

Economics
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US productivity: A pick-up, but beware the hype

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The US economy has seen lots of output growth in recent quarters with little hiring to show for it. Some see that combination as the dawn of a new era of productivity growth, and there's plenty of hype about the future being even brighter on that front as AI adoption builds.

But as they say, forecasting is difficult, especially about the future, and that's all the more so when it comes to where productivity is headed, when even what already happened is hard to dissect. The evidence suggests that what we've seen so far is more of a return to prior trends, helped by the adoption of conventional digital tools, after one weaker-than-usual cycle. Looking ahead, digging into the methodologies behind them, the existing studies on AI's implications generate some interesting guestimates, rather than estimates to be taken very seriously. The technology undoubtedly has immense promise, but history tells us that major technological change takes time, often decades. A pick-up in productivity seems likely, but beware of the hype.

More noise than signal in 2025 news

There are some arguing that the acceleration in labor productivity this past year could be due to the greater AI adoption. Except of course, those in charge of America's major businesses, with surveyed C-suite executives not seeing big cost savings for their companies.

True, when the data for Q4 roll in, the last three quarters of 2025 will likely show an average of close to 3% annualized growth in labor productivity, not far from the lofty trend seen during the IT boom in the late 1990s and early 2000s.

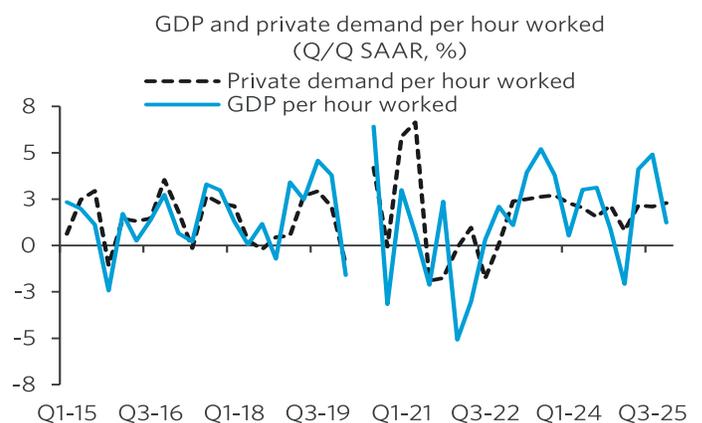
But given the volatility and unavoidable measurement errors inherent in tracking both real GDP and hours worked, a few quarters is too short of a span to mark a trend, particularly given the sharp swings in GDP and its components in the past year. GDP looked strong in the middle part of the year, but that was due to shifts in net trade and inventories as the economy adapted to the administration's new approach to trade policy, a

pattern likely to continue after the Supreme Court ruling earlier this month.

Stripping out those components reveals a more stable and likely representative underlying measure of productivity, private demand per hour worked (Chart 1) which has hovered closely around 2% while labor productivity — non-farm GDP per hour worked — has fluctuated widely. Outside of major shocks, private demand per hour tracks GDP per hour worked fairly closely.

A better litmus test of whether AI is driving productivity to new heights is total factor productivity, which compares how much output is generated from both capital and labor inputs. After all, capital inputs aren't free, requiring the economy to defer current consumption, or rely on funding from abroad that needs to be paid a return on investment. The SF Fed's estimate of TFP

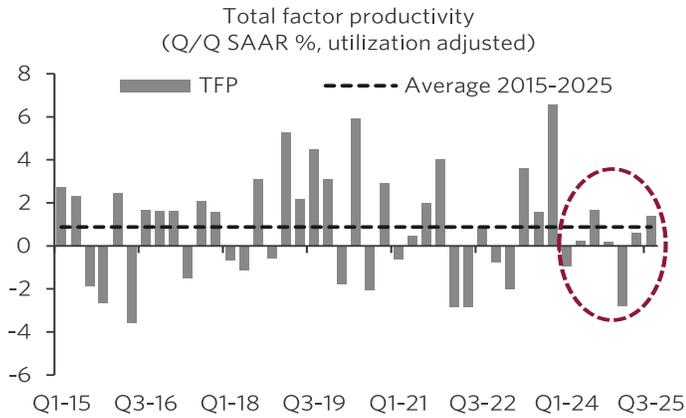
Chart 1: Labor productivity has been noisy due to trade and inventories



Source: BEA, BLS, CIBC calculations

Note: 20Q2 values omitted.

Chart 2: Since AI chatbots came on the scene, total factor productivity growth has been average at best



Source: SF Fed

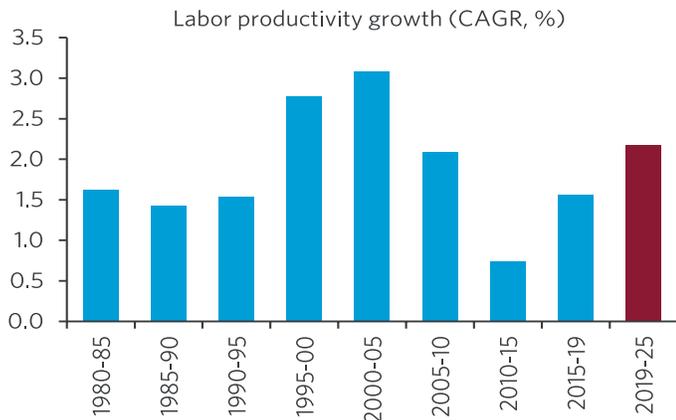
growth has looked average at best since late 2024 when AI chatbots first came on the scene (Chart 2).

