



Future-Proofing the European Economy

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NEOSLAB



FUTURE-PROOFING THE EUROPEAN ECONOMY

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Abstract

Europe is falling behind in global productivity. After decades of convergence, the gap with the United States has widened again. Since the COVID-19 crisis, productivity in the euro area has barely grown, while the US has continued to advance. Weak total factor productivity, the failure to scale innovative firms, and a shift towards low-productivity services are holding back incomes. At the same time, high energy and labour costs undermine industrial competitiveness, and Europe's dependence on imported critical raw materials and key technologies creates geopolitical vulnerability.

This publication argues that future-proofing the European economy requires progress along three interconnected pillars. First, Europe must complete the Single Market for goods, services, capital and digital activities to give firms the scale they need to grow. Second, it must restore cost competitiveness while pushing out its innovation frontier, particularly by lowering structural cost pressures and improving access to risk capital. Third, Europe must strengthen economic sovereignty in an open way: reducing critical dependencies without turning inwards.

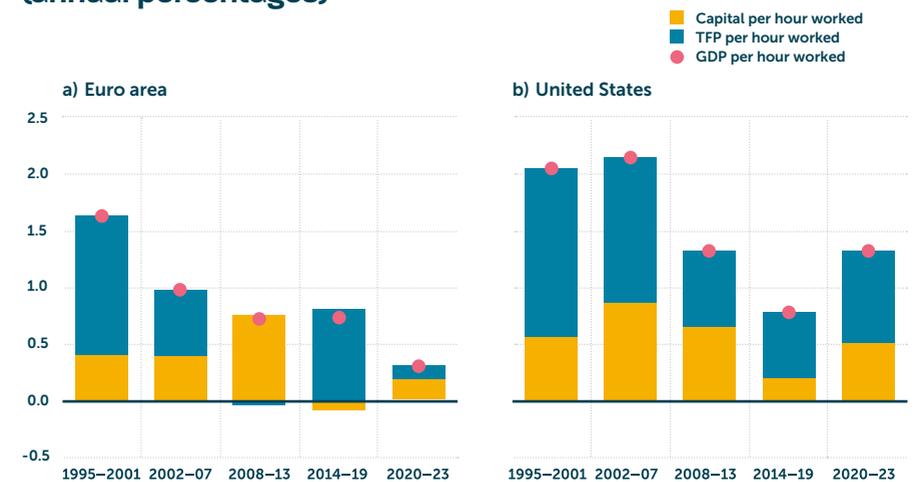
We show how remaining Single Market barriers, fragmented capital markets and research systems, and an over-reliance on bank finance constrain firm growth and innovation. We argue that network industries—especially energy, grids and transport—and a high labour tax wedge have become structural drags on competitiveness. We also identify Europe's main vulnerabilities in critical inputs and technologies and set out how to pursue open strategic autonomy without sliding into protectionism.

The paper concludes with a focused policy agenda that combines horizontal reforms with carefully targeted interventions. The aim is to close the productivity gap, halt deindustrialisation, and secure Europe's social model in a more contested global economy.

Introduction

After a four-decade-long productivity convergence spell with the US in the second half of the 20th century, Europe's hourly labour productivity gap vis-à-vis the US widened from the mid-1990s, and then again since the COVID crisis. For instance, **between the fourth quarter of 2019 and the second quarter of 2024 labour productivity per hour worked increased by 0.9% in the euro area, whereas it increased by 6.7% in the United States.**¹ In line with this, lower total factor productivity explains the bulk of Europe's significant per capita income gap with the US (see Figure 1).

Figure 1: Decomposition of hourly labour productivity growth (annual percentages)



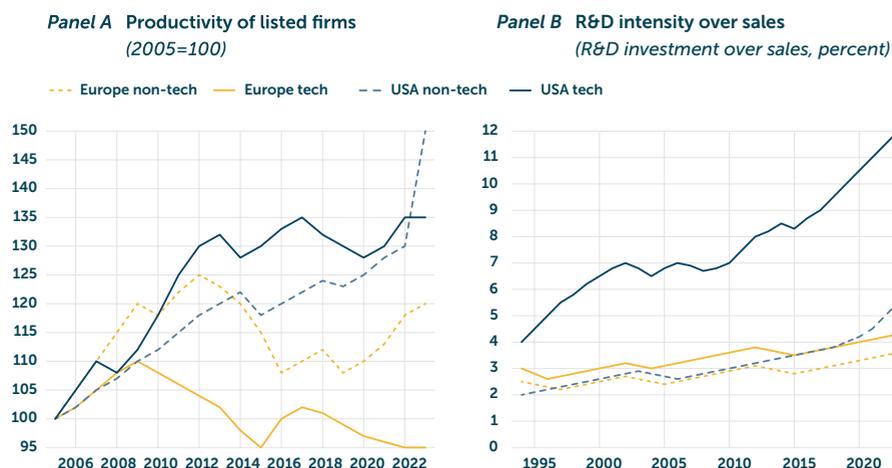
Source: ECB

¹ European Central Bank (2024), *Economic Bulletin*, Issue 4/2024 (Frankfurt am Main: European Central Bank), <https://www.ecb.europa.eu/press/economic-bulletin/html/eb202406.en.html>.

In both regions, productivity growth was primarily driven by growth within sectors rather than a change in the sectorial composition. The post-pandemic developments add to the two decade-long widening of the productivity gap between the euro area and the United States, pointing to the role of structural factors. Additional to the divergence in the developments in the tech sector, further competitiveness factors have played a major role. If current trends persist, Europe risks locking in a permanent productivity gap, weaker industrial capacity, and lower real incomes.

When we take a closer look at the sectoral decomposition of the differences, one fact stands out: the divergence is broad-based but is starkest in tech sectors. In all, **the productivity of US listed tech firms increased by around 40% over the past two decades, while that of European tech firms has remained stagnant** (see Figure 2).

Figure 2: Productivity and R&D investment of leading firms in Europe and the US



Source: Adilbish et al. (2025)²

2 F. Adilbish, M. Criscuolo, C. Haskel, and R. Martin (2025), 'Europe's productivity weakness: Firm-level roots and remedies', VoxEU / CEPR, <https://cepr.org/voxeu/columns/europes-productivity-weakness-firm-level-roots-and-remedies>.

Furthermore, Adilbish et al. (2025) observed that **young firms in Europe exhibit weaker dynamism than their US counterparts**. While entry rates are comparable on average, focusing on 'higher-quality' entrants by stripping out the data from microenterprises (firms with fewer than ten employees), which account for a markedly low share of total value added compared to their share of employment, reveals that the average entry rate in the US is about 25% higher than in Europe. Furthermore, within Europe's smaller pool of entrants, **high-growth firms tend to have a smaller economic footprint**. Top-performing young US firms (those under five years old and in the top decile in terms of sales growth) make up around six times the share of total employment of their European counterparts. Consequently, fewer innovative young firms become market leaders in Europe.

Ultimately, Europe is exhibiting a deficit not solely of nascent high-growth enterprises, but also of declining unprofitable entities. While exit rates are comparable on average between Europe and the US, the distribution of firm growth in Europe tends to be narrower for all age classes. This suggests that, compared to the US, higher-growth firms scale up more slowly while lower-growth firms contract at a more modest rate. Consequently, the difference in average firm size between Europe and the US increases over the course of a firm's life cycle. **Put simply, too few European firms grow into giants – and too few weak firms disappear.**

The final observation corresponds to the **structural composition of Europe's economy**. The 'deindustrialization' of Europe has been a popular topic of policy discussions, particularly since energy prices increased dramatically in 2022. While as mentioned above, the main differences in productivity happen at the intensive margin, i.e., within the industries, there is some shift between the sectors as well. Duernecker & Sanchez-Martinez (2023) analyse the changes in the sectoral composition of the European economy.³ The process of structural change can lead to a drag to overall productivity growth because it leads to a reallocation of economic activity from sectors with high rates of productivity growth – such as industry – towards the service sector which is characterised by comparably low rates of productivity growth.

3 Duernecker, G., & Sanchez-Martinez, M. (2023). Structural change and productivity growth in Europe—Past, present and future. *European Economic Review*, 151, 104329.

While it is documented that both the US and Europe have experienced a long-term decline in manufacturing employment and output share, there is a qualitative difference. In the U.S., much of the expansion has been in high-productivity, knowledge-intensive services (e.g., ICT, professional services, finance – tech companies as mentioned above), and supported by digitisation in other services. In Europe, the growth has tilted more toward low-productivity, traditional services (e.g., retail, hospitality, personal services) (Duernecker & Sanchez-Martinez, 2023). **Europe suffers under the 'Baumol cost disease' while the US does not.** This concept describes what happens when wages rise in sectors with low or stagnant productivity, simply because wages in other, more productive sectors are rising. Further decline in manufacturing output in Europe would consequently lead to even slower productivity growth.

The contents of this chapter focus on the solutions and remedies to both problems: low productivity growth within the industries and stopping the process of deindustrialisation. A future-proof economy would be one in which productivity growth keeps par – and overtakes – the competition from the rest of the world.



Three pillars of a future-proof economy

Europe does not lack ideas, talent or savings – it lacks a growth model that ties them together. A French start-up that wants to sell services in Italy still runs into red tape; a German scale-up that needs risk capital still finds shallow equity markets; an energy-intensive plant in Poland still pays far more for power than a competitor in Texas; and a chip manufacturer in the Netherlands still depends on fragile supply chains for critical inputs. The three pillars in this chapter address exactly these fault lines: a Single Market that truly allows firms to grow across borders, framework conditions that make it attractive to invest and innovate in Europe, and a form of economic sovereignty that secures key inputs without shutting the continent off from the world. Taken together, they sketch a path from a patchwork of national economies to a genuinely future-proof European economy.

1.1 The single-market

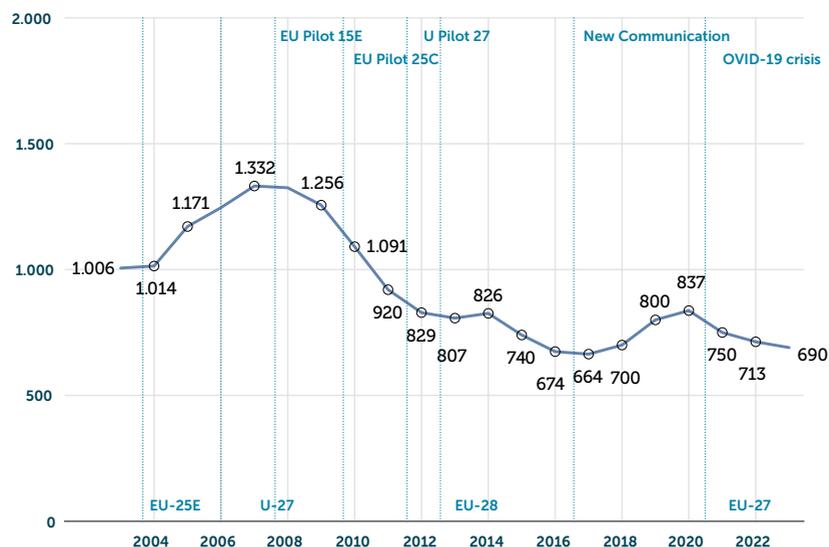
Existing barriers to the single market

The Single Market is Europe's largest growth asset, but it still does not function as a genuinely borderless home market for firms.⁴ In 2020, the Commission presented the results of a survey identifying 13 barriers to cross-border activity among business and consumers.⁵ Key steps of the business respondents included: gathering information to prepare a cross-border transaction (and/or expansion); meeting requirements to sell goods or services; marketing and selling; delivery; after sales and dispute resolution; taxes; (additional steps in case of establishment) setting up business activity; staffing; investing and financing. Consumers pointed to difficulties in gathering product/service information; purchasing; paying; obtaining delivery; after sales activities and dispute resolution. While the overall compliance of the member states with the single-market principles is improving – as measured by the number of single-market infringement cases (Figure 3) – there are still **significant obstacles towards the functioning of the single market.**

⁴ The Single European Act (SEA) was signed in February 1986 and entered into force in July 1987. The SEA paved the way for the completion of the single market ('an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured') over a period up to the end of 1992. On 1 January 1993, after the adoption of nearly 280 pieces of legislation, the single market came into force for 345 million people in the 12 Member States. Home to 345 million people in 1993, now it numbers around 450 million consumers and over 20 million companies.

⁵ European Commission (2020), Identifying and addressing barriers to the Single Market, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2020) 93 final (Brussels: European Commission), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0093>.

