

Challenges and Prospects for EU Economy: Addressing Problems and Shaping Future Directions for a Sustainable Growth

Florentina Olivia BALU*

Université de Genève

**Corresponding author: florentina.balu@unige.ch*

Iulian GOLE

MBA Bucharest University of Economic Studies, Bucharest, Romania

iuliangole@yahoo.com

Marian Victor DUMITRACHE

Bucharest University of Economic Studies, Bucharest, Romania

victor.dumitrache@gmail.com

Ana Mădălina BIGU (POTCOVARU)

Bucharest University of Economic Studies, Bucharest, Romania

ana.potcovaru@amp.ase.ro

Abstract. *The European Union (EU) faces multiple economic challenges in the context of a globalized and interconnected world. These challenges include managing economic growth, addressing sustainability issues, reducing economic disparities and integrating new digital economies. The article aims to analyze these challenges and explore the possibilities of achieving sustainable economic growth at the level of the European Union, through a mixed methodological approach. The research combines documentary analysis of the specialized literature and reports of European institutions with empirical analysis based on economic data provided by official sources, such as the European Commission and Eurostat. Within the framework of this analysis, the impact of the main European economic policies is assessed and the strategic directions necessary for strengthening a sustainable economic model are identified. The results of the study underline the importance of an integrated economic policy that favors balanced regional development, the integration of digitalization and the adoption of innovative solutions to reduce economic inequalities. The article thus provides a detailed understanding of the current economic challenges and the measures necessary to ensure a sustainable economy within the EU.*

Keywords: Sustainable Growth, EU Economy.

Introduction

The European Union (EU) has long been a focal point of academic research, especially in regard to its institutional evolution, political integration, economic performance, and societal cohesion (Buzoianu, et al., 2024). In recent years, the EU countries face economic challenges, ranging from structural disparities to external trade pressures. This proves the complexity of the challenges facing EU economies while highlighting opportunities for transformative change (Rădulescu, Mănescu et al., 2023). The pandemic served as both a stress test and a catalyst, revealing vulnerabilities and prompting innovative responses (Rădulescu, Angheluta et al., 2022). This period laid the groundwork for ongoing debates on achieving resilience, sustainability, and equity in the EU economic landscape (Rădulescu et al., 2023).

DOI: 10.2478/picbe-2025-0409

© 2025 F. O. Balu; I. Gole; M. V. Dumitrache; A. M. Bigu (Potcovaru), published by Sciendo.

This work is licensed under the Creative Commons Attribution 4.0 License.

Literature Review

The literature review explores these multifaceted problems and challenges and their implications for policy-making.

From its creation in 1992, the EU's institutional framework has been both praised for promoting unity and criticized for generating significant inefficiencies. Studies indicate that while the EU has successfully established a unique governance model, the supranational structure often encounters difficulties balancing sovereignty with integration (Majone, 1998; Moravcsik, 2002). Schimmelpfennig (2015) have emphasized the tension between centralization and the autonomy of member states, which often limits the EU's ability to respond uniformly to crises, including financial downturns, migration influxes, and geopolitical threats. The eurozone project, while promoting economic interdependence, has also exposed structural disparities between northern and southern European economies (Matthijs & Blyth, 2015). Austerity policies adopted in response to the 2008 financial crisis disproportionately impacted Southern European countries, leading to socioeconomic strain and heightened anti-EU sentiments (Stiglitz, 2016). Furthermore, recent works explore how the EU's monetary policy constraints may hinder the bloc's capacity to address economic recessions flexibly, raising questions about the viability of the euro in the face of asymmetric shocks (De Grauwe, 2018).

The period from 2019 to 2021 marked a critical phase for the EU economies, shaped by global and regional disruptions such as the COVID-19 pandemic, climate imperatives, and persistent structural issues. Rising Euroscepticism and political polarization were identified as barriers to deeper economic integration and collective action on pressing challenges (van Middelaar, 2020). EU policies such as the Green Deal and the Fit for 55 package were highlighted as ambitious frameworks to reduce carbon emissions. However, Tagliapietra and Zachmann (2021) emphasize the need for equitable mechanisms to support member states disproportionately impacted by decarbonization.

Feld and Schmidt (2023) highlighted regulatory fragmentation across EU member states as a barrier to achieving a cohesive single market, limiting the EU ability to compete globally. Sapir and Buti (2022) emphasize the need for institutional reforms to strengthen the EU's resilience against economic shocks, particularly in the face of increasing geopolitical tensions. Baldwin and Wyplosz (2023) discuss the EU's structural challenges, including labor market rigidity and uneven access to capital markets. They advocate for deeper economic integration to address these disparities. Darvas and Wolff (2022) discuss the impact of rising public debt in southern European countries. They warn of potential fragmentation within the eurozone if fiscal disparities are not addressed. Blanchard et al. (2023) argue that the reinstatement of stringent EU fiscal rules post-COVID-19 may hinder investment in critical areas such as green energy and innovation. They propose a reformed Stability and Growth Pact that balances fiscal discipline with growth-oriented policies.

