Research @ Citi Podcast, Episode 8: The Digital Transformation of the Global Economy

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Guest: Nathan Sheets, Global Chief Economist, Citi

Transcript:

Lucy Baldwin (00:03)

Welcome to the Research @ Citi Podcast. I'm Lucy Baldwin, Global Head of Research at Citi. In each podcast episode, we bring you our thought-leading views and analysis across asset classes, sectors, and economies from around the globe. Now, let me hand you over to our host today.

Rob Rowe (00:22)

My name is Rob Rowe. I am the U.S. Regional Director of Research at Citi, and thank you for joining us on the Research @ Citi Podcast. On the podcast with me today is Nathan Sheets, our Chief Global Economist at Citi, and Nathan has recently, and I think, in a timely manner, published a recent Must C piece on the digital transformation of the global economy. I think this topic is really important because right now it feels as if there's been a little bit of a change in the narrative, on the tech industry, we've seen a lot of that selloff happening in markets. There is a sort of a “prove it” narrative for generative AI as the new addition to all of this. So it's probably comes at a good time for us to be discussing this transformation. Maybe we start off with the question: What is the digital transformation, and what are key economic processes that are involved here? How are you looking at this?

Nathan Sheets (01:18)

Well, Rob, many thanks. It's great to be with you on the podcast. I think the digital transformation at its root and core is really this ongoing shift from an economy that's dominated by physical processes in the production of “stuff” into one that is more focused on virtual representations of things and services and of the computer-generated and computer-assisted world. You know, we've kind of seen this digital economy march through various chapters over time. First it's computing and then the Internet and then mobile technologies. And now, most recently, our sense is that generative AI is going to be transformative. For a number of sectors. Now, that doesn't say anything about near-term market movements, but our sense is very much that over the medium-to-long run that AI and the related technologies are powerful and are likely to have a meaningful macroeconomic effect and a significant effect on financial markets.

Rob Rowe (02:37)

And you, have we seen that already? You know, are there ways of looking at this, where we can say, yes, this is where we're seeing the effect right now?

Nathan Sheets (02:45)

As a macro economist, I like to resort to data. And there's no indicator that's more powerful and important than GDP. And certainly we have seen the effect of the digital economy, the

digital transformation in GDP in recent years, the IT sector, the digital sector has grown in the U.S. at a rate of 7% a year versus 2.2% for the overall economy. We're very much seeing it in real time. Similar kind of statistics apply to OECD countries and the global economy more broadly. And then the other place, you'd say, are we seeing it? We're seeing powerful transformations in a number of industries that AI and the creator economy is reshaping: advertising, it's reshaping retail into eCommerce, media and entertainment. We are seeing it in a big way. And in each case, as we walk through those sectors — and we do this in our Must C paper — as we walk through those sectors, it feels like there have been big changes, and as a result of AI in particular, but more broadly, there's still a lot more to come.

Rob Rowe (04:04)

And where do you anticipate seeing a lot more to come? A lot of people talk about where the latest technologies have improved efficiency. You know, has it made the economy more efficient?

Nathan Sheets (04:15)

So again, there are various ways to answer your question. And let me answer kind of at a high level, at a macro level, but also at a micro level. And in terms of the macroeconomics is really quite a list that I can put forward. I mean, we're seeing clearly improved communication. Our ability to interact with each other is much different than it was 10, 20, 30 or 40 years ago before cellphones and emails and chats and podcasts. So our ability to communicate has improved dramatically with attendant implications for the efficiency of the economy. Greater access to information. If I want to know the answer to your question about anything, I type it into Google or other search mechanisms and *boom* — I have an answer. And then related to that is a better ability to analyze the information. Reduce search costs. It goes on and on and on. And then in specific sectors. I think one of the most striking things that I learned and I'm kind of learning about the digital economy as we're writing about it. But one of the most powerful observations in our paper is the onset of the "creator economy". Whereas before, there were large gatekeepers, say in the media and entertainment world, and these folks were the keepers of the product and would decide what was published and what was produced. And now as a result of social media, you've got literally tens of millions of people around the world who are posting various kind of content: written content, videos, entertainment, music, and so forth. They're posting that, they influence, they're followed by others. As a corollary to that, they're reaping significant economic gains. Estimates suggests that these creators earned $75 billion in total last year. So it's just an example of the way it's transforming media and entertainment and advertising and brand management. And it really feels like some of these trends are still plenty more to come.

Rob Rowe (06:39)

And Nathan, we often have to think of this digital economy holistically, right? In other words, there are other industries that are either playing an influence on this, either enhancing the digital economy or are supporting it, right? So like any economy, there's supply and demand within the digital economy, how would you characterize that? How would you look at that? In addition to that, who are the winners and losers in this transformation?