Figure 3: Changes in the number of Single Market infringement cases



Source: <https://single-market-scoreboard.ec.europa.eu/>

These obstacles generate substantial economic costs. **High trade barriers within Europe are equivalent to an ad valorem cost of 44 percent for manufactured goods and 110 percent for services**, IMF research shows (see Figure 4 for details).⁶ The European Parliament Research Service (EPRS)⁷ estimates that completing the single market for goods and services would result in an additional 480 billion EUR in GDP. Based on this data we strongly recommend to foster **continued adoption of harmonised product rules, wider application of the principle of mutual recognition (wherever such rules do not exist), better transposition and implementation of existing EU law, and/or speedier remedies for nonenforcement of the latter in the area of goods, and e.g., increasing the degree of openness in the regulated professions for the market for services.**

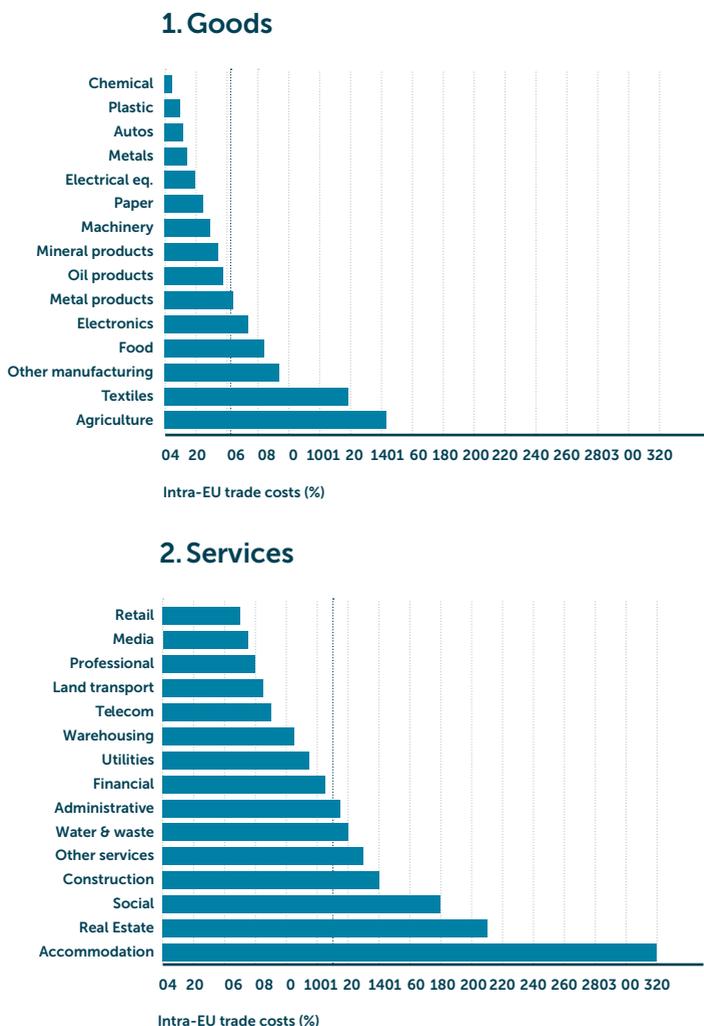
The IMF (2025)⁸ identifies smaller markets and limited market-based financing are key bottlenecks for frontier European firms and explain the productivity gap against the US. Continued efforts towards a deeper single market would support firm growth by lifting constraints related to market size. Removing remaining barriers to trade within the EU would incentivise firms to undertake R&D and other investments that pay off when the customer base is large. For example, there is scope for expanding firms' market access within Europe by addressing **underinvestment in border infrastructure, opening up protected sectors, pursuing further services trade liberalisation, and harmonising regulations** (IMF, 2025).

⁶ International Monetary Fund (IMF). 2024. Regional Economic Outlook for Europe: A Recovery Short of Europe's Full Potential. Washington, DC, October.

⁷ European Parliament, European Parliamentary Research Service (2019), Mapping the cost of non-Europe, 2019–24 (Brussels: European Parliament), [https://www.europarl.europa.eu/RegData/etudes/STUD/2019/631745/EPRS_STU\(2019\)631745_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2019/631745/EPRS_STU(2019)631745_EN.pdf).

⁸ O. Adilbish, D. Cerdeiro, R. Duval, G. Hong, L. Mazzone, L. Rotunno, H. Toprak, and M. Vaziri (2025), 'Europe's Productivity Weakness: Firm-Level Roots and Remedies', IMF Working Paper 25/40 (Washington, DC: International Monetary Fund).

Figure 4: Estimates of Intra-EU Trade Barriers, 2020



Source: IMF (2025)

Note: The vertical dashed lines are output-weighted averages within manufacturing (Panel 1) and services (Panel 2).

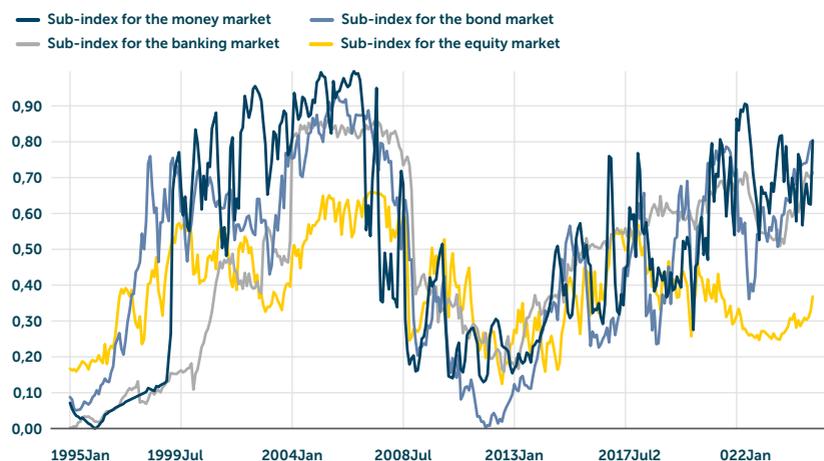
Completing the Capital Markets Union must be treated as a competitiveness reform, not a financial technicality. Many of the required reforms, such as the **review of the prudential regime for insurers and steps toward greater EU harmonisation of capital markets’ oversight**, would better harness Europe’s considerable savings and increase the availability of equity financing for firms of all sizes. **Easing the constraints that inhibit venture capital (VC) growth and closing the VC-funding gap** vis-à-vis other advanced economies would unlock equity financing for startups and young firms that lack tangible collateral, which would promote entry and innovation. Concrete measures include, among others, **harmonising VC regulations to incentivise the development of larger funds, and having the European Investment Fund play a catalytic role and provide due diligence as a public good**. Finally, increasing the portability of pensions and mutual-recognition agreements for professional services requiring licensing can promote talent agglomeration in innovation clusters. (IMF, 2025).

Single market for capital

EU institutions monitor the level of integration of the EU capital market. Figure 5 shows that while, since the global financial crisis, the integration of money, bond, and bank markets has been progressing, **the integration of equity markets remains low**. Several arguments show the need to further integrate the capital market. First, Martinez et al (2022)⁹ show that a money market union is efficient at sharing domestic demand shocks (deleveraging, fiscal consolidation), while a capital market union is necessary to share supply shocks (productivity and quality shocks). Secondly, **disintegrated equity markets might explain the productivity and innovation gap against the US**. Put simply, without a truly integrated capital market, Europe will not be able to fully turn its ideas, talent, and savings into higher productivity and innovation.

9 J. Martinez, T. Philippon, and M. Sihvonen (2022), ‘Does a currency union need a capital market union?’, Journal of International Economics, 139, 103675. <https://doi.org/10.1016/j.jinteco.2022.103675>.

Figure 5: Indicators of financial integration, from 0 (low) to 1 (high)

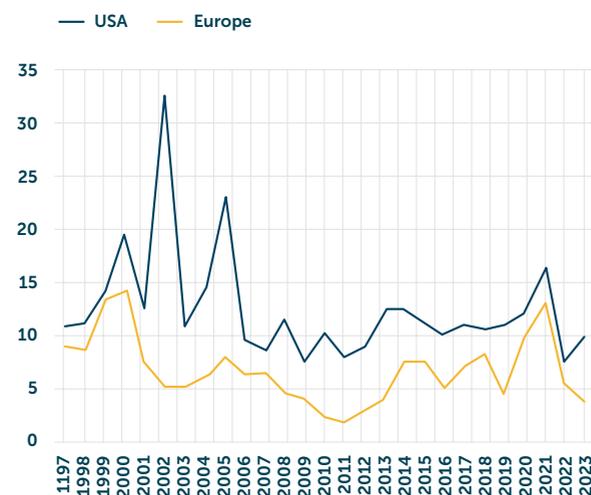


Source: European Central Bank (April 2025)

Specifically, European firms rely less than their U.S. competitors on equity; relative to their size, U.S. listed firms have been able to issue about twice as much equity as European ones (see Figure 6). Compared to debt financing, equity financing is better suited to ventures involving risk. This is particularly true of intangible investments, which cannot be used as collateral but constitute a primary component of firm capital in innovative industries. Innovation requires sustained high levels of research spending, regardless of temporary economic fluctuations, as disruptions to R&D projects hinder innovation (Aghion et al., 2010).¹⁰

¹⁰ P. Aghion, G.-M. Angeletos, A. Banerjee, and K. Manova (2010), 'Volatility and Growth: Credit Constraints and the Composition of Investment', *Journal of Monetary Economics*, 57(3), 246–265. <https://doi.org/10.1016/j.jmoneco.2009.11.005>.

Figure 6: Net Equity Issuance of European and U.S. listed firms (Share of total assets)



Source: IMF (2025)

IMF (2025) analyses the impact of financial frictions on the firms' propensity to invest: firms facing financial frictions will curtail investment in response to adverse transitory cash flow shocks, as they will be unable to fully offset such shocks through increased borrowing. They find that the elasticity of investment with respect to cash flow shocks to be higher for European listed firms compared to their U.S. counterparts (0.2 versus 0.13).

The difference is particularly pronounced in tech sectors, where an unexpected one percent increase in sales is estimated to increase investment by 0.4 percent for European listed firms versus only 0.1 percent for U.S. firms. Moreover, **European firms with greater exposure to the global financial crisis shock sharply curtailed investment, much more so than U.S. counterparts.**

Mezzanotti and Simcoe (2023)¹¹ further show that bank-related financial stress during the GFC led distressed firms to cut investments in intangibles. These results underline the importance of integrated equity markets to sustain R&D and investment activities in Europe. Moreover, **it can help cushion future shocks to the financial system.**

One of the major barriers to the single market for capital is its legal fragmentation. Company law varies significantly, with differing requirements for incorporation (e.g. notarial deeds in Germany and Austria), shareholder rights, and digitalisation of procedures. Starting a business can take days or weeks depending on the country, creating delays and higher costs. Insolvency laws are also inconsistent, often making restructuring slow and costly. Tax law differences further complicate cross-border operations: some Member States offer attractive stock option regimes or tax incentives for entrepreneurs, while others impose heavy burdens.

All these factors result in a low propensity to invest across the border. The **28th regime** proposes certain changes addressing these components: In insolvency, it would **harmonise procedures** to allow quicker restructuring and reduce the cost of failure, protecting creditors while enabling viable firms to restart. In tax law, **a standardised EU Employee Share Option Plan (EU-ESOP)** would provide uniform treatment of stock options, which is regarded in the literature (see, e.g., Köppl-Turyna et al, 2021)¹² as an important factor affecting the supply of venture capital.

Finally, equity market needs to be able to raise money from large institutional investors, in particular, **pension funds and insurance companies** – which are major investors in the U.S., and some European economies (e.g., Denmark). Some initiatives within the **Savings and Investment Union** and further initiatives address the question of mobilising more capital:

- **New long-term retail investment products:** Designed to offer accessible, low-cost, diversified investment vehicles (e.g., beyond traditional and fragmented UCITS or ELTIF products). These aim to build trust and encourage both retail and institutional uptake.
- **Adapting Solvency II rules** – which govern prudential capital requirements for insurers—to allow greater flexibility for long-term, higher-risk investments like venture capital and private equity.
- **Pan-European Personal Pension Products (PEPPs):** While primarily geared toward retail savers, PEPPs could be leveraged to channel long-term capital – including through sustainable or equity-oriented allocations.
- **European Long-Term Funds (ELTFs) and Green Guarantee facilities** to support risky but socially strategic investments like clean energy and innovation projects.

11 F. Mezzanotti and T. Simcoe (2023), 'Innovation and Appropriability: Revisiting the Role of Intellectual Property', NBER Working Paper No. 31428 (Cambridge, MA: National Bureau of Economic Research), <https://www.nber.org/papers/w31428>.

12 M. Köppl-Turyna, S. Köppl, J. Berger, and L. Strohner (2021), 'Determinanten und Effekte von Venture Capital und Private Equity: Eine Literaturanalyse', List Forum für Wirtschafts- und Finanzpolitik, 47(2), 151–192 (Berlin/Heidelberg: Springer).

Cross-border infrastructure

Santamaria et al (2023)¹³ explore trade patterns among European regions, highlighting the strong home country bias, the impact of geographic distance and national borders, and the influence of political borders on regional trade dynamics. They find that political borders explain much of the drop in trade between European Union regions. Controlling for size, distance, and other factors, crossing a national border reduces bilateral trade to 6–22% of the “independence benchmark” (the level predicted if only market size mattered).

The negative effect is smaller when countries share a language or a currency, but still very large. Not only national borders matter – regional political borders **within countries** also suppress trade. For example, trade between regions separated by political borders at both the NUTS1 and NUTS2 levels is reduced to 28% of benchmark flows. By contrast, purely statistical borders (used only for Eurostat data) have no effect, showing **that political authority and regulation drive these barriers.**

One of the reasons, for which the national barriers present a barrier to trade – independently of the legal and administrative barriers discussed above – weak cross-border transportation infrastructure. Anderson & Van Wincoop (2003)¹⁴ find that borders reduce international trade far more than tariffs or observable costs suggest – suggesting the role of cross-border transportation infrastructure in explaining the puzzle. The distribution of transport infrastructure across space is the outcome of **deliberate government planning that reflects a desire to unlock the welfare gains from regional economic integration.** On average, OECD countries spend about 1% of GDP on inland transportation infrastructure and maintenance. This amounts to about 3% of countries’ public budgets. In Europe, member states decide almost exclusively on their own

about transport infrastructure investment projects – and as shown by Feblermayr & Tarasov (2022), political economy considerations lead to underinvestment in border regions.¹⁵ Thus, trucks and trains can move easily within countries, but they often face bottlenecks as soon as they reach a border. This makes cross-border trade slower, more expensive, and less reliable. As a result, firms are less likely to serve a European customer base, even within the Single Market.

There is some coordination at the Union level through the Trans-European Transport Network, but the budget has been limited to about 1 billion Euro per year over the 2007-2013 spending period. This is less than 1% of overall spending on infrastructure in the EU. At the same time, transport infrastructure vastly reduces trade costs. Limao & Venables (2001)¹⁶ find that **deterioration of infrastructure** from the median to the 75th percentile **raises transport costs** by 12 percentage points and reduces trade volumes by 28 percent.