More than that, emphasize the EU's reliance on exports, particularly from Germany, which leaves the bloc vulnerable to global trade shocks in the context of the EU's trade policy challenges post-Brexit and in light of increasing U.S.-China trade tensions (Pelkmans and Mustilli, 2023). Smith and Brown (2024) highlight how potential tariff actions by external partners, like the United States, could disproportionately affect key EU sectors, including automotive and agriculture, exacerbating regional inequalities.

All these studies emphasizes that the EU's economic issues are deeply interconnected, requiring coordinated policy responses. Addressing trade vulnerabilities, promoting

competitiveness, and managing transitions to a green and digital economy are central to ensuring long-term sustainability.

Methodology

The paper is based on a mixed methodological approach, combining documentary analysis with empirical research, in order to explore and analyze the economic challenges of the European Union (EU) and the possibilities for achieving sustainable economic growth.

Documentary analysis. In the first stage of the research, a systematic review of the specialized literature was carried out, including academic works, official reports and publications of relevant European institutions. This method allowed the identification of the main economic and political trends that have influenced the development of the EU in recent decades, as well as the assessment of the structural challenges that the Union faces in the current global context.

Empirical research. The empirical part of the research focused on the analysis of quantifiable economic data, provided by official sources such as the European Commission, the European Central Bank and Eurostat. Time series of data on economic indicators such as real GDP, unemployment rate, inflation, budget deficits and international trade were examined. The analysis of these indicators provided a solid basis for assessing the impact of recent economic changes on the EU economy.

Integration of the results of the analysis. The methodology includes the integration of the two types of research (documentary and empirical) to build a holistic understanding of the economic challenges and opportunities for sustainable development. By comparing the data and interpreting them in the light of the global macroeconomic context, conclusions were derived on the effectiveness of European economic policies and the future prospects of the regional economy.

Results and discussion

Major Economic Problems for EU Countries

The EU countries faces multifaceted challenges concerning political, economic, social, and environmental issues. Furthermore, we have to emphasize structural challenges that demand innovative reform that balance integration with national sovereignty, advancing economic stability, promoting social unity, enhancing geopolitical resilience, and leading global climate efforts. The EU's ability to address these challenges will play a decisive role in determining its future as a unified political and economic entity.

EU countries face a range of interrelated problems, often exacerbated by global events and internal challenges.

- ✓ **Economic Disparities and Inflation.** While some EU countries have strong economies, others still face high debt levels, unemployment, and weaker GDP growth. The uneven economic recovery affects cohesion and limits collective progress. Rising energy prices, high inflation, and increased food costs are putting pressure on households across Europe. Many countries are struggling to mitigate the impact on citizens, as this undermines living standards and social stability. This is specially to two biggest problems that EU countries have to face with: high inflation and small economic growth.

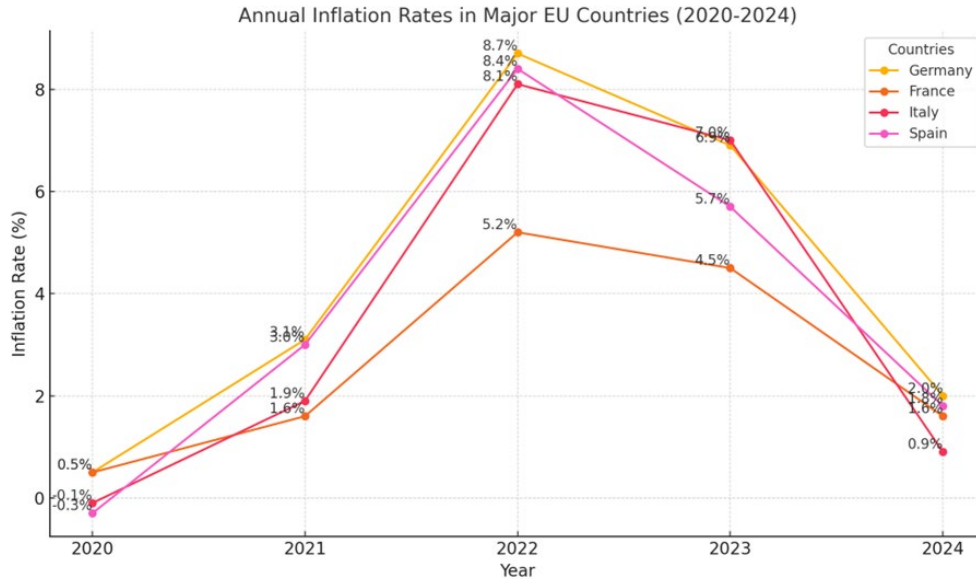


Figure 1. Annual Inflation Rates in Major EU Countries (2020-2024), Source Reuters (2024).

