

The AI Moment? Possibilities, Productivity, and Policy

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AI adoption and use are still evolving, and the technology itself is changing rapidly. What we know about AI and its impact on productivity growth and the economy remains uncertain. Transformations take time. We need to look for early indicators in the data and in business to get monetary policy right. The following is adapted from remarks by the president of the Federal Reserve Bank of San Francisco to the Silicon Valley Leadership Group and San Jose State University in San Jose, California, on February 17.

Today, I'm going to talk about artificial intelligence (AI). Now standing here in Silicon Valley, many of you might find AI exciting, full of promise and possibility. For others, it may feel more worrisome, a potential disrupter to lives, livelihoods, and what it means to be human (see, for example, Kennedy et al. 2025 and Lange and Alper 2025).

This is not surprising. People also had mixed feelings about electricity and the automobile, with some fearing them as dangerous, supernatural, even evil, while others imagined their potential, quickly adopting the novelty of driving or using electricity in their homes (for example, see Sullivan 1995 and Norton 2008). Irrespective of where they stood, almost everyone wondered how these technologies would change the role of humans in the world.

But knowledge gives us power—to separate facts from fears, speculation from reality, and worst-case scenarios from more likely outcomes. And this is my topic for today. What we know about AI, what remains uncertain, and how monetary policy should respond in the near term and the longer run.

Transformations take time

Let me start with a simple maxim—transformations take time. Think about electrification. Sitting here with lights, computers, and fully electric vehicles, it's easy to imagine it just happened with the flip of a switch. The truth is, it took nearly 100 years to move from Michael Faraday's and Joseph Henry's generation of the electric current in the 1830s to electricity boosting productivity growth and transforming the economy (see Al-Khalili 2015, Du Boff 1967, and Devine 1983).

The evolution is instructive (Figure 1). The figure shows the timeline of electric innovation and productivity growth in the United States. Many things had to happen to turn Faraday’s discoveries into practical applications. Innovators had to develop the light bulb, the electric motor, and the electric unit drive. Builders had to lay out the electrical grid, install transmission lines, and ensure sufficient access for households and businesses to make electricity a worthwhile investment (for example, see Devine 1983, Du Boff 1967, and David 1990).

And this was just the beginning. To create sustained gains in productivity growth associated with general-purpose technologies (GPT), the very essence of work had to change. Production had to be redesigned, factory floors reengineered, and workforces retrained (see Devine 1983). Firms had to shed the constraints of the previous steam-powered world and reimagine business in an era of electricity.

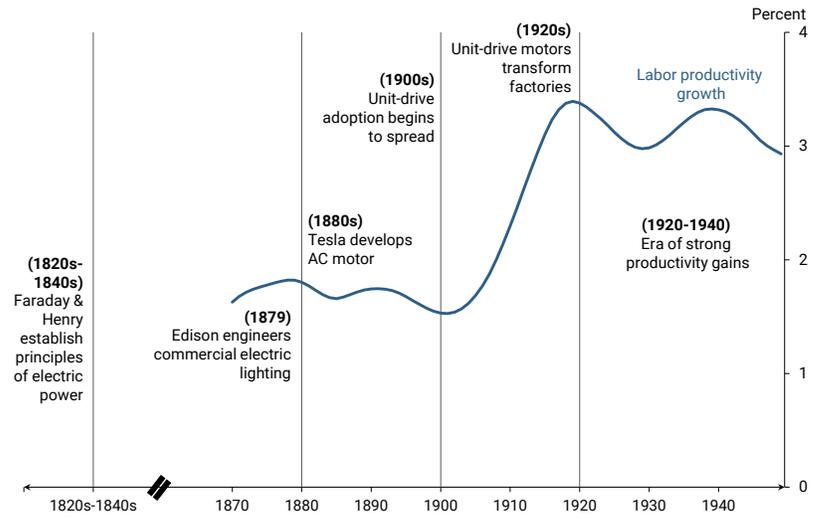
The scale of change was enormous, and it took time.

Is AI different?

The question is, should we expect a similar long period of access, adoption, learning, and transformation for AI? Maybe, but we are already well into it. The origins of AI date back to the 1940s and ’50s, and it has evolved much like electricity did (Figure 2).