To strengthen the international trade flows within the European Union, a more coordinated approach towards infrastructure is needed. The European Union has made cross-border transport infrastructure a priority, with recent strategic analyses highlighting both the scale of the investment gap and the structural barriers to integration. The Letta report underlines that **incomplete deployment of the European Rail Traffic Management System (ERTMS)** continues to hinder interoperability, leaving many cross-border rail services dependent on fragmented national systems. Building on this, the **Draghi report estimates that Europe requires €840 billion by 2040 for rail infrastructure** and the completion of the **Trans-European Transport Network (TEN-T)**, alongside new technologies such as automated coupling and the Future Railway Mobile Communication System (FRMCS). In this spirit, the Connecting Eu-

13 M. Santamaria, J. Ventura, and U. Yeşilbayraktar (2023), ‘Exploring European regional trade’, *Journal of International Economics*, 146, 103747. <https://doi.org/10.1016/j.jinteco.2023.103747>.

14 J. E. Anderson and E. Van Wincoop (2003), ‘Gravity with gravitas: A solution to the border puzzle’, *American Economic Review*, 93(1), 170–192. <https://doi.org/10.1257/000282803321455214>.

15 G. J. Felbermayr and A. Tarasov (2022), ‘Trade and the spatial distribution of transport infrastructure’, *Journal of Urban Economics*, 130, 103473. <https://doi.org/10.1016/j.jue.2022.103473>.

16 N. Limao and A. J. Venables (2001), ‘Infrastructure, geographical disadvantage, transport costs, and trade’, *World Bank Economic Review*, 15(3), 451–479. <https://doi.org/10.1093/wber/15.3.451>.

rope Facility (CEF) earmarked €25.8 billion for transport between 2021 and 2027, with a strong emphasis on cross-border corridors, while the European Investment Bank financed 105 cross-border projects worth €60 billion between 2010 and 2022, much of it in the transport sector. Nevertheless, **fragmentation remains acute**, with around 800 national rail standards still in use across the EU, which inflates costs and slows progress.

Taken together, these findings show that the Single Market remains Europe's most powerful but still underused asset. Regulatory and administrative barriers in goods and, especially, services still act like a hidden tax on cross-border activity, raising trade costs and limiting firms' incentives to invest and scale. Fragmented capital markets and divergent company, tax and insolvency rules hold back equity financing and venture capital, while weak and uncoordinated cross-border infrastructure means that trucks, trains and electricity often "stop" at borders even inside the EU. Completing the Single Market for goods, services, capital and infrastructure would therefore not only lift GDP by hundreds of billions of euros; it would also give European firms the large, integrated home market they need to innovate, grow and compete globally.

1.2 Competitiveness

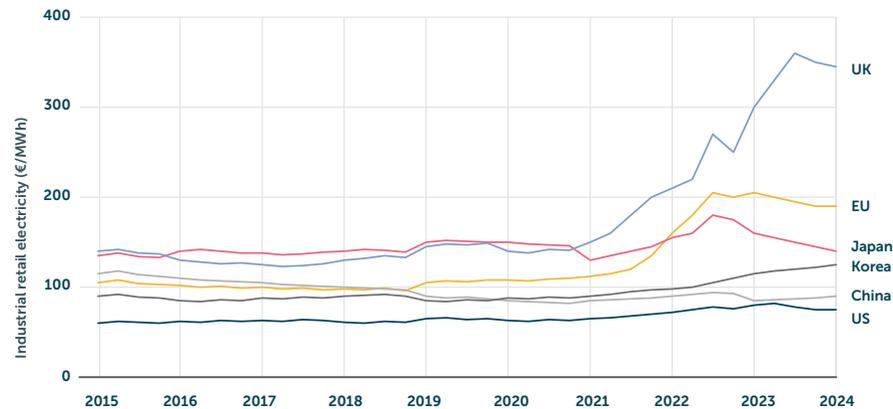
Competitiveness is where Europe's structural weaknesses become concrete for firms and workers. Even when the Single Market works on paper, companies still struggle with electricity bills that are double those of their US rivals, fragmented and underfunded innovation ecosystems, and a tax system that makes labour unusually expensive. This section looks at the cost dynamics and conditions that determine whether Europe is an attractive place to invest, produce and innovate: energy prices and grids, the strength and connectivity of innovation networks, access to risk capital, labour taxation, and entrepreneurial culture. Together, these factors shape whether European firms can scale new ideas at home – or whether they will continue to lose ground to competitors with more business-friendly environments.

Energy costs

High energy costs are eroding the competitiveness of European businesses, particularly in energy-intensive sectors. In 2024, industrial electricity prices in the EU reached around €0.199 per kWh, compared to just €0.082 in China and €0.075 in the United States, creating a significant cost disadvantage for European companies. The disparity persists over time—industrial electricity and gas prices in Europe remain 2.5 times and 3.5 times higher than in the U.S., respectively. (see Figure 7, Figure 8, and Bruegel, 2024)¹⁷

¹⁷ Bruegel (2024), Decarbonising competitiveness: Four ways to reduce European energy prices, Policy Brief (Brussels: Bruegel), <https://www.bruegel.org/policy-brief/decarbonising-competitiveness-four-ways-reduce-european-energy-prices>.

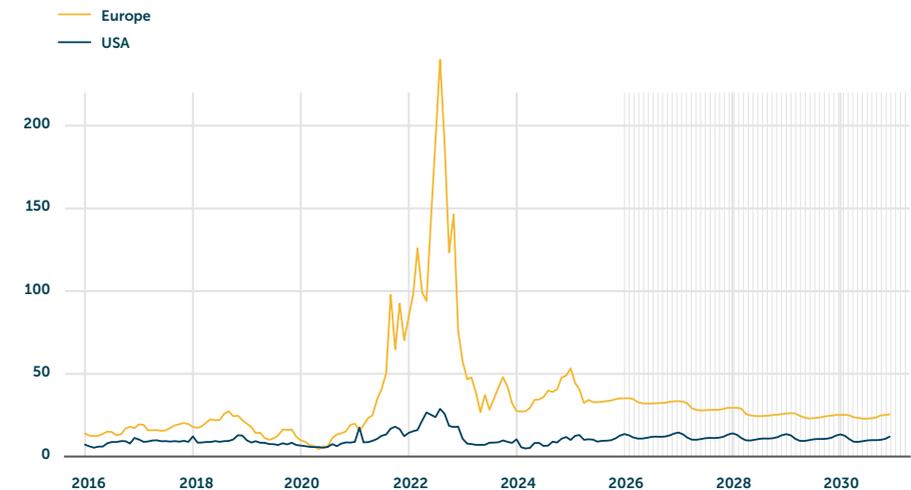
Figure 7: Europe pays more for electricity than its competitors



Source: Bruegel (2024)

Despite rapid decarbonisation of the power sector, **fossil fuels remain vital for electricity generation and continue to significantly influence final consumer costs**. Additional factors influencing final prices include **the fixed costs of supporting renewables and maintaining and expanding the energy networks, and consumption taxes and levies**. All of these need to be addressed to regain competitiveness. In the short term, policymakers must **allocate system costs** across energy consumers. Medium-term policies should **encourage demand flexibility** in electricity to improve system efficiency. In the long-term, **coordinated investment at EU level and deeper cross-border interconnection will drive down final costs** for all consumers.

Figure 8: Wholesale natural gas prices in Europe and the US



Source: EcoAustria

The difference in the final costs between Europe and the US stems from several elements. First, the cost is driven by the energy itself. The cost of supplying energy is primarily a function of access to fossil fuel resources. Europe is worse off in this respect than its competitors: **the US consumes cheap, domestically produced fossil fuels, while the EU relies on energy imports to meet domestic demand**. Secondly, network costs and energy taxes also push up European energy costs compared to other regions and they will likely increase over time, unless steps to integrate the single market for energy are taken (see Sections 2.2.1.1 and 2.2.1.2). **The US has lower electricity network costs per unit of electricity. Finally, Energy taxes are also structurally higher in the EU than in the US**. In the EU, excises taxes are placed on electricity and gas consumption in many countries, although levels vary. The US has no similar taxes at federal level.

In the short term, Europe cannot escape global fossil-fuel price dynamics, but policy choices determine how much of these costs firms ultimately bear. A wave of new LNG export capacity is expected to hit global markets from 2025 (IEA, 2024).¹⁸ Gas prices in Europe are expected to fall accordingly, although not to pre-energy crisis levels and not lower than in the US, because of the additional costs associated with importing LNG. In the EU, taxes and levies account for approximately 23% of retail electricity costs for energy-intensive firms. Energy taxation, however, can be adjusted. At present, the EU Energy Taxation Directive (2003/96/EC), which sets minimum excise duty rates for energy products, specifies a minimum rate for electricity at approximately the same level as fossil fuels such as natural gas. **In practice, in many European countries, electricity is taxed higher than gas. Temporarily suspending or reducing renewable levies for firms investing in decarbonisation projects is also possible. Furthermore, power purchase agreements (PPAs) can be one of the most effective tools to lower energy costs for European industry while accelerating the transition.** By locking in long-term contracts directly with renewable energy producers, firms gain access to cheaper and more predictable electricity prices compared to wholesale markets. Policy support could make PPAs more accessible and impactful in the short run. This works in practice. In Sweden, for example, Google has signed long-term PPAs with the renewable developer OX2, locking in clean power at stable prices for a data center at Hamina, Finland, while enabling new wind capacity to be financed and built. The firm gains cost certainty; the producer gains a reliable revenue stream; the system gains additional clean generation.

Governments could introduce **credit guarantees to de-risk PPAs for smaller firms** with weaker balance sheets, **expand aggregation schemes so multiple firms can bundle demand** and sign joint PPAs, and require **TSOs/DSOs to reduce administrative barriers to connecting renewable projects**. In addition, **contracts for difference (CfDs) could be adapted**

¹⁸ International Energy Agency (IEA) (2024), World Energy Outlook 2024 (Paris: International Energy Agency), <https://www.iea.org/reports/world-energy-outlook-2024>.

as a backstop for industrial PPAs, ensuring producers and buyers have a floor against extreme price swings.

In the longer-term, besides introducing more flexibility of demand, the most important component is **an actual single market for energy. Network costs, to recover the sizeable grid investments required to accommodate more variable renewables and growing electricity demand, will become much more important.**

Whether these costs translate into a competitiveness penalty or an advantage depends on policy choices. **A true energy Single Market is not only about more physical interconnections.** It also requires harmonised market rules, grid codes, and operational standards that allow electricity to flow freely across borders. Without common rules, national systems remain fragmented, and grids are built and operated as national assets rather than as part of a European network. Completing the energy Single Market in this broader sense would spread system costs more efficiently, strengthen cross-border competition, and ensure that rising grid investments support, rather than undermine, Europe's industrial competitiveness.

Figure 9: The average project implementation timeline



Source: ACER (2024)

The average implementation time of a transmission project is more than 10 years, of which more than half is devoted to permitting (5 years and more), which may run (partially) in parallel to the tendering of construction. The actual construction work commences after an average of 5 to 6 years of preparation after receiving the regulatory approval (which marks the end of the project planning phase). While not included in the depicted timeline, grid projects spend an average of around 2–3 years ‘under consideration’, bringing the **total project implementation time to approximately 14 years from being considered until the project’s commissioning**. To ensure the timely integration of increased grid capacities, **implementation must be streamlined, addressing the bottlenecks in the implementation process** and focusing the promoter’s resources on the projects that address an identified need. At the same time, project planning should consider lead times based on historic experience, to avoid underestimating the commissioning date and to provide a realistic best estimate of when new capacity will be integrated in the grid. While these observations are based on data covering cross-border electricity grid infrastructure, the implementation challenges are believed to be very similar for large national transmission projects, while distribution projects, typically smaller in scale, would suffer less from extensive implementation timelines (ACER, 2024).

In more concrete terms, with **more forward-looking in the planning and anticipating permitting-related activities, the overall project implementation could be sped up**. Acer (2024b)²¹ proposes that **“NRAs could consider greenlighting a project to allow progress on permit granting and other preconstruction activities as much as possible, without the regulatory approval of the project construction”**. Such an approach would speed up the project implementation, while limiting the risks of “sunk costs” for the society. While permitting is identified as the main bottleneck in the implementation process of electricity infrastructure, **low**

public acceptance could be an important factor in lengthy lead times for obtaining permits when appeal procedures are initiated. **Improving public acceptance through public engagement** may mitigate this bottleneck. Public awareness initiatives at the national level through impartial entities should also be promoted. In addition, interest groups such as consumer groups or municipality organisations could raise awareness regarding benefits at either the national or local levels. Finally, community-benefit schemes for major grid project, like reduced local electricity bills, direct compensation, or local ownership stakes in infrastructure assets, would be further measures that can increase public acceptance.

Finally, two steps must be addressed: **efficient planning and optimisation of the use of grids**. Grid development based on planning methods with shortcomings may lead to **too much investment in some locations and too little in others**. At the cross-border level, multi-vector scenarios, jointly developed by ENTSO-E, ENTSO-G and in the future the European Network of Network Operators for Hydrogen (ENNOH), ensure a common view on the evolution of consumption and supply of electricity and other energy vectors. **Consistent scenarios that underpin the network development across all grid levels are essential for a more integrated planning** of the electricity grid within the broader energy system.

Maximising **the use of existing grid capacity is the most cost-effective solution** to integrate new generation capacities into the network and managing congestion requests. Currently, grid-enhancing technologies are not included in the planning process by the national regulatory authorities (NRAs), even though their integration into the system can potentially increase the overall network capacity up to 40% (ACER, 2024) thereby reducing the costs. ACER (2024) proposes **network tariff practices which promote smart grids and network efficiency technologies** that further optimise the use of the grid network.

