European Commission

Joint Research Centre

The macroeconomic impact and insights of EU digital investment

Territorial Development Insights Series

2025

HIGHLIGHTS

- The Digital Agenda for Europe (2010) set in motion the EU's focus on digital technologies for economic growth and prosperity, laying the foundation for a digital single market.
- The COVID-19 pandemic accelerated digital transformation, boosting telework, e-learning, e-commerce, and AI adoption driven by data and computing power.
- This Insight reports the key insights of a modelling analysis of €175 billion of digital investment deployed through five EU funds.
- The analysis suggests that digital investment can have sizeable macroeconomic gains in terms of GDP, net exports and productivity, with territorial heterogeneity that should be taken into account by policymakers when devising the interventions.

Introduction

The European Commission recently developed an ambitious policy agenda to harness the benefits and mitigate the risks of digital transformation, particularly AI. Key initiatives include:

- The **Digital Decade policy program**, outlining indicators, targets, and trajectories to make the EU the most digitised continent by 2030.
- The **European Data Strategy**, aiming to create a single market for data and enhance data sharing through the Data Governance Act, the creation of European Data Spaces, and the Data Act to enhance data sharing.
- AI-related policies, including the **Coordinated Plan on AI** and the **AI Act**, to establish an "ecosystem of excellence" and trust for AI.
- The **Digital Services Act** and the **Digital Markets Act**, ensuring fair digital markets and addressing risks associated with digital services.

These initiatives, along with substantial investment programs leveraging key funding instruments (like the Recovery and Resilience Facility and Cohesion funds, among others), aim to establish a legal framework and level playing field to boost digital investments in the EU. Digital technologies promise enhanced industrial productivity, reduced corporate costs, and new business opportunities, underpinning the EU's significant investments in digital-related technologies.

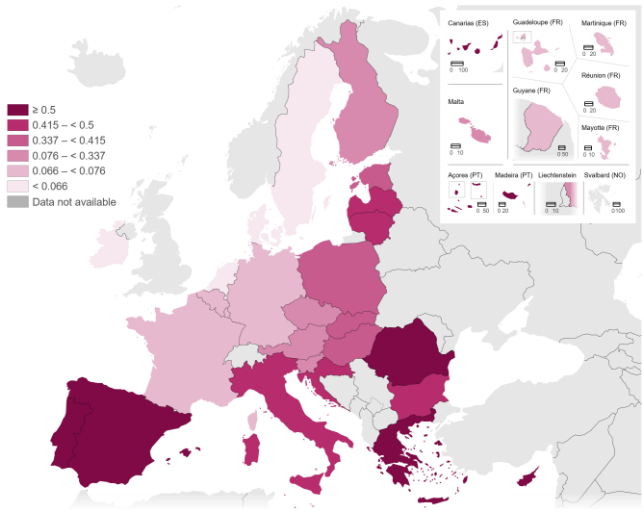
To inform future digital-related investments, it is crucial to understand their expected economic outcomes. This policy brief presents the key characteristics and policy implications of a modelling analysis estimating the macroeconomic effects of EU investments in digitalization, made using a spatial computable general equilibrium model – see [1] for more details.

The modelling analysis

The analysis examines the impact of digital investments from five major EU funds, totalling nearly €175 billion, aimed at achieving Digital Decade targets. These investments are distributed across several key instruments, each with distinct objectives, priorities, and geographical focuses. The Recovery and Resilience Facility allocates around €135 billion (26% of total RRF funds) to digital investments, making it the largest contributor. Cohesion funds follow with approximately €24 billion (6% of the Cohesion Policy budget). Additionally, the Digital Europe Programme contributes around €6.5 billion, Horizon Europe around €6 billion, and the Connecting Europe Facility – Digital around €2.7 billion. This diverse funding strategy highlights the EU's comprehensive approach to fostering digital innovation and infrastructure across member states.

Figure 1 shows the average yearly EU expenditure on digital innovation and infrastructure over the deployment period of seven years, expressed as a percentage of each country's annual GDP. EU-funded investment intensity in digital technologies varies significantly across EU Member States. Southern and Eastern European countries like Spain, Portugal, Romania, and Greece lead with investments exceeding 0.5% of GDP, while Italy, Bulgaria, and the Baltics range from 0.4% to 0.5%. In contrast, Northern and Western countries such as Sweden, Denmark, Ireland, and the Netherlands invest less than 0.07% of their GDP from EU sources.

Figure 1 – EU digital investment: yearly average over the deployment period (% of annual GDP)

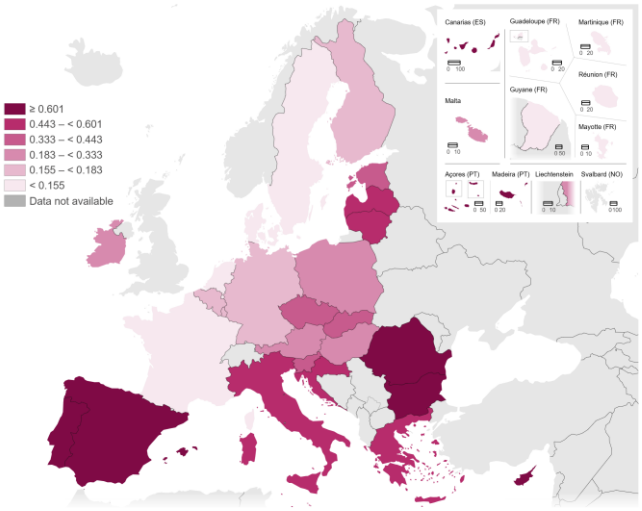


Source: Authors' calculations.

These investment data are introduced in a country-version of the well-established RHOMOLO model [2]. It is assumed that the various types of digital investments activate three different channels in the model: public investment, labour productivity, and private investment, including an increase in total factor productivity.

Moreover, given the nature of the interventions, it is further assumed that a share of these investments generates international spillovers (productivity gains materialising beyond national borders) additional to those related to changes in relative prices and demand-driven increases in exports and imports.

Figure 2 – Long-run GDP impact of digital investment (20 years after the beginning of the implementation), % deviation from base year GDP



Source: Authors' calculations.

The full analysis (explained in [1]) further reveals potential positive effects on net exports, consumption, and labour productivity.

Conclusions

Our analysis provides important policy recommendations for EU digital investments. To maximise benefits, policymakers should balance competitive funding with pre-allocated support to foster excellence in advanced regions while reducing the digital divide in less developed areas. Prioritising investments in digital infrastructure is vital due to its transnational impact and potential to enhance cross-border effects, such as 5G and gigabit networks.

Investments must be tailored to meet the needs of less digitised regions, particularly in Southern and Eastern Europe, to drive productivity and convergence. These regions stand to gain the most in terms of GDP and productivity improvements. Our

findings also emphasise the importance of considering digital spillovers and broader cross-border effects. By integrating these insights into the upcoming Multiannual Financial Framework, the EU can strengthen its digital leadership and enhance its digital landscape. Continuing and strengthening this integrated approach, which combines regulatory measures with substantial investment, will have an even more positive impact.

References

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[2] Lecca, P., Barbero, J., Christensen, M.A., Conte, A., Di Comite, F., Diaz-Lanchas, J., Diukanova, O., Mandras, G., Persyn, D., and Sakkas, S. (2018). RHOMOLO V3: A spatial modelling framework. JRC Technical Reports JRC111861, EUR 29229 EN, Publications Office of the European Union, Luxembourg.

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