The above chart illustrates the annual inflation rates from 2020 to 2024 in the first four biggest EU economies: Germany, France, Italy, and Spain. This data highlights the significant fluctuations in inflation rates across these countries, particularly the sharp increases in 2022, followed by a downward trend in 2023 and 2024. When we interpret this data, we have to have in mind the target inflation target that is 2%.

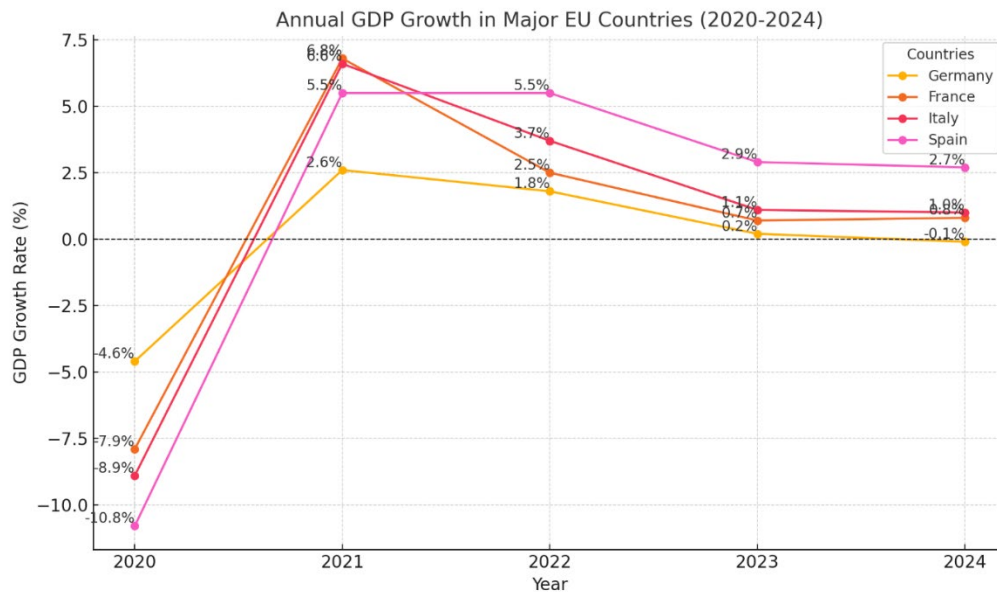


Figure 2. Annual Real GDP Growth in Major EU Countries (2020-2024) Source: Reuters (2024)

The data highlights the significant economic contractions experienced in 2020 due to the COVID-19 pandemic, followed by varying degrees of recovery in subsequent years. Notably,

Spain experienced the most significant contraction in 2020 but also demonstrated a robust recovery in the following years.

- ✓ **Climate Change and Environmental Degradation.** EU countries are increasingly experiencing climate-related challenges, such as wildfires, floods, and droughts. This not only affects agriculture and infrastructure but also places financial strain on governments. There are also challenges in balancing economic growth with stringent environmental regulations, especially in countries with industries heavily reliant on carbon-intensive processes. Ambitious targets for reducing carbon emissions (e.g., Fit for 55) require substantial investments in green technologies and infrastructure, which can strain public budgets and industries. The EU lags behind the U.S. and China in digital innovation, requiring investments in technology, cybersecurity, and digital skills to remain competitive.

As we can see in the below chart, the number of world-class patents in advance digital technologies during the period 2000-2023 shows obviously that the European Union has fallen far behind the US and China.

