Wilfried
Martens Centre
for European Studies

Is Draghi Right?

Designing the Way Forward

Foreword by Klaus Welle

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Credits

The Wilfried Martens Centre for European Studies is the political foundation and think tank of the European People's Party, dedicated to the promotion of Christian Democrat, conservative and like-minded political values.

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Foreword

Klaus Welle

The phrase ‘Whatever it takes’ made Mario Draghi world-famous. Everybody speculating against the European currency knew from that moment onwards that, confronted with the overwhelming firepower of the European Central Bank, you could only lose money. That speech effectively ended the ‘euro crisis’.

Can he do it again?

The Draghi report requested by the European Commission on how to strengthen European competitiveness throws a big stone into the water. It will be the point of reference for both political debate and action over the current five-year legislature. Draghi makes everybody face their responsibilities. And he makes the consequences of non-action extremely clear: in the absence of decisive action, we will no longer be able to reach all our strategic targets. We will have to choose.

The essentials

The Draghi report comprises six basic truths that will inspire the legislative proposals of the European Commission in this term, even more so as it was requested by the European Commission President herself. As I read it, the Draghi report can be understood, in a nutshell, as follows:

1. Investment is the precondition for future growth. Europe is lagging behind in high-tech investment and has largely lost the new digital economy race. This can be identified as the key reason for the difference in per-capita growth between the US and the EU. Mid-tech–based industry—for example, the auto industry—is our current economic backbone, and it is coming under increasing competitive pressure from China.

2. Without that investment, annual productivity growth is falling behind. Europe could maintain and develop its standard of living significantly by considerably increasing female and older-age participation in the workplace. Worsening demographics make that quantitative input increase more difficult.

3. The EU has to return to the strategy of scaling through the development of its own internal market, especially in the less integrated areas of the service sector.

4. The Banking Union and Capital Markets Union are critical to high-tech investors' efforts to scale beyond national boundaries. Given that high-tech means not only high return but also high risk, venture capital is necessary for that growth.

5. As is typical for aging societies, we have regulated for risk and not for opportunity. The regulatory burden has to be reduced.

6. Common public debt has to come in as a residual answer, dependent in volume on progress being made in the five points mentioned above. Consensus on common European debt could be achieved in the area of defence, which can be considered a European public good. A common European financing will also contribute to a more equal burden-sharing.

The authors

The Martens Centre's Academic Council asked four leading experts to provide a critical evaluation of the Draghi report: Jacob Funk Kirkegaard, Daniel Gros, Anthony Gooch Gálvez and Gilles Briatta.

I remember Jacob Funk Kirkegaard vividly from his contributions during the eurozone crisis. When more or less everybody in the US was writing about the end of the euro, he was arguing against the tide from his position at the Peterson Institute in Washington about the 'upcoming solution of the eurozone crisis'. Jacob is a member of the Academic Council of the Martens Centre. In addition to his position at the Peterson Institute, he is a Senior Fellow at Bruegel.

Daniel Gros is a leading European economist and currently serves as the Director of the Institute for European Policymaking at Bocconi University. For decades his research has been a point of reference in the debate about economic reform in the EU.

Anthony Gooch Gálvez has held leading positions within the OECD, and this has provided him with an understanding of issues that goes well beyond our own continent. He currently serves as the Secretary General of the European Round Table for Industry and is a member of the Academic Council at the Martens Centre.

Gilles Briatta is senior counsel at Gide Paris and can look back on an impressive career in both public administration and business. I especially remember him as the long-serving Secretary General for European Affairs, successfully coordinating France's policy on the EU.

While acknowledging the importance of the Draghi report, this publication will also provide policymakers and the interested public with a critical view of its limitations.

Maintaining the European Way of Life Versus Maintaining Europe's Role in the Global Economy

Daniel Gros

Over the last years, the EU's leaders have had to concentrate on firefighting as unprecedented challenges have absorbed the attention of policymakers at all levels. With Covid-19 definitely in the rear-view mirror and the fighting in Ukraine unfortunately having become the new normal, attention should shift back to bread-and-butter issues.

The current state of the European economy is not encouraging. Growth rates have settled at around 1%, making the EU overall, and the euro area in particular, the slowest growing of the major economic areas globally.

But this slow growth has not translated into lower standards of living. Protecting the European way of life was one of the priorities of the first von der Leyen Commission, which entrusted this task to a newly created vice-presidency. While this move has remained mainly a public relations exercise, broad economic trends over the last decade have ensured that Europeans have actually been able to maintain their standard of living much better than some headline indicators might suggest.

However, the economic weight of the EU in the global economy continues to fall. Moreover, productivity growth has fallen, both in absolute terms and in comparison to the US. The main finding of this contribution is that this disappointing performance should be surprising given the continuous reform efforts over the last two decades and the considerable improvement in the level of education of the European workforce. A lack of capital is unlikely to have been the root cause of lower productivity growth, given that the investment rate in the EU has been, until very recently, equal to that of the US. The return on capital is lower in most of the EU than in the US, suggesting that it is the composition of investment, rather than its volume, that is the problem.

Slow growth is clearly perceived as a problem at the highest political level and has led to the commissioning of two major reports on the EU economy by two former Italian

prime ministers, Enrico Letta and Mario Draghi. The Letta report, published in late April 2024, concentrated on the state of the internal market. The Draghi report on European competitiveness was published in September 2024. The analysis presented here is meant to provide the factual background necessary to evaluate the policy prescriptions of these two reports and any action plans then adopted by the EU institutions.

Macroeconomic trends over the last two decades

Growth

It is difficult to establish a universal benchmark for growth. Most evaluations of the performance of the European economy are thus based on a comparison of the EU to the US, as both are diversified continent-sized economies with a similar level of development. But even if one concentrates on the US as the benchmark, it is not clear which indicator to use.

There are a number of different ways to assess and compare the track record of countries in terms of economic growth. The most widely used are the following:

1. *Total GDP measured in a common currency* (e.g. US dollars or euros). This measure is useful to compare weights in the global economy.
2. *Real GDP.* This is the most often used measure of growth. It provides a measure of the growth of the real resources produced by an economy, but levels are not comparable across countries.
3. *Real GDP per capita.* This indicator provides a measure of the real resources available to the average citizen; it can be used only as a growth rate, not for comparison of levels.
4. *Real GDP per occupied person.* This is a measure of productivity growth.
5. *GDP per capita at purchasing power parity (PPP).* This indicator allows one to compare standards of living across countries (in levels).

These different indicators yield different pictures, especially if one compares the EU or the euro area to other large, developed economies, such as the US or Japan.

The distinction between the EU and the euro area is important. The record of the EU is affected by the fact that at its starting point (e.g. 1999 or 2000) the then still candidate countries were substantially poorer and classified by major international financial institutions as ‘developing countries’. These countries could therefore be expected to grow more quickly than mature developed economies such as the US or the pre-2004 member states.

One aspect not discussed at length here is the difference between the ‘old’ (i.e. pre-2004) and the new member states. There has been substantial and continuing convergence in east–west income levels within the EU. This is true for all the different indicators mentioned

above. The speed of convergence has, of course, been too slow for many since the gap has not yet been closed. But convergence inside the EU has proceeded more quickly than textbooks anticipated. It will still take some time before the remaining east–west gap closes, but the important point is that the direction of travel is the right one. The internal convergence track record of the EU is thus a, largely unsung, success story.1

The boosters2 of Europe therefore generally use EU growth data, whereas the doomsters3 concentrate on euro area data. The boosters tend to be based in the EU, while the doomsters usually come from the Anglosphere. This contribution adopts a neutral stance and focuses on the euro area since the growth problem is concentrated in the mature economies of the euro area.

Transatlantic growth comparisons

At first sight, it seems clear that the euro area is growing more slowly than its Anglo-Saxon peers, the US and the UK. Over the last 29 years, the average growth rate in real GDP for the US has been, at 2.12% per annum, much higher than that of the euro area (1.29%). Even the UK has grown faster than the euro area (1.64%), as seen in Table 1 below.

However, the picture changes if one adjusts these overall growth rates for demographic factors. A group of countries with a stagnant population grows naturally less quickly than a country with a growing population. One typically measures how well off a country is by dividing GDP by the entire population. However, if one wants to measure changes in output relative to the demographic potential, one should adjust for the working-age population.

This has been done in Table 1, below, which shows the overall growth rates in (real) GDP, the increase in the working-age population and, in the last column, the resulting growth rate of GDP per working-age person. The differences in GDP growth adjusted for the working-age population are much smaller than the headline growth rates. The US is still growing more quickly than the euro area, but adjusted for the working-age population, the difference is 0.2 percentage points (1.44% vs. 1.24%)—much smaller than the difference in headline growth rates that often provides the basis for the negative stories about the growth record of the euro area.

1 Especially if compared to the lack of convergence in Central America. See M. Emerson and D. Gros, 'The EU's Enlargement as an Unsung Catch-up Story', IEP@BU (2024).

2 Z. Darvas, 'The European Union's Remarkable Growth Performance Relative to the United States', Bruegel, 26 October 2023.

3 See for example, M. Arnold and J. Politi, 'Mind the Economic Gap: Europe and the US Are Drifting Further Apart', Financial Times, 16 March 2021; G. Rachman, 'Europe Has Fallen Behind America and the Gap Is Growing', Financial Times, 19 June 2023.

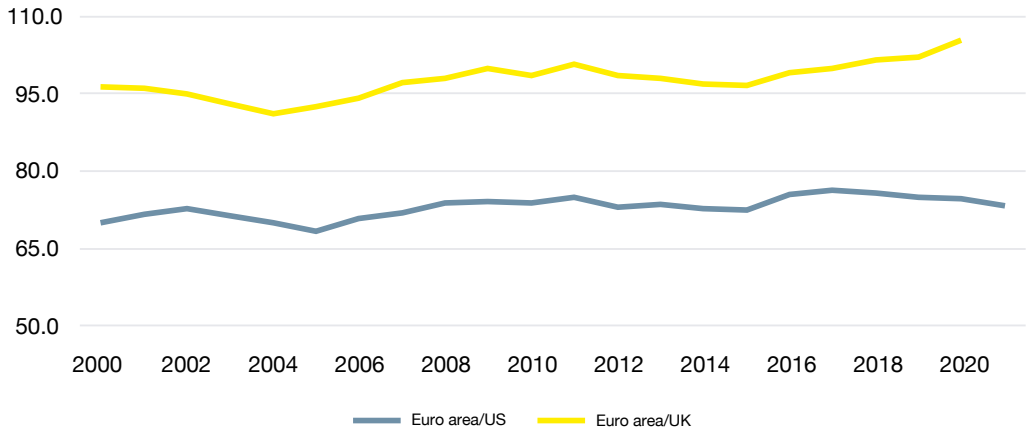
Table 1 Average growth rates 1999–2021

	Real GDP (a)	Increase in working-age population (b)	GDP per working-age person (a – b)
Euro area	1.29	0.05	1.24
US	2.12	0.68	1.44
UK	1.64	0.50	1.13
Japan	0.58	-0.68	1.27

Source: Data from Eurostat, 'Population by Educational Attainment Level, Sex and Age (%)'; Eurostat, 'GDP per Capita in PPS'.

Surprisingly the performance of the euro area looks even better if one does not compare growth rates over time, but the per capita outputs adjusted for PPP across countries at each point in time. Figure 1 below thus shows that the GDP per capita of the euro area has slightly increased relative to that of the US (from about 70% to over 73% of the US level). The euro area has also performed much better relative to the UK, especially since the Brexit referendum of 2016, with the average euro area citizen now slightly better off than the average UK citizen.

Figure 1 Euro area GDP per capita at PPP compared



Source: Eurostat, 'GDP per Capita in PPS'.

The two indicators analysed so far, the growth in GDP per working-age person and GDP per capita adjusted for PPP, show only small differences with the US. A first conclusion is thus that the standard of living in Europe has not declined, certainly not relative to the US. This has one major implication: the alarm sounded by the Draghi report about Europe falling behind is not shared by the population. Mobilising broad popular support for more resources and more reforms might thus be difficult.

Employment

Employment increased in the euro area by almost 15 million in the first two decades of European Monetary Union (EMU), more than in the US, where the total increase in employment over these 21 years was slightly below 10 million.

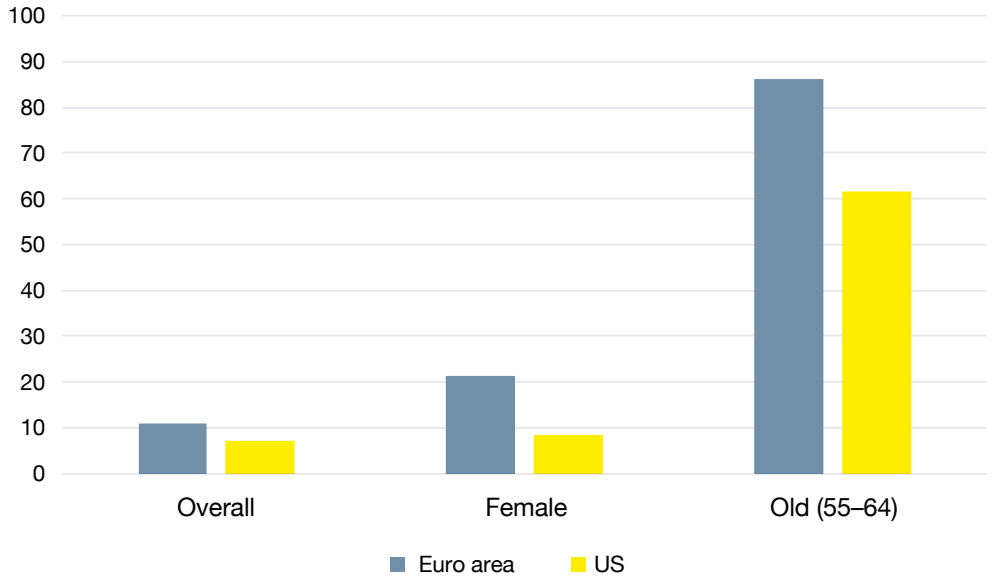
In both the euro area and the US, one finds that the increase in employment among the older cohort (those aged 55–64) was higher than the overall increase. This implies that employment among the younger cohorts (below 55) has fallen. Similarly, female employment increased by 12.9 million in the euro area, much more than the 2 million more men employed. In the US, while the increase in the employment of older people was also higher than the overall increase, the distribution of the male to female increase was less lopsided.

Table 2 A dynamic euro area labour market

	Change in employment (millions) 2000–21		
	Overall	Female	Older (55–64)
Euro area	14.9	12.9	16.5
US	9.7	5.5	11.9

Source: Eurostat, 'Population by Educational Attainment Level, Sex and Age (%)'.

Figure 2 Percentage increase in employment since 2000



Source: Adapted from OECD, 'Employment rate'.

This high increase in employment suggests that labour markets have become more flexible in the euro area. But coupled with slower growth, it also means that productivity has increased much less.

In percentage changes, one finds that employment has increased by close to 11% since the introduction of the euro, but by only 7% in the US in the same period, as shown in Figure 2. The rate of increase in female employment has been much higher in the euro area, over 21%, compared to only 8.5% in the US. The highest growth rates in both areas are among the older cohort (above 55)—employment has increased for this cohort by over 80% in the euro area and by 60% in the US.

As the present author has shown in another study,[4] this is mainly due to an increase in education levels, since there are very large differences across skill levels among the older cohorts (unskilled workers tend to leave the labour force much earlier, since they have to perform more manual tasks).

The downside to this strong employment performance is that GDP per employed person, that is, productivity, has been disappointing and much lower in the euro area than in the US. The US economy has grown more quickly than that of the euro area (by 0.8% per annum, as shown above), while euro area employment has increased by about 5 percentage points more than in the US since 2000—about 0.25% more per year. This implies that the difference in productivity growth has been substantial, slightly more than one full percentage point per annum (euro area productivity as measured by real GDP per employed person was below 1% per annum versus close to 2% per annum in the US).[5] As emphasised by the Draghi report, productivity growth has been twice as high in the US.

Investment

Many prescriptions to accelerate growth in Europe start with a call for more investment.[6] Some years ago, a purported 'investment gap' led the Commission to propose the 'Juncker Plan' to finance hundreds of billions of euros of additional investments.[7]

However, the broad figures on investment, and especially the available data on the results of investment, do not suggest that a lack of capital is the reason for the disappointing productivity performance of the euro area.

