

Remarks on Productivity Growth and Monetary Policy

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FEDERAL RESERVE BANK *of* CHICAGO

The views expressed today are my own and not necessarily those of
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I'm often asked by the press, "What's the most important indicator that we're not talking about enough?"

I don't need to tell you that if you ask an economist a question, you will almost never get a simple answer, but here, there *is* a simple answer: productivity growth. It is probably the single biggest determinant of our standard of living.

I'm excited to talk to Allan and answer questions, but first let me start with a few points about this underrated economic indicator and what it means for monetary policy.

And before I forget, let me officially note that these are my own views and not those of the Federal Reserve System or the Federal Open Market Committee (FOMC).

If you look at productivity growth, you'll see that something weird and lovely has been happening over the past two years.

Compared with the trend of the 11 years before Covid (figure 1), productivity growth since the end of 2022 has been notably faster. The slope of the line is steeper than the previous trend.

Many thought that it was just catch-up and once things got back to that previous trend, it would slow back down. It still might, but it hasn't yet. At this point we are above where we would have expected to be if Covid had never happened.

That has economists trying to figure out what's going on and whether it will continue.

Economists have come up with four potential explanations. Three of those suggest this surge in productivity growth probably won't continue.

The first explanation is that this is mostly just a reflection of the rise of work from home. I know Nick Bloom and Steve Davis are here, and they have documented ways that work-from-home flexibility can raise productivity. There are some other more mixed results in the literature. But regardless, if an increase in work from home drove the extra boost to productivity, that would be a one-time boost to the level of productivity, not a change to the overall growth rate going forward.

The second explanation is what economists call "labor reallocation and increased match quality."

Which kind of tells you why you should never ask for messaging advice from people with PhDs in economics. But this is just the idea that before Covid people were stuck in jobs they didn't love and then the Great Resignation essentially let people rematch to do things that they are more motivated or better suited to do, and productivity went up. Even if you buy that as a driver, quit rates and other measures of job turnover are back to their pre-Covid levels, so the lovefest is probably done. This one, too, would be a one-time increase to the level of productivity, not a longer-lived change to the growth rate.

The third explanation is entrepreneurial dynamism: The number of startups each year was steady or falling for a long time, and it jumped at the start of Covid to a higher level and it hasn't gone back down.

But again, if new firms have higher productivity, this jump will show up as a one-time increase, not a sustained increase in the growth rate.

The fourth and final explanation is that this boom in productivity has been tech and AI driven.

I realize that might have been where many of you first started, but note that economists are still skeptical—mainly because there hasn't been enough adoption yet to explain why the economy-wide productivity growth rate would've increased this much.

But here's a key point, a key difference from the other three explanations: If this surge in productivity growth is the result of a new technology—whether that's AI or something else—then history shows it is possible, that this surge is not just a one-time bump. It could keep moving through the economy, industry by industry.

Now, I should have my PhD revoked if I came to Stanford to talk about the history of technology diffusion and general-purpose technologies and did not mention Paul David and the Stanford School of Innovation Economics.

Paul David was an economic historian who tracked the evolution of innovations so powerful and widespread we call them general-purpose technologies: electricity, telephones, and computers.

Take electricity. We first saw massive productivity gains, but only in the electricity generating sector itself. After some time, productivity increased in the heaviest electricity-using industries. Then, with a further lag, companies reorganized to take full advantage of electrification, and we saw gains far outside the electric sector.

You see similar productivity diffusion with the advent of computers. At first, the biggest gains were in the computer manufacturing sector. Then it spread to the sectors that used computers most heavily. Eventually, companies like Walmart incorporated information technology into their inventory management systems, and suddenly retail and other service sectors started seeing broad productivity gains.

I don't know that AI will become the next general-purpose technology. But there is at least some intriguing evidence that the productivity surge of the past two years may be technology related, so it might not have reached its limits.