²¹ Agency for the Cooperation of Energy Regulators (ACER) and Council of European Energy Regulators (CEER) (2024), Position Paper on Anticipatory Investments (Ljubljana/Brussels: ACER-CEER), https://www.acer.europa.eu/sites/default/files/documents/Position%20Papers/ACER-CEER_Paper_anticipatory_investments.pdf.

Investment in interconnectors

The European electricity market remains fragmented into national wholesale markets. Most neighbouring countries are connected by transmission lines, but in most cases this transmission capacity is occasionally congested, resulting in different prices in different markets. In other words, one country might have cheaper generation units available, but these are not running because not enough transmission capacity is available to export. In a neighbouring country, meanwhile, more expensive units are needed to meet demand. This situation is inefficient (Dimopoulos et al, 2023).²² ACER (2024) quantifies **the cross-border capacity needs at 66 GW by 2030 and 90 GW by 2040, out of which 34 and 53, respectively, are being addressed.**

Different prices across the borders lead to arbitrage (the practice of exploiting price differences between markets to make a profit or gain value): significant arbitrage signals the value of capacity across the borders in question: higher price differences mean transmission is more valuable. Figure 10 shows that the value of arbitrage i.e., the value of interconnecting the markets has risen up significantly. Dimopoulos et al (2023) compares the arbitrage values to the cost of new transmission lines. The 1400 MW NorLink interconnector between Germany and Norway, finalised in 2020, reportedly cost €2 billion, or about €1.4 million per MW. Given the observed price differentials between the countries, its cost will already have been covered by early 2024.

All things being equal, a new interconnector will lead to more harmonised prices in neighbouring countries, raising prices in one country (leading to gains for the producers) and reducing them in the other (leading to benefits for the consumers). Several studies have quantified the investment needs in the interconnectors, which lie between €2 and €5 billion

per year.²³ Moreover, ENTSO-E expects investment needs to increase to €6 billion/year up to 2040, and to as much as €13 billion/year up to 2050 (Heussaff & Zachmann, 2025).²⁴

The EU has launched a range of initiatives to boost investment in electricity interconnectors, recognising that the challenge is not only financial but also regulatory and political. A central pillar is the **interconnection target, which requires each member state to be able to import at least 15%** of its installed electricity capacity from neighbours by 2030. To achieve this, the revised TEN-E Regulation prioritises cross-border projects of common interest (PCIs), which benefit from streamlined permitting and access to EU funds via the Connecting Europe Facility, guided by ENTSO-E's long-term Ten-Year Network Development Plan and cost-benefit analyses. Recent European Parliament resolutions also push for a Grid Action Plan to modernise infrastructure, strengthen resilience, integrate renewables, and further simplify approval processes. Alongside regulated transmission system operator (TSO) projects, frameworks for merchant interconnectors seek to attract private capital by clarifying revenue and risk allocation.

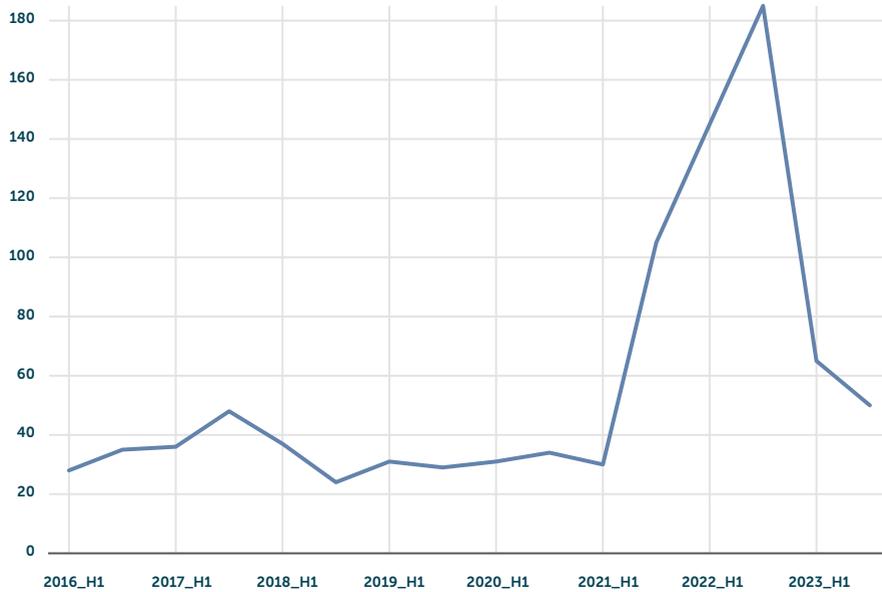
Political momentum has also grown, with Spain and Portugal urging the EU to accelerate links with France after a 2025 blackout, and the European Investment Bank committing €1.6 billion to the Bay of Biscay interconnector. Complementary frameworks such as REPowerEU, aimed at diversifying supply and deepening integration, and the Capital Markets Union, which reduces barriers to long-term infrastructure finance, further support the development of interconnectors as a cornerstone of the European internal electricity market.

²³ European Round Table for Industry (ERT) (2024), [title as published] (Brussels: European Round Table for Industry). European Network of Transmission System Operators for Electricity (ENTSO-E) (2025), TYNDP 2024 Infrastructure Gaps Report (Brussels: ENTSO-E).

²⁴ J. Heussaff and G. Zachmann (2025), Upgrading Europe's electricity grid is about more than just money, Policy Brief (Brussels: Bruegel), <https://www.bruegel.org/policy-brief/upgrading-europes-electricity-grid-about-more-just-money>.

²² G. Dimopoulos, J. Heussaff, and G. Zachmann (2023), The massive value of European Union cross-border electricity transmission, Bruegel Analysis (Brussels: Bruegel), <https://www.bruegel.org/analysis/massive-value-european-union-cross-border-electricity-transmission>.

Figure 10: Average arbitrage value at selected inter-EU borders, six-month periods, € thousands per MW

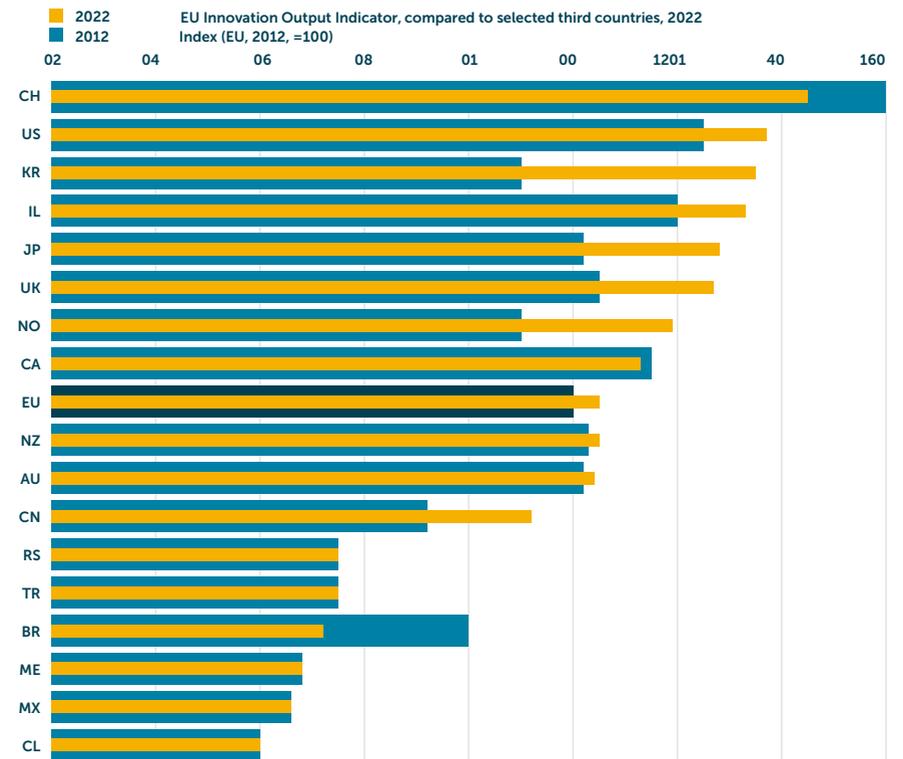


Source: Dimopoulos (2023)

Innovation infrastructure & networks

The European Union outperforms New Zealand, Australia, and China in terms of innovation output, but still lags behind countries like Switzerland, the United States, and South Korea.

Figure 11: Innovation output of the EU and its main competitors

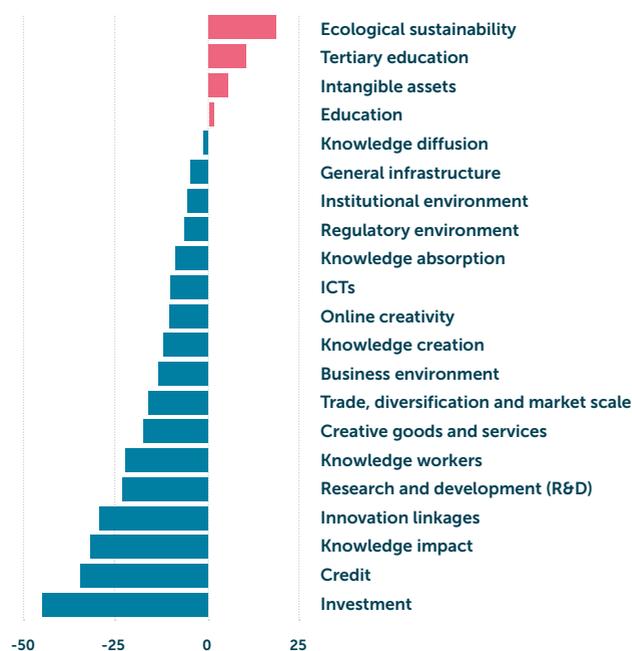


Source: JRC (2024)²⁵

²⁵ European Commission, Joint Research Centre (2024), How is the EU performing on innovation? (Brussels: European Commission), https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/how-eu-performing-innovation-2024-06-27_en.

Looking in more detail at the individual dimensions (Figure 12) reveals that there are only a few, in which the EU is ahead of the US. Europe leads in environmental sustainability of innovation, and high level of human capital. The largest gaps are observed for the dimensions of innovation linkages and several dimensions related to the regulatory market integration, and funding.

Figure 12: EU-US innovation gap



Source: EPRS (2025)²⁶

²⁶ European Parliament, European Parliamentary Research Service (2025), Benefit of an EU strategic innovation agenda, Study (Brussels: European Parliament), [https://www.europarl.europa.eu/RegData/etudes/STUD/2025/762853/EPRS_STU\(2025\)762853_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2025/762853/EPRS_STU(2025)762853_EN.pdf).

A mix of structural, financial, and institutional factors are responsible for this outcome: **fragmented innovation ecosystem, funding gaps, regulatory and market barriers within the EU, and innovation efficiency.** In this regard, the Letta report (2024) proposed a **“fifth freedom” centered on research, innovation, and education.**

Innovation Ecosystem

Balland et al (2025)²⁷ analyses the competitiveness costs of R&I fragmentation in the EU, focusing specifically on hub connectivity. They formulate three conclusions: first, the European R&I system is much more fragmented compared to the US, with major hubs showing weaker interconnectivity compared to major US hubs; second, they show that interconnectivity is particularly important for complex technologies such as AI and quantum computing; third, they find that the efficiency gap is observed for all technologies, but particularly pronounced in complex technologies, creating a competitive disadvantage in strategic sectors.

Within Europe, each Member State largely pursues its own innovation priorities, shaped by local economic needs and political agendas. With 27 national innovation strategies, funding for R&I is often dispersed and misaligned across Member States, while only **about 10% of total R&I spending is managed through more directed EU-wide programmes (Draghi, 2024).** This fragmentation hinders Europe from focusing on a cohesive set of key technologies essential for global competitiveness, leading to **suboptimal investment in strategic areas.** The European R&I fragmentation also leads to massive, missed opportunities for network effects. Scaling complex technologies requires **strong network effects**, achieved through interconnected ecosystems of researchers, companies, and institutions. In addition, fragmentation in R&I causes **duplicated**

²⁷ European Commission (2025), Divided we fall behind (Luxembourg: Publications Office of the European Union), <https://op.europa.eu/en/publication-detail/-/publication/ae52d562-44ec-11f0-b9f2-01aa75ed71a1/language-en>

efforts among Member States, leading to the inefficient use of resources. The cost of fragmentation is further evident in the incompatibility of policies and standards across Member States. Different regulatory frameworks, labour laws, and visa procedures create friction, making it difficult to deploy and scale advanced technologies across Europe. For instance, a technology developed in Germany may face hurdles in Italy due to differing standards, similarly a non-European software engineer hired in France might struggle to relocate to the Netherlands (Balland et al, 2025).

Recent evidence suggests that the US highly innovative hubs tend to collaborate more both nationally²⁸ and internationally, representing key global innovation hotspots characterised by higher degree of connectivity within the global innovation network (WIPO, 2019).²⁹ On the contrary, R&I collaborations in Europe still largely occur between actors located within the same national borders,³⁰ while cross-country collaborations are mostly limited to cross-border regions (European Commission, 2024).³¹ This gap between the European and the US R&I systems can be attributed to the **EU's structure as a union of multiple sovereign States, which makes the European science and innovation space highly heterogeneous**. Despite the important progress in the economic integration

process, key institutional settings in research infrastructures, education systems and labour markets in the EU are still largely defined at national level.

These results call for policy actions in shaping the next generation of European R&I programmes. This is particularly relevant for the reflections on the design of the next European Framework Programme for R&I. In this regard, **R&I resources could be explicitly weighted toward projects that bridge multiple hubs in complex technological domains**. Higher funding rates could be foreseen for multi-hub collaborative projects in complex technologies and **dedicated budget lines could be designed for cross-border infrastructure sharing** in advanced technological domains. This could include initiatives intended to create Complex Technology Integration Networks that provide sustained funding for multi-hub collaborations. Beyond the Framework Programme for R&I, **deeper structural changes are needed to reduce fragmentation through the development of pan-European research institutions with multiple hub locations, harmonisation of intellectual property rights and technology transfer procedures**, as well as the creation of a true ERA with seamless mobility and resource sharing.

