

Opportunities and risks of digitalisation in geopolitically difficult times

Presentation of the TARGION Science Award

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Check against delivery.

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1 Words of welcome

Ladies and gentlemen,

Thank you very much for the warm reception—and I, too, would like to welcome you here at Villa Bonn in Frankfurt. Frankfurt is Germany's data centre capital. Around two-thirds of the computing power available in German data centres is concentrated in the Rhine-Main area.[1] Frankfurt is also home to the northern hemisphere's largest internet node.[2] In April, it set a new world record for data throughput, namely 17 terabits per second. [3] 17 terabits. In the analogue world, that equates to around 3.9 billion pages of A4 text. Or a pile of paper 420 kilometres high—about 1,637 times as high as Frankfurt's Trade Fair Tower. Approximately as much information flows through this internet node every second!

It is consequently difficult to think of any other location in Germany more suitable for presenting a digitalisation prize. Without data centres, there is no further digitalisation and no artificial intelligence (AI).

The TARGION Science Award has, for almost two decades, been awarded for outstanding research work. It is presented to scientists who, through innovative studies of practical relevance, contribute to digitalisation in their respective fields.

This year, the award goes to Professor Ekaterina Jussupow for her dissertation on the use of artificial intelligence in medicine. Medicine, in particular, is an area in which AI will help bring about major progress. Are we ready to place more trust in AI in medical questions than in a doctor's recommendation? And how will doctors handle the issue?

These are some of the exciting questions that this year's award winner is studying. However, as an economist I am probably not best placed to pay tribute to the contents of her work. This is something that the next speaker will expand on.

Instead, I would like to discuss the economic opportunities and risks of digitalisation. Let me start by looking at the opportunities. These can be particularly helpful in an area in which all developed economies currently have a weakness, namely productivity. Productivity growth has been on the decline for several decades, in Germany and elsewhere.

2 Opportunities of digitalisation

That is worrying as productivity is central to our prosperity. Economic growth is a means of increasing material prosperity. As a general rule, this can be achieved through more labour, more capital or higher productivity. In Germany, however, demographic developments mean that more labour is unlikely to be available. And investment in a larger stock of capital is only worthwhile if it also generates higher income—in other words, if productivity increases.

Nobel laureate Paul Krugman put it in a nutshell when he said that: "Productivity isn't everything, but, in the long run, it is almost everything."

In Germany, however, productivity growth in many sectors of the economy has been fairly weak since the mid-1990s. [4] With the exception of one area: the digital sectors. In recent years, the efficiency gains achieved there have been far higher than those achieved in the other sectors of the economy. During the aforementioned period, average annual growth in total factor productivity in Germany was around 4% in the digital sectors as compared with 0.5% in the other sectors. As a result, the digital sectors have significantly bolstered aggregate productivity developments in Germany, although they are comparatively not very large.

However, productivity has recently grown somewhat more slowly in the digital sectors, too. That is why digitalisation warrants particular attention. It could, by increasing productivity, help to compensate, at least in part, for the lower labour input resulting from future demographic developments. Consequently, it is imperative for Germany, in particular, to exploit the opportunities presented by further digitalisation!

Generative artificial intelligence is currently seen as a particularly promising area for productivity gains. It can create content that we previously considered to be typically human: texts, images, even videos. It thus goes far beyond the results of traditional artificial intelligence, which processes and analyses existing data in order to solve specific tasks. This enhanced performance is made possible not least by the exponentially increased computing power that I mentioned earlier—because training and operating large language models requires enormous computing power. The current AI dynamics mean that the computing power needed doubles every 100 days.[5] AI is now capable of solving increasingly complex tasks and achieving ever better results. It is said that consultants can perform their tasks 25% faster using AI, and that the results are 40% better.[6]

However, assessments of the macroeconomic productivity gains that can be achieved through the use of AI vary greatly.[7] This is because those gains hinge on a variety of different aspects. First of all, it depends which tasks are automated or supported by AI. For example, there are tasks that AI can perform independently and in a profitable manner. Firms will tend to increasingly turn to AI for such tasks. The employees previously tasked with those roles would be available for other productive work—elsewhere within the company or at another firm.

The effects of AI on productivity depend in large part on how significant the tasks being performed or assisted by AI are for the economy as a whole. And on how quickly AI is used. And in how many occupational fields. [8] According to surveys, in the United States, where digitalisation is progressing at a faster pace, only around 5% of companies used AI applications to produce goods at the beginning of 2024. [9]

AI can also bring about opportunities for innovation and new products. Consider, for example, humanoid robots. They resemble the human form. With the help of AI, they are able to identify their environment. And they can communicate too. As they also learn at the same time, there is a broad scope of applications, especially for industry.

