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The EU's Productivity Performance: Falling Behind the Curve

Europe is yet again confronted with concerns over its economic performance. In recent years, the United States and other developed regions have grown faster than the European Union. Two former Italian premiers, Enrico Letta and Mario Draghi, have been separately tasked to come up with recommendations for economic reforms and improved competitiveness. With few European firms in the world league tables of market capitalization, and even fewer European companies involved in leading the current acceleration of structural and technological change (e. g., data, artificial intelligence, and quantum technology), there is growing pessimism about the region's economic future. Adding other challenges like demographic changes, corporate risk aversion, and hindrances to entrepreneurial growth, one might ask: is Europe doomed?

No, Europe is not doomed: it remains a region that is rich in capital and talented labor, with access to many necessary factors of fast growth. It is true that it used to be a global leader in company-led innovation and that it has lost some of its edge, but the region still has a strong class of companies with capacity to innovate and grow at scale. For improvement to happen, however, Europe needs to break with its habit of low productivity and address problems with poor underlying economic oomph. Productivity is the cornerstone of long-term economic prosperity. It allows for a more efficient use of resources and sustains competitiveness. Between 1995 and 2022, the EU's productivity level, measured as gross domestic product (GDP) per hour worked, grew by 42.6 percent. However, EU labor productivity growth, a better measure of changes in economic prosperity than the productivity levels, has been on a downward trend. It fell from an average of 2.1 percent between 1995 and 2000 to 0.8 percent between 2018 and 2022 (OECD 2024a).

Europe's productivity performance can be better understood by comparing its productivity growth over time. Additionally, a country with a similar size, level

of economic development, and institutional framework can serve as a benchmark for comparison. The first part of this paper examines the productivity gap between the EU and the US, and the factors driving productivity growth in both regions and setting them apart. The second section of the paper outlines policy recommendations for the EU to enhance its productivity. These recommendations focus on fostering innovation and reducing barriers to services, including financial services. The final section presents the key policy conclusions.

THE EU'S PRODUCTIVITY PROBLEM

The EU faces a productivity challenge, which has become more apparent over time in comparison to the US. In 1995, the EU lagged behind the US in GDP per hour worked by 16.3 percent. This gap had widened to 22.8 percent by 2022. There is also a significant disparity within the EU. Central and Eastern European

KEY MESSAGES

- **The EU lags the US in productivity growth**
- **Actions to increase innovation, investments in intangible assets, and promote market dynamism are needed to improve the EU's productivity**
- **The EU should increase expenditure on R&D and create better incentives for private-sector R&D spending**
- **The EU should design policies to channel savings to firm growth and boost venture capital**
- **The EU should close its technology gap and reduce market fragmentation to support firm growth and technology adoption**



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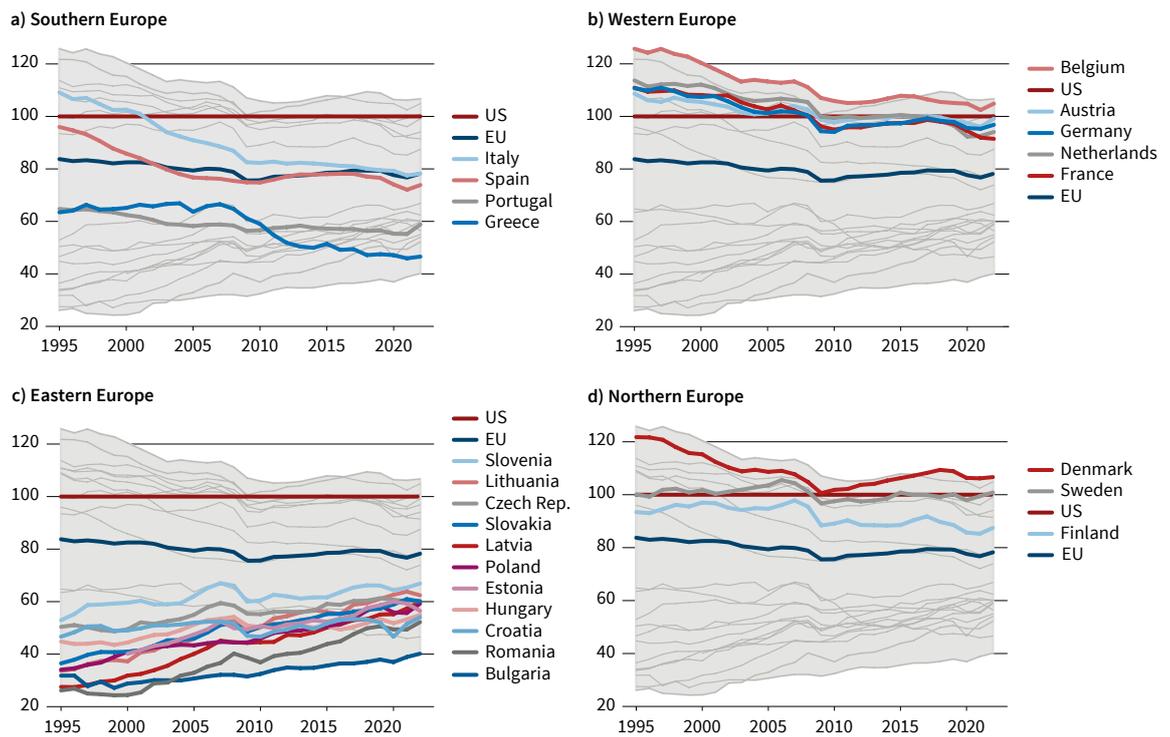
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Figure 1
EU GDP per Hour Worked Relative to the US