4 D. Gros, 'Improvement in European Labor Force Participation', IZA World of Labor 449 (2019, Preprint).

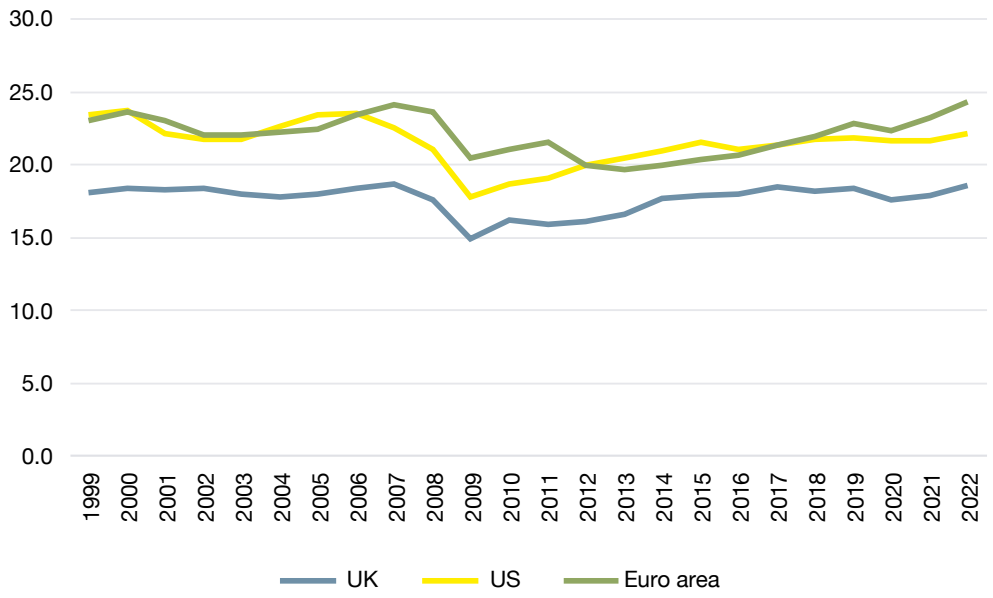
5 Productivity as measured per hour worked might yield a somewhat smaller transatlantic difference. The split in employment in terms of full-time versus part-time work has not changed a lot over the last decades. The low growth rates despite high employment growth thus cannot be explained by an increase in part-time jobs. See Eurostat, 'Part-Time and Full-Time Employment – Statistics' (September 2024).

6 D. Gros, 'Structural Reforms as a Panacea? The European Productivity and Growth Puzzle', Intereconomics 51/6 (2016).

7 E. Rubio and F. Virel, InvestEU Fund: A Rebranded Juncker Fund?, Institut Jacques Delors (26 September 2018).

Figure 3 below shows the investment rate (investment as a percentage of GDP) in both the euro area and the US. Investment fell on both sides of the Atlantic after the Great Financial Crisis. But this was somewhat to be expected since the period up to 2007 had been characterised by abnormally low risk premiums and potentially excessive investment in housing. However, over time, investment rates recovered along similar lines. The US and the euro area invested a similar proportion of GDP over the first two decades of the euro, the main difference being that investment levels were somewhat more stable in the euro area.

Figure 3 Investment as a percentage of GDP



Source: World Bank, 'Gross Capital Formation (% of GDP) - United Kingdom, United States, Euro Area'.

Given that the euro area had a similar average investment rate to the US, but a lower average growth rate, one must conclude that investment has been less productive in the euro area. The productivity of investment can be measured by the additional output produced by a given amount of investment.[8] Gros, Presidente and Mengel compute this measure of return on investment as usually being between 9% and 10% for the US, but only 6% to 7% for the EU.[9] This implies that there is a large gap in the efficiency of investment.

The key transatlantic difference is thus not the size of the resources devoted to investment, but the composition. OECD data suggest that in the US about 18% of gross fixed capital formation goes towards information and communication technologies, compared to about 10% in the EU. Moreover, there are very large differences across the member states (for

8 This is the inverse of what is called the incremental capital output ratio.

9 D. Gros, P.-L. Mengel and G. Presidente, What Investment Gap? Quality Instead of Quantity, IEP@BU Policy Brief (2024).

Germany, it is less than 7%; for Italy, it is about 11%; and for France, it is close to the US value, at 17%).

Another transatlantic difference is of course the size of the venture capital market that finances startups and innovation. This difference is usually related to the variations in capital market structures. In the US, equity markets are much more important and are more willing to finance radical innovation. By contrast the euro area's capital market is based much more on debt financing, the vast majority of which comes from bank credit, and bankers face difficulties in financing new companies with new ideas but no track record. However, the differences in the availability of venture capital might be less of an obstacle to European startups than is widely perceived.

The 2022 Innovation Scoreboard of the European Commission provides some useful detail on corporate venture capital (i.e. investments by corporations that provide financing to startups).[10] Its data show that while EU corporates provide about 22% of global corporate venture-capital funding, EU-based startups receive only about 9% of the total.[11] The destination of corporate venture capital is particularly interesting because corporates (whether in the EU or elsewhere) large enough to undertake venture-capital investment are not subject to capital market frictions. The fact that EU-based startups receive a relatively low share of the global corporate venture capital is thus an indication that the real problem might be one of the supply of investment opportunities in Europe, rather than a lack of funding for startups.

It is sometimes argued that the dominance of the bank-based financing system in Europe could be a reason why investment in intangible capital is weaker, because intangible capital does not create collateral that can be used as a guarantee for bank credit. However, somewhat surprisingly, investment in intangible capital is not noticeably weaker in Europe than in the US.[12]

The broad conclusions that remain are that it is not the size of the resources devoted to investment that is the main reason for lower growth, but their composition, and that it is not evident that the capital market structure is the main reason for the lower return on investment. The call in the report on the future of European competitiveness from Mario Draghi to increase investment by over 4% of GDP thus seems misplaced. Changing the composition of investment seems more important than increasing its quantity.

10 European Commission, Innovation Scoreboard 2023 (June 2023).

11 Ibid., 30.

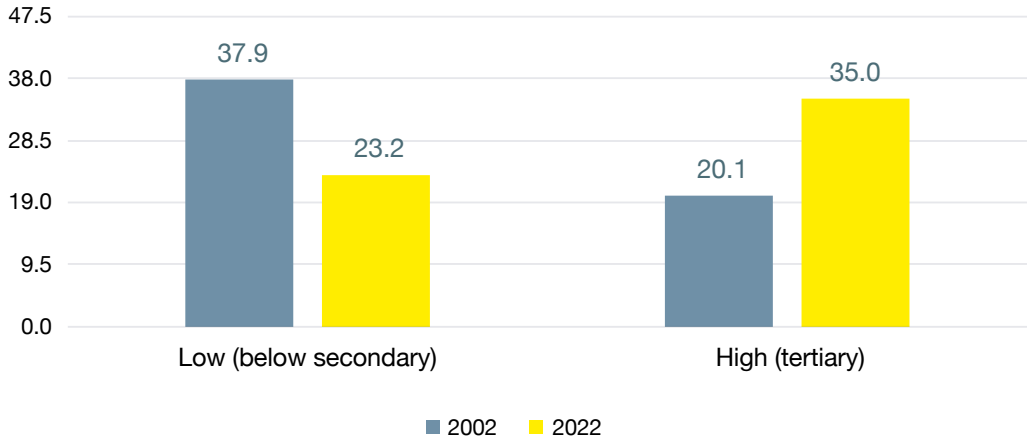
12 L. Demmou and G. Franco, Mind the Financing Gap: Enhancing the Contribution of Intangible Assets to Productivity, OECD Economics Department Working Paper no. 1681 (2021).

Human capital

Better qualification of the workforce is one universally recognised growth factor. More schooling should, in principle, increase productivity. Increasing the level of education of the workforce is one area where there has been significant progress. It is not widely noted because it happens slowly over time. This might be why it is not widely appreciated that the level of schooling and qualification of the European workforce has made great strides over the last decades.

The educational upgrading of the workforce of the euro area is illustrated in Figure 4 below, which shows the proportions of the working-age population (25–64) that were low skilled and high skilled in 2002 and 2022. Low-skilled workers are defined as those without secondary education. They amounted to almost 40% of the working-age population in 2000, but only 23.2% in 2021. Over the same period the share of high-skilled workers (those with a tertiary education) increased from 20% to 35%. The increase in the share of high-skilled workers by about 15 percentage points is very similar to the fall in the share of low-skilled workers. This implies that the middle level (those with secondary, but no tertiary education) remained roughly constant at somewhat more than 40%.

Figure 4 Euro area: shift in the skill composition of the 25–64-year-old population



Source: Eurostat, 'Part-Time Employment and Temporary Contracts – Annual Data'.

The upskilling of the workforce has had a profound impact on the European labour market. The employment rate of university graduates is at over 80% almost everywhere, much higher than that of the low skilled (below 50%). It follows that the 15-percentage-point increase in the share of university graduates could by itself have increased the employment rate by 4.5–5 percentage points. This is close to the observed increase. This effect of higher education levels on employment rates has been less strong in the US, where the ratio of university graduates has traditionally been higher than in the EU.[13]

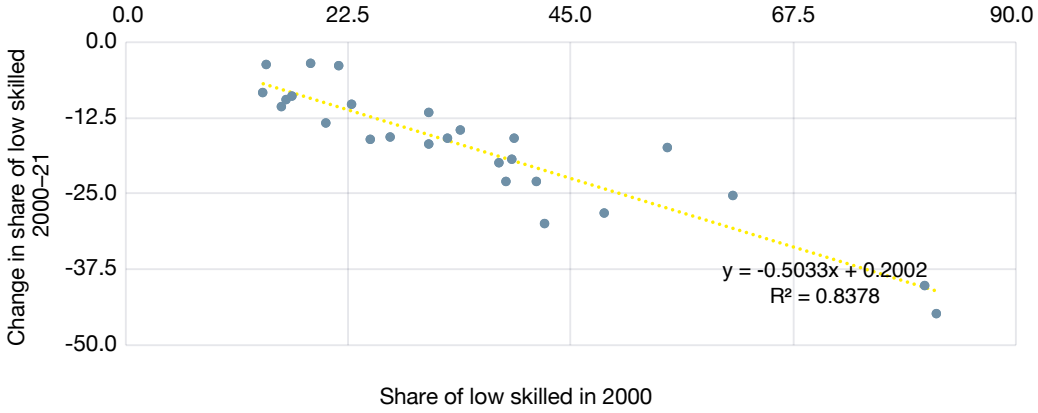
13 See OECD, Education at a Glance 2024: OECD Indicators (Paris: OECD Publishing, 2024). The Nordic EU members resemble the US in this respect.

The ongoing shift in the composition of the workforce is thus the main reason why employment rates have trended upwards in the EU and the euro area. Labour market reforms can have played at most a marginal role. OECD indicators of employment protection show little change over the last 15 years.

Given current university enrolment rates among the young of close to 40% throughout most of the EU, this trend in the transformation of the workforce will continue. The proportion of university graduates is destined to increase and that of the low-skilled to decline. This will attenuate the fiscal cost of ageing and its impact on growth because university graduates tend to work for much longer than unskilled workers. Europe's ageing problem might thus turn out to be more like Japan's than China's.[14]

Moreover, there has also been considerable convergence in education levels across the EU (and the euro area). Those countries with the highest share of low-skilled workers in 2000 also saw the highest reduction over the next 20 years, as seen in Figure 5 below.[15] In countries such as Germany and the Netherlands, which already had a low share of low-skilled workers in 2000, their decline (and the increase in high-skilled workers) has been much smaller than in countries such as Spain, where the low skilled accounted for over 60% of the working-age population in 2000, but only 36% in 2021, a fall of 23 percentage points. In this limited sense, Northern European countries are losing one competitive advantage.

Figure 5 Convergence in basic education



Source: Adapted from Eurostat, 'Population by Educational Attainment Level, Sex and Age (%)'.

14 J. F. Kirkegaard, 'Myth and Reality in the East Asian Challenge: The Lessons That Should and Should Not Be Learned From the Japanese Experience', Eurocomment.eu, Newsletter 2024/01.

15 One does not observe a similar convergence for the high skilled. This suggests that a declining share of low-skilled workers initially translates into a higher share of mid-level workers.

Reforms: the labours of Sisyphus?

The need for structural reforms has been a mantra for a very long time. The 2000 Lisbon Strategy was predicated on the idea that structural reforms could make the EU 'the most competitive and dynamic knowledge-based economy in the world' (by 2010).

The Services Directive (also called the Bolkestein Directive[16]) of 2006 represents another major initiative that was pushed through despite widespread resistance, promising to increase productivity in the services sector. The Digital Single Market[17] was launched in 2010. Neither of these two initiatives (nor other similar ones) has left any trace in the productivity statistics.

Most of the obstacles to growth are at the member state level. But here there has been progress. Since 2016 the Commission has supported reforms in member states through what was initially called the Structural Reform Support Programme, and was renamed the Technical Support Instrument in 2021. All euro area member states now have productivity boards.

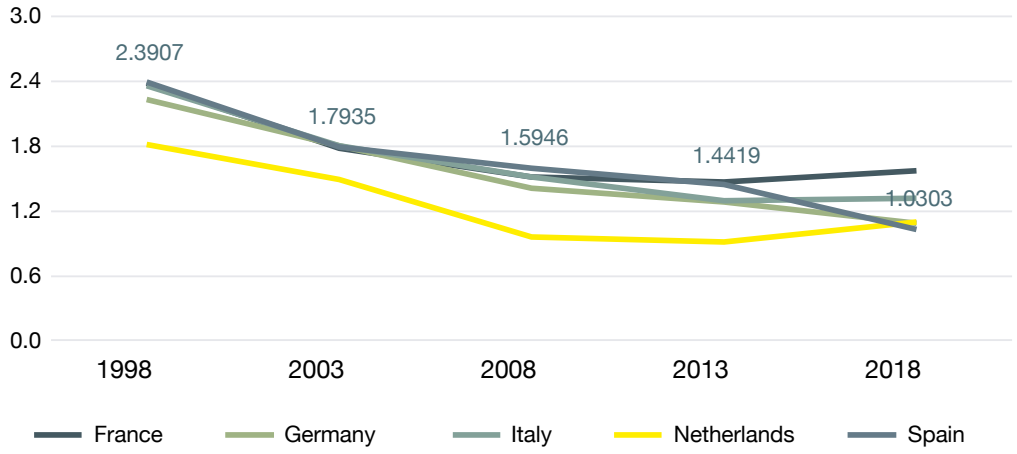
It is very difficult to measure structural reforms. The one internationally comparable indicator comes from the OECD and measures, on a five-yearly basis, the degree to which government intervention distorts markets (especially product markets). According to this indicator, most euro area countries have made considerable progress since the start of EMU. Figure 6 below shows the evolution of this indicator from 1998 to 2018 for the five largest economies of the euro area. A lower value implies fewer restrictions, that is, more market-opening reforms.

It is apparent that all countries have made considerable progress since 1998, despite a minor setback after 2013 in the Netherlands and France. The Netherlands was showing the best progress until 2013, but by 2018 it had slipped back to be level with Germany and Spain.

16 European Parliament and Council Directive 2006/123/EC on services in the internal market, OJ L376 (27 December 2006), 36.

17 European Parliament and Council Regulation (EU) 2022/1925 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act), OJ L265 (12 October 2022), 1.

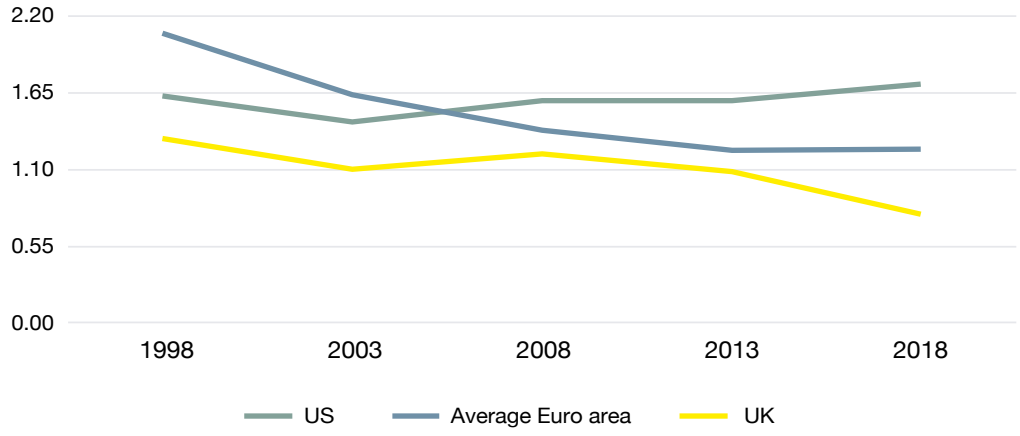
Figure 6 OECD product market regulation indication of reforms for selected euro area countries



Source: Adapted from OECD, 'Product Market Regulation Indicators'.

These continuing reform efforts in the euro area contrast with the performance of the US, whose product market regulation (PMR) index slightly worsened during this 20-year period. In 1998, that is, at the start of EMU, the US economy was less regulated than the average euro area economy, but by 2018 this had changed. Regulation is now more pervasive in the US than in the euro area. Moreover, even on sub-indicators such as the environment for new firms, the major euro area countries score better than the US.[18]

Figure 7 OECD PMR indicator of reforms for the US, euro area and the UK



Source: Adapted from OECD, 'Product Market Regulation Indicators'.

