FTC The “Sharing” Economy Workshop
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Segment 2
Transcript

ANDREW STIVERS: It's not going to be near enough time to cover everything we'd like to cover, but if we can go ahead and get started then. So welcome to panel two-- Mechanisms for Trust in the Sharing Economy. I am Andrew Stivers. I'm the Deputy Director for Consumer Protection in the Bureau of Economics at the Federal Trade Commission. And I'm delighted to have these panelists here with me today. Each of them is going to give a short presentation covering different aspects of these kinds of mechanisms, after which we're going to have a short panel discussion.

And then we're going to move on to some more general questions. So to start us off, we have Ginger Jin. Ginger is currently a professor in Economics at the University of Maryland, College Park, a research associate for the National Bureau of Economic Research, and a visiting professor at the Guanghua School of Management at Peking University. Her research focuses on information asymmetry among economic agents and solutions to overcome the information problem. During her 15 year research career, she has studied restaurant food safety, health insurance, prescription drugs, online trading, online reviews, and many, many other things.

And rather than cut into her time, you can read the rest of her biography. But we're very honored to have her here today, and she's going to start us off to talk about what is the problem that we're really trying to solve in economic terms with these mechanisms. So Ginger--

GINGER JIN: Thank you so much, Andrew. Can you hear me? Thanks so much for including me in this interesting panel, and also in this very important conference. Let me see if the slides can-- so since I'm the first presenter of the panel, I'm just going to lay out some foundations for the information problem and solutions we have seen in the field . And then I will leave details to the rest of the panel. So in particular, e-commerce faces a classical information asymmetry problem that has been there in the regular market for many, many years-- namely, sellers would know more about their own product or their own services than buyers do.

And we know from a lot of well known economists and economic textbooks if such information asymmetry problem is not addressed, then we could face very profound consequence in the marketplace. For example, the buyers may end up overpaying for the product, or they may end up matching with the wrong sellers. The sellers may-- they're low quality sellers. They're high quality sellers. Suppose the buyer cannot tell the low quality ones from the high quality ones, then whatever to buyer's willing to pay for such a product that low quality sellers would have more incentive to sell for it, because they have a lower cost by cutting corners.

So this would generate an equilibrium where sellers are racing to the bottom, which economists often call adverse selection problem. To the extreme, such information asymmetry could even invite out right fraud behavior from sellers and lead to a collapse of the whole market. So this is a classical problem in the traditional market, but I would argue it has some new meanings in this new sharing economy. So I would categorize this as probably new wines in old bottle.

So in early 2001, I started to look at the frenzy on the internet. I was thinking this is the perfect example of the textbook, of the classical problem we've just seen in the last slide. And I concluded myself that this market would not last long because it's exacerbating the information problem. It's one thing to patronize a new store open on the main street. It's another thing to trade with a stranger who knows where in the world, anonymous, and without examining or observing the product and his selling. So at that time I was thinking who will be brave enough to have such a blind trust in this market?

Well, the history has proven me to be quite wrong in many ways. It's also probably a highlight that the danger of reading the economic textbook too much. I guess the reason this information asymmetry problem does not stop the sharing economy to prosper is because the internet also provides a number of new tools to address the problem. It allows us to access a much larger market. It allows us to see that buyer experience of those who have bought from the same sellers maybe 10,000 miles away, maybe years ago. But the system allows us to share those buyer experiences in a very convenient way, and we know that's not easy to do in a traditional economy.

It also allows some external quality certification information to be available at our finger tip. For example, CarFax now allow us to see the repair and accident history of used cars, which is not available or even not imaginable in the traditional old fashioned way of trading used cars. So all these, including some ability for us to utilize the social networks-- your friends, your group, your colleagues and so forth-- all these tools have been used rigorously by the new sharing economy platforms. So here I give you the list of some trusted mechanisms we have seen used in the field.

So for example, at the first the platform can define who is allowed and who is not allowed on this platform. And it ranges from anyone who has a credit card can log on the platform. Or you have to go through credit rating check. You have to go through even criminal record check. And the second is reputation ratings. This could be user generated. It could be platform generated. It could be anyone generated, even if that anyone has not used the platform at all. So I guess the other panelists will get into that potential problem.

Many platform have used some platform guarantee policy that they try to assure buyers that they are protected. Some of the may even guarantee some performance of their same money on the platform. They also introduce technical features that will allow you to bring your friends, your group, into this platform. You can link your whatever listing to your Facebook posting. You can use external sources. And lastly the platform may be very vigilant in expose resolution-- in dealing with consumer complaints and really weed out the bad apples.

So all these mechanisms have been used by various platforms, and I want to end my presentation by saying that we really see an evolution of these mechanisms over time. And if you look at, say, early 2000 and eBay was positioning itself as intermediary marketplace, not an auction house. And they're even lawsuits between Tiffany and eBay. And Tiffany accused eBay for allowing counterfeit Tiffany products to be sold on eBay. But Tiffany lost the suits in both district court and the Second Circuit court. But if you look at Louis Vuitton, who lawsuits against eBay, Louis Vuitton actually ends up winning the case for similar issues in France.

So while the regulators still have diverse views on exactly what role would such platforms should play in the economy, the platforms have moved forward themselves. They have become more vigilant in using this whole list of trust mechanisms to try to build trust the platform. So I'm going to stop here and allow the other people to talk more in details.

ANDREW STIVERS: Thank you, Ginger. So I think one of the things that, if I can paraphrase maybe a little bit and Ginger could tell if I'm wrong, but I think one of things this has established is that the problem we're dealing with here is really very closely related to the problems in information transmission, in information flows and marketplaces that FTC has dealt with in consumer protection for a long time. I had some specific questions, but are there comments by the other panelists?

So one of the questions that I think you lay out here is that you started us with the beginning of the internet economy, and really thinking about the reputation issues starting at that point. Is there something different about the sharing platform versus the problems we were facing 15 years ago in trying to-- say there's some vertically integrated company that's trying to sell me a service, I would still have some kind of reputation issue. Is something different today? And I'd open this to all the panelists.

STEVE SALTER: Thanks. From my perspective, and we haven't gotten around to full introductions yet, but I've been with the Council of Better Business bureaus for 30 years now. And 20 years ago from '96 to '97, we started a program called BBB Online that was intended to help buyers online sort out reliable businesses. And from that perspective of what we were looking at then, I'd say there are a lot more similarities now to then as opposed to differences.

But I think that a couple things have changed. And two that I would just put out, maybe even talking points, is that there are far better rating systems now for consumers to rely on. External sources, and a lot have been talked about already this morning, that provide customer reviews and feedback and a whole variety of fora. So that's one difference, I think. There's a lot more third party information available to consumers to help them be smarter shoppers.

And second, I think we may have sort of a new set of buyers in the marketplace than existed 18 years ago or so. I think people initially were a little more skeptical about buying online. Things like privacy policies became prevalent at that time to help address that skepticism. It feels to me that younger buyers are far less skeptical and much more willing to go out there and shop and buy online. Maybe it's age. Maybe it's a certain naivete. But it seems to me that a lot of people are simply more trusting because it's a more established environment, whether they should be or not.

CHRYSANTHOS DELLAROCAS: I agree there are a lot of similarities. This is not the new problem, especially from the trust perspective. There are some second order differences that the sharing economies is introducing relative to the problem of trust in electronic markets. The one is that there is more of a symmetrical information asymmetry issue. Meaning if you buy, if you sell things-- and as Ginger said, the seller knows more than the buyer. And it's basically the concern is more directional really, that the buyer's uncertain about the seller. The seller has fewer things to worry about the buyer. Whereas in the sharing economy, for example if you're an Uber driver, the rider has to worry about the quality of their driver, but the driver also has to worry about the quality of the rider as much detail if you are an Airbnb host, right?

