

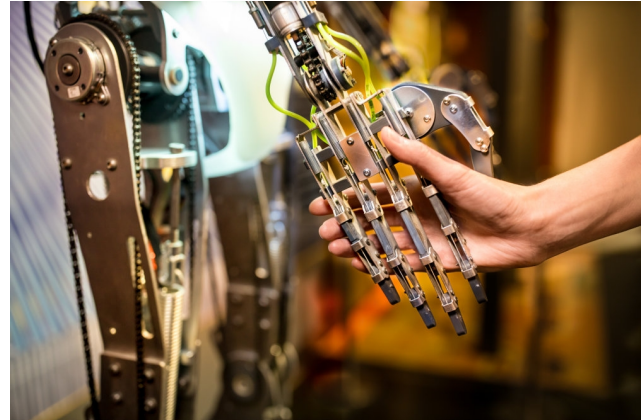
# What happens when AI takes over?

## Chief economist's comment

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There is a lot of hype about artificial intelligence (AI). There are four broad impacts where economists have something sensible to contribute.

- AI should improve efficiency, allowing more to be done with less. The "less" may mean less labor, but AI should also create jobs. In the long term there should be no net increase in unemployment, but the speed with which AI is adopted may create painful, temporary, frictional unemployment.
- The efficiencies associated with AI should raise living standards, but that may not be reflected in GDP data. Lowering inputs may be more attractive than increasing output, in the context of sustainability.
- AI should initially reduce overall inflation as it improves economic efficiency. AI also has the power to make inflation a less meaningful concept.
- Prejudice politics and economic nationalism are destructive but highly probable consequences of the changes AI will bring about.



The hype about artificial intelligence (AI) has been increasing—it is the “Bored Ape” of 2023. However, unlike the crypto or NFT crazes, there is a clear economic application for AI. This has triggered extreme fears of a dystopian future, where AI allies with robotics, automation, and digitization to render nearly all humans economically obsolete. Unrealistic expectations about the impact of new technology are normal—in the first industrial revolution, the steam engine was supposed to bring about world peace, lower taxation, and lower debt. These desirable outcomes have not yet happened. Anticipating the potential destructive power of technology is also not unusual—in the third industrial revolution, computer manufacturers’ advertisements emphasized that their reliable (sic) computers would completely replace unreliable human workers.

These wild expectations arise from the fact that industrial revolutions are revolutionary. Income, social status, and

job security all change in an industrial revolution. The contribution of AI to the fourth industrial revolution will obviously increase fear and uncertainty.

Without making fanciful forecasts about what AI will do specifically, there are four broad areas where economists can say something sensible about the impact of AI generally. These areas are: jobs; growth; inflation; and politics.

## AI and jobs

New technologies imply new ways of working. New ways of working imply that some jobs will be lost, and jobs that have never existed before will be created. This upheaval will occur as a direct and an indirect result of AI.

As with almost every other form of technology, introducing AI is aimed at improving the efficiency of the workplace. Efficiency means producing more with less—but if the “less”

in that process is “less labor,” then specific jobs will be lost. This is behind the fear that humans will be automated out of the economy. Fear of job loss is quite widespread—striking screenwriters and actors in the United States are demanding an assurance that AI will not replace them.

Technology also creates new jobs. There are three ways in which this happens: Directly, through efficiency, and indirectly through shifting demand patterns.

Any new technology directly creates new jobs. The mechanics of the first industrial revolution, the electricians of the second industrial revolution, and the computer programmers of the third industrial revolutions all directly owed their employment to the introduction of new technology. Without that technology, the jobs would not have existed. AI is no different—it will require people trained to ask the right questions, and computers will have to be manufactured for AI to run on.

Efficiency can also create new jobs as things become cheaper to do. In a world where media meant newspapers, there were very few “influencers” because it was expensive to communicate with large numbers of people. In modern times, being a social media influencer has become a viable career for some (please follow me on LinkedIn and Twitter). Those jobs only came into being as the introduction of new technology significantly reduced the cost of communicating with millions of people. As AI lowers the cost of accessing, processing, or presenting information, jobs will be created to exploit that.

