Transcript of Conversation with Sophia Johnson (Program for Economic Research, Columbia University), Aritra (AC) Chakravarty (Founder & CEO, Project Imagine), and Garrett Hagemann (Senior Economist, Twitch)

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Sophia Johnson:

Good afternoon and welcome to the Department of Economics' Program for Economic Research virtual live series. My name is Sophia Johnson with the Program for Economic Research, the world's leading program for identifying opportunities and strategies for enhancing economic research. Thanks for being with us today.

This event will be livestreamed by the Economics Department's YouTube channel. The conversation will also be recorded and closed captions will be provided in the days following. By attending, all conference participants agree to abide by the event's Code of Conduct, which is posted on the University's website at econ.columbia.edu/per. As always, the program for Economic Research in the Department of Economics at Columbia University takes no institutional position on matters of policy.

A little housekeeping before we begin: each presenter will speak for 10 to 12 minutes. Presenters have agreed to take your live questions at the end of both presentations, at which point you may unmute and ask your questions or simply type your questions in the chat box. Lauren Close, the Program Manager here at PER, is joining us. She'll be adding updates on social media as well as monitoring and posting comments in the chatbox. During our conversation today, we invite you to follow us on Facebook, Twitter, and LinkedIn. For this event, we are using #PERLiveSeries.

So how are tech firms shaping the future society and the new economy? We start this hour by exploring how financial technology is driving change, and we end it with a glimpse at a cultural revolution. We're talking about Project Imagine and Twitch, a live streaming platform that allows gamers and content creators to build communities around their streaming.

First, FinTech. The global financial technology market is expected to grow gradually and reach a market value of approximately $305 billion by 2025. FinTech is a combination of technology and financial services that have transformed and really is transforming the way businesses operate in various sectors such as electronic commerce, banking, social commerce, and wealth management to name a few. AC is the founder and CEO of Project Imagine, or PI, a London based FinTech with global ambitions. AC founded Project Imagine after more than 15 years in various roles at HSBC, across New York, London, Hong Kong, and in the fields of investment banking, private banking strategy, and CEO roles. In his last role, he set up HSBC's wealth digital team from scratch, building a team from zero to 300, and designing and delivering seven product launches in 18 months, and that was in UK, Hong Kong, Canada, among other markets. At PI, he continues to lead product and platform decisions and is also passionate about many people topics, resulting in key facets of culture, including no CV, hiring, transparent salaries across the board, and performance immunity. He is, among other things, a seasoned alumnus of Stanford Graduate School of Business, London Business School, at the Indian Institute of Management in Calcutta.

AC, welcome to the Department of Economics at Columbia University! I read somewhere your vision is really to create an equitable and financially savvy world. First of all, what would it take to do that? And how will Project Imagine get us there?

AC Chakravarty:

Such a nice intro, thank you so much. It feels like going back to a different life. But let me let me start with –

Sophia:

I think you're muted.

AC:

Can you not hear me?

Lauren Close:

Yes, we can hear you.

AC:

Can you hear us? Can you hear me as well, Sophia?

Sophia:

Yes.

AC:
Oh good, thank you, again, now that you can hear me for the amazing intro and bringing back like some 15 years of life. But let me start where I left banking and why. That should pave the way for what Project Imagine stands for. So I think, given that we also have Twitch, and you've kind of drawn a parallel with sort of changing behaviors and how platforms are starting to operate in today's world, my best way of sort of looking at banking is actually as a platform, because at the end of the day, banks have platforms where depositors, which are people with extra money, need borrowers, which is people who need the money. And if you think about other platforms that we know about, like Uber, Airbnb, and the people who have the assets that sort of could get onto these platforms, like the drivers at Uber, or the people who own the buildings and Airbnb spaces, these are the assets that they put on the platform, someone else comes and uses the asset, the, whatever fair rent is generated, the platform keeps 15-20% and puts 80% in the hands of the person who owns the asset. Sounds pretty fair and square. And even so, if like Uber sort of starts charging 25-30% for a ride sometimes, then drivers complain. So banks, you would expect to the same if you put in 100 GBP, $100, if they make $5 they should return $4 to the depositors because it's after all the depositor's money that they have lent out and keep $1 for their own, but it's actually quite the other way around. Most banks today would return, in a developed market, 0.5% while continuing to earn around 5% across loans, mortgages, credit cards, sort of thing and that tells you banks are not platforms. So you've got to worry about - what's their role? And then the usual refrain that you hear while in banking roles is that well, banks have fiduciaries, like, they're regulated. There's like, you know, capital cost and talent cost to sort of maintain these licenses, and you've got to always have