The guest worries about the premises quality and the host reliability, but the host also has a very important reasons to worry about what the guest will be like. So I think the information asymmetry issues are symmetrical. So we need bi-directional trust to be built much more than in the case of electronic markets. The other related issues that the downside of things going the wrong is actually much more severe.

If you send your money to a bogus seller, at most, you lose your money. If you get into a crazy Uber driver, you may lose your life. So I think there's bigger issues there. And I guess-- let me see. I had another thing in my mind, but I forgot about it.

ANDREW STIVERS: Well, maybe you should hold that for a second. Ginger, did you have any short comments you wanted add to that before we move to the next presentation?

GINGER JIN: I agree with what Steve and Chris were saying. Probably just to add to what Steve is saying is, not only do we have a new generation of buyers, we probably also have a new mindset of sellers. I think initially when the platform came in, say, late 1990 and early 2000s, sellers on eBay and other places are sort of marginal sellers and not in the mainstream. And now we see [INAUDIBLE] and other stores. And they really embrace those online platforms. So I think that changed the landscape as well.

ANDREW STIVERS: Thank you. So we're next going to move to-- now that we've maybe got some sense of what the underlying economic problem that we're dealing with here, we're going to move to a more in depth look at some of the particular review mechanisms that are out there. And so speaking next is Andrey Fradkin. He's a postdoctoral fellow in economics of digitization at the National Bureau of Economic Research. He's also a part time data scientist at Airbnb, and his research interests include the design of online platforms, the economic effects of digitization, and the economics of labor markets. So Andrey?

ANDREY FRADKIN: All right. So thanks so much for having me here today. Today I'm going to talk about the role of reviews in peer-to-peer marketplaces. And I'm going to draw on my research from the Airbnb platform. So before I get into the details of Airbnb reviews, I just want to mention what existed before Airbnb, which was Craigslist. And there, people could post a listing and buyers could see it and they could send messages to that listing asking if it was available, whether they could stay there.

But what Craigslist did not do was it did not keep track of the transactions and it did not have a review system. And therefore, this market-- at least in the Airbnb-style transaction-- didn't work very well. So what Airbnb did was two related things. First of all, it processed the payments and it held it in escrow until the transaction occurred. And then second of all, after the transaction occurred, it's solicited reviews from both guests and hosts.

And so once this information was available, it was used to help further people that came along later to match for the appropriate guests or hosts. And this made the market really have a lot more information than the Craigslist's market. So how do reviews work on Airbnb? There are several pages of questions that people get asked after a transaction. There's textual information. And this is very kind of personal. You can see in my slides there's a photo next to the person leaving their review. Then there are the star ratings, and there are different categories of those ratings. So the overall rating and things like the accuracy rating.

And those are averaged out. So the individual reviewer is not associated with a given star rating. So people should be kind of more honest than that. And then lastly, there are questions which are never shown on the site but are seen either by the Airbnb platform and/or by the party being reviewed. So in particular, there's a question that I used for my research, which is, would you recommend this listing or would you recommend this guest? And this answer is anonymous and not linked to you. And so this is a really important question for the review system, because some incentives that people may have not to reveal all the information about their transaction should disappear in this case where the other person would not see that.

So the first thing I want to mention is, this reviews system seems to be working pretty well just because of the tremendous growth that Airbnb has experienced. So something is clearly working correctly. And now I'll kind of discuss some of my specific research regarding reviews on Airbnb and experiments that Airbnb has run. So first of all, let's think about the review rates. So over 70% of people that transact on Airbnb leave reviews.

That is a very large coverage. So when you compare it to sites like TripAdvisor, Expedia, which also have hotel reviews, their share of the market is probably less than 1% of all stays at those relevant hotels. So we should be really careful about comparing different review systems. The second thing is, and others have noted this, is that reviews on Airbnb tend to be positive. So 74% of guest reviews in our sample are five stars overall ratings. So does this represent an overall positive experience?

Well, we can compare it to the anonymous ratings that are seen only by Airbnb. And in that case, 97% of all guests would recommend the listing that they stayed at. So it suggests that people are having a good experience overall. Now what happens in the 3% of the time when people don't recommend the listing? Well, they typically leave a lower than five star rating. So at least on that dimension, the review system seems to be pretty informative.

Now there are some reasons why the review system might not capture all the relevant information. One reason might be strategic. So if people are afraid of retaliation in the review system. So if I left a bad review, you might be afraid of being retaliated against. In the middle of last year, Airbnb changed its review system in order to make that impossible. So it did not show a given review until the other counter party left a review, or until the time to review had expired.

And so this kind of reduced the strategic incentive. Secondly, there is a potential social reason why people might not reveal information. So if I became friends with my hosts, I might not say something mean about them. And we study this in our research and we show that, while this behavior does exist, it doesn't seem to be driving the ratings in any significant way. And then lastly, there's sorting. So the people that don't leave a review might have a worse experience on average than the people that do leave a review. And Chris is going to talk a lot more about that.

So kind of in summary, reviews seem to work pretty well at getting whether a person had a positive or negative experience.

And there's still a lot of research and development to be done in how to elicit the right type of information and how to display it on the site. And I want to emphasize that we just don't even have an economic framework for evaluating these changes. So as far as kind of regulation, it's just way too early, I'd say.

ANDREW STIVERS: Thank you, Andrey. So next, we're going to hear from Chris Nosko. And Chris Nosko is an assistant professor of marketing at the University of Chicago, Booth School of Business. His research focuses on the organization of technology and internet markets. Professor Nosko spent the 2011, 2012 year working at eBay in their research labs. While there, he pursued projects related to pricing in two sided markets, measuring the effectiveness of paid search advertisements, understanding repeat buyer purchase behavior, and investigating the effectiveness of its review system. Chris?

CHRIS NOSKO: So thanks for inviting me to participate here. So everything that I'm going to say basically comes out of the time that I spent at eBay working in the labs. And in particular, working internally to think about their reputation system and how well it functions. So the key graph that I want to begin with was the one that we saw when we started looking at the internal data asking this question of just what did the review system look like overall.

So Andrey gave the number of 74% five star ratings on Airbnb. Here, you're looking at the percent positive ratings that are left for eBay sellers. And what you can see is it's extremely, extremely high. So most eBay Sellers look really, really good when you go and visit the site. And the question we wanted to tackle was which world are we in? Are we in a world where this is a sign that the reputation system is working incredibly well and that eBay Sellers are being disciplined by the reputation system, and so we should be very hands off?

Or are we in a world where the reputation system is relatively biased and information is not quite being revealed to buyers in a way that we would like either as eBay or from a broader economics perspective? So our approach was to try and rely a lot on the internal data. And the metric that we ended up coming up with was thinking about long term buyer engagement. And the idea here was if buyers were really satisfied with their transactions and they were meeting expectations, then they should want to engage with the platform over and over and over again.

And when you start digging into that, what you see is a substantial number of buyers seem to be left out and disappear and walk with their feet, sort to speak. So that led us-- that and some other evidence-- to start asking the question, what happens if this really is a positively biased system, and what effect does that have both for the platform and for economics as a whole? And here's where I think we frankly have been a little bit lazy as economists, because when you look at the literature that people have written about this, people say, well look at eBay. Look how well eBay is doing. And could eBay exist without a well functioning reputation system.