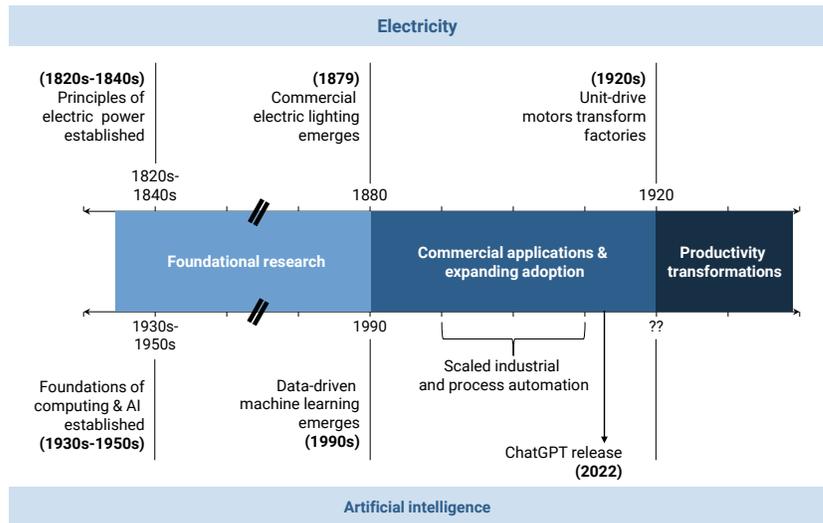
AI began with foundational research on neural networks and thinking machines. It was soon recognized as a field of study. (For a detailed history, see Nilsson 2009 and Stanford’s One Hundred Year Study

Figure 1
Key electricity innovations and U.S. labor productivity growth



Note: Productivity growth shown as the filtered year-on-year change in output per hours worked based on data collected by Bergeaud, Cetto, and Lecat (2016) and made available through the Long-Term Productivity project. The growth trend is obtained using a Hodrick-Prescott filter with a coefficient of 1000, in line with the approach in Bergeaud (2024).

Figure 2
Parallel timelines of AI and electricity innovations



of Artificial Intelligence by Littman et al. 2021.) Then came the experiments, use cases, and eventually applications like applied machine learning and robotic processing. These demonstrated AI's value but fell short of creating sustained gains in productivity growth. (This is consistent with recent analysis by Fernald et al. 2024, Foerster 2024, and Kahn and Rich 2026.)

Then in 2022, again nearly 70 years from AI's beginnings, ChatGPT and other large language models, with natural language processing, became available to anyone who wanted to use them. (For earlier examples of key innovations, see He, Cao, and Tan 2025.) Their accessible and humanlike interface encouraged people to try them and made businesses want to harness their capabilities (see, for example, Bick, Blandin, and Deming 2025 and McKinsey 2025). Their arrival signaled a major change in AI technology and access.

The change was dramatic. We heard this in our business and community outreach. In addition to longstanding outreach to businesses and communities, the San Francisco Fed and the Federal Reserve System Innovation Office launched the [EmergingTech Economic Research Network \(EERN\)](#) in 2024 to support a better understanding of how new technologies like generative AI (GenAI) are shaping the economies of today and the future. And we experienced it with our own employees. AI went from science and sci-fi to everyday work and conversation.

We now know that this surge moment was more than simple enthusiasm. Excitement has turned into real investments. Businesses of all sizes are working to leverage AI. Around the Twelfth Federal Reserve District—the nine states in the West—we've heard about firms using AI for consumer research, back-office operations, sales, and product development, saving time and money. Some examples include using AI to research and develop new crop varieties in agriculture, help scale tasks more effectively in IT and finance, and automate important but time-consuming routine tasks in the health-care profession. (For more insights on how our business contacts are utilizing AI, see, for example, Federal Reserve Bank of San Francisco 2024, 2025a,b and 2026.) Research case studies find similar results—cost-savings when firms use AI to automate—in everything from call centers, software development, and financial management, to marketing and even health care (see Imas 2026 and Sukharevsky et al. 2025).

As Figure 2 shows, commercial applications and expanding adoption are critical steps for AI to produce more systematic increases in productivity growth.

The question is: Will it be enough? Is GenAI a sufficient catalyst to change the nature of production and business?

From possible to transformative

The truth is, no one's sure. It is easy to see the possibilities but harder to know when and how they will evolve.

So far, most macro-studies of productivity growth find limited evidence of a significant AI effect (see, for example, Imas 2026, Acemoglu 2025, and Aghion and Bunel 2024.) Even firms that say it's useful find little evidence of transformative gains (see, for example, Yotzov et al. 2026 and McKinsey 2025). Some of this

could be timing. AI adoption and use are still evolving, so it may be too soon to see results in aggregate measures. AI technology is also changing rapidly. So, firms could be focused on acquiring and learning new tools, like agentic AI, rather than rethinking business.

