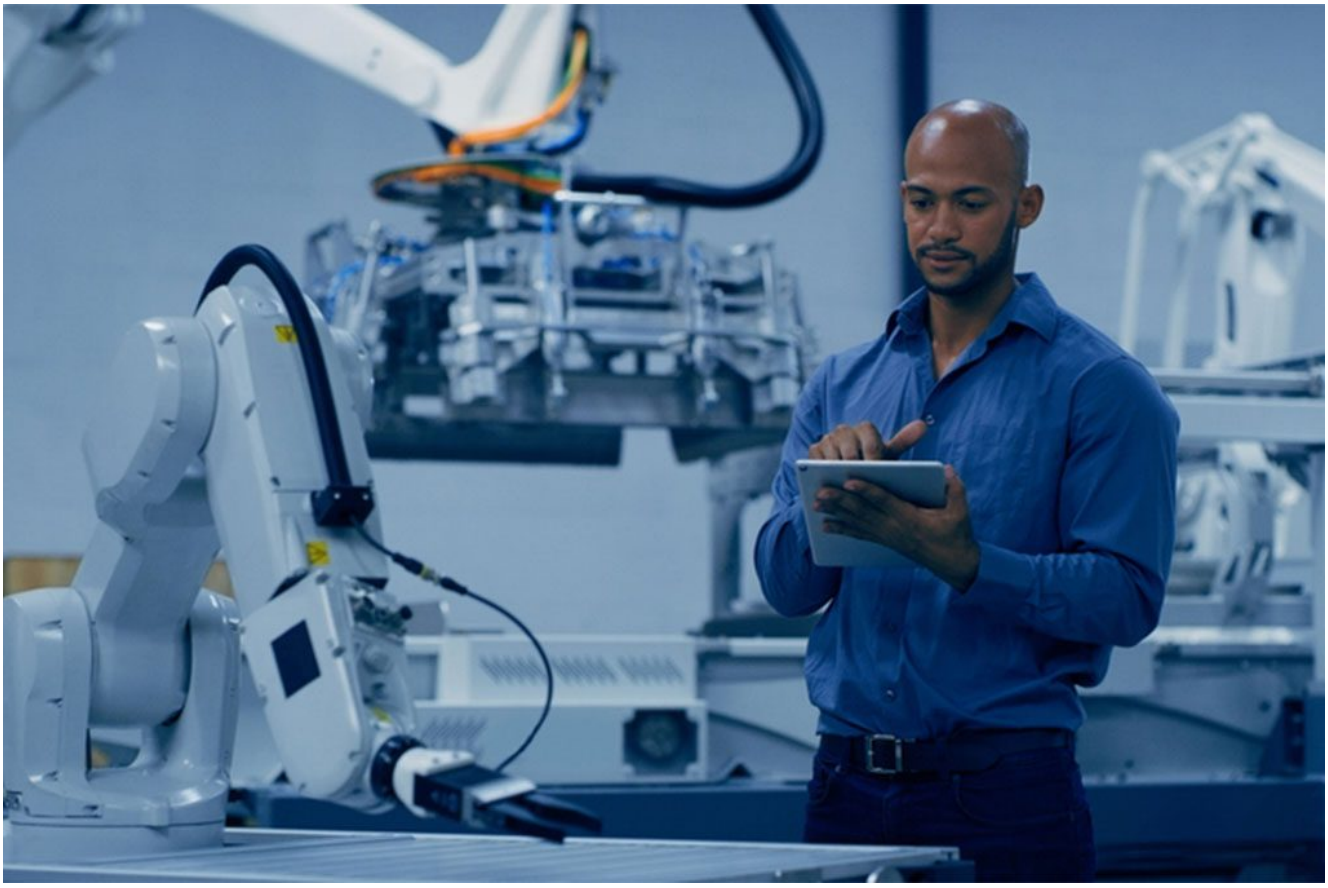
Job maker or job taker? How artificial intelligence is defying the doomsayers

Here is what is needed to harness the full potential of artificial intelligence. Act now or get left behind.