Nathan Sheets (07:08)

Yeah. This is very much the way that we as economists like to think about things, Rob. You know, what are the general equilibrium effects of these developments? And as AI rises, and we kind of think more broadly, what are the implications of that? And I think one big implication that could be a constraining factor is electricity demand. And grid infrastructure is that that supportive environment in place, and a whole variety of estimates suggest that as AI advances, it's going to require substantial energy capacity. Now, as we say that, again, continuing to think about things in general equilibrium, there is likely to be a big delta on electricity demand. But I think it's also important to remember that Moore's law is still very much in place. And when I read contributions in our report from our colleagues that are thinking about the semiconductor space, and the exponential growth that's possible in the efficiency of semiconductors and chips going forward, I think as we weigh the semiconductor advances, that increased efficiency is also going to be more power efficient. And so that could be something that reduces some of the power demands. Another observation is, yeah, it's going to require a lot of power, but the IT economy is less energy-intensive than the rest of the economy, the traditional economy. And again, that makes sense. It takes less energy to type an email and send it than it does to put a stamp on it, put it in the mailbox and have it hauled physically from one location to another. So there are some very broad general equilibrium effects, and we have seen winners of this, say social media, we've seen some losers, traditional media, for example, that's not been able to transform itself into the new world. Even within packages, parcels and physical transport, we've seen winners and losers. We do a lot fewer letters. I don't know when the last time was I wrote a letter. We do a lot fewer letters than I did 20, 30, 40 years ago. But then on the flip side of that, we're doing a lot more packages as a result of eCommerce. So is physical delivery out? No, but it's less about letters and small parcels that are often sent electronically, and more about these packages that we send as a result of eCommerce. So there will be a reprofiling, we've seen it over the last 20 years, and that's likely to continue.

Rob Rowe (10:05)

And actually, let me ask you another question in terms of inequality, actually, because you cover this also in the piece. What's your read on equality and how that may change?

Nathan Sheets (10:16)

This is something where we've spent a lot of time thinking about it and debating it internally. And I think that the more broadly there's a debate amongst the economists about the implications of AI for economic inequality. Now, traditionally, when we've adopted new technologies, those technologies have most benefited those with skills because those are the folks that have been most best-positioned to be able to utilize those technologies and deploy them with power and effectiveness. And technological progress has tended to complement those that have sophisticated skills and capacities. However, there's also some economic research where they've actually looked at how AI operates on the ground with folks in various professions. And what they find is it tends to compensate the most, and have the biggest delta in terms of performance, for workers that are relatively inexperienced and for those with more limited skills. And what AI is able to do is to kind of close some of that skill and knowledge gap. An expertise gap for some of these workers. So there's a strong case that maybe AI is different and that is more a substitute for some of the more sophisticated workers and will be a boon for some of the workers who have been not paid as handsomely in the past. This is a very interesting set of questions, and I think the jury is still out as to which

way it goes, and it could actually go different ways in different sectors. And in different parts of the economy, we may see differing effects.

Rob Rowe (12:10)

And Nathan, let's switch just real quick to global trade. I mean, one, you know, my favorite chart in the publication, which is Digital Services Exports, can you tell me more about how it's changing the face of global trade?

Nathan Sheets (12:25)

Well one of the features of global trade, I would say over the last 10 or 15 years, is that the share of services in global trade has risen, and that's consistent with us being less dominated by “stuff” and more dominated by services. But where that gap is the most pronounced is when we look at “digitally delivered services”, and by definition, a digitally delivered service is anything that is delivered through a digital means. So for example, if I do economic work and deliver that through email or Internet, then that's going to be counted as a digitally delivered service. And those shares have risen dramatically. I think it also would include entirely new sectors of the economy that are inherently virtual, like web design. And various kinds of software programming and the like. But what we've seen over this last 10 or 15 years is much less about trade in goods and stuff and a lot more trade in services and digitally delivered kinds of aspects of that. The final point I would make is even if you look at the trade in goods, in addition to it being weaker, all of the trade in goods that we see, more and more is actually related to the digital economy. And that's another important point is there are some parts of goods where it's vigorously and vitally linked to the digital economy and necessary for the digital economy to grow, like hardware, servers, devices, and of course, the key — the brains of it all, if you will — the semiconductors and chip industry. So even within goods, some of that is fundamentally digital in its nature.

Rob Rowe (14:29)

And it's lifting all boats, essentially. When you look globally at all the various countries — and behind this question is another table I saw on data centers — how would you look at that in the context of all countries? Because what I've noticed is the U.S. has exponentially more data centers than many other countries in the world. Is that a reflection of the focus or of, you know, the potential in various countries, do you think, or is it more proportional thing?