And to a certain extent, I think that's right. But to a certain extent, I also think that's asking the wrong question. Because the right question should be, how close are we to solving the information asymmetry problem as a whole. And that's where I think it gets really interesting. I think the two crucial questions we want to ask ourselves are, can platforms improve the long term experiences of their buyers either by trying to build a reputation system that reveals more information, or by actively intervening in the market?

And I think that latter point is something that eBay has been doing over and over again. And I think it seems to be the direction that platforms are going. The second and I think most important point from an economics perspective is, what incentives do platforms have to have to reveal this information, and are we stuck in an equilibrium where platforms don't actually want to move away from them. And I think to Andrey's point, this is a situation that we just don't have nearly enough research on.

And I think the open question is, what are the incentives of the platform to actually sort of create reputation measures that reveal everything to the buyers.

ANDREW STIVERS: Thank you, Chris. So I think there are two questions that I would like to have answered before I want to turn over to the panelists. So given some of the biases you folks have talked about-- first of all, do consumers actually pay attention to these ratings? And second of all, are they effective in terms of matching buyers to high quality sellers, and providing some quality discipline?

CHRIS NOSKO: So I think the answer is, there is a lot of research that shows that the answer is yes to that, and that reviews, for instance, seem to matter in terms of the price that an item will clear at on auction. So higher reviewed sellers get higher prices. And Ginger's done some work on this, so she could speak to that. I think what I would really push back on or ask a question about is, which buyers and who is paying attention in these particular situations? And I think that it's clear that there are a bunch of eBay buyers that really know what they're doing and know how to evaluate the review system and know how to, quote unquote, unbias the reviews as they're given.

The question is for all the buyers that are perhaps a little bit less informed who show up and think, wow, this 98% looks really, really good. And I think that heterogeneity is one of the things that masks some of the issues that go into thinking about the platform.

ANDREY FRADKIN: So the other thing that I want to mention is that we oftentimes think about reviews as a vertical thing, where it's good or bad. But in a lot of these markets, and especially the newer peer-to-peer markets like Airbnb, people have heterogeneous preferences. So the reviews should try to get as much of that heterogeneity out as possible. So I think for the good or the bad, many of the other things that platforms do to enforce who's allowed to participate or not also play a really important role.

And for the heterogeneity, reading the text of the reviews also is very informative for the user. But I would say that the research-- we have some research on this, but we need more.

GINGER JIN: I would like to add a few things. One is that consumers definitely look at the reviews. But they do not necessarily look at every word entered in every review. So there has been research showing that people are much more responsive to the aggregated rating then to a particular distribution of rating or to particular text in the rating. And the second is, actually as a consumer, you may not know that you actually do not necessarily see all the reviews posted. And two, the platform. For example, Yelp has an algorithm to filter out the reviews that they think are potentially fake. So some research have shown that the filtered review probably account for 16% of all reviews Yelp received.

And I didn't know that number until I started to do research about Yelp reviews. And that's kind of a surprise to me. As a consumer, I think it's amazing that the review system devolved in such a way that it sort of support people's consumption choice and so forth. But on the other hand, I still believe they're tons of things that we don't know about review system yet, especially in a very fast moving pace.

CHRYSANTHOS DELLAROCAS: Research shows that some consumers pay attention to pretty much every aspect of the review system. Meaning that, for example, there's research that has shown that specific words on the text of reviews correlate positively or negativity with prices that sellers can obtain for similar items. This doesn't mean that everybody sees them. It means that some people pay attention to the extent that they make a statistically significant difference.

We also have a research that shows that reviews from identified reviewers carry more weight than those from anonymous reviewers. We have research that shows that reviews from reviewers who have been rated positively by other readers has been useful. They also carry more weight in terms of their sales and prices. So pretty much every aspect of the currently pretty elaborate mechanism seem to be making statistically significant differences in buyer's choices.

Now, does this affect everybody? I'm not sure. But there's also the question of learning. In every new market, there's a learning curve. You enter the market. You're naive. But I like to thing that very quickly you understand the rules of the game, and you're able to make reasonably good decisions.

ANDREW STIVERS: So it seems like one of the things that we're doing here is relying on kind of the expert buyer model that we do in some other situations where we rely on to the idea that maybe somebody else is vetting these people or these sellers. And so I don't need to write a review, or I don't need to engage too strongly in the system. It does seem like you guys are suggesting that only a small fraction of folks are actually writing substantial reviews. Or am I mistaken in that.

CHRIS NOSKO: I would disagree with that. I think on eBay the percentage of people leaving reviews is between 60% and 70%. I think what Andrey was bringing up, I think that is not an unbiased sample. And in particular I think what's really going on is people who have bad experiences are disproportionately not leaving reviews. But to a certain extent I think that, at least on eBay, there is this sense of engaging with the platform in a relatively deep way, especially for buyers have been around for a long period of time.

GINGER JIN: Well I would add that this probably heterogeneous across platforms in platforms such as Yelp. And we do see a skewed distribution in terms of how many reviews each reviewer enter into this system and how many restaurants and other services, this kind of what they call elite reviewer have covered. And that's quite a skewed distribution. As much as I believe that the rating of raters could help in the system, I would also want to be cautious of that, as we have no-- there has been literature talking about information cascade. If a rater care about their own reputation in the rating system, they may end up not speaking out of their own mind but try to cater to the audience.

And to what extent that would drive a danger of information cascade so that we sort of actually deviate more from the truth, I think that's still an open question.

ANDREW STIVERS: So next we're going to hear from Chrysanthos Dellarocas. Professor Dellarocas is a professor of Information Systems at Boston University's Questrom School of Business and Director of the university's Digital Learning Initiative. His research focuses on online reputation, online word of mouth, and social media. Other interests include collective intelligence, online advertising, and economics of media industry. Professor Dellarocas?

CHRYSANTHOS DELLAROCAS: So as we mentioned-- you have more slides you haven't shown us as well. So the design of online education reputations systems is not a new question. There is a body of literature and practical evidence that dates pretty much since the year 2000, when the system started to appear in the context of eBay and other early stage electronic markets. So for the most part, those systems seem to be working reasonably well-- at least well enough to enable those markets to exist and to grow. But of course, over the years there's been a lot of research that has identified several of the weaknesses, of the challenges, and also there have been several design suggestions for alleviated some of these problems.

So I have five minutes, and I will try to give you a grand tour of those 15 years of research, some of which has been mentioned by the previous panelists. So one of the issues that was a bit of a concern in the early 2000 was this whole business of fickle online identities. On the internet, nobody knows that you're a dog. That kind of business. And it has been shown that online reputation systems are basically susceptible to that.

So they really cannot function if people can just get in and change identities. But that's not really a big issue, especially in the sharing economy. Because in the context of what we're talking about today, pretty much all the parts of the market have to be identified, and I think we're pretty comfortable with that. So that's not really a practical concern anymore. And then there's been all this story about various kinds of reporting biases.

Reporting biases arise for a number of reasons. First of all, we're more likely to engage with products and suppliers who already have good ratings and we're more likely to give them good ratings in return, because they are the best most likely. So that's one reason why there's a bias towards positive ratings. And also the other bias, which is also through an offline word of mouth. We are more inclined to speak up if we have extreme experiences than if we have average experiences.

