or require sellers to pay more for premier placement.

While some of these private regulations might protect the competitive process, are some of these regulations driven by the profit motive of the marketplace operator in ways that conflict with the competitive process? These are many of the questions we must answer.

Additional questions about regulations and restraints include contracting. What role do marketplace operators play in the contracting process between buyers and sellers? Who are the parties?

Preferencing. How do marketplace operators show preferential treatment to some sellers over others? What factors do they consider? And what are the implications of this?

Maintenance. What steps do operators take that have the effect of deterring the formation of new competing marketplaces. In today's economy, is it even possible to avoid some of these marketplaces?

Price controls. In what ways do digital marketplace operators engage in setting or regulating prices for sellers on the market?

Now, as my colleague Commissioner Rebecca Kelly Slaughter outlined in her remarks before one of last month's hearings, the distinction between consumer protection and competition is becoming blurry when it comes to facets of today's digital economy. I agree with her that it would be a mistake to categorize the questions before us simply using these two labels. We must approach this holistically with a goal of making markets work well for all participants, buyers, sellers, users, and creators. This will require more than just discussion.

The FTC derives expertise and learnings from enforcement, but we also must engage an analytically rigorous examination of data surveillance and monetization techniques, as well as an analytically rigorous assessment of the regulations and restraints imposed by today's digital marketplaces. Without this information about how our digital economy is governed by some of the largest companies and operators, we won't know if markets are working or if they may be breaking down.

So I look forward to these next set of hearings to serve as a starting point to deepen our understanding of digital marketplaces and platforms. These marketplaces may not operate like they did in history or how we learned about them in economics textbooks, and if we do not understand them, we are in big trouble. Shedding light on how marketplaces and platforms engage in data collection and analysis, as well as how their rules and regulations promote or impede the competitive process, will be a great contribution to advancing the Federal Trade Commission's mission and developing policy that will make sure our markets are truly working.

Thank you.

(Applause.)

MR. BUTLER: Thank you, Commissioner Chopra, for that wonderful introductory speech. We have two opening presentations to follow. The first is going to be by David Evans, and he's going to speak about the economics of multi-sided platforms. David is the

Chairman of the Global Economics Group at the firm's Boston office.

Following David will be a presentation by Catherine Tucker, and she is going to speak about network effects in multi-sided platforms. Catherine is the Sloan Distinguished Professor of Management Science and Professor of Marketing at the Sloan school at MIT.

David?

(Applause.)

THE ECONOMICS OF MULTI-SIDED PLATFORMS

MR. EVANS: So, thank you, Commissioner Chopra, for that nice set of remarks. It was a really good opening act for me. So what I was asked to do today -- and thank you, all, very much for asking me to come to this. I guess I need to speak in front of this microphone here. Is that the deal? I can't move around? So I need to stay here? Okay.

So I was asked to give a very basic introduction to multi-sided platforms, so that's what I'm going to do for the next 30 minutes.

So let me start out with BlaBlaCar. So if you happen to be stuck in Paris and you want to take a nice trip to Barcelona, you could use BlaBlaCar to do that. It's a ride-sharing company, and they match up drivers and passengers, and they try to do that in a way so that it's a pleasant trip. That's a ten-hour drive from Paris to Barcelona, so you kind of want to be in the car with people you like.

In order to get you matched up, they need to have a nice density of drivers and passengers between those city pairs, so they need -- kind of need that in order to make the thing work. They have an interesting pricing model. So you can't be a professional driver really for BlaBlaCar. What they do is they cap the fee for the driver at basically the cost of gas plus a little bit of depreciation. I was in Australia for all of last week, so I have had to switch back from saying petrol to gas.

And then finally, you know, one of the nice things about this is it increases both driver and passenger welfare, and we know that because we see those smiling faces right in the middle of the screen there. So that's an example of a platform, and there's an increasing number of these, as we know just sort of in our daily lives. From the minute we wake up in the morning until the time we go to bed, whether it's in our personal lives or whether it's in our work lives, we're interacting with these kinds of platform businesses all the time.

One of the reasons, I suspect, we're here is that there are a number of very prominent multi-sided platforms around the world. If you take a look at the ten largest companies in the world, publicly traded companies in the world by market cap, seven of them derive a significant portion of their revenue from operating one or more platforms. On the right-hand side there are examples of some of the platforms that they operate. So these are a very common part of the economy and our lives these days.

It's not a new business model, as Commissioner Chopra mentioned. It goes back millennia. There are these kind of businesses all over the place. What is new is, starting around 2000, we developed -- economists developed an interesting economic literature that studies these kind of businesses and offers a variety of insights. Listed there are some of the foundational, theoretical papers, and we will obviously be discussing much more of that today.

So what I want to do first is to do a deep dive into how these businesses operate, elaborating on some of the remarks that you've already heard. So these platforms tend to emerge when there's an opportunity to solve a friction between partners. I have a tendency to call them trading partners. That may not be all that intuitive, but it's basically when there are a couple of economic agents for which there's a value-increasing opportunity for an exchange or other kind of interaction.

So here are a bunch of examples of situations where frictions are reduced. We just went through one where you have drivers with spare capacity in their cars and passengers looking for a ride. You have the situation where marketers would like to pay to deliver a message to me, an advertisement to me, and they're willing to pay more than I'm willing to pay to avoid it. So there's an opportunity for an exchange there and possibly some frictions in between.

Men and women or other opposites would like to get together for romance, frictions possibly in that market. Buyers and sellers would like to get together in order to buy and sell things, but they need a common method of payment and need to agree on what that is, and there's a value to agreeing on something that's common.

Now, what platforms do is they reduce transaction costs and they internalize externalities for those kinds of situations. So they do that in a couple of ways. First of all, they bring these parties together onto a common platform, and that solves, in effect, a collective action problem. And then once they've gathered these groups of different kinds of people or businesses or generally economic agents, they have ways to get them together in order for them to find good matches, so the reduced transaction costs by having matching mechanisms and other things that are basically designed to make the interaction possible, to make the exchange possible, and for it to be consummated.

Now, there are a bunch of externalities that we ought to think about for these kinds of businesses, and I think Commissioner Chopra actually gave a good rendition of pretty much all of them, but let me elaborate a little bit more using economic language. So we have positive indirect network externalities, so that's the very basic thing that we always focus on when we talk about multi-sided platforms. Drivers value the platform more if they can get access to more passengers, because that makes it more likely they'll be able to fill up their car. Passengers like a platform more if they can get access to more drivers, because it's more likely that they will be able to find a driver who they like, who's driving to the destination that they want to go in. So we have that classic, positive, indirect network externality, and as you saw in the case of BlaBlaCar, you need to have a density of drivers and passengers who are -- who are right for each other in a sense. I think Catherine's going to talk more about that in detail.

There are also negative externalities. So, for example, in the case of the car-sharing platform, I really don't want strangers sitting in my car, so there's a negative externality from that, so we need to deal with that. Ad load on advertising media-supported sites is an example of an arguable negative externality. There's congestion on these platforms that needs to be dealt with.

And then, finally -- and I particularly like the fact that Commissioner Chopra emphasized this -- there are behavioral externalities on these platforms. Whenever you put together a community of people, just people, whenever you put together a community of people and businesses, they can do bad stuff to each other, and we'll see in a minute that one of the consequences of that is, in fact, rules and regulations, but there's the traditional problems that we always have in trade, so there can be fraud and deception and that standard list of problems. There's the gross stuff that can happen on platforms, and then there's the really bad stuff, including verbal and physical violence that takes place. Those are all things that we have whenever we have a community, and they potentially need to be dealt with on platforms.

Managing those kinds of externalities and the full gamut of them, from indirect network externalities to negative externalities to behavioral externalities, those are really central to what platforms do and distinguish them from traditional businesses.

So one way platforms address these kinds of externalities is through pricing and other aspects of the terms of trade. So like Catherine, I'm from Boston. I don't know why I have all these European examples, but I happen to be working on something in Germany, so I had *der Spiegel* instead of *Vogue*, but, you know, it's basically the same story for any ad-supported magazine. *Der Spiegel* uses pricing to determine how many -- in effect, to determine how many readers they can offer the advertising side of the platform, also use the ad load to kind of balance the terms of trade between the advertisers and the readers, and then they use -- platforms generally use nonpecuniary methods. In the case of *der Spiegel*, this turns out to be the content, and the content in this particular case serves a couple of purposes.

It serves the purpose of, in effect, paying the readers to come onto the magazine in order to get themselves exposed to the advertisements, but the other thing that it's doing is it's serving as a matching device. So I don't read German, but I will take the word of the Spiegel group, which says that the content in that magazine, for whatever reason, attracts male educated readers with high income and, of course, German. So that's one thing that is done to address externalities.

The other thing that's done to address

externalities on multi-sided platforms is all aspects of how these platforms are designed, how they're physically designed, how they're physically designed and the tools and techniques that are embedded in the platform. And just in a very simple sense, the next time you go to a shopping mall, you know, try to think through the logic of why stores are located in particular places, why the particular stores are there, why the mall is designed in a particular way. The same thing when you go onto a search results page for Google or Bing or whatever, there's a logic to how that's designed, and it's designed in a way to deal with these kinds of externalities.

And then, finally, rules and governance. So one of the things that characterizes many -- not all -- but many multi-sided platforms is that there are behavioral rules for interactions. There are dos and don'ts of being on the -- being on the platform, and that generally means that there are rules, there are detection mechanisms, and there's enforcement mechanisms.

So here's an example for The App Store, for the iPhone. Not everyone can get an app populated in The App Store. There are rules for that. So you have to go through a vetting process to get into The App Store, and if you violate the rules once you're in The App Store, Apple can not only decide not to let you into The App Store in the first place, but they can also kick you out of The App Store, and that's a whole set of rules and a whole set of people working for Apple that are working on enforcing exactly that kind of set of rules and regulations.

So let's put all that together for BlaBlaCar. So BlaBlaCar needs to have enough passengers for the drivers and enough drivers for the passengers, but in the case of the drivers, it has to compensate the drivers in order to get the drivers to have strangers sitting in their car. It adopted that peculiar pricing mechanism that I mentioned. They could have a pricing mechanism that offers higher compensation in order to attract more drivers, but they decided that they didn't want to be a platform where there were professional drivers working on the platform, because that has other externalities for the community, so they adopted a mechanism where the drivers just get, in effect, gas money.

The platform deals with negative externalities, in effect, works on making sure that there are good exchanges between the two sides through a variety of mechanisms. So the name BlaBlaCar comes from how --

one of the ways they do that. So when you sign up for BlaBlaCar, you have to rate yourself as blah, blah-blah, or blah-blah-blah, which is an indicator of how chatty you like to be.

Now, in my case, I like to have the "shush" option, which is not available on BlaBlaCar, which suggests that this is not a platform that is sufficiently differentiated for me. They also have ladies only, a great way for women to feel even safer, which is an option they developed particularly for women that were new to the platform, just to make it a safe experience.

As a result of doing all those things and lots of other things, they have been successful at getting enough drivers and enough passengers between different city pairs in a number of countries in the world that they've entered. They're now in 22 countries and most of the European countries. They have entered into India as well, not in the U.S. for various reasons, not in a bunch of other countries, but very successful in where they have chosen to be.

So those are -- those are some aspects of kind of the business reality of two-sided platforms. What I want to turn to now is to talk a little bit about the -- kind of the basic economics of these kinds of businesses.

So platforms connect two groups with indirect network effects, and they do that to reduce transaction costs and to facilitate exchange. So the platform operates as an intermediary between two sides. It does that in order to facilitate good exchangers or good interactions and to basically reduce transaction costs between those two groups.

Typically, always, they have indirect network externalities. So to be a two-sided platform, it's always going to be the case that one side values having more of the other side. It doesn't have to be for both sides, but at least one side values having more of the other side. And what the platform does is it facilitates those groups getting together and, as a result of doing that, is able to release the value of exchange, so that it can, depending upon how things are distributed, make both parties better off as a result of that, and then as a result of releasing the gains to trade, the platform gets to share in a portion of that, and that's how it gets compensated.

What I just described leads to the interdependence of demand between the two sides of the platform. So the standard models -- and by that I mean the three main ones that I mentioned in the earlier slide, the ones in the original Rochet and Tirole papers to kind of really kick this field off, the Mark Armstrong paper from 2006, and Glen Weyl's paper that synthesizes those for -- published in 2010 in the *American Economic Review*. Those all basically have models where there are -- there is interdependent demand that is developed in different ways, under different assumptions.

What I'll put out there is the basic equation in Mark Armstrong's model, and what you see there is you see a demand function, D1 and D2, and what you see as arguments of the demand function is the demand or the quantity of use by the other side of the platform. So that's the interdependence that's introduced in the Armstrong model, and as we'll see, that has some important implications.

When you do profit maximization, given that interdependent demand, when you, the platform, does profit maximization, you have to determine the two prices, and, in effect, what that means is you have to determine the pricing level for each one, how high or low are the level of prices going to be, but also, in effect, you determine the relative amount of those prices.

So there's a notion of a pricing level, but there's also a notion of pricing structure, because in order to cover the cost of the platform, you can make a decision on do I want to recover more of the costs from this side, less of the costs from this side, or vice versa, and that's part of the calculus that goes into profit maximization.

That all has significant implications for the economics of these businesses. It leads to a positive feedback loop between the two sides that relates both demand and the pricing decisions on both sides, and it has a bunch of other interesting implications as well.

So we have different models, different theoretical models, but they lead to pretty much the same place as a general matter, and the interesting thing, when you solve out those models, is that it turns out that it can be -- it doesn't have to be -- but it can be profit-maximizing to set prices on one side that is less than marginal cost, and this is the whole notion that one side, in effect, is going to be a subsidy side, and the other side is going to be a money side, so that less than marginal cost could manifest itself in -- it could be prices of zero, so, in other words, it is free; it could be prices less than zero, in which case there could be rewards. So that's what's true in theory.

What is interesting in this area and what got people really excited back in the early 2000s is that this isn't just a -- sort of a sport, you know, an unusual case like razor and blades that you can give your students; rather, when you actually take a look at these businesses that we characterize as two-sided platforms, we discover that that pricing result is not just true in theory but that it's true in practice, so that for a lot of platforms, it turns out that prices at less than marginal cost, that's generally true for newspapers, print magazines, and so forth. It's common, obviously, for free to be the model for these businesses, that's most online media, and it's not uncommon to have rewards. So if you use Open Table, you get rewards for using restaurants, but you don't have to pay any fee. If you use credit cards, of course, you get rewards.

So, you know, in the discussion so far, I've talked about two-sided platforms, just to record this, and platforms can have more than two sides. Facebook has several sides; Google has three sides; Google Search has three sides; and so forth. But we tend to talk about two sides just to make things a little bit simpler. So that's a key result of the economics of two-sided platforms, but there's more.

So one of the other implications of the theory of two-sided platforms is it turns out the critical mass and the chicken and egg problem turn out to be very important for these kinds of businesses, and generally, if you want to operate one of these platforms in order to deliver value to one side, you have to have the other side on board, and in order to deliver value to that side, you have to have the other side on board. So in order to really generate value, you need to have enough of both sides and in the right proportion.

We saw that in the case of BlaBlaCar. They had a lot of difficulty in the early years to get the platform off the ground because there just weren't enough drivers and passengers on particular city pairs. It was only once they were able to kind of move the demand for both groups up that they really had enough to get the thing off the ground. That turns out to be a big challenge for these kinds of businesses.

There is often but not always a chicken and egg problem in the sense that the only way you can solve that problem is to kind of figure out a way of getting both of them on board at more or less the same time, but there's this process of getting both on board that can be difficult.

Now, this notion of critical mass, I mean, that certainly isn't original to two-sided platforms. There's a lot of interesting work in the older literature on indirect network effects that deals with critical mass. What is new and different with two-sided platforms is a recognition that that critical mass problem and the pricing results that I just mentioned cover a wide and surprising class of businesses. I mean, the insight is, well, yes, this covers the Windows operating system, but, oh, gee, surprisingly, it covers shopping malls as well, as well as the local farmers market and so forth.

I'm not going to say much about multihoming. We should probably talk more about that in the session. I know there are going to be some questions on that, but one of the interesting things that turns out to be important in the theoretical literature for multi-sided platforms is the importance of whether consumers on either side tend to use one platform, so they standardize on one, or for whatever reason they're able to use multiple platforms. So most of us multihome on credit cards. We have several in our wallet. Most merchants take several credit cards. Things get a little bit complicated when we start thinking about what the consumer does at the store, and at that point in time, the consumer is sort of single-homing, because they are pulling one card out.

But there are some interesting implications from the extent to which there's single-homing and multi-homing. If there's just single-homing, then the only way that I, on the other side of the platform, can get access to those customers is through your platform, because those customers are only single-homing on your platform, and that has some competitive implications that tend to really depend upon the facts of the business and business reality.

So particularly after *AmEx*, there's this great interest in defining two-sided platforms very precisely. I'm not sure that's necessarily the best use of intellectual energy, but we can talk about that. But let me give you what I think are the key components of the definition that tend to be used in practice in the papers.

So we have two distinct types of customers for whom a value-increasing interaction is possible. There are frictions, breakdown of the Coase theorem, that makes those interactions difficult to arrange. The platform facilitates connections between those two distinct kinds of customers, and then participation by members of at least one group -- this is the indirect network effects flowing in at least one direction -- exists, so that there's a gained aggregating customers onto a single platform. I think in practice, for economists working on this area, it generally comes down to whether a business is connecting two different types of customers and for which there are sufficiently strong indirect network effects.

Let me give a couple of pointers in terms of the scope of two-sided platforms. So ad-supported media are two-sided platforms, advertisers on one side, users on the other side. This is the second friction externality that I mentioned in one of the early slides. The modern literature on ad-supported media, since about the mid-2000s, treats ad-supported media as two-sided platforms, so the classic paper in that area is Anderson and Gabszewicz, and there are tons of really great empirical papers that use the two-sided framework for ad-supported media. It turns out that it's particularly easy in ad-supported media to get data on both sides, so there are very interesting papers, including some very nice ones using structural models, for newspapers and radio in particular.

Another point to just kind of keep in mind is that the members of the two groups have to be different for the purpose of the transaction or the purpose of the interaction that the platform is facilitating, but they could be the same economic agents. So if you think about something like Venmo, which is a P-to-P money transfer platform, people use that platform, but for any particular transaction, there's a sender and there's a receiver of funds. So the important thing is that for the transaction, there are differences in the demands are different, but they can be the same people.

I guess another good example of that is eBay. People can buy stuff on eBay, they can sell stuff on eBay. For a particular transaction, they're one or the other.

One of the early definitions proposed by Rochet and Tirole, I think in the 2006 paper, is that a defining characteristic of a two-sided platform is that the pricing structure can be manipulated in such a way to increase output. I think actually that once there are indirect network effects and excluding the possibility of arbitrage between the two sides, that's an implication of indirect network effects, so that we would expect that price output relationship to be an implication of being a two-sided platform, rather than being a defining characteristic. And I mention that because this actually came up in Justice Breyer's dissent in *American Express*.

Having said that, as a practical matter, if I'm looking at businesses and trying to figure out whether they're two-sided platforms, I would take a look at whether the price structure matters. I would also take a look at whether there is a critical mass and chicken and egg problem in starting the platform, because those are all kind of clues as to whether you have this kind of multi-sidedness.

Okay, so two-sided platforms aren't just complements, and everything is in a two-sided platform. I've said it. So let me cover the first of those.

So in terms of complements -- and I mention this because this is a -- this is an argument that one sometimes gets, so if we think about complements in general, usually complements are being sold to the same customer, for example, gasoline and tires, nuts and bolts, and so forth, while the platform -- two-sided platforms are generally serving two different kinds of customers, at least for the purpose of that interaction.

Complements can be sold by different firms, so some firms sell gas, some firms sell tires, some firms do sell both. In the case of platforms, if you want to operate a platform and you want to internalize these externalities, you have to have both groups of customers on the same platform, and you need to be serving both of them at the same time.

The theory doesn't say that every business is two-sided, and it doesn't even say that every intermediary is two-sided. So many traditional businesses don't connect two sides. That's also true for some intermediaries. And many traditional businesses lack significant indirect network effects.

Then the final point to just be made there is the two-sided theory has predictions on business behavior that are really interesting, that apply to these firms that we think of as two-sided platforms, but don't apply to traditional firms. The final example there is what BlaBlaCar does. What does BlaBlaCar do? Well, it sells drivers access to passengers, and it sells passengers access to drivers, and basically it's selling both of them connections to each other.

So multi-sided platforms aren't everything, but having said that, they are increasingly common, and they're increasingly common because we've had this incredible technological change, including the internet, but including lots of other stuff, that has made it much more easy to start a platform business, to not only start that business but to scale that business on a global basis.

One of the things I think is true for an awful lot of the multi-sided platforms that we see, including many of the successful ones, is they're replacing other multi-sided platforms that were operating in a more fragmented way using older technology, but these platforms are definitely increasingly common, which I suspect is why we're having these hearings and why there is so much interest in this topic basically around the world.

So I'd like to conclude -- I'm told that I can conclude by having an advertisement, so if you want to learn more, Matchmakers is now available in multiple formats and in multiple languages. I think the French win the award for the most boring title. I think the Koreans won the award for the nicest cover. But in any case, if you want to learn more about multi-sided platforms, take a look at my book with Dick Schmalensee, Matchmakers.

(Applause.)

NETWORK EFFECTS IN MULTI-SIDED PLATFORMS

DR. TUCKER: All right. I have the fortune of being untethered, I believe, from the podium. So I am going to take full advantage of it. So I'm Catherine Tucker. I am a professor at the MIT Sloan School of Management, and my job today is, much like David, to provide some instruction about network effects and how they relate to platforms, and, in particular, I am charged with two missions.

The first is to go back to introductory economics and talk about what really is a network effect, but I'm going to try to do something a bit interesting and sort of say how it's evolved as industry has evolved, too, in terms of its definition, and then we're going to go and think, well, how big a problem really are these network effects in these new platform markets, which we just had so ably described?

All right. So what is a network effect? It is a phrase which simply describes the value that users obtain from interacting from other users on a platform. One little hint here. Sometimes you hear them called network externalities. Sometimes you hear them called network effects. I prefer the term network effect. Why? Well, a network externality implies that no one is really internalizing the fact this is going on, and if you think what platforms are all about, it's all about internalizing these properties. So I like the term "network effects" and think of it as simply describing the value we get when we interact with someone else in a marketplace in a platform.

Now, I'm going to take you through different types of network effects, and we're going to start off going back in history, perhaps to the 1970s and some work that was done in telecommunications, and introduce a concept of a direct network effect, which I like to call a same side network effect.

Now, what is this? It's what happens in terms of how I value users on a piece of technology, on a platform, who I interact with in a way which means they're similar to me. So, for example, on something like Skype, a communication technology, I'm looking largely to communicate to people who look a lot like me. We can also see how network effects operate on communication technologies like Skype. If I am the only person with Skype installed on my computer, I look pretty silly, right? It's not a piece of junk software. The only reason I would install Skype on my computer is in order to communicate with other people; therefore, I'm going to care about how many other users are also having Skype installed, and that's where we get a network effect.

All right. So then we move on to what I like to call cross-side network effects to emphasize the idea that there will be different folks' interaction, and what, you know, maybe ten years ago we were calling indirect network effects, and we're going to start off there with the sort of classic operating system case of a network effect. So if you take something like Linux, if I am a developer on Linux, I really care about how many people have Linux installed, because I only want to make programs that people are actually going to use them. And similarly, when I'm making the decision about whether to install Linux on my computer, I am going to really care about how many developers are actually developing software for that platform.

And so we see a cross-side network effect where really we have got two quite different groups of people who care about the presence of the other group.

Now, of course, we have got to remember that kind of case in the 1990s, so let's now move on to what the Commissioner so elegantly called marketplaces, which are an incredibly broad-brush now of our digital economy, and in these kind of marketplaces, say in the case of eBay, we have network effects, too, and why is that? Well, if I am a seller of laser pointers, then I really care about how many people might want to buy that laser pointer, and similarly, if I am wanting to buy that laser pointer, I am not going to be on eBay unless I think there's a reasonable chance there are going to be people selling it. So, again, we can see the work of network effects there.

Similarly, if I'm thinking about a ride-sharing application and I am thinking about whether I'm going to install an app, I'm only going to install Uber if I think there are going to be riders out there, and similarly, if I were a driver -- I'm sorry, drivers out there, and if I'm a driver, you know, no point driving for Uber unless I am going to be able to pick up a passenger.

Now, in terms of definitions, you know, we were told to do our best with definitions, and what I always think about a platform is that a big problem with them is that in some sense everything sort of wants to be a platform, and I experienced this -- the material you're seeing today is actually coming from the class I teach on platforms at MIT, and the first time I taught it, I made the mistake of putting up a slide of the top 50 brands, trying to inspire my students in saying, look how many of them are platforms.

You know, of course, you know, I looked at it, and I said, oh, but Coca-Cola, not a platform, I guess; McDonald's, not a platform. You know, but look at that top line. Everything else is sort of like working towards being a platform. And at that point, I had someone stick up their hand in a huge, furious rage, and they said, "How dare you say that Coca-Cola and McDonald's are not platforms. I consult for both those companies. If you said that to their management, they would just be so insulted. How dare you?"

And I sort of looked at him, he looked at me, and I tried to find out why on earth he thought that McDonald's or Coca-Cola could be platforms. He came up with some sort of random story about Coca-Cola Rewards in the bottle tops. I didn't find it it convincing then. I don't find it convincing now. But the key thing to take from this is it's definitionally hard, because everyone is trying to be a platform, you know, especially in business, and they like to sort of bring forward this platform technology, which is something I always struggle with.

What I think is more useful is thinking about when things really are platforms, rather than just sort of thinking about bottle tops, what challenges and -- what challenges they face and what changes. The first challenge is that because we're dealing with network effects, which are all about valuing interactions with other users, it means that your first job as a platform is to make sure you have people on your platform, and this is what David called the critical mass challenge, and we're going to be talking about that in a bit.

The second challenge is something we call, when we're teaching platform strategy, coring, and coring is the idea that you have to set up rules and regulations on your platform to make sure that not only do you have participants there, but when they're there, they behave well. This means you have to act as a police, you have to act as a mini-government of that platform, and I was just so happy to hear the Commissioner in his speech really pick up on this fact, because for me this is one of the most interesting parts of a platform.

If you look at the academic literature, it's really changed from being all about just network effects to being thinking about how we can best set up these rules and regulations on platforms to make these interactions go well, and I was just really happy to hear sort of recognition that, yes, we would expect this to exist, and what we need to do really, as well as sort of thinking of it as suspicious, is instead to work out, well, is this benefiting consumers in the way we had hoped given the idea this kind of policy is to make sure people behave well?

All right. So now we're going to turn to the second act, which is thinking about network effects as a potential barrier to entry, and here I must admit I teach it a bit in that, as I say, I teach this platforms class, and what we do there is I help firms who are starting up platforms work out how to break into platform markets, and so I was thinking, well, those strategies are going to be very useful for thinking about whether or not you're going to be able to break into a platform market or not.

Now, to do this, I always use this equation to try and remind my students to think about, well, what is the right way of analyzing how customers behave when they're thinking about whether to adopt a certain platform or not. And all this says is the network benefits -- those are the benefits I get from network effects -- plus the stand-alone benefits must be greater than the net price I'm saying.

Now, this is going to be a useful tool, but think of how this helps not only analyze barriers to entry, but you can immediately see the chicken and egg problem that David described in this equation, in that if I'm start -- if I'm a newcomer, I'm an entrant, and I want to break in this market, grab customers, and I'm competing with an existing platform, then I have a problem in that I don't have any network benefits. They, just by sheer virtue of their size, have these network benefits. So how am I ever going to break into this kind of market as a tiny firm?

Now, the good news is it's actually less chicken and eggy most of the time than you might think, and they say, well, you know, reasonable ways or we believe reasonable -- there are reasonable reasons to believe that actually it's not the big barrier to entry you might think. And what I always do to decompose this is to say, well, really, how strong are those network effects that you're worrying about curtailing your ability to enter? And I identify -- this comes from my research -- three different drivers of the strength of network effects.

Now, the first driver is that in early theory models, and also in early empirical applications, there was always an in-built assumption that network effects were a sheer -- just a function of n. That is the total number of people using the platform. And if you believe that, then, my gosh, that means that network effects can be quite a sizeable potential barrier to entry.

However, in reality, what I found -- and this sort of comes from my dissertation, which is a very long time ago -- what I looked to see really, is that how network effects behave? And there I was studying people using a video messaging system, and what was really noticeable was just the fact that when people were thinking about whether or not to adopt this particular platform, they didn't care about the complete size of the network of people using it. Instead, they were just focused on the few individuals that they knew they would be communicating with, and that suggests that network effects can be very localized and, therefore, potentially a little bit more fragile than we sometimes believe.

We can see that playing out in platforms, too. If I want to use this kind of website, which brings together schools and parents, well, then, you know what, I'm not going to give away my job at MIT. I'm not moving. I'm only going to be caring about schools in the local area. Whatever happens in Washington State, I'm pleased for them, but it's not going to affect my decision about what website to use.

So I think then the question comes, well, given this, when might we actually think that network effects could be a function of the entire size of the platform rather than these small little clusters of behavior?

And I always think a sort of good edge case for this is thinking about a genetic database stellar platform.

Well, there potentially, because you're searching for the proverbial needle in the haystack, as a researcher perhaps trying to develop new pharmaceuticals, then I'm going to want to just have access to as many patient histories as possible, and if I'm a patient with a rare disease, knowing that I am facing a needle in the haystack-type search process, that I am going to be looking for the database where there are going to be the most researchers, because it's not clear where any kind of genetic cure may come from.

So there we can make an argument that network effects may be a function of sheer size, but I want you to notice that in some sense the reason that size is so important there is because people are not clear or not certain about who they want to interact with, and I think one of the most fundamental drivers of how large the scope of network effects is is just certainty over interactions and whether or not users want the option value potentially of being able to communicate or interact with everyone else, people they don't know they want to interact with yet.