compliance in your mind. And that's really where the argument starts to fall apart. Because if banks are regulated to be fiduciary, especially from the retail customer's point of view, then why do banks do better when the retail customers borrow? If we really just sort of pause for a second and let that sink in - that there's really no other industry on planet Earth where that's the case. It's like having a car manufacturer that does better every time there's a new accident. And yet you trust your bank to process all the transactional data and all your years of, you know, experience or you almost see you grow from a student to - my bank has certainly seen me grow from a student to an early worker to sort of a experienced professional. Now, as a startup founder, they have a lot of information about me. So as long as the bank's incentive is not aligned with mine, why would I trust my bank's processing of my data to help me become a better financial version of me,? That's sort of where, the, the crux of the problem as to why we might need a new entity started. Of course, there are sort of known issues that aren't, you know, a bureaucracy and politics and sort of trying to get stuff done in a large organization. But I don't necessarily think those are bad skill sets to learn, as in - large organizations are bureaucratic for a reason, there's a lot of customers at stake, your impact when you do good is good. But if you do something bad, it can hurt a lot of people. So they should be bureaucratic. So that's not the element that starts off like startup funding spree. But I think incentive alignment is really, really hard to get right in large organizations that have had decades, sometimes centuries of existence, because it needs change across the board. So that's how that's how the idea for PI was born. Because actually, ironically, with private banks, which serve the kind of richer segments of society, because the rich don't borrow as much, or don't rely on borrowing as much, private banks are actually pretty incentive aligned, they win wallet share when their RM get AUMn, assets under management. And if the bank sort of, you know, the investment advice, etc, makes good returns on those assets, the client gives you more money next year. And therefore the RMs are always incentive aligned with the clients, because they know only if they do well with their money, will they get more wallet share, the year after. So we've tried to take that incentive align private banking model, which works on how much their clients save and invest, and tried to apply it to the segment below. And also, it's already been done. It's been done in Asia and China. You know, when you hear about on financial and stuff, it's basically this right, it's called on financial, where there's lots of tiny hands, making up these massive deposit bases. And, somewhat cynically, it's never been attempted in the West, because most countries that have developed over the last 100 odd years have now gone into a credit cycle. So the kind of 300 billion plus number that is that has gone into FinTech. It makes me really not so proud of being in FinTech, because in that same period, consumer credit in the US and UK has gone through sharp spirals up. And in the UK, today, your savings rate, taking your pensions into account, is negative. That means for every pound that you earn, you actually put away minus 10 pence, because taking equity moments into account, the savings actually go down. And all of this is before we even start thinking about- even when you save, if you're getting 0.5% per annum and inflation is 2-3% per annum. Your money is shrinking year by year. So now we need to start thinking about investing because you need to have a return more than the inflation. Otherwise, you're actually better off spending an economic stance right? So then you've come on to more behavioral issues like loss aversion. For most consumers around the world, a unit of loss, matters more than a unit of gain. Humans are built that way, we're protective about what we own. So if if you're going to be loss averse, and the banks don't want us to invest, because every time I take money from our deposits and put it into an ETF, the bank's balance sheet has gone down, they can't lend as much anymore. Sounds like the most hated guy in the [inaudible] because if

I did well, every other guy's books would shrink the next year. So there's massive incentive misalignment and behavioral issues with anyone investing. And yet all of our pensions are in investments. And yet there's massive pension gaps in all these developed markets. So when startups and FinTech start to innovate around credit, then I start to see red and therefore it was born the idea of Project Imagine, where Dozens which is our consumer brand - sort of gets you to save and invest. And the more you save and invest, the more money we make. Therefore, we can look you in the eye and say you must trust us to help you save, because if you never saved, we will not exist in a few years time, or even a few months time being an early stage startup. And because this financial education journey will take time, we also have a B2B aspect of the business, which is the tech and the data platform that Dozens is built on is now available globally to banks and asset managers. And that gets us our short term revenue that helps us not make kind of incentive misaligned revenue decisions and Dozens, like charging for overdrafts or bringing out fancy metal cards, just because it's - it's cool, but it's actually not going to serve any purpose. So between the sort of near term B2B bets, and the long term B2C bets, is born Project Imagine, and that's how they're going about sort of being slightly different than even most of the FinTechs. But certainly different from most banks and creating a new [inaudible], I guess.

It's really hard. It's hard to attract talent, attract funding, retain talent through things like COVID, you know, moving across remote working, but some of the cultural aspects that he mentioned, like, no CV hiring sort of gets us a really diverse crowd. It's actually amazing how many men will refuse to adhere to that advice and send you the CV anyway, like, I know, he said, no CVs, but just in case I mean, you must want to see my CV, right? And we actually asked kind of five why's in the questions was like, you know, why Project Imagine, why now?What role would you love to do tomorrow? And what role would you hate to do tomorrow and why? And most of their answers for those questions will start from: Well, I'm bored at my job, that's fine. That's great for you. But what about us and this empathetic journey that begins with the application is cut by the CV, right? Because a CV is what I want to tell you for the purpose of getting a job. Whereas if I could only think about what do you want to hear, and then maybe you have a chance in a startup. So that's why we've gone through those cultural aspects of no CVs and transparent salaries helps us sort of ensure we retain talent because they come talk to me before they will go talk to the competitor CEO for a better job, and performance immunity. Just make sure that everyone takes risks. And all of those things have together - create this people revolution, in addition to this economics are a new business model way of thinking, which is actually a thing what banking needs more than fancy cars and fancy apps. Because eventually the banks will catch up with the fancy apps. They're slow, but they're not like dead. So it's really business model innovation that will stand the test of time. That's what Project Imagine is about.

Sophia:
Thank you so much for that I can't wait to get the conversation going. Very insightful. I think we're gonna get a lot of - of questions, certainly. Thank you for that.

