

BY ANNA KOVNER

Is AI Taking Over?

Artificial intelligence (AI) is taking over — at least in the popular press, the equity market, podcasts, and, increasingly, economics research. Richmond Fed economists are no exception, with many of my colleagues studying AI adoption and its implications for productivity and the economy. In this column, I'll take stock of what we know, what we can forecast from theory, what we can extrapolate, and the implications. In 1980, economist Julian Simon famously bet against biologist Paul Ehrlich in favor of human innovation over resource depletion and won. Will AI be the innovation that creates so much abundance that scarcity is irrelevant? Or will innovation make human contributions obsolete?

First, what do we know? AI adoption is already widespread among firms and associated with measurable labor productivity gains, yet evidence that it is disrupting employment is more limited. In 2025, the Richmond Fed, together with the Atlanta Fed and Duke University's Fuqua School of Business, surveyed more than 700 corporate executives across a wide range of sectors, geographies, and firm sizes. Eighty percent of large firms and around half of small firms reported investing in AI, and they expect those investments to continue growing. The motivation for this investment is rarely to put people out of work. Rather, executives cite improving production efficiency, enhancing decision-making speed, and strengthening output as both their motivations for investing in AI and the areas where the largest AI benefits have been realized.

Second, what can we forecast from economic theory? Theories estimating the impact of AI on U.S. productivity growth tend to look at different occupations and the extent to which their tasks can be replaced with or automated by AI. Then these occupations are weighted by output or wages and added up. This gives rise to estimates of productivity growth ranging from 0.5 percent to 1.5 percent. These results depend on differing assumptions about the speed of and cost savings from adoption, among other factors. A key difference from past general-purpose technologies is AI's potentially disruptive impact on higher wage, college-educated workers.

Third, what can we extrapolate? Experience suggests that technology can automate some tasks, but it doesn't eliminate jobs immediately. For example, consider ATMs, which automated routine cash handling tasks, or check sorting machines, which automated check processing. At first, bank

teller employment grew after these inventions lowered bank branch costs and enabled expansion. It took the emergence of mobile banking to reduce branch tellers.

Generative AI has early adoption patterns like personal computers, which may have reduced the number of stenographers but exponentially grew the number of memos. Research that looks at AI's impact on tasks finds larger productivity benefits for less experienced and lower-skilled workers. The ultimate impact will depend on the extent to which AI substitutes for more educated workers rather than enhances their productivity — and we are too early into AI adoption to do more than speculate.

For now, it seems likely that AI will reshape jobs rather than eliminate them. AI is unlikely to perform all job tasks, even in occupations exposed to AI. Yet we cannot be complacent. Transformative technologies always have winners and losers, and one lesson of trade liberalization was that some workers proved less adaptive and were unable to replace high-quality jobs.

One risk often left out from these analyses is the potential productivity destruction from AI used for cyberattacks or other malicious purposes. To the extent that AI lowers the costs for nuisance attacks, this may detract from the productivity gains estimated.

A final topic of particular interest for the Fed is AI's impact on inflation. In the short run, red-hot demand for AI could increase inflation through higher demand for scarce resources such as computer chips, construction inputs, and electricity. In the long run, if AI results in increased productivity, prices should fall as lower production costs and improved resource allocation (not to mention labor-saving innovation) reduce marginal costs.

On the other hand, if AI is used to better estimate demand and adjust prices accordingly, firms with pricing power may use it to achieve higher markups, making its impact inflationary. A recent study found that the share of job vacancies that mention AI and pricing rose more than tenfold from 2010 to 2024. Appropriate monetary policy will require careful research to disentangle inflationary demand for scarce inputs and productivity gains, not to mention anticipatory demand from higher productivity expectations. **EF**

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