And we can see this a little bit with social networks, and, in particular, the rise of certain social networks, one of the most stunning ones I've ever seen is this social network called Friends United. It was, like many social networks -- and this was based in the UK -- but in 2005, it was bought for vast amounts of money by a major UK TV company. It was described as the crown jewels of that TV company. Everyone was very excited about it. Within six months, it was completely dead despite everyone in the UK basically using it, and if you go through its carcass, which is still there on the internet, what you end up seeing is that just people posted on it. We've gone to Facebook, because everyone knew each other, and they were like, oh, my friends are on Facebook. They went. It was that swift, that easy to coordinate off it.

So I think the problem with these localized networks or thinking about them, when we have -- the reason they don't tend to act so much as a barrier to entry, is that as soon as you got a localized network, then it becomes more easy to coordinate and switch between different platforms.

So this is going to bring us to the second thing, which is going to be important for the strength of network effects, which is multihoming. Now, David has already sort of brought this up and said that we are going to discuss it later. So maybe I'm going to do something similar, but I do just want to make this point, that much like with earlier, I think, antitrust issues, so much, when you're analyzing the strength of network effects as a potential barrier to entry, comes from this simple question of is it the case that users multihome?

And so, you know, this is one of my favorite examples. I always find it amazing, every time you get an Uber or Lyft, you just see the drivers -- to be completely clear -- we are multihoming. We have got no loyalty to any one platform, and when you see that kind of pattern, as someone who loves competition, your heart should just sing.

And I do also want to -- the other sort of point is why is this possible? Why do we see so much more multihoming now in this age than we did, say, in the 1990s era of Microsoft? And I think a lot of it comes from the shift of computing away from being embedded on certain devices towards the cloud, which just makes porting your data, porting your identity across different platforms just so much more easy than it used to be.

The last thing I guess to say in terms of the size of network effects is that we always sort of say it's going to fit worry that network effects may increase just in size, which could cause competitive concerns. I just want to point out there can be negative network effects, too. I'll just tell you that as part of -- I am one of the cofounders of the Cryptoeconomics lab at MIT, and one of our biggest successes -- well, I say "success" in inverted commas -- with that lab was we managed to make Bitcoin uncool at MIT. How did we do that?

Well, we decided to give $100 in Bitcoin to everyone, and why did that make Bitcoin uncool? Well, all my cool techie people, techie undergraduates, suddenly saw that all the humanities undergraduates now had Bitcoin. That didn't make it cool anymore. That made it too mainstream, too -- you know, just too not at the edge. And as a result, they ended up selling those hundred dollars in Bitcoin. You know what, that was in 2014. Do a quick bit of math to work out how much money they lost because we made Bitcoin uncool.

Anyway, the key point is that we always think we want to have everyone in the platform. Sometimes you really don't. These social and behavioral interactions are incredibly important.

Now, we don't have much time for this, but just to say, of course, there are other ways of getting in.

You can do something as simple as Instagram did, which is to tweak with stand-alone benefits. Think about Instagram when they entered that photo-sharing market, they were facing these huge platforms such as Flicker at the time. How did they get in? Simply by understanding that 17-year-olds like the idea of Polaroid pictures, right? So we can also use stand-alone benefits as ways of getting around network effects, too.

All right. So let me come to the punchline because they're waving red signs at me, and say this. First of all, you know, I was told to give a talk about network effects, but I am so glad that the Commissioner made the important point that really when you look at platform market, it's not just about network effects. It's also about coring and understanding these rules and regulations to make interactions go well and making sure that they are, indeed, there to make sure the interactions go well.

We often think of network effects potentially as a source of barrier to entry because we're worried that big size reinforces size, but, you know, I have given you three reasons to be slightly worried about that contention, in that generally network effects tend to be a lot smaller in scope than we might think. They tend to be very local. They tend to be undermined by multihoming, and they tend to be undermined by behavioral impulses.

The last thing just to say on an even more optimistic note is that we should be glad that in 2018, digitization has facilitated multihoming, intensifying competition, and I still think that whenever we're thinking about these platforms and barriers to entry, the right question is really still one of multihoming versus single-homing and switching costs. So I'll just say thank you.

(Applause.)

MR. MOORE: Thank you, Catherine and David. We are going to take a quick break, and we will be back at 10:20 for the next panel. Thanks.

(A brief recess was taken.)

PANEL 1: THE CURRENT ECONOMIC UNDERSTANDING OF MULTI-SIDED PLATFORMS

MR. YUN: Good morning. I'm excited for this panel. It's seven great economists, and it's just amazing to be part of this, and I think we are going to learn a lot. We have two hours, which sounds like a lot, but I think once we get through just even a couple of questions, we will realize that we wish we had a lot more.

So here's the basic structure of how I wanted to organize it. I'm going to start with introductions, very quickly, and then since David and Catherine have just spoken, I am going to let the other panelists have opening remarks, up to ten minutes each, and then once we go down the line, we will come back to David and Catherine to see if they have any reactions to what was said, and then we will open it up to sort of a free-flowing discussion of the panel for the remaining time we have.

We will also take questions from the audience, but I believe it needs to be written down, and then it will be sort of fed through the panel so we're on a flowing basis. So that's how we're going to handle audience questions. So without much ado, let me get started with introductions.

Obviously, David and Catherine were introduced early. Marc Rysman is joining us, who is a Professor of Economics at Boston University. Katja Seim is an Associate Professor of Business, Economics, and Public Policy, at the University of Pennsylvania's Wharton School. Joseph Farrell is a Professor of Economics at the University of California, Berkeley. Michael Salinger is the Jacqueline and Arthur Bahr Professor of Management and Professor of Economics at Boston University, Questrom School of Business. And, finally, Howard Shelanski, Professor of Law at the Georgetown University Law Center, and Partner in Davis Polk's Litigation Department.

So let me -- we are going to go in that order in which we did the introductions, so let's go ahead and start with Marc.

MR. RYSMAN: All right. Thanks so much. It's wonderful to be here. I am so sorry, I came in a little late. I did get to see David's slides, so I do feel like I can reply at the slides, even though I had my adventure at the airport which kept me from seeing most of his talk.

So, you know, a big part of the slides is about definitions. I will just kind of offer my own perspective on definitions, focusing on the part that I disagree with them rather than the parts that I agree with them, and then maybe try and turn the conversation more to antitrust issues, which I see as kind of part of a goal of our panel.

So on definitions, you know, two areas where I just want to kind of add or differentiate myself from what they said, is, you know, one, you know, I always see two-sidedness as a -- as on a continuum, as you always have to ask how important is two-sidedness in the market. There's a sense in which every market is two-sided. You know, I feel like I study networks for a living, and I can see networks everywhere, and I see platform issues everywhere, I can always come up with one. And I have to say I'm a little bit sympathetic to Catherine's misguided student, who thinks Coca-Cola bottle caps are a platform.

I bet, you know, we can come up with a story here in this room where it does -- it is a legitimate platform. Then the question isn't really, you know, is a firm a platform or not, but how important is platforminess in studying the outcomes of a firm? You know, Ford, you could argue is a platform, in between its dealers and its consumers and the way it sets up its franchising agreements, but maybe we can ignore the platform nature of Ford when we, you know, ask most questions we ask about Ford Motor Company.

Those charts, I think, you know, where we sort of label which of the top ten firms are platform firms or not platform firms, they often get us in these kind of really awful discussions where we're trying to pin down, you know, is a firm a platform or not.

And the other one I'd say is that, you know, we also have to recognize -- and this kind of really builds off of Catherine's point about coring -- that the choice to be a platform is an endogenous choice. It is -- you know, I think in the perfect world, we would be talking about two-sided strategies, not two-sided markets. That is, firms choose, you know, whether to be a platform, and they can choose to internalize one side of the two-sided market and become a reseller. And there's some great research by Hagiu and Wright kind of making that really explicit, but we see, you know, Amazon sells books in sort of a one-sided way but is a marketplace for something else, and, you know, Microsoft is a three-sided network of hardware and software and consumers for its operating system, but produces all the hardware itself for video games, and that choice, you know, is a very purposeful choice by the firm. They get to make that choice, and I think that should be really important in how we think about two-sidedness and going forward.

So just offering maybe some thoughts on antitrust, you know, I think understanding market power is really challenging in these contexts. I feel like the question I always think of is, you know, if a firm has, you know, high margins and maybe restrictive contracts on one side of the market, but is competing it all away on the other side of the market and has zero profits, does it have market power? And I find this question actually really challenging even after all this time. You know, if we went to a firm and said, oh, you have high margins and you have restrictive contracts, and the firm said, well, I have to spend all my profits lobbying the Government to maintain my monopoly position, we probably wouldn't find that a very compelling antitrust defense.

Or, you know, maybe more -- it may be better for society if they said we spent it all, you know, innovating or getting patents or something like that. Still, you know, we would think a firm like that could at least, in theory, act anticompetitively on the other side, and differentiating the two-sided platform from those cases I think is really crucial to our project. You know, at some level, the difference is this interrelatedness of pricing; that is, you know, if we think about entry costs into a market, you know, as being lobbying the Government, getting a patent, or getting consumers that you can go then get the -- go to the profitable side of the market, only in the two-sided case is the pricing so central.

That is, the pricing on one side of the market is so closely related to the pricing on the other side of the market, and to me it's that interrelatedness of pricing that really changes the direction of the antitrust conversation. So I'll stop there. I think we are going to keep hearing about these issues.

MS. SEIM: Well, thank you very much for having me and including me on this panel. I wanted to add a little bit on what David and Catherine said and just speak about two areas that I think are the source of the current interest, maybe, in multi-sided platforms. One is actually exactly what Marc just talked about; namely, how do we actually think about defining market power in such settings and whether a firm might be, as a platform, exercising market powers in ways that we think are anticompetitive, and the pricing strategies that David outlined I think highlight that quite nicely, where in a one-sided market, you might not be -- you might be concerned with above supra-normal profit margins, but in a two-sided platform, that isn't necessarily the case, and that seems crucial in situations where networks are very prevalent and network effects are high, but separating that in practice seems quite challenging, especially to the extent that we think firms have the ability to choose, on a spectrum, how important the network effects are to their business.

The second reason why I think there's been an increasing attention on platform markets is, whether you like the classification of a firm into a network market or not, is just the rise of digital platforms and the role that they play in economic interactions today, and that then relates to areas around scale. As both David and Catherine spoke to, we would expect network markets to be conducive to larger firms, because that creates value to the consumer that the firm on either side then might try to exploit, but also raises then maybe more traditional questions in anticompetitive effects of scale.

And, you know, Catherine's take on that was that typically network effects are relatively concentrated, and so as a result, these kinds of scale effects are maybe not as prevalent, and you think sort of assessing that and how it interacts with this entry seems key, at the same time it also does strike me that platforms do have the ability to generate value to the sites that they're serving that may make entry more difficult.

So, for example, if you think about Amazon, Amazon is sort of a platform in the traditional sense in that it serves about 70 percent of its sales from the marketplace, but also has its own in-house sales, and I think the place where Amazon has been quite successful in carving out a competitive position for itself is in building up entry barriers by investing in distribution at the same time as investing in the size of the platform.

And so these physical investments interact quite nicely with network effects to create value to both sides of the market that I think a smaller competitor is going to have a harder time replicating.

And then, lastly, I would also just say one unique feature of digital platforms compared to some of these traditional ones maybe is that these are settings where oftentimes the platform itself has an activity going on on one side of the market, and so you might think about, you know, Google and Google Maps, where the platform might be the search engine in the middle, and it is also active in related markets, or similarly, you might think about the platform as having better access to information about how the two sides of the market function and how it might be able to exploit that in driving its own activity on one or the other side of the market.

And so I think those are difficult issues to think through, especially in terms of competition implications, but I think in part it's this multiproduct nature of these new digital platforms that has attracted a lot of attention recently.

MR. FARRELL: One of the problems with being at an event and on a panel with so many distinguished people is everything you have to say gets preempted, at least if it's right. I am in trouble here. Howard is going to be really in trouble.

So I wanted to start by asking, network effects has been a popular and successful brand name for quite a number of years. Is this just kind of a rediscovery of network effects? And I think it sort of is and sort of isn't.

When we talked back in the '80s about indirect network effects, I think it's fair to say that most of the time we were asking the following question: Look at one side of the -- what we would now call a two-sided market, imagine the relationship between the two sides being perhaps optimally managed or managed however it gets managed, and do you then have economies of scale or density on the side you're focusing on?

And the new platform literature or the newer platform literature asks about the same situation but focuses more on what is this management of the relationship between the two sides, how do you do it, and how do you price it is a particularly important question. So I think it's somewhat a rediscussion of network effects but does have a different focus.

So I had a handful of points to make. Let me try to get through them all or many of them. One is -- and I think somebody mentioned this earlier this morning -- I think when we talk about platforms and we focus on often these digital platforms, one of the things that's going on is we used to have a lot of network effects, but the proprietorship of the network effects often was public sector. If you think about money, for example, seigniorage has been in existence and talked about for many centuries. It's traditionally a government thing. When we look at modern payment instrument markets, that's kind of been privatized, and how does that work out and is it okay and is it a good thing?

If you think about ride-sharing, which David talked about earlier, back when I was a youngster, there were ride-sharing boards in student unions and other such places. Nobody charged for that. Maybe they monetized it by getting customers into the student union, but I don't really think so, actually. So it was just a thing that people did. It wasn't a business.

I think, obviously, you can think of counter-examples, but I think there is a tendency for the innovative, IT-based, data-based platforms to do things that always had network effects but used to have those be public property rather than the core of a business, and that's an interesting set of questions.

I also think, as a pragmatic matter, we tend to use the word "platform" more if the management of these complementarities is most of what you do rather than part of what you do. So the less of other stuff you do, the more apt you are to get called a platform. And I think the popularity, let's say, among enthusiastic young MBAs of the platform business model idea is going to contribute to more and more people wanting to purify the business, get rid of the dirty business of making stuff, and focus on the business of managing your network, distributors, suppliers, and so on, which is more "platformy." It will be interesting to see where that goes.

So what in terms of competition policy and antitrust? Well, I think, you know, back to the old network effects issues, it's a form of economies of scale. That's not an antitrust problem in itself, but it does set things up for antitrust problems. There often are vertical restraints, most favored nations clauses, and similar. There are sometimes non-neutrality of the relationship with complementers where some people might expect or want neutrality. Is that a problem? It can be. Not necessarily.

And then there are all the issues which I know Catherine talked about diving in a little deeper to what are the entry barriers, what are the entry channels that you can get around those barriers, multihoming, switching points, who is the installed base you care about, and so on.

Another issue that really gets to, as I say, the management of the complementators rather than the reduced form that we used to look at in network effects is the pricing pattern, people are very interested in this, and the neutralization results, when you have a transaction between the two sides sometimes. I think basically you can say there is neutralization provided that the transaction price is not trying also to do some other work or otherwise constrained, as it is, for example, in payment systems if you have price coherence and in other contexts perhaps for other reasons.

So where does this leave us in terms of antitrust policy? I think one place it leaves us is economists are professionally not very practiced at saying, yeah, don't look at everything. We're more inclined to say, yes, look at everything, because everything might be interesting and could be relevant and it's cool. And so I think for practical policy we have to find -- and I think this relates to some of the things Marc was saying -- we have to find ways to say, yeah, there are platform issues here, but they're not particularly important, or, yes, there are platform issues, and they are particularly important.

Doing that dividing line, of course, like any dividing line, is apt to be arbitrary, but I also think that the more we get excited about these issues and the more we talk to and listen to people who are excited about these issues, the more we are going to see it everywhere, and that's not necessarily going to help with the most intelligent strategies for looking hard at these issues in some cases and seriously back-burnering them in other cases.

I think that's perhaps the challenge because I think courts and antitrust practitioners and consumer protection practitioners like to have rules that say, you have got to consider this here and not there, and I don't think that's a natural way for economists to function. So there's a little bit of a disconnect there that's going to be -- it already is -- a challenge.

Thank you.

MR. SALINGER: Well, I will try to help Howard out by saying some things that are wrong.

I am, I think, unique on this panel in that I have not written what's viewed as being one of the really important articles on two-sided markets, but I have had to deal with a number of cases in which two-sided markets were an issue, so I thought I would comment about whether or not the literature is helping us get to better answers or get to worse answers. I thought I'd start by saying a few words about the *AmEx* case and then talk more generally.

So it's perhaps the most fundamental principle in economics that there's no such thing as a free lunch, and so probably a lot of people in this room have these credit cards with very generous rewards, and we really like getting those rewards, but someone is paying for those rewards, and it's useful to think about who's paying for them.

Now, if the people getting generous rewards with their American Express cards were the people paying for those rewards, then, you know, then there wouldn't, you know, probably be any problem with it, but the reality is that the way the credit card system is set up is that the big merchant discount that's being used to pay for the rewards is being paid for not by the American Express customers, but by all the customers of the merchants who are taking the American Express card.

And, you know, it's as if the cattle farmers, the cattle ranchers of this country got a law passed that said, any restaurant that serves steak dinners has to charge the same for steak dinners as it charges for chicken dinners or pasta dinners, and let's assume for the sake of argument that it's cheaper for the restaurant to buy pasta and chicken than it is to buy steak.

Well, I think we could all agree that if someone goes to a restaurant and they want a steak dinner and they're willing to pay the extra cost for the steak, they should buy the steak dinner, but that it doesn't make much sense to have the people who choose to get pasta and chicken dinners to pay for the extra cost of the steak dinner. So that's the outcome that we have, and it seems to me that that's -- it's pretty obviously and economically an efficient outcome, and it's also pretty obviously anticompetitive to make someone else's customers pay for the cost of your service.

So market definition is supposed to help us get to the right answer, and what the Supreme Court did in the *AmEx* case was that they used the theory of two-sided markets to get to what I think is the wrong answer. So, you know, and that's not to deny the point that when you look at the merchant discount, you know, you need to also consider the fact that there are incentives on the other side of the system. You need to take that into account, but that could be done at the second or -- the second stage of the rule of reason inquiry, and, you know, which is a point that Justice Breyer made in his dissent.

So, you know, I think the *AmEx* case is an example that should make us cautious about whether or not the advances in the economics literature are going to be used in a way that leads to better outcomes, and there are, you know, ways in which the -- what the Court said about two-sided markets is -- if you were to apply it too generally would just plainly be wrong.

So one point -- one general point about

two-sided businesses, and it's important to distinguish between two-sided businesses and two-sided markets, which is a point I think Marc was making, which is that for most two-sided businesses, there is competition on both sides of the business, and to analyze the competitive effects, you need to analyze that competition separately.

And so the Court, of course, was careful to distinguish between what it called transactions markets and other two-sided businesses, but if you look at, say, advertising-supported platforms, they are competing for viewers or readers or whatever it is, and they are competing against other businesses that may or may not have -- may or may not have two-sided business models, and they're competing for advertisers where the advertisers might be looking at much different kinds of ways of advertising.

So, you know, so one of the, I think, big pitfalls that need to be avoided with respect to citing the two-sided markets, you know, so the first one is this point about market definition, and then, you know, it's crucial not to limit or not to assume that the competition faced by a business with a two-sided platform is primarily with other businesses that have similar strategies, that -- you know, so an example is a merger that the FTC reviewed a couple years ago between Trulia and Zillow.

They had very different -- you know, they had two-sided business platforms. They had very similar business models, right, but they were competing -- but, you know, they were competing for people looking for houses on one side of the market. They were competing with realtors or to get realtors on the other side of the market, and on both sides of the market, they were competing with a much broader set of entities than the companies that had their particular business model.

And then the last, I think, really big pitfall to avoid is to let the two-sidedness of businesses obscure what's really -- obscure the more important issues. So there's a lot of controversy worldwide over how to deal with Google, and, you know, David mailed the assertion earlier that Google is a three-sided business, not a two-sided business, where the assertion was that websites that want placement in Google's results are an actual side of the business.

And, you know, the real issue in, you know, looking at the difference between the way the U.S. handled the investigation into Google and the way Europe handled the investigation into Google's search bias is that the U.S. recognized that the real issue was innovation and product design, right? And that's a real issue whether you're looking at it as a two-sided business or a one-sided business or a three-sided business, and, you know, and the assertion that it's a three-sided business then, you know, I think really obscures it.

So I have run out of my time, and so I will stop there.

MR. SHELANSKI: All right. Well, like Michael, I have not written a lot about two-sided platforms, but I've written a fair amount about technologically dynamic markets into which a number of the platforms that have gotten a lot of attention in the competition policy world would seem to fall. So I want to talk about some aspects there.

Unlike Joe, preemption to me is great, because I like leisure, so it's a matter of joy rather than concern. So I'll skip a few of the points I'd been planning to make, and I want to focus on something that I think is very important when we think about the characteristics of platforms and some of the things that Catherine and David have outlined for us, along with what you've heard from my fellow panelists this morning.

I think one of the things we need to understand is what do the dynamics of network effects, whether the direct network effects, indirect network effects, whether they're positive or negative externalities, what do they say about the durability of the market position or the market power of these platforms? Because I think ultimately one of the questions that will really drive what kind of policy competition agencies develop for platforms will be effected by how durable those platforms turn out to be, how strong that the market power is, not just today, but it's going to look like going forward.

So I want to just step back and talk a little bit about that debate, about the durability of these platforms, and how the economic principles and the economic characteristics that we've heard about this morning might affect that in both directions and sort of talk about what more we need to learn before I think we're ready to decide how concerned we are with the market power of a platform, perceived market power of a platform, at any given point in time.

So I think we can acknowledge that at any given moment a platform might have very large market position, and that large market position might reflect not just share but market power or even dominance in some lines of commerce. Obviously, the fact that somebody has large market share may not reflect market power. They may be innovating at every moment, fighting for customers who are at any moment ready to defect, and so you can, from a large and dominant firm, get very competitive outcomes, but you also often do not.

And so what should we make of the fact that a large platform is at a certain moment apparently dominant in a line of commerce? Well, some say that we should make rather little of this and that if one looks at recent history, there are numerous examples of apparently powerful and dominant networks or platform products that have quickly eroded as a power in the market.

So some would point to Microsoft, at least some of the markets that were at issue -- some of the products that were at issue in the Justice Department's investigation into Microsoft and the European Commission's investigation. Others would point to the AOL/Time Warner merger and the apparent dominance of AOL in instant messaging. Others might point to iTunes, which, you know, at a certain point people said, all right, you know, online music is done for the next century. That turned out not to be so true. So there are a number of examples one can point to of apparently unassailable monopolies that vanished rather quickly.

On the other hand, people will look at some of the large platforms that are very powerful in various lines of commerce today and say, yeah, there's something very different about those platforms and what they're doing. These platforms are going to last forever, and there are certain things that have to do with the enormous amount of capital they possess, the strength and breadth of their network effects, both direct network effects of the fact Catherine described in her framing presentation, where, you know, this network is more valuable to me the more other people on my side of the market who are using it, because it's more people I can interact with.

I don't want to defect because I'll go to somewhere that's, you know, got fewer people, perhaps, not as good, and the cross-network effects that allow, for example, people on one side of the market to effectively subsidize or benefit my product or, you know, the service that I consume on the other side of the market or the users consume on the other side of the market.

So do those network effects really solidify the market position? Do they create lock-in and switching costs of a kind that create a particularly durable monopoly? And certainly there's a lot of argument now that what we are looking at -- and one can just find whether it's from certain people in the VC community, whether it's certain firms trying to enter the market, whether it's various commentators or people trying to do business with some of these platforms -- but they will make these arguments, that these are dominant firms that are going to last forever; we have got to do something about them.

So what's right? What should be our view of the likely durability of these kinds of platform monopolies? And I think one can look at some of the very same dynamics that might lead to a platform to rise in market position as being dynamics that could actually reverse. So the very same things that create people to rush to a particular product and then have this reinforcing feedback effect, where every new user of the product makes the product more desirable to everybody else.

So pretty soon you've got everybody on one social network or you've got more data flooding into a particular search algorithm, and you get this reinforcing feedback effect that can be very hard to undo, but we've seen examples of where those have, in fact, become undone, and the untipping or the tipping back or the switching to a new platform can happen rather rapidly.

So I think when one thinks about the economics and when one thinks about some of the social dynamics that surround how people decide what platform to use, one can tell I think a pretty coherent economic story based on some of the characteristics we've heard about today, while even a fairly large and dominant-appearing platform today could unravel and tip towards some other kind of product or platform down the road.

I was fascinated by Catherine's story about making Bitcoin uncool at MIT, but there is a lesson there. Those of us with children between 15 and 25 may have noticed that their Facebook pages today are places that are sort of acceptable for parents and others to look at, but there are other channels through which they actually interact with their peers in ways that they would like their parents and others to know less about.

And, you know, David talked about multihoming. We do see a lot of multihoming activity, and multihoming activity, if you will, gets right to the switching cost problems that would usually lock in a dominant share for a network. So I think it is a reasonable question, even for certain, although not all perhaps, of the large platforms that are out there are some of the very things that lead to the fast rise and apparent large share of factors that, combined with the social factors that I think are very prevalent in these markets, would be the undoing of these platforms and over what time frame.

So I think that there -- I think the answer is not obvious, and I do think that there is more economic learning that can be done. What were the characteristics of those large, apparently dominant platform products and services that did lose their market position? Why did they lose the market position? And what's different about any given platform one chooses to look at today when we're thinking about how to do competition enforcement with regard to those platforms?

I would just submit that the answer is not obvious. I don't think we can presume from the few anecdotes or -- you know, maybe that's a little bit derisive to call them anecdotes, but from a few recent historical episodes that any platform that is out there today is vulnerable and may have actually fleeting market power and, ten years from now, will be turning around and saying, "Am a what?"

You know, I don't think we can presume that, but nor do I think we can assume from the current market power that we're seeing today why -- that that power will necessarily endure.

I just want to conclude with sort of a statement or a thought about why this matters. If you look at footnote 7 of the recent *Ohio vs. AmEx* decision, it's rather interesting, because what the Court says is, when it comes to vertical conduct cases, the Plaintiff has an obligation to define a market. Well, why do you have to define a market in a vertical conduct price? We assume harm less readily in the vertical context than in the horizontal context.

Why would you have to prove a market? Because you have to delineate the zone of commerce in which you are trying to show harm. You are trying to show market power, because market power is connected to harm to the market. So the market power of these platforms is going to be a very important thing, and one thing we don't want to do is take too static a view of market power.

If we are going to take a dynamic view of market power, so that we make intelligent enforcement decisions, we need to understand better how durable or not these platforms are in their momentary or, you know, at any point in time market power, and from history and from retrospective studies, we have to try to identify what are the economic factors that would weigh for and against durability for any given platform.

Thank you.

MR. YUN: Thank you, Marc, Katja, Joe, Michael, and Howard.

I want to take this time now to turn it over to David and Catherine to see if they have any followups or comments after our speakers.

MR. EVANS: So my understanding is we each have, what, about 90 seconds, something like that?

MR. YUN: No, you have plenty of time.

MR. EVANS: Oh, plenty of time? Okay. So I'm actually not going to take up much time. I just want to make just a couple of remarks.

So let me begin with Marc. So I agree that network effects are on a continuum and there are different degrees of two-sidedness and so forth, and I also agree that being a platform can sometimes be a choice for firms, but I like to temper that a little bit with two observations.

One is that there is a wide class of businesses that is studied in the literature where it is pretty darn certain that those are significant platform businesses, and we shouldn't get lost in a debate about, you know, is Coca-Cola and whatever a platform business and ignore the fact that we have this whole set of businesses where it is clear that they are platform businesses. We have a big literature that studies them, has offered insights, and so forth.

The other point is, in terms of deciding on being a platform as a strategy, that sometimes -- that's sometimes true, but what's also true is there is a wide class of situations in which if you want to deal with the market problem, you probably have to operate as a platform business. So if you want to be in the selling advertising business, you better be in the business of getting advertisers and users.

If you want to be in the general-purpose payment systems business, you better have merchants and consumers, and the list goes on and on and on. There are a lot of situations where you basically need to be a platform.

There are situations -- and the retail situation where it could be a marketplace or a reseller, you could have Amazon Classic or Amazon Marketplace, that is true, that's a business strategy, but it shouldn't get us away from the point that a lot of cases, you really don't have a choice if you want to solve the problem.

And then the third point that is related to that is that I think one of the interesting things about the platform businesses that are very, very successful now -- and I think Joe touched on this -- is that a lot of the very successful platform businesses today, whether it's Google Search or whether it's Uber, and so forth, are basically displacing other platform businesses. They're just doing them in a more creative way, and that's true for a lot of the online media businesses as well.

Joe mentioned the free ride boards. I remember at Chicago, when I needed to get back from Chicago to Boston, there was actually a business that charged money, and it was a brokerage between drivers and people that wanted a lift, and you paid for the -- you paid for the service and --

MR. FARRELL: That's Chicago. At Berkeley, it was a utility in the student union.

MR. EVANS: Way too many things are free and socialized at Berkeley. This is true.

Let me turn to just one other point just real quickly, and this gets to Howard and Catherine's point concerning network effects and market power and so forth. So let me first of all say, in terms of everything that Catherine said about density and operating small platforms and so forth, I absolutely, positively agree with that. I just want to temper that a little bit to say that as a practical matter, we do need to worry about the intersection between these local network effects and the fixed cost of operating a platform nationally and globally.

If I want to compete with Uber, I can't really just have a Uber business in Boston or just an Uber business in Cambridge, Massachusetts. I need to have a bigger business in Massachusetts, and I probably need to have a national business and maybe a global business to compete in that space. That still means that in order to build up the business, I need to get a density of drivers and passengers in each local area, but I'm probably not going to be successful if I'm just a teeny-weeny business. So there is the possibility of entry and so forth, but, you know, the -- it is possible to have some economies in which, through the attraction of these things, you do need to be pretty big. Nothing wrong with that, but you may need to be pretty big.

I agree, absolutely, with Howard's point concerning the durability of these platforms. I don't think -- I agree with Howard that we can't look at the failure of some platforms and read into that that all existing platforms could fail as well, but it should also make us very careful about assuming that just because someone is successful now, they will be in the future, and, you know, all the points that Howard raised about, well, maybe the current platforms are durable, you know, you go back in time and the same arguments were made about previous platforms. That's not to say that some of the platforms today won't be durable, may not be -- you know, might very well be around for the next hundred years, but we just need to be a little bit cautious of reading too much into sort of where things are currently.