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By Philippe Aghion

Joint winner of the Nobel Prize in Economic Sciences 2025

Artificial intelligence (AI) is an unavoidable technological revolution. And like any revolution, its impact on the economy, employment, public services, the environment, information, culture and society will be immense, both now and even more so in the future. This fact alone should inspire neither excessive pessimism nor excessive optimism. Instead, it should inspire companies and governments to mobilize their collective resources to accelerate the adoption and deployment of AI in ways that serve individual and societal needs based on shared values and principles.

This was the message of a report I co-authored with Anne Bouverot, board chair of École Normale Supérieure (ENS), for the French Government's AI Commission.

AI: Our Ambition for France made 25 key recommendations to ensure France — and Europe — step up investments in training, innovation, computing power, data access and R&D so as not to miss out on the opportunities of the AI revolution. This informed the AI Action Summit held in Paris in February 2025.

Here, I summarize my own research perspective on AI and share some of the recommendations that demand our immediate attention if we are to stay in the game and help shape AI's future direction.

For the purposes of this article, I will focus my comments on employment, productivity and growth — areas where I am cautiously optimistic that AI has positive potential, but it requires appropriate policies for it to succeed.

Should we fear AI?

There exists in the popular imagination the fear that AI is going to replace all our jobs, amplified by a highly cited 2013 paper by Frey and Osborne that ominously predicted 47% of total U.S. employment was at risk of being replaced by computerization within the next 10-20 years. That has not happened.

My own research challenges the view that AI robotization or automation is bad for employment. Instead, I argue that AI has considerable potential to generate employment and productivity.

In a joint paper with Ben Jones and Chad Jones, we modeled AI's ability to automate tasks. When you automate the production of goods and services, you replace labor with physical capital, i.e., more machines. But that's only one side of it. AI doesn't just facilitate the

production of goods and services. We considered how it also facilitates the production of ideas through its ability to imitate, learn and become self-improving. This can lead to more labor productivity without any more physical capital, and a high number of human jobs can be automated without changing the labor share.

This is in line with a famous economic insight from Baumol that, even in sectors like manufacturing or agriculture that have gotten highly automated over time, the labor share remains substantial because “growth is determined not by what we are good at but rather by what is essential and yet hard to improve.”

So, even if automation keeps pushing ahead, our modeling shows a constant and positive labor share for essential tasks that remain hard to improve without continued human input.

To this point, Erik Brynjolfsson and co-authors performed a micro analysis that illustrates the empowering effects of AI on labor. They looked at a U.S.-based Fortune 500 company that employed customer support agents in the Philippines. The company rolled out a generative AI tool with these agents to assist them with answering customer queries via chat windows. Of the 5,179 agents studied, some had access to the AI tool while others didn’t, so the authors could compare each group’s productivity.

They found that the number of issues resolved per hour by agents using the AI tool went up by around 14%. Also, the customers helped by AI-assisted agents came away satisfied and were less likely to ask for the help of a supervisor compared with the agents not using AI.

But here’s the other really interesting piece: Among the less experienced, lower skilled agents, they saw productivity gains of 35%.

When people speak about AI and employment, they often raise the specter of it aggravating inequality. It may be true that, because of AI, companies seek to hire more high-skilled workers over low-skilled ones, and these hiring preferences might perpetuate inequality.

Yet the Brynjolfsson study offers a riposte to that. There, the AI actually helped the newer hires and the lower performers get up to speed faster, and the less experienced workers ended up becoming even more productive than their experienced counterparts.

This is the remarkable feature of generative AI: it mimics the actions of the best performers, so even those initially less productive can lift their performance to match or exceed the top employees.

Scale effects: more automation creates more employment

In other research with Celine Antonin (Sciences Po), Simon Bunel (Banque de France) and Xavier Jaravel (London School of Economics), we compared employment in two identical firms in France — one that automated and one that didn't — and found the firm that automated created more employment.

You might think that's paradoxical, given that automation means replacing people with machines. However, you have to realize that firms that automate become more productive: they produce cheaper and/or better quality for the same cost, and as demand for that cheaper/better product goes up, they increase their market size, leading them to hire more employees.

We see this dynamic consistently. When you automate sales, your sales go up, and that leads to more employment. This is why I am against the idea of taxing robots, because putting a tax burden on a firm for becoming more productive is essentially inhibiting employment.

We're now repeating our French study in Denmark, comparing firms that adopt AI with similar firms that don't. Again, we're finding a positive effect of AI on employment for exactly the same reasons.