18 OECD, 'Product Market Regulation Indicators' (2023).

This observation is difficult to reconcile with the perception that the US is more dynamic than old Europe because its economy is freer. While this perception is only partially justified if one takes demographic developments into account, it is certainly at odds with the stronger productivity growth of the US.

A comparison with the UK does not help to resolve this mystery of the absence of the impact of market liberalisation on growth. The UK has had fewer market restrictions than the average in the euro area throughout this entire period, but its growth performance has been worse than that of the euro area (and the US).

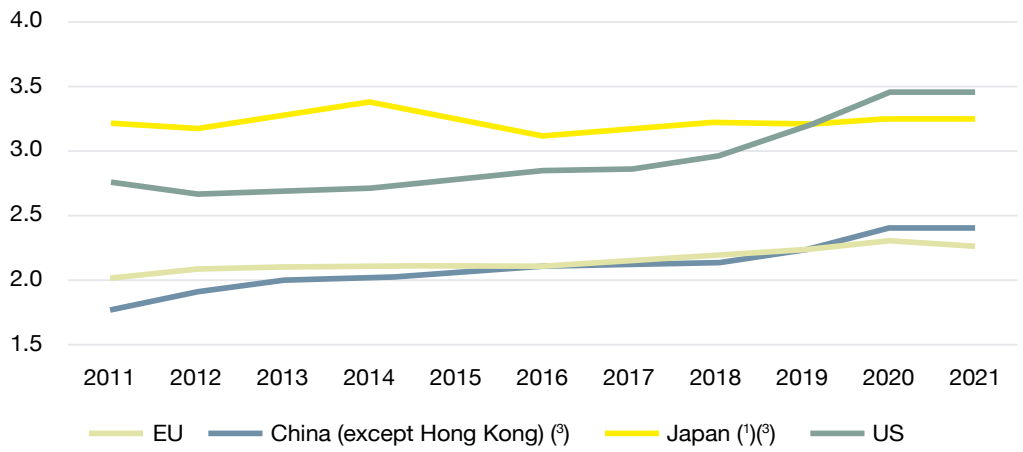
There are of course other indicators which show Europe to be much less business friendly, such as the World Bank's Ease of Doing Business index. However, even this indicator does not show any deterioration in the rankings of the larger EU member states.[19]

The question of why productivity growth has been so disappointing despite continuing reform efforts at both the national and the EU level remains difficult to answer if one combines the observations that have been made so far: that investment has been relatively strong and that reforms have been made.[20]

Innovation

Fostering innovation has been a priority of European policymakers for a long time, with the aim of reaching the technology frontier represented by the US. The official goal has long been to have research and development (R&D) spending reach 3% of EU GDP. But as Figure 8 below shows, this ratio has barely moved beyond 2% for the EU, while it is now close to 3.5% of GDP for the US.

Figure 8 Gross domestic expenditure on R&D (% of GDP)



Source: Adapted from Eurostat, 'GERD by Sector of Performance' and OECD, 'Gross Domestic Spending on R&D' (2024).

Note: (1) 2013 and 2018: break in series; (3) Data for 2021 unavailable; values copied from 2020.

19 World Bank, 'Ease of Doing Business Score' (2021).

20 Gros, 'Structural Reforms as a Panacea?'.

This mediocre performance should be surprising because government support for R&D in the EU[21] has grown gradually over the last two decades and has now reached about the same level as in the US.

The decisive difference between the US and the EU is in business R&D spending, which in the EU is at 1.2% of GDP, about half of its level in the US (2.3% of GDP).[22] The large transatlantic difference in private R&D suggests that in the EU, public support has failed to catalyse private R&D. The much lower propensity of EU firms to spend on R&D is not due to a lack of public incentives as, according to OECD data, the amount spent on tax incentives is roughly similar in the EU and the US (around 0.1% of GDP for the EU; 0.12% of GDP for the US).

Moreover, given that US GDP is over 50% larger, total US business R&D spending is over three times as much, making it unlikely that the EU will achieve a similar level of broad-based technology pre-eminence any time soon. Furthermore, EU business R&D is mainly concentrated in the mid-tech industry, particularly in sectors such as the automotive industry. This pattern has persisted for two decades, with the largest EU companies in terms of R&D expenditure almost invariably being car producers, as shown below.

Table 3 Biggest R&D spenders in the US and the EU compared over time

	2003	2012	2022
US	Ford	Microsoft	Alphabet
	Pfizer	Intel	Meta
	General Motors	Merck	Microsoft
	Automotive + Pharma	Software + Chips + Pharma	Software
Total euro billions	16	22	71
EU	Daimler	VW	VW
	Siemens	Daimler	Mercedes
	VW	Bosch	BMW
	Automotive + Electronics	Automotive	Automotive
Total euro billions	15	20	31

Source: C. Fuest et al., 'EU Innovation Policy – How to Escape the Middle Technology Trap'.

21 But nine-tenths of government support for R&D comes from the member states. EU spending, mainly through the Horizon Europe programme, amounts to only one-tenth. By contrast, in the US, over 90% of government support for R&D comes from the federal government.

22 The Innovation Scoreboards published regularly by the Commission consistently find that the EU lags behind the US on many indicators and is now at about the same level as China. The most recent Scoreboards finds that the gap with the US has been increasing since 2016. See European Commission, European Innovation Scoreboard 2023 (June 2023).

A much lower share of overall EU R&D expenditure is in high-tech industries. The gap is particularly acute in software development, where US companies account for over 75% of the global total compared to less than 6% for the EU (and 12% for China, whose software companies thus invest twice as much in R&D as their European counterparts). Most of the growth in US corporate R&D spending over the last decade has come from high-growth software-related companies. The key difference is thus that US companies invest more in high-growth sectors, not that they invest more overall.

The EU has still a comparative advantage in cars (in the sense that it exports many more than it imports), but it is worrying that despite massive investment in R&D in this sector, EU industry now risks being leapfrogged by battery electric vehicle producers, first from the US (e.g. Tesla) and increasingly from China. In fact, Chinese enterprises are catching up quickly in terms of R&D spending.

The automotive sector illustrates the dangers of concentrating R&D efforts on incremental improvements in mature technologies, with only limited potential for sustained growth. Growth in sales and profits trends higher for high-tech industries.

Conclusions: running just to stand still?

The first conclusion is that different metrics yield very different pictures of the economic track record of the EU and the euro area. No single metric is best because each one measures different aspects.

The standard of living of the European population can be measured by GDP per capita at PPP. On this account, the EU has done well, with a strong improvement in the new member states, and the euro area is not losing any ground with respect to the US. What one might call the ‘European way of life’ has remained at approximately three-quarters of the American way of life for over a quarter of a century.

Growth rates in terms of GDP per capita and even more so GDP per working-age person also suggest that the performance of the old EU members has been similar to that of the US and other advanced countries, including Japan. As mentioned above, the EU overall does somewhat better because of the strong growth performance of the new member states.

Looking at nominal GDP gives a very different picture. The weight of the EU in the global economy continues to diminish, much more so than that of the US. This measure is strongly affected by exchange rate movements and thus the base year. For example, in 1995 the US and the (future) euro area both accounted for about 25% of global GDP. At today’s exchange rates, which appear much closer to an equilibrium, the US still accounts for about a quarter of the global economy, whereas the euro area now accounts for only about 14%. Taking 1995 as the base year is misleading because of the extraordinary weakness of the US dollar at the time. But the longer-term trend is clear. Since 1999,

when exchange rates were at a similar level to today, the euro area economy has lost about 30 percentage points relative to the US, only 10 percentage points of which can be ascribed to the EU's lower population growth.

These numbers matter. Neither Vladimir Putin nor Xi Jinping will be much impressed by statistics showing how well Europeans live. Their strategic calculus will be much more informed by headline growth numbers and the raw size of the European economy.

Intangibles also matter in global power relations. The impression of an anaemic European economy saps the standing of the EU all over the world, even if European leaders protest that this is due to demographic developments. Moreover, US enterprises dominate the key software and information and communications technology sectors, and most successful startups are in the US. The result of all of this is diminished European soft power.

The trending diminishing weight of the euro area in the global economy also implies that plans to make the euro a competitor to the US dollar as a global currency are unlikely to succeed. Moreover, the boasts that the EU has the biggest market and it can use access to this market as a geopolitical instrument are ringing increasingly hollow. In terms of consumption expenditure, the EU now often ranks behind China.

Another area where the EU has not done well is in terms of productivity. Productivity growth, whether per worker, or per hour worked, has fallen, and remains significantly below that of the US. This 'missing productivity growth' [23] remains difficult to explain given the structural reforms undertaken over this period and the fact that overall investment rates (in physical and human capital[24]) have remained high and comparable to those in the US.

The overall impression is that over the last two decades Europe has been running just to stand still. Major reform efforts and substantial investment in both physical and human capital have allowed the euro area to keep its standard of living growing at about the same rate as in the US. But the transatlantic gap has remained roughly constant at about one-third. Moreover, employment has increased much more in Europe than in the US, making it even more difficult to explain the lack of catch-up.

Moreover, the 'old' member countries have undertaken many reforms. The standard OECD indicators of reforms show that EU countries now have a lower degree of government intervention and regulation in the economy than the US.

The low returns from this combination of reforms and considerable improvement in educational attainment are difficult to explain.

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23 The low real growth rates are unlikely to be a statistical artefact as national accounting data is collected in the same way all over the world.

24 Investment in human capital has been strong throughout the last decades, resulting in a profound transformation of the labour force. Twenty years ago, the unskilled accounted for 40% of the workforce and were more important than high-skilled workers (those with a university degree). Today the relative importance of the two groups is reversed, with the high-skilled also much more numerous.

What to do?

This broad overview of the longer-term performance of the EU economy leads mainly to a negative conclusion. The record (and the example of Japan presented in the Appendix) suggests that 'more of the same', that is, continuing reforms and more investment, will also yield 'more of the same', that is, slow growth.

Moreover, it would be difficult to replicate the existing model indefinitely in the future. The key elements of the last two decades (increasing employment among the older cohort and increasing capital intensity) are likely to run into decreasing returns. The same might also apply to structural reforms as a large part of the 'low hanging fruit' has already been picked.

The low return on investment that characterises the euro area economy underlines the importance of completing the banking union and making progress towards more integrated capital markets. European leaders have paid lip service to these goals for over a decade now. But very little has been done and progress seems extremely difficult, not only because of the technical complexities involved, but also because ultimately very few member states are willing to accept not having their own capital market or having their banking system owned by foreign institutions.

Deep reforms of the European capital markets thus need to materialise before it makes sense to call for more investment.

Innovation constitutes the one area where one can clearly identify a need for public intervention. But even here the key issue seems to be one of quality, not quantity. The US's Defense Advanced Research Projects Agency (DARPA) is widely credited with having supported many fundamental new technologies, despite it having a budget of just $4 billion per year. This sum seems well within reach of even the EU budget (without the NextGenerationEU fund) of over €150 billion. There exists a European imitation of DARPA, the European Innovation Council. But it is underfunded, and its structure is ill suited to support the type of fundamental innovations DARPA focuses on.[25] Other funding schemes for innovation exist (such as the European Institute for Innovation and Technology, which should have been the European equivalent of the Massachusetts Institute of Technology), but their impact has so far been marginal. Support for innovation is thus one area where a combination of additional modest means (less than €10 billion per annum) and decision-making structures independent of political influence could have a major impact.

Reforming structures before increasing spending is also necessary for the defence sector. Many member states are already planning to exceed the NATO target for defence expenditure of 2% of GDP. Germany has even suspended its debt brake to allow more fiscal space for defence. Moreover, the EU has created a small, but potentially important fund to support

25 For more detail, see Fuest et al., 'EU Innovation Policy' (2024).

collaborative defence projects. European industry should have little difficulty in expanding its output in response to higher demand. The aerospace and defence industry fortunately represents one of the strong points in terms of technology, as Fuest et al. document.[26] But the use of European equipment under combat conditions in Ukraine has shown that its standardisation and compatibility are far from perfect. Moreover, while European mid-tech hardware, such as tanks and guns, has performed well, the most advanced weapons come from the US. But more and more advanced weapons will need to be produced in Europe given the uncertainty created by Trump.

It is not certain that higher expenditure on defence will boost growth on its own. There will be a short-term boost as defence spending increases by about 0.5%–1% of GDP. But if this is financed through higher taxes (as would be necessary sooner or later to make it fiscally sustainable) the net impact on demand will be much reduced. One should thus not count for long on a demand impetus from military expenditure to revive growth in Europe.

A concerted effort to boost innovation, including in the military field, is therefore necessary to boost long-term growth prospects. One should be under no illusion that even the best innovation policy and a completion of the 'savings and investment union', as proposed in the Letta Report, will quickly increase the dynamism of the European economy. European industry has for decades invested too little in high-tech, such as software, and too much in mid-level technology (and medium-growth) sectors, such as the automotive industry. It will take time to correct this legacy.

However, without taking steps in this direction, the European economy is likely to continue on a path that perhaps maintains the European way of life for some time but ultimately endangers it, as a weaker EU will not be able to defend the continent against a revanchist Russia.

Appendix

Disappearing Japan: a cautionary tale

Japan should be doing well. It has a well-educated and disciplined workforce, investment is higher than in most other industrialised countries,[27] and expenditure on R&D is at over 3% of GDP and therefore also higher than most of its peers (until recently higher than in the US).[28] But despite all of this, Japan's relative decline continues. With the recent weakening of its currency, Japan has now become the fourth largest economy,[29] falling behind Germany, which has a much smaller population (80 million, compared to 120 million

26 Ibid.

27 Data show that public sector investment has also been higher (as a share of GDP) than in the US or the EU. See World Bank, 'Gross Capital Formation (% of GDP) – Japan, United States, OECD Members'.

28 World Bank, 'Research and Development Expenditure (% of GDP) – Japan, United States, OECD Members'.

29 Wikipedia, 'Economy of Japan'.

for Japan) and is facing similar demographic problems. In the 1980s and 1990s, Japan was the second largest economy in the world with an industry that seemed unbeatable.

The root causes of this decline can be found by considering a product that no longer exists. Nothing illustrates the rise and fall of Japan's economy better than the fate of the video cassette recorder (VCR). These were marvels of technology, requiring very small and reliable mechanical elements, and were the pride of Japanese precision manufacturing. In their heyday, in the mid-1980s, many millions of units were produced and exported. Japan had a near monopoly in this market as European firms (there were no US producers) could not compete in terms of quality and price.

However, the analogue technology of the VCR could not compete with the digital substitutes that emerged over the 1990s and with full force in the early 2000s. Production of VCRs declined, firms had to shave profit margins and, one after another, companies abandoned this product. The last surviving producer of VCRs stopped production in 2016, citing difficulties with sourcing parts.[30]

Many other consumer electronics products, such as tape recorders or the Walkman, followed a similar trajectory. The success of the Japanese export industry was largely based on this sector. With digitalisation, these products became solid-state standardised items that no longer required what Japan excelled at, namely precision engineering. The components of solid-state digital consumer electronics were increasingly produced elsewhere in Asia and then assembled in China, with the US providing the software. Japanese exports declined.

This shift from analogue to digital naturally depressed the prices of Japanese exports. When VCRs and similar products were in high demand, Japanese exporters could charge relatively high prices and make a good margin. However, as the digital revolution began, their profit margins started to decline and they had to lower their prices.

Economists tend not to look at export prices in isolation, but relative to import prices. This variable is called 'terms of trade'[31] because it measures how many of its own products a nation can exchange for the imports it needs. Japan is an outlier among developed economies in that its terms of trade declined throughout the late 1990s and then crashed in the early 2000s. The Japanese terms of trade index went from close to 160 in the mid-1980s to less than 100 in 2008.[32] The extraordinary nature of this fall can be seen by comparing it to the terms of trade in the EU or the US, which remained roughly constant over this extended period, rarely going beyond a narrow range of +/- 10 points around a score of 100.

30 B. Woods, 'RIP the VCR: The Last Manufacturer in Japan Is Finally Stopping Production', Wired (21 July 2016).

31 OECD, 'Terms of Trade'.

32 Ibid.

The fate of the VCR also illustrates why, at times, productivity statistics can be misleading. It has often been remarked that Japan has done relatively well in terms of real GDP. In particular, real output per worker has increased over the last two decades as much as in the US (and slightly more than in Europe). This is partly due to the fact that the Japanese have become ever more efficient at producing VCRs and similar goods. But the prices of these goods have kept declining, thus reducing national income.