Because technological change like AI is revolutionary, the impact that it has on society will also disrupt the labor market indirectly through changing demand patterns. For example, if AI reduces the time taken to perform certain tasks, it may increase the amount of leisure time some people have. Increased leisure time means more jobs in leisure-related industries. AI could increase the number of people employed making gardening tools, filming travel vlogs, or working as personal trainers as they service the increased demand for leisure. This has happened before. In 1930, the British economist Keynes famously predicted that by 2030 everyone would be working 15 hours a week and no more. This prediction was not as wrong as it might appear—while time spent in paid work has not fallen as dramatically as Keynes predicted, the time spent on unpaid household chores has collapsed as a result of technology. The resulting increase in leisure time was more or less what Keynes forecast, and has generated huge numbers of jobs in the leisure industry.

This means that at a macroeconomic level, AI is unlikely to create mass unemployment in the long term. Existing jobs are destroyed, new jobs are created, and some jobs that already exist will grow in number. The problem is that this

balance is only likely to occur in the long term—and in the short term, the imbalances of the labor market may be more painful.

The basic rule for analyzing the impact of technology on employment is to break down a job into tasks. If AI can do more than half your job, it is time to change your job. If AI can do fewer than half the tasks, your job will change. As this implies, jobs will be lost as a result of AI. However, even if your job is not replaced by AI, flexibility of attitude is still going to be important. If part of an employee’s job has been changed by AI or other technology, the employee will have to adapt or risk being replaced by someone who will embrace the new way of working.

One of the biggest challenges of AI is the potential speed of adoption, and thus the speed of change in labor markets. The internet took time to change the economy because it required a critical mass of consumers using it (and being willing to use it for retail purchases, etc.). Arguably, it was only with mobile access to the internet that the full disruptive forces started to emerge. AI is mainly a corporate-led initiative—and because of the costs, at least currently, it will be focused on large companies. A small number of people making a decision to embrace AI will change the labor market, and because the number of decision makers is smaller the critical mass of adoption can take place faster.

The speed of adoption is a challenge. A slower pace of change would allow older workers to gradually retire out of the workforce, while new entrants will only know the new way of working. Rapid change increases the risk of what economists call “frictional unemployment,” where people are unable or unwilling to retrain for new jobs. A lawyer’s clerk made unemployed by AI might find it a challenge to retrain themselves as a TikTok influencer. This could create a short-term unemployment problem alongside a labor shortage as workers with obsolete skills are unsuited to the vacant positions available.

## AI and growth

There is an assumption that technological change will increase rates of growth. Some economists are throwing out long-term forecasts for the impact of AI on global GDP, with a confidence based on the fact that in ten years no one will remember their unnecessarily precise predictions.

The truth is that AI is likely to raise living standards, but it may not have the same effect on economic growth. GDP was used to describe the economies that existed a hundred years ago—output economies where the production of things defined living standards. Economic needs have evolved from the mindless pursuit of material possessions, and the combination of declining populations and rising awareness of the sustainability crisis pose reasonable

questions about how the efficiencies AI produces may be put to use. Impact economics captures the broader range of economic wants society now has<sup>1</sup>, including things like sustainability and equality.

Efficiency gains coming from AI and other technology may go toward increasing output, but this cannot be automatically assumed. One possibility is that AI efficiency gains will be used to stabilize economic output, but achieve that output using fewer inputs. This would generate economic growth of zero, but would be a positive in the broader sense of the impact economy. Other changes in the fourth industrial revolution are already producing this outcome. Digitization means that the world has a wider range of music and film, of higher quality, without the commodities required to produce compact discs and DVDs. Quality and quantity of output has increased, while the resource input has declined. AI is likely to produce similar results.

