Tech Summit on Artificial Intelligence: A Quote Book

Hardware and Infrastructure Edition: Semiconductor Chips & Cloud Services

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US Federal Trade Commission
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Overview

On January 25, 2024, the FTC held a Tech Summit on Artificial Intelligence. The event page, with the full 4.5 hour recording of the event, is available [[here](#)].

In the first panel, we hosted the following panelists:

- Tania Van den Brande, Director of Economics, Ofcom UK
- Dave Rauchwerk, Technologist and Entrepreneur
- Ganesh Sitaraman, Director of the Vanderbilt Policy Accelerator
- Corey Quinn, Chief Cloud Economist, The Duckbill Group

Panel Summary: The panelists discussed ways that dominant firms may have control over key infrastructure inputs such as cloud computing and access to hardware such as GPUs, and this may be exacerbated by obstacles to migrating between offerings. This may in turn allow them to charge excessive prices or impose coercive terms, and as a result, they may be able to exercise market power in ways that favor their own incumbency or impact competition. In addition, the panelists discussed ways in which the structure of these markets may make it challenging for new players to compete even where their products and services may be better than the incumbents.

Why a Quote Book? The voices of everyday Americans can sometimes be lost in discussions involving dense technical, policy, or legal language. While the benefits or risks of new technologies are being debated by policymakers, these individuals experience the effects of innovation in real -time.

The FTC recognizes that this is not a representative sample of the entire population, and we strive to continue to listen and engage with a variety of perspectives. The goal of the quote book solely aims to reflect and compile quotes from the participants aggregated into common themes. This summary aims to be a resource, to quickly see various perspectives on topics.

Ideas to enable competition and innovation

> *"It's really interesting that the FTC has convened this because we're in this moment where, okay, what is the point at which the market leader who gets there by fair means over 30 years becomes anti-competitive? And what needs to change so that we can have more companies building more chips?" - Dave Rauchwerk*

Addressing vertical integration through structural separation

- "So one thing I think that's important is we want to see innovation. And I think a critical part of that when you think about the lower layers of the stack is the possibility that we will have innovation be foreclos ed by vertical integration and dominance at these lower layers. And so I think addressing that is a critical issue." - Ganesh Sitaraman
- "But the first is a structural separation. And this is basically an idea that you restrict the lines of business operations within an entity so that they can only operate one or a set number of lines of business as opposed to being vertically integrated across many different lines of business or a conglomerate that applies across many different lines of business. That is a very clean and administrable way to prevent things like self-preferencing and other kinds of harms that may emerge from integration." - Ganesh Sitaraman

Regulatory action

- "So in the UK context, currently, our competition authority is looking at these issues and to the extent that it finds concerns, we'll be able to make interventions, and you can imagine that that might focus particularly in part on some of that ability and that incentive for customers to switch." - Tania Van den Brande
- "I think regulators and authorities, not just in the UK but across the world, I think are starting to look into the risks that you've been highlighting during this talk, and I think have several tools available to them to intervene where we can find solutions. And particularly in UK, we're about to start doing regulation of the big tech companies on an ongoing basis where some of the issues, if they do arise, could be dealt with on a more ongoing basis. So really value the discussion today to really help the creative juices in how we might tackle issues as they emerge." - Tania Van den Brande
- "I think there's a real danger from concentration to innovation in these downstream areas based on dependence on the more utility like elements upstream. And I think that's a real concern. And so solutions to addressing that problem in a combination of enforcement and regulatory actions, I think are very critical. And we could talk about that more later or now if that's of interest. But that's a place where I think we should be very worried." - Ganesh Sitaraman

Non-

Increased transparency

- "I th ink that in the short term increased transparency because right now it's who can genuflect the hardest to the feudal lord that they are sworn to. That's not a viable system for modern governance around distributing an asset that is right now incredibly roo ted in scarcity. I want to see a better tomorrow, not so much a better 10 years from now. How do we start making small steps today rather than hoping focync3.4 (l)3.8 (ti)m0.7 (a)-0e.5 (t 6b)3.1

- "So, as a former semiconductor founder, now has never been a better time to be in the semiconductor business. We're going to have more fabrication capacity online in the next five years within the country than we've ever had. And there's enormous demand. And yet, the dynamics of the market make it extremely challenging to get off the ground." - Dave Rauchwerk