28 P.-A. Balland (2024), Network complexity and innovation systems: Evidence from OpenAlex data, United States (2019–2023), <https://www.paballand.com/asg/network-complexity/complexity-openalex-2019-2023-us.html>.

29 World Intellectual Property Organization (WIPO) (2019), Tied in: The Global Network of Local Innovation, Economic Research Working Paper No. 58/2019 (Geneva: WIPO).

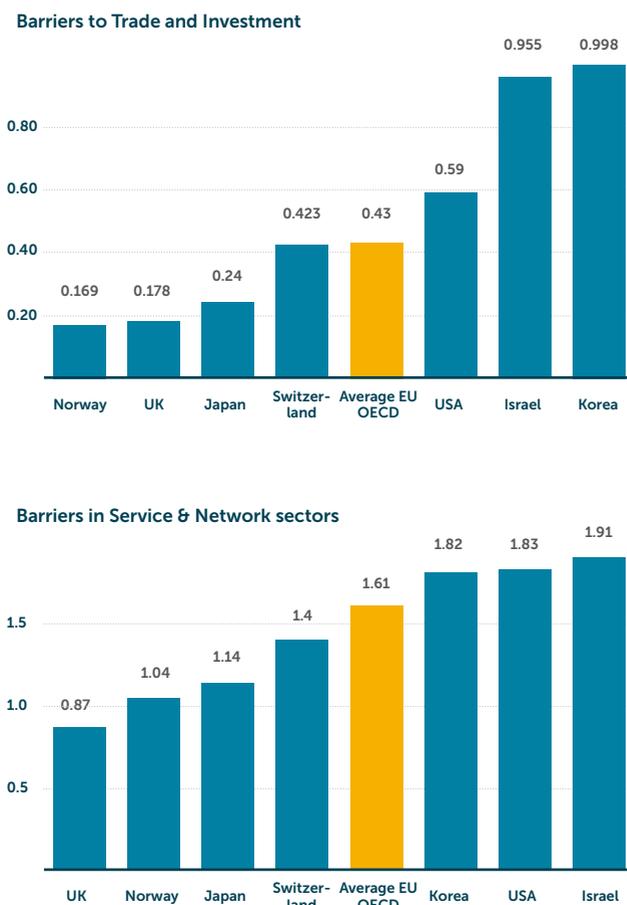
30 P.-A. Balland (2024), Network complexity and innovation systems: Evidence from OpenAlex data, European Union (2019–2023), <https://www.paballand.com/asg/network-complexity/complexity-openalex-2019-2023-eu.html>.

31 European Commission (2024), Science, Research and Innovation Performance of the EU 2024: A Competitive Europe for a Sustainable Future (Luxembourg: Publications Office of the European Union).

Regulatory & market barriers

European countries still impose restrictions on trade and investment and erect barriers to trade and services, as measures by the Product Market Index sub indicators, in particular in comparison to the United Kingdom and Switzerland (see Figure 13).

Figure 13: Market regulation in the EU and competitors



Average of the EU OECD members in yellow. Lower value corresponds to a more competition-friendly regime. Source: own calculations.

Product-market barriers - legal entry restrictions, state control, price and conduct regulation, and limited cross-border contestability – undercut innovation through four well-documented channels:

- 1. Weaker competitive pressure on incumbents.** In the canonical “escape-competition” framework, innovation rises with competition up to a point; too little rivalry blunts incentives to move ahead of rivals. This inverted-U is shown theoretically and empirically for European/UK firms (Aghion et al, 2005).³²
- 2. Blocked entry/exit and slower reallocation** (“business churning”). Tighter product-market regulation (PMR) lowers firm turnover, which slows the diffusion of new ideas and shifts of resources to more productive (often younger, more innovative) firms—an effect documented in EU panels and ECB research.³³
- 3. Input-output propagation from regulated upstream services.** Anti-competitive rules in energy, transport, communications, and professional services raise costs and reduce quality/variety of essential inputs, which depresses productivity and innovation downstream in manufacturing and tradables. Empirical studies show that industries more intensive in such services grow productivity and exports faster where service regulation is lighter.³⁴

32 P. Aghion, N. Bloom, R. Blundell, R. Griffith, and P. Howitt (2005), ‘Competition and innovation: An inverted-U relationship’, *Quarterly Journal of Economics*, 120(2), 701–728. <https://doi.org/10.1093/qje/120.2.701>.

33 European Central Bank (2019), *Product market regulation, business churning and productivity: evidence from the European Union countries*, ECB Working Paper No. 2332 (Frankfurt am Main: European Central Bank), <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2332~53142f69bc.en.pdf>.

34 G. Barone and F. Cingano (2011), ‘Service regulation and growth: evidence from OECD countries’, *Economic Journal*, 121(555), 931–957. <https://doi.org/10.1111/j.1468-0297.2011.02433.x>

- 4. Lower profitability of R&D at sub-scale due to market fragmentation.** When barriers fragment markets, firms struggle to reach the scale needed to amortise fixed R&D outlays; evidence from Single Market reforms shows that pro-competition shocks were followed by higher innovation intensity and productivity in exposed EU manufacturing sectors.³⁵

Product market regulation and entry barriers to other markets are, thus, a major problem for reestablishing European competitiveness. As already mentioned in Section 2.1.1, innovation can be stimulated by a further deepening of the single market for goods and products. Some policy steps could include **strengthen contestability and enforcement of anti-trust**, use the Digital Markets Act to **open digital bottlenecks** (interoperability, anti-self-preferencing, real choice screens/sideloads for app distribution); in procurement, **publish machine-readable notices via eForms**, split large contracts into lots and deploy innovation partnerships, while screening distortive bids under the Foreign Subsidies Regulation. Further, **deregulate disproportional restrictions in professional services and retail** – apply the Proportionality Test Directive to prune fixed tariffs, residency/nationality rules and ownership caps, allow multi-disciplinary practices, and **make qualifications truly portable**; for retail, replace prior authorizations for store openings with simple notifications and relax opening-hours/discount rules where they're disproportionate. **Remove cross-border frictions that block scale** – make mutual recognition of goods work in practice (use the MR declaration, SOLVIT, measurable time-to-decision), complete digital-by-default and once-only administration via the Single Digital Gateway and the Once-Only Technical System, and **finish online company formation plus fast cross-border conversions/mergers so scale-ups can operate EU-wide without legal deadweight**.

³⁵ R. Griffith, R. Harrison, and H. Simpson (2010), 'Product market reform and innovation in the EU', *Scandinavian Journal of Economics*, 112(2), 389–415. <https://doi.org/10.1111/j.1467-9442.2010.01602.x>.

Funding of innovation

While the topic of single market for capital has been partially addressed in Section 2.1.2, the focus here lies on the financing of innovation specifically, and of technology-oriented start-ups and scale-ups specifically. According to EPRS (2025)³⁶ using dealroom.co data, 1,770.0 billion EUR of venture capital was invested in the US, 35.2 billion in China and 29.6 billion in the EU. Further **VC investment in AI equalled 89.4 billion in the US, 7.2 billion in China, and 6.9 billion in the EU**. Similarly, US led investments in biotech (about ten-to-one with respect to the EU) and in clean tech (about twice as much as the EU). In all policy domains of current deep technologies, the US is a clear financing leader. While start-ups are confronted with diverse challenges dependent on their stage of development (e.g., in the seed phase the difficulty of finding suitable labour force, fragmented stock options schemes; in the early stage a lack of clear regulatory environment), later stages i.e., **scale-up phase and subsequent exits are characterised primarily by financing gaps**, i.e., inability to secure financing for expansion through venture capital (and venture debt) in the scaling phase, and limited size of equity markets (both public and private equity) in the exit phase.

The EU produces more tech start-ups than the US,³⁷ but they fail to scale up due to a lack of access to capital. Thus, in 2023, the US had eight times and China three times more unicorns (company valued over US\$1 billion) than the EU.³⁸ This is due to the particularity of EU capital

³⁶ European Parliamentary Research Service (EPRS) (2025), *Scaling up European innovation* (Brussels: European Parliament), <https://epthinktank.eu/2025/06/24/scaling-up-european-innovation/>.

³⁷ Centre for European Policy Studies (CEPS) (2024), *Europe can produce its own tech giants – here's how* (Brussels: CEPS), <https://www.ceps.eu/europe-can-produce-its-own-tech-giants-heres-how/>.

³⁸ European Commission (2024), *Science, research and innovation performance of the EU 2024: A competitive Europe for a sustainable future* (Luxembourg: Publications Office of the European Union), <https://op.europa.eu/en/publication-detail/-/publication/c683268c-3cdc-11ef-ab8f-01aa75ed71a1/language-en>.

markets: their **size is limited compared to the US and displays low-risk tendencies**. In consequence, most highly innovative tech start-ups face funding shortages. In 2023, EU pension funds reached a total €2.7 trillion, representing 25 % of the EU's GDP. However, only €6.5 billion (11.5 %) of new funding from private equity and €0.6 billion (5 %) **in venture capital were committed, which is only 0.4 % and 0.02 % of the total pension funds' assets**.³⁹

Deep tech start-ups are a specific case, due to the high level of risk and long-term return on investment. They are very capital-intensive: first, they seek funding through venture capital; then, once they develop a product or service, they need new capital to scale-up quickly and to retain their market lead. At this stage, these companies undergo Initial Public Offering, but they are at a great disadvantage in the EU compared to the US when trying to raise enough capital and market valuation. **Enrico Letta proposed to create an EU 'Stock Exchange for deep tech'** (EPRS, 2025b).⁴⁰ Moreover, long-development periods might **require public support, e.g., in form of strategic funds-of-funds**.

The priority should be to anchor **very large late-stage funds through public-private vehicles (e.g. the Scaleup Europe Fund)** while ensuring they **crowd in private LPs**, not replace them. **Completing the Capital Markets Union is equally important**, since without deep, unified listing and secondary markets, capital cannot recycle at scale. On the regulatory side, making reforms like **ELTIF 2.0 and Solvency II capital charge reductions** bite is critical to channeling long-term savings into VC/growth buckets. Regarding involvement of large institutional investors, such as

³⁹ Centre for European Policy Studies (CEPS) (2024), Closing the gaping hole in the capital market for EU start-ups – the role of pension funds, CEPS Policy Brief No. 90 (Brussels: CEPS), <https://cdn.ceps.eu/wp-content/uploads/2024/08/No-90-Closing-the-gaping-hole-in-the-capital-market-for-EU-start-ups-%E2%80%93-the-role-of-pension-funds.pdf>.

⁴⁰ European Parliament, European Parliamentary Research Service (EPRS) (2025), Benefit of an EU strategic innovation agenda (Study, Brussels: European Parliament), [https://www.europarl.europa.eu/RegData/etudes/STUD/2025/762853/EPRS_STU\(2025\)762853_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2025/762853/EPRS_STU(2025)762853_EN.pdf)

pension funds, two additional steps were proposed by Jacques Dellors Institute (2024):⁴¹ **National policies restricting investment in VC should be harmonised** across the EU.

To also increase pension funds' engagement, the European Commission should replace the existing **IORPs Directive with a directly applicable EU Regulation and therein include harmonised limits for VC funds** domiciled in the EU and a lower cap for investment in non-EU VC funds. Finally, Eichenauer et al (2025)⁴² show that **Investment Screening Mechanisms** reduce the inflow of cross-border late-stage VC into Europe. The problem of ISM is that due to the complexity of the rules and in certain cases vague definitions, **more firms are at times screened than would be necessary by the grounds of public order or security**. While theoretically portfolio investments are considered to be outside the scope of the Regulation, Article 2 does not define what constitutes a portfolio investment.⁴³ The Court of Justice of the European Union (CJEU) defined 'portfolio investments' as "the acquisition of shares on the capital market solely with the intention of making a financial investment without any intention to influence the management and control of the undertaking". However, **the European Court of Auditors assessment of a sample of cases showed that portfolio investments had been screened**, further reducing late-stage VC investments.

⁴¹ Jacques Delors Centre (2024), Venture capital: Getting the scale-up of cleantech right (Berlin: Jacques Delors Centre), <https://www.delorscentre.eu/en/publications/detail/publication/venture-capital-getting-the-scaleup-of-cleantech-right>.

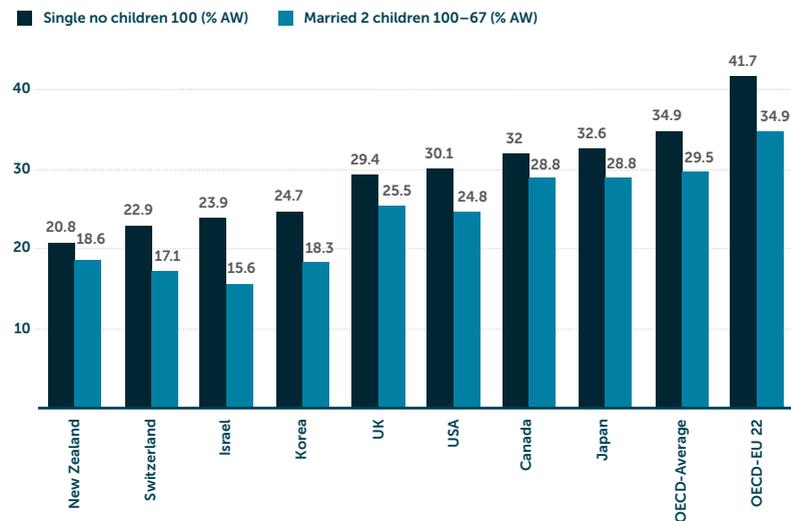
⁴² V. Eichenauer, S. Köppl, and M. Köppl-Turyna (2025), Investment screening and venture capital, Kiel Working Paper No. 2282 (Kiel: Kiel Institute for the World Economy, IfW Kiel).