Our second speaker is Garrett Hagemann, Senior Economist at Twitch, a live streaming platform that allows gamers and content creators to build communities around their streaming. Twitch is a subsidiary of Amazon. Garrett joined Amazon in 2018, after completing his Ph.D. In his initial position, he focused on questions around advertising and advertiser behavior on Amazon. His latest

role at Twitch continues to focus on advertising, as well as pricing-related questions. Prior to graduate school, Garrett worked as an economist for the US Department of Transportation, where he worked on forecasting aggregate travel demand, aviation safety, and fuel economy standards. Thank you so much for joining us. Now in an age of increasing social isolation, Twitch seems to offer an unfiltered human experience. But why do people want to broadcast every raw, unedited moment of their lives? And why do others want to watch them? And if you could sort of give us some sense of what this space is like culturally, but also, you know, what you do? Within this space?

Garrett:

Yes. Um, so I haven't completely shaken the trappings of academia so I do have some slides. But the Twitch I think, is really interesting. It's one of the, the more interesting sort of economic entities that I've grappled with, in my time. I think, you know, as a - as a company, we're also starting to think about what happened during the - the quarantine. I, you know, it's public information that that Twitch has become extraordinarily popular as people have been shut at home, and sort of why and how and the mechanics of that are still being sorted out. I think one, I, let me go back. One thing I should preface is that these are my opinions, and mine alone, they don't represent Amazon or Twitch, despite me working there.

But I think one of the more interesting aspects of Twitch, like AC mentioned, is this idea that there's there are people on both sides, right? Twitch wouldn't exist without creators and wouldn't exist without viewers. And so what I wanted to sort of go through today is just sort of how that manifests. And what does that mean, for me as a professional economist? What are the types of problems that I'm working on? What are the types of problems that that you all can be thinking about?

So give me give me one second, and share screen. Here we go. Come on, there we go.

Um, so like I said, my opinions are my own, they don't represent twitch or Amazon. And and as we've been talking about, a lot of tech firms sort of operate as these multi sided marketplaces. He mentioned Airbnb, he mentioned banks, which sort of operate as two sided marketplaces between creditors and people seeking credit. You know, traditional examples are newspapers, video game systems, operating systems. And the sort of key feature here is that the value generated depends on the number of people on both side, right? The more games there are, the more gamers there are, the more readers there are, the more advertisers there are. And the last one is sort of interesting, because I think readers prefer - would prefer fewer advertisements, but advertisers would prefer more readers. And so that sort of interactions can be very complicated. You know, Mark Riesman, has a really great academic summary on this that I think is- if you're interested in this space is worth checking out. And lastly, there, the these marketplaces are typically monetized through fees or advertising. But tech is different in that it is trying to either implicitly or explicitly match people on both sides of the market, right? When you think about operating systems, like Windows, like you buy Windows, and that opens up a whole world of software to you, but Microsoft isn't offering particular software recommendations to you. Likewise, when you buy a newspaper, like you get everything that is in the newspaper advertisements, and all the content, the newspaper isn't trying to offer you particular content. And in principle, they could. But what what enables that is digital content, right? So when you go to newyorktimes.com, they are offering you, you know, personalized

articles, most likely, I can't speak to it New York Times is exactly doing but you know, when you when you would do a search on Amazon, they are trying to match you to particular products, when you search on Google, they're trying to match you to particular search results and Twitch, we're trying to match viewers to content, right? And so that mechanism is necessary when there's a large number of participants on each side, there's, you know, millions of viewers on Twitch and millions of broadcasters and so how do we make sure that, you know, you, when you show up, you find something that you want to see and that you aren't seeing something that you don't want to see? And- and how that happens is sort of economically important, in my opinion, you know, random matching would be really bad. The example I use when I when I talk about this is if you showed up to Amazon, and there was just a random product, and it said buy this or not, that's not a great experience, right? You would show up and you would see all sorts of random products. And you would say, No, I don't want to buy this. And by the time you found something you wanted to buy, you would have clicked through hundreds of products.

And so you know - what, what this matching mechanism is trying to do is elicit your preferences, right? And so for those of you sort of thinking about economic mechanisms, you know, this is how matching mechanisms and search models will work. And the idea is that I want to know something about your preferences, right? And that's what personalization is trying to do. :ersonalization is saying, you know, you watched Friends, the TV show, and so you might also like Seinfeld, the TV show, and that's that's how sort of Netflix does and for those of you sort of paying attention to this world, you know, Netflix run, there's the grand Netflix challenge several years ago, where, you know, is essentially like improve our recommendation algorithm, right? Which is essentially make our matching mechanism better. And so most of those mechanisms rely on previous behavior, whether it's your own or other people's.

And so I want to give you guys a couple examples of problems that I've dealt with and how this manifests and how I think this is going to matter going forward, as you see more and more companies that essentially are playing intermediaries between two sides of the market, right? So one is is advertising, right? I've been spending a lot of time thinking about advertising. And sort of the most obvious conclusion that one draws is that ads are disruptive, right? If you have video ads, they're interrupting your content on Twitch. This means your live content experience is interrupted right? This is notably different than than so called linear TV. Or even live sports where, you know, they don't show commercials in the middle of the play action in a sports game, right? They do it during a timeout, they do it during a change in periods, whatever. And then if you're thinking about search ads, like what Google is offering, there's this problem that if the, if I believe that they're ranking the results correctly, then an ad who paid to show up top must be weakly worse, or they would have shown it to be in [inaudible]. So why is it there? And so, you know, a key question for firms is, you know, how should the firm trade off that disruption? Like, what does that mean, right? We get money for showing an ad. And then what happens to the users? Right? And, you know, in the extreme, sure, like, Procter & Gamble, may pay Amazon a lot of money to show an ad. But if that drives people off the service, and they don't come back to Amazon, that's, that's long term bad, right? And that valuation might be highly context specific, it might depend on what else is being shown on the page, it might just depend on how many ads you've seen previously, it might depend on who you are. Right? And, and sort of the very sort of trivial example there is that if you were to

search for pencils on Amazon, and I showed you a pencil skirt ad, that's probably not what you're looking for. Although you can find such examples if you go on Amazon pretty easily.