Industry-leading researchers at the Federal Reserve Bank of Chicago analyzed the productivity numbers of every U.S. industry, comparing their productivity in the decade before Covid with their productivity since, ranking them according to whose productivity growth increased the most. We're talking about a list of 63 industries here (figure 2).

Again, let's remember if this surge were caused by work from home, labor reallocation, or more startups, we might expect to see broad-based, one-time-boost-type gains across many industries or concentrated in sectors with more work from home, et cetera.

But that's just not really what drove it. If you look at the industries experiencing the most significant productivity surge, seven or eight out of the top ten look tech or AI intensive (figure 3).

We're talking about things like internet publishing, e-commerce, computer system design, renting intangible assets, motion picture and sound recording, and miscellaneous professional, scientific, and technical services.

Now, of course, being associated with technology doesn't prove this is a general-purpose technology. But it could be a reason to expect continued productivity growth, rather than just a one-time jump.

That brings us to my final issue, which is that if productivity growth is not a flash in the pan, what are the implications for monetary policy? And here, I think it could cause some trade-offs in the immediate run.

On the one hand, higher productivity is fantastic for the economy—and for central banks.

It's effectively the positive supply-shock of our dreams. It allows the economy to grow and wages to rise more without triggering inflation.

And it directly recalls the lively monetary policy debate of the Greenspan Fed era. In the late '90s, as personal computers, IT, and the internet were all on the rise—and despite rapid productivity growth and concerns that overheating could cause inflation—the Fed decided not to raise rates for an extended period. Lo and behold, there was not much inflation.

Higher productivity growth gave the Fed more room to maneuver.

But since the economic actors are forward looking, it's important to balance the risks that can come from getting too far ahead of reality. For example, anticipation of the coming productivity surge could lead to a massive investment boom in AI-related businesses. And in the short run, before the productivity gains actually materialize, the economy still faces the same normal, grubby capacity constraints that it always does. If investment demand heats up too quickly, it can overheat the economy. If consumers and investors get so excited about potential future productivity booms that equity prices soar in anticipation and the surge in wealth leads to more spending, it could overheat things in the short run. These anticipatory effects can put the Fed into a tough position.

If anticipation gets too far ahead of reality, we risk relearning the lessons of 2001.

The 1990s productivity surge was real—computers and the internet investments showed up in multiple years of high productivity growth. But that excitement also led to massive run-ups in equity values and increases in internet-related capital investment. When the reality of internet growth—while still good—didn't match the hype, the investment overhang from all that expansion helped drive us into recession.

So, in summary, I'm excited by the prospect that the technologies many of you here are working on could usher in an era of rapid, lasting productivity growth.

