

Box 7: Artificial Intelligence

There is mounting evidence to support the view that generative Artificial Intelligence (AI) systems may be ushering in a new technological wave (**figure 20A**). If so, this could have major economic implications, with several channels through which economic activity could be transformed.

While there is no single, universally-accepted definition, AI can be thought of as a process whereby machines internalise data, process the data and, finally, make informed decisions (i.e. produce output) based on these data. Advances in computer processing power mean that AI-generated output in some areas is now almost indistinguishable from output generated by humans.

These powerful systems are revolutionising the production of knowledge, boosting the capacity of machines to generate original content, including creative content (e.g. artworks) and to perform complex tasks (e.g. medical diagnostics).

These developments, allied with the falling cost of producing and adopting these technologies, suggest – at least in principle – that this could be a game-changer for the workplace, with both potential positive and negative effects.

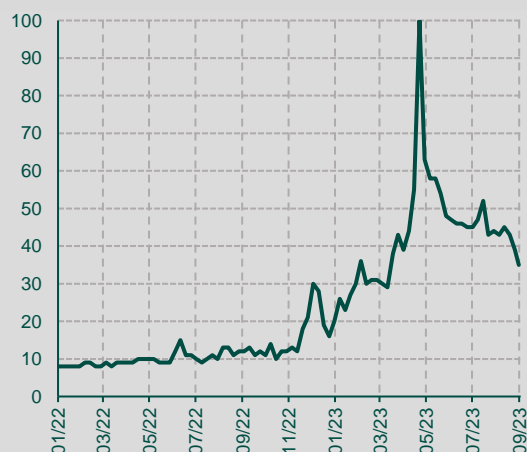
A fundamental difference between AI and previous technological waves is the potential for AI to automate non-routine tasks: in the labour market, previous waves involved ‘machines replacing hands’ but, with AI, there is the possibility of ‘machines replacing heads’. Using rapidly-evolving algorithms and the increasing availability of ‘big data’, AI is making in-roads in its ability to solve complex problems in areas where, until recently, considerable human capital (accumulated skills and experience) was required.

From an economic perspective, therefore, its adoption and deployment could lead to a rapid acceleration in task automation – including of non-routine tasks – that could lower production costs. To put it in economic terms, AI is a form of physical capital (albeit intangible in some cases) and its roll-out involves boosting the amount of physical capital per worker – so-called ‘capital deepening’ – which raises labour productivity.

The key question is whether the adoption of these labour-saving technologies results in job losses or job gains. Historical experience – including evidence from previous technological waves and the industrial revolutions – suggests that job displacement arising from automation has been offset by the creation of new jobs. Perhaps the most obvious historical example being the mechanisation of agriculture (boosting productivity and incomes of those who remained) which freed-up labour to move into manufacturing.

Figure 21: Developments in AI

A: AI web searches in Ireland, per cent relative to peak



Source: Google Trends.

B: AI skills penetration compared to OECD average



Source: OECD, Self-reported AI skills by LinkedIn members from 2015-2022.

That said, the potential benefits from AI cannot be taken for granted. The labour market could face significant disruption, highlighting the role of active labour market policies in addressing any skills mis-match and facilitating the transition to the ever-more digitised economy (**figure 20B**).

In addition, there will be an important regulatory role: ensuring that larger firms with first mover advantage do not monopolise the market.

Finally, and more strategically, there will be the geopolitical dimension, with the possibility that these technologies become the next fault-line in an increasingly multipolar world.