And so, you know, as a professional economist, this is this is a question that that I grappled with. It's a question that that other firms have grappled with - Pandora notably has a really great published example that was done by a couple of economists, it's, you can see exactly what they did, they ran a long term hold out.

And so like, what do we do with this right? You can immediately plug this into an auction mechanism to say like, we're only going to accept ads that are paying us more than X, you can directly translate that into higher prices for ads, it sort of you know it, the value to the to the company of showing that ad in terms of disruption and the ad payment is sort of the piece of information you need if you're thinking about sort of how the firm should allocate either ads or organic content.

The other example that I want to talk about is new product ranking. So in the previous slide, I mentioned that we think we might think that search and personalization is trying to get your ranking, right? And in the extreme, I'm going to show you exactly the order of things that you want to watch at any given time. But it's not super obvious that that is true, right? In some sense, there's finite data. In the other sense, like when you're talking about something like Pandora, or Netflix, where there's this collaborative filtering mechanism that like, okay, everybody likes this. So you must like this, they're going to show you sort of very popular things that you may actually not prefer.

And so what you can see is, this leads to a spiral of success, right? So if I have a result that shows up high in the match matching mechanism, it's going to get matched or clicked on, regardless of sort of its underlying quality for those people. And so that's then a positive signal by these algorithms. And they're going to continue to show that thing higher in the future. And that high ranking is not necessarily because of any inequality, but just history dependence, right? The fact that I show this thing first, it gets clicked on means it's going to show up higher in the future. And it may be really bad, right? And I'm sure I'm sure you've all seen this where like you go on and you look at something at, you know, a search results, or you see a particular kind of story on Facebook, and suddenly, that's what you see for the next you know, three weeks is you start seeing the same thing. You know, I was talking to my wife about this, and she told me a story where she clicked on a, you know, a picture of a dog on Instagram. And the next thing she saw her entire feed was full of dogs. And it's like, why it there's nothing meaningful about that it was just a random picture she liked. And it doesn't mean that those things are the right thing she wants to see. But it sort of sucked up that information. And so now it's sort of history dependence, and it's going to take a while to clear that out.

And so what that means is that if I have a new product, if I have a new piece of content, or a new broadcaster on Twitch, I don't- we have to think about how to learn about their quality, while also making sure that we get a reasonable signal about that quality. So if I show them really high, we're going to get a lot of signal because people are going to click on it a lot, but it's going to sort of be distorted and biased upwards. If you show them, you know, too low at the bottom of the rankings, because I think there's zero, I'm never going to show anybody. And so you know, think about how many times you go to the second page of Google, or the second page of Amazon results, like there

are 1000s of products back there that you that you don't see. And because nobody sees them, or very few people see, them the likelihood that they'll move up the search ranking is very low. And so where where can economics come in to think about this? So there's a lot of like mechanism questions we can talk about. But one idea I wanted to sort of specifically highlight is that this idea of economic measures of quality, right? We, as economists, we spend a lot of time thinking about product quality. And when we write down a model, it's just some sort of abstract set of characteristics or, you know, for those of you trained in IO, you know, be familiar with product characteristic models, and we say like, ah, you know, it's, it's faster processes are better. And that's right. And that notion of hedonic product quality, it can be really useful. But product quality is complicated, right? When I'm talking about computer parts, it's the speed, it's the price, it's, you know, the compatibility. But when I'm talking about, say, clothing, I don't - I don't know what necessarily makes good clothing, and more importantly, it may not be recorded in the product database, right? So if you were to go and you were to say, like, okay, here's a shirt, like, it may not give you the thread count, it may not have the color clearly defined, it may not have the brand clearly defined. And so like what do you do about that? And, you know, one thing that

I find really interesting and has taken hold in sort of other parts of Applied Statistics, like machine learning, and data science is this idea that you can sort of pull information out of description text, right, so you can use these sort of high dimensional features, and do some machine learning, and then you spit out something that is usable. But you know, if you if you were to say I need to use product descriptions in a sort of standard economic demand model, you'd be - you'd be out of luck, right? That's just not something that we think about, right? And so how do we sort of take tools from these other disciplines and sort of inject them into what we know how to do, which is demand modeling and thinking about pricing, and that sort of stuff with this sort of non-standard inputs that are rich, but but complicated? And so - and so lastly, you know, some of the challenges with Twitch - some of the challenges with Amazon, some of the challenges with sort of tech firms as intermediaries is that, you know, there's this idea that privacy is important, but personalization takes data, right? And so if I were to tell you suddenly that, you know, I can't use anything about you, when you're shopping to to rank items, that becomes really complicated. And then you essentially just get back to like, show me the average ranking products. And then it's sort of essentially like a digital supermarket. Right? And so you have things like GDPR, out of Europe, you have the consumer, the California Consumer Privacy Act, that that allows users to purge their data. And that's, that's great from a privacy regulation. But it's sort of it's not obvious that restricting the use of data is better. And so there's a, what I mean by that is that providing more data to the firm can improve the matching for most people. And so a really, sort of salient example is this paper by Dube and Misra where they essentially look at third degree price discrimination for- I want to say it's Indeed - it's about job postings, where they're trying to match employees to employer - job seekers to job havers, job offers to employers. And so they find out that like, you know, if you were to just do a uniform price, the price goes way, way up. If you allow sort of high - high dimensional data, price discrimination, most people are actually better off and the sort of like average transacted price comes way, way down. And that's not sort of necessarily unique, from a theory perspective about price discrimination. But it is sort of informative, when we start thinking about, you know, how am I restricting how firms use data to achieve those results? And sort of the last thing is, is when we have these intermediaries, they control this discovery mechanism. And - and what does that what does