Only a relatively small part of the stark fall in the global weight of the Japanese economy is due to demography. The population of the US has increased by about a quarter more than Japan's since 1995,[33] while its GDP has increased by over 300% more.[34] Other factors, such as the deterioration in the terms of trade, have played a much more important role.

Japanese society has remained extraordinarily cohesive in the face of this relative decline. The standard of living has continued to increase, albeit very slowly. But Japanese consumers are doing less well than those in other developed countries. The evolution of GDP per capita adjusted for the cost of living shows that Japan has lost some ground relative to Europe, which in turn has tended to follow the US closely.[35]

The big question is naturally why the Japanese (producers and the government) did not see their demise coming and enter new fields. The simplest explanation might be a combination of path dependency[36] and pride.

Path dependency arises when firms have acquired know-how in a particular technology and find it more profitable to invest in further improving their skills in this area than to enter an entirely new field. This certainly was the case for the large Japanese consumer electronics companies. But psychological factors likely also played a role.

The top Japanese firms, and indeed Japanese society at large, were proud of their engineering prowess and were naturally loath to admit that these admirable capabilities were becoming worthless. This also applied to the government and the (once almost mythical) Ministry of International Trade and Industry, which was widely credited with piloting Japan's growth. For these bureaucrats it proved impossible to admit that Moore's law had condemned analogue devices to a slow death because it would have implied that their key technical competence had become worthless.

33 World Bank, 'Population, Total – Japan, United States'.

34 World Bank, 'GDP (Current US$) – Japan, United States'.

35 World Bank, 'GDP per Capita, PPP (Current International $) – IDA Total, Japan, United States, Euro Area'.

36 A. Hartell, Path Dependence in Economic Theory and Research, SRE Discussion Papers 2013/03, WU Vienna University of Economics and Business.

What lessons can be learned from Japan?

The first is that nations must be ready to change, to adapt to new technologies. Japanese firms were everywhere in their heyday, underpinning the global role of their home country. Today they are largely irrelevant.

The second is that relative decline, even if very well managed, leads to a loss of global influence.

Both lessons appear particularly relevant for Europe with its ageing population and weakness in emerging new technologies. If Europe wants to stay relevant it needs to adapt, not conserve old structures. This applies in particular to a key sector, namely the automotive industry. European and Japanese firms still dominate the global automotive industry. The decline will not be as stark as for VCRs. Cars will always remain a complex product requiring precision engineering for passenger comfort. But the advent of the battery electric vehicle has taken out the most complex part of the car, namely the combustion engine. Moreover, software is becoming ever more important, even before the eventual advent of self-driving cars. This is another part of the value proposition in which European producers are weak.

	Programme 1	Programme 2	Programme 3
	Decarbonisation, growth and openness	**Enhancing innovation via a refocused successor to Horizon Europe**	**Innovation-friendly rule-making, simplification and the single market**
Project 1	Refocus the decarbonisation and circularity agendas on price mechanisms (e.g. ETS I and II) instead of subsidies or regulations. The Innovation Fund should become more of an ARPA/green-energy institution rather than a provider of subsidies to incumbents.	Build on Europe's R&D and innovation strengths as drivers of technology development, by enhancing Horizon Europe's first pillar (promoting scientific excellence) and bringing the third pillar (the European Innovation Council) to the next level (e.g. an EU version of US ARPAs).	Enact Enrico Letta's recommendations on reducing single market barriers and developing a horizontal strategy for quick progress on single market integration. Switch to the country-of-origin principle for services rendered to corporations.
Project 2	Adjust financial sector legislation to allow for more equity investment by insurance companies (Solvency 2) and pension funds to mobilise private-sector capital for startups/scale-ups.	Address weaknesses in Pillar II of Horizon Europe by reducing consortia sizes and abandoning the practice of very detailed calls. Thematic areas should be determined by independent expert panels.	Drive forward the simplification agenda for the EU regulatory rulebook through close coordination amongst the European Commission, the European Parliament and the European Council to enable quick progress.
Project 3	Avoid using trade policy to protect uncompetitive industries. European champions can only emerge if they are successful on the global markets. Avoid subsidy races, like in the Chips Act.	Increase the synergies of dual-use innovation, following the Heitor and Draghi Reports. Use the surge in defence spending to nurture a home-grown high-tech industry.	All regulations and subsidy schemes should have a sunset clause. Renewal should be subject to strict impact assessments.

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Europe's Time to Complete and Compete[1]

Anthony Gooch Gálvez

Over the last two decades, Europe has been significantly losing relevance as an economic powerhouse and leader in global markets. Industry market shares have declined by nearly a third since the early 2000s, making EU companies less relevant when compared to global peers.[2] Taking revenue as a measure, since 2005 Europe's share in the world's top 500 companies has been halved to around 15%, with European companies having largely been replaced by China's rising stars whilst US peers have held their own.[3]

Against a backdrop of comparative decline, Europe's industry is contending with headwinds from many new fronts: its traditional 'business model'—with a strong reliance on manufacturing exports and global value chains, combined with cheap energy imports—is ill-adjusted to new realities.

The penny has finally dropped in that Europe faces a massive 'competitiveness problem' in the EU and in the capitals of the most affected member states. The commissioning of the Letta and Draghi reports[4], timed to deliver their fruits with the start of a new political cycle at the European level, provides the necessary impetus for Commission President von der Leyen at just the right time as her team prepares to hit the ground running to get to work on restoring Europe's competitiveness. Together these reports provide the basis for the Commission to take immediate action to deliver results. The time for thinking, diagnosing and analysing is over. Now is the time to just do it! And industry plans to play its full part in this endeavour over the next four years.

The first important milestone will be the Clean Industrial Deal that President von der Leyen has committed to delivering within her new Commission's first 100 days. Both industry and investors will welcome a clear signal that Europe is getting a grip on its competitiveness and productivity problem and remains a place worth investing in. By making sure the right

1 This paper was commissioned from the author in a personal capacity as a member of the Wilfried Martens Centre for European Studies Academic Council. The opinions expressed in it do not necessarily reflect the views of the European Round Table for Industry (ERT).

2 ERT, *ERT 2024 Benchmarking Report* (March 2024), 4.

3 Ibid., 11.

4 M. Draghi, *The Future of European Competitiveness: Part A – A Competitiveness Strategy for Europe*, European Commission (September 2024); *The Future of European Competitiveness: Part B – In-Depth Analysis and Recommendations*, European Commission (September 2024).

action is taken in Brussels and in EU capitals, Europe will bounce back because it (still) has very strong factors working in its favour: a long-standing entrepreneurial and civil society culture, extremely high skill and education levels, a proven capacity to innovate and create, integrated and sophisticated industrial value chains, a dense economic fabric, legal certainty and relative political stability.

Von der Leyen's commitment to use the Draghi report as a roadmap for the mandate on which she will be judged bodes well. The 'Draghi prescription' to prevent and reverse slow and perpetual 'agony' includes key elements to restore Europe's competitiveness. What will matter from an industry perspective is the quality, consistency and speed of implementation.

Draghi's industrial policy triptych

Rich in both analysis and recommendations, in addition to horizontal measures, the report contains over 120 sector-specific proposals. Endorsing and echoing, as it does, a detailed analysis of the status quo and the room for improvement in the EU single market, it is the perfect complement to *Much More Than a Market*, which Enrico Letta issued in April.[5]

Europe as a strategic player in innovation, decarbonisation and security

Draghi's recommendations on innovation, decarbonisation and security constitute a plea to Europe to finally 'wake up and grow up' while it can still maintain or achieve a lead in technologies that will define our future.

Innovation

The first horizontal priority is for Europe to *close the innovation gap* with the US and China, particularly in digital technologies such as artificial intelligence (AI) and quantum computing. The report is predicated on the supposition that breakthrough innovation originates from either startups or academic research. However, much lies between those two ends of the spectrum, notably in applied research, where the role of industry is fundamental. For innovation to germinate and take hold, especially in a European financial system without deep capital markets and hamstrung by a low-risk culture, existing industrial ecosystems play a critical role as research and development (R&D) partners, investors or incubators.

To address chronic underfunding, Mario Draghi is closely aligned with many other stakeholders, including academia,[6] in arguing that the resources apportioned to the Commission's next Framework Programme for Research and Innovation (FP10) should be at least doubled in size to €200 billion for Horizon Europe.

5 E. Letta, *Much More Than a Market: Speed, Security, Solidarity* (April 2024).

6 ResearchMatters, 'Open Letter: A Call to Strengthen Research and Innovation in Europe' (4 June 2024).

However, his recommendation to focus on only a limited number of 'new EU competitiveness priorities' fails to adequately address the lived experience of industry. Many industrial sectors profit significantly from Horizon Europe activities, including the essential Marie Curie programmes, joint undertakings and public–private partnerships under Pillar 2.[7] Scrapping those would undermine blossoming R&D communities and deprive our industry of initiatives that already improve competitiveness in the short to medium term. Given the rapid technological change reshaping the global industrial landscape before our very eyes, it would be a strategic mistake to sacrifice short-term impact for hypothetical long-term gains. Europe must ride both these horses in parallel, as the valuable findings and recommendations of the Expert Group chaired by Professor Manuel Heitor, a valuable complement to Draghi, make clear.[8]

Draghi sees the future of the European Innovation Council as a genuine and strong 'ARPA-type agency' (modelled on the US approach of Advanced Research Projects Agencies). Even if a considerable portion of the €200 billion were to be dedicated to this end, the Innovation Council could only realise its potential if the Commission and the European Investment Bank succeed in stimulating substantial private investment in their promoted scale-ups of startups. For strategic reasons, most of this investment should be sourced within the EU.

Both the Draghi and Heitor reports seek to overcome a very 'European' prejudice that does much to hold the EU back, by calling for a much more pragmatic approach to dual-use innovation.[9] Until now, Europe's institutions have opposed the exploitation of important innovation synergies between military and civilian applications, whether in advanced technologies—such as satellites, lasers and AI—or advanced materials. Unless legislators shift their mindsets away from those of a bygone age and embrace the obvious benefits to be derived from 'dual' and 'shared' use, Europe will miss a historic opportunity to make a virtue out of necessity by harnessing the innovation dividend that can accrue from enormous investments in defence by member states committed to spending at least 2% of GDP. The civilian applications at hand would go a long way towards successfully completing the ongoing digital and green transitions.

No one has any illusions that negotiations on the next Multiannual Financial Framework will prove a greater source of contention than usual. Here the role of the European Parliament will be critical to save Europe from an unhealthy tendency to self-sabotage by consistently

7 ERT, *FP10: Seizing the Moment: The Next EU Framework Programme for Research and Innovation* (July 2024).

8 European Commission, Directorate-General for Research and Innovation, *Align, Act, Accelerate: Research, Technology and Innovation to Boost European Competitiveness*, Publications Office of the European Union (October 2024).

9 The Commission's definition of 'dual-use items' is 'software and technology that has the potential to be used for both civil and military purposes' (European Commission, Trade and Economic Security, 'Exporting Dual-Use Items', (n.d.)).

underspending on R&D and innovation. If there is one thing EU decision-makers can and must learn from the experience of any successful business and industry, it is that with nothing ventured through investment in the future—including trial and error—nothing is gained.

Decarbonisation

Draghi takes Europe's industrial policy ambition to another level by firmly linking it to both climate and trade policy, arguing that Europe needs an industrial strategy whose level of ambition is comparable to what one finds in other parts of the world. To have a fighting chance of remaining competitive and prosperous, the EU must succeed in the twin goals of lowering energy prices and capturing the industrial opportunities of decarbonisation as important parts of Europe's future business case. These must be achieved at a time when China has become the dominant supplier of clean energy technologies globally whereas Europe has been struggling to translate its advantages in clean energy innovation into manufacturing superiority.

Europe's industries have already invested heavily in decarbonisation, yet the implementation of Europe's green transition is proving a formidable challenge. A new emphasis on EU policy enabling this transition and making it a source of strength for our industries is an important turning point. Properly implemented by the incoming Commission, this plan will serve as a strong stimulant for companies across many sectors: energy producers and infrastructure providers, traditional energy-intensive industries and the digital industry, and technology solutions providers of all kinds, from clean tech to materials to digital. A technology-neutral approach signals the need for greater pragmatism, as it includes not only renewables but also nuclear, hydrogen, bioenergy, and carbon capture and storage.

When it comes to reducing energy prices in the short term and supporting energy-intensive industries, balancing different interests will prove more challenging than the Draghi report anticipates. This should not, however, detract from the overall goal of an Energy Union supported by adequate energy infrastructure. Without it, the electrification of our economy and the increased use of hydrogen and carbon capture will remain mere pipe dreams.

Expectation is rising as to which of these many elements will be included in the new Commission's forthcoming Clean Industrial Deal. There are strong reasons, underplayed in the Draghi report, why circularity should be included as an important competitiveness driver, perhaps on par with decarbonisation.

Betting on decarbonisation *and* circularity as horizontal productivity drivers, will only work if Europe embraces and drives forward the development of digital technology solutions. Digital technology is the key to integrating renewables into our electricity grids and improving energy efficiency across the sectors. In today's world, industrial competitiveness has become outright impossible without the state-of-the-art digitalisation of production, logistics

and distribution facilities. Draghi touches a nerve when he calls for Europe to allow its digital infrastructure providers to scale up and invest much more heavily in connectivity.

He highlights an increased use of *data* as part of his strategy to improve competitiveness in individual sectors such as automotive, but this is just the tip of the iceberg. Europe is sitting on a veritable goldmine of data generated by 450 million citizens, European companies, industries and economic actors, including industrial data. But we lack the vision and frameworks to harness its true potential. It is heartening, therefore, to see von der Leyen take up the idea of an EU Data Union and the unique asset this would prove globally for Europe. Turning this into a reality will require, in the one hand, taking advantage of the opportunities (portability) offered by existing regulations such as the General Data Protection Regulation, and, on the other, addressing its in-built limitations—especially as regards being able to put data to productive use and the vexed question of interoperability.

Security

Draghi echoes a widespread concern that 'unhealthy dependencies' on foreign resources such as critical raw materials and advanced technologies leave Europe's companies exposed to increased insecurity in supply chains. He sounds a necessary warning regarding dependencies in defence and tech that hinder Europe's ability to raise productivity, achieve strategic autonomy and safeguard its long-term security. The remedy lies in fashioning a new and explicit EU 'foreign economic policy', he argues, involving preferential trade agreements with—and direct investment in—resource-rich nations, the building up of stockpiles in selected critical areas and creating industrial partnerships to secure the supply chain of key technologies.

From an industry perspective, much of this will remain wishful thinking unless Europe's internal approach to trade policy becomes much more pragmatic and focused on speedy delivery at all levels of negotiation and adoption. Beyond covering the supply of critical raw materials and key inputs, a strategic trade policy should also support the diversification of supply chains more generally and secure broader market access for European exports and investments. Europe's debate on trade risks being 'hijacked' by economic security concerns, while from a competitiveness perspective, it is more important to open new markets (and fast) for all technologies and products 'made in Europe' and build robust alliances with high-growth trading partners.

Draghi rightly warns that Europe suffers from two capacity gaps in defence: insufficient aggregate spending and an insufficient focus on innovation, due in part to sector fragmentation along national lines and the high degree to which member states source defence equipment from non-EU producers.[10] Furthermore, Europe is losing ground in the space sector. Here Europe badly needs to move beyond the parochial concept of *juste*

10 Of EU member states' defence procurement, 80% is sourced outside the EU, 65% of which is from the US.

retour or geographical return, which fails to deliver European Space Agency's projects of genuine common European interest. Taken together with Europe's vulnerabilities to hybrid and cyberwarfare, these could have quite sudden and dramatic consequences for our societies and the much-prized 'EU way of life'. Yet Europe seems alarmingly unprepared for such scenarios, and too many continue to labour under the mistaken impression that we can still afford to operate along peace dividend lines. As the Latin adage goes, *Si vis pacem, para bellum* ('If you want peace, prepare for war').

Doing 'whatever it takes'

Given his track record at the European Central Bank, Mario Draghi's vision for a new industrial policy is suitably ambitious. To make it a success, EU policymakers and stakeholders must find creative ways to overcome two seemingly intractable issues: funding and completing.

Implementing Draghi's innovation and decarbonisation agenda hinges on huge amounts of financing. While public sector funding and public–private partnerships can provide an important impetus, private funding needs to be mobilised at a massive scale, as provided for by Letta's Savings and Investment Union.

Europe has been going round in circles on its Capital Markets Union project for over a decade. The time for prevarication is over. We have 24 months to get it done. Any further delay will undermine the EU's credibility, exposing an unforgivable failure to 'do what it takes'. Where there is a political will, there is always a way for Europe's regulatory craftsmen to mobilise European citizens' savings and investments within the EU's existing financial sector construct. As 'seeing is believing', who better than Draghi himself—who set the example in the midst of the 'euro crisis'—to show the way?