And then the final just quick point on this, you know, the debate about whether, you know, Facebook and Google and Amazon are monopolies and so forth and whether they are going to be durable for a hundred years, you know, it's all interesting, it's, you know, great to read in the *New York Times* and so forth, from Tim Wu and so forth, but, you know, the practicality is, whether they're durable or nondurable, when we get to actual cases, we're generally facing in my experience working for the plaintiffs and agencies and defendants, it's generally a narrow case, a narrow situation of whether, for this particular restraint, is there market power that's relevant to evaluating that particular restraint? And the big, bad monopoly and the durability or fragility point is often, you know, not all that relevant to dealing with a particular restraint that we have before us and have to evaluate whether it's anticompetitive or not.

DR. TUCKER: All right, I have just got three points to make, and the first is to give you the sort of the Post-it note, what happened about my course on platforms after this Coca-Cola incident, which is that, you know, I learned very quickly, the worst thing you can do as a teacher is have people paying $8,000 to hear you speak and then have a huge, unproductive argument about definitions. So the next time I taught the class, I had a light, I said it's a continuum, and we're talking about more platformy, and I was really happy to hear someone as elegantly spoken as Joe use the inelegant phrase of "more platformy," but I think it's a very helpful phrase.

Now, my optimistic note, though, rather than just being a wimp like me, I think when we are lucky when we're thinking about antitrust, that we're not doing this silly thing of looking at firms and saying that's a platform, that's not a platform. Instead, we're looking at a particular case, a particular set of facts, and saying, are platform issues important here? And I think that's an important distinction which is going to make it easier to go forward.

The second thing I want to sort of pick up, and then comes from Michael's discussion regarding the *AmEx* case, which is the reason I introduced this language about tipping and coring is that when I read analysis of the *AmEx* case, there seems to be a little bit of confusion about these two distinct types of strategies. Network effects come into play when we think generally about tipping and thinking about how to set up a market to balance it to bring users to interact with each other.

Coring, which is how we set up rules and regulations about how these parties interact, is something we do to keep people happy on our platform. And it always strikes me that some of the key issues in the *AmEx* case were really about coring, but I see a lot of conflation of those two issues, and, you know, if you think about it in terms of coring, then we can ask ourselves, well, do these steering provisions in the case of *AmEx*, do they actually benefit consumers or not? We can actually ask those questions if we allow for this separation.

The third thing I just wanted to point out, so I agree -- I think I agree completely with Howard, that when we think about network effects and whether or not they're a barrier, it all comes back to the key question of whether or not there are switching costs, you know, and that might be sort of temper to what David said, you know, completely well said about whether or not network effects can still be a barrier to entry given that you might need some scale of operations.

I can completely agree that perhaps to compete with Uber, you need to be in more than Boston, but what strikes me is that becomes an argument about economies of scale rather than one of network effects. So I think we probably -- we are probably in agreement --

MR. EVANS: Yes, absolutely.

DR. TUCKER: -- on that. Okay. Isn't that a nice point to end on?

MR. EVANS: Three economists who agree on something. This is amazing.

MR. YUN: Thank you, David and Catherine, so --

MR. EVANS: Can I say just one thing?

MR. YUN: Yes, of course.

MR. EVANS: I have a recommendation for the FTC, the Bureau of Consumer Protection. If there's one thing I think you should do as a result of the platform hearings, it is to ban the phrase "more platformy."

MR. YUN: So let's start at the beginning in a way in terms of the definition. Obviously, we have already opened the *AmEx* case already and some criticisms, maybe some defenses. So one of the issues that came up is how to define platforms, obviously, and this sort of reminds me of the market definition exercise where economists, we tend to like to think of markets more in a continuum. There's substitutes, but it's the degree of substitution, whereas in antitrust we're interested more broadly into sort of zero/one classifications or in or out for various reasons. You know, there's pros and cons to each approach, but we have settled in on defining relevant markets and allowing us to sort of make assessments within that market.

So that comes to the next question of, while there's no canon for market definition and there's perhaps a continuum in terms of how platform-like or platformy that you are, what should we be looking for? Is it we know it when we see it? Is it the strength of the network effect, in essence, and that's kind of how we measure it? So those are the -- kind of the issues that I think implementers, regulators, courts will face, is when are we facing a platform and what if it's sort of fluid between the two, as sort of Marc has alluded to, in terms of continuum?

And I am happy for everyone to weigh in, but I will start with Howard and Michael on this question.

MR. SHELANSKI: Yes. So it's just come to my attention, as I look down the panel, that on this panel of economists, I'm actually the only one who is also a card-carrying lawyer. So I want to put that hat on in addressing something -- now, Catherine, I happen to agree with you, and David, that both of you indicated to some extent that we're just not going to spend our time, in the context of a particular case, worrying about whether it's a platform or more platformy or less platformy, but actually I think after the *AmEx* case, that's exactly what federal courts are going to be spending a heck of a lot of time doing, because the fundamental burden on the plaintiff hinges on whether or not the court decides that we are dealing with a transactional platform with significant cross-network effects.

Now, if those things are shown, then the plaintiff has to show a sort of total welfare analysis, if you will, across all sides of the platform. If not, the plaintiff can do what the plaintiff does in every other antitrust case, show harm and flip it -- flip the burden to the defendant to come back and say, but there's an offsetting benefit, in all other rule of reason cases.

So I do think that this definitional question is going to be overwhelmingly important, because we are going to have tons of defendants claiming, I'm really kind of less platformy, and I'm kind of less network effecty, and I just don't fall into -- I mean, you're going to have -- excuse me -- a lot of plaintiffs saying that. You are going to have defendants coming back saying, oh, no, no. I'm, like, way platformy, and I've got every cross-network effect in the book, and I've got all these different sides of my market, and you've got to, like, show harm net over all of them, plaintiff. See you later.

So just the one thing I would say is this is -- any, I think, guidance on exactly what kind of network effect we're talking about, a cross-network effect, which is to say different people who may benefit differentially from the same -- did you have sides of the market that may benefit differentially from the same policy, I think -- and what constitutes a strong network effect are going to be things that economists and competition agencies should get a jump on before these are defined as a doctrinal matter through an accumulation of court cases that are bound to come. So I just want to say I think the definitional issue is going to be front and center.

MR. SALINGER: Yeah. Well, that's a problem, because, I mean, if you look at the literature, one approach to the multi-sided market issue is the Potter Stewart approach, which is that you know it when you see it, and then you have these attempts to define it more rigorously, and, you know, David did I think as good a job as could be done to try to do it, but in a famous article Jensen and Meckling said that the essence of a firm is that it's a nexus of contracts, and every firm, I think, is solving the four features that David -- you know, that David asserted.

I mean, we're sitting here at George Mason University, and, you know, it hires professors, and it charges tuition to students, and you could imagine a situation in which the students just directly contracted with the professors, but George Mason University is minimizing those transaction costs, you know, and that's true of one-sided businesses -- what we call one-sided businesses as two-sided businesses.

Now, that said, I agree with David that there are some businesses out there that are -- you know, that clearly look like they're multi-sided platforms, and the essence of them is that they are competing for more than one set of customers in ways where the competition for one customer interacts with competition for the other customers, and so it's important -- I mean, the purpose of market definition is to identify the competitive constraints operating on the firm, and so when a company is competing for more than one set of customers, you need to define the market with respect to both of those sets of customers. Who are they competing with for a set of customers A and who are they competing with for a set of customers B? And if you don't do that, you are going to miss -- you are going to make bad decisions, because you are going to miss the competitive environment.

MR. FARRELL: Do you mind if I just jump in quickly to, I hope, clarify what Michael is saying?

I think what you said was you need to define the market to include both sets of customers, but then when you kind of explicated our own comment, it sounded as if you were talking about defining two markets, which is a very different thing than lumping them all into one. So I would agree that in market definition, you need to consider both. I hope you were not saying you should lump them all into one, but if you were, then --

MR. SALINGER: No, I wasn't.

MR. FARRELL: You have to define two markets.

MR. YUN: Thank you.

MR. SALINGER: Look, take advertising-supported businesses. There is a market for the advertising. There's a market for the viewers. You know, and you have to look at those -- at that competition, you know, in some sense separately.

MR. YUN: Did anyone else want to weigh in on this issue?

MR. EVANS: So I think -- I think the notion that this is really hard I think is a bit overbroad. So we have -- we have now an extensive literature on multi-sided platforms that goes back to 2000.

Catherine, tell me if I'm wrong, but I don't think that there is massive amounts of consternation in the literature about what exactly a two-sided platform is. People tend to talk about the same businesses and so forth. So there's not a lot of controversy among economists about what this class of businesses is.

I take your point, however, that some defendants are going to come along and try to claim that they are the most platformiest business around -- I'm violating my own rule now -- and, you know, I suppose that's possible, but I've been involved in a lot of platform cases, and, you know, the economists on both sides more or less agree that they are platforms, and we analyze them. I have a case now where I'm working for an agency. It's obvious that it's a platform and so forth.

I suppose there are going to be cases where they are going to be marginal and so forth, but we shouldn't lose sight of the fact that there are an awful lot of situations where they are simply not marginal, and my guess is, when we get into the facts of the case, it's going to be fairly clear what a platform business is and what a platform business isn't. I don't deny that there will be massive numbers of billable hours by lawyers, you know, wrapped around this definitional question, but I think at the end of the day, I really don't think it's going to be as hard as Michael is making it out to be, that everything could be two-sided and so forth.

MR. YUN: Yeah. It sounds like we kind of need like a SSNIP test for how platformy you are.

MR. FARRELL: Well, I think we've identified a real issue for the FTC, which is there are two jobs. One job is, as expressed by David, to think about the cases where it's clear that it's platformy and what do you infer from that and how do you handle it, and the other job, which may also be necessary, although it's less congenial to economists, is to focus on the gray area, and, you know, perhaps both of those things need to be done, but they are not really the same task.

MR. YUN: So had Hagiu and Wright, they state that indirect network effects or cross-group effects exist even for nonplatforms, and this is sort of getting at a theme that we have arrived at. Take, for instance, Walmart, where if you're a shopper you care about the variety and the number of manufacturers in which Walmart deals with and stocks on their shelves. In a similar way, manufacturers care about obviously the number of consumers that shop at Walmart, and that influences their decision, and you can think of Netflix in a similar way, even if in a sense they are not platforms.

So this sort of gets to my question. How should we think about these indirect network effects? Are they sort of unique to platforms or are they applicable to single-sided markets in the sense that, for a reseller such as Walmart, a manufacturer like Procter & Gamble is essentially handing off their product, Tide, to Walmart to then sell to consumers, and we wouldn't I think traditionally think of that as a two-sided platform.

In a similar way, is an advertiser handing off their ad to Google, who then decides to serve it for certain search results, or are they maintaining some control over that that moves it more in the two-sided arena?

And so that's sort of broadly my question, is how should we think about these indirect network effects, and is it more about the level of significance in terms of what drives behavior for that business in the sense that recognizing all of them have some degree of this, or is it a little bit more clearer and cleaner than that?

So let's start with -- I'll throw this out to Katja, Joe, and David. So I'll let Katja start.

MS. SEIM: All right. I feel like now I'm all of a sudden in the role of needing to decide whether you are a platform or not, a thing the economist doesn't like to do.

I guess from my perspective, it's really about the strengths of the network effect. I agree with your Walmart example. To some extent, the consumer has a fixed shopping cost, and so they care about the variety they see at the store, but I think fundamentally Walmart's success, to me, is about the fact that they have much better logistics than anybody else out there, and that's been able to drive price down, and that's why the consumer comes.

So I both agree, yes, there's platform notions in many markets, like the retail example, and you would think that they affect market power to some extent, but my general thinking is that they are much smaller in those types of settings than in a case like Uber, where really the platform is the primary feature of the product market itself.

MR. YUN: Joe, did you have anything to add?

MR. FARRELL: No. I mean, I think it's -- that's getting awfully definitional in a way that I don't find terribly helpful. I mean, so you're pointing to a way in which Walmart is a bit platformy, and as Katja says, maybe that's not really the main thing going on with Walmart, and then, okay, where do you go from there?

MR. YUN: David, did you have anything to add?

MR. EVANS: Yes. So let me make a -- just a practical observation on this, which kind of goes back to the previous discussion. So there is now an extensive literature within two-sided platform economics on ad-supported media. It goes back to the mid-2000s. As I said before, lots of theory papers, lots of empirical papers. I don't think there's any real dispute in the profession that ad-supported media consists of two-sided platforms, so there's this whole body of literature with lots of interesting insights, including on mergers, that one can rely on.

There is not a vast -- I'm not sure there is any -- literature talking about supermarkets as being two-sided or simple retailers as being two-sided. Maybe there are some papers out there, but I don't -- I don't think so. So practically, if you're involved in cases and someone says -- and it's an ad-supported media case -- you can rely on the literature, a body of theoretical, empirical research to support the notion that, yes, this is a two-sided platform business, and you need to worry about it.

If a defendant comes along and says my supermarket is a two-sided platform business, see? Well, you can certainly -- they can certainly make that argument, but the hurdle is higher, because you don't really have a body of economic literature to really -- to really support that. It still might be two-sided in some cases.

DR. TUCKER: I just want to add a little salacious factor onto that argument.

MR. EVANS: Oh, salacious?

DR. TUCKER: Salacious background to that article, which is that the origins of it is that when Andrei was at HBS, his colleagues didn't believe that platforms were a big deal. Now, I've got a little bit of MIT pride relating this story, but they said that we just don't think that these two-sided platforms are that big a deal, and as a result, this article came out trying to sort of translate indirect network effects to sort of more traditional businesses.

And I think if you sort of understand it in that context of someone trying to say this could be a deal somewhere out of where we usually think about it, it makes a lot more sense, but I don't think we should go to that article and say, oh, indirect network effects are everywhere; we can't define it. Andrei was just trying to say, look, people who have always worked -- you know, pretty large multinationals. What I'm working on, the sort of Google/Facebook stuff isn't as obscure and as nichey as you might think.

MR. FARRELL: Are you saying that the management at HBS didn't think Google was a big deal?

DR. TUCKER: That is the salacious implication of what I am saying, yes. They said it wasn't a big enough industry to work on if you wanted tenure at HBS.

MR. YUN: So I want to turn to Rochet and

Tirole and the model that they developed and other pioneers in terms of the profit maximization of a two-sided platform, and David alluded to sort of the difference between price levels and price structure and how Rochet and Tirole in some ways define platforms based on that structure, and Catherine had some comments on that.

So in some ways, where does this fundamental interrelationship between the two sides and prices lead us? Is this sort of our avenue into a definitional approach? And I don't mean -- I know there's some aversion to that, but in terms of just from a practitioner's perspective, is this something that could help a corporate practitioner unlock what is or isn't a platform and the strength of that?

And so I wanted to ask that, and a related audience question, what specific economic test can be done to evaluate market power in a market that is claiming to be two-sided? Does that allow us to unlock some test on market power as well?

So I will direct this at Marc, but obviously everyone can address this.

MR. RYSMAN: All right. Well, after hearing this discussion on both sides of me, I do feel still justified in bringing up my earlier point about platforminess and how important -- of course, just to -- I'll jump to your question in a minute, but just to reply to David, of course, I agree, some businesses are just clearly platform businesses, and no one could deny it, although I think many of them have features of their business, even those firms have features where we could probably ignore the platforminess.

And also I guess a bit of salaciousness, I went to a talk at the BU Law School last week, and the speaker had the view that already there's been defendants filing, you know, we need to start this case over, we're a transaction platform, and, you know, maybe as David suggests, that will turn out to be just a lot of billable hours that are very easy for the court to decide, but I do think Howard's point that this is coming is a good one.

I don't have anything salacious because I don't have any specific cases to mention, just -- it was kind of just rumor at this presentation, so...

Turning to John's question about market power, I think it -- you know, in evaluating market power, for me, the thing that we always have to start with, that often I feel like doesn't get started with, is really specifying the counterfactual; that is, you know, we can take the Lerner index and rewrite it so now it accounts for cross-side network effects or something like that, but inherently the Lerner indexes compare -- it's thinking about price compared to marginal cost, and, you know, what is our counterfactual when we do that?

In a traditional case, we're thinking about perfect competition, which might force price to go to marginal cost, or socially optimal pricing, you know, what an omniscient social planner would pick, which would be price equal to marginal cost. And neither of those are the case in two-sided markets.

In two-sided markets, we often don't want price equal to marginal cost, and it's not clear that competition would move price towards marginal cost or, you know, let's say two different sides simultaneously, and it's not always clear that competition moves price to be -- even in an efficient direction, you know, I mean, and we can compare the market with a single monopolist to a market with millions of competing platforms, and, you know, that would break up the network effect and dissipate the sort of demand-side economies of scale that we're talking about.

That makes it much more difficult to evaluate, you know, what we mean by market power, and I think that's -- even in the theory literature, as much as we have, you know, I think we could still have more just kind of pinning down exactly what we're talking about in that dimension.

MR. YUN: All right. Joe?

MR. FARRELL: Well, I have a slogan on market power that I will haul out, although there's also going to be a separate panel on market definition and market power in platforms later, so I'm preempting the panel, including myself.

I think some writers on writing say you can improve the clarity of your writing by getting rid of abstract nouns and substituting active verbs, and I like to do that when it comes to market power. So I think the right way to diagnose market power is to say if something harmful were done or attempted, and maybe you specify what that something is, who would do what? What would happen? Would users on this side of the market flee in droves? In that case, what would happen? Is there enough single-homing and switching costs that that wouldn't happen? In that case, what would happen?

So I think if you up the active verbs and downplay the abstract nouns, you do a lot better. I've noticed that that doesn't necessarily direct your attention to share in a defined market, but that's the way it goes.

MR. YUN: So some have suggested that platforms in this interrelationship between prices is very similar to complementary goods, and so we're making much ado about nothing, and there was some flavor of that -- I'm not suggesting this was their entire argument in the dissent in *American Express*, in the case of invoking complementary goods, so I want to direct this at Catherine.

So what are the important views -- and I -- between two-sided platforms and complementary products? And David hinted at some, but I wanted to see if you had any thoughts.

DR. TUCKER: Yes. So, no, I really like the way that David was saying it, and maybe if I paraphrase it, he would say, look, if you have complementary goods, you make money from getting people in your market and keeping on selling to them, whereas in a two-sided platform, you make money by bringing two separate groups together. When you say that, they sound like very different things.

You know, maybe if you sort of like something more concrete, let's think about a coffee maker, something like Keurig, right? You know, sort of the Nespresso to make your American coffee. Now, that is what I would generally think of as a complementary good. Why? Well, you make money by getting people to put the coffeemakers on their kitchen countertops, and they keep on buying these expensive little K-cups to put in them.

Now, of course, you could make that into a platform if you didn't decide to be the supplier of the coffee pods, if you just said, here's a technology standard, go on, make coffee pods, whoever wants to, then that could be potentially -- it's not a technology platform, but it is a product platform, but it's quite -- you know, it's quite a very different business to get into, and you are going to have a very different strategy towards it.

MR. SALINGER: Well, I think when you write down the models, mathematically, they look very similar. I think that when you -- if you're selling complementary goods and you lower the price of good A, you take account of the fact that it will stimulate the demand for good B, that you'll get a margin on, and that affects what you're doing, and that's very similar to the network effects, where if you take David's examples of singles bars, if I lower the price for drinks to women, you know, it will increase the drinks I'm going to sell to men.

With the tire and car example -- tire and gasoline, I guess you used -- you know, David said, well, you would have different people -- different companies selling the tires and the gasoline, but if it was the same companies selling the tires and the gasoline, then they would take account of those cross-effects, and mathematically, it would look very similar to, you know, to these two-sided effects.

MR. SHELANSKI: I agree with Michael, but there is sort of a -- there's a bit of a conceptual difference, and I'm not sure in the end how much it matters, but the universe of things covered by, for example, *AmEx*, much greater than complementary goods, and we are -- we are used to thinking of complementary goods as things that are in some degree, to some proportion, used together, whether it's K-cups and Keurig coffee machines or things that might have much more variable proportions.

When you are talking about cross-network effects, you don't need to have that concept of a complementary good involved. What you have to think about is things that might be where one good is contingent upon the way some other good or service is provided. So what happened in *AmEx* was people liked their AmEx card because they liked their points, presumably. Those points are funded by the higher fees that the merchants are paying, and if you let the merchants steer, that flow of fees would be cut, and the downward flow of points would be cut. So in some sense, the downward flow of points was contingent on the upward flow of fees, but the consumer isn't thinking that, right? These are not necessarily visible. They're not part of some kind of combined consumption decision, so thinking about, you know, for example, you know, Kodak copiers and paper. The Supreme Court has told us that rational consumers think ahead about how they're consuming both of these.

I guess we could tell a story where a rational consumer thinks, if I don't use my AmEx card and I use my cheaper MasterCard, well, wait a minute, I have two long-run effects. I will benefit the mass by perhaps reducing the costs of the merchant and lowering prices for everybody, but by using my higher priced card for the merchant, I directly individually benefit by these higher flow of points. Maybe you get that kind of thing, but I don't think consumers are thinking about these what I would call, you know, contingent or enabling goods the way they think about complementary goods.

MR. YUN: David?

MR. EVANS: Yeah. Just in response to Michael, okay, so mathematically, there are similarities and whatever, but, I mean, so what? I mean, the two-sided models that we're all talking about are focused on different customer groups with indirect network effects. We have literature now that has all sorts of interesting implications that we don't really have in all the literature on complementary goods. We have an extensive empirical literature that's relevant to a wide set of businesses. There's been a massive payoff from the two-sided models. So, so what? If in the background there's some similarity with complementary goods, I don't really see what the relevance of it is.

The point about or criticism that two-sided platforms is just complementary goods, I think my first paper in the area in 2002 addressed this. I think many of the papers in the area over the years have addressed the point, no, it's not just complementary goods. And what I have to say I find frustrating in this area is that, you know, 17, 18 years later, after the launch of this area, after these things were discussed back in the early 2000s, you know, we're sitting here among economists having discussions about isn't it just complementary goods, and we have a Supreme Court decision and an economist presenting briefs, you know, suggesting that it's just complementary goods.

It's not just complementary goods. You have this massive literature, published in prestigious journals, with all sorts of interesting insights. It's not just complementary goods.

MR. YUN: So let's stay on *AmEx*. We are going to stay here a while. We'll move on at some point. This might be it.

So 18 years I was at the Commission as an economist, I spent most of that trying to think not about the law, per se, and focus on the economics. Take competitive effects, weighing both sides, who has the burden, that was not interesting to me. Maybe it should have been.

But now, focusing here on the law school and learning where such *prima facie* -- a word I have never said previously -- and getting that right, so one of the big issues in *AmEx* on the legal side -- and maybe, again, this might not interest us as much, but I think it's relevant to practitioners -- is who bears the burden of showing the benefits and harms?

So, example, for rule of reason, there's a three-step process, and usually the plaintiff needs to show that anticompetitive harm, and then the defendant can then subsequently show that procompetitive benefit, and then the policymaker in step three makes some weighing of those two.

So focusing on step one, this was the *AmEx* case. What is anticompetitive harm? Is it the net sort of welfare of the two groups, which is where the majority came, or is it what sort of the dissent said, is that let's not bundle these things together, let's keep them as a two-step process. So it gets fundamentally at what anticompetitive harm is or isn't.

And so let me start with Howard, and then we'll go to David, and if anyone wants to weigh in, we'll go there.

MR. SHELANSKI: So I'll add that John was the last 12-year-old economist who got hired at BE.

And, you know, I think what I would say is, you know, and in your -- you know, your 18 years of being at the Commission, John, you certainly saw lots of different kinds of alleged harm, you know, in conduct cases, and the interesting thing to me about the *AmEx* case is it didn't do a lot to narrow down what could be a candidate theory of harm, right? It really was about what -- sort of what scope of harms a plaintiff had to bring to bear.

And so, you know, we don't really know at the end of the day what the Court thought of the theory of harm that the merchants might have been alleging. One could think of a number of them. So what I would simply say is I think any of the harms that have been recognized by the precedent could be brought to bear, where relevant or where provable, on a side of the market. The key thing about *AmEx* is it's saying that once we have flipped you into this bucket of a transactional platform with significant cross-network effects, you've also got to have a strong theory of harm, or at least of not offsetting benefit, from the other sides of the market.

So I think any sort of these theories of harms -- although I will note something rather interesting. You know, if you think about the merchants, they could articulate a theory of harm that is we have to remit these higher fees to AmEx. Okay, but, I mean, there's a lot of pass -- those are being passed through, effectively, so what is the harm that's occurring?

Well, it's we have to -- we don't know if somebody coming into our store is going to use an AmEx or a MasterCard. We can't have different prices depending on what card you're giving -- you know, you are going to pull out at the register, so we're just raising prices, you know, at least to the average level of the card fees, but maybe even, you know, higher, and so you're raising prices to consumers.

There could be a standing issue there. There could be a competition issue there. Those will all be fleshed out, I think, in future cases.

MR. YUN: Okay.

MR. EVANS: So if we're talking about -- if we're talking about rule of reason cases, and if we're talking about a situation in which you have identified a two-sided platform with significant indirect network effects, so I'm assuming all that, then the thing we know is that the two sides are linked. There are positive feedbacks going on, and the welfare of the two sides are linked.

Also, if it is the kind of platform where they're probably competing with other platforms mainly, which was the case in *AmEx*, the competition is taking place over both of those customer groups, is taking place simultaneously. In a situation like that, if we're interested ultimately in determining whether there is a harm to the competitive process, the competition that is taking place between the platforms is over both sets of those customers, it's hard to see why we wouldn't want to take both sets of customers into account in terms of determining whether the restraint is a harm to the competitive process.

We often use prices and output and quality as signals of whether there has been a harm to the competitive process. In a rule of reason case, again, with those kind of two-sided platforms, hard to see how you could establish harm by just looking at one side, for a lot of the reasons we've -- we have already discussed. Both groups of customers are relevant. They are both being competed for. If there really is a restraint, you would expect that in a counterfactual world that restraint would show itself with the overall price level being raised, so an exercise of market power, and we'd expect that in the counterfactual world, the restraint would be generating less output.

So, yeah, it does seem to me that you would want to take both groups into account in that context.

MR. SALINGER: Well, you would want to take more than those two groups into account, because there are externalities on the other -- on the other customers.

MR. EVANS: But, no, Michael. I mean, if you're taking a traditional approach to market definition, if that other group of customers isn't defined in the market, I'm not exactly sure how you get to do that.

MR. SALINGER: No, well, I'm agreeing with you that you can't just look at the price increase to the merchants and infer market power from that, and you have to take account of the fact that if there are rewards on the other side that -- you know, that those rewards might be shifting the demand curve out for the AmEx cardholders in a way that compensates the merchant for the higher fee.

But you can't just look at the net price either. You need to -- I mean, I think this is Howard's point, which is that because of the no-steering condition, and even if you got rid of the no-steering condition, there would be this price coherence issue -- that that fee is being borne partially by the people who pay with other cards, you know, and you have to take that into account with respect to what's competitive harm.

MR. EVANS: Just a couple of quick points on this. I'm not sure whether you actually do get to do that. There may be a market failure issue you might want to talk about, but in an antitrust context, I'm not actually sure you get to do that outside of the market that's been defined. That's above my pay grade, so maybe that's a question for the lawyers.

The one thing I did want to get to, to just say briefly, John, with regard to your question on the burden-shifting, so, you know, one way you could approach this is you could do one side in the first stage and then, you know, look at the other group of customers in the procompetitive efficiency stage. I think that's the wrong approach, but one thing I want to mention is it's very interesting, in Justice Breyer's dissent, he says, yes -- so, remember, this was actually an issue, as to whether, given that the cardholders were in a different market, whether you could count those efficiencies at all. The Justice Department in their brief said, well, we think you should be able to count them, and Justice Breyer agreed with that, but with an interesting qualification. His qualification was, of course, in practice, defendants never succeed in doing that.

MR. YUN: So I am going to move on from *AmEx*. I feel some groans from the audience whenever I mention *AmEx*, so we are going to kind of move on, and so -- but I will get to Michael and Marc, who I had one more question for them, and I will incorporate them in this following question.

So let's move on to multihoming and switching costs. Just to give you a little bit of context and background maybe to generate discussion, in a Pugh survey earlier this year, Facebook was used by 68 percent of all U.S. adults, which placed it as number two. Number one was YouTube at 72 percent. Now, you're probably thinking, wait, is that really a competitor of Facebook? Certainly on a differentiated space, they might be quite far apart, but certainly a social media, and others were Instagram at 35 percent, Pinterest at 29, Snapchat at 27, LinkedIn at 25, Twitter at 24, and WhatsApp at 22.

According to Pugh, most -- the median adult uses three of the eight platforms in which they surveyed. For example, 74 percent visit Facebook -- and the intensity is also high. 74 percent visit Facebook daily, but those who use Snapchat, it's close behind with 63 percent. So it's fairly clear that the evidence is strong, not just in social media, but in other areas, that there's some intensity of multihoming.

There's actually a story -- just yesterday I was with a friend of my daughter's, and she took a picture, and she said, can I post this on Instagram? She's in fourth grade, and she pulled out a phone that's literally larger than her face. And I said, ah, sure, you can -- do you have an account? Are you going to use your parents -- she says, no, I have an

Instagram. I said, how about Facebook? She says, no, no, nobody uses Facebook. That's uncool. I'm getting at the Catherine uncool part.

So what do we make of the fact -- let's just fix ideas, and we can use any type of multihoming example, but almost -- the data shows almost everyone goes to Yahoo to some degree in terms of checking news and various things. They might not search there, but they go on Yahoo. Certainly Google, we all know people use Google a lot. So they are multihoming on both, and the data shows that they are often on both, but they seem to be skipping over the search box on Yahoo and just doing it on Google.