Nathan Sheets (15:03)

I think the reality is that the U.S. is clearly leading in the AI space, and as that AI sector has taken hold and has continued to develop, as we discussed, it has been very energy-hungry, and it's required substantial increase in data centers. And when we look at the contours of the tech space at the moment, the cloud and the continued growth of data centers is a key part of it. So I think this is a place where the U.S. is in the lead and where it is reasonable to subscribe U.S. exceptionalism in the tech space. And I think it's likely to be a driver of U.S. growth and productivity in the years ahead. Another part of the global economy that's very much integrated into this tech ecosystem, and is playing a key role in the development of AI, is Emerging Asia. You've got Korea and Taiwan that generate sophisticated chips. China itself has a large tech sector. I think there's some geopolitic, political risks that we need to think about and the risk of fragmentation, that we may end up in a place where the

U.S. tech sector is evolving in one direction, and China's tech sector is evolving in another. And we may not have the same efficiencies for global technology as we would have otherwise. And I'd say that's a little bit of a cloud on this issue, but certainly Emerging Asia is a key part of the tech ecosystem as well. As are, we can find this in other countries and other parts of the world. But those are the two leading spaces, I think, at the moment.

Rob Rowe (16:54)

And Nathan, we often talk about this as the digital transformation of the global economy, and then we'll often talk about something as the digital economy, which often sounds separate from the rest of the economy. You had before alluded to the fact that the contribution of the digital economy, or we should say, what percentage of GDP is the digital transformation of the economy? And I know this is hard to quantify, but you said, you said that you expect this growth to continue. Can you give us a context for that? I mean, what do you think it's contribution to GDP is now and how much do you think it'll grow?

Nathan Sheets (17:32)

There's a lot of debate about how you define the digital economy and what should be included and whatnot. And let me start with the U.S., where we have more granular data, and then make a few comments on the rest of the world. But for the U.S., depending on exactly which measure you use, you get an estimate of the share of the digital economy. On the small side, on the narrow side, would be around 7% of U.S. GDP. On the high side, you can get estimates that would suggest up to 20% of GDP. So I think that's about in the right space. If we used traditional kind of decomposition of GDP metrics, we'd probably get something like between a half and a percentage point of U.S. growth in recent years has been associated with the digital economy. The metrics for the rest of the world are somewhat smaller than that. Asia is comparable to the United States, or in some cases, even higher, but many other parts of the world are smaller. But this could very well, in the years ahead, these kinds of numbers could very well accelerate. And another big debate amongst economists is whether as a result of GenAI, we may not have a period for productivity growth in the years ahead. That is broadly similar to what we saw during the Internet boom during the second half of the 1990s, where growth was very strong, inflation was low, and productivity — which is really the gold standard of what an economy is trying to deliver — you're able to do more with less and productivity accelerated by a percentage point a year for roughly five to seven years. There are a number of estimates. There's a range of estimates, but the center of the estimate suggests that something like that in the years ahead, I don't think it's this year or next year, but let's say in a five to ten year horizon, that something like that is possible for GenAI as well. So we may have some of that kind of productivity bounce to look forward to in a further acceleration of the effects of AI on the economy.

Rob Rowe (19:51)

So Nathan, I have to ask this, as we close. Simply put, how do you invest in the digital transformation? And I ask that question because I think most folks would say, just invest in tech. But given our discussion today, how do you look at that?

Nathan Sheets (20:08)

This was a key feature, I think, a contribution of our Must C. So we spoke with seven teams of Citi equity analysts. And we asked them that very question, Rob. We said, How do we invest in AI in your sector? And some of those analysts we talked to were very much what we would call the tech space. The hardware, the chips, the software, the Internet teams, and we got their recommendations of firms that they think are poised to be winners during the coming, say, three to five years. But we also thought really hard — and I think this may be the key to investing in the AI economy — we thought really hard about the downstream sectors. And which of them are likely to be benefited. And which firms within those sectors will feel the greatest effects, and what will that look like? And so we also have spoken to, and we include discussions in our report from our colleagues in the retail and restaurant sectors, electrical machinery, entertainment and media, and ask them for recommendations of firms that they think are likely to be winners. So you want to think hard about the tech. But I think at this stage, you also want to think hard about that second derivative, those downstream sectors that are likely to be transformed. And economic history teaches us that when we have transformative technologies like the steam engine or like the railroads, that yes, those sectors in which they occur are benefited. But ultimately, the biggest dividends are reaped by those that are affected, those sectors that are affected by the transformative technologies.

Rob Rowe (22:04)

Well, Nathan, thanks so much for being on the podcast with us today. Really appreciate your insight, and we look forward to reading the Must C on the digital transformation of the global economy. Thanks again.

Nathan Sheets (22:14)

Thanks, Rob. Very much a pleasure.

Lucy Baldwin (22:18)

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[Disclaimer] (22:43)