⁴³ European Court of Auditors (2023), Pan-European Personal Pension Product: Still far from being a success, Special Report No. 27/2023 (Luxembourg: European Court of Auditors), <https://www.eca.europa.eu/en/publications?ref=SR-2023-27>.

Labour costs

High and rising labour costs are a structural obstacle to European competitiveness. A central driver is the high tax wedge on labour compared with international peers (see Figure 14). The tax wedge measures the gap between what employers pay for labour and what workers take home after taxes and social contributions. A high tax wedge raises labour costs in two ways. It increases employer costs directly through mandatory employer-side contributions. It also raises costs indirectly, because workers require higher gross wages when a larger share of income is absorbed by taxes and contributions. The result is more expensive hiring and lower net incomes for workers.

Figure 14: Tax wedge (2024)

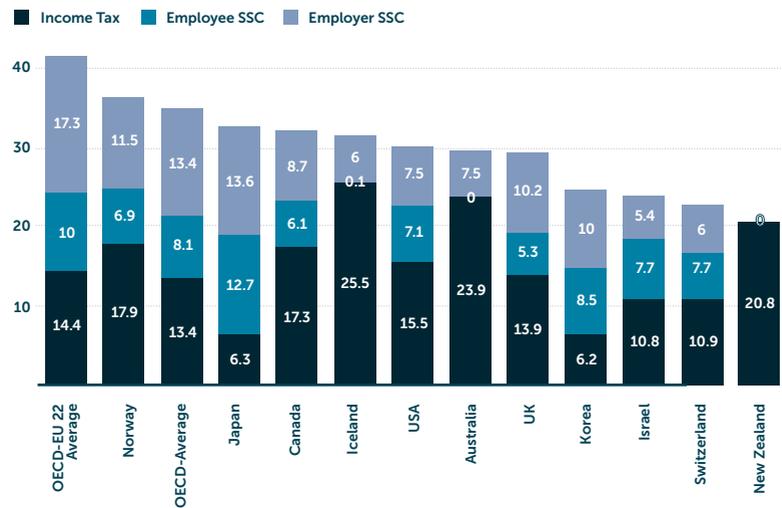


Source: OECD (2025)

The newest OECD Taxing Wages 2025 data clearly shows that the OECD-EU22 average **tax wedge is substantially higher** than in most other advanced economies. For a single worker without children at average wage, the EU22 average stands at 41.7%, compared to the overall OECD

average of 34.9%, while countries such as New Zealand (20.8%), Switzerland (22.9%), Israel (23.9%) and Korea (24.7%) record much lower wedges. The same pattern holds for married couples with two children, where the EU22 average tax wedge is 34.9%, significantly above the OECD average (29.5%) and far higher than benchmarks like Israel (15.6%), Switzerland (17.1%) or Korea (18.3%). This gap highlights how Europe's heavy reliance on labour taxation continues to weigh on competitiveness compared with other developed economies.

According to Figure 15, the main components of the tax wedge for the EU consist of the social-security payments. The decomposition of the 2024 labour tax wedge shows that **EU countries rely far more heavily on social security contributions than other OECD economies**. On average, employer contributions in the EU amount to 17.3% of labour costs and employee contributions to 10.0%, compared with 13.4% and 8.1% respectively across the OECD. This stands in contrast to countries such as New Zealand and Australia, which finance welfare largely through income taxation and impose no social security contributions, or the United States, where the burden is more evenly split between income tax and modest SSCs. Japan is a notable non-EU exception with high SSCs, reflecting its own ageing pressures. The EU's reliance on labour-linked contributions mirrors the financing needs of pay-as-you-go pension systems and broader social insurance schemes, particularly in the context of ageing populations. While this model sustains Europe's social spending, it also results in a significantly higher labour tax wedge, weighing on competitiveness, employment, and the capacity of firms to invest and innovate.

Figure 15: Components of the tax wedge (2024)

Source: OECD; own calculations

Empirical and institutional research shows that high labour tax wedges depress employment and competitiveness while also shaping innovation outcomes. Micro-evidence from Sweden demonstrates that cutting employer social security contributions (SSCs) for under-26 workers boosted youth employment by 2–3 percentage points and increased firm capital, sales, and profits (Bennmarker et al., 2009;⁴⁴ Saez et al, 2019⁴⁵). Beyond employment, **tax design affects innovative capacity**: higher personal income tax rates deter “superstar” inventors from locating in high-tax

44 H. Bennmarker, E. Mellander, and B. Öckert (2009), ‘Do regional payroll tax reductions boost employment?’, *Labour Economics*, 16(5), 480–489. <https://doi.org/10.1016/j.labeco.2009.03.003>.

45 E. Saez, B. Schoefer, and D. Seim (2019), ‘Payroll taxes, firm behavior, and rent sharing: Evidence from a young workers’ tax cut in Sweden’, *American Economic Review*, 109(5), 1717–1763. <https://doi.org/10.1257/aer.20180905>.

jurisdictions (Akcigit et al., 2016).⁴⁶ R&D-targeted payroll tax reliefs, such as Sweden’s subsidy for hiring STEM PhDs, and France’s *Crédit d’Impôt Recherche* (CIR) combined with payroll exemptions for research staff, are consistently associated with higher R&D spending, innovative hiring, and product innovation (Appelt et al., 2016;⁴⁷ Johansson et al., 2025).⁴⁸

We argue that reducing the labour tax wedge must become a strategic EU priority, not a by-product of scattered reforms. This requires a clear forward-looking policy choice along two dimensions. First, expenditure on ageing needs to become more efficient. Second, changes to the tax structure would improve the economic effects of taxation, even when keeping the level constant.

First, Europe’s high reliance on SSCs stems largely from the mounting costs of pay-as-you-go pension systems and quality healthcare for ageing populations. The 2024 EU Ageing Report⁴⁹ projects that **age-related spending (pensions, healthcare, long-term care, education) will remain a significant budgetary burden**, unless structural reforms are undertaken. To relieve the pressure on SSCs, policy should pivot towards **strengthening second- and third-pillar schemes**. Stronger funded pil-

46 U. Akcigit, S. Baslandze, and S. Stantcheva (2016), ‘Taxation and the international mobility of inventors’, *American Economic Review*, 106(10), 2930–2981. <https://doi.org/10.1257/aer.20150237>.

47 S. Appelt, M. Bajgar, C. Criscuolo, and F. Galindo-Rueda (2016), *R&D tax incentives: Evidence from OECD countries*, OECD Science, Technology and Industry Policy Papers No. 32 (Paris: OECD Publishing), <https://doi.org/10.1787/5jlr8fldqk7j-en>.

48 U. Stavlöt and R. Svensson (2025), ‘Evaluating R&D payroll tax subsidies: impacts on high-skill employment’, *Applied Economics*, 1–16. <https://doi.org/10.1080/00036846.2024.2434567>.

49 European Commission (2024), *The 2024 Ageing Report: Economic and Budgetary Projections for the EU Member States (2022–2070)*, Institutional Paper No. 279 (Luxembourg: Publications Office of the European Union), https://economy-finance.ec.europa.eu/document/download/971dd209-41c2-425d-94f8-e3c3c3459af9_en?filename=ip279_en.pdf.

lars can ease the financing burden on labour while mobilising long-term pension capital for investment and growth.^{50 51}

However, the European Court of Auditors recently warned that the EU's flagship **pan-European pension product (PEPP) has vastly underperformed, underscoring the need for more effective incentives**⁵² and regulatory frameworks to make private pensions viable at scale. Parallel to diversifying funding, raising the **effective retirement age** is essential. Health and long-term care efficiency also matters: **improving preventive and integrated care delivery** can moderate the projected costs of ageing and free up fiscal space for SSC cuts.

Second, **shifting Europe's tax structure away from its heavy reliance on labour contributions and towards more growth-friendly bases** is a recurring recommendation (see e.g., Arnold et al, 2011).⁵³ The European Commission's Annual Report on Taxation 2024 explicitly **calls for reducing the labour tax wedge by shifting part of the burden to environmental taxation, recurrent immovable property taxes**, and well-designed consumption taxes, arguing that these sources are less distortive for

50 missing footnote

51 European Liberal Forum (2025), A Pension System for Our Common Future, Policy Paper (Brussels: European Liberal Forum), <https://liberalforum.eu/wp-content/uploads/2025/10/A-Pension-System-for-Our-Common-Future-Policy-Paper.pdf>.

52 European Court of Auditors (2025), Developing supplementary pensions in the EU – EU action not effective in strengthening occupational pensions and establishing a pan-European personal pension market, Special Report No. 14/2025 (Luxembourg: European Court of Auditors), <https://www.eca.europa.eu/en/publications/sr-2025-14>.

53 J. M. Arnold, B. Brys, C. Heady, Å. Johansson, C. Schwellnus, and L. Vartia (2011), 'Tax policy for economic recovery and growth', *Economic Journal*, 121(550), F59–F80. <https://doi.org/10.1111/j.1468-0297.2010.02415.x>.

growth and employment (European Commission, 2024).⁵⁴ The Letta Report on the Single Market also advocates for tax reforms that incentivise the green transition, noting that **revenues from carbon pricing, CBAM, and the EU Emissions Trading System (ETS2) could be recycled into lowering social security contributions**. The EU should actively encourage a shift in the tax mix away from labour and towards less distortive bases. **A future-proofing option would be an explicit recommendation to link this greening of taxation to reductions in labour taxes**. Revenues from carbon pricing, CBAM, and ETS2 should be earmarked, at least in part, to lower employer and employee social security contributions in national budgets.

Finally, **strengthening the European Semester** – the EU's annual framework for coordinating national fiscal, economic, and structural policies and issuing country-specific reform recommendations – is central to embedding structural reforms that enhance competitiveness across the EU. The reformed economic governance framework of 2024–2025 introduced medium-term fiscal-structural plans with country-specific recommendations that now carry more binding force, creating a stronger vehicle for tax-mix and competitiveness-oriented reforms.⁵⁵ Recent 2025 Country-Specific Recommendations explicitly urge several member states **to reduce the labour tax wedge, raise effective retirement ages, and shift taxation toward environmental and property bases**, aligning

54 European Commission (2024), Annual Report on Taxation 2024, Commission Staff Working Document, SWD(2024) 172 final (Brussels: European Commission), https://www.europarl.europa.eu/RegData/docs_autres_institutions/commission_europeenne/swd/2024/0172/COM_SWD%282024%290172_EN.pdf.

55 European Parliament, Directorate-General for Economic Governance and EMU Scrutiny (2025), 2025 Country-Specific Recommendations: stylised facts and figures (Brussels: European Parliament), [https://www.europarl.europa.eu/RegData/etudes/STUD/2025/764365/ECTI_STU\(2025\)764365_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2025/764365/ECTI_STU(2025)764365_EN.pdf).

fiscal sustainability with productivity and competitiveness.⁵⁶ Bruegel's evaluation of the new fiscal rules, highlight that the Semester can now better link fiscal trajectories with pro-growth reforms: "To qualify for an extended adjustment period, **governments must propose reforms and investments that foster economic growth, enhance fiscal sustainability**, align with common EU priorities, **address relevant European Semester country-specific recommendations** and result in an increase in nationally financed investments." However, the measurement must be **consistent and enforceable**. Making the European Semester effective now requires clearer enforcement triggers, transparent and comparable measurement of reform implementation, and explicit conditionality. **Access to fiscal flexibility – including extended adjustment periods or more gradual consolidation paths – should be directly linked to verifiable progress**, e.g. in reducing labour taxation and implementing agreed structural reforms. Without such enforceable conditionality, the Semester risks remaining a coordination exercise rather than a driver of change, and tax-mix reform will continue to depend more on political discretion than on a credible European framework.

56 N. E. Boivin and Z. Darvas (2025), *European Union's New Fiscal Framework: A Good Start, but Challenges Loom*, Bruegel Analysis (Brussels: Bruegel).

Culture

While institutional and policy steps matter for restoring European competitiveness, "soft" factors such as culture play an important role. Culture and norms constitute one of the framework basic conditions of the entrepreneurial ecosystem (Audretsch & Belitski, 2017⁵⁷). A strong **culture of entrepreneurship** – characterised by societal support for risk-taking, innovation, and business creation – has been empirically linked to higher innovation outputs and greater economic competitiveness. Fritsch and Wyrwich⁵⁸ show that German regions with a long-standing **entrepreneurial culture generated more innovative new ventures** over time.

An entrepreneurial culture encourages creative ideas and knowledge-sharing, which cannot be separated from innovation in modern economies. In turn, this innovation drive contributes to national competitiveness by boosting productivity and growth (Fritsch & Wyrwich, 2018). "Efficient entrepreneurial culture" – one that fosters opportunity-driven entrepreneurship (as opposed to necessity-driven entrepreneurship) – is associated with stronger GDP growth and economic performance (Fernández-Serrano et al., 2018).⁵⁹

57 D. B. Audretsch and M. Belitski (2017), 'Entrepreneurial ecosystems in cities: establishing the framework conditions', *Journal of Technology Transfer*, 42(5), 1030–1051. <https://doi.org/10.1007/s10961-016-9473-8>.

58 M. Fritsch and M. Wyrwich (2018), 'Regional knowledge, entrepreneurial culture, and innovative start-ups over time and space – an empirical investigation', *Small Business Economics*, 51(2), 337–353. <https://doi.org/10.1007/s11187-018-0014-2>.