that do? Right? When we think about, you know, Google isn't just trying to show you the best search results that they can, they're trying to show you the search results that make Google the best, that make Google better off. Right. And so AC touched on this a little bit where like, there's a misalignment between the firm and the individual here, right? And so what sort of inefficiencies does that create? And so it's a there's a fairly technical paper, but it's, it's I think, conceptually right, and worth looking into by Hodgson, Lewis, and it's got a really long title that's like: "You can lead a horse to water", and then there's like a whole subtitle after the colon... But it's it's essentially this idea of trying to write down a model of how firms can influence outcomes through the searching mechanism and through the matching mechanism, right? So it's starting to illuminate how as economists, we should think about these these issues where we have firms who are intermediaries and they are essentially playing matchmaker, and then there's a potentially an incentive misalignment and what does their matchmaking actually do to the end consumer? And that's it for me.

Sophia:

That's great. Thank you so much. Thank you both for a very provocative framing of the discussion and the conversation that will follow. I think that the students have been thinking - we've all been thinking very deeply, especially with the in light of the global pandemic, about how technology is being used to shape the way we will continue to engage in the future. So I have a lot of questions coming in. I want to jump right in, I will be- sort of present the questions to you both as they come in, in just in the order that I received them. The first question we have here: FinTech and tech startups generally hire staff from a variety of disciplines, including engineering, communications, and finance. Why have economists in particular been been valuable to your company? AC? Are we valuable to your space?

AC:

Yes, I think I think the answer is absolutely. To us as a company. I think the initial bit about like the industry, maybe less so and maybe that's actually the problem because you know, for example, when I left banking and I didn't actually leave banking with the vehicle, like, let me get some money and like start my own company, I thought, I just want to work in a smaller place and sort of see what what outcomes I can achieve at the same level of effort if there was less bureaucracy. And the issue was: I wanted to talk about balance sheets and two sided marketplaces, and return investments, return equity and every FinTech that I went to, which our competitors now basically want to talk APIs. I think, actually, it would be an amazing thing if the industry cared more for economists. We certainly do, because we are based, as you heard, in a problem that is economics at its heart, and everything else, including user experience is a path to getting the economics, right, not the other way around. But I think generally speaking, that's not true for the FinTech space, and I would be happier if it was.

Sophia:

Okay. The second question, I have a question coming here. Is there a difference between how Big Tech versus tech startups contribute to the global economy? I think you probably can both weigh in on this.

Garrett:

I can, I can take a stab at that sort of- one interesting aspect, it is I found sort of moving from Amazon, which at this point, I think people would classify as Big Tech is inherent in the question versus Twitch well, which was owned by Amazon is sort of operating independently, you know, the first thing I noticed is I went from sort of working in a company of 40,000 people, plus, you know, the, the millions of warehouse workers to a company that is essentially 2,000 employees, and then a million, you know, millions of people sort of broadcasting right? And so the, the notion of, you know, who your customer is, and how you interact with them, and the sort of intimacy of that relationship -of understanding what they're doing sort of was different. Like, you know, Amazon, Amazon advertising, which I can speak to is sort of, you know, the number three advertiser on the, on the web, and it's, you know, that's a huge business. It's, it's billions of dollars, and it's, you know, it's all about scale, right? And sometimes, you know, anecdotal evidence will come in. And, you know, we have to weigh that against the data we see sort of being put together, whereas you move to a sort of more startup oriented company like Twitch, where I found there's a lot more sort of interest in understanding how people are sort of using the product, and that can influence decisions. And that's not to say that Amazon doesn't care about how people are operating, you know, using their product. That's that's not the point I'm trying to make, but rather just sort of the scale of that, right? When Amazon says, I had 10 people telling me this, that's 10 people out of, you know, hundreds of thousands or millions. When Twitch says, hey, I'm noticing this small trend, like, it's a little bit more important, because it's a larger fraction of the user base.

Sophia:

Thank you. What are the implications of technology embedding itself? Oh, sorry, AC, we didn't get your feedback on that question.

AC:

I sort of agree, I might just have one to add from maybe a culture standpoint, I think, look, it's like, and it's funny, Garret, that you consider the 2,000 employees [of Twitch] - we have less than 100 people at this stage where 2,000, I'm like, oh my god, that's too big! Because actually, I think there is a number. And you would know this from running classes in universities, right? There's a number of beyond which having a good discussion is harder. And by definition, if you're too big, that discussion will get restricted to certain layers. And then you've kind of created hierarchy without even wanting to. So my biggest fear as a founder is like just how, how long can we stay as small as possible? So measuring impact rather than measuring size. And I think inherently small companies can change more, but perhaps you feel the change in the future. Whereas if Amazon does something today, all of us feel it right away. So can Amazon at that scale, continue to sort of have that much rebellion to revolutionize another thing? And another thing? You know, in our history of stock markets, that's not been the case, if you look at sort of Fortune 500, or like, even like NYS, Italia, like anything like these have high attrition rates, and they're sort of index members, because companies that get big have this problem of discussions and hierarchy. So I'm very worried about that for our company. And I have this number of 500 in mind, and I almost have never wanted to be more than 500 and some of our employees will laugh that I'm crazy ambitious that I think we'll ever get to 500.