Note: Constant 2017 dollars PPP, US = 100. Ireland and Luxembourg were omitted from Western Europe figure for clarity reasons.
Source: OECD; World Bank; Authors' calculations.

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(CEE) countries, despite having lower overall productivity than the EU average, have consistently exhibited higher productivity growth rates compared to western and southern EU countries (Figure 1, panels a, b, and c). These latter regions have witnessed a concerning downward trend relative to US productivity. Among the Nordic countries, Sweden's productivity remained comparable to the US. Denmark's productivity initially declined relative to the US but began recovering after 2010. Finland's productivity, on the other hand, converged with the US until the Great Recession.

In other words, Europe's productivity problems are predominantly about slower paces of productivity growth in western and continental Europe. CEE countries have enjoyed faster growth – also in economic output and GDP per capita – and generally reduced the prosperity gap between them and other members of the EU. They have also caught up in prosperity with the US. Remarkably, Poland is now richer than Portugal, and Estonia is richer than Spain (in real PPP terms). Yes, slower growth in other parts of the EU has expanded the prosperity gap with the US. If the EU was a state in the United States, it would be third poorest state – trailed only by Idaho and Mississippi.

Developments in total factor productivity (TFP) exacerbate Europe's productivity challenge. TFP captures the growth in output that cannot be attributed to changes in physical and human capital. This includes advancements in technology, innovation, and management practices. As a critical driver of economic growth, TFP contributed around 60 percent of labor produc-

tivity growth within the EA12 (i.e., twelve euro-area countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain). However, this contribution has diminished, falling from 68 percent to 55 percent between 1995 and 2019 (Lopez-Garcia and Szörfi 2021).

Figure 2 illustrates the concerning slowdown in TFP growth for both the EA12 and the US. Since 1965, both regions have experienced a significant decline, with TFP growth rates dropping from 3 percent in the US and 4 percent in the EA12 to roughly 0.5 percent today. Notably, the EU's TFP growth suffered a sharper decline compared to the US, particularly during the Great Financial Crisis and the subsequent European sovereign debt crisis of the early 2010s. However, the EU's TFP slowdown began well before these events, suggesting the presence of deeper structural factors.

FACTORS SLOWING THE EU'S PRODUCTIVITY

Addressing Europe's productivity slowdown is critical for long-term economic prosperity. Three interrelated factors are essential determinants of both current and potential productivity growth: innovation; intangible assets; and market dynamism.

Innovation is key to sustain technological progress and TFP growth. Traditionally, research and development (R&D) expenditure and the number of patents have served as key metrics for assessing a country's innovative capacity. In 2002, the EU set a target of allocating 3 percent of GDP to R&D. However,

two decades later, the EU's R&D expenditure stands at EUR 355 billion, representing just 2.23 percent of GDP. This falls short of comparable economies like Japan (3.34 percent, 2021), the US (3.46 percent, 2021), and South Korea (4.93 percent, 2021) (EC 2024a).