That's me looking into the more or less distant future. Sticking with the here and now, it is good to see public authorities in Germany already using AI and it being driven forward in various areas. Here in Hesse, AI is being deployed to respond to correspondence from the public, for reformulating official texts into simple language and to aid in police investigations.[10]

And we at the Bundesbank are using AI too, for example to automate the process of drafting reports, to assist in producing our very short-term inflation forecast and for analyses as part of preparatory work for monetary policy decision-making. Perhaps, in future, AI may also write and deliver speeches. But we aren't at that point yet: this speech is the product of human intelligence and is being delivered by a human made of flesh and blood. There is one thing that we always bear in mind: for us, AI is a tool. It is used by us people. And we are responsible for how we apply its output and for any consequences that may arise from that.

The legal framework for this is provided by the EU (European Union)'s AI Act. The bulk of the provisions will be applicable in two years' time.[11] From an economic perspective, the main test of its quality will lie in whether it provides the necessary clarity to help increase AI's productivity potential. It is pleasing to see a broader international development against the backdrop of this regulation: more than 50 countries have drawn up a convention on the use of AI, which some countries have already signed. It builds on a framework agreement drawn up by the Council of Europe together with other states and which is based on respect for democracy, human rights and the rule of law.[12] At a time when geopolitical tensions are placing a strain on the international community and in which the World Trade Organization (WTO (World Trade Organization)), for example, has been struggling to operate effectively for years now, I find this kind of international consensus on a topic so highly relevant to the economy encouraging and all the more valuable.

The use of AI is an important building block on the way to increased productivity. What can and needs to be done here in Germany to boost digitalisation and thus productivity?

3 Levers for boosting digitalisation

An evaluation by the European Commission highlights an initial key area requiring action. It shows that the share of people in Germany with basic digital competence is lower than the average for EU (European Union) countries, with 49% of the population in Germany in possession of such skills versus the EU (European Union) average of 54%.[13] This means that digital skills need strengthening in Germany—in the education system and in the world of work. This will improve the opportunities for productivity growth—as well as the opportunities for each and every individual in the labour market.

The assessment carried out by the European Commission that I just mentioned also shows that, by European standards, Germany is lagging particularly far behind when it comes to the EU (European Union)'s objective of full fibre optic broadband coverage. In Germany, only around 19% of end users are connected, while the average for the EU (European Union) is 56%. There is a considerable need for investment. And this is where the private sector, in particular, is called upon.

As for the public sector, it should, above all, work on digitalising its own administrative processes. This would speed up processes for companies, alleviate staffing shortages, reduce bureaucratic red tape—and, in so doing, boost productivity. Lastly, specific managerial skills will also be needed to convert digitalisation into productivity gains. Studies suggest that US (United States) firms' management practices in this field are better than those of their European counterparts.[14]

These measures could also lessen German scepticism towards digitalisation. In a survey conducted just a year ago, only a small minority of respondents said that the term “digitalisation” made them think of “future prosperity”—a mere 29%, in fact.[15] We are in drastic need of a change in attitude here.

4 Risks of digitalisation

While digitalisation presents opportunities, it also entails risks—especially in terms of cybercrime. Opportunities and risks go together like light and shadow. In its latest report on Germany, the Federal Office for Information Security concludes that “the threat in cyberspace is higher than ever before”. [16] Overall, damage is increasingly being caused by attacks from abroad [17]—some politically and some financially motivated, with the line between the two becoming increasingly blurred. Geopolitical tensions have raised the risk of government-backed cyberattacks. [18] A recent study commissioned by the digital association Bitkom found that China is becoming the main country of origin for attacks on the German economy, followed by Russia. [19] The study reports that 45% of the affected companies traced at least one attack back to China, while 39% traced the origins back to Russia.

From a central bank perspective, cyber risks at financial institutions are particularly relevant. They can spread far beyond the institution and industry concerned and have a systemic effect—with considerable damage to the real economy. A European regulation—the Digital Operational Resilience Act or DORA (Digital Operational Resilience Act) for short—now establishes significantly higher requirements for the operational resilience of financial market players in the European Union, including in terms of their robustness to cyberattacks. If you would like more information on DORA (Digital Operational Resilience Act), I recommend our latest Monthly Report, which includes an article on this topic. [20]

Cyber resilience likewise plays a prominent role in banking supervision by the Federal Financial Supervisory Authority (BaFin (Federal Financial Supervisory Authority)) and the Bundesbank. From 2025 onwards, banks' critical IT (information technology) service providers, cloud operators or software providers say, will also be continuously monitored at European Union level with regard to their robustness. This is a very welcome development because the importance of IT (information technology) service providers for the financial sector has continued to grow in recent years. Their cyber resilience should therefore be strengthened just as much as that of banks.

5 Concluding remarks

Ladies and gentlemen,

Further digitalisation will strengthen our economy. However, further digitalisation also entails risks, especially cyber risks, which need to be kept in check. But one thing is certain: one of the biggest risks is missing out on the opportunities presented by further digitalisation. At present, these lie mainly in the application of generative artificial intelligence.

For me, there can be no doubt that all parties involved should play their part in strengthening further digitalisation in our society: in the education system, in enterprises and within public authorities. As President of the Deutsche Bundesbank, I am committed to ensuring that we actively seize the opportunities offered by digitalisation—in the interests of society as a whole.

Footnotes:

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