Sophia:

Yeah, you know, before we begin, I want - before we continue, I want to just remind our viewers who are watching live on YouTube to submit your questions in the chat box or on social media. Also, if you are joining us via Zoom, you can certainly unmute yourself and introduce yourselves to us and ask your question. So that is open right now. I will continue to review the questions that are coming to me on social media. But the floor is open, please unmute yourselves and ask your questions or submit them in the chat box? Let's see question from YT. YT, you can unmute yourself as well. Is it possible for consumers to price on the value of their personal data and charge accordingly? The data companies? YT do you want to clarify or you want to chime in somehow?

Lauren:

This is a question coming in to us from social.

AC:

I'm happy to take a stab at that think understand what what he's getting at. I was as having a discussion with a partner today on, for example, an office platform in a bank. And you know bureau saving, we are here to incentivize saving and investing. So we had a long, long debate about our offers- good for our brand or not? Because on one hand offers might get you to buy stuff you don't need, as happens all the time. But discounts and stuff right like Black Friday is probably the biggest example of that. And on the other hand, if you told me that you're saving for a winter coat, and I asked you would you like to be given some offers from manufacturers about this specific item that he said he was saving for? He said yes. That's a completely different context for exactly the same user feature. And I think when I hear what discussion, it's like, sort of that buy in of Did I ask you before selling your data for an offer to come your way? Even that simple question weighs a lot and has effect on pricing. And then I think YT's sort of taking it to the next level saying, okay, yes, do sell my data. And by the way, don't sell it to anyone pays less than five pounds. And even in the world of social media, you can apply the same analogy, right? Like talking about sort of YouTube and when sort of YouTube Music came out, and like, you know, the 15 pounds, 18 pounds pricing. You know, on one hand, people went crazy, like what YouTube? Like, have you seen that pricing? Like, Are they crazy? But that moment of asking, like, are you going to get targeted by us mining your data and giving personalized ads as Garrett said or are you happy to pay 15 pounds 18 pounds a month? Because actually, that's the value that we get from doing this mining? You know, making it my choice makes me like you more - I may choose to not pay the 18 pounds, but at least they asked. I want the same question on my bank. I want the same question on Facebook.

Sophia:

Yeah.

Garrett:

Yeah, and I think it's really interesting when you think about the personalization, and the the impact that can have on your user experience. Right. And, and to ACs point, like, you know, Twitch, for example, sells the opportunity, you can subscribe and get no ads in, similarly to YouTube. And, you know, that's one way we can think about the value of sort of advertising. But I think this notion of personalization can even be sort of more expansive than that. So you know, for example, if you were

to tell Google, you know, hey, purge my data, please don't give me personalized results, like you will have a substantively less good experience than the personalized results. But you know, if that trade off is worthwhile to you, I think - I think that's interesting from an - sort of academic perspective, because it allows you to start pinning down what the value is, right? If I can tell you the difference in value between a personalized experience and in a generic experience, suddenly, I can start bounding the value of privacy for the people who opt out, right. And so I can start to think about, okay, like, what is the value of that? Is that something we want to do? We sort of, you know, these regulations are sort of, there's no, they're, they're binary, right? Either your data is in or it's out, there's no use my data, but only for people who pay x, right? Or only in situations in which it's worth x. And like, you know, that's how policy is complicated, right? And so there are ways to think about, or mechanisms that tech firms can offer to sort of make the decision less binary. I think that's a huge grounds for improvement.

Sophia:

So YT has added something he wants, he or she: has the value of user provided data and traffic, but also training the algorithms of big tech been assessed by economists and how does it compare to the market cap of big tech?

Garrett:

I can't speak to the market cap of big tech. What I can speak to is sort of like thinking about using that data to train algorithms. I mean, the answer the short answer is yes. The longer answer is that, you know, machine learning people, sort of traditional traditional economists or economists, people trained as economists sort of have a traditional view on data, we're trained in sort of simpler models that use less data and sort of more clearly structured ways. And those models typically fit the data less well, right. And so when you then involve sort of more advanced statistical things you get, you get better experiences, right? And so, you know what that- what that means is sort of, you know, a firm will AB test, they'll run an experiment where they say, here's a simple model, here's a complex model that uses more data, like, what's the value that's generated? Right, and if one generates more value, that's the one that goes live. So in that sense that the value has been assessed. I think, you know, the broader question you're asking is sort of like, should firms use any data, It sounds like. And there's a little bit of work out of the market - implied marketing literature in the 90s. Looking at this, where it's essentially like, what sort of discounts can a supermarket offer by using your purchase history? Right, very sort of simple question. And like, how many purchases Can I use? And can I offer better discounts? And the answer is yes. And like, in general, firms will be better off, whether that sort of welfare improving in a societal sense, is a different, different question.