Is this a case of two lemonade stands next to each other? They just go to the one with the better lemonade, and it's a little unfortunate, but it's not market power, per se, or a lack of choice? It's just a lack of intensity of use. So how should we consider switching costs and multihoming in the context of an antitrust investigation, if the data shows a lot of people are using social networks outside of Facebook? What are the arguments, sort of pro and against enforcement based on that?

So I will throw this to Katja and Michael and Marc, but anyone can weigh in.

MS. SEIM: So I have a ten-year-old daughter. She does not have a phone, but I understand from her friends that the reason why they use the Instagram is because it has a private feature that Facebook does not. So I think that might be why.

But speaking to your broader question, I think the challenge in using these statistics on multihoming is usually I think the way we think about competitive interactions between products and how strongly they compete is we think about, well, you know, if one product raised its price, how many consumers would it lose relative to people abandoning altogether or something like it, a diversion ratio?

But with two-sided markets, that's sometimes difficult, especially the best examples you mentioned, because the consumer doesn't really pay a price, and so we can't observe in the data sort of this idea of responsiveness on the consumer's part. And so instead, then, we have these multihoming statistics, and I think they are indicative of switching costs in examples like the one that Catherine put up, which is the Uber /Lyft example. These are platforms that offer, I think, much more similar products than, for example, the Yahoo/Google example you put at the end. And so there I've seen people multihome and being active, ideally that would be the second thing. I think you would like to see not just that they have it installed but that they also use it. I think that would give you some indication of switching costs being insufficient to prevent people from being locked into a platform, and less certain that seeing people use both Google and Yahoo would tell me as much about the competitive intensity between those platforms, simply because, you know, as you mentioned, they offer differentiated services, and it might well be that I use Yahoo only for finance, but use Google for all of my searching. And so I think they are just observing multihoming and in a sense isn't sufficient to really say much about the competitive interaction.

MR. YUN: Michael?

MR. SALINGER: Well, if multihoming is easy, I think that's pretty clearly a limit on the extent of market power. I mean, whether it -- it -- you know, that by itself proves anything isn't so clear, but the Yahoo example is a really good example, and, I mean, Katja, you're right that, you know, if you look at Yahoo, as I understand it, there are two areas where Yahoo has been very successful, and that's with finance and with sports, and people have learned that, you know, that they're good at that.

Google has a finance product, and people in the room might disagree with this, but, you know, I've never liked it that much. And, you know, what the example illustrates is that the competition in -- you know, with this group of products occurs on a class of search by class of search basis, and the competition to get financial information is not limited to Google and Yahoo, but it would also include the *Wall Street Journal* site and other sources of financial information.

MR. YUN: Marc, did you have any thoughts?

MR. RYSMAN: Sure. Well, I agree with what we just heard, and, you know, as a kind of matter of efficiency, you know, in these kind of network effect markets or competing platforms, you only need one side to multihome to kind of get efficiency in the sense that everyone can reach each other, right? If our main goal is that everybody can reach everyone on the other side, only one side needs to multihome to achieve that.

In that sense, you know, kind of one side multihoming seems like it would do enough, but then it turns out that if one side is multihoming and one side is single-homing, that has all these really extreme predictions for pricing and the nature of market power, and that's kind of this literature that David's been referring to, is, you know, exploring -- exploring a lot of that.

So I tend to agree with what -- as Catherine said in our initial remarks and what we just heard, that if people -- if we are multihoming on both sides, that does tend to be a limit on competition. I don't think that's been actually established in a theoretical paper in the way that we might like, but I'm guessing that's probably true.

There is an issue of, you know, what John referred to as switching costs, you know, if everyone's going to be multihoming, they're probably paying a cost to holding multiple -- you know, holding multiple apps or systems, and I think that's probably a cost as well, and sort of balancing that against the competition effects of having single-homing on one side, you know, might be challenging in any given context.

MR. YUN: Joe?

MR. FARRELL: I'd just like to remind people -- and I think some of the other speakers have said this, but not quite this bluntly -- I mean, both single-homing and multihoming are simplifications of a nuanced reality. So just because you single-home doesn't mean that you would never switch, and just because you multihome doesn't mean that you would switch for epsilon. It's a matter of degree. If you're multihoming, you're probably more likely to switch with less inducement.

One area where this came up was in the early years of telecom competition after entry started happening, and there you saw that households tended to single-home and businesses sometimes multihomed. There, of course, if you want to call someone, you might say, if they're not already multihoming, good luck with it. Otherwise, you have to send a messenger boy around on a bicycle to say, would you mind getting a second phone so that I can ring you up? And that's probably not going to happen. So that might be a little more hardcore, but in general, it's a nuanced thing, and talking about single-homing and multihoming is kind of simplifying and stripping that down.

MR. YUN: So just on a related question is the role of default, and that plays a role in the Android decision at the EC, where Google preloaded their suite of apps, that was considered perhaps something that didn't help competition in that area, although perhaps it gets at the core of their monetization. It's an issue that came up in the Google Search case as well, in that Google makes it the default on various browsers, certainly their own Chrome browser, and it came up in Microsoft with Netscape, but we are certainly at a different age in terms of the switching costs from a default.

Given that the default -- often it doesn't take a lot of actual time to switch from a default, how should that play into our analysis? Is that -- is it ultimately too simple to think of default purely as sort of can you do it or not, or does it really inform us in terms of the level of market power that these firms can have? And I'll just throw this out if anyone wants to take it. If not, we can just move on.

MR. SHELANSKI: I mean, I'll just say a quick word about that. I mean, I find it hard to think about the question of defaults totally separately from the question of interoperability, and, you know, I think defaults are fine. I don't think there should be any rule against defaults. I mean, people actually want the simplicity of, you know, signing up for a service and having -- not having to select everything and do the brain-twisting exercise of deciding which setting is best for them. These platforms know something about what are going to be the most desirable settings for most people, so I think I, at least, as a fairly lazy person when it comes to these technology things, appreciate the defaults, until they start to bug me.

And then what I want is two things, options, that's where interoperability come in, and ease of switching, and the problem with Microsoft was there were options, but at least early on -- and what they got caught with in court -- was that the ease of switching was not easy, that they had done things to defeat switching.

So I think putting aside that kind of conduct, where it's simply a question of the consumer deciding to go to a menu or do what everybody does now, just Google, "How do I get rid of that, you know, weird thing that comes defaulting on my screen," and you're sometimes told I can't, then that's not a default problem to me. That's an interoperability problem.

And other times you're told, "Do A, B, and C," and it takes you 14 seconds. So to me the interesting question -- and I don't know how much this is an economic question as opposed to a question for behavioralists of different types -- is 14 or 44 or three minutes -- you know, 44 seconds or three minutes, is that a meaningful barrier or not?

What I have observed, at least, is -- you know, with my students is they're more than happy to go through the challenge of downloading an app, which takes, you know, maybe, you know, a minute or less and to figure out very quickly how that app works as a way around something or to do something we're doing interactively in the classroom.

You know, I think it's an empirical question and a behavioral question, but I don't think that the mere fact that some people like me are too lazy to do that for long periods of time should necessarily be viewed as a significant competitive issue if it is easy and if the options are there through interoperability.

MR. YUN: Okay. So let's move to something related to an audience question. I will read the audience question and then have a little leadup.

How do you evaluate a market with two dominant competitors but many smaller competitors?

So we hear a lot about the potential difficulties entering into markets that have strong network effects, both direct and indirect. We can sprinkle in arguments about big data also creating certain barriers to entry, although Catherine and Lesley had a paper on that that I thought was pretty insightful. If you haven't looked at that issue, that's a paper to start at.

Bruno Jullien wrote, "It may be easier than expected for a superior technology to enter provided that the quality of improvement is large enough."

So within network effects, can it work sort of both ways? One example that David gave for the BlaBlaCar, which I actually thought he made it up. I thought, oh, he's just in a hypothetical world, and then it's a real thing, where they limited the number of drivers on the network because it was more about the quality or type of driver that they wanted rather than sort of the numeric size of the network, which is sort of getting outside of sort of perhaps breathless assertions about some of these networks.

Similarly, with Open Table, it wasn't about getting a lot of restaurants on. It was about the right restaurants and the right consumers, and that's an example David also uses.

So what characteristics of digital platforms hinder entry and what might actually facilitate entry, our winner-take-all story, supported by the empirical realities? And is it significantly easier to enter and be profitable? Is the minimum viable scale a term that we have sort of gotten rid of in the 2010 Guidelines -- unfortunately, I kind of like that, but I'm dating myself by referencing that term for the Guidelines -- but is it easier in a digital platform than, let's say, mac and cheese, where, you know, for my daughters to get the mac and cheese, it seems to be just two brands, Kraft and Annie's. I don't know, maybe -- I just view it as hard to bring a mac and cheese to the market. Maybe I'm overstating that.

But just -- those are just some thoughts to get us started, and, Catherine and Joe, I'll throw it out to you guys first.

DR. TUCKER: Well, maybe -- I'll just start. I'll just skip and -- I'll give a little publicity for my paper with Lesley. So this is a paper we have actually never managed to publish because we didn't find anything, and what we were doing when we didn't find anything was we were looking to see how some changes in European regulation about how much data you have stored about search results, whether it affected the quality of search results, and we measured that by something called a bounceback rate, whether, that is, someone had to search again, refine their search.

And we found absolutely no change whether you had six months of data, three months of data, nine months of data, and, you know, it was one of those "oh" moments. We presented it I think actually here, and all these engineers just mocked us for this result, and they said it's very obvious. Don't you know how many searches are unique and how current they are? And you don't understand anything about search advertising if you think that data six months old is at all valuable.

So I felt fairly mocked, never been able to publish the paper, very glad that someone like John likes it, which is very --

MR. YUN: I like it a lot.

DR. TUCKER: -- you know, its time has come.

So anyway, my big point, I am just going to pick up on the question of why do we see, you know, all the examples of solid limits to multihoming we have heard about have all been about devices, whether it be Joe having two telephones in your house, which seems today such a weird idea; whether it be sort of Microsoft and thinking about switching costs which come from an operating system embedded in a piece of hardware; and now in this digital age we really are sweating a bit trying to understand where the switching costs are coming from.

I'm going to actually pick up on John's point, which is where we've got two brands of mac and cheese, and there's a whole marketing literature, a huge marketing literature -- I just have to point to it -- that studies this precise question, and this is called switching costs that just come from brand inertia.

Most brands, if you think what a brand is actually doing for you, it's just a proxy to not think, and so when you buy those mac and cheeses, it's really about you're just using the brand so you don't have to think about it. And this is like something a bit uneasy for economists. We don't like to think that consumers don't like to think, but perhaps it's a way forward to try and understand some of the inertia we see in these markets.

MR. FARRELL: So let me give a very different response to the question, maybe not an answer. I think the Jullien paper -- I haven't gone back in the last few days and looked at it -- but my memory of it from a while ago is that it's in the tradition of looking at the circumstances in which an entrant with proprietary network effects that are strong enough to lead to market dominance will displace an incumbent with such strong network effects. So, in other words, in a battle to the death, who is going to win?

And there it's really all about the dynamics of expectations and who wins the winner-take-all and takes all. So I don't think that actually gets to the question from the audience, which was about the role of small competitors in what looks like a heavily networky or platformy type of industry.

I think there I would want to ask, why have they survived? Perhaps they get to specific communities of interactions that don't particularly want to be in on it with everybody else. Perhaps they offer something else instead. Given the reasons that they survived, why have they stayed small? Possible similar answers.

But I think in evaluating the level of competition, which I think is what the question was referring to, when you look at small firms -- and this is a broader thing, it's not all about platforms and network effects -- you want to ask, you know, why do they stay small? Do they stay small? Are they expanding? Why do they survive? What's going on there?

MR. YUN: Okay, thank you. So let me go to an audience question. So this is an audience *AmEx* question, so it's not coming from me. An issue that was discussed was whether credit cards are especially two-sided due to the fact that every transaction involves a consumer and a merchant, and that something like a newspaper is something different. This is that transaction versus nontransaction distinction.

I was just wondering if the panel had any thoughts on whether that is useful going forward in terms of defining markets, and does that introduce a different set of tools or is it a distinction that's important but it doesn't change the fundamental reality of how we should assess a platform.

We can start with David, and if anyone -- or you don't have to comment, but...

MR. EVANS: So the question is on transaction platforms versus ad-supported platforms? So first of all, I think there are more similarities between transaction platforms, as that term is used in the Filistrucchi paper, and ad-supported platforms than some people think about, but let me put that aside.

I have a paper coming out on that that I can -- I can send it out, but they are both obviously two-sided platforms. There are indirect network effects. There's the same pricing things and so forth. So I would be inclined to use kind of generally the same general framework.

I think the issue that's raised with the ad-supported platforms versus the transaction platforms is how you go about defining markets and contours of competition and so forth, and, you know, the *AmEx* case, you know, it decided to define a single platform market. I would at least admit the possibility that there are going to be cases where it may be very sensible and a more convenient thing to do to define one market on one side and one market on the other side and then deal with the welfare linkages by linking those two together and taking both of those markets into account.

Ad-supported platforms may be a case for some of the reasons that Michael talked about. Ad-supported platforms also compete with single-sided content platforms, like Netflix, that don't do advertising, and doing a single-platform market is a little bit complicated in that case. So there's an argument that in that situation maybe you should have separate markets and define it that way and then take the linkages into account.

I think as we do more of these cases, we will get more experience in how we want to go about doing that, but the fundamental economics, ad-supported platforms and transaction platforms are the same. They're both connecting two distinct groups of customers; they're both internalizing an externality; and they both have some form of network effects.

And the other thing for ad-supported platforms is the advertiser or the consumer may not like advertising, but they do like content, and wherever they get the content, you need to have advertisers willing to pay for the content, and that generates a positive feedback loop between the advertising side and the user side. So a lot of similarities there, and there may be reasons in particular cases to analyze them separately.

MR. YUN: Okay. So we have basically a minute left for each panelist, if they want to take it, on sort of where the areas of platform research need to go and some areas that need to be explored further, and let me just close by saying thank you to the FTC and GMU for an amazing setup, for time, timekeepers, with the most lovely "Stop Talking" signs I've ever seen. This is awesome. I wish it was always like this.

So let me start at the very end and we will go down the line, if you have thoughts on this.

Howard?

MR. SHELANSKI: You know, just a couple of things. I do think we need to do a better job of integrating some of the behavioral economics literature or, you know, literature from areas of economics like marketing that have always been more inherently behavioral if we're really going to understand, you know, how consumers are going to behave in these markets and if we're going to understand what I still think is going to be a very important issue in a lot of these particularly conduct cases, which is how do we think about market power and how do we think about the fragility or durability of that market power over time. I think those are topics that are worthy for research.

Full disclosure: I'm about to write a paper with Bill Rogerson on monopoly durability, so...

MR. SALINGER: Well, this will feel like it's coming out of the blue, but we talk about the two-sided markets as if the markets are separate, but before you get to two-sided markets, you have to have separate products, and I think with a lot of these businesses the question of how you do the separate products test is something that's really been unexplored in the literature. It was a big issue in *Microsoft*, but there's not a literature on exactly how to do it. I think we should figure out how to do it.

MR. FARRELL: Where does the field go in one minute or less? I'm tongue-tied. Sorry.

MR. SEIM: I sort of agree. The one thing I would add, though, is, you know, I'm an empirical economist, and I think one thing that's been amazing about seeing some of these tech platforms come up is we just observe a lot more about consumers and firms than we did before.

And so that might actually allow us to speak to whether consumers are responding behaviorally in ways that our models don't typically allow for, and so trying to dig more into how we can assess competitiveness and the use of important multihoming with some of these data I think seems quite valuable.

MR. RYSMAN: So I'm also an empirical economist, but I am going to pick two things I wish the theorists would do or do for me, because I can't quite figure it out myself.

One is that, you know, we talk a lot about the effect of competition among platforms, but I don't think there's any -- the theoretical models that I know consider one platform or two, and there's no papers with more than two, and so I think if we're going to talk about competition, you know, richer models, what competition means, would be really useful.

We got that question, what if there's two big ones and lots of little ones? I don't think we have a theory model -- I mean, you can maybe -- you can extrapolate going from one to two, but I think there could be more there.

And the other thing that I'll say is that, you know, network effects run counter to market efficiency by themselves. I mean, they are something outside of what -- if we are going to describe an efficient market, sort of a perfectly competitive efficient market, it's not going to have network effects. It's some kind of -- I don't want to say market friction, but what that means is that every -- you know, we may say inefficiencies in markets with network effects, but that doesn't mean it's an antitrust violation.

Maybe, you know, it's an inefficiency that's not due to some anticompetitive behavior, and maybe that points us towards regulation or something like that, which is not exactly the FTC's business, but I think more direction about exactly what is the antitrust violation and what's kind of an inefficiency that just arises underlying the kind of technological feature of the network effect would be helpful for me.

DR. TUCKER: Well, you know, I go back to that speech we listened to from the Commissioner this morning. I thought it was like a really wonderful blueprint for what we should be doing. He sort of laid out all these big questions that exist, such as trying to understand when marketplaces' only regulations are procompetitive or whether they're anticompetitive, such as trying to understand, well, where does data play into all of this discussion.

I know that's what we're doing in November, but it seems strange to be having this conversation without thinking about data. And also asking, you know, how does consumer behavior change in these purely digital markets? I thought those were all great questions, so I am going to give him all the credit rather than trying to come up with something new.

MR. EVANS: So I am going to go to the opposite end of the spectrum. So I think all these big, grand questions I think are really interesting, but I think in terms of the FTC and DOJ going forward and analyzing platform cases and everyone else analyzing platform cases, I think we need to be careful about doing things at a general level and thinking that we're learning things.

I think platforms are an incredibly diverse set of businesses. We heard all this discussion of multihoming and so forth, but, I mean, the reality is, when we get into cases, to Joe's point, you need active verbs. To what extent is the actual substitution? To what extent is data in the particular context of the particular case and restraint and so forth that you have before you is relevant.

So I think that an awful lot of these questions, you're not really going to know the answer to until you deal with the facts of particular kinds of platform businesses and until you actually do the empirical research that's applicable to the questions before you, and I worry a little bit that these kind of grand themes, people will say, oh, multihoming, therefore, there's a lot of competition.

Well, you know, it depends on the degree of substitution and the particular case that's actually before you, and I think that's true for data and pretty much everything else.

MR. YUN: Please join me in thanking, David, Catherine, Marc, Katja, Michael, and Howard.

(Applause.)

PANEL 2: MULTI-SIDED PLATFORMS IN ACTION

MR. RYBNICEK: All right. I think we are going to get started. Hi, my name is Jan Rybnicek. I'm an adjunct professor here at George Mason University, and I'm delighted to be here. I'm a big believer that the FTC and the antitrust community more broadly should re-evaluate its tools periodically and see if they measure up to the modern economic realities.

We have a fantastic panel here that I'm particularly delighted to be moderating. Unlike your usual competition panels that are faced with lawyers and economists, we actually have industry specialists, though we do have both lawyers and economists as well, so we're going to hear their experiences from in the trenches, inside and alongside companies, talking about the issues.

The title of this panel is Multi-Sided Platforms in Action. So we will get a range of views from personal experiences and hopefully a healthy discussion afterwards.

Just a quick note about the structure of today's panel. We'll start with Ben Thompson, who will give a 20-minute presentation or so, and then each of the panelists will give their introductory remarks, about ten minutes each. Then we will open it to Q&A

and discussion, including I think there will be some opportunity for questions from the audience, though I think you have to write it down and those will be passed up. But there will be about a 30-minute portion there for Q&A and discussion.

So before we get any further along, let me introduce the panel. To my right, Elizabeth Altman, who is the Assistant Professor at the Manning School of Business at the University of Massachusetts. Scott Kupor, who is the Managing Partner at Andreessen Horowitz. Roger McNamee, a Managing Director and Cofounder of Elevation Partners. Steven Tadelis, Professor of Economics, Business, and Public Policy at the Haas School at Berkeley. And then Ben Thompson, who is the founder and author of *Stratechery*.

So with that introduction, I think we'll turn the mic over to Ben.

MR. THOMPSON: Good morning. To Jan's point, I think this presentation will be a little bit different in flavor than the ones that came before. I think -- oh, yes, there is an economist here. I am not an economist. I am not a lawyer. I write about the tech industry, primarily focused on it from a strategic perspective.

So when I am thinking and writing and talking about platforms, I am thinking about it in the context of how and why are companies like Google and Facebook and Amazon and Apple and all the other companies that would seek to challenge them or live in a world in which they dominate, how do they make decisions? How do they make strategic choices? And so there are aspects that relate to what was talked about this morning but hopefully more in the context of how it actually applies in real life.

What I wanted to sort of focus on in this presentation is something that I think is challenging about these issues, is quite obviously these companies are dominant. I mean, any sort of surreal world view and understanding of what's happening, not just in the tech industry but in all sorts of industries broadly, it's kind of -- you lie to yourself to say that they're not, but per the discussion today, it's very easy to come up with arguments, particularly under the way that antitrust is traditionally thought about in the United States, how could they be dominant?

There was a discussion about multihoming in the earlier panel. You could just go to another search engine, you could just go to another social network, yet that never seems to actually happen. So what I want to talk about today is something that I've thought about for several years now, this idea of aggregation, where what is it that makes these companies so dominant in a world where people really could go elsewhere, yet they continue to go to these same places?

How does that happen? What are sort of the driving factors? And what are the implications of that? And if this is the case, how do we think about addressing these companies in a new sort of framework beyond sort of the traditional antitrust?

I really started to think much more about this -- I was also speaking earlier this year at the -- Chicago had a similar conference about antitrust, and it was about digital platforms, and that word "platforms" -- and I talked about how these companies are dominant, and I am going to use a couple of the same slides today, full disclosure -- but I realized as the discussion went on, in part because I went first in that case and the economists came later, that this use of the word "platform" really stuck out to me, because "platform" means something.

It's been used in the context of antitrust technology, obviously in the case of Microsoft, but to my mind what is happening with Google and Facebook is very different than what went on with Microsoft. And my concern and eagerness to sort of tease this apart is that if we take a Microsoft framework and try to apply it to Google and Facebook, one, it probably won't be successful; and two, it will lead to actually poor policy outcomes that will only entrench them and make them stronger.

So just to sort of reiterate how strong these are -- you don't need to look at it closely, I am going to highlight the important parts -- but these are the mobile audience reach of the leading smartphone apps in the United States, and there's a whole list there. What it turns out, though, is Google has seven of them, Facebook has three, they have all the top five, and they have eight of the top ten.

So from a consumer-facing side, they are clearly very dominant, and you can see this in the share of mobile search. Google has well over 60 percent, has been for a long time. This actually dramatically understates it from a worldwide perspective, where they are well over 90 percent.

And then in the meantime on the other side is the share of time spent on social networks, and you see Facebook at the top, but you also see that other one, the dark blue one, is Instagram, which is obviously also Facebook, and this is as of -- this is projected to 2018 and 2019. I think it's actually inaccurate. I would imagine Instagram has now significantly surpassed Snapchat.

So I call these companies, particularly Google and Facebook, I call them aggregators, and I want to sort of explain what an aggregator is and why it's different than a platform, and I am going to do this, to go back to sort of when Google got started, because essentially Yahoo came up in the panel earlier, because to me understanding how and why it is that Google beat Yahoo helps explain why it is they are so dominant today and why that dominance has only built over time.

So to go back to 1994 and the internet, you know, was -- there was a few pages out there, a few links, and I will analogize it to a pile of straw, and finding a needle in straw in this size, it's pretty easy. And that's basically what Yahoo did.

This is the first version of the Yahoo site. There were not that many links. Like, they literally put numbers around how many webpages there were, around each particular category, because there just weren't that many. And in this sort of context, it was very easy to find results, and Yahoo went out and found the sites and would make a directory, and you could find what you were looking for.

Within two years, the internet had gotten to be obviously quite a bit bigger. It was still possible to find the needle, but it was getting a lot more complex. As you can see on the Yahoo webpage, it was getting more complex, more links over time. Within a couple more years, finding a needle was really quite difficult, and Yahoo pretended like they had everything, but if you remember, back at the time, it was getting more and more difficult to actually find what you were looking for.

And the reality of the internet is it's actually much more like this, and good luck finding a needle here. And the problem for Yahoo is that the number of websites were increasing exponentially, but Yahoo, by virtue of its model and being a directory, was sort of fundamentally limited to sort of linear growth, and that's why the sort of performance of Yahoo as a useful portal for finding your way around the web was dramatically deteriorating over time.

And to understand what made Google different is Google, instead of trying to look at all the pages, looked at all the links in between the pages, and what was so brilliant about this model is that the more pages that were on the internet, the better Google actually got, whereas Yahoo was going in the opposite direction. The more pages, Yahoo got worse. The more pages, Google was actually getting better.

And I put web pages on here because the reality is the number of websites was what you think about a newspaper. It's adding a hundred pages a day, and you do this across all kinds of sites, and it was just exploding. And Google basically, by indexing on the link and by understanding the relationship of websites and using that rank to basically have the whole of the internet almost within itself, and when you compare this sort of homepage to the Yahoo one, exploding in complexity, and Google dramatically simplifying it, it was just -- it was superior.

Like, it was -- I mean, I've been following technology since the eighties or late eighties -- I guess I was still a kid back then -- but I've looked at a lot of history, and I don't know if it's hard to imagine a more sort of dramatic -- a product that was so much better from day one. It was just dramatically better, and Google won because it was better. It just crushed Yahoo.

Now, the way this plays out now over time is you go back to the way information used to be distributed, and it would be in a newspaper, would be bundled together, and what made newspapers valuable back in the day is that they were a bundle. You put editorial together. You put advertising together.

What actually made a newspaper valuable was not that editorial and not even necessarily that advertising. It was the fact that they had delivery trucks, they had printing presses, and they -- by controlling distribution, they were fabulously profitable entities for a very long time. Why? The hardest problem was actually getting stuff out there.

The difference with the internet is distribution is effectively free. You can go to any website on any server, anywhere in the world, and it's basically zero dollars, and so the hard problem was no longer distribution. The hard problem was discovery. It was how do you find what you're looking for in just a world of abundance?

And Google solved that problem, and then, because they solved that problem, all the users went to Google, and then, boop, they dropped advertising in front of the user in exactly where the advertiser wanted them to be, the person telling them what they were looking for, and Google profited fantastically.

And this is sort of the way to understand how the internet has changed, what happens when you have zero distribution costs, and also transaction costs. Google is not limited by the number of people they can serve because, oh, a million people, how could we serve another million? No. Again, for all intents and purposes -- obviously it costs a lot to run a server and the bandwidth is expensive, but on a marginal basis, every additional user is effectively free. And so you have this idea where before the internet, distribution was the challenge. After the internet, discovery was the challenge.

And you see Facebook did something very similar. Where would you connect with friends and family? Well, you might do it at school, it might be your neighborhood, might be your church, and this was the way to connect to people, and that was fundamentally limited. It didn't scale.

Facebook, on the other hand, lets you literally be friends with anyone anywhere in the world, and your experience of being friends with someone next-door was the exact same as your experience of being friends with someone on the other side of the globe. And then, of course, once you had all the users' attention, that's where everyone wanted to be, whether it be news, whether it be quizzes, whether it be all sorts of different content, and, of course, Facebook could put ads there.

And so you get to that multihoming issue, you know, Larry Page is saying our competition is only a click away. And technically, yes, that's true, but the difference is, if you go back to these models, when all the users are on Facebook, what happens to the supply? What happens to the news media? What happens to the articles? What happens to the videos? They are all heavily motivated to get on their platform.

And you see the same thing with Google, in particular. I mean, my favorite example is newspapers will complain that Google is killing their business, and meanwhile, their web development folks are finely tuning their websites so it will appear better on Google's results.

There is an entire business, called the search engine optimization business, which is basically all about making Google better. That's literally what's going on. The suppliers have no power over Google. They are heavily motivated to actually improve the Google product, and you get this sort of virtuous cycle where Google gets more users, gets more attractive to suppliers, in this case being content, who enhance their content to make it better for Google, and you see this more and more every day with that Omnibox.

Google puts out specifications. If you're a recipe site, put it in this format, and they all hustle to put it in that format, and now Google's results are better. So more users want to go to Google. More users on Google, suppliers are more motivated to make Google better. You get the exact same sort of thing with Facebook.

And the key thing about these aggregators is that by controlling the users, they can compel suppliers to come on their platforms at their terms, and so when you figure out over time why would you go anywhere else, the users don't leave Google, because Google is better. And Google is not just better initially, but they leverage that to become better and better over time, and a similar thing with Facebook.

And so these digital platforms are aggregators. This is what I said the first time. I am going to get to the distinction in a moment, but they control demand, they deliver superior user experience -- and by "user experience," I just mean the UI. I mean the totality of it. What's the number one part of the user experience for a social network? It's are your friends or family there.

They pull suppliers on the platform on their terms, they benefit from scale, and they tend towards winner-take-all because of this virtuous cycle where more users drives more suppliers drives more users.

But, again, I'm starting to get a little unsure about this "digital platforms" word. Is that the right thing for -- aggregators and digital platforms, are those the same things? And I think they might be a little bit different, and this is sort of the key sort of message that I wanted to get across.

A platform, if you think about it, you have third parties on the platform, and you have users who are using those third-party applications. This is the Microsoft model for all intents and purposes. Think about Windows being on the bottom. Think about all the applications being on top. Users both buy computers with Windows. They also buy applications to use it.

So there is this -- just think about the order of where they're in, and compare that to the sort of aggregator, where the aggregator, all the stuff is on there, it's out there, but it sort of leads you to it. And the difference is that a platform sort of facilitates a connection between the third parties and the user. You need Windows to have Photoshop on it, and the user can connect with Photoshop and use that, and Windows is sort of underlying that.

In the case of an aggregator, though, they are intermediating. They are standing between what the user wants and where they're going, and I think this is a slightly different structure that is very important in thinking about where their sort of market power comes from.