The second 'mother of all Rubik's cubes' lies in regulatory complexity and single market fragmentation. Europe's institutions have developed an immense volume of legislation, with countless Delegated Acts still outstanding. The Commission and Europe's co-legislators have sought to satisfy many sometimes competing policy goals. However, this has been to the serious detriment of industrial competitiveness and delivered the opposite of the much-needed completion of the single market. We have got ourselves into an almighty mess as a result. Europe's industry leaders consider the complexity and incoherence of the EU's regulatory environment to be far and away *the* major factor behind Europe's loss of competitiveness,[11] stifling economic activity and innovation, and investment in and within the EU, across the board. As Letta laid bare, that Europe's single market remains far from complete, makes it impossible for Europe's industries to achieve economies of scale domestically.

11 ERT, 'ERT CEO Confidence Survey' (November 2023); ERT, 'ERT CEO Confidence Survey' (May 2024).

What is required is a concerted push for systematic competitiveness checks vis-à-vis member states and improved consultation processes and impact and innovation checks for legislation proposals. President von der Leyen has tasked a highly experienced and trusted colleague to make those reforms a reality within her own institution. But this is just a first step. Without the full cooperation of co-legislators and capitals, any simplification agenda will remain a quixotic exercise. Here, industry and business leaders can and will 'help' by bringing home the importance of robust action and the politically unpalatable consequences of inaction that would put a huge dent in any politician's or party's prospects for re-election.

Draghi has 'done his job', but he cannot change Europe's mindset alone or overnight. EU institutions and their decision-makers will need to muster immense discipline and rigour to simplify our regulatory environment and put Europe's interests above 27 national wish lists. But we must all do our bit. The time has come to stop asking the easy blame-shifting, buck-passing question, 'What is Europe doing for us?' Our future collective success lies in committing ourselves to do all we can for the common European good, drawing on our strengths and capacities. The time has come to 'complete and compete'.

	Programme 1	Programme 2	Programme 3
	Clean Industrial Deal	**Enhancing innovation via the successor of Horizon Europe with a budget of at least €200 billion**	**Innovation-friendly rule-making, simplification and the single market**
Project 1	Establish an industrial policy programme for decarbonisation and circularity to boost technology development and infrastructure investment in Europe, leveraging and creating business opportunities for digital technologies.	Build on Europe's R&D and innovation strengths as a driver of technology development, by enhancing Horizon Europe's first pillar (promoting scientific excellence) and bringing the third pillar (the European Innovation Council) to the next level (e.g. an EU version of the US ARPAs).	Enact Letta's recommendations on reducing single market barriers and developing a horizontal strategy for quick progress on single market integration.
Project 2	Adjust financial sector legislation to mobilise private sector and retail investment in much-needed infrastructures and startups/scale-ups, to be achieved within the next two years.	Address weaknesses in Horizon Europe's second pillar by following the recommendations in the Heitor report, improving its governance and simplifying administration procedures.	Drive forward the simplification agenda for the EU regulatory rulebook in close coordination among the European Commission, the European Parliament and the European Council to enable quick progress.
Project 3	Achieve synchronisation between trade policy and EU competitiveness goals beyond the EU's economic security agenda, but also with a view to securing/maintaining access to third-country markets for Europe's exporting industries.	Increase the synergies of dual-use innovation, following the Heitor and the Draghi reports.	Increase the standards of the Commission's consultation and impact assessment processes with a special focus on capturing the impact of envisaged legislation on competitiveness, innovation and SMEs. Adopt the rule of running impact assessments at key moments during the legislative adoption process to understand the implications of substantial amendments.

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The Draghi Report on the Future of European Competitiveness: Conditions for Its Successful Implementation

Gilles Briatta

Will the Draghi report be one more failed strategy to boost EU competitiveness? Or could the growing sense of economic marginalisation create the political impetus to act?

The Draghi report highlights the magnitude of the EU's problems with competitiveness in relation to the US and China, and the risk of lasting EU marginalisation in the tech sectors. This assessment is not disputable. And this begs the question: this time, what could trigger real and effective political European action, after the failure of so many previous initiatives, for example, the numerous Better Regulation initiatives, or the Lisbon Strategy of 2000 'to become the most competitive and dynamic knowledge-based economy in the world'[1]?

There is one real difference: political urgency. For many years, a sense of economic marginalisation has been growing in large parts of the EU's working middle class, with fierce criticism of 'globalisation' and EU policies linked to it, a phenomenon which has produced visible electoral results in Europe. The novelty is that this malaise of the middle class is now shared by a growing number of EU economic and financial elites who are complaining about US tech domination (a frightening weakness in the present context of growing transatlantic tensions), EU marginalisation in the equity valuation of companies, the structural overcapacity of Chinese products, EU competitiveness problems because of high energy costs and the regulatory/administrative burden in Europe, a lack of financing for the most innovative EU startups and so on.

The fact that the EU's middle class and its economic and financial elites share this growing sense of economic marginalisation creates a unique chance for a strong political impetus that could ensure that the Draghi report is taken seriously. But it is also a huge risk: European scepticism is growing fast, too. The Draghi report could be the last political opportunity to recover EU credibility, both among the middle class and among the economic and financial elites. And the EU will need both constituencies to succeed.

1 European Council, *Presidency Conclusions: Lisbon European Council – 23–24 March 2000* (2000), 1.

Dual conditions for selecting priorities

The Draghi report proposes many remedies to EU competitiveness problems, perhaps too many. Not everything can be a priority. The choice of priorities should be guided (1) by the need to deal with the most urgent and structural problems in the EU that impede, in the most indisputable way, innovation, growth and wealth; and (2) by the need to quickly win support from crucial constituencies, otherwise there will be no political pressure on EU institutions and member states to make the decisions that they have refused to make for so long. One of the crucial constituencies is EU firms of all sizes, which have become sceptical about the ability of the EU to reform. Firms need concrete signals that their growing anxiety about the EU's economic marginalisation is being acknowledged. Thus, firms could put their political weight behind the implementation of the Draghi report, as they did, many years ago, behind the construction of the single market.

On the basis of these criteria, the main priorities could be the following:

1. *Addressing energy prices.* This is often ranked as the number-one priority by EU industries (including digital firms). Energy costs are up to four times higher for EU industry than they are for US industry, with several EU chief executives being vocal about the consequences of this situation. There is a need for quick and visible action on this difficult but crucial topic—and the new Commission is aware of this.

2. *Removing key barriers to innovation in Europe*. Besides a shortage of financing, the Union faces two fundamental problems:

    - A general European preference for complex regulation, which is explained by our common history and culture but can be destructive in a competitive world. The EU carbon strategy is a good example: while the EU decided to regulate first, the US and China prioritised the development of clean energy capacity. On this, the EU is the product of most of its members, with many examples of 'national gold-plating' in the member states' implementation of EU rules. Existing and future EU and national law must quickly undergo a 'competitiveness stress test'. EU firms do not believe that change is possible; it is urgent to show them that they are wrong.

    - A widespread lack of understanding, in the EU, about the necessary conditions for entrepreneurship and innovation and the need to favour young entrepreneurs. It is a crucial point: in the US hundreds of thousands of innovative startups were created during the Covid-19 pandemic, leading to seven million additional jobs2. Take the example of France: entrepreneurship has become, in just a few years, a major ambition for the younger generations, which is a complete change from the

2 B. Casselman and S. Ember, 'Pandemic Start-Ups Are Thriving, and Helping to Fuel the Economy', *The New York Times*, 4 October 2024.

past. Some progress has been made in French regulation, but the majority of the political class is still not really interested in the multiplication of innovative experiments and forgets that the winners of tomorrow are today unknown by the EU and state authorities. It is important to note that most obstacles to EU entrepreneurship are based in national regulation (e.g. tax laws to ensure predictability and reward risk-taking, educational priorities, labour and company laws), not EU regulation. If nothing is done to solve this problem, implementation of the Draghi report will fail.

3. *Removing financial barriers to innovation*. The Draghi report is excellent at describing the negative consequences of a non-functioning Capital Markets Union (CMU). It rightly highlights that without a substantial EU 'safe asset', a true CMU will not develop, knowing that the issuance of an EU 'safe asset' would also enable some joint funding of investment at EU level, which could be particularly useful to key infrastructure in research and development (R&D) and defence (see points 4 and 5 below). But beyond this controversial question of issuing more EU debt, the core reason for the lack of progress in CMU is well known: too many vested interests are against it (although they say they are not) in too many member states. A very visible consequence of this non-functioning CMU is the EU marginalisation of innovation financing, in particular of venture capital. The European Central Bank notes that between 2013 and 2023, the US raised EUR 924 billion in venture capital, while the EU raised EUR 130 billion3. In addition, listed equity amounts to 170% of US GDP, while it only totals 70% in the EU4. The EU needs financial sponsors able and willing to finance many innovative startups, knowing that only a few of them (nobody knows which) will be the winners of tomorrow. Again, national regulations, in particular national tax rules, are the main reason for this lack of innovation capital in Europe. Very slow progress in CMU legislation is mainly a consequence of this lack of will from the member states. This must change urgently.

4. *Rethinking several fundamental EU policies*. The Draghi report makes several proposals with regard to fundamental EU policies that would address real impediments to growth and innovation, and prove to European industry that the EU is acting on its concerns. These include:

   - *Spending more on EU infrastructure and R&D at the central level*. Clearly the US has benefited enormously from major investment from its central authorities in tech and defence. But the EU should take care not to multiply its subsidies to 'pick the winners' in the innovation race. Nothing will replace a functioning European innovation financial market. And it should never be forgotten that the 'real money' is at the member state level, so nothing will change if there is not a change of priorities in public expenditure in the member states.

3 A. Pekanov, *The Capital Markets Union – An Extra Feather to the EMU: Are Capital Markets Important for Monetary Policy?*, European Parliament, Monetary Dialogue Papers (September 2024), 16.

4 Ibid, 13.

- *Taking action on structural overcapacity problems and unfair non-EU subsidies in certain industrial sectors*. There is an urgent demand from EU firms to take efficient action to address these issues, as in the US, and there is a growing consensus on this kind of trade defence action. (See the document from the Bundesverband der Deutschen Industrie: 'As new structural distortions emerge, so must the EU further develop its trade defence instruments.'5) Action should be taken urgently on this exclusive EU trade competence, otherwise in industrial circles the credibility of the EU competitiveness strategy could collapse.

- *Accelerating completion of the single market in sectors*, including the financial sector, where EU firms are still impeded from selling easily outside their national borders because of national laws and regulations. It is an EU paradox that the single market is much more advanced for professional football players than for university researchers, biologists or venture capital specialists. When harmonisation is too difficult to obtain on key issues, the EU should not hesitate to propose efficient optional alternatives to national rules (e.g. the '28th regime').

5. *Focusing on the defence industry*. New military threats are growing, and US protection has unfortunately been called into question. The EU's security is an absolute condition for growth and prosperity. The EU should concentrate its action where it brings clear added value: interoperability, increased R&D subsidies (including for dual-use), capacity planning and programmes open to all willing member states where there could be a clear interest to act jointly (e.g. drones, fortification of borders). The main challenge may be convincing EU defence firms to join complex intra-EU cooperation, enabling the growth in sales to member states as well as non-EU countries.

Conclusion: a methodology to successfully implement the Draghi report

Select the right priority actions, using the dual conditions for success. Be explicit on short-, mid- and long-term objectives. Do not fall prey to ideological wars (e.g. on EU debt issuance, the creation of new EU agencies).

Deliver some 'quick wins' as soon as possible to convince key industries that the EU is serious about this, particularly about regulatory simplification. Do not underestimate current scepticism among the EU's economic and financial elites, nor among the EU's middle class, about the Union's willingness to act. The good news is that the political influence of private firms and entrepreneurs has generally increased, so if you win industry support, you win big. Motivated constituencies are needed to force changes in the EU.

5 Bundesverband der Deutschen Industrie, 'For a New EU Trade Agenda' (September 2024), 3.

Maintain constant contact with EU industries and with the member states, without which the implementation of the Draghi report will be dead on arrival. Many necessary regulatory and financial actions will also have to be taken at the national level.

For each priority, set up a European sectoral expert committee, with the relevant EU and national bodies and appropriate industrial experts. Encourage the constitution of such committees in each member state, or in groups of several member states, not just at the EU level. Encourage national initiatives, including possible 'competitiveness labs' among several participants (e.g. the recent Spanish initiative on CMU[6]). Facilitate regulatory change in the member states, including by proposing a '28th regime'.

At the EU level, organise global coordination in each institution (e.g. the Competitiveness Coordination Tool in the Commission), including the European Parliament and the European Council: the member states may be the biggest impediment if they are not fully on board. Find a way for all these coordinators to work together.

Be very reactive in implementation—in particular integrate concrete reactions from EU industries and entrepreneurs: if the bulk of this constituency is lost, the whole project will probably fail.

	Programme 1	Programme 2	Programme 3
	Lower energy costs and remove barriers to innovation	**Rethink fundamental EU policies**	**Develop a new defence priority**
Project 1	Adopt as a common priority the need to remove regulatory burdens and various bottlenecks (EU and national) that increase the cost of energy for EU firms. Invest in interconnections, common energy importation schemes and energy production capacities.	Invest more at the EU level in infrastructure and R&D, including dual-use R&D. Encourage each member state to prioritise its infrastructure and national R&D budgets, with the objective of boosting growth, competitiveness and innovation: never forget that the real money is in the member states.	Encourage EU member states to invest in a coordinated way to reduce European strategic dependencies and strengthen the European defence technological and industrial base (again, the real money is in the member states). Invest more at the EU level where it would bring real added value. Encourage cooperation among member states to develop common objectives, common production and common capacities.

6 Spain, Ministry of Economic Affairs and Digital Transformation, 'España propone una iniciativa para acelerar la integración económica europea y potenciar el acceso a financiación de las pymes' (6 October 2024).

	Programme 1	Programme 2	Programme 3
Project 2	Encourage each member state to build a national programme to remove the most serious impediments to growth, innovation and entrepreneurship (e.g. in tax laws, labour and company laws). Most of the obstacles are caused by national laws, not EU ones. Adopt a new European Innovative Firm regime.	The Commission should react firmly and proportionally to present transatlantic trade tensions. The Commission must also deal with the urgent problem of subsidised industrial overcapacity (mainly in China), an immediate danger for many European industrial sectors. Trade policy has been an EU competence for decades. If the Commission cannot respond to this vital challenge, EU industrial firms will no longer believe in the EU's credibility for growth and competitiveness.	Better protect strategic industrial EU capacities useful to the defence industry, including key sectors in the metallurgical industry, in digital and cyber technologies, in satellite capacities and so on.
Project 3	Remove financial barriers to innovation. Encourage each member state to develop national tax incentives to reward financial risk-taking and long-term investment in EU equity. Remove the barriers to a functioning EU financial market. Encourage the development of European pension funds.	Accelerate the completion of the single market, including in the financial sector. Do not hesitate to propose efficient optional EU alternatives to national laws and regulations (i.e. the 28th regime).	Develop incentives for defence industry financing.

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Increasing European Productivity, Resiliency and Defence Production, and How to Pay for It

Daniel Gros and Jacob Funk Kirkegaard

This discussion paper has four main components. The first section critically reviews some of the proposals to increase European productivity presented in the Draghi report, focusing on its suggestions related to the technology sector and artificial intelligence (AI). In the second is a discussion of the EU's strategy to ensure improved long-term supply resiliency for critical minerals. The third analyses how fully integrating Ukraine into a revitalised European military-industrial sector could help Europe to rearm at an affordable cost. And the final section contains a proposal for a new European Security Fund as a common European financing vehicle to resist Russian aggression. A distilled set of policy recommendations follows at the end.

Raising European productivity levels by using AI

Mario Draghi's report, *The Future of European Competitiveness*[1], is a call to action to confront the main economic challenges facing the EU in the coming decades. Slowing economic growth, especially compared to the US, compounded by the need for improved resilience against geopolitical shocks and globalisation in reverse, the need to address climate change and high fossil fuel costs, and the need for Europe to be able to defend itself, demands a comprehensive response. And this must come not least at the EU level, as fragmentation often lies at the heart of our relative underperformance. Draghi's response is clear—up to 5% of GDP in additional annual investments in the EU in the coming years, with up to 80% coming from the private sector. The principal future policy challenge is to incentivise the private sector in Europe to invest more, while recognising that only governments can lead in boosting our national and regional security.

The title of Draghi's report—which is obviously directed towards political concerns—misses the crucial economic point that it is productivity, rather than competitiveness, that dictates living standards and should be the focus of EU policymakers. Even low-productivity

1 M. Draghi, *The Future of European Competitiveness* (9 September 2024).

economies can be competitive through means such as a flexible (under-valued) exchange rate or low wages. And the EU, of course, already runs a sizeable current account surplus, around 3% of GDP, and can expect to derive a generally positive terms-of-trade shock in the future as decarbonisation cuts fossil-fuel import costs towards zero. The EU's crucial problem instead lies in raising low average productivity levels. The Draghi report contains a number of important suggestions for how Europe can increase productivity, which will be discussed in the following section. This paper ends by focussing on particular issues related to increasing the EU's economic resiliency and defence industrial capabilities.