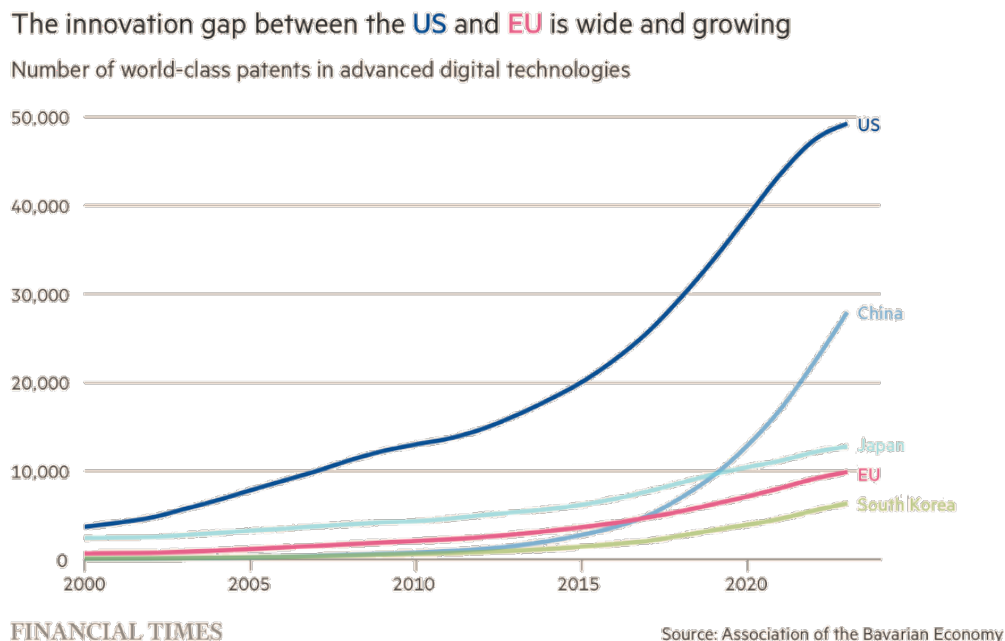


Figure 3. The EU lags behind the U.S. and China in digital innovation

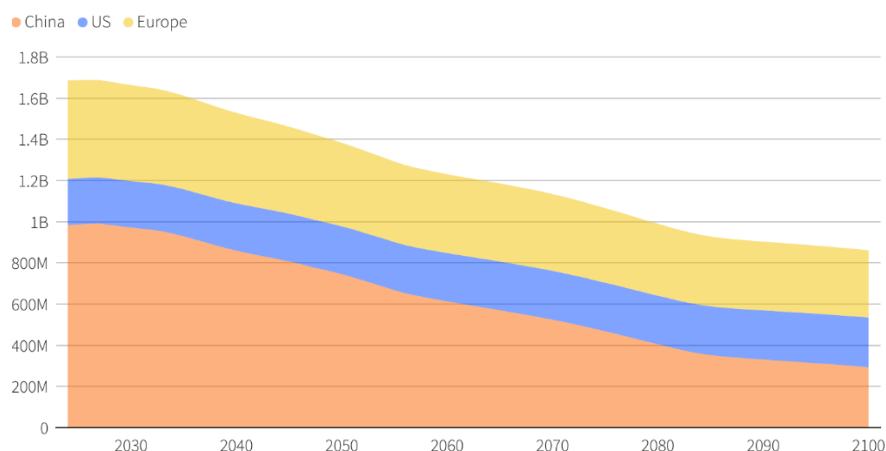
Source: FT (2024)

The EU has faced challenges in keeping pace with the United States and China in digital innovation. But, the EU invests less in research and development compared to the U.S. and China. This shortfall affects the EU's ability to foster cutting-edge technologies and digital advancements. While the EU's regulatory framework emphasizes data protection and privacy, it can sometimes hinder rapid technological adoption and innovation. In contrast, the U.S. and China have more flexible regulations that can accelerate digital progress. More than that, the EU's digital market is fragmented due to varying regulations across member states, making it challenging for digital enterprises to scale efficiently. The U.S. and China benefit from more unified domestic markets, facilitating faster growth for tech companies. More than that, there's a shortage of digital skills within the EU, impacting the development and deployment of new technologies. Both the U.S. and

China have made significant investments in education and training to build a robust digital workforce. Addressing these challenges requires the EU to increase R&D investments, streamline regulations to balance innovation with protection, unify the digital market, and invest in digital education and skills development.

- ✓ **Demographic Challenges and Migration Pressures.** Aging population and migration pressures are another set of major problems that have to face with. Many EU countries face aging populations, leading to labor shortages, increased healthcare costs, and pressure on pension systems. The chart area shows the declining population in China, US, and Europe by 2100. The bad bit is that a moribund EU is easier for more powerful countries to push around. The danger from China and the United States, whose economies are growing more rapidly than the EU's, is commercial.

Working-age populations in the EU and China are set to shrink



Note: Probabilistic projection of population age 15-64 (both sexes combined)
Source: UN World Population Prospects 2024 | P. Thal Larsen | Breakingviews | Sept. 13, 2024

Figure 4. The declining population in China, US, and Europe by 2100

The EU is facing a shrinking working-age demographic. Projections suggest that the number of individuals aged 20 to 64 will decrease from 264 million in 2022 to 207 million by 2050, a reduction of approximately 21% (Reuters, 2024). This trend is driven by declining birth rates and an aging population, leading to concerns about the sustainability of pension systems and economic growth.

While migration can address labor shortages, it poses challenges for integration and social cohesion. As we can see in the below graph, the EU has experienced notable fluctuations in immigration numbers between 2020 and 2024, influenced by factors such as the COVID-19 pandemic, geopolitical events, and policy changes.