And there's this quote -- it's a little bit long, you can read it if you like -- from Chamath Palihapitiya when he was at Facebook, and he was bragging about, oh, we have this great platform. You know, Bill Gates comes in and says, that's not a platform. Why is it not a platform? Because your suppliers are all screwed. They're not making any money. Facebook is harvesting everything, whereas Windows was a platform, and Windows used to brag on the totality of the Microsoft ecosystem, that we only take 27 percent, or that was about the number that they were focused on, because they under -- the way a platform works is you succeed when all the entities on top of your platform succeed.

And I kind of coined this idea of there being sort of a Bill Gates line, where is the value in the value chain? Who captures that value? And clearly compared to something like Microsoft, all the value in the Facebook and Google ecosystems is accruing to Facebook and Google, whereas Microsoft was only taking a portion.

So AWS, very much a pure platform -- I would distinguish it from Amazon -- is absolutely -- the value is going -- some's going to Amazon via the AWS, via the companies that are paying for AWS, but the vast majority is going to the companies that are running on there, and I find it very difficult to say that Facebook and Google are the same sort of economic model as something like AWS or Microsoft, when you see how the value is being distributed within the entire ecosystem.

And so if you think about it in different ways -- and there's a typo on this one, I'm sure you will find it soon -- but if you think about the difference between a platform and an aggregator, platforms have open access. Anyone can build on top of that. They have the closed technology. This is the issue that was discussed earlier.

Microsoft, it was hard to sort of switch, because they made it very difficult, because they had this sort of closed API, which they opened up kind of, sort of, and made it very difficult to do on top of, whereas an aggregator, their technology is wide open. It's open source. Come get it. You can use what you want. But the issue is that no one -- it's not about the technology. It's about where the users are.

Thinking about third parties, you partner with a platform. You partner with Microsoft. You partner with AWS. You're on the same team. Now, obviously, there can be conflicts there, as Microsoft had conflicts with third-party applications and Amazon has conflicts, but by and large it's a relationship where you work together.

When it comes to an aggregator, your best option is to try to go around them. If you're on them, you're on their terms, you're competing with everyone else, you're totally commoditized. And then from a regulation perspective -- it should not be "limit vertical disclosures," it should be "limit vertical foreclosure" -- is important for platforms.

You worry about Microsoft having Office on top of it and building things up and down and locking people in and not having competition on top of the platform, whereas with aggregators, because the power comes from the number of users they have and the network effect they have on that side, you want to limit where they go horizontally. It's a very different sort of problem.

And so when I think about what's a framework or an approach to regulating these sort of companies -- and, again, I'm not a lawyer, not an economist, I'm just thinking sort of big picture, strategically, what makes sense -- you really have to start with internet assumptions, and by that I mean start with the idea of zero marginal cost; start with the idea of things spreading very rapidly. Right now all the traditional companies view those as negatives, but they can be hugely powerful.

So, number one, you have to constrain horizontal expansion. I consider the, you know, greatest regulatory failure in the internet era is Facebook acquiring Instagram, and part of the problem was there was no really framework to say why they shouldn't be allowed to. Instagram had, what, a million users. It was a little company, about a billion dollars, and everyone was, like, why are they spending so much money?

But Instagram was a network with network effects on the consumer side that was growing at a rate that where it is now was definitely predictable, particularly by people that were in the industry, and certainly by Facebook. That's why they paid a billion dollars.

And the issue really matters in this case when it comes to advertising markets. From the user perspective, Instagram is still separate from Facebook, and, yes, you see your friends between the two, and you can tell there's a connection, but what really matters from a user perspective, WhatsApp, Facebook, Instagram might be separate from a user perspective, but from an advertiser perspective, they're the same.

And so you're an advertiser and you think about I want to reach young people. Facebook is no longer cool with young people. How do I reach them? Well, I could go to Snapchat, maybe Snapchat is popular. But you know what, I'm already on Facebook. I'm already spending money on Facebook. Facebook, if I go there, I can also advertise on Instagram with very little effort, very little extra work.

It's the same portal, it's the same salespeople, and it's the same ad format. You actually just do the same ad and you can run it on both, whether that be feed ads, whether it be story ads, and the issue is that why would you bother with something like Snapchat? So Snapchat can get 300 million users and yet be on the verge of being a failed company because they can't build an effective monetization engine, because Facebook has effectively eaten their lunch.

The second principle in my mind is really a focus on transparency. The issue with users driving the power of these platforms, because they have all the users, is their power will never be reduced until users decide to leave them. I mean, there's very -- it's going to be very difficult to have any other sort of approach.

And so I think what's been very interesting, you take something like Facebook, for example, Facebook has made dramatic changes in the last six months around your data and how much is locked down and privacy. And what drove that? It was not the FTC consent decree, which was seven years ago. They didn't really change anything, to be frank. What drove that was the Cambridge Analytica scandal.

Why? Because what is far more dangerous to Facebook is not a regulatory intervention. It is users deciding, crap, I don't want to use Facebook anymore. I'm going to go somewhere else. I'm going to cut it off. That is the real danger point for Facebook.

It sounds very stupid to say bad PR is a tool, but in a world of social media, where news spreads like crazy and any story can be read by anyone in the world, because it's not geographically constrained, it is actually the thing these companies fear the most.

The other thing that's superimportant to keep in mind is not burdening challengers. If we want to have sort of competition to craft regulation, like I would argue the GDPR in Europe, that is focused on

Google and Facebook and trying to catch them in, you know, very complex, is it makes it nearly impossible to build a competitor, and in this case simple and predictable, combined with transparency, I think would be much more effective than complex and prescriptive, precisely because we need competitors to arise, and they can build around simple and predictive. It's very hard to build a new company around complex and prescriptive.

So, thank you very much.

(Applause.)

MS. ALTMAN: Excellent. Shall I start?

MS. RYBNICEK: Yes.

MS. ALTMAN: Well, good afternoon. I'm Elizabeth Altman, and it is an honor and a pleasure to be here today. I have been learning all day so far a great deal from my colleagues, and I'm looking forward to continuing with discussions.

So I was asked to take a couple minutes to introduce myself and provide some comments for my perspective vis-à-vis multi-sided platforms, or MSPs, and their related ecosystems.

I started my career as a mechanical engineer, then realized that I wanted to work at the intersection of technology and business, so I went to graduate school at MIT, completed two master's degrees, one in mechanical engineering and one in business, and then I went to Motorola and stayed 18 years, nine of which as a VP primarily focused on business development and strategy.

In 2010, I returned to academia and started a doctoral program at the Harvard Business School. When I arrived at HBS, the professors kept asking me, what was the most complex, difficult, or frustrating thing I had been dealing with as an executive? What was the puzzle that I really wanted to solve? So I thought about a number of challenges and realized that what was really difficult and interesting was the transition we were seeing to more open and interdependent business models. Along with new opportunities, we had new dependencies and much increased complexity.

So essentially I had been living through the challenges of a large, mature, incumbent, successful firm grappling with the transition to platform-based and ecosystem models. My dissertation, completed in May 2015, was titled "Platform and Ecosystem Transitions: Strategic and Organizational Challenges."

Then, building on that work, Professor Andrei Hagiu and I published a *Harvard Business Review* article in 2017 on the opportunities and challenges for firms transitioning to platform-based businesses as opposed to those that were born as a platform. As a side note, I imagine we will come back to platforms, aggregators, and discussions around them. At the moment, I'm taking a broader view of platforms that I'll discuss.

So in our HRB article, we present a framework for four specific ways in which products and services can be turned into platforms, and we look at strategic advantages and disadvantages of each approach. For the sake of time, I'll briefly explain two of the approaches we present and then spend a few moments both highlighting particular challenges in hybrid organizations and also touching briefly on considerations for firms that interact with platforms and/or join their ecosystems.

So first, because the terms "platform" and "platform business" are used in multiple ways, and we have already seen that today and just had that conversation, or at least heard about it, let me note that when I say "platform-based business," I refer to an organization that facilitates interactions or transactions between parties. So, for example, Airbnb facilitating transactions between hosts and guests, or Amazon on the marketplace side of their business connecting sellers with buyers.

So the first scenario of a firm aiming to transition all or part of a business to a platform involves opening the door to third parties. In this case a firm has a large, established customer base the third-party sellers of other offerings are interested in reaching. The firm becomes a multi-sided platform by making it possible for these third parties to connect with the firm's customers. I note that this connecting can also include advertising to them, so that's where we get the ad-supported platforms as well.

The third-party offerings can either be independent of the firm's product or service or they can be products or services that work in combination, such as apps or modules that we see a lot of today. An example is Intuit, working with its Quickbooks financial accounting software product and turning it into an MSP by opening it up and allowing third parties to provide add-on modules for it.

These modules or apps leverage data about small businesses, small business finances, to provide more functionality to Quickbooks and Quickbooks users. The connection then is between Quickbooks customers and the third parties, and it's made through Intuit's system, and, thus, Intuit becomes an MSP.

An advantage for the strategy is that these third-party apps serve additional needs for customers that may not be served by the original product. They often fill niche gaps that the MSP doesn't intend to fill themselves, but there are, of course, potential downfalls of this approach. One is that firms start to allow others to reach their customers, but the customers may not always want to be reached through the platform. So if a firm starts to allow advertisers to interact with customers through their product, customers may not be happy about this.

An issue also is that if a third-party firm fails to meet expectations for a customer or, worse, causes some significant problem, the customer may want to hold the initial firm, the now MSP, responsible. So essentially the MSP, by enabling and facilitating transactions, implicitly endorses third parties operating on their platform. Thus, there are a variety of strategic decisions a firm must make regarding the extent to which they plan to govern or control the third parties they're enabling on their platform.

We see a spectrum of curation approaches, ranging from very tight control to a much more open market, and, again, we can discuss that a little more in our discussion.

The final consideration for firms that follow this approach is that the third parties may cannibalize the MSP's offerings. So very basically, when Amazon initially allowed other booksellers to sell through their marketplace offering, they were essentially enabling competitors to compete with them, and this is the tradeoff associated with making the MSP itself more attractive to a greater number of customers.

The second scenario for creating an MSP involves connecting customers. In this case, a firm is already selling a product or service to two distinct sets of customer segments. These customer segments also interact with each other but outside the firm's products. Thus, there is an opportunity to create an MSP that connects the customers.

Sticking with the Intuit example, Intuit sells Quickbooks to both customers and user small businesses and accountants. Intuit has worked to add a matchmaking function within Quickbooks to enable small businesses to contact and contract with accountants. Preparers can then exchange data easily through the product.

Like in the first scenario, one of the potential disadvantages of this scenario is that a firm may waste resources building a matchmaking function only to find out that the customers do not want to make the matches through the platform or through the MSP, and, again, if customers perceive the matchmaking to be misaligned with their core use of the original product or service, that will turn them away. And, again, like in the first scenario, if one party becomes dissatisfied with the service of the other, the MSP then may be held accountable.

In both these scenarios and others, the firm also maintains all or part of its traditional business, so these transitions are often partial, and we often oversimplify it when we talk about platform transitions. We don't usually see firms moving entirely to platform-based businesses or entirely to interacting with platform businesses, but, rather, moving part of the business in that direction or entering a new business within a platform business model.

Thus, we also see challenges related to operating in hybrid business models. These may cause internal difficulties. For example, one part of the business may be actively competing with another firm, while another part of the business may be enabling the growth of that same firm.

Similarly, to measure performance of a platform business, a firm might want to adopt different types of metrics and hold one part of the firm accountable for different performance. So for a product firm, for example, metrics might include more transaction or engagement-centric types of measures.

We are also just starting to fully understand organizational and leadership challenges associated with these transitions. For example, whereas a product firm might primarily reward engineers and designers who create innovative new solutions or patents, an MSP might need to focus more heavily on rewarding people who engage externally, build large communities, generating growth through network effects.

And finally, while many firms are transitioning businesses to platforms, even more organizations are now in a position where they need to interact with platform ecosystems, whether or not they become a platform themselves, ranging from simply having a smartphone or tablet app through selling products via platforms, firms are addressing strategic questions associated with joining ecosystems or, in many cases, becoming complementers.

I mentioned Airbnb earlier as a platform. An interesting discussion, for example, is how Marriott is and should be interacting with Airbnb. On the one hand, they are clearly competitors going after the same customers. On the other, they're complementers. Marriott now lists rooms and vacation properties on Airbnb, so Airbnb is serving as a distribution mechanism.

If an MSP, like Airbnb or others, changes its requirements or business models, that may have a large effect on the ecosystem of complementers around it. So there are dependencies that are created in these interactions. In the case of Airbnb and Marriott, they are both very large businesses, large firms at this point; however, often these interactions involve assymetries of size and power, and that causes other sets of challenges. We're really just starting to refine our understanding of these dependencies and interdependencies that are created in the systems.

So I will leave it there for now. Thank you again for including me in the panel. I look forward to our discussion.

MS. RYBNICEK: Thank you.

(Applause.)

MR. TADELIS: Okay, I guess I'm next. Thank you again for including me as well.

What I'm going to do is I'm going to focus more on marketplaces as a particular form of platforms, and the reason that's important for me is because you hear a lot of people talking about platforms as if they all share something deeply in common and, therefore, the same approach or the same methodologies or the same kind of analyses are going to be well suited to address all kinds of problems or lack thereof across different kind of platforms.

And I think it's important to realize that the devil's in the details, and we're using this word very loosely. I have nothing against definitions, but we're struggling defining "platform," adding something like another definition, aggregators, and now we're going to have to start asking ourself, what's exactly an aggregator?

And I think that it was useful to hear the conversation/discussion earlier in the morning which echoed, starting with Marc Rysman and through Joe Farrell, that we're really talking about a continuum here and how many network effects are there and how strong is it, how much of a strategy is this vis-à-vis multi-sided platforms, and so on.

So going into online marketplaces in particular where I think it's a little clearer to see the exact business model, then we just have to go back to 1995, right, almost 25 years ago, and that was Craigslist and eBay, right? They really were the first marketplaces online.

Before those you had online bulletin boards, not too different from the older version of BlaBlaCar that Joe referred to as bulletin boards to get shared rides, but what Craigslist and eBay did, they made it a lot easier for people to interact. Of course, one, Craigslist was very much replacing ads in newspapers, the classifieds, and it was a very local market. eBay took it to a national and even global level.

If you ask what the business model was, it was relatively straightforward. It's connecting buyers and sellers. It's creating gains from trade and grabbing a commission on that gains from trade, much more eBay than Craigslist. As I'm sure you know, Craigslist only charges for a sliver of the ads that people list on Craigslist.

So if you think about the incentives of a marketplace business, I think in order to do their business successfully, they really have to internalize the externalities that happen on these marketplaces, and, in particular, it's about facilitating and maintaining a level of trust.

So if you think of the fact that you have thousands, if not millions of sellers and millions of buyers on each side of these markets, then if at some point in time one of these parties feels that they were short-shrifted or screwed in any way, they're not thinking, oh, I just bought this pair of jeans on eBay from Joe Schmo Jeans, and I was not happy with the transaction, so -- mental note -- don't go to Joe Schmo Jeans again, but eBay is fantastic.

No, what people are thinking is, no, I bought this through eBay. I'm not happy with eBay. And, in fact, there's some research that I did with a colleague who used to be at eBay with me when I was there, where we took data from eBay at the consumer level, very granular, and were able to prove in no uncertain terms that when someone is harmed by a transaction, in any way of dissatisfaction, the impact that that really has is abandoning the site much more than just abandoning a particular seller.

So marketplaces that understand that business model clearly have to invest in helping maintain a level of quality, which then, of course, means that they have to monitor, they have to find ways of measuring the quality of transactions, and they have to have carrots and sticks to incentivise sellers to do the right thing.

The tools they will use, for example, are feedback mechanisms that everybody is familiar with, right, the reputation of a seller, and eBay started that, and now it's commonplace on practically every marketplace, using search, for example, to demote or promote sellers that they believe are doing a better job, and so on.

So there's a very important tool that these marketplaces are using in order to create that trust and facilitate the trade that really comes from having a trustworthy marketplace.

Now, when we think about that, then, okay, I now own a marketplace; I'm putting together these tools; I'm creating these externalities; and I'm internalizing them. Well, does that necessarily mean that we're going to have a convergence towards one large firm, market size that's going to be protected by barriers to entry and lack of entry?

Well, the common argument really is that there are these strong network effects, okay, or the chicken and egg problem, that once a marketplace is established, another one will have trouble. But here I'm echoing again a term that came up in the morning, the issue of multihoming. If anyone is talking about platforms, online marketplaces, et cetera, and not talking about multihoming, you're leaving out one of the most important aspects of the evolution of these markets.

If you think about Catherine Tucker earlier had this nice slide where you saw a car with an Uber sticker and a Lyft sticker. Well, if I pull out my iPhone, you'll see the Uber app and the Lyft app right next to each other, and the reason is that unless I'm doing a $5 ride, which I'll sometimes do, within 40 seconds, I'm going to check both of those apps, and I will see both the price and how long it's going to take the driver to come, right? And I know a lot of people that do it. I always ask drivers, oh, are you just driving exclusively for one or the other? A majority of drivers -- and this is also well documented -- do both. Multihoming is very easy.

Now think about sellers. Every major seller on eBay is listing on Amazon, and many of them will have their own website. So you have these sellers and buyers trying out all these places because the cost of engaging in multihoming for most of these is very small. It's not like it was with the railroads where there was no alternative to the monopolist railroad that owned the tracks.

So if you think about the evidence on entry, well, let's go back to 1995, but actually, let's look at Craigslist today. That's what the Craigslist website looks like today. Now, I don't know how many people here have used Craigslist over the years, but if you have, you know that the website looked the same way five years ago and ten years ago and basically 20 years ago.

And this is a meme, if you will, that's very popular among VCs in the Valley, because it takes Craigslist, and for many of the subcategories on Craigslist, it then points at companies that were founded and got VC funding and are profitable companies just by coming in and specializing in one of the many submarkets that Craigslist has.

If you think -- you know, I see Redfin there, which I used recently when I bought a home, well. You have Redfin and you have Zillow and you have Trulia, and you just have so much competition across all of these different niches because it's not rocket science. And really what's going on here is Ecclesiastes Chapter 1, Verse 9, there is nothing new under the sun, right?

These ideas go back to medieval times when you had trade fairs and a central place where people would come and buy and sell, and to enhance that, you had some central authority that really kept track of history in order to say, oh, this person cheated before, watch out, don't interact with them again, and so on and so forth.

So we see, you know, Uber and Lyft, Airbnb and HomeAway and Upwork and TaskRabbit, and all these are reincarnations of the eBay model in particular, because Craigslist really did focus more locally. You have multihoming. You have innovation. The maybe exception some might argue is, well, Facebook and Google are really different because they're not marketplaces. Well, maybe, okay, the devil's in the details, but let's talk about social networks.

Some people here might remember Myspace or Friendster. They're dead. And will Facebook die in a year? Maybe, because it would be so easy to transfer your friends over to another platform. Now, if Facebook is going to continue making it easy and is trustworthy and so on, you won't have an incentive to do that, and if there are two more Cambridge Analyticas, I'm pretty sure that that will happen.

And when you think about search, well, I remember when I switched from Lycos to Google around 1999, and it was just because Google was better, and if tomorrow a company is going to pop up called Schmoogle and they'll be better than Google, I'm going to switch to Schmoogle, because all I care about is having efficient and effective search.

So the natural question -- sorry, before, though -- why didn't eBay do everything? Well, eBay didn't do everything because this is what innovation is all about. They didn't see their model as everything, because if they did, then they would have launched Uber and they would have launched Airbnb, and they would have launched TaskRabbit back in 1998 and 2002 and so on and so forth. But they didn't and others did, and those who didn't do it well, well, were replaced by others who did it even better.

So I think understanding the ease of entry and the multihoming is very critical to understand the strength of competition in these markets. Thank you.

(Applause.)

MR. MCNAMEE: Thank you for inviting me to participate in this hearing. My name is Roger McNamee. Since 1982, I have been an analyst of and investor in America's technology industry with a particular focus on Silicon Valley.

In the 1980s, at T. Rowe Price Associates, I managed the top-ranked science and technology fund. In 1991, I cofounded the first crossover fund, combining public market investments with venture capital, inside Kleiner, Perkins, Caufield, and Byers. In 1999, I was lucky enough to cofound the first technology buyout fund, Silver Lake Partners. And in 2004, I cofounded Elevation Partners, a venture and private equity fund that invested at the intersection of technology and media.

Through Kleiner Perkins, I was an early investor in Google and Amazon. At Elevation, I made early investments in Facebook and was, at one time, a mentor to Mark Zuckerberg. I am a capitalist by nature and training, but I believe America's technology industry is experiencing a giant market failure. Monopolies have developed at the heart of the industry that threaten the country's leadership in technology and are undermining a key segment of the entrepreneurial economy.

I believe that Ben Thompson's introduction here was fantastic. He is a brilliant analyst, and his aggregation theory advanced my understanding of how data-driven, two-sided markets with network effects operate, especially in the absence of constraints such as government regulation.

For three companies, Alphabet, Amazon, and Facebook, the economics of aggregation theory have produced harmful side effects on competition, innovation, democracy, and national security. While consumer regulation would be best, which is to say consumers altering their behavior, the absence of alternatives makes that option unrealistic for these three companies.

I believe antitrust action is the best and most pro-growth remedy available, and given our limited time today, I will focus my remarks on Alphabet and Facebook. I hope at another time to be able to present my concerns about Amazon.

Now, most multi-sided markets are transactional with both the buyer and the seller interacting directly, as would be the case with eBay. The market maker facilitates a transaction to the benefit of both the buyer and the seller. The economic value of the market maker's services can be priced for all participants.

Traditional two-sided markets tend to lead to monopoly or oligopoly at the level of the market platform itself, but to date, policymakers and courts have not found unacceptable harm to consumers. But with data-centric internet companies like Alphabet and Facebook, two-sided markets operate differently.

In these cases, the middle man interacts directly with the buyer and seller, while largely blocking the buyer and seller from interacting directly, precisely as Ben described. One resulting difference is that the consumer-facing side is not explicitly transactional and is not priced in dollars. Instead, Alphabet and Facebook operate on a barter system with consumers, trading a variety of services for personal data.

Both corporations rely on selling advertising to survive. Data is the essential input to their business, so they have each designed systems to gather all the consumer data they can get. They then use this data to create barriers to entry for competitors, barriers to exit for users, and to undermine the business models of content suppliers.

Historically, advertising-based businesses had a one-size-fits-all broadcast model. Alphabet and Facebook transformed media by implementing a realtime, one-on-one relationship with each user. Smartphones transformed that relationship further by making it available at times and in places earlier generations of media could never reach.

Each company began with a single data set but built their economic dominance by combining data sets. Consider the case of Alphabet's Google subsidiary. It began with search-based ads. A consumer in the market for a hammer would search on Google, receive three adwords from vendors of hammers, and buy from one of them. Everyone won in that transaction. The consumer got a hammer, the vendor made a sale, and Google got paid for an ad.

Google's insight was that additional data sets would make its data geometrically more valuable. Combining search-based purchase intent data with identity from Gmail and realtime location from Google Maps enabled Alphabet to achieve a Holy Grail of advertising value that could not be replicated by traditional media or even by Amazon, which only knows the delivery location. Facebook has executed a similar strategy but with an integrated, walled garden of product.

The success of Alphabet and Facebook raises a broad range of issues for policymakers, especially in the realm of antitrust. Each data set they acquire increases their advantage, not only relative to competitors but also suppliers. To understand, consider how they grew to dominance. Each offered users a bundle of incredibly convenient, notionally free services, an offering that has proved to be irresistible to users. By aggregating the audience, Alphabet and Facebook forced content providers onto their platforms on their economic terms. The result is that Alphabet and Facebook have captured an increasing percentage of the advertising value of content produced and owned by other people.

This might be excusable if Alphabet and Facebook added value to that content or increased the economic pie. Unfortunately, they do just the opposite. The algorithms and business models of Facebook and Alphabet prioritize trending over substance, undermining the business model of news, video, music, and other high-value and high-cost forms of content. They are not reducing unit demand for this content, but they have disintermediated the economic value.

When companies like Alphabet and Facebook combine data sets, they often discover new use cases that were unknown at the time users offered their personal data. Users are not aware of the new use cases and, so far as I can discern, often do not benefit from them. In some instances, as with the recent hacks of Facebook and Google, they can suffer great harm.

The current model of antitrust regulation provides a safe harbor for Alphabet and Facebook because consumers do not pay for their services with currency. For policymakers, the exchange of services for data should raise several questions. If we were to view data as a currency, how is the price of the consumer transaction changed over time in nominal terms and relative to value received? How is the value received by Alphabet and Facebook changed relative to the benefit delivered? How has the accumulation of consumer data changed the opportunity for competitors and suppliers who transact with Alphabet and Facebook?

Now, Ben Thompson's user regulation framework would have been perfect had we known what we know now before Alphabet and Facebook expanded horizontally and acquired their most threatening rivals. The situation calls, I believe, for greater intervention. My hypothesis is that the algorithms and business models of Alphabet and Facebook have harmed suppliers, competitors, and users in ways which, if data were viewed as a currency, would violate antitrust laws.

While not the subject of this hearing, I believe Alphabet and Facebook routinely violate the FTC's consumer protection mandate, and those violations are central to the violations of antitrust law. Alphabet and Facebook are unusually opaque to advertisers, users, and regulators, and I hypothesize that that opacity has enabled them to change the effective economic terms of every business relationship without the knowledge of the other party.

In the context of the economy and society, the consequences of the concentrated economic power of Alphabet and Facebook are many and increasingly destructive. By compounding network effects, Alphabet and Facebook have created massive zones where entrepreneurs and venture capitalists will not enter. They have also acquired and invested in promising next-generation technologies, like artificial intelligence and virtual reality, distorting the entrepreneurial incentives in those categories. They are able to choke off capital in emerging segments and in at least one case were able to purchase a promising startup at a bargain price. Even successful startups are not immune, as we can observe in the case of Snap.

Alphabet and Facebook have co-opted much of the venture capital industry by sharing just enough economic value to keep the peace. Now, the pendulum of technology normally oscillates between centralized and edge-centric architectures, as that has proved to be the optimal way to grow the functionality of the network and create economic growth. Thanks to the market power of Alphabet and Facebook, that pendulum is pegged to an extreme form of centralization, where by now we should have seen massive investment in new technology at the edge of the network to address the increasingly obvious flaws of the cloud model.

The massive hacks and data leaks that are revealed every week are the inevitable result of this centralized model. The only decentralized model that has attracted capital, what was known as the Blockchain, is struggling to find use cases because the most valuable ones are dominated by monopolists who are determined to bend it to satisfy their own needs.

Against this backdrop, entrepreneurs and venture capitalists have been forced into less promising categories, like cryptocurrency, scooters, and what I call services your mother used to provide, like delivering food to your home. The effect of this is that for the first time in 60 years, the country is relying on monopolists for innovation. This is demonstrably suboptimal. Consider the risk for national security. Are we better off entrusting the development of artificial intelligence to a handful of monopolists or to a much larger set of competitors?

The question takes greater salience when one considers the monopolists in question have demonstrated a desire to do business with our likely strategic challengers on whatever terms are imposed by those countries. We're a country that prospers when a thousand flowers are allowed to bloom. We need antitrust intervention to clear fertile ground for those flowers to grow.

Thank you.

(Applause.)

MR. KUPOR: Thank you very much for the opportunity to be here today. By way of background, my name is Scott Kupor. I'm the managing partner for AH Capital Management, which manages approximately $7 billion in venture capital funds, focused principally on early-stage IT investments. I'm also the managing partner for CNK Capital Management, which is a registered investment advisor that manages a $350 million venture capital fund dedicated to investing in crypto-related technologies.

I'd like to make three points today related to the topics at hand. First, while it is true that many of the companies today that we're talking about do enjoy very strong market positions, I believe that their value as potential distribution platforms in the technology community, and in particular to the pace of new startup investment, remains very important and in many ways is actually procompetitive.

Second, these large players play a significant role as acquirers of venture-backed startup companies, which is an important part of the overall health of the venture ecosystem.

And thirdly, where startups have concern about the potential market power of these institutions, the free market actually works very well in addressing those concerns. We will use the rise of cryptonetworks as an example of such a well-functioning free market response to incumbency concerns.

Let's start with the distribution platform issue. Prior to the existence of these large consumer platforms, it was very difficult for consumer startups to cost effectively build a customer base. This is among the reasons why many of the early consumer internet-based startups in the late to mid 1990s failed. It was simply too expensive for them to acquire customers directly, and the economic rents that they could ultimately earn from these customers was too small to be able to recoup those costs. The internet was simply too nascent, and the number of customers to whom they could ultimately market their services was severely limited.

If you fast-forward to the past seven to ten years of consumer-related startup activity, we've had an unprecedented amount of new and successful large company formation. As examples, we have seen the creation of a whole new set of multibillion dollar companies delivering significant consumer utility, include Airbnb, Pinterest, Uber, Lyft, Instacart, Snapchat, and Lime, among others.

These companies, of course, benefit in the virtual ubiquity of the internet, itself supported by the commercialization of smartphones by Apple and Samsung, among others, which drove an enormous increase in the available market size, but they also benefited from the customer acquisition channels available to them from many other large platform providers that are today the subject of these discussions, Google, Facebook, Amazon, and, of course, Apple.

That is, to acquire customers, these startups did not have to go to the expense of building out massive new sales channels, but, rather, they leveraged the advertising and search platforms of these large incumbents. This meant a lower cost of customer acquisition and a pay-as-you-grow model for increasing advertising and customer acquisition costs depending on a company's stage of development, ultimately providing an attractive model for entrepreneurs and venture capitalists to fund experimentation in the startup world.

It's the existence of these platforms that in many ways explains the significant growth we've seen in the last seven to ten years in consumer startup and VC financing activity. Simply put, the math works. Companies can experiment with customer acquisition via these channels and fund their marketing companies iteratively based on which yields the highest return on capital.

Without these platforms, I would venture that the economics of customer acquisition might be cost-prohibitive for most startups and, thus, that the venture capital economy would shift its investment into other more cost-effective areas.