In terms of innovation output, the EU's share of global technology patent applications has shrunk dramatically, falling from 30 percent to just 17 percent between 1990 and 2022 (OECD 2024b). While patent quantity is a metric, it is important to acknowledge that not all patents hold equal weight in terms of innovation. However, even when examining the most complex technologies like nanotechnology, optics, and semiconductors, the EU's relative contribution has diminished. According to a Knowledge Complexity Index (KCI) that analyses 36 technology categories, the EU ranked 3rd behind the US and Japan in the 1990s. However, by 2020, the EU had fallen to the 5th position (Di Girolamo et al. 2023).

Modern knowledge-based economies increasingly rely on intangible capital, a broad category of assets that include organizational structures, human capital, industrial designs, IT software, and intellectual property rights (IPRs). Investments in these intangibles are crucial for driving productivity growth. Figure 3 compares the relative shares of tangible and intangible capital investments between the EA9 (i.e., nine euro-area countries: Austria, Finland, France, Germany, Italy, Luxembourg, the Netherlands, Portugal, and Spain) and the US. While intangible investment in the EA9 surpassed tangible investment in 2009, reaching 17 percent by 2020, the US holds a significant lead with a 6 percentage-point higher share and a much earlier shift toward intangibles.

Beyond innovation and intangible capital, market inefficiencies hinder productivity growth in Europe. Efficient allocation of capital and labor ensures resources reach the most productive firms, allowing them to scale, while less productive ones exit the market. This process is another key driver of TFP growth (Baqae and Farhi 2020). Prior to the financial crisis, Europe witnessed a robust flow of resources toward high-performing firms. However, this trend has stagnated, coinciding with a significant decline in job dynamism. At the heart of this challenge lies the diminished role of young, high-growth firms. These companies, despite employing less than 20 percent of the workforce, contribute 7.6 percentage points more to job creation than larger firms (Crisciolo et al. 2014). However, Europe's startup rate, particularly in several euro-area countries, has been declining.

ADDRESSING EUROPE'S PRODUCTIVITY PROBLEM

What can European policymakers do to lift growth in productivity? In Enrico Letta's report on the EU single market, useful reforms are outlined (Letta 2024). The EU could reduce barriers to economic integration in sectors like telecommunications and energy. Reform-

Figure 2
Total Factor Productivity Growth

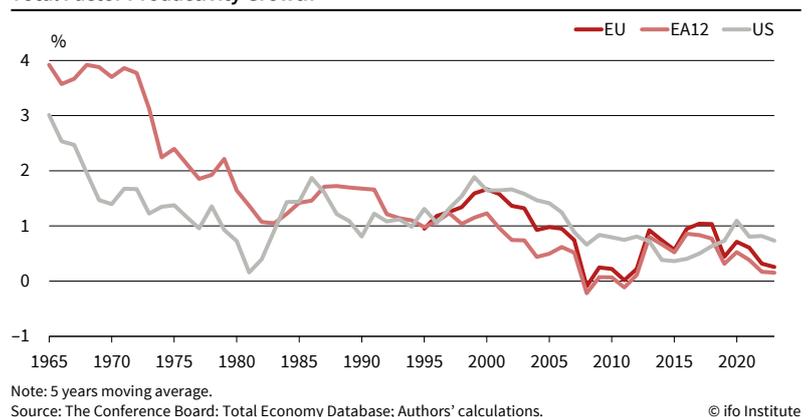
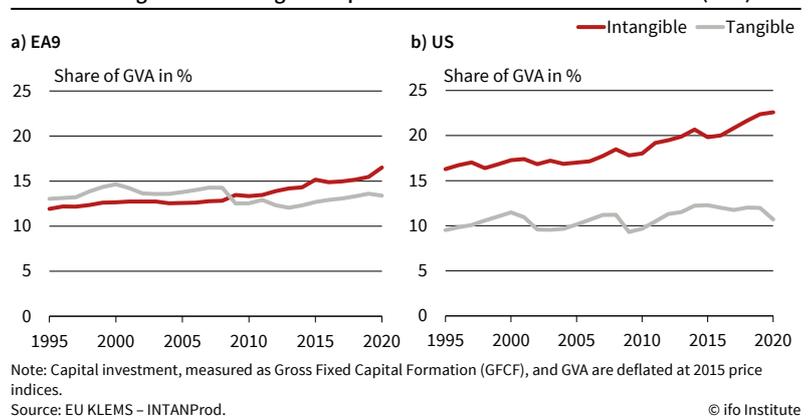


Figure 3
Shares of Tangible and Intangible Capital Investment in Gross Value Added (GVA)



ing a fragmented system of national financial supervision could help foster better allocation of capital and deter habits of banking and capital nationalism. After an era of muscular regulatory unilateralism, the EU could seek better cooperation with other large markets in the regulation of businesses and technology. Europe's global trade performance has been underwhelming for some years now (the profile of total EU trade has become more internal than external – despite global demand growing much faster than EU demand – but a friendlier approach to trade partners could help reverse the trend). Using a conservative assumption to estimate potential gains to the EU from a set of similar moderate-level reforms, we found that total EU GDP could increase by a bit less than 3 percent in the medium term (Erixon et al. 2023).