So as a result, most systems have a skewed distribution of ratings, which is actually skewed positively for the most part. What can you do about that? Well, one thing you can do is to report percentiles as opposed to low scores. This can alleviate a little bit the extent to which things seem skewed. The other thing which I think Chris has also mentioned in his paper is to also report to the percentage of silent transactions. The percentage of transactions where people did not report feedback is informative.

And that's something that one can also report in the system. And I guess perhaps the most robust solution is to not just rely on numbers, to rely on text reviews. And we have evidence that people are reading the reviews. They're reading between the lines. And those can be much more nuanced and informative than just the numbers. Then there are other reciprocity biases we have discussed. If both parties rate another, there can this hold up problem where people are afraid to say anything negative.

And this is becoming more of an issue in the sharing economy, as I mentioned before, because both parties are risky to one another-- much more than it is in commercial transactions. So what can you do? Well, if rating of one party is much more important than the other, you can basically just allow one party and do away with reciprocal ratings. But that's not really a very good solution in the sharing economy. Then you can do things like what Airbnb did. Some usually publish the ratings, so to reduce the mutual threat.

Again, you can report silent transactions because that's also informative. If the market does penalizing parties for not receiving feedback, then this can actually help maybe put things into some more perspective. And then of course there's the issue of fake or unfair ratings. People rating themselves or bashing their competitors. Or people just posting frivolous ratings. And this is a pretty tricky problem. But there are several solutions to that.

So for example, platforms can only allow verified customers to post ratings. So this makes it difficult for someone to just go and post 100 ratings. So and if have to transact, just introduce a cost. Of course, you can have a fake transaction. But it's still more costly than just going into the internet and just posting a couple of sentences. The other thing is there's a system, as I mentioned, whereby readers can rate the raters and they can rate the quality or usefulness of reviews. And this is actually working.

My research has shown that reviews which have been rated as useful by, let's say, readers in a commercial context, they actually correlate with fewer product returns. So which is one metric of making a good or a bad decision. So there are algorithms that can detected dubious ratings. And of course, there is, as a last resort, the possibility to have some sort of dispute resolution in cases where they're blatantly unfair ratings.

Then you have the issue of the cold start. How do you gain trust if you have no profile, you want to enter a market, who's going to trust you. How do you basically get through the initial phase of gaining trust? This can be sold by the resorting maybe an alternative mechanism as help. So doing background checks on new members, I think it's a good idea, especially in settings where one crazy driver or one crazy host can totally basically wreck the platform. And I think that's a good thing.

Theoretically, you can require new members to post a bond. You can use escrow services until somebody has established themselves. But more practically what's happening is newcomers have to offer great service at very low prices until they build a reputation that allows them to normal members of the community. And then there is the so-called end game or reputation milking problem, which is somebody builds a good reputation and then they can try to milk it.

Or when they want to exit the market, then they cheat a few times and then they exit gracefully and take a one way ticket to Brazil or something like that. So again, one way to the fight the milking of reputation question is to discount all their ratings. So basically you don't allow anybody to rest on their past laurels, so you always have them have to try hard to maintain their good trading. But really the end game problem is something that really cannot be solved very easily by reputation alone. And that's where platform guarantees or dispute resolution or some alternative mechanisms can play a role.

Hopefully those will be exercised very infrequently. So that was my little more than five minute overview of reputation system design challenges. And just a very quick end note, maybe as a bridge to the next panelist-- so we talked about reputation systems as being embedded in platforms, and that's what Airbnb, eBay, and Amazon has. But perhaps you also understand that there are some standalone reputation systems that are not affiliated with a platform, they're not affiliated actually with a market, maybe because these are platforms as well-- like TripAdvisor or Yelp.

And there's also need an interesting distinction between consumer generated feedback and expert generated feedback, which is what Consumer Reports or scene interviews or the Better Business Bureau is mostly engaged in. So I guess these are my remarks.

ANDREW STIVERS: Good. Thank you, Chris. So I think one of the questions that I'd ask here-- we've been talking about reputation mechanisms bundled with the platform. So they're two things going on here. There's a market making matching, which of course relies on the reputation. But really can think about these two as separate, these potentially separate, mechanisms. And I'd open this all the panelists. Do you see this as a necessary relationship? Is this something that we're going to see going forward? Is there any opportunity to break these off? And I think going back to the first panel, are there then competition issues that we should be worried about there?

CHRYSANTHOS DELLAROCAS: I can comment.

ANDREW STIVERS: Sure.

CHRYSANTHOS DELLAROCAS: So in principle, it is advantageous to have reputation systems embedded in the platform because as I mentioned, reputation alone has certain weaknesses. So reputation has to be supplemented by the platform guarantees, background checks, some form of dispute resolution mechanisms, maybe some way of ascertaining that somebody who posts feedback has actually transacting. And it's much easier to do this if the system is embedded inside the platform.

On the flip side, having a reputation system embedded inside the platform raises some potential conflict of interest issues. One issue is-- and I would agree with Chris that we haven't fully researched those issues. That's a very interesting area that we need some more research. One issue is reputation is both a trust building mechanism, but it's also an incentive to stay in the platform. It is greater switching cost. It's a locking mechanism.

Let me just give you an idea of where this might play out. So eBay, for example, traditionally the mechanism has a reputation score which is basically the sum of all of your transactions throughout your entire lifetime. And this score has this property that's the longer you stay in the platform, the higher the score. So it kind of gives you an incentive to stay in the platform. If you go to another platform, then you start from zero.

However the optimal reputation mechanism has to discount the past, because that way you basically allow-- if you just let somebody accumulate score, you basically-- it's very difficult to detect if somebody has declined in quality. So eBay has this potential conflict of interest. Well, if I change my reputation mechanism and basically just only show someone's six months or last year of score, then this reduces the lock0in that I have on them. This is an area where you have a simple case where optimal design and incentive for the platform can be in conflict.

And so I guess the other potential conflict of interest, which is actually much more complicated and I have to say that we need to research it, is this idea that platforms, they have an incentive to make it seem that things are kind of better than they are. A little better, so that there are fewer dissatisfied customers, that fewer transactions would go bad. There's is this conflict of how much information do you reveal. I think Chris touched upon that. And I agree that that's--

So if we can resolve those conflicts of interest, then I would think that the embedding them into the platform has advantages. But those conflicts of interest exists.

ANDREW STIVERS: If we have a couple more brief comments on that and then we'll go to Steve.

GINGER JIN: Yeah. I would add on Chris' comments that the bundling or de-bundling of the matching function and the review function probably also depends on the availability of third party website that provides such information. So we have seen people have reputation in Yelp. You'll have reputation in eBay, have reputation in Amazon. To some extent, there's got to be some economic efficiencies to aggregate those information together and have a more comprehensive picture of what you look like in the whole world of e-commerce.

So every individual platform may not have the incentive to really collect all those information and get into one platform. So that's probably where the third party certification website could do. And we sort of already seeing a rise of such websites. I guess depends on how that would devolve. This may redefine the pros and cons of having the review system inside a platform.

ANDREW STIVERS: So I want to come back to this. Because it's an interesting question. But that provides me with a really great segue to our final panelist. Steve Salter is vice president of Standards and Services at the Council of Better Business Bureaus, a nonprofit organization serving the needs of 112 Better Business Bureau organizations across North America. Steve manages Better Business Bureau customer service and evaluation, and is involved in policy development focusing on BBB programs and standards. Steve helped create the BBB online trust mark program in the mid-'90s and has worked for 10 years in CBBB's dispute resolution division prior to that. Steve?