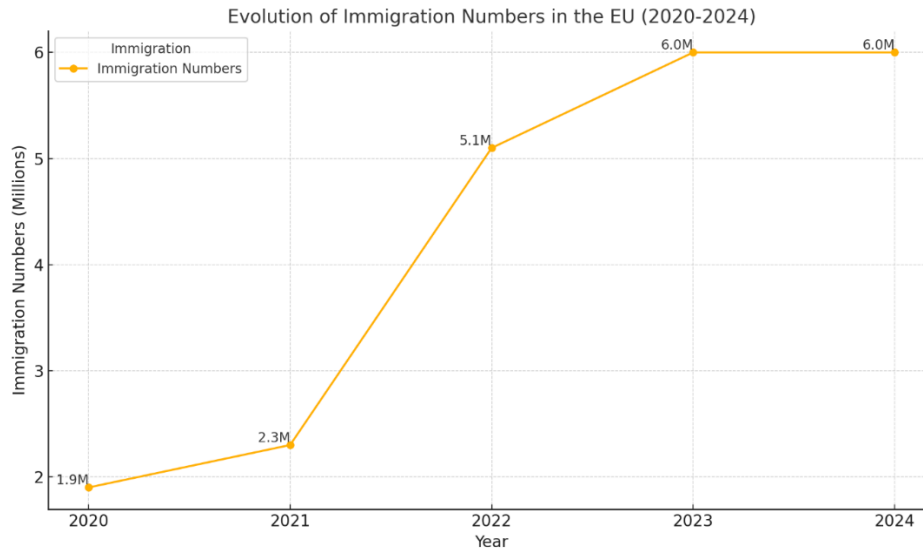


Figure 5. The evolution of numbers of immigrants in EU countries

Source: Reuters (2024)

The data highlights a significant increase in migration flows after 2020. The upward trend continued, with 5.1 million immigrants entering the EU from non-EU countries in 2022. This significant rise was partly due to the influx of individuals fleeing conflicts and seeking better economic opportunities. In 2023, the EU's population increased from 447.6 million to 449.2 million, primarily due to migration. This growth was largely attributed to displaced individuals from Ukraine fleeing the conflict with Russia. We can see also a stabilization by 2024. All these reflect the impact of major geopolitical and economic events during this period.

- ✓ **Fiscal and Monetary Policy Constraints.** High public debt in some member states limits their ability to respond to economic shocks. The eurozone's one-size-fits-all monetary policy does not always address the diverse economic needs of its member states. Therefore, high public debt poses a significant challenge to fiscal and monetary policymaking in EU countries, particularly in the aftermath of economic shocks such as the COVID-19 pandemic and the 2008 financial crisis. Elevated debt levels restrict fiscal policy flexibility by limiting the ability of governments to implement counter-cyclical measures without exacerbating debt sustainability concerns.

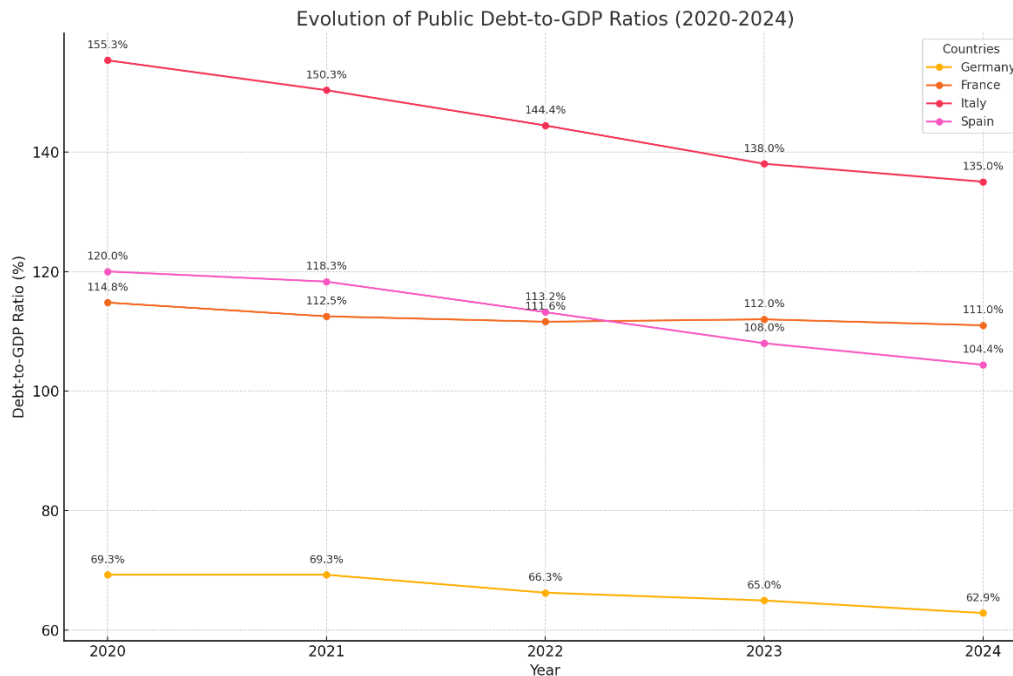


Figure 6. Evolution of public debt-to-GDP in major EU countries

Source: Reuters (2024)