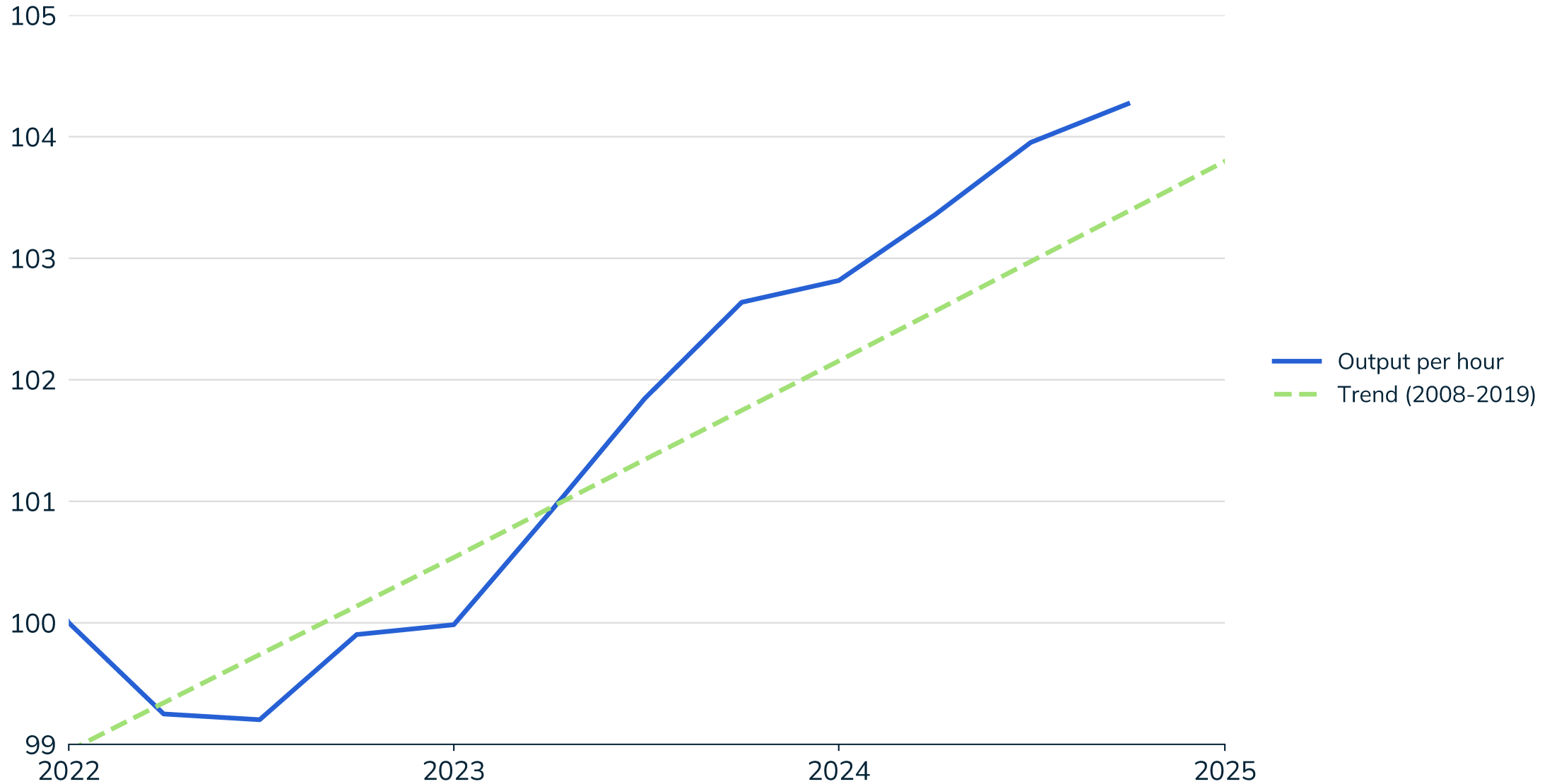
But it will not be easy to tell if this productivity surge is a blip or if it is going to be long-lasting.

As a purely statistical exercise, productivity data are so variable that it would literally take years of data before you could statistically conclude that this was not just temporary.

So, our challenge is to figure out whether there is a continued surge in productivity growth while avoiding the excessive anticipation trap. That's not easy, but I think it starts by incorporating the perspectives of industry experts, business leaders, and people on the ground because they may see things before the data can statistically prove it. At the same time, we can't throw skepticism to the wind. We need to keep our expectations grounded, so that we don't overshoot the target and fly too close to the sun.