Now, to be fair, there are times where too much platform risk can create problems for companies; that is, where a complete dependency on these third-party platforms can impact a business. Zynga, for example, ran into this problem with Facebook in that it became wholly reliant on Facebook as its sole customer acquisition mode and failed to establish a direct relationship with its customers over time. The successful startups that I mentioned recognized this and utilized these platforms as mechanisms to jumpstart or bootstrap their initial customer acquisition approaches, understanding that over time they need to build direct relationships with customers to mitigate the risks of long-term dependence on these platforms.

Let's turn to the important role of the platform companies in the M&A environment. The VC business, as you know, is a very high-risk one. We basically fund companies at their earliest inception, with the understanding that most of these companies will not yield significant economic value. In fact, about 40 to 50 percent of what we invest in fails, meaning that the companies have little to no remaining economic value. About 25 to 30 percent of what we fund turns into small returns. The companies build something of value but don't ultimately grow into what we hoped would be the larger market potential.

And, finally, a small minority of what we fund turns into large opportunities that either exist as stand-alone public companies or are sold for significant economic returns to larger players.

We know and understand this risk, of course, but nonetheless require that a small number of companies have to yield high returns on capital to make the ultimate venture business succeed. To that end, about 15 to 20 years ago, the venture in business enjoyed what we called liquidity events, which is basically the ability to convert an investment into a real economic return, in the form of about 50 percent IPOs and 50 percent M&A activity.

Today that math is closer to about 80 percent M&A and about 20 percent IPOs. The reasons for this are beyond the scope of this hearing, but this trend plays a very important role in the potential actions that the Commission might be considering with respect to the large platform players in this industry.

In full disclosure, we as a firm have been the beneficiary of acquisitions in our portfolio from some of these players. As examples, we were part of the investing group that sold both Instagram and Oculus to Facebook, and we have been parties to transactions with Google as well, but it's important to understand the important role that M&A does play in the venture ecosystem.

As venture capitalists, we raise money from institutional investors who seek a high return on their investment and want to be able to recycle these investment returns into long-term portfolio venture assets. To do this, we need to provide them liquidity in the form of cash returns from either M&A events or IPOs.

As the number of IPOs has shrunk considerably, down about 50 to 60 percent in the last 15 to 20 years relative to long-term median values, and as the time to IPO has significantly elongated, now about 10 to 13 years from founding of a company versus a long-term median of about 6 1/2 to seven years, the role that IPOs play in providing liquidity continues to shrink.

As a result, M&A continues to grow in importance to the well functioning of the ecosystem. It provides much needed liquidity to the institutional investors who then use that liquidity to reup their venture capital investments. Policies that could impact the timing or availability of M&A could do meaningful damage to the capital close in the venture business, particularly at a time when the capital markets remain a much delayed and smaller exit opportunity for venture-backed companies.

Finally, I'd like to turn to the role of the free market in addressing potential competitive concerns related to the platform providers. We believe that in many ways the growth of what we call cryptonetworks is, in part, a response to the developer community's concerns about too much reliance on large platforms for customer acquisition. We don't think it's an accident that at the same time U.S. policymakers are holding hearings to discuss potential concentration in the technology industry, that we see the increasing growth of venture capital investment and new company formation in the cryptonetworks industry.

Why is that? Recall I mentioned earlier that successful companies leverage platforms to bootstrap their customer acquisition efforts but over time develop ways to control their own destinies. They don't want to be overreliant on the platforms for the long term, as the platforms may change their business practices -- by the way, in perfectly fair and legal ways in most cases -- that could favor or disfavor certain other participants of the network. This potential risk is one that many companies seek to mitigate.

Enter cryptonetworks. We define the term "cryptonetworks" as a new way to build digital services, and a digital service can be effectively any internet-based application where those services are owned and operated by a community of network participants rather than a centralized corporation and where the repository of activity on the network, essentially the database of activity, is decentralized and maintained by the broader community.

The value of cryptonetworks, thus, are manifold. First, they provide a platform on which new companies can be built without the attendant concerns that may come from relying wholly on centralized platforms. That is, decentralization and transparency ensures a more transparent governance model and allows the very startups who build on these platforms to be active members of the platform's governance.

Second, cryptonetworks provide a symbiotic economic relationship between the value of the network itself and the work that is done by those who govern and manage the network via the introduction of a network-specific token. Tokens in this regard perform a series of functions. They are the method for value exchange between network participants; that is, consumers pay for services using the token and sellers receive tokens in exchange for services. And two, they provide the financial incentive to reward developers and other maintainers of the network; that is, people may receive tokens for ensuring the authenticity and integrity of transactions completed on the network.

I bring all this up not to laud the value of cryptonetworks themselves but, rather, to use them as very real and current articulation of the role that free markets play in reacting to perceived market challenges; that is, to the extent that developers perceive their platforms to be more powerful than they might otherwise wish, cryptonetworks are a potential free market solution to that perception.

In other words, it may not require new

government regulation or changes to existing regulations to address changes in a very progressive and fast-changing technology market; rather, the industry has a way of remedying perceived changes through the operations of economic self-interest.

Interestingly, there is an impact parallel in the enterprise community that mirrors what we've seen on the consumer platform side of the world. In the early 2000s, many commentators thought that market power and consolidation among the large enterprise players, companies like Microsoft, IBM, Cisco, and Oracle, et cetera, could create anticompetitive behavior and consumer disutility, and in many ways the concerns were identical to those being expressed today.

These large organizations controlled access to customers, akin to the consumer platforms today, in a way that made it difficult for new entrants to offer competitive solutions to those very same customers. The customers in those cases were the centralized buyers of enterprise IT solutions; namely, the chief information officer who controlled IT budgets and thus dictated the adoption or not of new technologies.

Again, however, the free market solved the perceived concentration problem through development of new technology. In particular, the development of cloud computing democratized access to technology and enterprise, enabling point solutions to be adopted by individual departments versus the tops-down option of technology from centralized IT organizations.

As access to the technology itself democratized, so, too, did access to budget dollars to produce this technology, thus defeating the centralized budget control of the CIO and in turn reducing the power of incumbent IT providers. It is this broad shift in the underlying technology that has given rise to a whole new generation of IT providers, such as Salesforce.Com, Workday, Splunk, ServiceNow, Box, among others.

It goes without saying the free market does not always work and the role of government regulation remains an important one to remedy such market functions, but particularly in a market as fast-moving as technology, we should exercise caution in supplanting the ability of the free market to react appropriately by developing new government regulations.

In many cases government regulations can have unintended consequences. In particular, regulation can have the opposite effect by providing more market power to the incumbents as they are often the only ones who can absorb the costs of regulations. Startups inevitably are at a disadvantage in such circumstances, as venture capitalists won't finance new businesses where the incumbents have perceived regulatory advantages in the form of unlimited compliance resources.

Barriers to funding new companies that may, in fact, help produce competition for market incumbents not only has economic losses from the lack of new job formation but will also calcify market control for incumbents. Such risks are particularly acute today given the global opportunities for startup development and the ability for governments to utilize pro-startup policies to extra new investment.

Twenty years ago, the U.S. had about a 90 percent market share of venture capital dollars. Today, that's just 50 percent, as foreign governments continue to seek to attract startups through development of pro-entrepreneurship policies, taxes, immigration, and regulatory-light frameworks. Capital is, indeed, highly fluid globally, and, thus, we need to be careful that well-intentioned regulatory policies don't disadvantage U.S. startups to the benefit of foreign domiciled competitors.

I appreciate the opportunity to be here and look forward to answering your questions.

(Applause.)

MS. RYBNICEK: All right. So with that we'll open it up for Q&A and discussion. Maybe I'll just initially allow anybody who wants to to respond to anything that they've heard. I know, Ben, you've been taken off the podium for a while after your presentation. I don't know if there's any reactions you have to the presentations after yours.

MR. THOMPSON: I think the thing that just is very clear is -- and both Steve and I have discussed this -- is the importance of distinguishing between these different markets and issues. The issues that come with Google and Facebook I think are clearly one category. Marketplace is another category, and I think -- I thought Roger articulated well that the fact there is a -- you can articulate exactly what the transaction is, how much it costs, solves a whole lot of problems.

And I think the goal that -- the issue of Google and Facebook is the -- one, it's not just a two-sided marketplace. It's a three-sided marketplace, with content suppliers, users, and advertisers, and that results in a very opaque sort of marketplace because the users are not aware that's what's valuable is their attention, and they are not party or aware of what transactions are going on otherwise, and so it's very hard to initiate any movement among consumers because there's a lack of information.

MS. RYBNICEK: All right. Are there any other reactions to the other presentations anybody would like to share?

So on the issue that we've heard a number of definitions of what a platform is or what a multi-sided platform is, and whether or not there's a continuum or if it's just clear-cut or -- who knows? Maybe it's just a "you know it when you see it" test.

Elizabeth, I don't know if you -- this is an area where you spent a lot of time. I don't know if you want to delve into that question a little bit more about how you see platforms and how you define them, particularly hybrid platforms, potentially.

MS. ALTMAN: Sure. I mean, I think we have already today spent a good deal of time on this topic, and I think -- so, as I said, I think that the word "platform" -- I guess maybe where I diverge a little bit from Ben is that I think -- Ben, I noted, said "platform" means something. I think part of our problem is "platform" means a lot of things, many of which are related but not all of which are related, and I don't think we have, as a community, at least, amongst academics -- and I would say probably also attorneys, economists -- and economists within academics -- we haven't come to kind of a solid agreement of what we mean.

So when I look at platforms, I look at it more broadly as, again -- so technology platforms are often the base, right, and often we are talking about the software or the system or the algorithms that are at the base, and then we think about the platform-based businesses that those technology platforms enable. So generally speaking, when I think about platforms, I'm talking about them in terms of the organization or the firm or subset of a firm that is facilitating or enabling transactions amongst players.

So it's a simple way to kind of separate out, and so in that case aggregators do fall within that broader definition, and, yes, I think there are different -- there are differences -- you know, I was having a conversation the other day, the difference between transaction-based platforms, again, which came up this morning, and ad-supported platforms. I don't think anyone brought up conflicts of interest and how they kind of come up in these conversations.

So with transaction platforms, generally speaking, you have less concern with conflicts of interest, but in ad-supported networks -- and we heard kind of the manifestation of that here in some of the comments, right -- you end up with conflicts of interest by nature of the platform, because the platform needs to take the data and then sell the data, and that's not always in the best interests and often isn't in the best interests of all the users on the platform.

So I think that's an important distinction to think about, and, again, it is a -- and the devil is in the details, and I think it depends from what perspective you're looking at the platforms and kind of why you care, which question you're trying to answer about platforms. So I'm not sure if that clarifies or muddies the water, but that's...

MS. RYBNICEK: Does anybody else kind of want to weigh in on the significance of transaction-based platforms versus ad-supported platforms and the implications of that for competition policy?

MR. TADELIS: So I do want to say something along these lines of, you know, like you said, do you know it when you see it? I wonder how many people here in the audience had an experience that I had many times in my life where I was in a supermarket, and I walked up to someone stocking the shelves to ask them where I could find, you know, the chocolate powder or whatever, and they'll turn to me and say, "Sorry, I don't work here. I work for Coca-Cola or I work for Pepsi or I work for Nabisco and I'm just filling the shelves."

Clearly, if you think of a supermarket where they take shelf space and they say, Coca-Cola, you have this much shelf space, you decide how many Diet Cokes and how many Cokes and how many Coke Zeros you are going to put on there, in what way is that not a platform?

So it really is murky, and I think the most important thing as an economist is if you're concerned about a certain anticompetitive behavior, what is your theory of harm, right? What is your understanding of the business model? What is your understanding of the interaction with consumers and other players? And what is your theory of harm? If your theory of harm is this looks big, big makes me feel uncomfortable, something needs to be done, that's a problem.

MS. RYBNICEK: So one of the things that we have heard is a key feature of platforms is the network effects and a tendency to go to large-scale and winner-take-all models. I was interested in the reaction to -- I think Ben brought up the Facebook/ Instagram transaction, and in light of kind of the benefits of network effects and potentially a winner-take-all model and the benefits that accrue to consumers from that, how should we think about that?

And, in particular, if you think that these types of horizontal acquisitions might end up harming consumers or dampening competition, how should we think about those two kind of points that are in tension?

MR. THOMPSON: Well, I mean, I think the -- if you start with the premise that the power in these value chains comes from controlling consumer demand, then it points to the -- sorry, it points to the issue of being able to expand horizontally is, by definition, going to increase their power in the value chain. And the other thing, too, is the scale that these companies are operating on, it's very difficult to look back historically and make -- well, it happened before.

I mean, you mentioned Myspace and Friendster. Myspace peaked at 75 million users. I mean, Friendster peaked at 8 million users. I mean, Facebook -- Instagram is probably at 8 million users today. And so the level of -- just to your point about the economic harm, saying big is bad, but I absolutely agree with it to the extent there's economic harm. I expect you have to look on the advertiser side to see what is happening there with pricing.

But the other point is I do think there is a -- to use a problematic cliché -- is that it actually is different this time and different in the context of being able to scale to literally billions of users, that is a -- and then to add the transformative effect of not just data from the users directly but data from multiple sources.

And this is where I kind of push back on the, like, well, how much is your data worth at Facebook? That's actually very difficult, because Facebook, from an economic perspective, adds tremendous value to user data. The data that Facebook gets from you is worth very little if you could give that to another company, but once Facebook combines that with all the other data they get, and then has the scale on the advertising side to take advantage of that, it is a massive, meaningful economic difference, where Facebook is really adding tremendous value and is appropriately valued because of that.

And so I do think there is an aspect here -- and, again, I totally agree with the theory of -- the issue of defining the theory of harm and the issue of just saying it's different, and my hope is, with all the folks in this room, to see if this can be calculated. And freely admitting that, I'm not the one to do that.

MR. MCNAMEE: There is a second element -- I very strongly agree with Ben's framing of those points. The one thing I would observe is that these issues at the scale these companies operate at cannot be viewed as only about markets and only about economics. Facebook operates 2.2 billion Truman Shows, and between Facebook and Google and the use of filter bubbles, they have changed the public square really dramatically. So their form of market power has implications that we have never seen previously.

So my observation is the issue isn't just how big they are. It's what they do with that scale and how they change the public square, how they change the economy, and what -- you know, when you look at this as a regulator, one of the questions you're asking in this whole thing is, is the economy better or worse off for the changes that have come with the success of this company?

And to my mind, from the FTC's perspective, the scale isn't the problem, per se. It's what they're doing with it, and it's how they got there. Again, it's not just about antitrust. There is also material misrepresentations to almost every constituency they deal with.

You know, so there's a lot of harm -- from the FTC's point of view, this is like the beginning of a whole new era, because you've never previously had, I believe, a case which hit both of the FTC's mandates in the same companies at the same time, and these things are intrinsically baked together.

Again, I'm a capitalist. I would normally not be sitting here arguing against the success of companies in the industry that I invest in, companies that I have personally been invested in, but the harm that's taking place to the public square, the harm that's taking place to the structure of the economy is real.

And with all due respect to the crypto guys, I mean, that is -- that is not the same -- you know, that to me doesn't feel like as good a use of capital from the point of view of the country as, you know, putting people to work, creating jobs, creating infrastructure, and that's not what these companies do.

MS. RYBNICEK: So on that point I'd be interested in hearing from Scott and Roger about what has happened to venture capital funding over the last ten years, five years, two years, what we're seeing. Are we seeing money -- are funds being diverted from these areas?

I mean, obviously, there was this -- *The Economist* article that talks about kill zones around these major platforms. There have been other studies and discussions in that space. Can you speak from your experience, what you're seeing on the ground with respect to funding and whether or not it's being diminished, diverted, and if that's actually a good or bad thing?

MR. KUPOR: Sure, I'll start, and I'll give Roger an opportunity as well.

So if you look at it from a raw numbers perspective, venture capital funding this year actually will hit kind of a -- at least a ten-year, if not an almost 20-year high, so we're on pace to invest more than $100 billion in the industry.

Now, a lot of that money, to be fair, is happening kind of in the later stages, so it's a little bit related to the comment I made earlier about the elongation of companies staying private and effectively kind of later-stage private money really supplanting what would otherwise be public money, but in terms of, you know, overall dollars investment, if you look at dollars into the industry in terms of the amount of money that LPs are funding, we will probably eclipse, you know, 40, 45 billion dollars this year in the U.S., which is also certainly a ten-year high.

So I think from a macro perspective, it's very healthy at least in terms of kind of dollar flows. I do agree -- and I think I referenced it earlier -- that there are -- you know, there are -- there are implications obviously of the success of the platforms that do impact venture financing. So, you know, it's unlikely that you would find a lot of early-stage venture capitalists who would fund a purely ad-supported, you know, consumer social business today, just given that obviously they understand certainly the kind of reliance and the market power that some of these other organizations have.

On the other hand, as I mentioned, I think if you look at the growth of other platforms and other marketplaces, a lot of them were jump-started or bootstrapped based on kind of the existence of those platforms as relatively cost-effective ways of getting customer acquisition, so in that respect I think it's actually been a very positive beneficiary in terms of new company formation.

MR. MCNAMEE: So the observation I would make is that traditionally we've measured the success of an industry by growth in jobs, growth in economic output in the sense of building infrastructure and building out the economy, and the big change in Silicon Valley since the millennium is that now Silicon Valley on a net basis reduces employment in the economy and reduces, as a consequence, investments in infrastructure. And so from a policy point of view, I don't want us to confuse a bull market in venture capital with an economic success.

And, you know, again, the history will be written. I think it's too early to know which way this comes down. I think Scott's points are dead on, okay, and I don't disagree with a single thing he just said. I just think that the issues we're facing here are broader and that we have to -- you know, we need a Moore's law in Silicon Valley about investing in industries that create jobs.

We really need the next big thing to be human-driven technology, you know, things that actually protect privacy, protect security. You know, you need different models than advertising, because the problem here is that, at the scale these guys operate, it's about really behavior modification more than anything else, and that's just not healthy for the citizens or the economy, and that's the concern that really drives me.

The interesting thing is, because I believe these guys violate antitrust law, that is the most pro-growth way of addressing the problems that I see across the broad set of things these companies are doing.

MR. THOMPSON: The one other thing I would note is -- I'm going to sit in the middle figuratively between Scott and Roger -- I do see value in the advertising that these companies provide. I am a huge believer and a personal beneficiary of the possibility of the internet to enable very narrow, niche businesses that can reach all over the world. That's literally what my business is, and I think that Facebook ads, in particular, and Google ads as well allow companies that could not have existed previously, that are great for the businesses and also great for consumers, that get products that are actually tailored to what they want.

I think the thing that I would push back on with Scott is he correctly articulated the value that these provide. The problem is that there's only two of them. I don't think that these channels would fail to exist had Facebook not acquired Instagram, for example. I think there would -- instead of being two, I actually think there would be four, because if Instagram was an independent entity, advertisers would be forced to diversify and would also go to Snapchat, for example.

My concern is I believe in the model, I think it's important for the economy, but I worry about the fact that there's only two places to go.

MS. RYBNICEK: Yeah, well said. Well said.

So, Steve, I think this is kind of to your point about multihoming and there's nothing new under the sun and that we've seen all this before and it's a cycle, you're going to get it again. How do you react to the idea that, you know, we have had Google for a while, and we haven't seen something different, you know, and people kind of may smirk at the alternatives as not being realistic, but how do you square that kind of actual experience with your comments about multihoming actually being a source of allowing other platforms to become developed?

MR. TADELIS: So, you know, using the search engine as an example, I think it was about five or six years ago that I made a bona fide attempt to play with Bing, and it was inferior. So I don't care that there's only Google, because 99 out of 100 times, when I'm searching for something, I find it on page 1, and that's all I care about as a consumer of search.

Now, let me go to the other side of advertising. There seems to be a lot of concern that, you know, there are only two. Well, there's the theory of Bertrand competition where two is enough to get perfect competition under certain circumstances, but more importantly, remember the pricing model of ads on Facebook and Google. Facebook and Google do not set prices for advertising. Advertisers bid on advertising space, and we know that in markets where people have somewhat rational expectations and an understanding of the market they participate in, then when multiple people bid on a certain item, it will go to the person or the entity that bids the highest value. So we are achieving economic efficiency.

Now, I want to make it very clear that I agree with Roger that the world is not just about efficiency, right? I live in San Francisco. I would happily have my taxes go up by 5 or 10 percent, which is a lot of money, if government would promise me they are going to solve the homeless problem, because it aches me every time I see that, okay? That's not an antitrust issue. Employment is not an antitrust issue. And I think it's very important that, as policymakers and regulators, we understand that there are a lot of things we would like to see in the world made better. Antitrust is not the panacea of solving all problems.

MS. RYBNICEK: Roger, I don't know if you want to respond to this kind of idea that, you know, the antitrust laws are dedicated to ensuring that competition is strong to the benefit of consumers, and there might be a whole host of other social ills that need to be protected, but is that a separate issue, one that --

MR. MCNAMEE: So my point is I think no matter how you look at it, I believe there are antitrust violations here, and I happen to have -- while I believe it would be really helpful to control the growth of these companies, my preference would be, of the myriad ways you could regulate them, I would like to start with antitrust and run that thread through, because I believe for the economy as a whole, for venture capital, for startup formation, it is by far the most attractive option, and the set of issues that we see on the antitrust side are very easy to understand once you look at data as a currency.

So my work now is attempting to create that into a unified model that we can apply to antitrust. So, you know, I strongly agree with what everybody said, you know, what Steve just said a moment ago, because that's demonstrably true, but I don't think it eliminates the antitrust issues that are here, and the reason I'm here and not at some other agency right now is because I think this is the place I'd like to start of the ten places where I think they are in violation of the public interest.

MS. RYBNICEK: So a question from the audience. How do cryptonetworks -- this is, I think, for Ben -- how do cryptonetworks -- or anybody on the panel -- fit into the aggregator platform framework? Do you think they can challenge the incumbent networks?

MR. THOMPSON: Ah, from a theoretical perspective, they are absolutely the antidote to aggregators. I completely agree with Scott. I think the challenge -- and it remains to be seen, and Andreessen Horowitz has certainly led the way on this -- is figuring out what use cases will arise from that.

I suspect that to the extent Blockchain companies succeed, they're going to be entirely new use cases. I have difficulty seeing a social network built on the Blockchain or a search engine built on the Blockchain, but from a theoretical perspective, it's absolutely -- I mean, I agree with Scott.

MS. RYBNICEK: Another question. How should the FTC identify future competitors to existing dominant firms? How do they know -- how can they know what they're looking for? I think, Ben, you mentioned that this was pretty obvious in Silicon Valley or in the VC world, that Facebook and Instagram were going to be competitors. Should we just be looking at the models of doing business or are there other features that we should be focusing on?

MR. THOMPSON: Well, I think you have to start -- oh, sorry, go ahead.

MR. TADELIS: No, go ahead.

MR. THOMPSON: No, I have been talking a lot. Please.

MR. TADELIS: So I want to echo something that Scott said that I think is really important, and that is what is the optimal path of expansion of a potential competitor or some nascent technology? Because coming up with good ideas is one thing, and then executing on them is a completely different story. One of the huge benefits that large platforms bring to the table is execution, because they've already learned how to do that.

So when we think about this kind of, you know, M&As of potential competitors, right, if a company would buy them and then execute on that technology to the consumer's benefit, then you have the end result happening a lot faster. If the company would buy them and then take that technology and shelve it, right, because they don't want to invest in, you know, promoting that competition, then there's that theory of consumer harm.

However, given this technology, if that's what, say, Facebook would do with each one of their acquisitions, it would take four weeks for someone else to come up with that same idea, because it was out there, get VC funding, wait for Facebook to buy them and shelve them, and then the next one would come up and do that again, right?

So I think the end result should be what's happening to consumer welfare, and I think that's the measure stick that we should be using.

MS. RYBNICEK: Anybody else have any final comments?

All right, I think that concludes our panel. Thanks again to the entire panel for being here and for sharing your thoughts.

(Applause.)

PANEL 3: DEFINING RELEVANT MARKETS
AND ESTABLISHING MARKET POWER
IN CASES INVOLVING MULTI-SIDED PLATFORMS

MR. FRANCIS: All right. Well, good afternoon, everybody. We move now to Panel Number 3 on Defining Relevant Markets and Establishing Market Power in Cases Involving Multi-Sided Markets. My name is Daniel Francis. I am senior counsel in the Bureau of Competition at the FTC, and it's now my pleasure to introduce our panel.

So introducing folks very briefly in the order in which they'll be speaking, Michael Salinger is the Jacqueline and Arthur Bahf Professor of Management and Economics at Boston University and a Senior Academic Advisor at Charles River.

Tasneem Chipty, here on my right, is the Founder and Managing Principal of Matrix Economics.

Joseph Farrell is a Professor of Economics at UC Berkeley, and he's a partner at Bates White.

Eric Citron is a Partner at Goldstein Russell.

Darren Tucker is a Partner and the Co-head of the Antitrust Group at Vinson & Elkins.

And Joanna Tsai is Vice President and an Economist in the competition practice at Charles River.

So the way we're going to proceed is each of our panelists will give a short affirmative presentation for between five and ten minutes, and then we'll have some Q&A.

So with no further ado, we start with Michael Salinger.

MR. SALINGER: Well, thank you. So economists don't like market definition that much. It's kind of ironic, but -- you know, and they don't like it because it requires drawing this sharp distinction between being entirely in, being entirely out, whereas in reality there's a range of substitutes. But I think in evaluating the antitrust allegations against companies in these platform businesses, the market definition exercise is actually, you know, a quite important one, and it's important to be clear who the companies are competing with on each side of the market.

So we had a long discussion today about what is a two-sided market or a multi-sided market and what isn't, but, you know, roughly, if you're a multi-sided market, you have multiple sets of customers that you are competing for, and it's important when you do this that you not do what often happens in antitrust markets, which is you take a company and you say, okay, what are the companies that are most like that company, and that's necessarily the closest competition, because if you do that, you're going to miss an essential part of the competition.

So the best example of this is with respect to the allegations -- considering the allegations against Google, where there's a temptation to say, okay, well, Bing is what looks most like Google, and maybe Yahoo looks a little bit like Google, and no one else looks very much like Google, and so that's the relevant market. And if you do that, you miss a huge amount of the competition that a company like Google faces.

So, for example, if you consider shopping search and ask the question who's the competition to Google in shopping search, it's not Bing; it's Amazon. And if you evaluate, you know, allegations about Google Shopping without recognizing the competitive constraint from Amazon, then you're missing the most important competitive constraint.

And similarly with -- if you focus on the companies that just look like the company that you're evaluating and you say, okay, we're going to look at Bing and it's a general search engine, you make the mistake of thinking that the relevant market is for general search. So there's basically -- there's no such thing as a general search. Every search has a particular intent behind it. So the relevant markets there are for classes of search, right?

And so if you're doing a travel search, Expedia is an option for doing a travel search. If you want to find out what happened in the great games involving the Boston teams last night, you can go to ESPN rather than going to a general search engine.

Now, the fact that you wouldn't go to Expedia to find out whether the Patriots beat the Chiefs doesn't change the fact that Expedia is a competitive constraint for travel search, and, similarly, the fact that you wouldn't book a flight on ESPN doesn't change the fact that ESPN is a competitor on sports searches.

So, you know, it's very important when we look at these antitrust cases that we do the market analysis in a way that captures the true competitive constraints on the firms.

MR. FRANCIS: All right. Well, thank you.

We turn now to Tasneem Chipty.

MS. CHIPTY: Thanks very much. So I thought I would kick off by talking a bit about the Court's ruling in *American Express* in regards to market power and the question of whether, from an economics perspective, market definition is necessary to assess market power, okay?

So let me jump to the majority's opinion. For anyone who's read the Court's decision, no doubt you were struck, like I was, by the emphasis on the need to define a market. The Court says in multiple places that applying the rule of reason generally requires an accurate definition of the relevant market.

Now, in this context, there is a very long footnote. The Court tries to distinguish between horizontal and vertical cases, okay? And in horizontal cases, it explains that one need not precisely define a market in horizontal cases that involve agreements among competitors not to compete in some way, but it goes on to contrast these horizontal cases with vertical restraint cases, like the antisteering provisions used by American Express, and says that because vertical restraints often pose no risk to competition, unless the entity imposing them has market power, one has to begin with an analysis of the relevant market.

Okay, so there were -- actually, I want to pause on two aspects of what is in this decision here surrounding the need to define markets in vertical cases. The first for me has to do with the distinction between vertical and horizontal cases. Now, I don't think many economists would say that the distinction creates a differential need for market definition, okay, that depends on the case-specific evidence. There's nothing inherent, at least from my perspective, about the conduct that necessarily creates the need for formal market definition, but, rather, given the fact that vertical restraints can often have procompetitive justifications, one needs to do some kind of balancing in vertical cases, okay?

So I think on first read, one's left with this impression, but I think a closer read suggests that the Court's not actually distinguishing between horizontal and vertical cases just generically; rather, the Court has distinguished between horizontal per se cases versus vertical cases.

So I think it's not entirely clear to me, at least, what the Court would say about the need for market definition in nonhorizontal -- excuse me, in non-per se horizontal cases. I think that's my first observation.

The second to me really has to do with the distinction the Court made with regard to direct evidence versus indirect evidence and the need for market definition in those two circumstances. I think many economists would describe direct evidence as evidence that bypasses the need for formal market definition. It doesn't bypass the need to do the kind of work that Michael was talking about, but it certainly, I think, can in some circumstances bypass the need to formally define and identify what's in and what's out in some kind of bright-line way and that indirect evidence is usually what we describe as work that sort of is built on a more rigid approach towards market definition.

Now, taken literally, the majority on the Court here in *American Express* would seem to be saying that market definition is necessary for both approaches, and to me this strikes me as odd and contrary to how we normally practice, and, in fact, it's notable that the dissent, in its written opinion, expresses the opinion that market definition analyses are beside the point, they say, when there is an actual finding of anticompetitive harm. So, anyway, those two things really sort of struck me.

The other thing that struck me is what the issue was of market definition that the Court actually raised and took on. Most economists, I think, would agree that the work of market definition involves thinking about the substitution possibilities of the type that Michael was just talking about from the perspective of consumers, which in the *AmEx* case involved two groups of consumers, merchants and cardholders, both of whom consume card services.

