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responsible for digital affairs

European Union productivity growth continues to lag behind the United States partly because of weak EU investment in, and uptake of, digital technologies. US R&D spending on ICT software, hardware and services exceeds EU spending by an order of magnitude. The US ICT capital stock grew at about twice the EU rate over the last two decades. US labour productivity growth in the ICT sector (2000-2021) is four times higher than in the EU (Pinkus *et al.*, 2024).

Part of the reason for this gap is that the US is home to the world's largest tech companies, which account for the bulk of US ICT R&D. Their market power enables them to hoover up much ICT spending by consumers and businesses worldwide, and to re-invest it in their own R&D priorities. Moreover, their market capitalisation and financial means enable them to integrate innovative start-ups into their ecosystem – including European ones.

Collaboration with the big US tech companies is often the most promising growth strategy for EU ICT start-ups

EU ICT firms, meanwhile, are innovative in terms of producing patentable research, but face obstacles in scaling-up that research into viable business models. Barriers include weak EU private equity and venture capital markets and insufficient access to established business channels to expand sales. Collaboration with the big US tech companies is often the most promising growth strategy for EU ICT start-ups.

As the EU is not home to major tech firms, it misses out on the large private R&D budgets they generate and the market reach they can leverage. The EU is also not in a position to compensate for low private R&D and investment through government funding. Instead, the EU has focused on reigning in the market power of very large digital platforms and re-distributing their intermediation rents and data stocks to smaller firms and consumers. The Digital Markets Act (DMA, Regulation (EU) 2022/1925) imposes a series of competition policy measures on very large and mostly US-based 'gatekeeper' platforms to reduce market power and facilitate market entry. The Digital Services Act (DSA, Regulation (EU) 2022/2065) targets very large online social media and other intermediary platforms with responsibility rules to reduce illegal and inappropriate content.

The EU has also launched a plethora of data regulations to open

up access to data and facilitate competition in data-driven services markets, including data access rights in the Data Act (Regulation (EU) 2023/2854), the DMA and specific sectoral data regulations.

These seek to bring more competition into data markets and data-driven services markets. At the same time, they create the risk of multiple and partly overlapping regulations, with provisions that are not always consistently defined or applied across sectors and regulatory instruments. Regulatory complexity and compliance are becoming a costly burden on firms (Demireu *et al.*, 2024). The General Data Protection Regulation (GDPR, Regulation (EU) 2016/679), a cornerstone of EU data regulation, has been enforced less rigorously than it could have been. Since managing consent is economically costly for firms and for consumers, this is holding up effective implementation.

The EU Artificial Intelligence Act takes a precautionary stance to set product safety standards, including for the latest generation of general purpose AI models that have widely varying applications. General fundamental rights considerations have replaced specific technical safety standards. The Act marks the start of a long regulatory process in which many implementation rules and compliance mechanisms remain to be defined. It focuses on self-standing AI models rather than on rapidly developing ecosystems of AI-driven services.

There is increasing data-regime competition between the EU, US and China (Bradford, 2023): the design of data regulation matters for competitiveness across the economy. The US takes a *laissez-faire* approach with little regulatory intervention. It counts on homegrown big and small tech firms to take a competitive lead and increase productivity across the economy – so far very successfully. It has opted for a lighter and more flexible approach to regulation of digital competition, data access and AI. China has made some heavy-handed interventions in its domestic big tech industry. However, much of its regulation seeks to promote digital innovation and investment, for example in AI. Whether the EU will remain an attractive location for AI model and services developers

put considerable effort into reducing regulatory barriers in the single market as a way to stimulate digital services. The EU Geo-blocking Regulation (Regulation (EU) 2018/302) had some success in promoting online cross-border trade, except for copyright-protected media products, which remain locked up in national markets that are not competitive in an era of global media giants and streaming platforms. However, most remaining obstacles are not specific to digital services; they mirror border costs in offline services, such as product safety and consumer protection legislation, or the absence of a single payment system. Increasing

sufficient condition for the successful uptake of digital technology. A complementary challenge is market deepening. Even if the DMA is successful in reducing monopolistic profit margins of US-based gatekeeper platforms, and channelling some of that surplus back to European consumers and businesses, there is no guarantee that this re-direction will result in an increase in EU private investment in digital R&D and firms. This requires linking measures to stimulate the development of private equity and venture capital markets in the EU to provide private financial resources for R&D and start-ups.

Public R&D and investment funds alone cannot bridge the digital investment gap with the US. Accelerating the uptake of digital technology in EU firms and services requires investment in digital ecosystems that link many types of services. For the time being, EU consumers and businesses still depend on network effects around rapidly evolving and expanding digital ecosystems that work on US-based platforms. Trying to weaken these network effects without alternative sources would only reduce welfare for EU citizens. Instead, investment is required to build alternative and competing EU ecosystems, for example around a single payments platform, identity platforms, industrial data pools or new AI-driven ecosystems.

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Your first challenge in this area is to reduce regulatory fragmentation among the large number of data regulations where rules intersect, overlap and sometimes lack coherence, and may impose heavy compliance costs on firms. The scope of personal and business data that can be accessed and ported to third parties varies across regulatory instruments, from raw data, to interaction data and to processed data. Data-sharing obligations for very large gatekeeper platforms in the DMA are especially challenging because of the technical complexity and large volumes of data involved. This raises the question why so many regulations are needed: why not just one, or a few, horizontal regulations that cover many conceivable situations? Are the nature and types of market failures in each situation so different that they justify separate regulations?

Another challenge is high GDPR compliance costs for firms and consumers. This results in reduced investment in innovative

notices and make it easier for data subjects to meaningfully exercise their data rights. The introduction of standardised and machine-readable consent notices would facilitate personal information and consent management systems with AI-powered personal assistants. This would considerably reduce transaction costs and risks for data subjects, compared to current ‘manual’ personal information management applications that are too costly to scale up.

Implementation guidelines should avoid excessively precautionary measures

Dozens of guidelines and implementing acts for the AI Act still need to be designed by the new AI Office. This creates an opportunity to keep the AI Act in tune with the rapidly evolving landscape for AI technologies and complex business models. While the AI Act focuses on self-standing models, implementation should take into account AI-driven ecosystems that seek closer collaboration between incumbent services firms and providers of AI models. The dividing lines between AI model developers, deployers and users, and their respective responsibilities, should be clarified in guidelines. Implementation guidelines should avoid excessively precautionary measures and facilitate innovation by keeping market entry and compliance costs low.

Generative AI technology has shifted the balance between exclusive copyright as an incentive to produce innovative artwork and the wider societal innovation benefits. Generative AI technology has reduced the cost of producing creative content and induced positive spillover effects beyond the media sector to the rest of the economy. To sustain these benefits and maintain vigorous competition in AI model development, the widest possible access to training data is required. This may require a revision of the opt-out clause in the EU Copyright Directive (Directive (EU) 2019/79), or at least pro-innovation design of the implementation guidelines for this clause under the AI Act.

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