The EU as a fully developed economy (still) relatively close to the global productivity frontier cannot import technology to boost productivity, and the economics profession is generally poor at identifying the long-term drivers hereof[2]. The literature[3] identifies three categories of productivity drivers: (1) boosters of innovation and experimentation with new knowledge and technologies, including research and development (R&D), especially in digital and intangible assets; (2) contributors to the diffusion of existing knowledge and technologies among the largest number of economic agents, including human capital and public infrastructure; and (3) processes that facilitate the efficient allocation of resources within and/or between sectors and firms, including competitive intensity, trade intensity and globalisation, and financial deepening.[4] The EU faces critical challenges in all three categories.

The Draghi report clearly identifies the key role of the technology sector as the principal driver of the increasing productivity growth differential between the US and the EU. Largely due to its limited venture capital availability and smaller market size, the EU failed to capitalise on the initial digital revolution from the mid-1990s onwards. Europe failed both to generate new technology and Internet companies, and to diffuse the new digital technologies into the wider economy. First-mover advantages in most digital sectors have proven decisive, due to network and scale effects, enabling today's US technology giants to dominate global corporate R&D budget rankings.[5]

Internet and technology services firms in Europe face natural language barriers to growth, a still incomplete internal market in services and, not least, the continued national location of sector supervisors, which often provides a powerful bureaucratic obstacle to fast and seamless firm expansions across the EU. Indeed, as illustrated by the banking union, even a common European supervisor is often not enough to facilitate cross-border expansions

2 Total or multifactor productivity is in fact a 'residual' category in economic models, simply capturing the additional output produced, once all relevant input factors have been accounted for.

3 OECD/APO, *Identifying the Main Drivers of Productivity Growth: A Literature Review* (Paris, 2022).

4 Factors such as the rule of law; resilient, transparent and legitimate institutions; and associated good governance are increasingly frequently also included as affecting outcomes across the entirety of an economy.

5 Amazon, Alphabet, Meta, Apple and Microsoft top the global corporate R&D budgets, well ahead of firms in the global automotive or pharmaceutical sectors. See A. Irwin-Hunt, 'Top 100 Global Innovation Leaders', *FDI Intelligence* (19 June 2023).

and mergers and acquisitions (M&A) in the face of entrenched domestic opposition in individual member states.

This factor of domestic supervisors principally focused on maintaining the independence of national players further dims the integrative prospects of Enrico Letta's[6] and Draghi's '28th regime'.[7] This common European 28th regime, in principle available to European companies as an alternative to national regulatory frameworks, would be illusory without strong, independent European-level sector supervisors. However, with such institutions, a 28th regime would simply mean opting out of national regulation, which would in practice surely not be tolerated by competitors or national regulators. For a 28th regime to be a viable alternative, it must be preceded by what in virtually all European services sectors would be the unprecedented integration of day-to-day supervisory institutions (in addition to the existing European-level rule-making). To date, the political will for such institutional integration has not been present among the EU member states. However, it is possible that genuine common European supervisory institutions could be created in new economic sectors before national regulatory institutions are created and invariably establish national barriers to entry and obstacles for pan-European expansion by EU companies. For this to work, however, member states would have to willingly hand over their 'supervisory first-mover advantage' to the EU level and refrain from establishing any national supervisory functions in these new sectors. This would prove a challenging political task as it would have to be weighed at all times against ensuring consumer protection and, among other things, addressing environmental concerns.

Divergent and size-dependent national labour market regulations pose another regulatory obstacle to the rapid pan-European growth of technology (or any other) sector firms in Europe. But as regulations are often the result of long-standing national conditions and political processes, integrating or reducing such regulations for all but the smallest of European firms is likely to prove politically impossible. Widespread labour market deregulation has always proven politically contentious in EU member states.

On top of such obstacles to the growth of entrepreneurial and fast-growth technology, the sector also faces potentially important policy trade-offs with regard to the benefits of scale and efficiency. The issue resides with EU competition policy, which is guided by market structure analysis and the desire to prevent firms from acquiring market dominance through M&A, and/or, for instance, through the network and scale effects at play in the digital sectors. In the US, the competition policy litmus test is instead consumer prices, and firms' prospective M&A and market position are less

6 E. Letta, *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens* (April 2024).

7 The ongoing resistance among national supervisors towards genuine European integration is an unarticulated policy never put on paper but most forcefully revealed in the recurring resistance by national regulators (and their governments) towards cross-border bank mergers inside the banking union.

relevant if the company can show that efficiency gains will lead to lower prices.[8] In technology sectors, in which network effects are very powerful and a key driver of efficiency and productivity gains, this competition policy framework risks putting European firms at a disadvantage. As Blanchard and Ubide[9] succinctly ask: would Amazon have been able and allowed to grow and develop in the EU?

All told, and despite the lengthy list of recommendations laid out by Draghi,[10] it seems unlikely that the EU can become the home of the next generation of globally competitive technology firms, including in new AI and related sectors. Acknowledging this has obvious national security implications, as global technological leadership bestows the opportunity to impose extraterritorial sanctions and technology restrictions on other actors.

This is a valid concern, though one that is essentially political and related to national security. The likely failure of the EU to produce the next generation of global technology and AI champions is not, however, in a broader economic sense, tantamount to condemning the EU to the 'slow agony' discussed by Draghi.

In an era increasingly defined by geopolitical rivalry, it is important to distinguish between the political desire for technological leadership rooted in 'great power status' and the economic goal of sustaining productivity growth and improving economic conditions. The former is captured in the work of historians such as Paul Kennedy in his 1987 capstone *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000*.[11] It posits that differentials in growth rates and technological change lead to shifts in the global economic balances, which in turn gradually impinge upon the political and military balances among the great powers. Other authors, such as Daniel Drezner,[12] argue that great powers and hegemons tend to derive their status from a near-monopoly on innovation in certain leading economic sectors. Economists such as Walt Rostow[13] and William Thomson[14] have argued that this 'leading sector' sequencing has moved from cotton to steel to chemicals to automotives to computers to now (allegedly)

8 Remedial measures can be applied *ex post* to any merger, following an intervention by the US authorities and approval by the court system.

9 O. Blanchard and Á. Ubide, 'Essential Issues Raised, But Not Fully Answered by the Draghi Report', *PIIE* (8 October 2024).

10 These include reforming and integrating at the EU levels; public sector R&D support; promoting more universities and research institutions to the top global level; promoting innovation clusters of venture capitalists, universities and startups; integrating the often costly and complex national procedures for filing for intellectual property rights and patents and facilitating that 'inventors become investors'; increasing the availability of risk capital for disruptive innovation; making available publicly funded high-performance computers for AI development; and facilitating the consolidation of the telecoms sectors in Europe to promote investments in connectivity.

11 P. Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (1987).

12 D. Drezner, 'State Structure, Technological Leadership and the Maintenance of Hegemony', *Review of International Studies* 27/1 (2001).

13 W. W. Rostow, *The World Economy: History & Prospect* (Palgrave Macmillan, 1978).

14 W. R. Thomson, 'Long Waves, Technological Innovation, and Relative Decline', *International Organization* 44/2 (1990).

AI or advanced biotechnology. And Raymond Vernon has created a model of societal technological change that is adapted from the product life-cycle theory.[15] According to this type of 'leading sector' technological analysis, the EU would likely be doomed to economic 'slow agony' unless it were to generate domestic versions of globally competitive AI and other related technology firms.

Yet, as argued by Jeffrey Ding,[16] another paradigm exists that is potentially more important when it comes to harnessing the economic benefits of what Bresnahan and Trajtenberg dub particularly disruptive 'general purpose technologies' (GPTs).[17] These technologies are characterised by their wide and pervasive applicability across many economic sectors, and their potential for continuing technical improvements and synergies with other innovations. GPTs historically include technologies such as the steam engine, electricity, semiconductors, the Internet and, probably, today's AI. Deriving the full economic benefits of GPTs is not directly related to inventing them, or even to producing them, but rather to ensuring the fastest and widest diffusion of the use of these technologies throughout the economy. Mann and Kirkegaard have argued along similar lines that what drove the US's relative outperformance in productivity in the 1990s was the higher diffusion of information technology to more sectors of the economy than in other OECD countries.[18] Thus what matters for GPTs is not producing them but using them.

Here it is particularly relevant to understand the impact of the recent DeepSeek breakthrough in large language models (LLMs) and AI in general. What DeepSeek—and since then a number of other academic research teams and private technology firms—has achieved is to produce a cheap and well-reasoning LLM while significantly reduce the cost of training it through smarter coding and improved reinforcement learning. And it has done so while relying on a relatively high degree of open-source software. Figure 1 from Bertin Martens illustrates the process.

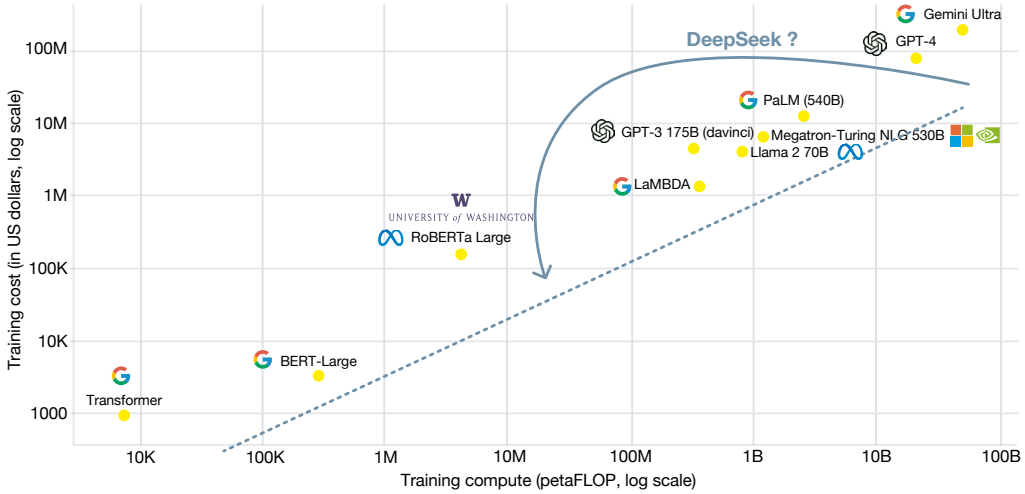
15 R. Vernon, 'International Investment and International Trade in the Product Cycle' *The Quarterly Journal of Economics* 80/2 (May 1966).

16 J. Ding, 'The Rise and Fall of Great Technologies and Powers' (November 2021).

17 T. F. Bresnahan and M. Trajtenberg, 'General Purpose Technologies "Engines of Growth"?', *Journal of Econometrics* 65/1 (1995).

18 C. L. Mann and J. F. Kirkegaard, *Accelerating the Globalization of America: The Role for Information Technology* (2006).

Figure 1 Estimated training cost and compute of select AI models



Source: B. Martens, 'Beyond the DeepSeek and Stargate AI Hype: Back to Economic Reality', presentation given at Bruegel, Brussels, 10 February 2025. Reproduced with permission.

DeepSeek (and similar new models) needs a lot less data to train on, and hence requires fewer high-end microchips and has lower investment costs. It therefore represents an important cost-reduction development, pushing LLM applications of AI towards what in the semiconductor industry was known as 'Moore's Law commoditisation'. Sam Altman, the founder of OpenAI, recently highlighted the impact of AI LLM-related price declines, noting,

> The cost to use a given level of AI falls about 10x every 12 months, and lower prices lead to much more use. You can see this in the token cost from GPT-4 in early 2023 to GPT-4o in mid-2024, where the price per token dropped about 150x in that time period. Moore's law changed the world at 2x every 18 months; this is unbelievably stronger.[19]

It is important to distinguish between, on the one hand, the currently commoditising LLM AI applications, which will be useful for carrying out specific text, picture, sound and other binary data-based tasks and, on the other hand, 'artificial generalised intelligence', which typically refers to artificial systems that can manage complex challenges in space and time, and which in the process directly replicate multifaceted human capabilities. The development of artificial generalised intelligence remains aspirational and will undoubtedly be extremely costly. Meanwhile, LLMs are fundamentally just models trained on large amounts of data to predict the next letter or word in a text, or pixel in a picture, and as such represent only a particular application of AI. LLMs can perhaps best be thought of as more advanced and flexible chess computers—these dropped in price from around the $10

19 S. Altman, 'Three Observations', *SamAltman.com* (9 February 2025).

million needed to construct DeepBlue[20] to beat Garry Kasparov in 1997 to today being an essentially free service available on apps in return for watching an advertisement or two.

However, LLMs may well already be proving disruptive to new and politically influential groups, including journalists, filmmakers/actors, lawyers and (even!) economists. With powerful groups potentially economically threatened by this technology, political and popular controversy will follow.

Yet, as with earlier technological innovations, as AI LLM costs drop, usage of the technology will naturally spread more rapidly throughout the economy, and the key for future productivity gains will be for individual sectors (or firms) to tailor these technological capabilities to their specific needs. With the core service, however, drastically dropping in price for users, it is not a real economic priority for Europe to develop indigenously designed and trained LLMs to boost productivity growth. Instead, it would be much better to purchase commoditised AI LLMs and spend the resources on promoting the use and diffusion of the ever-cheaper already available AI services. As Martens succinctly notes:

> Even with a €200bn investment [from the EU's InvestAI initiative[21]] spread out among 60 companies, the EU is unlikely to develop its own foundation LLMs. But it may develop a layer of smaller and more specialised fine-tuned AI models and applications on top of these baseline models. That would be sufficient to spur innovation and productivity growth in the EU.[22]

Yes, the EU's likely inability to generate an indigenous and globally competitive technology-producing AI sector will, given the sector's weight in aggregate productivity measurements, pose a further challenge to any productivity catch-up with the US. But the EU's productivity enhancement efforts must instead focus on accelerating the absorption and diffusion of AI—arguably the contemporary novel technology with the most obvious GPT characteristics—across as many sectors as possible and across all the EU economies.

This first means promoting broad-based educational attainment in the EU workforce across all age groups so as to be able to better understand and design AI applications and use commoditised AI services across the European economy. This must happen through adequate funding of full-time educational institutions, adult (lifelong learning) education opportunities, and flexible curricula adjusted in accordance with identified skills gaps in an ongoing manner, based on input from employers and other stakeholders. To promote cross-border EU labour flows, common EU certifications should be introduced, especially across the professional services sectors, thereby complementing the national certifications

20 *Autoblocks.ai*, 'Deep Blue (Chess Computer)'.

21 The InvestAI initiative was launched on 10 February 2025 and includes €20 billion in new EU public funding. See European Commission, 'EU Launches InvestAI Initiative to Mobilise €200 Billion of Investment in Artificial Intelligence', Press release (11 February 2025).

22 B. Martens, 'Beyond the DeepSeek and Stargate AI Hype'.

frequently administered by domestic self-interested professional bodies. Such EU-level certifications should be legally valid across the EU and as such would function akin to a 28th regime, enabling private-sector employers to hire workers from across the EU with a degree of transparency regarding their skill levels.[23]

Second, it also means promoting private corporate investment in new AI applications and their use across all sectors. Public investment plays a role here, but the focus must be on facilitating higher private investment levels. The EU Capital Markets Union, a long stagnant but 'prestige' policy project, is mentioned again in the Draghi report. However, in a still fundamentally banking-intermediated European financial system, it is unlikely to yield declines in the cost of capital for businesses that would materially boost investment levels in the near or medium term. Attempts at mobilising European savings should instead be focused on making more risk capital available to European startup businesses that are pioneering the use of new AI applications in their sectors. This could be done, for instance, by having national or European-level financial institutions offer non-diluting, non-senior, medium-term (e.g. five-year) 'matched funding' at the government interest rate to business angel or venture capital investors putting their own money at risk in European upstart companies.

The big lift in terms of promoting more private European investment is not, however, to be found on the supply side through the lower cost of capital, but as highlighted repeatedly in the Draghi report, is to be found on the demand side. European businesses must have improved incentives to invest more resources in the EU economies. Apart from the improved skills availability highlighted above, this involves general political measures to reduce the regulatory and reporting burdens on businesses, especially small and medium-sized enterprises, as well as to minimise permitting delays and other obstacles related to not having a fully digitised e-government-based public sector.