STEVE SALTER: Well, thanks. So a disclaimer-- out of the 10,11 people who have sat on this stage today, I'm the first non-economist.

[LAUGHTER]

That doesn't mean I don't have any data at all for you. So this problem of information asymmetry is the core problem that BBB has been trying to address since its inception, and that was 103 years ago. When you start work at the Better Business Bureau, you get a little booklet like this that says BBB history and traditions. And the very first thing you read is a quote from Cicero 2000 years ago to his son Marcus that says, "All things should be laid bare so that the buyer may not be in any way ignorant of anything the seller knows."

And that is the major concern of Better Business Bureaus from their inception until today. So the outcome of the effort, though, to balance information asymmetry-- the hoped for outcome-- is to build trust. If you balance and level that playing field, you should build trust. And that is the mission of the BBB today. So we are one of those third party sites that's looking to advance trust in the marketplace. And I just want to touch on some of the ways we do it, and later I'm sure we can talk about different systems.

The first thing I have to mention is that accredit businesses that meet certain sets of standards. About 380,000 businesses across North America have met a set of standards that go well beyond BBB rating, that we'll come to in a minute. We do background checks. We validate the histories of the individuals involved. We require companies to commit to resolve disputes that may arise in the future and to be responsive to customer complaints. There's a whole code of business practices to which we hold these accredited businesses.

That's sort of the highest level. I mention it because it's the highest level, and I think almost everybody's heard of the Better Business Bureau. In my experience, not everybody really understands what we do. So I'm trying to lay that out a little bit here. And I start by mentioning accreditation as an important feature. We also accredit charities, by the way. But beyond that then, the second point is that we do rate businesses. We really rate them primarily based on the complaints that we receive about them in the marketplace.

And last year BBBs received about 865,000 complaints against all types of businesses. Doesn't matter whether you're accredited or not. We'll process and try to help resolve disputes against any business on whom we have a record. Our rating system looks primarily at complaints but also considers-- it's the volume of complaints received, it's the responsiveness of the business to those complaints, it's whether they resolve them or not. But we also look at external factors like proper licensing, the presence of government actions taken against the business.

We do our own proactive review of advertising. That's sort of the core mission of the BBB is to insure honest advertising in the marketplace of both online and offline. We factor that into a company's rating. That rating is on an A+ to F scale. So different from accreditation, but every Business Review that we post-- and there are about 4.7 million business reviews on BBB websites, BBB.org-- we try to rate that business. If we don't have enough information or we lack certain key fields, we will give them an NR-- not rated. So that rating of the business incorporates a lot of what we do.

Next big point that I think is important-- I don't how many of you might be regulators yourselves, might be media who look for background information on businesses. That's really what we are, is an information service provider. We provide information on businesses, both online and offline. So all those 865,000 plus complaints we receive every year, we publish. We publish the text of the consumer's complaint. We publish the text of the businesses response. And then any final back and forth between the parties as well. If I had to point to a single source of useful information on how business resolves problems and where their reputation, where you can really drill down and see the reputation, I would point to that.

Read through some of those complaints and the way businesses respond and handle to them, and you'll get a good feel for why they're rated the way they're rated. We also now process customer reviews-- different from complaints, because they can be positive, neutral, or negative. We face the challenges that the platforms face in weeding out fake reviews. Everybody faces that. Yelp, whoever. We take some extra steps in verifying that a customer is a customer of the business, that they've had an actual marketplace transaction with that business. We don't publish those reviews right away upon receipt. We send them to the business with the customer name saying these folks said they did business with you on this date and this was the transaction they had. Will you verify that.

If there's a dispute about whether it's an actual customer not, we will mediate before we post anything. And we also, before we even do that, we send an email back to the alleged customer requiring them to validate their email address to make sure that there's really somebody there. We actually lose about a third of all customer reviews right at that point. So we take some extra steps that slow our process down but we think are worth it in terms of validating the actual marketplace interactions.

So those are some of the things we do. We're a third party mechanism. Of course, we report on the very peer to peer platforms that we've been discussing today. We take complaints against Uber and eBay and Airbnb. We publish those complaints. We give them a rating just like anybody else. If you look at them-- and again, you can just Google BBB review Airbnb, or Uber or whatever. You'll see a rating. Word of caution about that rating-- the BBB rating is really most about not just the experience that a customer might have with that platform, but with how that platform results complaints that arise after the fact. It's a little bit of a difference there, and I would just flag that for your attention.

I think that's enough. I would mention that we already partner with the FTC in the Consumer Sentinel database. We feed the complaints that we receive to the FTC. I think we're the single largest provider of complaints that get fed into the Consumer Sentinel database. So we work with regulators and law enforcement regularly. But like everybody else, too, we're moving and adjusting in this new marketplace. We're changing the way we offer the rating.

In fact, just this week our management committee approved-- we've been starting to develop a star system of our own to get away from the-- not to get away, but in addition to that letter grade rating. So now we'll have a five star system that's based partially on the BBB rating, the expert rating if you will, and partially on customer reviews. 2/3rds, 1/3rd. So we're moving and evolving. But most of all, we hope to be a resource and an information provider to both regulators and consumers. Thanks.

ANDREW STIVERS: Thanks, Steve. So I think it's really important that we think about how what BBB is offering intersects with what the platforms are offering. And it, I think, touches on a point that Chris Nosko raised earlier, which is about the active intervention on the part of the platform in terms of dispute resolution. So it sounds like the roll that BBB is trying to play is to ask, once we have these reviews, we have some potential problems revealed, how does the platform deal with that? So is that kind of intervention-- Chris, you had suggested that you think this is a really important part of the platforms do. Again, is this a crucial part that we have, or can we just rely on these reviews and how consumers respond to the reviews?

CHRIS NOSKO: I think part of the evidence is that platforms have been moving more and more towards using these sorts of mechanisms. And you see the newer platforms, like I think Uber, actively intervening in ways that eBay certainly didn't do in the early days. And just to think about the eBay context for a second, there are some interesting things going on. So first of all there's what Ginger was touching on. There are some of the obvious things, like if you get defrauded on eBay, you can file a complaint. And I think that's one sort of thing that platforms are intervening on.

But I think the more interesting side of this is actually things that don't require effort from the consumer at all. So for instance, how do we match buyers and sellers together without them even knowing that that's what's going on behind the scenes, because we know something about the buyer preferences and the seller preferences. And not to be like a proponent of machine learning saving all problems, but it is one of those things where oftentimes the platform knows a lot about buyers.

So just as a simple metric, you could say that a new buyer coming to eBay maybe should be treated very differently than an experience buyer. Because they don't have the same sort of a set of knowledge that someone who's been transmitting on the platform for while does. So I think there's a lot of scope for behind the scenes matching of these things that would really perhaps move us in the right direction-- away from reputation systems and toward more active matching of these things.

ANDREW STIVERS: Thanks. So before we move on, I do want to remind folks that we do have comment cards, or question cards. If you have questions, please do fill those out. We won't necessarily get a chance to review them here today given the limited time. But we do look at those quite seriously, and it becomes part of what we consider in terms of the overall impact to the workshop. So again, if you have questions, please do ask them.

So we're going to circle back to Ginger briefly to talk about some of these other mechanisms and widen the picture a little bit to think about, what is the ecosystem in which these particular kind of review mechanisms that we talked about for eBay and Airbnb operate. And the BBB website is an example of that. So if we could pass the clicker back down this way.