This chart underscores the varying fiscal dynamics across EU economies and highlights the importance of tailored fiscal and economic policies to address public debt sustainability. The elevated debt levels in 2020 reflect the fiscal responses to the pandemic, including stimulus measures and increased public spending. More than that, these values have to be interpreted relatively to Maastricht Treatment target for Eurozone countries that indicate a value of debt-to-GDB equal to 60%. While Germany and Spain exhibit more pronounced reductions in debt ratios, France and Italy face more persistent challenges, underscoring differences in fiscal capacity and structural conditions. Concurrently, monetary policy faces constraints, as central banks in the EU must balance price stability mandates with the need to accommodate government borrowing. The reliance on unconventional monetary tools, such as quantitative easing, has further intertwined fiscal and monetary policies, raising concerns about their independence. Moreover, the EU's Stability and Growth Pact (SGP) imposes fiscal rules, including debt and deficit limits, which often necessitate austerity measures in highly indebted member states, potentially hampering economic growth and social welfare. This complex interplay between high public debt and policy constraints underscores the need for structural reforms, enhanced fiscal coordination, and targeted investments to foster economic resilience while ensuring long-term debt sustainability.

✓ Technological Fragmentation and Innovation Gap

Technological progress is a cornerstone of economic resilience and global competitiveness. However, the EU countries faces significant hurdles due to fragmented digital policies, uneven research and development investments, and a lack of skilled labor in technology-intensive sectors. These challenges undermine its ability to compete with global leaders like the U.S. and China and limit its capacity to drive innovation-led growth. As we shown in the figure no 3, the number of world-class patents in advance digital technologies shows that the EU economy has fallen far behind the US and China in this area. The EU's digital market remains fragmented, with disparate

regulations across member states making it difficult for businesses to scale operations efficiently. This fragmentation is a barrier to achieving a unified digital single market, which is crucial for fostering innovation. According to the European Commission (2024), regulatory differences cost the EU's economy approximately €415 billion annually in lost growth potential. While the EU accounts for 21% of global GDP, it only contributes 10% of global R&D spending. The EU's average R&D investment as a percentage of GDP was 2.2% in 2022, compared to 3.5% in the U.S. and 4.4% in China (OECD, 2023). This disparity has a direct impact on the EU's ability to lead in critical technological domains like artificial intelligence (AI) and green technology.

Indicator	EU	U.S.	China	Source
R&D Investment (as % of GDP, 2022)	2.2%	3.5%	4.4%	OECD, Main Science and Technology Indicators (2023)
AI Patent Applications (2023)	8%	30%	42%	WIPO, World Intellectual Property Indicators (2023)
Digital Skills Proficiency (2023)	56%	70%	75%	Eurostat, Digital Skills Indicator (2023)

In 2023, China produced 42% of the world's AI patents, while the EU accounted for only 8% (World Intellectual Property Organization, 2023). A severe shortage of digital skills further hampers the EU's technological progress. According to Eurostat (2023), only 56% of the EU's adult population possesses basic digital skills, compared to 70% in the U.S. and 75% in China. This skills gap limits the EU workforce's ability to adopt and implement advanced technologies, weakening the bloc's competitiveness.

The lack of technological leadership contributes to slower GDP growth. The European Commission (2024) estimates that bridging the innovation gap could boost the EU's GDP by €1.2 trillion by 2030. However, achieving this requires a cohesive approach to R&D funding, digital policy harmonization, and education reform.

Several Recommendations for Strengthening the EU Economies

The complexities and the differences between EU economies make the task of strengthening the EU economies both challenging and imperative. This part of our article outlines some key recommendations that in our opinion could help to foster economic resilience and sustainable growth across the EU. These recommendations are related to the problems and challenges identified in the previous chapter and are particularly related to global competition, green transition, and geopolitical uncertainties.

1. **The increase of investments.** These investments are needed in different sectors of economy, but in our opinion the most urgent is to allocate a higher percentage of GDP to research and development area to foster technological breakthroughs, particularly in high-tech and green industries. The digital skills gap is a critical obstacle to technological adoption and economic growth. To remain competitive, the EU must invest heavily in education and training programs to create a digitally literate workforce.

Some concrete actions to be taken could be: (a) Raising R&D Targets: Increase R&D spending to at least 3% of GDP by 2027, aligning with the EU's Horizon Europe objectives; (b) Encourage Public-Private Partnerships: Establish incentives for corporations to co-invest with governments in cutting-edge research projects, leveraging resources and expertise; (c) Expand Horizon Europe Grants: Focus on emerging fields such as AI, biotechnology, and cybersecurity.