Promoting EU economic resiliency

In 2022 the EU faced the obvious consequences of its fossil-fuel dependency on Russia, and geopolitical tension remains a major risk factor today. Improving the resiliency of the EU economy to adverse supply shocks, for instance, related to the supply of critical minerals, remains important. Here, in particular, the EU must sensibly address the true nature of the alleged ordeal that could arise from the professed new EU dependency on the critical minerals used in the green transition. The Draghi report warns against a decarbonising Europe developing a new dependency, on China, especially, for critical raw materials—a situation that would arguably be worse than that which the continent

23 A private employment contract based on an EU-level certificate should not generally be associated with lengthy employment security or severance payments.

experienced with Russian natural gas after the invasion of Ukraine.[24] Fortunately for EU competitiveness, such comparisons are fundamentally flawed, as even an unexpected and sudden loss of supply of critical raw materials would not in fact be economically critical for the EU. Therefore, rather than implementing costly policies to rapidly exit from critical minerals supply arrangements with China, the EU must instead protect its competitiveness by pursuing the gradual market-led diversification of its supply, innovative substitution, incentivised and mandatory recycling, and stockpiling. The EU should not seek to replicate the accelerated exit from Chinese critical minerals that is stipulated in the US Inflation Reduction Act.

The traditional definition of dependency is a situation in which one needs something and is unable to continue to function normally without it.[25] As has been repeatedly illustrated in economic history since at least 1973, modern economies have suffered for decades from a dependency on fossil fuels, with broad increases in inflation and recessions frequently having followed dramatic fossil-fuel price hikes. This was most recently experienced in Europe during the summer of 2022. In other words, it made perfect economic and political sense for EU governments to take even very expensive precautions to mitigate the 2022 fossil-energy price spike. Fossil fuels account for about 20% of all EU imports,[26] and energy continues to comprise about one-tenth of the consumer price basket in the EU (the impact on producer prices tends to be even bigger); voters tend to dislike governments that fail to stop material declines in disposable income after fuel purchases.

Fortunately, there are no critical raw materials that amount to any discernible share of total EU imports or consumer purchases. Thus, hypothetical Chinese supply disruptions would not cause consumers' (non-energy) disposable income to decline or be the cause of a consumption-decline-driven downturn in the economy. Japan's economy, for example, did not sink into a recession when China cut off rare earth exports in late 2010.[27] Nor have we yet seen any material economic impact on the US economy of China's ban on shipments of antimony, gallium and germanium in December 2024.[28] These bans were instituted under China's recently implemented export control regime regulating critical minerals, and were utilised in response to the Biden administration's restrictions on the Chinese

24 See also, for instance, U. von der Leyen, 'State of the Union Address', European Commission (Strasbourg, 14 September 2022); U. von der Leyen, 'State of the Union Address by President von der Leyen', European Commission (Strasbourg, 2023); T. Breton, 'Critical Raw Materials Act: Securing the New Gas & Oil at the Heart of Our Economy', European Commission (14 September 2022).

25 *Cambridge Dictionary*, 'Dependency'.

26 Eurostat, 'Trend in Extra-EU Imports of Energy Products' (2025).

27 These Chinese export restrictions did, however, only last a few months in late 2010, and subsequent analysis suggests that there was never a total ban on exports to Japan, but rather these restrictions were related to an earlier aggregate reduction in Chinese rare earth exports. See K. Bradsher, 'Amid Tension, China Blocks Vital Exports to Japan', *New York Times*, 22 September 2010; A. King and S. Armstrong, 'Did China Really Ban Rare Earth Metals Exports to Japan?', *East Asia Forum* (18 August 2013).

28 G. Baskaran and M. Schwartz, 'China Imposes Its Most Stringent Critical Minerals Export Restrictions Yet Amidst Escalating U.S.–China Tech War', *Center for Strategic and International Studies* (4 December 2024).

semiconductor industry. Even if the EU were to face similar restrictions from China in the future, it would be misguided to spend a lot of public resources on countering a threat that would have only a very limited economic impact. Critical raw materials are invariably inputs into very specific—though often important—supply chains, and a sudden stop in their delivery would not result in an economy-wide drop in activity but would merely affect individual industries. The overall negative impact of critical raw materials trade restrictions is hence far smaller than it is for fossil fuels. They are simply not macroeconomically critical.

This is particularly true in green energy, where the EU's continued near total reliance on imported Chinese solar panels is often highlighted as a key and dangerous EU dependency. The Net Zero Industry Act[29] (NZIA) deemed this dependency sufficiently damaging to strive for a 40% domestic production share of solar panels by 2030.[30] Yet, what would happen if China suddenly stopped exporting solar panels to the EU tomorrow? Unlike when Russia stopped shipping natural gas through NordStream 1, which caused European natural gas prices to rocket over the summer of 2022 and led to concerns that Europeans would freeze in their homes in the following winter, if solar panel shipments to the EU stopped, not much would happen. Existing installed solar panels would still produce electricity, though obviously the speed of Europe's future rollout of solar energy would slow significantly. This would, if sustained, possibly jeopardise the EU's 2030 climate goals, but it would not have any short- or medium-term economic or political impact remotely comparable to that of fossil-fuel supply disruptions. The scope of possible EU policies to counter the effects of a hypothetical future disruption to the supply of solar panels or other critical raw materials and to protect the Union's competitiveness should therefore reflect this much lower economic impact.

There are in fact better and more cost-conscious solutions than the domestic production capability benchmark policies currently being pursued by the EU in the NZIA or the Critical Raw Minerals Act[31]—or indeed, in the policies proposed in the Draghi report. The first is 'diversification subsidies'. China's current dominant position in many of these markets is not due to the raw materials themselves only being present in China but rather because its extraction and processing of these minerals is often far cheaper than can be achieved elsewhere. This is partly due to somewhat laxer environmental rules in China; the economies of scale from a very, very large domestic market; and likely also the scale of the government subsidies provided. China, in other words, wins on production costs, not by

29 European Commission, 'The Net-Zero Industry Act: Making the EU the Home of Clean Technologies Manufacturing and Green Jobs' 2023.

30 Fortunately, the NZIA is unfunded and, as such, there is no money available to pursue this merely aspirational, though reckless, solar panel production target.

31 European Parliament and Council, Regulation (EU) 2024/1252 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) no. 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020 (Text with EEA relevance), OJ L 1252 (11 April 2024), 1. The Act among other things envisages 10% of EU strategic raw materials being extracted in the EU and 40% of strategic raw materials being processed in the EU. See European Commission, 'Critical Raw Materials Act'.

controlling the actual extraction locations of most critical raw materials. EU governments could therefore explicitly pursue the diversification of supply and subsidise the purchase of critical minerals from non-Chinese sources. This would not entail implementing any trade restrictions, merely spending taxpayer funds on securing critical raw materials from places other than China. EU governments could do this by directly funding the relevant transactions, or by offering firms corporate tax credits to encourage them to pursue a more diverse supplier-base than the rising market-driven corporate concerns over 'China risk' might dictate. The broader supply-diversification strategy would also be enhanced by the continued pursuit of free-trade agreements (FTAs) with countries other than China and the US. However, dedicating resources to negotiating entire tailored 'critical minerals deals' with third countries rich in such minerals is a waste of political time and effort. Robust critical minerals supply chains and sector relevant 'strategic partnerships' are best built as part of as wide a network as possible of broad and deep FTAs with countries in all parts of the world. Such strategic partnerships should not be pursued independently with third countries outside the broader anchoring of increased economic interaction within an FTA. What true purpose would it serve for the EU to negotiate a stand-alone critical minerals agreement or implement critical minerals–related strategic projects (as called for in the Critical Minerals Act) with, say, the Democratic Republic of Congo?

Second, the EU should actively pursue 'substitution through innovation'. Unlike burning fossil fuels, critical raw materials are used because of the particular capabilities they give to the decarbonised products they are part of—whether lithium, nickel or cobalt in batteries, or rare earth minerals in the permanent magnets in wind turbines or electric vehicle (EV) engines. This means demand for a given critical raw material is subject to innovative substitution as scientists discover new and cheaper materials with the same capabilities with which to replace them. The incentive for private actors to pursue innovation substitution is directly related to the price of a given critical raw material, and de facto puts a cap on likely future price increases. This also makes it commercially risky to invest large sums in new extractive capacity for critical green raw materials that innovation may replace in the future. The price of cobalt for instance, much sought after for use in car batteries, has dropped more than 70% since early 2022,[32] as new battery technologies have emerged that are cobalt-free and based on iron phosphate.[33] Similarly, sodium-based batteries are increasingly competing directly with traditional lithium batteries, effectively putting a price ceiling on the main ingredient in the latter, with lithium prices having dropped more than 75% since late 2022.[34] Future innovative breakthroughs will see new, cheaper and more available materials replace expensive critical raw materials.

32 *TradingEconomics.com*, 'Cobalt'.

33 P. Johnson, 'Hyundai Has a Plan to Lower EV Prices by Making Its Own Cheaper LFP Batteries', *Electrek.co* (8 November 2023).

34 *TradingEconomics.com*, 'Lithium'.

Due to the risk of substitution innovation if prices remain high, there will be no OPEC-style monopolies for critical raw materials. The EU Framework Programmes for research and member state governments should continue to actively promote innovative substitution by providing additional long-term funding for basic materials research aimed at replacing and/or complementing currently known critical minerals.

Third, the EU should incentivise and mandate comprehensive and very high critical raw materials recycling targets in the medium-term.[35] Fossil fuels are consumed in the process of producing energy, while critical raw materials are not consumed in their use and can be recycled to ensure a secure domestic supply.[36] The use of some rare earth minerals in individual goods is in such small quantities that recycling may not be cost efficient with regard to all such materials. Overall, however, it is important to understand the power of recycling materials already mined. If, for instance, a 95% EV battery recycling rate is achieved (not unreasonable if mandated and with economic incentives) and the lifetime of an EV battery is 10 years, more than half of all the materials in today's EV batteries will still be in use in the year 2150. And that is assuming that no battery performance improvements happen over each cycle. Add such improvements to each cycle—and EV performance has recently improved greatly—and the minerals mined today will serve us literally for centuries. This is the true promise of a circular green economy. Crucially in key products that use critical minerals, such as EV batteries, commercially available recycling rates for key elements are already as high as 9%.[37] There is no reason such ambitious targets should not be mandated in law for many of the critical minerals used in the EU within, for instance, 10 years from now, thus providing private investors and innovators with the long-term incentives to develop and diffuse recycling technologies.

Lastly, as was pioneered by the founding of the International Energy Agency in 1974 and the introduction of required oil stock levels equivalent to no less than 90 days of net oil imports in industrial nations, concerns about the security of supply for critical raw materials commercially unsuited to high recycling rates could be addressed through incentivised or mandatory minimum stockpiles. Either governments could choose to create such stockpiles themselves by simply buying and stockpiling the raw materials deemed sufficiently important, or they could incentivise businesses to do it via tax benefits or by prescribing firm-level stock levels. Given the risk in a genuine scarcity situation of national preferences prevailing in terms of access to individual member state stockpiles, elevating these measures to the European level is of the utmost importance. The Critical Minerals

35 The EU Battery Passport, mandating lithium recovery rates from waste batteries of 80% by 2031, and mandatory recycled content requirements in EV and other batteries, is one such example. See Council of the EU, 'Council Adopts New Regulation on Batteries and Waste Batteries', Press release (10 July 2023). The Critical Raw Materials Act similarly aims for 25% recycling of strategic raw materials in the EU.

36 G. Li and E. Olcott, 'Tech Start-Ups Race to Make EV Battery Recycling Sustainable', *Financial Times*, 12 November 2023.

37 See, for instance, Redwood Materials, 'Homepage'.

Act's measures to increase transparency regarding member states' national stockpiling frameworks are welcome, but its failure to harmonise the relevant national laws and regulations and replace existing mechanisms (reflecting the current political conditions in the EU) is an evident source of potential friction in the future.

Gros has argued that stockpiling would best be done at the EU, instead of the national, level because, should a scarcity arise, every country would have an incentive to protect its own reserves and users of the critical mineral in short supply.[38] As mentioned above, the value of the imports of critical minerals is rather low. Calculations carried out by Gros suggest that with an investment of less than €2 billion the EU could create a stockpile equivalent to about two years' worth of consumption of the five most important critical minerals.[39] This sum would not need to be financed out of the budget of the EU: a small 'European Sovereignty' Fund could be created that would buy and hold the stockpiles and release them in EU-wide auctions to ensure that they went to the most relevant users.[40] As in other areas, the EU should offer its European neighbours the opportunity to participate in this insurance policy. Countries such as the UK, Norway and even Switzerland would likely take an interest because their participation in such a pool would be much cheaper than trying to create a stockpile themselves.

Increasing European defence industrial capacity[41]

In the light of the Trump administration's decision in early March 2025 to betray Ukraine (combined with the Congressional Republicans' unwillingness to confront the president on behalf of a democratic ally), it is evident that the EU, along with the rest of Europe and likely other democracies around the world, faces an urgent task of rearming to confront and hopefully militarily deter an irredentist and fascist Russia, increasingly likely without US support. With growing doubts about the fundamental trustworthiness of the US as an ally of Ukraine and as the anchor of NATO security provision in any conflict with Russia, the importance of ever-closer EU and Ukrainian collaboration is rising. As US military supplies and intelligence for the war dry up, Ukraine's dependence on European financial and military support increases correspondingly, as does the EU's immediate dependence on Ukraine for the current military deterrence of Russia. The EU and Ukraine need each other, as Ukraine must survive Russia's current onslaught, and the EU must find an affordable path to lasting rearmament.

38 D. Gros, *A European Sovereignty Fund: Investing in Europe's Future and Security*, European Parliament, Directorate-General for Internal Policies, PE 760.229 (July 2024), 15.

39 Ibid., 9.

40 There would be no need for the EU to create warehouses for the stockpile (which in any case would not require a lot of space). The quantities in question could be warehoused by traders or even users, while remaining the property of the EU.

41 This last section builds on J. F. Kirkegaard, *Ukraine: European Democracy's Affordable Arsenal*, Bruegel Policy Brief (12 March 2025).

As reflected in the Commission's recent proposal in ReArm Europe,[42] and the endorsement thereof by the European Council on 6 March,[43] this reality is today quite clear to European leaders. There is hence good reason to assume that activating the national escape clause of the Stability and Growth Pact will see a significant response in most member states. Certainly, the incoming German government has made clear its intentions to dramatically increase German defence spending.[44]

The EU's current security predicament can meaningfully be split into two parts. First, the EU must secure the ongoing ability of Ukraine to resist Russia's invasion without US military and intelligence support. Without Ukraine's battle-hardened army in the field today, a still militarily weak EU would be acutely vulnerable to Russian aggression. Putin is highly unlikely to simply dismiss his mobilised army, currently marauding through Ukraine, back into Russian society if Russia manages to overcome Ukraine. The EU's task will be expensive—at a minimum, the EU (or the broader non-US countries in NATO) must ensure that Ukraine has adequate general budget support in 2025 and beyond. More importantly, however, the Union (mostly though bilateral member state action) must step up its military and intelligence support for Ukraine to supplement—and possibly entirely replace—US assistance. Perhaps most importantly, the EU must ensure that Ukraine's own military-industrial sector can produce arms and equipment at full capacity. Through the 'Danish model',[45] direct support is already flowing to the Ukrainian defence sector, but it is not yet working at full capacity. According to Ukrainian estimates,[46] this would require an additional €15–€18 billion in funding in 2025—a sum that the EU simply must supply immediately. Europe cannot afford to let its most efficient and low-cost arsenal stand idle at this critical point time.

The importance of Ukraine for Europe's security today becomes more apparent once the second part of our current security predicament is considered, namely, how to pay for the longer-term rearmament of Europe in a time of ageing populations and rising social expenditures? The guns versus butter debate is back with a vengeance, but here, too, Ukraine offers part of the solution.

We do not yet know the necessary extent of European rearmament, though given that Russia is, both economically and militarily, a dramatically weaker opponent than the Soviet

42 European Commission, 'Press Statement by President von der Leyen on the Defence Package' (4 March 2025).

43 European Council, *Special Meeting of the European Council (6 March 2025) – Conclusions*, EUCO 6/25 (Brussels, 6 March 2025).