Figure 1. Productivity: Actual and Pre-2020 Trend

Output per hour nonfarm business sector as a percent of its level in 2022Q1



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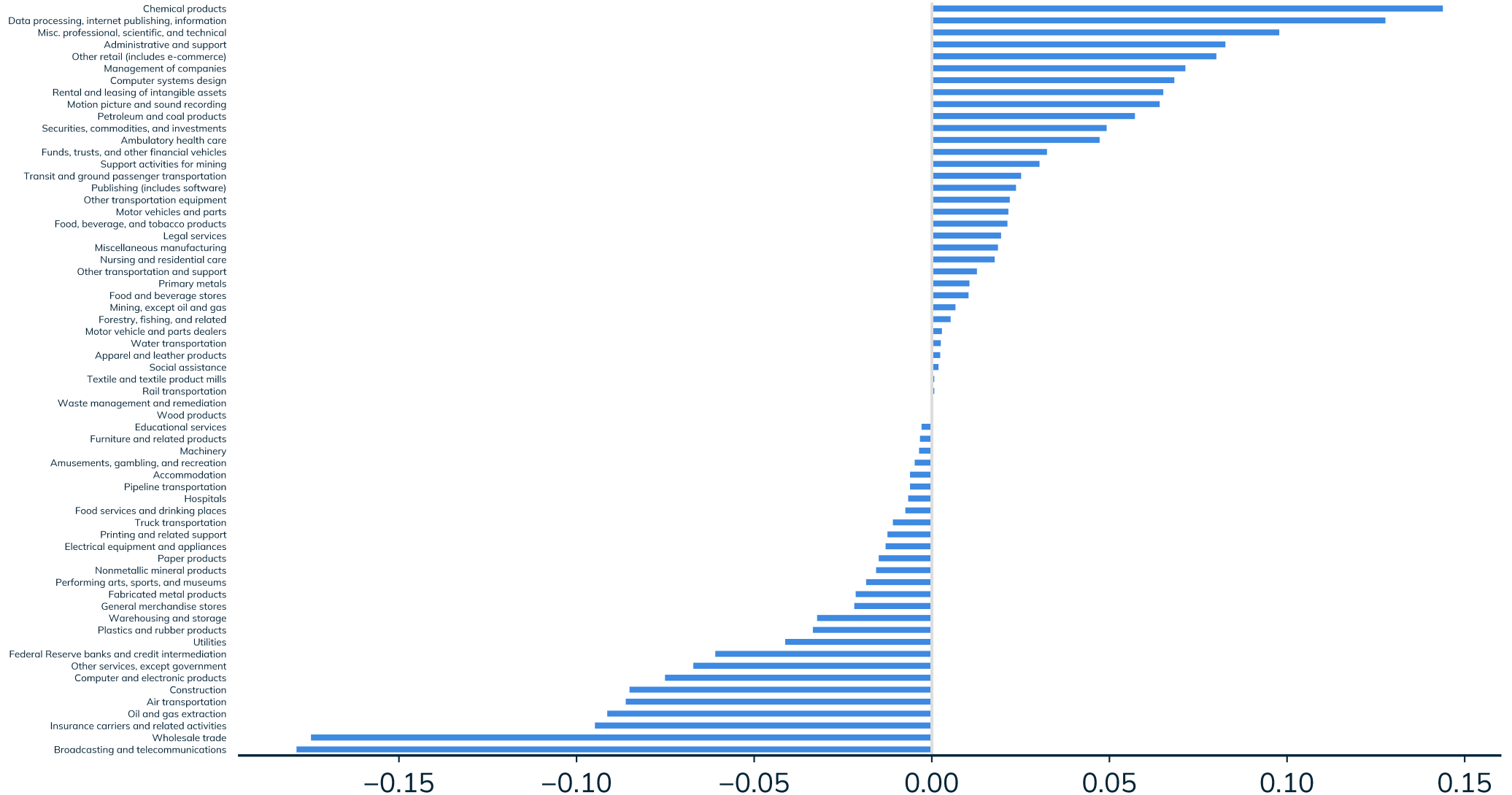
Source: Bureau of Labor Statistics, Federal Reserve Bank of Chicago calculations

Data as of February 27, 2025.