59 J. Fernández-Serrano, V. Berbegal, F. Velasco, and A. Expósito (2018), 'Efficient entrepreneurial culture: a cross-country analysis of developed countries', *International Entrepreneurship and Management Journal*, 14(1), 105–127. <https://doi.org/10.1007/s11365-017-0459-3>.

The underlying mechanism is that **entrepreneurial values (e.g. innovation, proactiveness) lead to more new business formation and competition, which in turn drives efficiency and productivity gains** in the economy. As Dheer (2017)⁶⁰ observes in a global analysis, competitiveness increases when entrepreneurial values are widely adopted, underscoring that fostering entrepreneurship is a route to improved innovation and competitive advantage. Dheer (2017) further argues that argues that **individualism–collectivism moderates how political freedom, corruption, and education influence entrepreneurial activity across nations**. Culture acts as a boundary condition. The same institutional factors (political freedom, corruption, education) produce very **different entrepreneurial outcomes depending on whether a country is more individualistic or collectivist**. This underscores that formal institutions alone cannot explain cross-national entrepreneurship rates – the cultural framework fundamentally shapes how these institutions matter. For the policy steps to matter, **individualistic culture** must play a role.

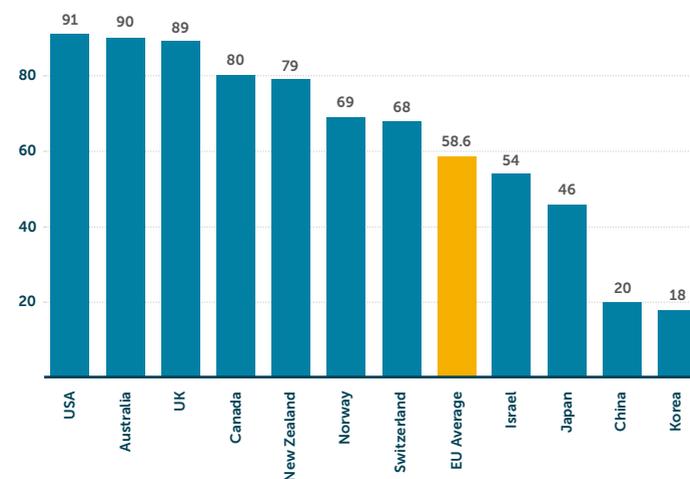
The relevant cultural factors from Hofstede – individualism vs. collectivism, and uncertainty avoidance – are presented in Figure 16.

The data illustrate clear cultural contrasts between the EU and major competitor countries when measured by Hofstede’s dimensions of individualism and uncertainty avoidance. On average, the EU scores 58.6 on individualism, placing it in the mid-range – more individualistic than collectivist countries such as China (20) and South Korea (18), but well below highly individualistic societies such as the U.S. (91), Australia (90), or Great Britain (89). This suggests that Europe tends to balance collective traditions with growing individualist values, whereas Anglo-Saxon economies display stronger emphasis on autonomy and self-reliance. On uncertainty avoidance, the EU average is 71.9, considerably higher than in the U.S. (46), Great Britain (35), or Canada (48). This indicates a stronger cultural preference in Europe for rules, stability, and risk-aver-

60 R. J. Dheer (2017), ‘Cross-national differences in entrepreneurial activity: role of culture and institutional factors’, *Small Business Economics*, 48(4), 813–842. <https://doi.org/10.1007/s11187-016-9816-9>.

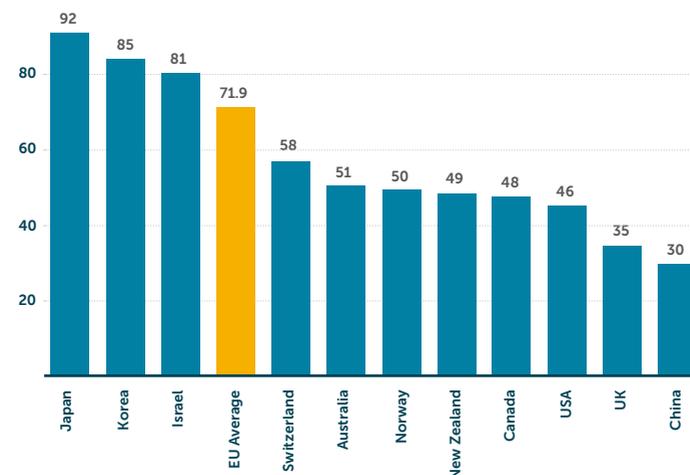
Figure 16: Cultural dimensions

Individualism vs. collectivism



Higher value corresponds to higher individualism

Uncertainty avoidance



Higher value corresponds to higher uncertainty avoidance

Source: <https://geerthofstede.com>; own calculations

sion, which can dampen entrepreneurial dynamism. By contrast, East Asian countries such as Japan (92) and South Korea (85) are even more uncertainty-averse, whereas the U.S. and other **Anglo-Saxon countries combine very high individualism with relatively low uncertainty avoidance — a cultural profile strongly associated with entrepreneurial activity and innovation.**

At the European level, several steps could be taken to strengthen entrepreneurial culture and **encourage greater initiative-taking, especially among young people.** In education, entrepreneurship should be embedded across secondary and higher education through business planning, innovation projects, and tolerance of failure, with a **stronger emphasis on critical thinking and self-reliance** rather than purely technical skills. The EU's EntreComp framework already defines entrepreneurship as a key competence, and scaling it across member states could help cultivate autonomy-oriented attitudes. Cultural measures are important: EU-wide campaigns could **promote entrepreneurs as respected role models**, while programs like Erasmus for Young Entrepreneurs and EU-level awards could normalise self-reliance, risk-taking, and individual achievement. Crucially, by **not punishing failure but instead framing it as part of the entrepreneurial process**, Europe could reduce its high levels of uncertainty avoidance, making entrepreneurial action more attractive and socially acceptable.

Taken together, these findings show that Europe's competitiveness problem is not a mystery – it is the predictable result of policy choices. High and volatile energy costs, underpowered grids and missing interconnectors, fragmented innovation systems and risk-averse capital markets, heavy labour taxation and a cautious entrepreneurial culture all tilt the playing field against investment and growth. The good news is that these outcomes are not fixed; they can be changed through deliberate policy choices. With clearer price signals and a real single market for energy, deeper and more risk-friendly capital markets for innovation, a tax mix that rewards work and invention, and institutions that normalise experimentation rather than punish failure, Europe can turn its strengths in human capital and sustainability into a genuine competitive edge. Competitiveness, in this sense, is not about winning a race to the bottom, but

about building the conditions for more firms to grow, more people to thrive in productive jobs, and more ideas to scale from labs and start-ups into globally relevant businesses.

1.3 Sovereignty

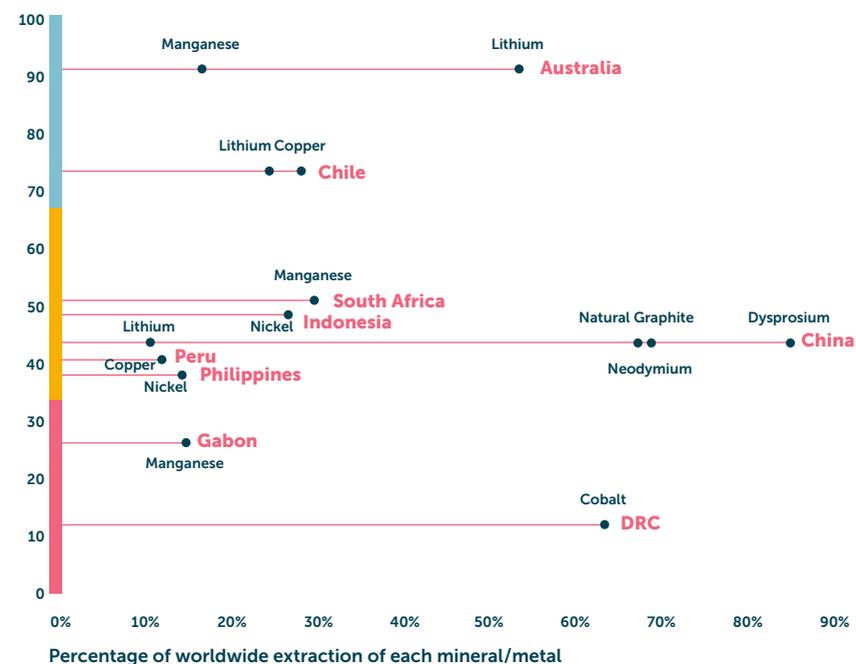
Geoeconomic Sovereignty has moved from a niche concern to a hard economic variable. When a handful of countries can choke off supplies of critical minerals, semiconductors or cloud services, Europe's productivity and competitiveness are suddenly hostage to geopolitics. This chapter looks at how the EU can secure the inputs and technologies it needs for the green, digital and defence transitions without sliding into costly autarky or subsidy wars. It explores what economic sovereignty really means in practice: building domestic capacity where it matters, diversifying suppliers and trade partnerships, and using industrial policy, investment screening and procurement in a way that manages risks but keeps Europe open, innovative and deeply connected to the world economy.

Securing economic sovereignty

For the European Union to achieve the ambitious targets it has set for the energy and digital transitions and its defence and space agenda, it needs uninterrupted access to critical raw materials and to many products which contain them. Therefore, the European Union has increasingly prioritised bolstering its sovereignty and "strategic autonomy" in critical domains – from securing strategic raw materials (such as rare earth elements) to reinforcing digital infrastructure, data capabilities and cutting-edge technologies. This agenda is driven by mounting concerns over economic security: the EU remains heavily reliant on external suppliers, evidenced by pronounced dependencies on a few countries (notably China) for critical raw materials and on foreign tech providers for key digital resources like cloud computing and semiconductors. Through e.g., Critical Raw Materials Act and European Chips Act, the EU seeks to enhance its economic resilience and technological competitiveness while asserting greater geopolitical autonomy, especially in an era of global supply disruptions and intensifying US–China tech rivalry.

Furthermore, critical materials necessary for the energy and digital transitions are imported largely from countries scoring low on governance and democratisation, implying that there is a higher risk involved in trade relations compared to more developed nations (see Figure 17).

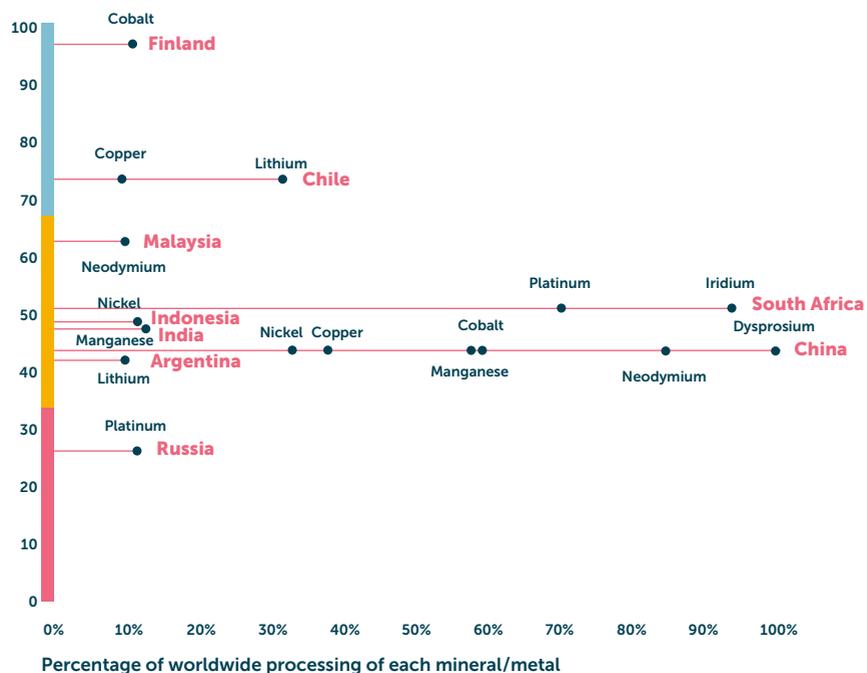
Figure 17: World Governance Index scores for critical mineral-extracting countries and their share of extraction



Source: Nobletz et al (2024).⁶¹

61 C. Nobletz, R. Svartzman, and S. Dikau (2024), *The EU's dependency on critical materials* (London: Grantham Research Institute on Climate Change and the Environment, London School of Economics).

Figure 18: World Governance Index scores for critical mineral-processing countries and their share of processing



Source: Nobletz et al (2024)

62 See: European Commission (2023) Study on the critical raw materials for the EU 2023 – Final report. Luxembourg: Publications Office of the European Union. <https://data.europa.eu/doi/10.2873/725585> European Commission Joint Research Centre (2023) Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU – A foresight study. Luxembourg: Publications Office of the European Union. <https://data.europa.eu/doi/10.2760/386650>

Thus, the EU’s ability to meet its forecasted critical material demand could be at risk, especially in a context of increasing geopolitical tensions. Demand for minerals necessary for strategic sectors is set to significantly increase from a 2020 baseline: by 2030, demand for most materials is projected to increase 5–14 times, with the steepest jumps in graphite (x14), lithium (x12), nickel (x10), and copper (x6). By 2050, demand intensifies even further, reaching x26 for graphite, x21 for lithium, and x16 for nickel.⁶² While Europe lacks its own critical mineral reserves, it is important to note that **major competing economies – such as the US, Japan, and China** also rely heavily on strategic imports (see Figure 19), underscoring the importance of trade for modern economies and world interconnectedness.

Figure 19: Number of import-dependent products, by country (2022)

	All Sectors	Sub-sample of strategic sectors		
		Number of products	Number of products	Import share (%)
EU	390	122	4.9	China (74) India (12) USA (8) UK (8)
China	154	47	10.5	EU (12) Indonesia (5) USA (4) India (4)
USA	395	117	11.2	China (54) EU (32) India (8)
Japan	442	132	10.3	China (72) EU (25) USA (10)

Source: Lefebvre & Wilbaux (2024)⁶³

63 K. Lefebvre and P. Wilbaux (2024), *Import dependencies: Where does the EU stand?*, CEPII Working Paper No. 2024-47 (Paris: CEPII).