GINGER JIN: Thank you. So talking about what the platform can do proactively, one popular tool is so-called platform guarantee. So you can consider this as sort of an insurance system that the platform offer to their users. Like a reputation system, it has its own pros and cons. So on the pro side, it shifts the risk from buyers to the platform, or from whoever will suffer from the information problem. And this shift of risk could be complete or could be partial. And this, to the extent that it shifts the risk, then it may enhance buyer willingness to use the platform. It may increase their willingness to pay for the products or services sold on the platform, which will be helpful for the platform as well.

And also as Professor Dellarocas has mentioned, the platform guarantee could actually be a complement to reputation system. For example, if you start a platform and rely on the reputation system, it will take while for everybody to accumulate some ratings before consumers can actually tell who is well reputation and who is not all reputation. But the platform guarantee can enhance people's trust from day one. And so that could be a compliment. On the other side, it could also be a compliment in the sense that sellers who have accumulated a large reputation may have incentive to milk the repetition and leave.

And in those cases, they could intentionally try to cheat a lot of buyers. And because they want to milk the reputation, they don't care how the reputation would go down from there. While the platform guarantee would probably be a better situation to deal with that problem, because the platform will always be there. And consumers can engage in the platform and the platform is on the hook by either reimbursing the buyers or give other compensation to the buyers.

So in that sense, it probably could work better than the reputation system in that particular example. However, there are also some cons in using the platform guarantee. So the first year is, while you're shifting the risk from the buyer to the platform-- and we have to ask the question, why the buyers would trust the platform more than individual sellers. And we know this marketplace is still in flux and many platforms may not exist sometime down the road. So I think it's still an open question of why the buyers would trust the platform more. And also the platform, as have been touched by other panelists, the platform may face conflicting interests here.

Maybe this platform guarantee you would just be a tool for them to expand quickly, rather than to provide a better incentive for due diligence in the weeding out the bad ones. So I think how that plays out depends on how much trust buyers are willing to put in the platform guarantee. Another downside of platform guarantee is it's just like any insurance policy. It transforms the problem of using your own money to using somebody else's money. And that would open doors for users to take advantage of the system.

And on the seller side-- and for example, the seller now think the buyer trust the platform more or trust the seller more, they could charge higher price. And that could be not so much welcomed by the buyers. Or the sellers now can engage in strategic default, because the consequence of that default will be sort of covered by the platform. And in the complicated model, we have reason to address eBay equivalent website in China, we see a possibility that this platform guarantee actually would attract some strategic sellers to enter, because the buyers now trust the platform and the low quality sellers may have more incentive to enter the platform, which sort of undermines the potential value of the platform guarantee.

On the buyer side, we could also have this strategic problem that maybe the buyers of would over-claim-- that even if I'm not cheated, I could seek some extra money from the platform and guarantee the buyers may become more careless in transaction. Now they're insured by the platform, they're less vigilant in sort of checking out the reputation system, for example. And in the extreme case, you could even have buyers and seller collude to defraud the platform, as we have seen in other insurance complications.

And all of these could add some financial and labor costs to the platform. So it's gets back to the incentive of how platforms would have full ability or full willingness to use the platform guarantee. So I will stop here.

ANDREW STIVERS: Thank you. So are there other pieces of this reputation system that we should be considering here? And the follow up question to that is going to be to what extent can we rely on the incentives of the platform providers to provide these things?

ANDREY FRADKIN: So one thing I want to mention is just the complementarity between scale and all of these actions. So for example, if you're a large platform and you observe a large number of customer service complaints, then you can build a model and you can predict which types of buyers and Sellers are likely to cause issues, and you can use that in order to improve the platform in a variety of ways and so. And this kind of goes back a little bit to the question of what is new now. I think the tools are there and the scale is there now to use these machine learning solutions in a way that wasn't possible 15 years ago.

CHRYSANTHOS DELLAROCAS: Whether the platform has an incentive to have a reasonably well functioning reputation system or arsenal of trust building mechanism-- yes, definitely. What we're not sure is whether they have the incentive to make it optimal for the buyers. Whether the solution that is optimal for the platform is also the optimal solution for social planner. But I think that if there's a disparity, it would be a second order effect. Definitely it's a great area for research.

For the most, those systems have worked without them. They can open markets. They can open trust. As the first panel has pointed out several times, the fact that those markets exist and they grow exponentially is a testament to the fact that those systems seem to be doing reasonably good work, at least with respect to building an adequate level of trust.

ANDREW STIVERS: Would folks agree that that's a second order issue?

CHRIS NOSKO: So I think it obviously it depends on how you define second order. I think one of the things that reputation mechanisms do perhaps very well is weed out the particularly egregious situations. So the real bad situations on eBay where you actually have fraudulent sellers. And I think once you start dropping pretty low in the rating schemes, you're not going to be able to survive on eBay. So there's a strong incentive both from the reputation side and from the dispute resolution side to weed out the really, really bad behavior.

I think the interesting question is what about those sort of mediocre transactions, or the transactions that right on the border, where you're not getting great service, but you're not getting really, really poor service either. Now, to the extent that you want to lump all those into the second order claim, I would agree with that. To the extent that you think that those are important for the platform, I think you have to start examining the situation very closely.

And I think that comes back to this question of what exactly should we be doing from a regulatory standpoint and if your harm function is really about trying to weed out the really bad transactions and the really bad actors, then reputation systems probably do a really good job of that. If you're trying to sort of maximize social welfare, then I think it's a much more complicated problem. And I think it comes down to this question of how many transactions do you have that are on the fence or on the border between being mediocre versus really bad.

GINGER JIN: I would want to add that the incentive for the platform to really build the trust, it probably depends on the extent to which the users or the public know the problem there and be willing to tolerate it. And this probably relates back to sort of the information policy by the platform. If they do not review all the information to what extent that is known by the users, do we sort of looking at the picture that too rosy to be true, given the information from the platform?

So that would be related to the conflict of interest facing the platform, as well as the competition in the field that could sort of push either on the information side or the other policy side.

ANDREY FRADKIN: Just one more follow-up point. I think this is a very theoretical discussion, like what are the incentives of the platform? But when you're actually thinking about how to design a platform, you have many possible ways to use your data scientists and product designers and whatnot. And whether making marginal improvements to the reputation system or to other aspects of the platform, how do you make that choice? What is more valuable to the platform? To spend your time running experiments on the reputation system, or improving search, or doing other stuff?

And I think that's a much more relevant trade-off for platforms rather than this devious strategic choice about who do you benefit.

STEVE SALTER: If you think of BBB as a platform-- as I mentioned, we have these 380,000 accredited businesses. And we know they've been vetted and we believe they've met a set of standards, we have an incentive to keep that pool clean, if you will, just as the platforms have an incentive to keep their own pool clean. For years, Better Business Bureaus have had the practice of expelling those accredited businesses who fail to meet standards. They've lost their license. They've become non-responsive to complaints. They develop a pattern of complaints and they don't address it. There are a variety of reasons.

Not only do we expel them from accreditation, but we publicize that. Typically BBBs will list in their newsletters each month, these are the companies that were kicked out the BBB this month, and here's why. If platforms did that, it seems a bit counter intuitive like it's bad news, but it's actually positive to say, we're keeping an eye on things. We're weeding out bad actors. And it might actually enhance the reputation of the platforms if they did something like that.

ANDREW STIVERS: So in the first panel, I think it was professor Gans had suggested that the reputation mechanisms of some of these platforms actually are a harsher market correction on quality than some of the more traditional command and control regulatory structures. Would you guys agree with that? Is there comments on it?