AC:

On the face of it, big tech is worth, what? $3, $4, $5 trillion at this point, right? And we've got maybe what 4 billion people who are online today and maybe 5? So there's a billion or like sort of magnitude difference between the valuation and even per head data values? It's, it sounds unlikely that it's, it's data that's driving these valves. The bit that sort of makes it even more complicated is it's not a quantitative equation, is it? Because when when you've got Apple sort of doing the cost of Goldman, and they get into this equation, where they probably get credit scoring very right on

extremely wrong grounds, they're in more trouble than they were before using the data. So is that valuation increasing or valuation decreasing for them? Because the reputation damage? So I don't think it's anywhere near as black and white as more data equating to more value?

Sophia:

Thank you. What are some of the non-traditional or soft skills an economist needs in order to be successful in a tech startup?

Garrett:

I think, at least on my end, one of the more challenging aspects is, you know, my, my training is in a PhD in economics, I, my background is in sort of structural modeling and IO. And so how I think about and tackle a problem is sometimes distinct from how somebody in the business might think about the problem. And bridging that gap to explain how what I'm thinking about, which, which may be something as sort of like, you know, fundamental is price elasticity, right, encompasses a lot of the business intuition that that people have developed over time, right? So you know, notions of, you know, discreet spending, or you know, how sensitive people are to, you know, selling out on Twitch like that, that can all sort of be baked into sort of standard economic theory and sort of bridging the gap to say, No, like, I hear you, I understand it. And then let's find a way to sort of make sure we're communicating that no, we're both talking about the same thing. It's just that I'm using different words, and sometimes you have to go to them. But, you know, one of the more powerful skills is being able to bring the business towards economics where we can say like, here, we have a principled point of view on something like pricing, for example, how do we, how do we bring more people towards that perspective, while incorporating all the sort of business intuition that they have?

Sophia:

Thank you. AC?

AC:

I guess the best answer from our perspective, is our assessment framework, which is a set of values because, as one of the earlier questions said, we almost sort of become a company because of so many diverse skills coming together, because that's exactly what finance needs. Otherwise, it's more bankers like me making stuff for bankers, right. Even when I think I'm doing plain speak, like, I've lost half the population. So it's inherent in our need to get people from different disciplines together. And therefore we have to come up with a values framework. And our values framework is basically that first of all, values are more important than performance. And you can get performance through impact and ambition and hard work and resilience. These are kind of things that you do what you do. And the values outperform them as in the performance immunity comes from you can get zero and performance, but still not lose your job, because it's kind of a mutually shared responsibility to get you to perform better because you are a high values person, and you already have the skills that you needed to get into the company back, you lose the company's if your values fall and these values are coachability. Because you're operating in a new space, you're not maybe in a space that you previously used to have bringing in skills from different places into this cauldron being coachable to

team feedback, to the manager's feedback is extremely important. Transparency will make information the way to get ahead is share information widely. And it's your processing of that information that should get you ahead. Having a moral compass. There are some things that, especially in the financial industry, employs and it should just not be okay. But despite the manager saying it's okay. And, you know, if you if you notice, kind of moral compass and coachability have a trade off, just like impact and ambition and the trade off, if you are very highly ambitious, you actually may not get done anything. So we've created the framework so that these- there's these trade offs day to day, and coachability sort of becomes like a judge- an issue based on do I want to like you and me outside right now on this and then never taking your answer for this after we convinced or actually, this is what I should take for the team. And as long as people are thinking like this every day, I think that's the key bit, your skill set is almost secondary to this thought process.

Sophia:

I like that. So that that becomes a sort of important way of framing and thinking about, you know, what, what new economy is going to essentially look like. I have a two part challenge question. One, what are the implications of technology embedding itself within all industries and sort of all fields? And what effects does this have on company valuation, if any? Two part challenge.

AC:

Was it the valuation course that people just got off?

Sophia:

[Laughing] It could be! We have some, you know, we have students from the MBA program as well as the Econ Ph.D. program.

AC:

If I take the first stab, Garret. I think Big Tech is faster moving as a as a leverage factor than many other things. So for example, if you're a manufacturing plant, like let's say, from the industrial age, or even put 1920s - 30s, what could change the valuation factor, like kind of if your car - manufacturing cars is maybe like, your car is 20- 30%, faster, you make 20-30% more cars in the next factory. So it's kind of down to very few paths and components, maybe some worker skills. But in tech, as Steve Jobs said, you got 100x multiple, like, if software is better, it's better, maybe 100x. So that means the valuation driver can be really quickly changed, the discounting factor can be really quickly changed. Like in three months, you could have one over the word in three months, like you saw with Reebok and the others, you could have lost the world. So I think the discrepancy that comes from these assumptions and how long these assumptions are valid for change is completely in tech. And that's why sometimes maybe the kind of way we articulate this discrepancy is when we see some of these start up valves, and they just don't make sense. Because actually, it's hard to see exactly which driver, people who know the space have accounted for. And how quickly or not that could be proved wrong. As a manufacturing space, it's actually easier. It's like you can see the plant because the number of cars, even if you think about Tesla, which is a high tech manufacturing unit, you see the reports on it. It's like how many cars got out? Did he hit the volume that he said he would? It wasn't

the QA was at the right level, like it's measurable. And tech, I think it's much, much harder, it could swing really fast. And that's what makes it complicated.