Now, traditional market definition work would involve tackling the questions like is a debit transaction a substitute for a credit transaction? What about cash? What about check? And so forth. These are not the issues that were debated in the *American Express* decision.

In *American Express*, the work of market definition involved deciding whether to analyze American Express' antisteering provisions in a single market where the product is jointly and ultimately consumed or in two complementary markets involving, on the one hand, speedy payments to merchants and on the other credit for shoppers, right? The majority was of the view that in order to assess competitive effects here, one needed to describe the market as a single market as opposed to two complementary markets.

Now, from my perspective, I think probably many economists would agree, it really doesn't matter what label you attach to how you describe the nature of the competitive interactions and the competitive discipline facing the firm. As long as the economic analysis accounts for the linkages and the interdependencies, right, I don't necessarily see the need to define a formal market, even though here we find ourselves in a vertical case with a two-sided platform.

So I guess I leave it at that. I still think it's an open question as a matter of economics about whether or not one needs to define the market.

MR. FRANCIS: Wonderful.

Let's turn to Joe Farrell.

MR. FARRELL: Thank you.

So our assignment, I think, or the title of our panel is "Defining Relevant Markets and Establishing Market Power in Cases Involving Multi-Sided Platforms." I think it's useful to go back to first principles, somewhat echoing what Tasneem said, and say why? What?

So first of all establishing or establishing the opposite of market power, why are we doing that? It's not a simple question, actually, because having market power is not an antitrust offense, so why is an enforcement agency trying to diagnose market power?

It's because a syllogism that we use in antitrust is if you have no market power, then you can't unilaterally do anything bad. "Anything" has to be caveated a little bit, but roughly speaking, that's the syllogism.

So going back to some things that I said this morning but saying them at a little more length, okay, so then I think the techniques for diagnosing market power ought to be techniques such that the answers to the questions you're asking help you diagnose what would happen if this firm or these firms collectively did something bad.

And so you need to have some way of modeling or gauging or telling what would happen -- trying to stick with the active verbs here rather than the abstract nouns -- and I think from what we've heard and from what we know, the answer depends on what's something bad.

So I don't think there's an *a priori* way to establish or not establish market power necessarily without thinking about the what's something bad. There may be a particular way of diagnosing it that would apply to multiple kinds of hypothetical bad actions, but you can't count on it advance, partly because there are a lot of moving pieces in multi-sided platforms. So that's kind of my first observation.

My second observation, a little more constructively perhaps, is, you know, we talked this morning about some of the things that you would probably want to look at in trying to diagnose market power, and a lot it has to do with both the strength of the complementarities and the stickiness of one or another group of users, switching costs, single versus multihoming, and so on.

All right. And so then the second half of our title is "Defining Relevant Markets," and it's strange that that came first, but, again, that's the economist's perspective. So why define relevant markets? Well, one answer is because a court said so, but that's perhaps not a very interesting answer to the economists.

I would say the right answer is to help illuminate market power and associated questions, ideally using the same techniques that we use in one-sided markets, to use market definition to help diagnose market power, which is, roughly speaking, if you're small, then chances are your customers are not all that committed to you, because if your customers were all that committed to you, then there'd be more customers who were willing to go with you. And so if your customers are not all that committed to you, then if you did something bad, they would leave.

There are various refinements and nuances to that. You might have just a few customers who are very committed to you and then how do you think about it, but loosely thinking, I think that's the intuition. Question: Can you extend that intuition and that technique to the case of multi-sided markets?

Well, maybe, but it's kind of awkward, actually, because by definition there are different kinds of customers who differ from each other not in how attached or mobile they are as between competing firms, but they differ from each other in the very roles that they play, and they may be very different in the roles that they play depending on how the two-sided structure works.

And so I think one thing to keep in mind is just, sure, go ahead and think about alternatives, absolutely. If that's what we mean by defining a relevant market, then go for it. If you're trying to come up with some group of products such that measuring share within that group of products or customers is going to take you to market power, I think it's going to be a lot more challenging.

And I'm happy to say that there is a footnote, a short footnote in the Merger Guidelines that kind of makes that point in a very brief and cryptic sort of way. So eight years ago, the Division and the Commission had already thought about that. So I suggest that instead of holding these hearings, we just look back at the notes from drafting the Merger Guidelines, because probably the answer is going to be there.

MR. FRANCIS: Wonderful.

Eric?

MR. CITRON: Yeah, I'm going to speak pretty briefly with the hope of illuminating more during question and answer. I think from my perspective the thing that Tasneem and Joe are saying politely is that *AmEx* is more or less economically illiterate. The Supreme Court just does not understand how economists assess market power, why they do so, what role market definition plays in that, and that's unfortunate, but when the Supreme Court was on an economically illiterate pathway 50 years, 60 years ago, antitrust scholars and students took it as their job to more or less relentlessly shame judges into understanding the economics that underlie antitrust practice, and just because the side of the aisle to which current judges tilt has changed, there's no reason why antitrust scholars should abandon the same view of what their role is in this particular legal space.

Judges are not antitrust experts. This is hard for them. Justices of the Supreme Court are actually even less likely to know the antitrust economics because they have to be generalists. What we need to do is try to teach more and more judges and justices how to do their work in ways that are productive.

I think, honestly, the best way to do that is to -- picking up on something that Joe said -- is to try to demystify the practice of market definition and market power analysis to the greatest extent possible. It's not that complicated. You just start by asking, why do I care? Why do I care if this company has market power or if these merged companies will have market power?

In the merger space, it is frequently, though not always, well, are these merged companies going to be able to raise price? In the conduct space, it's often, what will happen if this company does something bad to the people on one side of the market or the other? In other spaces, you know, market definition or price definition has totally different purposes. A lot of the two-sided market scholarship that underlies *AmEx* is actually just about whether you count the price on both sides of the platform for purposes of analyzing whether price exceeds marginal cost for purposes of predatory pricing analysis. That might make sense; it has nothing to do with two-sided markets, or whatever.

This is -- in a way, it's a conceit of antitrust attorneys that antitrust is so complicated. Maybe it is, I don't know, but I don't think antitrust economists think of market power analysis and the role that it plays in any given case as being particularly mystical, and it would be easier, actually, if we just started teaching, to the greatest extent possible, through vehicles like the FTC and the Antitrust Division and their Guidelines, why it is we're engaged in these practices.

So I guess what I'm saying is I don't want to relent on the *AmEx* battle. Even though it's been lost once, you know, it's our role I think here to try to explain to the Court how we can do better, and until we abandon the sort of mystical view of defining markets and assessing market power, we are not going to make a lot of progress.

MR. FRANCIS: Eric, thank you.

MR. FARRELL: Do you mind if I just interrupt briefly and say you may have noticed I haven't commented on *AmEx* specifically, and I don't intend to. I'm a partner at Bates White, and one of my partners was deeply involved, so I'm not going to say anything about the case specifically.

MR. FRANCIS: Great.

Let's turn now to Darren.

MR. TUCKER: Thanks very much. I want to thank the Commission for holding these hearings and, in particular, to the panel organizers for inviting me to speak here today.

So Tasneem spoke a bit about the *AmEx* decision, which, of course, offers some potential guidance to the courts in terms of how to look at two-sided platform markets, so let me sort of start there and share my thoughts as to what the big-picture takeaway is from that decision.

So I think that really one of the fundamental insights from that case is that courts need to include all sides of a platform when defining markets involving two-sided platforms, except when indirect network effects and relative pricing effects are minor. As an example of that, where there's a two-sided market but minor indirect network effects, according to the Court, as in traditional newspaper ads, where the indirect network effects operate in only one direction because readers tend not to like to see more advertising, all things being equal.

The decision also says that plaintiffs need to demonstrate anticompetitive effects in the two-sided market as a whole, and in a direct evidence case, which the *AmEx* case was, plaintiffs can do this in a number of different places. They can show prices increased above a competitive level, output dropped, or quality decreased due to the restraint, but all of these need to be measured in the overall market, the overall two-sided market.

I don't read the decision as saying that a reduction in output is necessarily required, as some have read the decision to say. In fact, the Court says repeatedly that an increase in prices combined with a showing that prices were above a competitive level in the overall market would be sufficient to establish a *prima facie* case.

So, in sum, really, I think what the key take-away is, the decision makes clear that in a two-sided market, establishing harm to just one group of participants is insufficient for a plaintiff to establish a *prima facie* case.

So an important question raised by the decision, kind of an obvious question but important, is what markets fall within the decision's holding? So what markets, going forward, will be treated as a two-sided platform market subject to *AmEx*?

So I don't think it's particularly surprising or concerning that the Court really didn't flesh out the answer to that question in any detail. Leaving courts to fill in the details is really the typical approach of the Roberts Court, not only in antitrust cases but in most other types of cases before the

Court.

For example, in the *Actavis* antitrust decision, the Court held that large, unjustified payments from a patentholder to an alleged infringer could be anticompetitive without actually explaining what "large" meant. So it will be the work of the lower courts and the U.S. antitrust agencies to help flesh out exactly what markets fall within the decision, but in doing so, they should avoid the temptation of reading the decision narrowly.

For example, the case in *AmEx* focused on what it called a special type of two-sided market, called a transaction market, which it called or described as having simultaneous sales, but the Court's holding was not limited to that particular type of platform market. And I will say that I'm skeptical of claims that I've heard that the courts or agencies are ill-suited to identify two-sided markets. These markets are usually straightforward to identify, and enforcers can observe the degree to which the effect of a challenged practice affects each side of the market.

No one can seriously dispute that credit cards are not a two-sided market, for example, and there's a number of other markets that are discussed at length in the economic literature that would seem to fall within the scope of the decision because they're two-sided markets; shopping malls, operating systems, app stores, video game platforms, auction marketplaces, job boards, ride-sharing platforms, stock markets, ad exchanges, and so forth.

Likewise, markets where buyers and sellers transact directly will generally fall outside the scope of the decision. And in my view, proper implementation of the *AmEx* decision by the lower courts and the antitrust agencies will lead to more accurate and effective antitrust enforcement.

Although it didn't use the terminology, the Court noted that the decision would help reduce Type I error. In fact, it should also reduce Type II error. Consider conduct that directly affects users on only one side of a platform, some kind of a restraint or pricing effect. Analyzing conduct in just one side could reach a false-negative by ignoring harms on the other side, and a false-positive by ignoring benefits on the other side.

Likewise, applying the hypothetical monopolist test or critical loss analysis to a single side of a two-sided market could lead to markets being drawn either too broadly or too narrowly. There is no particular reason to believe that application of correct two-sided analysis should reduce overall antitrust enforcement levels or increase false-negatives relative to reducing false-positives.

The dissent's approach in the *AmEx* decision would make it more difficult to attack platforms in which conduct on one side inflicts harm on the other; in other words, a false-negative.

For example, to go back to the *AmEx* case, assume instead of increasing merchant fees, as was alleged in the *AmEx* case, what if AmEx had substantially reduced merchant fees but kept the fees above marginal cost and managed to continue its generous rewards program? So AmEx loses huge amounts of money but manages to drive some of its competitors out of business.

A single-sided analysis would focus on the conduct on the merchant side since that's where prices are being lowered, but since prices are greater than marginal cost, there would be no basis for a *Brooke Group* claim.

A two-sided analysis, on the other hand, accounting for prices and costs on both sides, would identify this predatory behavior and avoid the error. In short, considering the effects on all platform participants, it's far more likely to lead a court or regulator to understand what's really happening in the marketplace and reach the correct result.

For these reasons, claims that the Court's decision will give big tech companies a free pass to engage in anticompetitive conduct are off the mark. In fact, application of *AmEx* will make some potential claims against platforms easier and some more difficult. More importantly, the goal should be to conduct the proper analysis regardless of where the results take us. To be sure, it will often be more difficult to assess price and output effects in multi-sided markets than in traditional markets, but difficult and right is superior to easy and wrong.

Finally, with these hearings and in its day-to-day enforcement and policy efforts, I think the FTC has a real opportunity here to play a valuable leadership role in expanding and advancing two-sided market analysis with other competition enforcers. The economics of two-sided platforms is well established in the industrial organization literature, but in my experience representing U.S. companies before non-U.S. competition agencies, I've observed that exceedingly few have attempted to incorporate these insights into their enforcement and policy missions.

Simply put, the notion that a platform operator might impose a restraint on one group to benefit another group is a novel concept to many regulators and enforcers outside the United States. Particularly with the attention drawn to this issue by the *AmEx* decision, the FTC and DOJ have an opportunity to play a leadership role on the global stage in explaining when and how to define markets involving platforms, which could have the potential of improving the quality of enforcement and achieving more consistent outcomes.

MR. FRANCIS: Thank you, Darren.

Finally, we will turn to Joanna.

MS. TSAI: Thank you, Daniel.

So I'm at a slight disadvantage here because I'm going last today and all of my very distinguished panelists here today have said -- made all the very brilliant comments already. On the other hand, I have a slight advantage in the sense that I've had the benefit of hearing what everyone else had to say. As an economist, I always look at both pros and cons on every issue.

So I thought I would start off with sort of the key relevant -- you know, before diving into relevant markets and market power, to go back to first principles and to talk about whether the key relevant characteristics of multi-sided markets before getting to relevant markets.

I think a lot of us agree that multi-sided platforms has the presence of -- exhibit the presence of indirect network effects, meaning you have network effects across various sides of the platform, and as a result, you have interdependent demand, and the strength of the linkages in the platform for the different sides may be stronger in some platforms and weaker in others.

Because of the feedbacks and their interdependencies of the different sides, the multi-sided platforms ultimately need thriving levels of customers and activities on all sides, and then profit-maximization requires taking into account demands and costs of each of the sides and the interdependencies of the demands on the different sides and indirect network effects. These characteristics, I think, necessitate the need to implement economic analysis with additional considerations.

Another additional characteristic that I wonder if it's -- that is less commonly talked about out there in, for example, decisions like *AmEx* is whether we need a formal economic definition of two-sided markets. I think for a period of time, a lot of people would talk about, you know, multi-sided markets and, you know, per the -- you know, we see a definition of it in the *AmEx* decision, but economists have also long known a definition that's been proposed by very respected economists, like Rochet and Tirole, which add something in addition to indirect network effects, which is that, you know, a multi-sided market is when the overall volume is dependent on the price structure in addition to the overall level of the fees charged by the platform.

And so I just want to throw that out there for now for everyone to, you know, sort of think about whether this is something that, you know, in the analysis of multi-sided markets, it's important to have that as a key, relevant characteristic.

Now, with that out of the way, market definition, what is the key differences between defining relevant markets, you know, on multi -- in businesses involving multi-sided platforms as opposed to single-sided platforms? I think the traditional techniques for defining relevant antitrust markets still apply. They just need to incorporate and account for the multi-sided nature of the business.

Another complication is, you know, not all multi-sided markets are alike. There are different categories. I think we started to see categories such as transaction platforms versus nontransaction platforms that's, you know, sort of surfaced or evolved or been highlighted by the *AmEx* decision.

So traditionally we will look at market definition and define it to -- define it by, you know, asking the hypothetical monopolist test, a SSNIP test. So where do we begin and where to end with that, right? So let me just talk through, you know, sort of this is how I would think about it.

So the test, again, identifies constraints on pricing and other businesses, business decisions to maximize profits. There is a need to identify competition on the different sides of the business, which may include other multi-sided businesses that compete for the same customer groups on the different sides, as well as single-sided or other multi-sided businesses that compete with just one of the sides, okay?

We start with identifying a multi-sided platform's distinct group of customers and the various businesses of the single-sided/multi-sided platforms that serve each groups of these customers, and there are potential competitors in the multi-sided platform that may constrain their pricing or other business decisions.

So, so far all very similar to single-sided analysis, except we are looking at things on the different sides. A SSNIP for one side of the customers affects the demand of the customers on the other side because of, as we talked about, the indirect network effects and the interdependent demands, and in turn has the impact on the demand of the first side, the customers.

And then a small increase in price on one side reduces the quality demanded on that side, as well as quantity demanded on the other sides, which, in turn, further reduces the quantity demanded on the first side. So there is a loop effect.

Because of the interdependencies across the different sides of customers, a hypothetical monopolist that only considers one side of its platform might increase price on that side and actually lowers its overall profits once the effect on the other side is accounted for, okay? Ignoring -- I think it's important to consider all these sides, because ignoring the effects on the other sides could cause one to arrive at a relevant market that is too narrowly defined.

Okay. For transaction platforms, meaning a simultaneous transaction takes place and it's proportional, one on each side, one might modify the SSNIP test to use an overall price, an output, like number of transactions for all similar platforms, and allowing the hypothetical monopolist to maximize profits across all sides, taking into account network externalities. I think this gets a little more complicated when we're talking about nontransactional platforms, but I think that's something that maybe you'll cover a little later on with the Q&A.

Well, I think I have used up my time, so I will stop at that. Thank you.

MR. FRANCIS: All right, Joanna, thank you.

So before we move to the Q&A, I want to give our panelists an opportunity, if they want to do so, to respond to any of the affirmative presentations, if they would like to do so.

MR. SALINGER: Yeah, I would.

MR. FRANCIS: Please do.

MR. SALINGER: So I agree with Tasneem that if you identify effects, there must be some market in which -- that was relevant for antitrust purposes, and whether it was precisely the one the Department of Justice defined or not should be irrelevant.

And I agree with Joe that if the reason you're defining a market is to then measure share and infer market power from a high share, that that's completely right.

What -- you know, this morning we had a lot of discussion about whether -- you know, what is a two-sided market, and there's -- you know, sort of one view is that, well, it's obvious, and then, you know, we try to define it, and it's -- you know, and Joanna mentioned the Rochet and Tirole definition, which is interesting, but it's not obvious that that's the right definition.

And I'm sort of troubled by this -- by the contrast between it's obvious and we can't really define it because of casual comments that I've heard. So I think three times today I've heard the assertion that Google is a three-sided market and not a two-sided market, and so the argument is that the websites that would like to get placement in Google's results are one side of the market.

And David Evans isn't here, but I've argued with him about this before, and I think the argument he would say is, look, there are websites out there that want viewers, and there are viewers out there that want to see websites, and Google is bringing them together, and that means that the websites are a side of the market.

But the problem is that when you -- the essence of a two-sided market is that you have two sets of customers that you're competing for, and Google's not competing for the websites that want to show up in its results. I mean, at some technical level, they have to agree to be -- to have the sites crawled, but, you know, they're competing for people who search, and they're competing for advertisers, but the relationship with respect to the websites is much more complicated, and it's not a customer kind of relationship.

And so, you know, if we're not able to define what these markets are, there is this risk that there's going to be this casual assertion, you know, that here is a side of the market, and by the way, if someone on this side of the market is harmed, that that's customer harm and, therefore, the sort of harm that the antitrust laws are concerned about. You know, if we do that, we are going to make some very bad decisions.

MR. FRANCIS: Michael, thank you.

All right. We are going to turn now to a little Q&A. Let me just point out to you there are two -- I think two or three FTC folks who will be walking up and down with index cards, which is our 21st century tech-focused way of encouraging you to be interactive with our panel and ask your questions. So they will be up and down. Flag them down, send us a question, and I will ask it.

All right. So why don't we turn, while that happens, to a couple of more general questions, and I'm going to start with one for Joe and Michael and then anyone else who wants to respond as well, and that's the foundational one.

Why is it that two-sided or multi-sided platforms merit distinctive or special antitrust treatment, to the extent that they do at all? So we know that intermarket externalities, whether indirect network effects or of other kinds, are pretty common throughout the economy, and it is more generally not rare that price and demand in one market will have effect on price and demand in other markets. We see this when markets are upstream or downstream or complementary of one another.

Two-sided markets are obviously distinctive in that buyers don't internalize or may not internalize those effects, but is that enough to warrant sort of special antitrust rules of the kind that the Court seems to signal in *AmEx*? And if so, why? Why are two-sided markets or multi-sided markets special for antitrust purposes?

Let's start with Joe.

MR. FARRELL: Well, as I said, I'm not going to comment on *AmEx* specifically. I think actually the answer to the question is they don't really merit distinctive antitrust treatment. In all cases in antitrust, I think, maybe except for naked price-fixing, you want to know what's going on, what protections do customers and others have against it being harmful, and that gets to this market power question, what sort of harm can be expected to result, what sort of efficiencies might arise.

It's all the same questions. It's different details, but we know, you know, and the agencies have often said that antitrust always is fact-specific, again, perhaps except for naked price-fixing, and so you're always trying to wrestle with fundamentally the same set of issues.

I think what we're discussing here today is not how to categorize some markets or some businesses in a way that puts them into a different box. I think we're really discussing what are some things that you need to keep in mind in dealing with what turn out to be an awful lot of different businesses and markets in the modern economy, to some extent, and so if you take it that way, then I'm not convinced that they either merit or will get distinctive antitrust treatment if the antitrust treatment can be defined not in terms of, you know, rules and boxes to check but in terms of intelligently analyzing the fundamental questions.

MR. FRANCIS: Michael?

MR. SALINGER: So I agree with what Joe just said. The only thing I would add is I think part of the reason that we're interested in multi-sided markets -- I mean, in part, it's the *AmEx* decision, but if the *AmEx* decision hadn't occurred, we would still be talking about it. But the reason really isn't the multi-sidedness of it. It is that there are these very successful business platforms that have two-sided strategies, and they are very innovative businesses, and, you know, really the big issue with these businesses is not the two-sidedness. It's how do we do antitrust with innovation?

And, of course, that's not a new issue, we have been wrestling with it for a long time, but I think that it's an issue that we haven't nailed down quite as well as how to do -- you know, how do you evaluate a merger between two grocery stores? And, you know, the companies for which this is -- you know, these innovation issues are relevant is not limited to companies with two-sided platforms.

I mean, you can -- and I guess the question --

you know, do you view Apple as being a two-sided business? There are elements of it, but -- you know, but in many ways, you know, it's designed its business differently from some of these other companies that are being talked about, and it's more one-sided, you know, in its business model.

MR. FRANCIS: Would anyone like to respond?

MS. CHIPTY: Sure. I would actually like to add something on top, which is that I think in part, given the nature of certain businesses that involve two sides or multiple sides, the firms necessarily need to be big. So, for example, early on Joe said, well, you might have a situation where you could say, well, this firm is small, if you were able to measure the share properly, and look at it, you might say, well, this firm is small, so we can move along; nothing here to see.

But the fact here is in many of the types of businesses that I think have already been described or suggested today, and that you can think about in your own world, these businesses tend to be big, and the fact is that the network effects -- the need to create these platforms is not just a coincidence. It's because of the nature of the business that they're selling.

So I think that perhaps means that we're not going to necessarily find small firms. Maybe newspapers, some local daily newspapers, but by and large, all of the examples even spoken here today are large firms, because they, in essence, have to be.

MR. FARRELL: Yeah, and can I jump in on that?

I mean, of course, we're very familiar in modern antitrust with the fact that the link between size or market share and market power is not a tight link, not as tight as perhaps people used to believe, and I think this is an example of that. So it might be that in a particular market with strong network effects, you've got to be big, and that might be true with or without effective market power.

MS. CHIPTY: That's right.

MR. FARRELL: I think that's right. It can be taken too far, but basically right.

MR. FRANCIS: So speaking of taking things too far, let me ask you about the kind of more kind of complicated or troubling side of the concept of two-sidedness as a zone of special pleading in antitrust, to the extent that that's what we're going to see as a legal matter, even if as an economic matter that might not be intuitive.

I am going to start here with Eric and Tasneem.

My question is, what do you see as the principal risks of misuse of this concept? So we now have a Supreme Court decision out there, right, that's sort of popular and exciting and we're all talking about it and engaging in sort of exegesis of the text, but one thing that is pretty clear is the Supreme Court is telling us that there is something different about antitrust in these markets, in these contexts, and it's going to be for lower courts and for agencies and to some extent for the bar to operationalize that and to figure out how far this distinctive treatment, this special set of rules is going to extend.

So my question is this: Do you worry about misuse of the concept of two-sidedness? Do you have some concerns that it will be inappropriately extended or deployed by courts or enforcers or the bar? And if so, what warnings would you want to give against that kind of misuse?

Let's start with Tasneem.

MS. CHIPTY: Okay. So I guess one of the things that worries me about courts thinking about multi-sided markets, it was said earlier -- I think Darren said it -- that it's relatively easy. I actually don't think it's that easy because you have economists struggling with it and struggling to explain it to each other, let alone to noneconomists.

I'll give you a for-example, something that I think is a difficult question, and I don't think there's a clear answer, and I certainly don't think there's a one-answer-fits-all, and that is the issue of price structure, okay? There was a lot of discussion, even in the *American Express* decision, about the net price, and let's look at the all-in price on all sides, both sides of the platform.

Well, so, does price structure matter? What would we think about a setting in which a firm raised prices on one side and essentially gave it all to the other side? Do we not care about the different experiences and the welfare consequences for different segments of consumer groups? Is the economic consequence of the net price the same across all different sort of paths by which that net price came to be?

I think that's a really hard question to answer, and I do worry a little bit that one of the sort of easy ways to take the *American Express* decision is to look at the net price, and I think that could be a mistake. I think that the decision is very open, and I think Darren mentioned that this was perhaps sort of the way it should be and perhaps the way all Supreme

Court decisions go, but, you know, reading it as an economist, I found little guidance in how to weigh the benefits to one group or the harm to the other or perhaps to weigh externalities to consumers that were on either side of the platform that might also be affected. So I think there was -- that it's -- the decision doesn't contain a clear guideline on how to proceed, and in many ways, I suppose that's a good thing.

And then finally I just close it with the mantra that I started with, which is that I sure hope sort of lawyers and courts don't look at this decision and think that, oh, multi-sided platform must define a market, you know, I kind of -- maybe yes, maybe no. It kind of depends on whether that's a useful exercise.

MR. FRANCIS: Thank you.

Eric?

MR. CITRON: So I tend to be a somewhat Pollyanna-ish person, so I hope to give the, like, hopeful answer, but here's the real one. We have an adversarial system. So what's going to happen is the defendants are going to say I have a two-sided market defense. They are going to put on an economic expert that they are allowed to pay for who will say this is a two-sided market, so it is impossible that this person has market power or could violate the antitrust laws.

Judges who have no economic training are then going to try to analyze that defense, and that is a disaster, okay? So I think almost all uses of the *AmEx* decision are likely to be mixed uses for reasons that I think Joe was saying -- probably in less incendiary terms and a better accent -- which is to say what we're trying to do is intelligently answer a pretty straightforward antitrust question, and if the question is of the kind in *AmEx*, then the proper use of the *AmEx* decision is pretty straightforward.

The prosecution is saying this company has the power to make merchants do what they want, and AmEx is trying to defend that proposition by saying, well, no, because there are consequences on the other side of our business model or our market or our platform or something that are going to somehow constrain what I'm able to make merchants do. And if that's true, if AmEx can show that or if the prosecution can't show it, then great. We've identified the correct question and the right way to answer it.

If it devolves into a kind of abstract question about the two-sidedness or eight-sidedness of AmEx or whatever, then it will be pointless and very likely to confuse. I just think the more likely thing is, unfortunately, the latter rather than the former, and so the thing that we ought to keep trying to encourage courts to do is to do something more like the former. Correctly identify the question, understand why we care about market power or market definition in this context, and then try to tackle the question in the least mystical and most straightforward way that you can.

MR. FRANCIS: Eric, thank you.

Would anyone else like to take up the theme of misuse of the concept of two-sidedness? I think Joanna.

MS. TSAI: I would just like to add a small comment to something that Tasneem had said earlier. I agree that it's an important question. It's important to consider whether structure is important in addition to the net price level, but I do want to point out that, you know, it's important to not make it too important as well, because at the same time as AmEx had recognized -- you know, American Express versus other payment cards, you know, decided to charge -- to have a different allocation and split, you know, between the two sides, and that was -- that's procompetitive, it's innovation.

So trying to decide sort of what should be the right allocation, you know, one or the other, I think there could be a danger, and I think pointing to something that, you know, maybe is allocated differently and, you know, calling that, you know, potentially harmful. That's all.

MR. FRANCIS: So one of the themes that has emerged from a number of the comments is the space between antitrust law and antitrust economics, which we may confront more often than we would like in this space, in particular. So I'd like to ask to what extent the Supreme Court was successful in reflecting in legal terms the economic scholarship on which it was relying. And I am going to start here with Tasneem again and Michael.

So in *AmEx*, the Court purported to rely quite heavily on the Filistrucchi paper dealing with market power and market definition in two-sided markets, but when the Court came to explain or express in legal reasoning the grounds for its conclusion, it emphasized two or three things quite distinctively.

So one was the joint and simultaneous nature of activity in the credit card market on the cardholder side on the one hand and on the merchant side on the other, which strikes me at least as pretty consistent with the Filistrucchi discussion of transactional markets.

The Court also emphasized, you know, point two, that the significant bidirectional externalities, which, of course, we'd expect, and point three, the prominence or preeminence of competition at the inter-platform level among credit card providers.

So recognizing that some of those factors are pretty common, approaching ubiquity in some cases, was the Court right? Did the Court do a good job here of expressing in, you know, legal reasoning terms that us lawyers without a background in economics can go out and apply, the economic work on which it was relying, or has the Court set out a set of factors that don't accurately capture the economic scholarship on which it's relying?

Why don't we start with Tasneem?

MS. CHIPTY: Sure. I would say in part, yes, it did a great job, and, in fact, a surprisingly transparent discussion of the business models and the economics; and in part, you know, no, for some of the reasons we've already talked about, at least in my view.

But one of the things that I think is missing from the list of things that you just went through is the fact that in this particular case, there was the nature of the conduct which was at the heart of why I think the Court thought about the transaction market. It was the nature -- so, for example, if you had a two-sided platform that was happening -- that was accused to have done something nefarious in some place in its supply chain, I don't know necessarily that we'd be focusing on this. It was the nature of the conduct specifically worked at the nexus of the -- the bringing together of the two sides of the platform.