Provide additional support to less developed EU regions to ensure balanced technological progress; (d) Introduce Digital Skill Vouchers: Offer financial support for workers to enroll in training programs on AI, programming, and other in-demand skills; (e) Revamp School Curricula: Make coding, data analysis, and critical digital competencies integral to education at all levels.

The EU needs to significantly boost investment in research and development (R&D), particularly in critical areas like artificial intelligence, renewable energy technologies, and quantum computing. The current 2.2% of GDP allocation is insufficient compared to global competitors. Mario Draghi recommended in his report to mobilize €750-800 billion annually, approximately 4.5% of the EU's GDP, to bridge the investment gap in innovation, green technologies, and defense (Draghi, 2024).

1. **Reforming Immigration Policies.** Addressing immigration effectively requires a multi-faceted approach that considers the root causes of migration, economic realities, and social integration. Increase funding and technology for border surveillance and control, ensuring the EU's external borders are secure. More than that, it is absolutely required to adopt policies that prioritize migrants with skills aligned to EU countries labor market needs, to reduce the illegal and unregulated immigration. Another effective measure could be the introduction of transparent quotas for economic migrants to regulate the influx and address specific economic needs as well as the running of some information campaigns in source countries to inform potential migrants about the risks of irregular migration and the realities of life in the EU.
2. **Harmonization of EU Regulations:** The EU must work toward establishing a unified regulatory framework that simplifies and standardizes digital policies across member states. Current disparities create significant barriers for businesses, particularly startups and digital enterprises, limiting their ability to scale and compete globally. Thus, some measures could be effective on a medium run: (a) Adopt an EU-wide Digital Policy Framework: this could include the extension of the Digital Markets Act (DMA) and Digital Services Act (DSA) to encompass more consistent rules for emerging technologies like AI and blockchain. (b) Streamline Data Policies: harmonize rules under the General Data Protection Regulation (GDPR) to balance data protection with innovation, enabling greater flexibility for research and business applications. (c) Reduce Cross-Border Barriers: introduce policies to eliminate differences in taxation, licensing, and trade regulations related to digital services, allowing for seamless operations across EU borders.

Conclusion

In conclusion, the European Union economy stands at a pivotal moment in its history, where its ability to navigate internal fragmentation, external pressures, and systemic challenges will determine whether it undergoes collapse or radical reinvention. The EU faces pressing issues, including economic disparities between member states, rising Euroscepticism, demographic shifts, geopolitical tensions, and the climate crisis. These challenges test the EU foundation principles of solidarity, cooperation, and shared sovereignty that have guided the EU since its inception. The possibility of collapse looms if the UE fails to address these challenges effectively. However, now, the EU has a unique opportunity to pursue a radical reinvention, a transformation that strengthens its institutions, aligns its policies with the demands of a changing world, and reaffirms its commitment to unity in diversity.

A future-oriented EU must prioritize comprehensive reforms, including deeper integration of fiscal and monetary policies, investments in green and digital transitions, and more equitable

mechanisms for managing migration and regional disparities. It must also cultivate a stronger sense of European identity, leveraging education, cultural exchange, and communication to build public trust and solidarity. By embracing innovation, sustainability, and inclusivity as core principles, the EU can reposition itself as a global leader in addressing complex challenges and advancing collective well-being.

Ultimately, the choice between collapse and reinvention lies in the EU's willingness to act decisively, adapt to shifting realities, and reaffirm its vision for a unified and prosperous Europe. Radical reinvention, while demanding, offers the most promising path to securing the EU's future and ensuring that it remains a beacon of cooperation and progress in an increasingly fragmented world.