After accounting for the surge in investment and the changes in labor input, we're not producing much extra output for all of those costly inputs. In fact, TFP growth has slowed since 2023. Admittedly, quarterly changes in TFP growth are noisy, but it's not clear that there is any signal here either.

The boring digital stuff

While it's difficult to conclude that the very recent data point to a further sustained uptick in productivity, or capture the fruits of AI, looking over this full cycle still suggests that productivity has improved over what we saw in the cycle that ended with the pandemic (Chart 3). Since the start of 2019, productivity growth has returned to about a 2% annualized pace, compared to about 1% growth in the decade following the financial crisis.

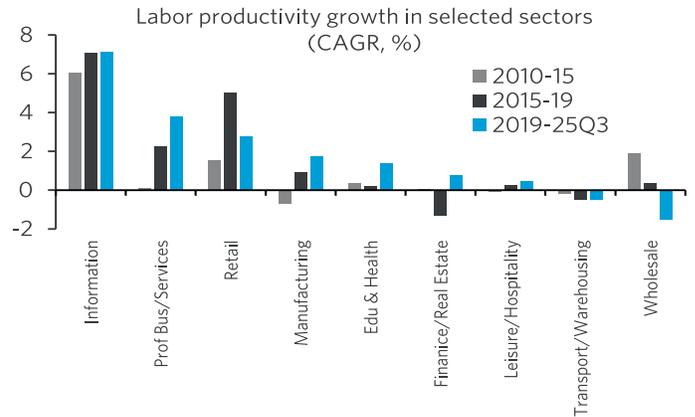
Chart 3: Underlying productivity growth may not be off the charts, but its picked up after a decade being below average



Source: BEA, CIBC calculations

Note: Due to compositional distortions in 2020, we end and begin the last two periods in 2019.

Chart 4: Knowledge-based services are driving in productivity growth

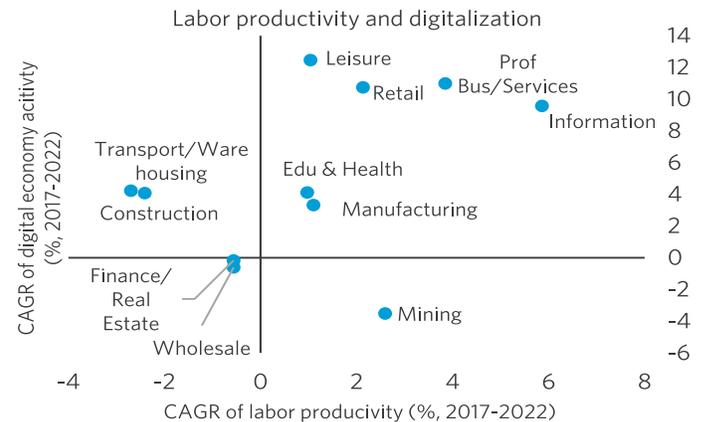


Source: BEA, BLS, CIBC calculations

While that's good news, it's really more of a return to normalcy after what was an unusually weak business cycle for labor productivity after 2010. Looking under the hood across sectors, what appears to be driving this is a shift toward firming productivity in the service sector that suffered immensely in the aftermath of the financial crisis, and the productivity rates over that period now look atypical (Chart 4).

This improvement does incorporate some important innovations, but the data suggests that rather than the shiny new objects of AI software, the drivers are more mundane digital innovations that pre-date AI. The BEA has a measure for the footprint of digital economy that captures digital infrastructure (hardware, software), e-commerce, and digital services (cloud computing, telecommunications). The latest assessment by the BEA in late 2023 showed the digital economy grew by an average annual pace of 7% from 2017 to 2022, or about 3x faster than the economy as a whole.

Chart 5: Underlying improvement in productivity might reflect an increase in digitalization that is unrelated to AI



Source: BEA, CIBC calculations

Sectors that saw some of the fastest growth in digitalization also have seen the most rapid growth in labor productivity (Chart 5). These investments could be finally paying off for businesses and firms, after a long period of experimentation, enterprise development, new business models and shifting customer preferences.

We've seen significant improvements and usability in technologies like check-out counters, apps for e-commerce, cloud computing and storage, booking services, project management software, warehouse robotics, and more. The cumulative effect of these wide-ranging digital innovations could be stacking up as the silent driver of today's productivity. In sum, it's what Americans are now doing on their cell phones, and what businesses are doing with their conventional software applications, that are behind this cycle's better trend growth in output per hour.

What to expect from AI?