And so I think that the literature actually that the Court cited talks about this quite a bit, and it is one of the themes. I don't think the decision uses the same language as the literature, so perhaps it got left off the list, but I think that is something that the Court identified well and appropriately, and so I do think that in many ways they accurately described the literature.

I will say, though, that on the subject of market definition, the very papers -- the literature that the Court cites raises a concern about getting stuck unnecessarily in dealing with the complexities of two-sided platforms and the concern that to do it rigidly and mechanistically could lead to sort of a distraction from the important issues. So in that sense, I don't think that the Court hit the nail right on the head.

MR. FRANCIS: So just to follow up very briefly before we turn to Michael, I think some of that literature, even when talking about credit card markets, emphasizes the difference between the transaction level, where activity is joint and simultaneous, and the membership level, where it really isn't, right?

So the services that a credit card company provides to a cardholder, you know, rewards and, you know, whatever else are neither joint nor simultaneous with what it provides to merchants.

Do you think it's possible that the approach to market definition we've seen the Court take here in the context, as you say, of transactional conduct might actually, you know, lead to the opposite conclusion in antitrust cases where the conduct in question is about membership, is about dealing with customers in a way where activity is not joint and simultaneous, even though we're in the credit card space?

MS. CHIPTY: Oh, it would depend, I would think, on the nature of the conduct and then tracing through the role of that interconnectedness, you know, so I don't think we can answer the question without recognizing the two-sided platform, but I don't know unambiguously, in a hypothetical, whether it would necessarily go one way or the other.

MR. FRANCIS: That makes sense.

Michael?

MR. SALINGER: So the Court got right that, when you're looking at the credit card market, you can't just look at the merchant fee and say, oh, the merchant fee is high, therefore, there is an anticompetitive effect, and that you've got to look at the other side of the market and, you know, consider the incentives that the credit card company is giving.

It got wrong, at least as I read it, that it would seem to suggest, well, all you have to do -- what you should be looking at is the combined price, you know, the merchant discount but minus the incentives, but, you know, but if you take the Rochet and Tirole article that Joanna talked about, she said, you know, it says it's only a two-sided market if how you divide up that total price matters, and this is something that Justice Breyer pointed out in his dissent.

You know, and then I think, you know, the question is, you know, even though the Court got it right, that you have to look at the -- you have to look at both sides of the market, the question is, was market definition the stage where you should do that or would you -- when you're evaluating conduct like a no-steering clause, do you look at -- do you look at -- do you evaluate that and take account of the two sides of the market at the second stage where the company puts forward its justification for why it thinks its behavior is reasonable?

MR. FRANCIS: Would anyone else like to respond?

All right. So let's bring Joe and Joanna back in with a question that touches on some of the things that we've heard raising their heads a few times.

So a number of folks have referred to combined price, overall price, net price, price structure. There are a series of ways of talking about price and output across a platform as a whole, and I'd love to hear what you think about how we can usefully measure overall price or overall output in nontransactional multi-sided contexts.

So when activity isn't joint and simultaneous or isn't even directly proportional on the two sides, it can be very hard to tell, at least in the abstract, sort of whether overall output in some relevant sense has increased or decreased. So we will see that, for example, if price and output change on one side and change perhaps in the other way on the other, *AmEx* encourages us, at least in the course of proving anticompetitive effects, to try to answer the question -- it might not require us to do this, but at least encourages us to do so -- to answer the question of whether overall output has been reduced or overall quality-adjusted price has been increased, but how can we do that in cases where we've got a nontransactional platform and activities aren't directly commensurate with one another?

Let's start with Joe.

MR. FARRELL: Well, I think this is a hard question. So in the traditional single-sided, nothing subtle type context, quantity is often a good measure for consumer welfare, but one of the conditions for that, which is not always true, is that there's no price discrimination. So the fact that the marginal customers are getting a good deal and caused to become actual customers rather than potential customers is a good indication of what's happening to the other customers.

When there's price discrimination, then you can't necessarily make that leap, and you have to worry about that. And I think you could say that in a multi-sided context, with different prices to the different sides, as you'd normally expect, that is kind of like price discrimination from the point of view that proxy for customer welfare.

I would also say the extent to which we -- particularly in conduct cases -- really set out to evaluate customer welfare, in a way it's supposed to be the focus, but in a way not. I mean, it's really more about whether you're getting in the way of somebody potentially making a better offer than you're making, and how good an offer you're making compared to some other benchmark is not exactly, I think, in all cases the right focus.

So I think you raise a good and difficult question. I think it is present in more traditional contexts, although in a slightly different form, and I also think, you know, if we focus on the competitive process, I'm not saying you won't get to that question, but it's not as obvious that it's as central as you might think.

MR. FRANCIS: Joe, thank you.

Joanna?

MS. TSAI: I think this is a very difficult question but a very good one. So in transaction markets, such as in AmEx, you know, you have one transaction on one side, one transaction on the other, simultaneously. We see other platforms like this, like, you know, perhaps ride-sharing, like Uber, you know, a ride, you know, is the transaction.

In the nontransaction platforms, they don't equal both sides, and even more importantly, they are not measured by the same unit of measure, right? So that makes it tricky. So examples include content advertising models or social networking media, okay? So when they are not directly proportional or the same transactions, then, you know, in the content advertising model, for example, on the one side we could observe a hundred subscribers, and each paid a dollar. On the other side, we might observe ten advertisers and each paid $10. Then what do we do with them, right? It's not possible to measure an overall price or output, because such measurements are just not meaningful.

So on the one side, the unit of measure for output is number of articles of relevant information for the subscribers. On the other side, it could be what's -- and that's what the subscribers are paying for. On the other side, the unit of measure could be number of eyeballs or number of click-throughs in your advertising model, and that's what the advertisers are paying for. Again, that doesn't help in terms of conceptually finding that aggregate price.

So we have a problem, and I think there are a couple of ways to tackle this that we could consider and maybe think about, begin to think about. So *AmEx* recognizes that decisions -- in the decision, my reading of it is that it specifically is applicable to transaction platforms, and other multi-sided platforms may be different, and in situations when we have nontransaction platforms, since our antitrust laws are implemented with a consumer welfare standard, one possibility is to treat each side as separate groups of consumers and evaluate the effect of a merger or conduct on each side, taking into account the cross-platform network effects without trying to aggregate and put them together and calling it this one thing or unit of measure.

So, for example, if assessing whether a proposed merger between two social networking platforms harmed consumers, we assess whether consumers on each side would end up paying higher, you know, quality-adjusted prices, okay? Now, by implementing this analysis, I recognize that there are a few things that would be tricky and would require extra care when implementing.

One is that such analysis must take into account, I think, the increase in value from the customers, from greater network effects resulting from a greater network and finding a way to measure that and incorporating it into a quality-adjusted price that the consumers face.

Second, you know, cost efficiencies from a merger like that and how to allocate them across sides. And then thirdly, a really difficult question is how should the welfare of the different sides of customers be weighed when we reach a result in which one side is better off while another side is worse off?

MR. FRANCIS: Wonderful.

MR. CITRON: Can I --

MR. FRANCIS: Please do, Eric.

MR. CITRON: I want to try something, which is going to be a live experiment on the demystification of the question, because this is not something where I understand the economics really well, but I'll give you the following example.

The reason that quantity is a really good measure of consumer welfare, like in the traditional manufacturing market for widgets or whatever, is that if the person that makes the widgets puts more widgets out there in the market, that's typically good for consumers. It will drive the price down. It will mean that more transactions can happen. The marginal consumer is able to afford widgets when they weren't before, or the like.

But AmEx or credit card companies, they don't manufacture transactions and offer them for sale. AmEx is -- essentially wants all the transactions to go across AmEx's platform. They aren't increasing the queue of transactions or the like.

But if you look at a more traditional relationship that AmEx does have, you do see the normal relationship between price and quantity. Merchant acceptance of AmEx is constrained by how much AmEx asks merchants to pay, and so there's a large chunk of people who don't take American Express but do take Visa and MasterCard, because the price is higher there.

That's a real example where you see that higher prices are driving quantity down and that if AmEx wanted to have more merchants who took American Express, it would have to lower prices as a result.

What you see there is that output really is constrained in meaningful ways by AmEx's practices, but you can't get that by trying to see how many transactions AmEx has in total, because AmEx, like I said, isn't manufacturing transactions. It's not trying to create transactions. It's just trying to capture as much of GDP as it can in AmEx transactions rather than, you know, dollar transactions or check transactions or the like.

And so, you know, I think there are times when focus on quantity makes sense, but it's not going to be in these circumstances where, you know, it's not something that the company actually makes or produces.

MR. FRANCIS: Would anyone care to respond? Okay.

All right. So let's turn to a related subject, and this will be for Darren and then for Joanna and then others if they would like to, and this is the question of what *AmEx* might tell us about the treatment of efficiencies in antitrust doctrine or the economic analysis that underlies it.

So we ordinarily take the view when we're out there engaged in the antitrust thing that efficiencies in one market, procompetitive benefits in one market, don't offset, shouldn't offset, aren't adequate or relevant to offset harms to competition in another.

Now, in *AmEx* itself, that question or that issue wasn't presented, because the Court defined a single market in which both merchants and cardholders were purchasers, but let's set that aside and let's focus on multi-sided platforms that really are selling into different markets. I don't know, you know, maybe social networking on the one side and online advertisers on the other, for example.

In contexts that are multi-sided in that way, where you have two relevant antitrust markets or even more potentially, should courts weigh efficiencies in one market against harms in another? And if so, is it because of the two-sided nature of the platform or is it just because that would be better economics and we should be doing that throughout antitrust law anyway?

Let's start with Darren.

MR. TUCKER: Sure. So you've mentioned the principle that you should not use efficiencies in one market to offset concerns in another. That, of course, refers to *Philadelphia National Bank*, which just as an aside is a holding I've always been sort of dubious of. But putting that aside, I don't really read *AmEx* or really sound economics as saying, you know, whether the market at issue is transactional in nature really should answer that question.

As long as the market is multi-sided and there are sufficient externalities between the different groups of participants, I think courts and agencies should consider the harms and benefits to all sides of the platform regardless, again, of whether you would characterize it as a transactional platform or not.

Only then will the reviewer be able to correctly determine whether the conduct at issue is anticompetitive.

You know, I mentioned this in my opening comments. I don't read *AmEx* as being limited to transaction platforms. I think it would have been odd to read the decision in that way given the many cites that we were talking about before to the economic literature, which, of course, is much broader in terms of the way it characterizes two-sided markets.

MR. FRANCIS: Joanna?

MS. TSAI: So I understand, you know, from my antitrust lawyer friends and people I have worked with that we do not consider out-of-market efficiencies in antitrust analysis. So as a simple example, suppose a retail merger benefits consumers in one state but harms consumers in another state. The two effects are not combined to say the effect is zero. That's the state of things.

So what is different about multi-sided markets that would warrant different treatment? Perhaps in some markets we have -- you know, this is just a proposition, but perhaps in some markets we have end user consumers on one side and providers on another side, say a travel website with rental car, hotel, flights providers on one side and then consumers on the other side, and if the merger resulted in efficiencies on the provider side, arguably with some pass-through, okay, if one were to recognize pass-through of lower costs, they may lower prices to end users, and some harm on the end user side may be countered, okay?

But it would need to be thought through very carefully, obviously. Just like in antitrust analysis, we always think through efficiencies very carefully. What are the circumstances and what are the examples of -- you know, as an example of a merger that would result in harm to one side and really efficiencies to the other side?

MR. FRANCIS: Thank you.

Would anyone else like to respond on the treatment of efficiencies? Tasneem?

MS. CHIPTY: Yeah. I think that this is where multi-sided markets I think is different and tougher in so many ways than merger work, because if, you know, you were presented with the merger example you gave, that in one geographic market, no problem, in another geographic market, there's some concern, we could talk about a divestiture plan and retain the good and jettison the not so good.

But it's quite possible that -- again, it's fact-specific, and I don't have a specific example in mind -- but it's quite possible that certain mergers or certain types of conduct with multi-sided markets only work because they intrinsically make the platform bigger, and so I don't know that a remedy would be nearly as convenient or even feasible in that context.

MR. SALINGER: Well, so it's inherent in many two-sided business models that companies make tradeoffs between the interests of one set of consumers and another set of consumers, and so just consider a television network. You know, suppose it does something that -- you know, it increases the number of ads that it shows in ways that irritate the viewers. Is that -- if they haven't shown -- if they're not broadcasting what the viewers most want, could that be the exercise of market power or an antitrust violation?

Well, it's inherent in the business model that -- you know, that you have to show the ads even if consumers don't like them. So I think, you know, that that is a complication that you don't see in some one-sided markets.

MR. CITRON: Yeah. I would just say this is one of those areas like you asked before, are you concerned about the possible misuse? You know, I think price-fixers like to say that they can save jobs in their industry or whatever by fixing prices. There's always the chance that you can redirect the rents that you extract on one side of a market to another side of your platform or business model or the like, and so you just want to be extraordinarily careful about permitting that kind of analysis, because it leads to bad things.

And, you know, in general this is the thing that we're supposed to be trusting to the markets; that is, we try to set up a well-functioning game, and then we let where the -- where the benefits and costs flow according to competition and not from judges trying to say, well, it's true Bob got really hurt, but Joe seems better off, and using incommensurate prices or whatever, we will try to balance that out.

So, you know, I think in general that's a dangerous direction, so it's better if it's as limited as possible, and, you know, I think -- but you will see companies argue, well, we're a two-sided business and there are benefits from this anticompetitive behavior somewhere else in our business, and so all should be good.

MR. FRANCIS: All right. I'd like now to introduce some of the questions that we have had from the audience, and I am going to start with the first one we received.

So the question is, can you talk about the inherent conflicts of interest found when platforms operate multi-sided markets? Often platforms directly compete with those also competing on their own platforms.

So I read this as a question about essentially vertical integration, right? We often find ourselves in a situation where a platform is effectively integrated in a way that puts it into competition with its customers on one side of the market.

For example, if I was running an online retail website where merchants or manufacturers offered their products through to consumers, I might, in addition, have a merchant or a manufacturing business in which I was in competition on one side with some of my own merchant customers.

And so the question I think would be, how, if at all, should that fact -- that fact of vertical integration on one side -- change the analysis of market definition or market power?

And this I throw open to the whole panel.

MR. CITRON: Well, I mean, I'll just start with a concrete example because it's probably easier to wrap our heads around one. Take Amazon, right? Amazon is a marketplace. It functions as a marketplace. It has lots of third-party sellers. It's for buyers and sellers to find each other in large part. It's also a gigantic retailer and sells a lot of stuff.

Is there a potential conflict of interest there? Sure. Of course, there is. AmEx is a profit-maximizing entity. It's probably interested in doing whatever it makes the most money doing. How do we figure out if there's a potential problem here?

We would do it probably by starting with an analysis of whether market power exists; that is, the sellers who offer things across Amazon -- and, look, I am going to do this in a way that isn't particularly two-sided, because I'm just attending to the question I'm trying to answer, right?

The competitive constraint on Amazon monkeying around -- what we're concerned about is Amazon monkeying with the people who sell things on the Amazon platform, and the constraint on Amazon doing that is those sellers being able to take their business elsewhere. So we just ask a really straightforward question. Are people who sell through Amazon able to do otherwise? Can they find other outlets for their businesses?

And you can interview them and find out if they feel comfortable not offering for sale through Amazon even though Amazon is monkeying with them, for example, and you can see what are the alternatives to Amazon. How else can they offer their products?

Someone was up here on the last panel saying how, you know, the ability to market through these marketplaces has actually led a lot of people to come to market who couldn't have otherwise. Well, that's great. That is a good thing in the world, but it's also evidence that, you know, they need these markets in order to operate and they may be at their mercy.

So, you know, I think you have that conflict that the questioner identifies exists. It doesn't require special multi-sided analysis to figure out, I think, what it is we care about.

MR. TUCKER: I guess one thing I would add, I think Eric's example of Amazon and third-party sellers is a good one. I think that illustrates, I think pretty effectively, that for most types of multi-sided platform markets, the platforms compete not only against other platforms but also sometimes against more traditional sellers.

So in the Amazon example, some of the other sellers on its platform are, you know, more traditional sellers. They are not themselves necessarily platforms, as well as Amazon also competes against traditional brick and mortar retailers, such as a Walmart. So I think it's important to not only consider -- I think going back to I think Michael's comments from the very beginning -- not only to look at other companies that look similar to whatever company that is under scrutiny, but to look a little bit further, not only at other -- not other platforms, but other companies that are offering very different business models, because they may offer a constraining effect on the company at issue.

MR. FARRELL: So I think this is in essence the very traditional economic antitrust question of leverage, and, you know, if I control a platform, do I feel tempted to take over one of the complementary sectors where it gets me money and makes my customers worse off?

And I think if David were here, he would probably say, no, then you wouldn't really be being a platform, but being a platform is about appealing to all sides. I think the hard-core economics that perhaps echos that is, of course, there's a downside to a platform sponsor in turning one of its sides into a chore rather than a pleasure.

Whether that downside is heavy enough to outweigh the upside turns out to be a fairly detailed and nuanced analysis. It's something that's been analyzed in a fair amount of detail in the aftermarkets context, which is one illustration. We don't tend to think of an aftermarket as a platform, but it sort of is. The one monopoly rent theorem is about that, and the main thing to remember about the one monopoly rent theorem is it's a very important observation, but it's not a theorem.

MR. FRANCIS: All right. I would like to turn now to the second of the questions I have here from the audience, and the question here is --

MR. SALINGER: I'm sorry, could I answer that?

MR. FRANCIS: Oh, please. Sure.

MR. SALINGER: So the Amazon case is an interesting case because, of course, Amazon started out as a one-sided business. It was a traditional retailer, right? It wasn't a brick and mortar business, but it was buying books and it was -- and then it was selling them.

Of course, it was so efficient that it then opened up its platform to other sellers, and so, like, does it matter which direction this went? You know, if they had started out as a platform and then moved into their own selling, would that have changed the analysis?

I hate to keep coming back to Google, but this was precisely the issue in the FTC's investigation into Google and has been the issue with respect to the European investigation into Google, and if you frame -- if you say, look, Google is somehow leveraging its position as a general search engine into thematic search, then you're completely misunderstanding the nature of the product, you know, that the problem a general search engine faces is that, you know, different searches -- you can have the identical search with much different intent, right?

So if you're a thematic search engine, you know, if you go to Expedia, Expedia knows you're doing a travel search, but if you enter -- if I, sitting in Boston, entered "Washington, D.C." into Google, they wouldn't know that I was doing a travel search as opposed to being an eighth-grader doing my social studies project.

And so the way a general search engine works is it runs multiple thematic searches simultaneously and then has some sort of algorithm to determine, you know, what the search was likely to be, and there are often different possibilities. And so then, you know, when you do a particular search into Google, you're getting their search results, and, you know, and people are saying, well, these different pieces of Google are -- you know, those are separate products that Google is somehow leveraging its market power into, but it's -- they're not separate products. They're a single product. You know, so these -- you know, there are often these assertions of vertical foreclosure that I think are misplaced.

MR. FRANCIS: Before we finish the detour on to vertical integration, Joanna, Darren, Tasneem, any further questions? Okay.

So the next question from the audience that I have here is this: How can plaintiffs and prosecutors disprove efficiencies in the affirmative case? So one of the things that *AmEx* tells us or at least very strongly implies is that a showing of *prima facie* anticompetitive effects under the rule of reason requires a plaintiff to evaluate in that context not just sort of harms to merchants but also and simultaneously benefits to cardholders, or at least that's one way of reading the decision.

So on one view at least, *AmEx* implies that just to get off the mark in a rule of reason case in a two-sided market, particularly in a transactional context, a plaintiff, whether it's a government plaintiff or a private plaintiff, not only needs to prove some harm but also needs to engage affirmatively with any evidence of benefit, whether in the form of lower prices for some customers or increased quality.

As a practical matter, how significant do you think that burden should be and how do you think plaintiffs should go about engaging with it, recognizing that it looks like an increase in the barrier that a plaintiff has to get over at the beginning of the rule of reason analysis?

And, again, this is to anyone on the panel who would like it.

MR. TUCKER: So I guess I would dispute the premise of the question. You know, to establish a *prima facie* case under *AmEx*, one thing a plaintiff could do, after properly defining the market, is to show output had declined due to the restraint, for example. In that case, there's no weighing of benefits versus losses. We have a drop in output.

Likewise, you could show a decline in quality of services across the two sides. That would also be potentially sufficient. I think it's only where you get into a pricing effect is perhaps where maybe this question is really aimed, of looking at potentially higher prices on one side versus lower prices on the other.

In that case, I think you -- if that was your case, if you were bringing a direct effects evidence case based on prices, which is not how you'd have to bring one of these cases, in that case, you would have to look at both sides and show net effect on prices across the two sides, which obviously is going to be challenging.

MR. FRANCIS: Thanks, Darren.

Anyone else? All right.

Then the third of the questions I've received from the floor is a specific one about health insurance, and so the question is, are health insurers two-sided markets under *AmEx*? And if so, does that affect how a court should define the market in an insurance merger? So this is an open question.

MR. CITRON: Ah, I am going to take the second part of the question first, because it's really useful, because the first part of the question is too inchoate to answer, right? Like, without knowing why you care about health insurers, I can't really tell you if they're two-sided or three-sided or eight-sided or twelve-sided die, but when you say, well, I'm worried about a health insurance merger, then I think their "two-sidedness" becomes kind of straightforward.

If you take the ordinary consumer welfare standard, where the purchasers of health insurance are our primary concern, you would say, well, no, this isn't two-sided at all. I'm curious whether the price of health insurance to people who purchase it will go up and the increased market power that this entity might have over doctors or hospitals in the area, say, will now present as a good thing rather than a bad thing, because it will allow it to negotiate for lower prices.

Now, I mean, you can quarrel with whether that consumer welfare model is the best in the end and whether we should be concerned with buyer power in those markets or the like, but, you know, I think it resolves away concerns about its two-sidedness when you see it through the lens of the antitrust question that you're trying to answer.

MR. FRANCIS: Thank you.

I just received another question from the floor which I think -- well, let's put it this way, so can a platform firm have market power on one side and be in perfect competition on the other? I think the answer may be no, but let's put it to a member of our panel.

MS. TSAI: I'm sorry. Can you repeat that question again?

MR. FRANCIS: Sure. The question is, can a platform firm have market power on one side and be in perfect competition on the other?

MR. FARRELL: So I think -- let me rephrase the question. Part A, can a firm have market power, let's say an output, and be a price taker on its inputs? Of course. In fact, that's the standard way that we model a firm with market power.

So I think the only sensible version of the question would have to be, if we're thinking about a firm like that, would we not call it a platform firm?

MR. FRANCIS: Right.

MR. FARRELL: And so I think that becomes a question of definition and I think not very interesting.

MR. CITRON: So, I hope so. I will just say taking credit cards as an example is a really interesting way of looking at this question, right? One of the striking things about credit card markets is that the credit card companies have a very, very narrow set of competitors on the merchant side. There are basically four credit cards that you can agree to accept that are useful, AmEx, Visa, MasterCard and Discover, and Discover has a very small share of the market.

On the cardholder side, Visa, MasterCard and American Express -- actually, Visa and MasterCard aren't even themselves properly understood to be the competitors, because you can pick as a cardholder among all of the banks that offer credit cards. You can get a credit card from Chase, Capital One, your local credit union. It's tens of thousands of competitors.

So this is a one very straightforward way of understanding why things are really good in this market for card members and not so good in this market for merchants, right? Merchants have to pick among three card companies that have a lot of market power, and card members get to pick among a huge number of competitors who are viciously fighting with each other for cardholders, mostly so that they can get the rents available --

MR. SALINGER: Wait. Aren't there a lot of acquirers, too?

MR. CITRON: Well, it's more complicated, I guess, than I'm saying.

MR. SALINGER: Yeah, I think it is.

MR. CITRON: But you can see, I think, why you can have a different set of competitors on both sides of your business model, which I think is all I'm trying to get at. You can't really look at a platform firm and say, well, they're going to have a -- because you're not looking at -- this is what Michael was saying. You're not looking for people who have the same business model. That's not how you identify whether you have a competitive market or not. You could have a different set of competitors on one side than the other, and that's very true in the credit card context, in particular.

MR. FRANCIS: Would anyone like to respond? All right.

Then we've talked quite a lot about conduct and conduct implications, particularly sort of vertical agreements. One thing we haven't talked very much about is merger cases. So let me ask this first to Tasneem and then to anyone else.

In your view, does *AmEx* have anything to teach us in merger cases beyond the kind of things we've talked about here? And if so, what do you think it is?

MS. CHIPTY: So I think that in many ways the answer is no, because it comes back to the primitives. I think that what we've been talking about are things about really understanding the competitive forces that discipline firms. Whether it's in a single-sided or multi-sided context, I think we just have to do the hard work and understand the facts and understand the competitive dynamics. So in many ways, I would say no.

I think that the fact of the *American Express* decision has inevitably heightened awareness on transactions that involve multiple sides, and I think we are all going to have to do some mindfulness to make sure we don't trigger either the buzzwords or the buzz principles, what have you. So in many ways, substantively, no, but I do think this will make us more cautious going forward.

And then lastly, on the issue of efficiencies, I've already said a little bit about this, but I don't think *American Express*, at least the fact pattern in *American Express* helps us think hard about efficiencies. It doesn't. It doesn't give us a roadmap. So at most I hope that it doesn't get misused to suggest that we can offset, you know, harm on one side, to one consumer group, because of benefits to another consumer group. If that happens, it would have to be because of a very stylized set of facts.

MR. FRANCIS: Anyone else on the topic of mergers? All right.

Well, I know we have just a couple of minutes left, so I am going to ask a final question, and then anyone who would like to do so would be welcome to add any closing remarks or a couple of sentences just to wrap things up.

So the final question I have -- and we'll start with Eric and Darren -- is about the meaning of the *AmEx* decision for antitrust law sort of more generally. So we know that the meaning of a Supreme Court case, of any important precedent, really isn't so much to do with the text of the decision. It's really a function of how it's used and how it comes to be understood in the period that follows.

So my question is whether *AmEx* will come to stand for a broad proposition or a narrow one. So on the narrow view, right, *AmEx* could be read to suggest that, in its least controversial form, if you as a plaintiff show only an increase in nominal price to a subset of purchasers in a relevant market, you have not cleared the hurdle of showing a *prima facie* case of anticompetitive effects. That does not seem controversial. That does not even seem specific to two-sided markets.

On a much broader view, *AmEx* might suggest that in cases where intermarket externalities are significant, cases of multi-sided platforms, whether it's one relevant market or two or even three, a plaintiff has to show an overall loss of output, considering all sides of the platform at once, in order to clear that first hurdle.

So my question is, which of those two readings, the broad or the narrow, do you think is more appealing and which do you think *AmEx* will come to symbolize?

Why don't we start with Darren.

MR. TUCKER: Sure. So I think I touched on this in my opening comments, so I'll be sort of brief and just say I think the reading of the cases is unmistakable that in a two-sided market, establishing harm to just one group of participants, you know, is not enough for a plaintiff to make a *prima facie* case. I think that's a very straightforward reading of the case. I think the narrow reading that you put forward is just not consistent with the plain language of the decision.

Let me also just make one other quick point, which is that the *AmEx* decision really didn't come out of nowhere. There actually were prior cases, significant antitrust cases, that announced similar principles. Joe actually touched on one of these before, although he didn't mention the name, which is the *Eastman-Kodak* case from '92. This was the aftermarkets case, and in that case, the Court said that if there had been evidence that equipment sales disciplined aftermarkets, it would have been appropriate to define a single market for the original equipment sales and the aftermarkets and that plaintiffs would have had to show harm in that overall systems market.

Another case, *U.S. vs. Microsoft*, D.C. Circuit decision. The D.C. Circuit found the applications barrier to entry existed because consumers wanted to buy operating systems that had lots of applications. Developers wanted to develop only on operating systems that had lots of users. They called that the applications barrier to entry, another way of saying a two-sided market with indirect network effects.

In the same case, the Court defined a single market for operating systems. It could have defined a market for operating systems licensed to end users, operating systems made available for developers, operating systems made available for peripheral makers. Since it was a multi-sided market, it didn't do that. It defined a single market for operating systems.

I think this is a good example of how incorporating multi-sided market analysis into decisions could actually strengthen antitrust enforcement, not weaken it. There's lots of other cases -- I won't go through them -- but if you go back in the last ten years, there are probably half a dozen or more district court cases that have wrestled with multi-sided markets and indirect network effects.

Courts have not really struggled, as far as I can tell, with managing with these concepts. You might quibble with whether they got these decisions right or wrong, but the fact is lower courts are actually addressing these issues on a regular basis and so far don't seem to be having to devote an excessive amount of effort to do that.

MR. FRANCIS: Thank you.

Eric?

MR. CITRON: I mean, I have already revealed myself as an *AmEx* skeptic, so I guess I should say that I hope that the application of it is narrow in some respects, but I will say also that I don't disagree with Darren, that, you know, there is a way that *AmEx* can be applied that is consistent with things that courts have already been doing, which is in a generic kind of way considering indirect network effects and other things that discipline one side of the market through the other side of the market as relevant to either establishing a *prima facie* case or a defense that you don't, in fact, have market power.

If it's applied in that way, it will do minimal damage. I think the thing that we ought to be concerned about is the sort of on/off switch where a defendant tries to show that they're a two-sided market and, having flipped the two-sided market switch, then has available to it a bunch of defenses that make it essentially impossible for a government regulator or a plaintiff to prevail.

If that latter thing happens, that's an unfortunate use of the decision. It will sow a lot of mischief in the law, and unfortunately, I think for the reasons I said at the very beginning, that that's as likely an outcome I think as the more, what I'll say, narrow one that Darren describes. Although it might be a broader use of the decision, it would be one that's much more constrained to ordinary antitrust doctrine, and that would be good.

MR. FRANCIS: Thank you, Eric.

Any final reactions from our panel members?

All right. Well, it's one minute past 5:00. I think it's been a terrific discussion. Thank you so much to our very distinguished panel. Thank you for your attention and your questions. It's end of the panel, it's end of the day, and I wish you a good evening.

(End of hearing.)

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