However, the productivity challenge needs much more comprehensive reforms. The EU faces a critical juncture in innovation and innovation-led growth. Data from 2022 reveals that private firms contribute the majority (58 percent) of the EU's EUR 355 billion R&D expenditure, with governments providing 30 percent (EC 2024a). Therefore, if the EU is serious about moving the needle of its R&D spending, it must support private R&D spending, either by encouraging market competition or through initiatives such as tax incentives. Otherwise, European firms risk falling behind

in the technological race. Large European companies spent a lower percentage of their revenue on R&D than comparable economies (McKinsey 2022).

Public investment in R&D also merits attention. The EU's public R&D spending (0.24 percent of GDP) falls short compared to similar economies like Japan (0.28 percent), the US (0.29 percent), and South Korea (0.48 percent) (EC 2024a). This disparity raises concerns about EU priorities. While Horizon Europe, the most significant EU R&D program, boasts a EUR 95.5 billion budget (nearly 9 percent of the 2021–2027 EU budget), agriculture spending holds a considerably larger share at 31 percent (European Council 2022).

Ambitions also need to be raised. The target of spending 3 percent of GDP on R&D reflected the profile of the economy in the 1990s, but since then the role of knowledge, human capital, and scientific discovery in the economy has become much bigger. A better target for the economy of the future is a target of, say, 4 or 5 percent of GDP, and to achieve that by 2040 requires a significant increase in R&D spending in the next 15 years. In the next Financial Framework of the EU, R&D spending should double, and individual member states need to take even greater responsibility for incentivizing private R&D and expanding on the national research spend.

While raising the level of EU R&D spending is crucial, maximizing its impact requires improving how those funds are spent and how they help fuel economic growth. Currently, a uniform distribution across member states, while seemingly equitable, contradicts the economic logic of fostering innovation. Take Horizon 2020 – the predecessor to Horizon Europe. As a percentage of GDP, Cyprus, Luxembourg, and the Netherlands received the highest research spending (EC 2024b). However, these are not the hubs for European innovation. Importantly, this approach hinders efforts to cultivate world-class research, which is essential for the EU to compete and engage with global centers of excellence. In a ranking of the top 25 universities globally, only one EU institution (Université PSL) made the cut. When looking at the top 50 universities, Asia is home to nearly three times as many as the EU (QS World University Ranking 2024).

Skilled workers are another fundamental driver of technological advancement, as they determine an economy's capacity to adopt new technologies. Unfortunately, demographic trends suggest a decline in Europe's domestic supply of advanced human capital, leading to potential skills shortages in critical innovation areas (Lamprecht 2022). To mitigate this challenge, the EU should prioritize funding for educational programs aligned with these emerging skills gaps. Additionally, the EU should attract foreign talent and foster mobility for EU researchers to participate in international networks and tap into the growing body of research undertaken outside the EU.

Improving capital markets also goes in tandem with accelerating innovation-led growth. Eu-

rope does not have a shortage of savings that can be used by capital markets to fund corporates and growth. Capital markets are also liquid, which means foreign capital also comes to Europe's capital markets. However, corporate funding in Europe remains all too dependent on banks and bond markets, and too small shares of European savings find their way into growth funding for companies. Both corporates and capital markets in Europe are more risk averse than their American peers, and financial sector regulations have encouraged an allocation of capital that makes the corporate sector too dependent on public bond markets and savers too dependent on treasuries, corporate bonds, and other assets that tend to go to incumbent companies. For instance, venture capital funding as a share of GDP is ten times larger in the US than in the EU (Elert et al. 2019). In other words, there is a strong potential for better corporate growth funding in Europe, and this could also help provide funding at scale.