While the application of AI technology is likely to promote efficiency, there is also a very clear risk that the *reaction* to AI technology may deliberately add inefficiencies into the economy. These inefficiencies would work to slow growth in some sectors. Policy reactions could seek to limit the use of AI in the belief that this will preserve employment in the short term. This will be covered in the politics section. But the private sector may also create inefficiencies in order to preserve profits. For example, economic research could be split into AI generated and human generated research. Economists would then go to great lengths to deny AI access to their premium, human-generated research. Removing research from online access, for instance, would create less efficient distribution, but would also deny the content as an input to AI. Spending time and effort hiding from AI is inefficient.

## AI and inflation

AI should lower inflation. If greater efficiency means we can do more with less, costs should go down. Some or all of those lower costs will be passed to consumers (profit margins may also expand). Like most technological advances AI should lower prices in certain sectors of the economy. However, AI will also likely raise some prices. More unusually, AI may return economies to an older pricing system.

As AI lowers prices in specific areas of the economy, AI may trigger stronger demand and higher prices in other areas of the economy. This is the parallel to the way AI may create jobs in one area by lowering costs in another. In the first industrial revolution, introducing spinning machines like the “spinning jenny” produced a significant increase in the supply of thread or yarn. That just led to an increase in demand for weaving, to turn that abundant quantity of thread into cloth. The supply bottleneck at the weaving

stage meant that the price of a weaver rose accordingly (until such time as their industry, too, was mechanized). Overall, the effect of lower prices should outweigh the effect of higher prices, but some specific prices may rise as a result of changing demand patterns introduced by AI.

While AI is likely to be a general disinflation force, especially early on, there is a way in which AI could make the concept of inflation in an economy effectively obsolete.

Inflation, as it is currently understood in financial markets, rests on the idea that everyone pays more or less the same price for a good or service. Prices will vary from seller to seller, or from area to area. US regional inflation shows significant divergence for identical items, and the item by item price data in the UK shows that different stores charge different prices for the same product. But the general idea is that individual *buyers* will usually all be charged the same price in the same store at the same time. The store has a fixed price, and everyone pays the same fixed price.

AI may change that, when combined with the rise of online retail. A virtual store may be able to use AI to judge just how much a consumer wants to buy a specific product—what is the maximum price they would be willing to pay. It will then charge that individual their personal, maximum price. AI may then inform the retailer that a different consumer is only prepared to pay a lower price, and so the price that they are charged will be a lower, personal price. A third individual may be judged willing to pay a higher price, and their price will be higher, and so on. This personalized pricing is known as first degree price discrimination. It is a pricing system that maximizes profits for sellers.

First-degree price discrimination would not apply to all prices in an economy. It is probably restricted to virtual sales, because that is when AI can give the seller unique insights into how desperate the consumer is to purchase the product on sale.

First degree price discrimination is absolutely nothing new. This is the pricing mechanism of haggling in the bazaar, where each buyer pays a different price—a mechanism that has existed for millenia. Before the twentieth century, this was common even in shops—indeed, it was normal outside major cities. The shopkeeper would know their customers personally, and judge what they could pay for the goods being sold. Different customers at the village store would be charged different, personalized prices. Even when buying an identical product, the Lord of the Manor would be charged a higher price than the farm laborer would be charged. Later on, the anonymizing nature of mass consumption meant that standard prices applied indiscriminately became the norm. The checkout operator at a department store will not know all their customers personally, and so cannot possibly charge personalized prices. But AI may potentially

offer sellers the opportunity to “know” their customer in the same way their eighteenth and nineteenth century forebears did. For some sectors of the economy, we may be going back to the bazaar.

AI applied to pricing would therefore mean that an individual’s experience of price changes in specific sectors of the economy could be very, very different from the reported average of consumer price inflation. If consumer price inflation is still based on sampling prices in the economy, there is no guarantee that the person sampling the prices across swathes of the economy is being charged the same as anyone else in society. Measuring an index of prices in the economy rapidly becomes meaningless.