A second aspect of sovereignty involves **digital capacities, such as computing resources**, which enable countries to run critical services – such as cloud infrastructure – autonomously. The Digital Sovereignty Index⁶⁴ ranks countries based on the relative presence of self-hosted tools across key application areas. The sub-indicators include sovereign data, groupware, projects, and communication, and self-hosting technologies. The Digital Sovereignty Index reveals stark contrasts in Europe’s position relative to other major economies and within the Union itself. The United States scores 14.9, Japan 5.2, and South Korea 5.1. The European Union averages 17.4, suggesting a stronger position than both Japan and South Korea and even slightly ahead of the US. Yet this aggregate conceals striking internal disparities: Finland (64.5) and Germany (53.9) are global frontrunners, joined by the Netherlands (36.3), while several Southern and smaller member states, such as Portugal (4.3), Greece (4.8), and Malta (3.4), remain at the very bottom of the ranking. These divergences underscore both the EU’s potential leadership in digital and technological sovereignty and **the challenge of ensuring cohesion across member states**.

A core strategy for economic sovereignty in the EU is to develop domestic capacity in critical technologies. Governments direct funding and incentives toward sectors like semiconductors, batteries, renewable energy, AI, and pharmaceuticals. The EU has launched the European Chips Act with over €43 billion in public-private investment, aiming to double Europe’s share of global semiconductor production from ~10% to 20% by 2030.⁶⁵ Similarly, Important Projects of Common European Interest (IPCEIs) have become a key tool: IPCEIs allow EU governments to jointly subsidise large cross-border innovation projects in areas like micro-electronics, batteries, and hydrogen technology. These initiatives pool resources to build up European champions (e.g. the European Battery

64 Nextcloud (2025), 2025 Digital Sovereignty Index: *How countries compare in digital independence* (n.p.: Nextcloud), <https://dsi.nextcloud.com/report.php>.

65 European Commission (2022), *European Chips Act* (Brussels: European Commission), https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/european-chips-act_en.

Alliance) and fill supply-chain gaps. The EU Industrial Strategy explicitly frames these efforts as building “strategic autonomy in key technologies and access to raw materials”.

However, an important caveat is **the risk of government failure in “picking winners.” Pouring public money into domestic industries does not guarantee success if those industries are not globally competitive**. Critics warn against the fallacy of the entrepreneurial state – the notion that the state can simply mandate innovation or create profitable industries by decree.⁶⁶ Poorly targeted subsidies can misallocate resources, protect inefficient firms, or invite rent-seeking. **Industrial policy should enable companies to thrive and innovate, not distort markets with unnecessary subsidies and protectionist measures, and avoid micromanagement of technology development**.

Grafström (2025)⁶⁷ highlights that industrial policy can play a role in addressing market failures, and supporting strategic transitions, but it must be applied with caution. It stresses that **horizontal policies (broad measures improving broad economy-wide measures) such as lowering regulation and improving access to finance should remain the foundation**, while vertical policies (targeting specific sectors or firms) should only be used when clear market failures, coordination gaps, or public good needs are identified. Policymakers are advised to design interventions that are **targeted, temporary, and transparent, ensuring firms have “skin in the game” to avoid rent-seeking and inefficiency**. Further risks include corruption, overcapacity, and trade conflicts if subsidies are poorly managed, and calls for **robust evaluation mechanisms and benchmarks** to assess outcomes.

Economic sovereignty also means preventing strategic assets or technologies from falling under adversaries’ control. Many Western countries have tightened their foreign investment screening mechanisms to block

66 J. Grafström (2025), *Vertical industrial policy: principles, practice and potential*, Ratio Working Paper No. 384 (Stockholm: Ratio – The Research Institute of Industrial Economics). <https://cms.ratio.se/app/uploads/2025/06/wp-384-vertical-industrial-policy.pdf>.

67 Ibid.

hostile takeovers in sensitive sectors. The EU introduced an FDI Screening Regulation in 2019, and member states have ramped up national review regimes, especially for Chinese investments. For example, Germany has vetoed Chinese acquisitions of semiconductor fabs and power grid operators on security grounds. France, Italy, and others broadened their “golden share” or authorisation rules to cover tech, energy and health companies during the pandemic.

Yet **strategic exposure remains uneven and acute across Europe**. Some member states continue to court state-backed capital in areas with long-term security implications. Examples include majority foreign control in parts of the EV battery value chain (notably gigafactories in Hungary), acquisitions of energy distribution assets in Spain and Portugal, and interest in strategic port infrastructure. This patchwork approach weakens European resilience: vulnerabilities created in one member state spill over to the Single Market as a whole.

Investment controls can be important tools to safeguard national technologies and prevent dependency on foreign (especially state-backed) firms. Additionally, governments can use **public procurement policies** to favor trusted domestic or allied suppliers for critical infrastructure (as seen in EU efforts to use European cloud providers via the GAIA-X initiative or requiring 5G telecom vendors meet strict security criteria). However, these protective measures, while sometimes necessary, come with trade-offs. Overly restrictive investment screening **deters beneficial foreign capital and innovation**. Research suggests that while screening is needed to protect security, it may reduce the efficiency of capital allocation in the economy.⁶⁸ It reduces FDI and cross-border VC (as mentioned in Section 2.1), which is primarily a result of broad and unclear interpretation of subjects of screening. The key is to make regulations **transparent, narrow in scope, and predictable**, so that most investments face no additional transaction costs and uncertainty. Policymakers should apply investment controls surgically – **targeting genuine security threats** – and continuously assess the economic impact.

68 L. Bencivelli, V. Faubert, F. L. Gallo, and P. Négrin (2023), ‘Who’s afraid of foreign investment screening?’, *VoxEU / CEPR*, <https://cepr.org/voxeu/columns/whos-afraid-foreign-investment-screening>.

Selective controls must be tied to clear priorities, such as resources. Policymakers should focus on three complementary steps.⁶⁹ First, establish a **European-mandated materials observatory** to map dependencies, ownership, and concentration risks across critical inputs and technologies, increasing transparency for both policymakers and investors. Second, adopt an **efficiency-first principle** for critical material use—prioritising demand reduction, substitution, and recycling—to lower exposure where supply diversification is slow. Third, align procurement and screening with these priorities, ensuring that stricter controls apply where Europe’s strategic exposure is greatest and alternatives are limited. Applied this way, investment screening becomes a targeted risk-management tool rather than a blunt barrier.

69 Compare European Liberal Forum (2024), *The Geopolitics of Resources*, Journal issue, which recommends strengthening strategic autonomy through improved transparency of material dependencies

Securing supply chains and trade partnerships

Sovereignty does not mean absolute self-sufficiency (which is unrealistic and costly) – it means having **diversified sources for critical inputs**. Thus, rather than autarky, a smarter policy is “open” strategic autonomy, balancing domestic production with external cooperation. Europe should deepen **trade and investment ties with trusted democratic partners** to reduce dependence on authoritarian regimes. This includes securing alternate suppliers for essential commodities, components, and energy. For instance, the EU is pursuing Critical Raw Materials partnerships with countries like Canada, Australia, and African nations to obtain rare earths, lithium, and other minerals currently dominated by China.

More broadly, Europe should **prioritise free trade agreements or alliances with democracies (such as reviving deals with Australia or India)** to “friend-shore” supply lines and reduce exposure to geopolitical blackmail. Supply-chain resilience can be achieved without full localisation. Ensuring uninterrupted access to vital goods doesn’t require industrial or technological sovereignty, but rather **strategies focused on diversification and risk mitigation**.

For example, after COVID-19 and the Ukraine war, many European firms adopted a China+1 strategy (adding an alternative supplier in Vietnam, Mexico, etc.), or increased inventory of critical parts, instead of entirely reshoring production. The downside is that diversified or duplicated supply chains may raise short-term costs – but they provide insurance against disruptive shocks. The alternative – autarky – carries even greater economic costs. **Autarky forgoes the efficiency benefits of trade and specialisation, leading to economic inefficiency and slower growth.** Frontier Economics (2022)⁷⁰ found that **protectionist “strategic autonomy” measures** (e.g. high trade barriers or local content rules) **would reduce EU economic welfare – even without any retaliation by trade partners**. Depending on the stringency of the measures involved, and whether partners retaliate when faced with the EU’s measures, real gross

national income (GNI) would fall on an annual basis by between \$12 billion (0.08%) in a low-stringency scenario, \$20 billion (0.14%) in a high stringency scenario and \$22 billion (0.15%) in the high scenario with retaliation by certain partners.

Taken together, the evidence shows that sovereignty is not about pulling up the drawbridge, but about making Europe less easy to push around. The EU will remain deeply intertwined with global markets for minerals, technologies and ideas – and that is a strength, not a weakness, if dependencies are diversified and rules are clear. The real task is to reduce single-supplier risks in critical inputs, build credible capacity in key technologies, and design industrial and investment policies that are targeted, time-limited and transparent rather than protectionist and open-ended. Done well, “open strategic autonomy” reinforces, rather than undermines, productivity and competitiveness: it lowers the risk premia firms face, stabilises the conditions for long-term investment, and ensures that Europe can pursue its climate, digital and security ambitions without having its economic model dictated from abroad.

⁷⁰ Frontier Economics (2022), *Measuring the impacts of the European Union’s approach to open strategic autonomy*, Report prepared for the European Centre for International Political Economy (London: Frontier Economics).

Conclusions

Europe's long-term competitiveness depends on three interlinked outcomes: closing the productivity gap with the United States, reversing the erosion of its industrial base, and securing economic sovereignty without retreating from openness. Today, Europe falls short on each front. Innovative firms struggle to scale, investment remains concentrated in lower-productivity activities, and fragmentation limits network effects in research and innovation. Heavy reliance on bank finance, shallow equity markets, and persistently high energy and labour costs compound these weaknesses and reduce Europe's ability to compete globally.

We argue that the response must be strategic and integrated, not incremental. Completing the Single Market across goods, services, capital, and digital activities remains the cornerstone of any credible growth agenda. Removing remaining product-market barriers, harmonising key rules, and finishing the Capital Markets Union would give firms the scale and resilience they need. At the same time, targeted investment in cross-border infrastructure—especially energy grids and transport corridors—can reduce structural costs. In the near term, energy tax and levy adjustments can provide relief; in the long term, competitiveness depends on a genuine single electricity market, faster interconnectors, and modernised distribution grids.

Europe must also expand its innovation frontier. Fragmentation in research and innovation policy weakens scale and slows diffusion, particularly in complex technologies such as AI, semiconductors, and quantum computing. Pooling resources at EU level, strengthening connected innovation hubs, and mobilising more venture and late-stage capital—especially from institutional investors—are essential to scaling European champions. Regulatory reforms to stock options, insolvency frameworks, and investment screening should encourage risk-taking while maintaining security and predictability.

Finally, economic sovereignty requires a balanced, disciplined approach. Initiatives such as the Critical Raw Materials Act and the Chips Act can strengthen resilience, but they must avoid protectionism and open-ended subsidies. We recommend an approach grounded in “open strategic autonomy”: diversifying supply chains, deepening partnerships with democratic allies, and using targeted industrial policy tools only where market failures or strategic gaps are clearly identified. Cultural and institutional factors also matter. Encouraging initiative-taking, reducing fear of failure, and celebrating innovation are necessary complements to formal policy reform.

In sum, Europe's path to a future-proof economy is not isolation, but strength through integration. By combining a deeper Single Market, stronger capital markets, lower structural costs, a broader innovation base, and a disciplined approach to sovereignty, the EU can restore productivity growth, sustain its social model, and reassert itself as a leading global economic actor.

Policy priorities

• Deepen and complete the Single Market

- Cut remaining barriers in services, professional qualifications and regulated professions; enforce mutual recognition and proportionality tests.
- Make the Single Market for capital real: advance Capital Markets Union, harmonise key elements of company, insolvency and tax law, and scale up EU-wide equity markets.
- Invest in cross-border infrastructure – transport, digital and energy – with a clear EU priority for border regions and core corridors.
- Strengthen enforcement: faster infringement procedures, better use of the Single Digital Gateway and competition tools to keep markets open and contestable.
- Unlock more risk capital for start-ups and scale-ups by mobilising pension funds and insurers, anchoring large late-stage funds, and removing unnecessary barriers in investment screening.

• Restore cost competitiveness and expand the innovation frontier

- Lower industrial energy costs through a genuine single market for energy, accelerated grid build-out, more interconnectors and wider use of PPAs and smart pricing.
- Prioritise cost-effective grid and network investments, streamline permitting and planning, and fully deploy grid-enhancing technologies before building new assets.
- Reduce the labour tax wedge by shifting the tax mix towards less distortive tax bases (environment, property, consumption) and by making age-related spending more efficient.
- Cut product-market regulation that blocks entry, exit and scaling, especially in network industries and business services, and use competition and procurement policy to open bottlenecks.

- Foster an entrepreneurial culture that tolerates failure, promotes role models, and embeds entrepreneurship in education and mobility programmes.

• Build open and resilient economic sovereignty

- Diversify supplies of critical raw materials and technologies through targeted trade, investment and partnership strategies with trusted partners.
- Focus policy on clearly identified market failures and strategic gaps, making interventions targeted, temporary and transparent, with strong evaluation and sunset clauses.
- Develop European capacity in key technologies (chips, batteries, clean tech, cloud, AI) primarily via cross-border projects of common European interest and competitive funding.
- Design FDI and investment screening regimes that are narrow, risk-based and predictable, protecting security without unnecessarily deterring beneficial capital and innovation.
- Promote “open strategic autonomy”: avoid broad protectionism and local-content races, and instead combine diversification, trade openness and resilience-oriented regulation.

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