CHRIS NOSKO: I think it's all over the board. I think if you look at the platform like TaoBao, I would disagree with that pretty strongly. I think that there's a wide variance in terms of the amount of effort that these platforms are putting into the actual regulation. And I think one sort of interesting question we haven't touched on is to what extent do consumers see the platform as a whole as something that is an entity into itself, or the individual sellers as being the prime actors here. And I think that if you think about a situation like Uber, which I think is at one end of the spectrum, if you have a bad experience with an Uber driver, you're going to think about Uber as a platform as a whole. If you have a bad experience on TaoBao, maybe you just say that particular seller was a bad apple, so I'll keep going to TaoBao.

And to the extent that these platforms are actually implementing these regulations, I think that's one important component to think about in terms of how consumers view these things overall.

STEVE SALTER: I would just add, I certainly think that the platforms have a greater incentive than regulators to get it right. It's their business.

ANDREW STIVERS: Is that a comment Chris, or--

CHRIS NOSKO: Just a smile.

[LAUGHTER]

ANDREW STIVERS: So there's been some suggestion that some of the benefits of sharing economy go beyond the market. Is there any sense that participation in these kinds of reviews and back and forth, and then having these individual transactions, has any greater impact on the market, on trust in the market, on how these things are going to evolve? Or is that way too open ended? This is a question from the audience, by the way-- or a paraphrase thereof.

CHRIS NOSKO: I didn't understand the question.

ANDREW STIVERS: People think there's a greater benefit to building trust from sharing economy issues. You have people coming together to share the spare capital they have lying around, and it then becomes useful to other people, maybe at a lower price.

GINGER JIN: I think much research has to be done to understand why people are willing to share. From the economic point of view, I guess we couldn't justify why so many people willing to spend their precious time enter all kinds of reviews on the platform, even for the transaction they probably will never come back to in their whole life. I think much more research needs to be done to sort of understand the incentive of that sharing before we can answer that question.

CHRIS NOSKO: There's sort of an obvious difference here as well, which is that within the sharing economy, you have a wide variance in terms of the quality of the sellers or the Uber drivers and what they're doing. So just anybody can show up and sell something, you've lowered the barriers to entry, which means you're going to get a distribution of quality that's going to look very different than if you have a sort of centralized firm who actually has control over what's going on here.

And I think that in and of itself probably gives platforms a larger incentive and makes it more crucial for them to sort of put these reputation mechanisms in place, relative to other types of businesses.

ANDREW STIVERS: So we just have a few more minutes left to us. Are there any final comments? Any points that you folks wanted to make that perhaps we didn't get to earlier on? And one of the issues-- so Ginger reminded me. One of the issues that we had talked about in some of the primary discussions before the panel was issues of litigation. So Chris, I think maybe you were going to talk a little bit about that? Or did you have some points you wanted to make?

CHRYSANTHOS DELLAROCAS: Sure. I have some very brief comments. There is what about litigation or alternative dispute resolution as a mechanism. So what are these mechanisms? I think it's a room full of lawyers, probably, so I don't need to tell you what they are. But basically it boil down to either party trying to recover damages ex-post, following an unsatisfactory transaction. But the tricky thing is that those mechanisms involve a costly and, at the end of the day, imprecise discovery and adjudication process, which means that they are impractical to engage in except to when the expected damages are going to be high.

So you're not going to engage in a dispute resolution if you bought the $5.00 trinket from eBay and you never received it. Also, they're pretty resource intensive for all parties-- for both parties who transact, and for the platform, and they do not scale. So my take on those mechanisms that they are good to have-- like guarantees, they're good to have as an add on-- infrequently exercised option to take care of situations where everything else fails. And they have to be structured in a way that they're not exercised frequently.

So perhaps you could use them in situations where you have irrational parties. We all know reputation doesn't work if people are irrational. Or when you have the end game, where somebody just treats a few people and then exits the platform. In those cases, you might have to resort to them. But those things don't scale. They're not going to solve the problem in the large scale.

ANDREW STIVERS: Well, thank you very much. We are out of time. I want to thank all of our panels for participating. And I will turn this over to the next speaker. Thank you.

[APPLAUSE]

JULIE GOSHORN: So just briefly so I don't eat into his time, it's my privilege right now to introduce a NYU professor Arun Sundararajan to help us bridge between this morning's discussions and this afternoon's sessions. Arun is a thought leader on the sharing economy and its issues, and will sit on a panel a little bit later this afternoon. Right now, though, he's going to give us a short presentation that will frame this afternoon's discussions within the context of the issues that we've all heard about this morning. So, with no further ado, Arun.

ARUN SUNDARARAJAN: All right. Thank you, Julie, for that generous introduction. My name is Arun Sundararajan. I'm a professor at New York University. I'm very interested in the sharing economy. I've been thinking about it a lot over the last three years. And so I'm delighted to be here and participate in this discussion. And thank you for putting together such a fabulous program. I know that you've already had an overview of the sharing economy this morning from the Liran, so I won't dwell too much on how much variety and the scope of its impact on different sectors of the economy.

But I will point out that we've expanded well beyond Airbnb, and TaskRabbit, and Uber, and Lift. And even the diversified labor platforms like TaskRabbit and Handy and HomeJoy. Excuse me. We've now got sort of like a depth of personal service platforms. There's this proliferation of platforms of different kinds that are touching different aspects of our lives. And if you look at that personal services line ship as a platform, that if you take a picture of stuff that you want to ship through the app, we'll come home, pack it for you, and ship it for you.

Postmates is a service that will pick up anything for you and bring it to your home in less than an hour. Luxe is a service that is valet parking on demand. Anywhere you are, they will come to you and park your car for you and then bring it back to you. When you get home, Wash U will have done your laundry and delivered it to you. Munchery would have delivered a meal on demand. If you're not feeling well, Heal cam get you a doctor on demand. If you're still not feeling well, Zeel can get you a massage therapist on demand.

And if you really want to kick things up, Drizly can bring you alcohol on demand. And I'm not going to talk about what EAZE does. But this motivates cartoons like the following one from the Wall Street Journal a few days ago. And they paint a picture of somehow a divide between the haves and the have-nots. And one of the points I want to make, and I want to make six quick points and then frame the afternoon discussion.

But the first point that I want to make is that the research that I have done looking at the economic impact of peer-to-peer markets paints a picture, projects, a story of inclusive growth-- of growth where the benefits are positive, but they are captured disproportionately by people below median income, because these are the people who are able to sort of expanding their consumption through rental. Where ownership was a barrier, these are the people who might give up ownership in favor of rental because of cost savings. And these are also the people who might start buying better products because they can now make up some of the cost by renting them out on peer-to-peer platforms.

The second point I wanted to make was that there is a clear shift underway in the economy from a traditional model of institutionally provided goods and services and towards goods and services provided through these wide variety of platforms. And so the discussion about platform power isn't merely restricted to retail or to online services like Google and Amazon anymore. They're touching very real world, very fundamentally sort of important to everybody's life services. And so in the context of thinking about policy that is inclusive, I think that's an important observation. The third point that I wanted to touch on real briefly is that, while this wave of peer-to-peer markets was really enabled by the consumerization of digital, the fact that we've got powerful general purpose computers running operating systems with high speed internet connections and GPS enabled.