There may be efforts to prevent AI from being applied to pricing in such a way that first degree price discrimination arises. One reason for this is that first degree price discrimination can often generate results that appear prejudiced—members of one ethnic group routinely being charged a higher price than members of other ethnic groups, for instance. Where there is sufficient price transparency, allowing consumers to directly compare the prices they are charged with the prices other people are charged, social discipline (or competition) may challenge discrimination. But if prices “churn”—or change rapidly (even hourly)—transparency may be damaged.

The initial impact of AI on inflation is therefore likely to be lower inflation, and probably create deflation for some specific products or services. However, there will be relative price changes and some goods and services may experience rising demand and rising prices as AI is introduced. In the longer term, the potential for AI to allow companies to return to traditional, first degree price discrimination means measuring economy-wide inflation may become less meaningful.

## AI and politics

AI will change politics, and this will feedback to impact economic development. This is less about the threat of AI-generated images and other media impacting political campaigns (US presidential candidate DeSantis allegedly used AI generated images of US presidential candidate Trump in political advertisements). Before the invention of the camera, political images were routinely distorted for propaganda purposes, and the manipulation of photography and film is hardly unknown. The economic impact of AI on politics comes through the policy and social responses to technological change. The critical factor here is the rapid pace of change that AI may introduce.

If AI quickly changes the way we work, some employees will not be able to adjust in time—the “frictional unemployment” already mentioned. Understandably,

politicians get worried about rising unemployment and may seek to put in place policies to remedy the problem. Effective policies would focus on education and retraining, but these are policies for the longer term and the benefits may not be realized within an election cycle. Ineffective but disruptive policies would try to restrict the use of AI to preserve obsolete jobs. The political advantage here is that a politician is seen to be doing something, and the *damage* from that policy may not be realized within an electoral cycle. Taxes on robots are one example of this sort of destructive policy with a different form of technology. These policies create inefficiencies, and will ultimately put an economy at a competitive disadvantage.

The socio-political response is also potentially economically destructive. Changes arising from AI will change the relative status of people in society. The income and social status of some groups will decline while other groups receive significant improvements to both. While the causes of these changes are complex, the tendency of humans is to look for a simple solution. Whether the simple solution is the right solution is incidental. This gives rise to “scapegoat economic”—finding a group in society to blame for a relative decline in income and social status. That then encourages “prejudice politics,” where policies put in place barriers aimed at attacking the income or social position of whichever group has become a scapegoat.

The rise of scapegoat economic and prejudice politics is something that takes place with every period of technological upheaval, but the effects are likely to be particularly damaging to economies in the fourth industrial revolution. There are two reasons for this. First, prejudice puts in place barriers to labor market flexibility. To get the most out of AI and other technology, companies need to be able to employ the right person in the right job at the right time. Irrationally discriminating against someone, either because of personal or officially sanctioned prejudice, prevents that from happening and weakens the efficiencies that new technology can offer. Second, scapegoat economics will often focus on foreigners—who have been an easy target for prejudice for centuries. This encourages economic nationalism, damaging both trade and investment flows and further disrupting the efficiencies that AI might offer.

## Life with our AI overlords

The economics of AI is not especially different from the economics of other new forms of technology—it is the economics of disruption. The biggest potential difference arising from AI is the speed with which disruption is likely to take place. As people, politicians, and economic institutions have less time to adapt, the “friction” of change is likely to burn.

The macroeconomic response to the challenge of AI is not especially novel.

- Training people to be flexible, and to adapt to changing circumstances.
- Not trying to hold back the tide of change, but identifying what new opportunities may be created.
- Working to ensure that efficiency gains benefit a wide group in society, and that the benefits are properly recorded.
- Using all these forces to make sure that the forces of scapegoat economics and prejudice politics are kept in check.

The change AI brings is likely to be significant. Significant change does not have to be a bad thing.

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<sup>1</sup> Please see <https://www.ubs.com/global/en/sustainability-impact/impact-economy.html> for a discussion of the evolution to an impact economy

## Appendix

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