Admittedly, the employment effect is not uniform across all types of jobs and professions. For any job, it's important to decompose the tasks and analyze which ones have a small, medium or high risk of replacement by AI.

What's interesting is that, so far, many managerial tasks seem to be at low risk of replacement, and those tasks that can be replaced are usually the more mundane ones, freeing up managers' time for more creative, higher level tasks. For managers, this is good news.

For others, like administrative assistants or legal secretaries, AI adoption may not create more employment, yet this is not to say those jobs will disappear entirely. Rather, certain tasks within those jobs will become redundant and you may have to rethink the job a bit.

In the same way as more automation can increase employment because you have a higher demand for your product and therefore you employ more of it, we generally find most employment skills are benefiting because of these scale effects.

This is an important distinction. AI may put certain tasks at risk but not generate mass unemployment, despite the fearmongering.

It has been the same throughout history, going back to the 19th century Luddite movement involving English factory workers who resisted and sabotaged the machines they feared would put them all out of work. As with other technological disruptions, people's fears are often worse than the reality.

Economic productivity and growth

Now let's turn to talk about AI's potential for economic productivity and growth.

MIT economist Daron Acemoglu recently published a paper in which he estimated that the macroeconomic gains as a result of AI will be modest, with GDP increasing between 1.1% and 1.6% over the next 10 years and an annual gain in productivity of roughly 0.05%. He makes AI's impact seem much less revolutionary than it is touted to be.

However, Aidan Toner-Rodgers, also at MIT, contemplated other AI scenarios and found potentially much bigger gains. He studied the introduction of an AI tool in a U.S. R&D lab to partially automate the usual trial-and-error process that scientists go through for materials discovery. He found that AI-assisted researchers discovered 44% more materials, resulting in a 39% increase in patent filings, a 17% rise in downstream product innovation and a 13%-15% boost in R&D efficiency.

Granted, this is a micro-level proof. The question is whether we can extrapolate such findings to make broader claims about AI's benefits. We could, for example, compare the growth trajectories of other technological revolutions, like the electricity wave of the 1920s in Europe or the digital technology wave of the late 1990s and early 2000s in the United States.

Simon Bunel, an economist at Banque de France, and I did exactly that in a recent paper. Using these two historical comparables, we calculated that productivity growth by AI would increase by anywhere from 0.8 percentage points per year (following the pattern of ITC) to 1.3 percentage points per year (following the pattern of electricity). Both trajectories are within the ballpark of Acemoglu's "modest" gains — and I wouldn't characterize the impact of those other tech revolutions as "modest."

We must assume a time lag between when the technology is introduced and when its true impact is felt in terms of reorganized work processes and radical, systemic change.

Bearing in mind the earlier observation — that AI automates tasks not only in the production of goods and services but also in the production of ideas — I would argue it is still too early to quantify the real magnitude of AI's impact on economic productivity and growth.

Again, using a historical parallel, 17th century advances in glass polishing eventually led to powerful microscopes capable of detecting previously unknown germs and other microorganisms.

Likewise, AI's possibilities are as yet hard to say with any certainty — although Toner-Rodgers' paper gives us a sense of what might be on the horizon in terms of idea generation, scientific discovery and rates of innovation as AI realizes its potential.

What to do: 5 urgent action items for policymakers

Based on all this research and more, our AI report to the French Government proposed a series of urgent action items. Beyond calling for substantially more public investment, we urged reforms in several strategic policy areas, including the following:

1. Restructure education to improve AI training

One of the top action items was to restructure education to improve AI training. Education is a key driver of social mobility. Whenever you have a good education system, you mitigate the negative socioeconomic impacts because people are better equipped to adapt to change.

Having said that, as important as it is to have more AI education in schools, we must be careful not to give students access to AI too early. In that sense, I am a traditionalist. People need to spend time writing and reading books, and not be on screens all the time. They need to learn mathematical demonstration. When I was a kid, I would work on Euclidean geometry, which helps you learn how to reason.

With AI, it becomes even more important to be able to write correctly, to have good mathematical reasoning, calculus and logic. People need to develop critical thinking skills.