Security Risks: Single points of failure

- "Oh, dear Lord. I think the war has already been lost. We've passed a tipping point where you cannot avoid the three main hyperscalers out there, full stop. In fact, if there were to be a law or technical issue passed tomorrow where AWS could onboard no new cloud customers, they would continue to grow revenue for at least several quarters just based upon organic growth." - Corey Quinn
- "Too big to fail has passed a tipping point long ago, and the centralization risk is massive. Once upon a time when we all ran our own data centers things went down a lot more, but the failures weren't correlated. It wasn't effectively every business having a problem." - Corey Quinn
- "Even today, if you decide that you want to build an e -commerce store and I'm going to build it on Azure so I don't have to deal with AWS in any way, well, if you're using Stripe to handle your checkouts, they're a full in AWS company. So if AWS has a bad day, no one's buying anything on your shop. Those dependencies wind up happening across the board." - Corey Quinn
- "In the chips layer, the CHIPS and Science Act is addressing a different kind of resilience challenge, one tied to geographic production of chips and where they're located, obvious national security issues and concerns there. So I think one of the other places we need to think is just how concentration can be important in that direction." - Ganesh Sitaraman
- "On a couple of other points, I think if you are the federal government, there's also a question of dependence n, ●s

problematic against them for the effects that they would have. I worry also in that case that we may end up in a similar kind of situation if there's a very limited number of actors upon which there's real dependence, particularly by the government, but across the economy as well." - Ganesh Sitaraman

Competition Concerns

Less innovation

- "[W]hat we might see over time then is actually less innovation in the model or application layers, anything dependent on these concentrated layers where there's a kind of bottleneck of players that can incorporate those new ideas directly into their own offerings and then spread them throughout their vertically integrated business lines." - Ganesh Sitaraman
- "But right now, there's not enough cloud providers and there's not enough chip app7(n)-0.7 (o)1.6 (m)5.2 (y)0.6 (a)-0.21.076nes.   ol1.076w, .5 (th)5 (t8wic/)]TJ 0mTver

jurisdictions where it's not barred have to sign an 18 month non -compete scope to Amazon, which means that there's no industry they're not in, there's no way to not run afoul of that, which causes a certain chilling effect." - Corey Quinn

Inability to change providers

- "Moving from a data center into a cloud provider is a massive project that's measured with multiple calendar years. Moving from one cloud provider to another is almost that same level of difficulty. Once you're there, you tend not to move. There are a few stories of people fully leaving a cloud provider that they have been all in on. And for good reason, it simply doesn't happen at most. A workload or two will move from one to another or something greenfield will be spun up somewhere else. But once a workload is there, it basically is there to stay." - Corey Quinn
- "Inertia is such a powerful force it's hard to overcome. Oh, a new vendor to get through all of my procurement processes, my security validation, understand how it works, more importantly understand how it breaks because when it breaks, you really wan ted someone who's been there before. And it becomes this almost insurmountable series of obstacles to the corporate decision-making process where, okay, let's put this on Amazon too is a straight shot. The big get bigger and the gulf grows wider. It becomes a bimodal distribution whether we want it to or not." -   Corey Quinn

Bottlenecks

- "[At] the lower layers of the stack, there are already monopolies and oligopoly, and concentration is already a reality in the lower layers of the stack. So that's the first point." - Ganesh Sitaraman
- "From my part of it, I think that the biggest challenge that we're seeing is that all roads lead to Nvidia. They are today a bottleneck on all of this, followed only slightly by the large cloud pder.A(er)3.6 (s o-6 (a).3.355 0 Td (-)0.388 rg 0.002 Tc -0.7 344 Td [(n)-1.7 (a)-1.754o (l)2.

- "Now, a second barrier we looked at were the costs and the effort that customers need to put in when they need to re-engineer an app and move it from one cloud to another, and that makes switching hard. But also some of the difficulties they have in connecting apps that are hosted on different clouds. And we though t that could make multi -cloud more difficult. " - Tania Van den Brande

Discounting structures

- "And finally, we pointed to a number of discounting structures in the industry that we thought create quite strong incentives for large customers to put all or mo st of their cloud needs with a single provider, and particularly make it unattractive for those large customers to split their cloud usage between larger and smaller cloud players." - Tania Van den Brande

Inability to compete

- "But we're also worried that some of these barriers create a risk that the cloud market might concentrate even further towards the market leaders, and particularly that they make it difficult for small cloud providers and challengers to really go after customers that are already established on AWS and Microsoft. And that worried us because we thought that makes it more difficult for those challengers to start building their customer base and to really start gaining that skill that you need in cloud to be a more direct competitor in the market, or at least threatened to become a more direct competitor." - Tania Van den Brande
- "But I think at this point it's obvious that we have if not a monopoly, the next thing to it. These cloud companies talk in the language of monopolists, which always touches on these ideas of, oh, it's a fight for survival for them. They could be out-innovated tomorrow by a startup in their garage. Well, yeah, if you give that startup $6 billion of funding for all of these AI training runs they'll need to do and the m assive hiring binges and the specialized hardware, yeah, then maybe. But I kind of don't see it." - Corey Quinn
- "If you're a fully vertically integrated company and you have cloud models applications, it's very possible that someone develops an application or a kind of model that has some