Finally, there is substantial work ahead to raise the technology and productivity performance in Europe's SME sector. Europe's industrial profile is strongly based on SMEs, and there is a firm-level productivity distribution pattern that is worrying. Technology adoption in the US economy is stronger than in the EU across all firm sizes, but the gap is the largest for small and medium-sized enterprises (EIB 2023). Low levels of technology adoption weigh down on productivity performance, and also make it harder for European companies to grow on the back of technology acceleration. The services sector in particular is fragmented and based on unconsolidated markets with many firms that do not grow much. With smaller scale comes smaller capabilities for technology investment. In the end, it reduces the contribution that these firms can make to the economy.

POLICY CONCLUSION

In this article we have argued that:

- Europe has a productivity growth problem, and it is especially alarming in western and southern Europe. While total factor productivity growth has gone down in the US, too, the deceleration is stronger in the EU, and it requires urgent policy attention.
- Europe's key productivity problem is to accelerate technological change and have more companies that lead on modern innovation, not least in areas of data, AI, and quantum technology.
- There is a strong case to be made for improving EU policies on the single market and for reducing barriers to trade and investment both within the EU and externally with other countries. Europe should change its stance of regulatory unilateralism toward more regulatory cooperation with key partners, leading to better opportunities for economic integration.

- European policymakers should increase expenditure on R&D and create better incentives for private-sector R&D spending. They should also pursue policies that lead to a greater share of European savings being invested in growth funding for firms and that allow for faster growth in venture capital.
- Policymakers in Europe should also focus on closing the gap in technology adoption and productivity across firm-size classes and making it easier to diffuse technology to SMEs.

REFERENCES

- Baqae, D. and E. Farhi (2020), “Productivity and Misallocation in General Equilibrium”, *Quarterly Journal of Economics* 135, 105–163.
- Criscuolo, C., P. N. Gal and C. Menon (2014), “The Dynamics of Employment Growth: New Evidence from 18 Countries”, *OECD Science, Technology and Industry Policy Papers* 14, <http://dx.doi.org/10.1787/5jz417hj6hg6-en>.
- Di Girolamo, V., A. Mitra, J. Ravet, O. Peiffer-Smadja and P. A. Baland (2023), *The Global Position of the EU in Complex Technologies*, Publications Office of the European Union, <https://data.europa.eu/doi/10.2777/454786>.
- EIB (2023), *Digitalisation in Europe 2022-2023: Evidence from the EIB Investment Survey*, European Investment Bank.
- Elert, N., M. Henrekson and M. Sanders (2019), *The Entrepreneurial Society: A Reform Strategy for the European Union*, Springer, Berlin.
- Erixon, F., O. Guinea, P. Lamprecht, E. Sisto and E. van der Marel (2023), *The Economic Dividend of Competitiveness*, <https://ecipe.org/publications/economic-dividend-of-competitiveness/>.
- European Commission (2024a), *R&D Expenditure*, Eurostat, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D_expenditure.
- European Commission (2024b), *Horizon 2020 Dashboard*, <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-dashboard>.
- European Council (2022), *Long-term EU Budget 2021-2027 and Recovery Package*, <https://www.consilium.europa.eu/en/policies/the-eu-budget/long-term-eu-budget-2021-2027/>.
- Lamprecht, P. (2022), “Does Shortage of High-Skilled Labour Threaten Germany’s Ambitious Sustainability Goals?”, ECIPE, <https://ecipe.org/blog/does-shortage-of-high-skilled-labour-threaten-germanys-ambitious-sustainability-goals/>.
- Letta, E. (2024), *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*, <https://www.consilium.europa.eu/media/ny-3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>.
- Lopez-Garcia, P. and B. Szörfi (2021), *Key Factors behind Productivity Trends in Euro Area Countries*, https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202107_02-c95a8477e1.en.html.
- McKinsey & Company (2022), *Securing Europe’s Competitiveness: Addressing Its Technology Gap*, <https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/securing-europescompetitiveness-addressing-its-technology-gap>.
- OECD Dataset (OECD, 2024a), *Growth in GDP per Capita, Productivity and ULC*, https://stats.oecd.org/viewhtml.aspx?datasetcode=PDB_GR&lang=en#.
- OECD Dataset (OECD, 2024b), *REGPAT: Patents by Regions*, https://stats.oecd.org/Index.aspx?DataSetCode=PATS_REGION.
- QS World University Ranking (2024), <https://www.topuniversities.com/world-university-rankings>.