2. Labor policies that include reskilling, upskilling and

flexicurity

A good education system must go hand in hand with adequate labor market policies.

Personally, I am fond of the Danish system, which has a strong social safety net, so if you lose your job, the state retrains you and helps you find a new job.

Contrast that with the United States, where mortality rates for unskilled, middle-aged, white men have risen sharply owing to the phenomenon of "deaths of despair."

Studies have been done on the health consequences of an employee who loses his job in, say, Denmark versus an employee identical in experience, education and age in the U.S. Their outcomes are drastically different. And these are largely the result of policy choices, not because of AI.

Yes, some jobs will have to be restructured and some tasks will disappear, but there will be new jobs with fantastic potential, thanks to AI. What matters is having the appropriate education and flexicurity systems in place to harness the potential.

3. Competition policies that do not put up entry barriers to new firms

Antonin Bergeaud (HEC Paris), Timo Boppart (IIES Stockholm University), Peter Klenow (Stanford), Huiyu Li (Federal Reserve Bank of San Francisco) and I looked at total factor productivity (TFP) — total outputs relative to total inputs — in the U.S. between 1988 and 2019, a period coinciding with the IT revolution. From 1988 to 1995, we saw average growth of about 0.8% per year. But from 2006 to 2019, average growth was down to just 0.4% per year. What happened in between?

From 1996 to 2005, annual growth surged to 2.1% per year. This can be accounted for by the emergence of superstar firms like Google and Amazon, which harnessed technology better than others and relentlessly expanded through mergers and acquisitions.

At that time, competition policy was not adapted to the IT revolution, so these firms were able to expand without constraint. They became tentacular and ended up discouraging competition.

The entry rate of new firms of all sizes declined from the year 2000 onward, while the average markup went up, not within all firms but only for the winning firms, resulting in

hegemony for superstar firms. This occurred because there was no effective competition policy preventing it from happening.

Which brings us to today: The upstream segment of the AI value chain is dominated by a few superstar firms. That is why we dedicate a major part of our AI report to policy reforms that would foster competition.

This means stopping boundless acquisition, especially if it raises entry barriers to new firms and prevents innovation by new firms.

Competition policy must be determined not only according to market-share definitions but by the effect a merger could have on subsequent innovation.

4. Data policies that protect without preventing innovation

I believe in "open source" all the way. We also need to relax some of the regulations on data access.

On top of the EU-wide General Data Protection Regulation (GDPR), France has added its own regulation regarding the use of health data. I'm not against regulation per se, but as things stand, our current level of regulation is creating a barrier to competition, especially for smaller firms.

We know from research that competition fosters innovation, especially frontier innovation like AI. The problem with regulation — whether concerning data management or competition — is always the same: technology moves very fast and our institutions move very slow. We need to find a middle ground.

5. Unified market where the EU can come together and launch innovation

Among Mario Draghi's recommendations in his must-read 2024 report on European competitiveness is that the EU needs to have a truly unified single market and financial ecosystem, able to invest in innovation akin to the Advanced Research Projects Agency (ARPA) in the U.S., to get academia, industry and government partners to work together on cutting-edge R&D and expand the frontiers of technology and science.

The U.S. also has DARPA, for defense projects, and BARDA, for biomedical research. Europe does breakthrough research but the innovation tends to get done outside of Europe. We need to change that.

We have world-class researchers, but we need a massive amount of capital investment in order to make the most of their research, together with a unified market where we can launch their innovations.

Time to act: a coalition of the willing to get things done

AI represents a turning point in our modern societies, disrupting our ways of thinking, producing and consuming — in short, our entire way of life. This is why it is vital to master these technologies and not wait.

Europe tends to act only when there's an emergency. COVID was an emergency. Ukraine is an emergency. Unfortunately, not enough European leaders perceive the concession of technological leadership to the United States and China as an emergency.

In Europe, we should form a coalition of the willing — people who want to align on this agenda and get things done, collaboratively tackling key issues like unifying to develop strong capital markets to invest in innovation. Ideally, all European nations would get on board.

In the meantime, let each one of us in our own sphere of influence make a purposeful start.

This article is based on remarks delivered by Philippe Aghion at the Economics of AI Conference organized by the Artificial Intelligence and the Future of Management Initiative at IESE Business School in Barcelona.

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