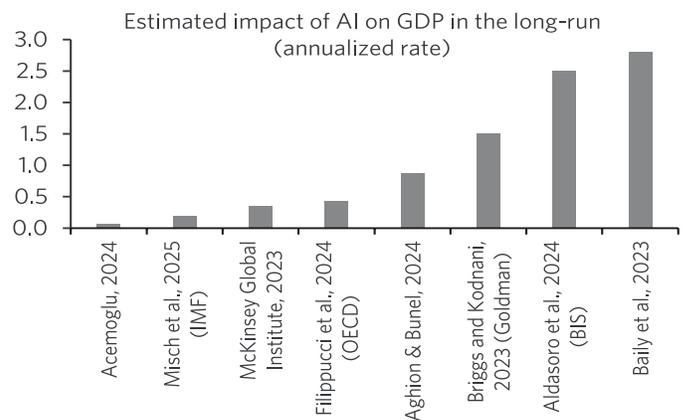
While AI may not be driving productivity today, it's clearly been seen as an important innovation that will support economic growth ahead. The massive capital spending behind the roll out of AI represents a big bet on its ability to increase labor productivity. But total factor productivity also matters even more. Replacing workers with software will only generate an adequate investment return if the capital and electric power inputs required don't swamp the labor cost savings. Gains are clearly coming, but the big question is when, and by how much.

Some are looking to the past, zeroing in on periods of major technological change. History may not repeat itself, but it rhymes. At the dawn of new technologies, there were forecasts that were notoriously far too pessimistic, including the 1977 prediction by the CEO of a major computer company, looking at the professional minicomputers available back then, that nobody would ever want a computer in their home.

On the other side of the ledger, jet packs for commuters, fusion power just around the corner, and colonies on the moon, were among the visions that never came to be. AI seems far enough along that this sort of big miss seems unlikely, but that might be the case for Artificial General Intelligence (AGI) which has yet to be realized. Other breakthrough technologies, including plain paper fax machines, word processors, and Palm Pilots, flamed out because they were supplanted by desktop computers, and cell phones. Some AI experts see risks that large language models might be surpassed by other approaches to AI, particularly when aiming for something closer to the holy grail of AGI.

In many cases, new technologies took a lot longer than expected to show up in the productivity data. Witness Nobel economist Robert Solow's famous 1987 statement that computers were everywhere except in the productivity statistics. The reality was that a standalone computer on one's desk replaced a secretary with a word processor and was quicker than a calculator, but didn't do much for productivity until businesses hooked up to the internet in the mid-90s. And it was many years between the launch of the internet and

Chart 6: Estimates of the impact of AI are all over the place



the applications and bandwidth needed for online banking, streaming videos, online shopping, video conferencing and other uses.

As a result, history suggests taking forecasts for productivity gains from AI in the next few years with a healthy grain of salt. Our review of the literature underscores that caution. There are only a few available studies of economy-wide productivity gains which are then cited by others. The optimists come up with estimates in the range of a 1-2%-point boost to annual productivity growth, an astronomical achievement that would push up the US growth path miles above its projected 2% trend if sustained.

But how well grounded are such figures? The huge range of estimates for the GDP lift ahead (Chart 6) is a warning sign that these estimates are more like guestimates, or perhaps mere guesses disguised by some fancy math or statistical analysis that's plagued by a lack of actual data.

Lacking hard data, some of these studies (see for example Goldman Sachs, 2023; Bailey et al., 2023) cite the share of workers in different sectors that AI tools might help with, and then assume their productivity gains will be equivalent to the small number of tasks for which microeconomic research has actually observed such gains. The risk here is that the tasks with the largest AI benefits are also those at which AI has been initially deployed, helping coding, customer service agents, and other functions with a higher degree of repetition. Other studies merely take these estimates as a given in modelling the broader economic implications (Aldasoro et al., 2024).

Much larger benefits, including not just speeding up work but the wholesale replacement of workers with AI tools, are ascribed to the achievement of AGI. But when, if ever, LLMs can hit that milestone is a much debated topic among experts in the field (see, for example, the skeptical view of AI expert Gary Marcus at NYU).

Finally, for AI to achieve these economy-wide labour savings, it has to be cost effective. The early results aren't that

encouraging, with a 2025 MIT study finding that 95% of the 300 firms in their sample failed to achieve any P&L benefit from their AI pilot programs. So at a minimum there's work to do to help adopting workplaces better to integrate AI tools.

Total factor productivity, rather than just labour output per hour, is the right benchmark when thinking about economic returns, because you need to get more output from all of the inputs, including capital equipment and power usage. Given how much money is being poured into data centres, power plants, computer chips, and software, that bar is much higher. What if the costs of these tools to the economy exceed the labor savings? Can we expand the supply of computer chips to meet demand? Are we going to divert workers away from sectors where labor is harder to automate, raising costs in these other parts of the economy? Generating a large TFP gain from AI depends critically on the economy's ability to overcome these weak links and bottlenecks. And that's no easy task.

Our conclusion is that it's simply too soon to have a firm view of what AI will mean for productivity. Your guess is as good as ours. But history does suggest that the full flourishing of a new technology takes time to show up. As a result, we're not building in a sea change in productivity in our forecasts for 2026/27.

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