Figure 2. Change in Contribution to Productivity Growth

Between 2008-2019 vs 2020-2024Q3 (percentage point)



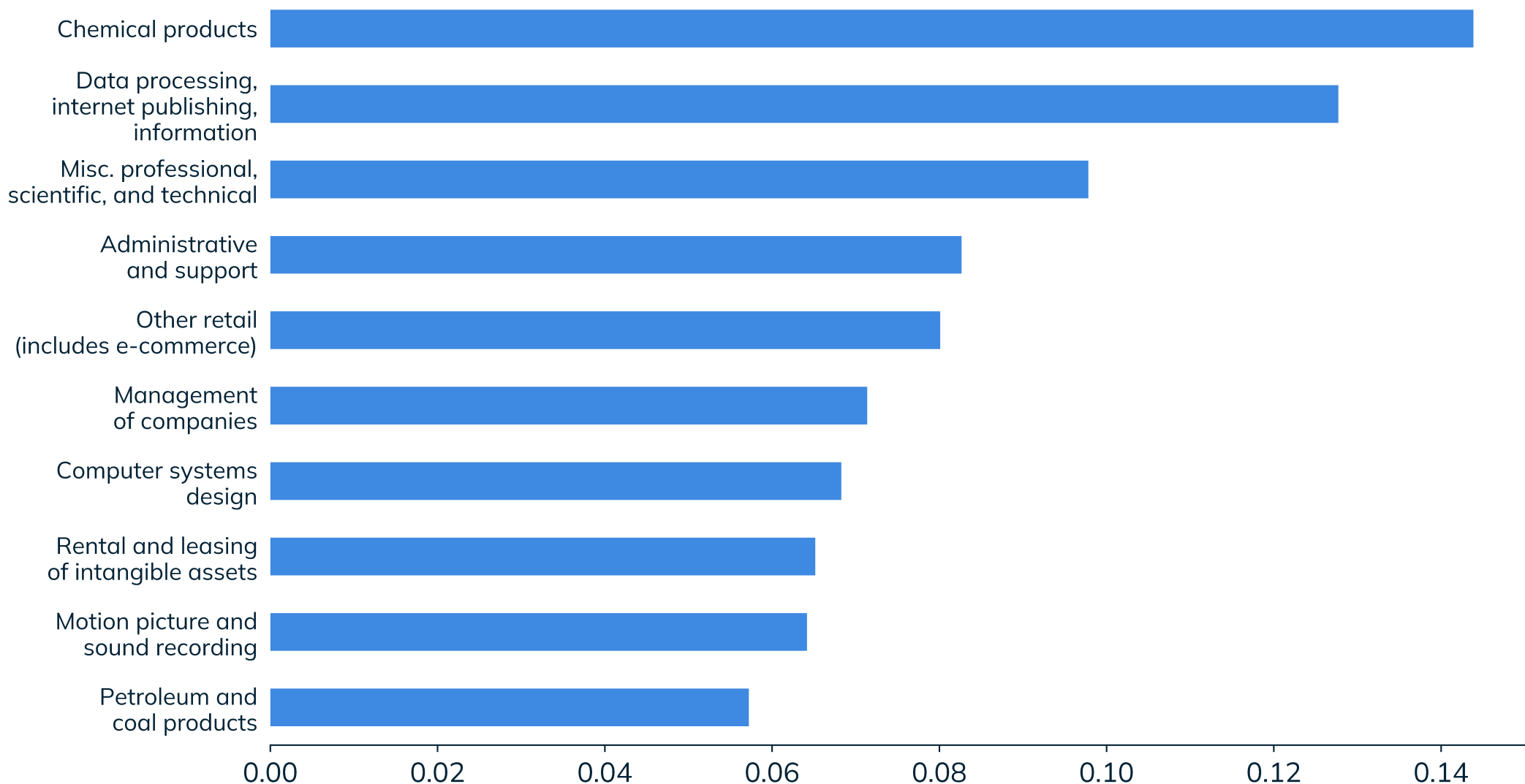
Federal Reserve Bank of Chicago

Source: Bureau of Labor Statistics, Bureau of Economic Analysis, Federal Reserve Bank of Chicago calculations
 Change in contribution to private nonfarm business productivity growth. Data as of February 27, 2025.



Figure 3. Change in Contribution to Productivity Growth: Top Ten

Between 2008-2019 vs 2020-2024Q3 (percentage point)



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Source: Bureau of Labor Statistics, Bureau of Economic Analysis, Federal Reserve Bank of Chicago calculations
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