Garrett:

Yeah, one -one aspect of it of this, I think, is really interesting that you mentioned AC is the idea that I can be sort of, you know, 100x better, or, you know, the the improvements are vast. And I think a lot of that comes down to this scale that tech operates at. Like one of the things that sort of continues to surprise me every day, by working in one of these tech firms is the amount that can get done with the number of people, right? It's a lot of tech is infrastructure, right? It's automation, it's machine learning, and it's six people serving hundreds of thousands of people, which you know, if you think back to sort of traditional retailers, like take- pick Walmart, for example, like the number of people in a Walmart, versus the number of shoppers in a Walmart is much higher than the number of people working at Amazon versus the number of people who shop at Amazon, right? Or Twitch, you know, it's the same sort of thing. And so I think, you know, when I think about tech versus valuation, I still think valuation comes down to the fundamentals of are you providing a service that people like, and is it a service that people want to buy, right? And then tech is a tool, right? There's nothing that would prevent Walmart, to stick with the example, from, you know, tracking your purchases, providing personalized shopping aisles like they could do that. It's extraordinarily expensive because everything is in physical space, the ability to scale that is, is a sort of unique feature of tech, because it's digital. And I think that, you know, but at the end of the day, like Amazon is successful, because they provide products that people like, Twitch is successful, because they provide a service that people like, and they want to watch and they want to pay for. And so like, you know, this notion that somehow the tech itself is valuable, I think is wrapped up in the idea that like, intellectual property is valuable. And I think that's sort of distinct from this idea that like tech is a tool. And you could operate a traditional retail store, like a tech firm, it's just extraordinarily costly, because you would have to like reshuffle the aisles every day. And that would be that's, that's insane.

Sophia:

Possible, but insane. I get it. I have - one person is asked a question of you, Garrett. What markets are you most excited to engage in next? And a second part of the question for AC is where do you see opportunities in FinTech?

Garrett:

Yeah, what markets? Am I most excited? You know, I think I'm still- I really come being an advertising and in Twitch, I've really come to be excited about the sort of multi sided marketplaces, I think there's a lot of really interesting economic questions. I think, questions... Like, where do I see what markets do I see being interesting going forward? I think one of the more interesting aspects of Twitch to me is this idea that, you know, you're paying to support somebody doing something that you like, right, and sort of decentralizing that sort of support for content, right? When you go to Netflix, you pay them a monthly fee, and you get all their content, and they provide you what they want to provide you. Right, but I think, you know, when we get down into these multi sided marketplaces, and you have these sort of more intimate relationships between consumers and

producers, I think you get to see a lot more interaction on that. And, and that can manifest in things like, like Twitch where, you know, you're directly interacting, I think that could also manifest - manifest in things like, just in time manufacturing, you know, so you see things where it's like, okay, you know, we bought time in a factory. And if we get 1,000 people to agree to buy this thing, we're gonna get custom built, you know, keyboards or custom built shoes, or whatever it is, and this idea of sort of small scale custom. At scale, I think it's sort of a, an interesting, it's got an interesting set of features for economists to think about.

Sophia:

AC?

AC:

I think I'll try not to answer that the B2C level in the B2B bits. And maybe it's just top of mind, but it's sort of stuff that we're working on right now. So obviously, I'm excited about them. On the B2B side, our vision for the end of 2021 is a product manager in a bank that takes our stack and our platform, even if a non-engineer is able to put together a journey from a graphical user interface. So we call that low, no code. So sort of take away the dependency on engineers completely, because banks are not that great at hiring engineers. And the reason they come to platforms like us is to get the good platform. But if they still need engineering talent are going to use the platform, either from us or from them doesn't matter. And it sort of defeats the purpose, if you can actually take away that last bottleneck, and make it really easy for product managers and economists and everyone else to sort of put together products and do tests, that will be cool. And I think it's really, really exciting that we're less than 12 months from it, in terms of vision, and if we got it going, that could take the world by storm. And in the B2C space, we've been working on this loss aversion topic, as was the initial thesis. And we sort of start working on structured products where you know, for example, like you put money into the product, let's say it's based on the S&P 500. You put money in today, you come back in three years, check if the S&P 500 is above today's rate. If it is you get 4% per annum. So 12%, which is almost double what you would get in a savings deposit. And if it's below, you get your money back. So now you've taken away loss aversion, what are you putting at risk is the return from the savings deposit, but then you potentially getting much more. So there's a little toe dip into the world of investing because you could make much more in investing but lose much more. But now you have this middle ground. And I think these products exist, by the way, and it blows my head that it's only for the private banks and the rich people and that no one sort of thought of getting this down a segment. And we're very close to sort of launching that in the UK through the Dozens brand. So these are some experiments that are very close to my heart. And I think it's not because we are working - I think it's sort of goes to the heart of the issue of why FinTech exists. And FinTech doesn't challenge some of these things, then basically, we just more of the same, just a little bit cooler and fewer branches, but nothing substantially changed. And between these two examples, I think the world could substantially change, which is what's exciting.

Sophia:

I want to thank you both. We're just about out of time. Thank you both for joining us for a very thought provoking conversation on the future of the economy and the future of society, and the role

of technology in this particular space in sort of driving global change. We on behalf of the Department of Economics at Columbia University thank you both. Thank you, Project Imagine - thank you, Twitch - thank you, Amazon. Thank you to our participants, both on Zoom and on our YouTube space. Join us in 2021 for a brand new schedule of programming. We have a whole host of guests lined up for the spring semester. I want to wish you all a very happy holiday and we can continue this conversation on social media. Thank you again, Garrett and AC.

Garrett:

Thank you so much.

AC:

Thank you.