But it could also be that we are simply not there yet. That while GenAI and related applications are useful, they are not the innovation that spurs broad-based reorganization of the economy.

Take the financial sector. Several firms have reported using AI in the loan application process (see Ng 2026 and Board of Governors 2025a,b,c.) Uses range from initial document review to checking the final application. While automating these steps saves time and money, it falls short of transforming the overall process. It is analogous to replacing a steam-powered motor with an electric one but leaving the factory floor unchanged—good progress but not transformative.

So, what will that take? Likely, something you don't expect.

The factors that made electricity a general-purpose technology were not solely technologies, but ideas. Innovative firms used imagination and creativity to start fresh and build a world shaped by electricity, rather than leverage electricity in a steam-powered world.

The same path is likely to hold for AI. Technology will enable, but ideas will determine when it transforms.

Monetary policy in a time of transformation

And this brings me to monetary policy and how we should think about AI as we work to achieve full employment and price stability, our congressionally mandated goals. Fortunately, this is not the first time the Federal Open Market Committee (FOMC) has had to manage policy in a time of transformation.

In fact, I began my career at the San Francisco Fed during a similar period. It was the mid-1990s—the beginning of the computer and internet revolution. Businesses were ramping up investment in information technology equipment and software to take advantage of these emerging technologies, but there was little impact on official measures of U.S. productivity growth. (As Anderson and Kliesen 2006 point out, incoming data during 1995 and 1996 were not signaling an increase in labor productivity growth. Subsequent data revisions showed that productivity began accelerating before 1995.) At the same time, FOMC policymakers were concerned about elevated inflation and a tightening labor market. Standard macro models and monetary policy thinking suggested interest rates should rise to ward off overheating in the labor market and a more significant run-up in inflation.

Then Fed Chair Alan Greenspan offered a different view. He distrusted the official productivity numbers, finding them at odds with the surge in information technology investment we were seeing. He posited that the burgeoning computer revolution would spur sustained productivity growth, allowing the economy to grow faster without putting upward pressure on prices (see Board of Governors 1996). In this scenario, the economy would not need to be bridled, and interest rates would not need to increase.

He found evidence for this possibility in the disaggregated micro data, including what he was hearing from executives. And there he saw considerable possibilities. Wholesale and retail firms were using inventory management systems to reduce warehouse stockpiling. Trucking companies were leveraging GPS to reduce deadhead hauling. Manufacturing firms were using computer-assisted designs to do mass customization and reduce waste.

We asked the same questions at the San Francisco Fed. We talked to firms and walked factory floors, looking for evidence that computers and software were making a difference. We found numerous examples. But we also discovered something bigger and more significant. Businesses were asking questions about how they could fundamentally alter the way they produced goods and services. Their focus was on factory design and business process, with computers and software at the foundation. This looked like the pattern with electricity, and it began to deliver sustained gains in output, revenue, and longer-run profitability.

Policymakers took this information and debated whether and when these micro examples could lead to the type of economy-wide productivity growth that Greenspan considered (see Board of Governors 1997 and Greenspan 1999). In the end, the FOMC remained patient on policy and the roaring '90s followed, with a strong labor market and sustained growth (see Fernald 2015). (As Frankel and Orszag 2001 and Mankiw 2001 highlight, there were other factors behind the strong economic performance in the 1990s, including deregulation, globalization, and stable food and energy prices in global markets. For more information on policymakers' actions in the 1990s and the conditions that supported the roaring '90s, see Daly 2025 and Blinder and Yellen 2001.)

So, what do these lessons teach us about monetary policy today? First, we won't find all the answers in the aggregate data on productivity, the labor market, or inflation. Seeing developments before they fully emerge requires digging deeper, relying on disaggregated information that foreshadows transformation. Second, there is no matrix that tells us exactly what data to follow at any moment in time. Greenspan's innovation wasn't looking at more data; it was looking at the right data—finding inconsistencies in what he saw and working to resolve them. Third, talking to businesses matters. Businesses invest, experiment, and learn long before we see it in aggregate productivity data. Incorporating this information and seeing how it supports or negates what we expect is essential to making appropriate policy decisions.

In the end, it wasn't just good luck that allowed Greenspan to navigate the 1990s, it was also good practice. The willingness to listen to businesses, hear their ideas, use data and evidence to test them, and invite others to do the same.

Turning back to today, none of this is a playbook for managing the economy and AI, but it is a foundation. It is a reminder that monetary policy is a forward-looking business. To get it right, we must be grounded in what we see and open-minded to what's possible. The willingness to confront what we know and what we don't is essential to making appropriate and durable policy that serves all Americans.

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