References

- Aiginger, K. (2024). *Industrial Policy for a Sustainable Growth Path*. Policy Paper Series, Vienna
- Bénassy-Quéré, A. (2022). “How to Ensure that European Fiscal Rules Meet Investment”, VoxEU.org
- Blanchard, O. (2019). Public Debt and Low Interest Rates. *American Economic Review* 109, no. 4: 1197–229.
- Blanchard, O., Leandro, Á., & Zettelmeyer, J. (2021). Redesigning EU Fiscal Rules: From Rules to Standards. Working Papers 21-1
- Blesse, S., F. Dorn and M. Lay (2023a). “Do Fiscal Rules Undermine Public Investments? A Review of Empirical Evidence”, IFO Working Paper 393
- Buzoianu, O. A. C., Iacob, O., Mateescu, V. M., & Burlacu, S. (2024). Balancing Economic, Environmental, and Technological Systems for Sustainable Agricultural Development in Romania. *European Journal of Sustainable Development*, 13(4), 153-153.
- Castillo-Díaz, F.J., Belmonte-Urena, L.J., Batlles-de la Fuente, A., Camacho-Ferre, F. (2022). Impact of the new measures related to the circular economy on the management of agrochemical packaging in Spanish agriculture and the use of biodegradable plastics. *Environ. Sci. Eur.* 34 (1), 94, <https://doi.org/10.1186/s12302-022-00671-7>.
- Draghi, M. (2024). *The Future of European Competitiveness – A Competitiveness Strategy for Europe*. Retrieved from https://en.wikipedia.org/wiki/Draghi_report
- European Commission (2024). *Annual Sustainable Growth Survey 2024*. Brussels: European Commission. Retrieved from <https://eur-lex.europa.eu>.
- European Commission (2024). Assessing Public Debt Sustainability in EU Member States: A Guide ECFIN, Occasional Papers No. 200, Brussels.
- European Commission (2024). *Spring 2024 Economic Forecast: A Gradual Expansion Amid High Geopolitical Risks*. Brussels: European Commission. Retrieved from https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/spring-2024-economic-forecast-gradual-expansion-amid-high-geopolitical-risks_en.
- European Commission. (2015). *Europe 2020 Strategy: A Strategy for Smart, Sustainable and Inclusive Growth*. European Commission, Brussels.
- European Commission. (2024). *Annual Sustainable Growth Survey 2024*. Brussels: European Commission. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023DC0901>
- European Commission. (2024). *Spring 2024 Economic Forecast: A Gradual Expansion Amid High Geopolitical Risks*. Brussels: European Commission. Retrieved from [DOI: 10.2478/picbe-2025-0409, pp. 5343-5354, ISSN 2558-9652 |
Proceedings of the 19th International Conference on Business Excellence 2025](https://economy-</p>
</div>
<div data-bbox=)

- finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/spring-2024-economic-forecast-gradual-expansion-amid-high-geopolitical-risks_en
- Eurostat (2023). *Digital Skills Indicator*. Retrieved from <https://ec.europa.eu/eurostat>.
- Garretty, J., & Deutsch, A. (2023). Europe Has a Growth Problem. Should You Care? Retrieve from <https://rscapital.com/2024/05/17/europe-has-a-growth-problem-should-you-care/>
- Gaspar, V. (2020). Future of fiscal rules in Europe. Keynote speech at Workshop on “Fiscal Rules in Europe: Design and Enforcement” at DG ECFIN, January 28, Brussels.
- International Monetary Fund (IMF). (2024). *Regional Economic Outlook for Europe, October 2024: A Recovery Falling Short of Its Full Potential*. Washington, D.C.: IMF. Retrieved from <https://www.imf.org/en/Publications/REO/EU/Issues/2024/10/24/regional-economic-outlook-Europe-october-2024>
- International Monetary Fund (IMF). (2024). *Regional Economic Outlook for Europe, April 2024: A Soft Landing in Europe Is Within Reach*. Washington, D.C.: IMF. Retrieved from <https://www.imf.org/en/Publications/REO/EU/Issues/2024/04/05/regional-economic-outlook-europe-april-2024>
- Organisation for Economic Co-operation and Development (OECD) (2023). *Main Science and Technology Indicators*. Retrieved from <https://stats.oecd.org>.
- Rădulescu, C. V., Angheluță, P. S., Burlacu, S., & Kant, A. (2022). Aspects Regarding Renewable Sources in the European Union. *European Journal of Sustainable Development*, 11(3), 93-93.
- Rădulescu, C. V., Gâf-Deac, I. I., Bran, F., Mănescu, C. O., Bodislav, D. A., & Burlacu, S. (2023). The Mix of Resources, Security and Sustainability of the Energy Complex in Romania in the European Context. *The Amfiteatru Economic journal*, 25(63), 447-447.
- Rădulescu, C. V., Mănescu, C. O., Popescu, M. L., & Burlacu, S. (2023). Sustainable Development in Public Administration: Research, Practice, and Education. *European Journal of Sustainable Development*, 12(4), 27-27.
- Salvi, M., C. A. Schaltegger and L. Schmid (2020). “Fiscal Rules Cause Lower Debt: Evidence from Switzerland’s Federal Debt Containment Rule”, *Kyklos* 73, 605-642.
- Sapir, A., & Buti, M. (2022). *Reforms for Economic Resilience in Europe*. Brussels: European Economic Policy Studies.
- World Intellectual Property Organization (WIPO) (2023). *World Intellectual Property Indicators 2023*. Geneva: WIPO. Retrieved from <https://www.wipo.int/publications/en/>.
- Wyplosz, C. (2019). Fiscal Discipline: From Theory to Practice. In European Fiscal Board Workshop 2019: Independent Fiscal Institutions in the EU Fiscal Framework: 8–33