These are sort of a clear driver of the emergence of a lot of these platforms. The two technological trends that might in part sustain this trend, but also challenge it, are the digitized of physical objects-- certainly autonomous vehicles down the road. But even when the physical objects that we own and use now have the ability to tell you where they are and how much they are being used. And so as block chain technologies lower the transaction costs associated with peer-to-peer exchange, we may see the emergence of a much broader range of exchange of this kind. But exchange that may not be mediated by a billion dollar platform, that may be completely decentralized using block chain technology.

The fourth point I wanted to make, again, just to sort of frame the afternoon discussion is that-- I know that we've spent a lot of time talking about network effects this morning, and we will continue to talk about them this afternoon. And there were many observations about network effects and I may be sort of summarizing some of the points that were made in the morning about multi-homing and about exclusion. But one of the things I've observed about the network effects associated with these peer-to-peer platforms is that they've almost got this fractal structure to them, where you need to build supply and demand in increasingly small local grids.

Being the leader, the Uber leader in New York, gives you nothing in Los Angeles. Having a lot of Airbnb homes in Chicago gives you nothing in New York. But a critical determinant of how resilient these network effects are going to be is going to be how localized the demand is for that particular supply. Uber's supply and demand are both localized, whereas Airbnb's supply is localized, but not its demand. A demand for the supply in New York comes from around the world. And I think this will be a critical determinant in durable or how resilient these network effects are.

The fifth point I wanted to make real quickly is that it's very clear, and the afternoon's discussion will probably make clear, that any sort of regulatory framework in the long run that accommodates these peer to peer businesses at scale is going to involve some kind of delegation to the platforms that facilitate the exchange. I think it's important to think about that in the context of the fact that de facto we have already been delegating things that we used to look to the government for to these platforms.

We buy our music and video through iTunes and a licensing agreement, rather than copyright law sort of mediates that exchange. We're buying books on Kindle, again, through a licensing agreement. Facebook and LinkedIn may be more important forms of ID than a state issued ID.

The observability that platforms like Google and Facebook have on our interactions rivals or exceeds that of any government that I'm aware of.

And now we have platforms that are taking on other regulatory responsibility. So we have to think about the fact that consumers have seemed willing to embrace this regulatory delegation without actual de jure planning. And the final point, and one that I keep coming back to in thinking about regulating the sharing economy, is that to me a central point in this discussion of what should a new policy framework look like is a recognition of the fact that a lot of these platforms blur the lines between personal and professional in the provision of commercial services.

We've always given people rides to the airport. We've always accommodated people in our homes. We've often lent our apartments to friends. We've cooked meals for them. We've lent them money to start their businesses. That was all in the personal bucket. In the professional bucket, you had banks. You had bed and breakfast. You had restaurants. You had taxi drivers. And so now we're entering an economy where these lines have blurred. And so we're trying to fit the models of personal-like delivery, but from money, into a regulatory set of boxes that were designed for full time professional providers.

And that's an important point I think we need to come back to. And I think that's at the heart of a lot of why we've seen a lot of regulatory conflict in this space. So this panel just talked a lot about reputation systems. But put it into the broader context of trust. And as Steven pointed out with his Cicero quote that I really loved and plan to use actively in the future, that these reputation systems are part of a trust infrastructure.

So I thought I'd do two things really quickly to frame the afternoon discussion and inject this morning's discussion with the afternoon. One is to take a two minute look at a 2000 or multi-thousand years history of trust. And to make the point that for a very large fraction of the history of economic exchange, trust was obtained through community. We only interacted with people who we knew well because there were no other trust mechanisms.

There was some government provided trust mechanisms. And it's only over the last 100 years or so that the dominant trust mechanism in the economy has become brand. People let their kids take roller coasters at Six Flags, but they may hesitate to let them ride the roller coasters at that theme park on the side of the highway. Same government regulations, different brand. We place a lot of faith in brand. And now we seem to be coming full circle back to some form of digitized community that is contained, in part, in these peer-to-peer feedback systems. But it's interesting to contextualize that in the evolution of trust, and to point out that it is a relatively recent phenomenon. .

Often this debate between government regulation versus the reputation system seems to be situated as certification by the government versus reputation systems that digitize peer feedback. And so one of the points that I was glad to see come out of this morning's panel is that this is not the sum total of the digital or the non-digital trust infrastructure. There's a lot more to it. Smart brands recognize that consumers trust brands. And they inject brand into their trust infrastructure. There's a wide variety of independent third party certifications. And even on the digital front-- and you've got, of course, as Ginger mentioned, these third parties like Traity that are trying to substitute platform provided reputation systems.

But you've also got other forms of digital reputation. You've got digital conduits to individual choices. You can hold your license up and get your ID verified. You can connect to your Facebook profile, which is not purely digital. This is digitized versions of your real world social capital. And so it's more valuable than purely your friends online. And then you've got the digitized peer feedback. And so the fact that maybe this digitized peer feedback is good at weeding out bad actors, but is not particularly good at signaling who is really a high quality-- they should be looked at in the context of the fact that is only one component of the trust infrastructure, digital or otherwise.

So let me conclude by foreshadowing some of the discussion I expect in the afternoon, in the context of the building of this trust infrastructure. One point is that because we now have this third party, at least until the block chain changes, although I don't expect that. I expect it will be co-opted by private interests and we will continue to see platform media to peer-to-peer exchange. But the mere existence of this third party in industries that were historically peer-to-peer. Taxis were historically peer-to-peer. To some extent, bed and breakfast were historically peer-to-peer. Lots of other services. Doctors have often been peer-to-peer. Appear

But you're injecting a third party into this exchange. And so it seems natural to think about the self-regulatory approaches that this might introduce into the economy-- that maybe there are things that this third entity, that didn't exist in the past, can now start to shoulder for society that the government had to shoulder in the past. And maybe there are new issues that will come up that the government will have to step up and address.

So simply the creation of the self-regulatory opportunities is one important change. I think that a big part of the afternoon's discussion should be about the relative effectiveness of platform based regulation in solving two different forms of market failure. One form of market failure that comes from information asymmetry, that comes from adverse selection quality, uncertainty, or moral hazard, where the platforms seem like they would be quite effective. And other forms of market failure that come from externalities, either congestion externalities that are familiar, or neighbor noise and stranger danger externalities that some people perceive with their Airbnb hosts in their buildings.

Those it's not clear that the platforms are best suited to internalize them. And they may be other third parties that might have to step in this part of the self-regulatory solution. We've also entered, in this blurring of lines between personal and professional in the provision of commercial services-- I think it's important that we rethink. Any society that puts in place regulation makes a trade off between perfect safety, perfect solving of the market failure-- and there's some error that they're willing to accommodate. And that error changes as you introduce millions of people providing services three hours a week rather than full time professionals providing services 40 hours a week.

And so we have to recognize that maybe there are safe harbours needed for these casual providers of these essential services. And a couple of policy issues that I hope we will have another workshop on-- one of them has to do-- there is a whole host of labor issues that are arising from this on-demand economy that warrant their own discussion. But there's also-- and this relates to the existence and the continued popularity of reputation systems-- as these kinds of online feedback system start to encompass a greater and greater fraction of our capabilities, there's the risk of what Om Malik from Gigaom called data Darwinism, where the inability to build a positive reputation early on may cause your exclusion from participating in marketplaces that you otherwise are qualified to participate in.

So there's a path dependence associated with this. And so we may see a stronger dynamic start to play in. And this has some implications when we're talking about eBay and participation in eBay. It's another when you're trying to get accommodation, get transportation, get food delivered. All right. So that's all I have. Thank you for listening. And I look forward to the afternoon discussion.

[APPLAUSE]