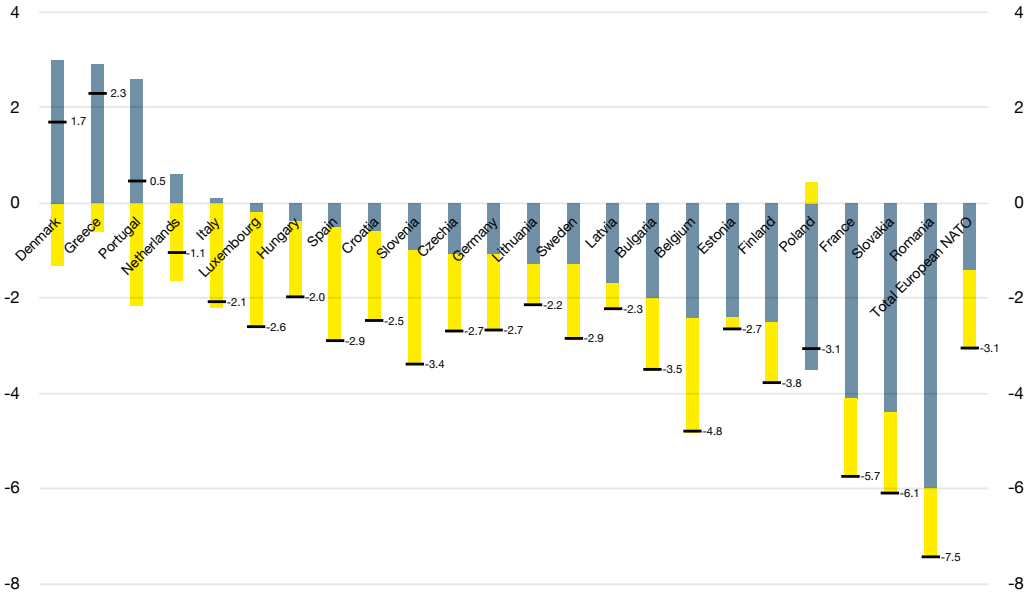
44 Italy, another major European manufacturing economy, is also reportedly mulling an increase in the size of its army by 40,000 troops. See L. De Cicco, 'Altri 40mila militari, così la Difesa punta a rafforzare l'esercito', *La Repubblica* (9 March 2025).

45 Ministry of Defence of Ukraine, 'Results of the "Danish Model" of Support for Ukraine's Defense Industry in 2024: The Armed Forces of Ukraine Received Weapons Valued at Nearly €538 Million' (9 January 2025).

46 Ministry of Defence of Ukraine, 'Rustem Umerov: Supporting Ukraine's Defense Production Is a Strategic Contribution to Europe's Security' (22 January 2025).

Union was, it seems reasonable to assume that defence budgets do not need to return to Cold War levels. However, even rearming to a much lesser extent will prove a dramatic fiscal challenge for many member states. Taking NATO Secretary General Mark Rutte's target of 3.7% of GDP in defence spending as the appropriate level would effectively double the current average primary deficit among the EU's NATO members (Figure 2).

Figure 2 EU and NATO members, primary balance 2024 and implied rise in defence spending to reach 3.7% of GDP



Source: Kirkegaard, J. F., *Ukraine: European Democracy's Affordable Arsenal*, Bruegel Policy Brief (12 March 2025).

Large differences exist among member states, with only three able to reach to 3.7% without falling into a primary deficit; Poland illustrates how political choices (and borders with Russia?) matter and that it is possible (at least for a fast-growing member with low debt) to exceed this target today. Whatever the Commission might still propose with regard to 'additional funding sources at the EU level' in the coming months, many capitals will face the dilemma of either letting domestic debt levels rise, increasing taxes or cutting spending elsewhere.

Fortuitously for the EU, a new major European defence industrial player is emerging: Ukraine, once home to large parts of the Soviet Union's advanced weapons production. Driven by the urgency of compensating for depleted Soviet-era weapons stockpiles, inadequate Western military aid and the need to sidestep Western restrictions on striking targets deep inside Russia, Ukraine has had to rapidly expand its domestic weapons industry. It has done so at astonishing speed, relying extensively on new entrepreneurial military producers, notably in drone production.

Through its Brave1 initiative,[47] since late 2023 Ukraine has provided extensive funding and logistical support for Ukrainian defence-related startup companies. In 2024 Ukraine produced 96% of the drones used by its forces in the war—over 1.5 million—and in 2025 will aim to purchase from domestic companies 4.5 million small first-person view (FPV) and kamikaze drones.[48] In addition, the domestic production of 30,000 long-range strike drones is planned,[49] alongside up to 3,000 long-range drone missiles and cruise missiles.

Ukrainian production costs for FPV drones are currently estimated at around $500/unit.[50] This is an astonishingly low cost by Western standards: implied production costs for a January 2025 initiative of the Drone Capability Coalition[51] (comprising the UK, Denmark, the Netherlands, Latvia and Sweden) to ship 30,000 FPV drones to Ukraine are cited as €1,800/unit (with a total budget of about €54 million), although it is unclear whether this contract will see drones actually arrive at the front at this price point. While care should be taken when directly comparing the capabilities of Ukrainian FPV drones and Western-produced drones, even the €1,800 per Western drone would be a paradigm shift compared to the alternative US-produced drones (which presumably do not include any Chinese components). US costs are estimated to range from the low to the high tens of thousands of dollars, while in late 2024 the Pentagon Inspector General estimated the unit cost of the US Switchblade 300 drones supplied to Ukraine at $78,369. In short, Ukraine remains the most cost-competitive FPV drone producer.[52]

Ukraine's scale-up of drone production and other aspects of weapons production at very low cost is partly a function of technological innovation and partly a function of Ukraine's embrace of the use of commercially available parts in weapons manufacturing. Integrating far cheaper, adequate and commercially available parts and materials is a key competence, with far-reaching cost-cutting potential for Ukrainian wartime arms manufacturing.

The war in Ukraine, however, shows that it is not only drones that matter on the battlefield, even if they represent the military revolution of our time, being currently responsible for the vast majority of Russian (and likely Ukrainian) manpower and equipment losses.[53] Traditional artillery (especially if drone adjusted in real-time) is the other main component of the type of modern defensive war European countries might have to fight or participate in against Russia in the future. As noted, several individual NATO members have begun to support

47 *Brave1.gov.ua*, 'Ukrainian Defense Innovations'.

48 Ministry of Defence of Ukraine, 'Glib Kanievskyi: In 2025, the Ministry of Defence Plans to Procure 4.5 Million FPV Drones' (10 March 2025).

49 O. Mukhina, 'EU Ready to Take Charge in Ukraine Aid as US Stance on Future Support Remains Unclear Under Trump', *Euromaidan Press* (9 January 2025).

50 D. Hambling, 'Coalition Send 30,000 Kamikaze Drones to Ukraine', Forbes.com (10 January 2025).

51 UK Government, '30,000 New Drones for Ukraine in Boost to European Security' (9 January 2025).

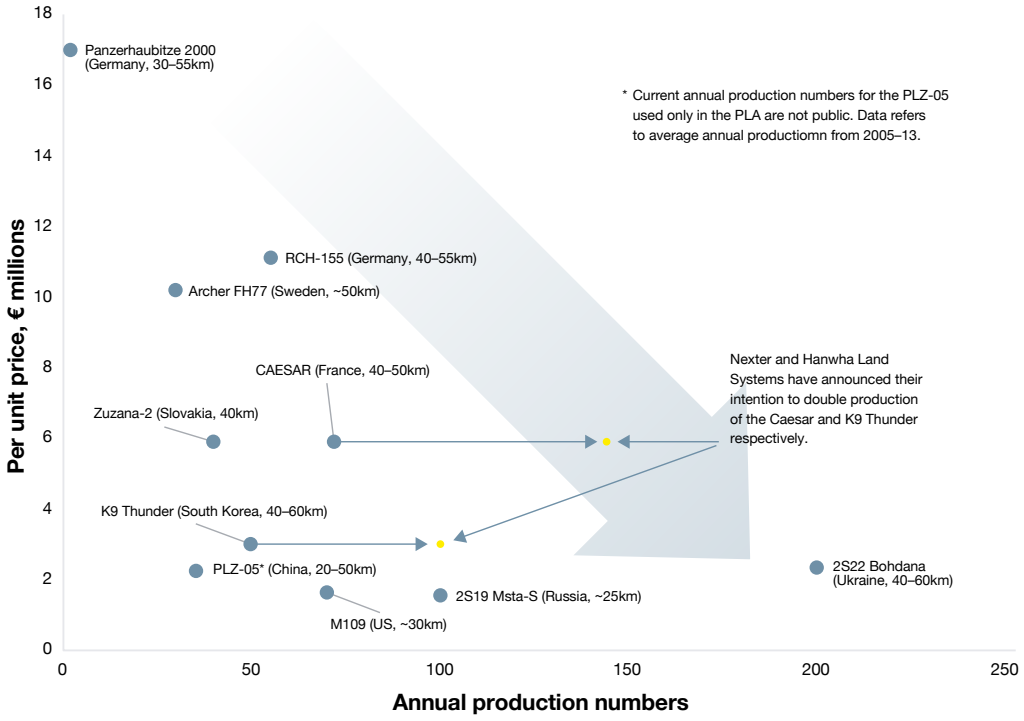
52 Inspector General, 'Enhanced End-Use Monitoring of Defense Articles Provided to Ukraine' (2024).

53 M. Kofman, 'On the Ground in Ukraine: Winter 2025', *War on the Rocks* (24 February 2025).

Ukraine's domestic arms production directly. Denmark, Norway, Sweden, Lithuania and Iceland, alongside the EU,[54] have bilaterally, in line with the 'Danish Model', earmarked Western financial assistance (including the proceeds from frozen Russian assets) for the procurement of weapons produced in Ukraine for the Ukrainian armed forces. This model, implemented initially to produce Ukrainian 155mm Bohdana 2S22 self-propelled howitzers (SPHs), ensures fast equipment delivery, low-cost production and training, and maintenance capacity close to the front line.

Bohdana 2S22 production has already been scaled up in Ukraine to approximately 16 per month, or almost 200 units annually, at a unit price of about €2.3 million.[55] This makes the Bohdana 2S22 the cheapest modern long-range SPH produced today among Western nations. It is price competitive with even the less-sophisticated shorter-range Russian 2S19 Msta-S weapons system (Figure 3).

Figure 3 Per unit price, annual production and range of SPHs in 2024



Source: Kirkegaard, Ukraine: European Democracy's Affordable Arsenal.

As can also be seen in Figure 3, SPHs are produced in several other EU member states, so while it is clear that Europe is likely to continue to produce several such large guns, Ukraine as a production location offers an attractive price point. At the corporate level,

54 K. Hodunova, 'Denmark, Norway to Buy $183 Million in Arms for Kyiv From Ukrainian Manufacturers in 2025', *The Kyiv Independent* (9 January 2025).

55 Y. Clavilier and M. Gjerstad, 'Combat Losses and Manpower Challenges Underscore the Importance of "Mass" in Ukraine', *IISS Military Balance Blog* (10 February 2025).

Ukraine's price competitiveness is already having an effect, with a number of Europe's leading defence producers, including KNDS and Rheinmetall, setting up maintenance and increasingly also weapons-production facilities inside Ukraine, even as the war is still ongoing. France's Thales, meanwhile, has established a joint venture with Ukraine's Ukroboronprom to develop and produce air defence, radar, electronic warfare, tactical communications and electro-optical systems. And Germany's Diehl Defence intends to begin production of air defence systems in Ukraine. The expansion of Ukraine's military-industrial sector and its integration with that of the rest of Europe is, in other words, already ongoing.

While the ultimate outcome of the war in Ukraine cannot be foreseen, it is clear that in any post-war scenario in which Ukraine survives as a wholly independent state in control of most of its 1991 territory, it will remain Europe's biggest weapons producer. This is a direct function of the likely scale of Ukraine's post-war standing army (certain to be Europe's largest, because of its proximity to Russia), which will need a sizeable domestic military-industrial supply. But it could also be a direct result of Ukraine's ongoing integration and ultimately full entry into the EU, and then its status as the EU's most cost-competitive location for the production of much, if not most, of Europe's critically needed military equipment.

Ukraine is and will remain a considerably poorer country than any EU member, even if high economic growth rates can be expected during a period of post-war reconstruction and full EU accession. Thus, Ukraine has—and will continue to have for a prolonged period—considerably lower investment and wage costs than any EU member. In arms production, post-war Ukraine will, in other words, have both scale and low costs, plus unrivalled recent military experience and what seems likely to be one of the most innovative domestic military industries in the world.

For other EU governments looking to meet NATO's potential informal 3.7% defence spending target and equip their armed forces with modern weaponry at an affordable cost and produced to the greatest extent possible inside the EU, relying on Ukraine as a future military production platform will increase their purchasing power. The full integration of lower-cost Ukrainian production locations into the corporate structures and pan-EU supply chains of the EU's major arms producers will also offer these companies improved profitability and global competitiveness.

Jobs and control over critical military technology are always important political issues, though Ukraine's future role as the EU's (and European NATO's) ultimate security guarantor against renewed Russian aggression should encourage other EU governments to share their most advanced technologies with Ukraine. Jobs, however, tend to be zero-sum—scaled-up weapons-production facilities are either built in a jurisdiction or they are not. EU countries will have to accept that if they wish to benefit from the lower prices provided by a fully integrated Ukrainian defence sector, a large chunk of the EU's future arsenal will have to be built in Ukraine.

A fully integrated EU internal market in defence equipment facilitated by EU competition policy exemptions (as called for in the Draghi report) would see market forces shift towards Ukraine and likely make it the principal weapons production location in an enlarged EU. This would help to rebuild the Ukrainian economy and to restore the cost-competitive military-industrial capacity of the entire EU, and with it Europe's military deterrence against Russia. It would, however, also see fewer defence-sector jobs created in the rest of the EU than might have otherwise been created as a result of higher defence spending. This is a policy trade-off that EU countries should be conscious of, but should embrace for their own security.

The successful Draghi-esque integration of the EU's military-industrial sectors would enable all of an enlarged EU, including Ukraine, to take full advantage of the future lower-cost military production capabilities of Ukraine, including after the end of Russia's invasion. The fiscally necessary relentless pursuit of cost-conscious weapons procurement, technical experience and scale would see market forces and commercial logic push a large share of the EU's future total military-industrial capacity to locate in Ukraine. This would be good for Ukraine's reconstruction and long-term security, good for EU taxpayers and good for all of Europe's military deterrence.

How to pay for it: a European Security Fund for Ukraine

A coalition of most EU member states plus the UK and Norway should create a European Security Fund (ESF) to provide Ukraine with a reliable source of financing, large enough to replace the US's funds.

There exists an encouraging precedent. Back in 2010 the EU faced an existential crisis. Financial markets were in turmoil, with many fearing a generalised bank run. One of the smaller EU member countries, Greece, was at the epicentre of the crisis, but it proved impossible to use EU institutions to organise a rescue. Only when financial market tensions became unbearable was a solution found: euro area member countries joined forces to create a special purpose vehicle, dubbed the European Financial Stability Facility (EFSF),[56] which was supported by €440 billion in guarantees, later increased to €780 billion, to provide countries under financial stress with emergency long-term financing on the back of its own high rating.[57]

Today the EU faces an even more existential crisis. A revanchist Russia is being held at bay only by the heroic defence of Ukraine. Military and financial support coming in about equal measure from Europe and the US has enabled Ukraine to hold off Russia for over three years. But US support has suddenly been withdrawn. Even if it is partially reinstated, as many hope it will be, it clearly can no longer be relied upon. Europe must

56 European Commission, 'European Financial Stability Facility (EFSF)'.

57 *Fitch Ratings*, 'European Financial Stability Facility S. A.' (8 August 2024).

thus dramatically increase its support for Ukraine and clearly signal that this will continue for as long as necessary.

EU-level initiatives face the problem that they can be paralysed by a veto from a single member country. So far, enormous pressure has succeeded in overcoming the resistance of Hungary to various EU support packages for Ukraine. But this cumbersome process has delayed many decisions and might not work tomorrow. Furthermore, the existing packages were considered adequate under the hypothesis that US support would continue. Clearly further packages will now be needed, and the Orbán problem may worsen over time if other countries join his Moscow-friendly position. The EFSF experience provides a useful example of how to escape the veto problem.

A coalition of the willing should create an ESF via intergovernmental treaty. Participants would probably encompass most EU member states plus the UK and Norway. This fund would finance itself on the capital market to provide Ukraine with loans at favourable rates. The loans would be very long term and could be collateralised by the returns on Russian assets.

Participating countries would provide guarantees for the bonds issued by the ESF. The guarantees would be proportional to national GDP. Even limiting the guarantee amount to 5% of GDP would provide the ESF with guarantees of about €1,000 billion given that the combined GDP of the EU, the UK and Norway is about €20,000 billion. The €780 billion guarantees for the EFSF were equivalent to over 8% of GDP then. What is proposed for the ESF would thus be smaller relative to today's GDP. These guarantees would give the ESF a top-notch rating, like the EFSF, and allow it to finance itself at a low cost. The guarantees would not constitute joint and several obligations. The risk for each participating country would remain limited to, at most, 5% of GDP.

The initial financing requirements of the ESF would be much smaller than those of the EFSF, which immediately had to take care of the Greek debt, which amounted to €130 billion. By contrast, replacing the US aid to Ukraine would require only about €50–€60 billion annually. The ESF should thus start with a pre-agreed annual flow of loans of about this magnitude.

A large part of this funding for Ukraine would flow back to Europe through orders for European tanks, ammunition and even planes. A significant fraction would remain available for highly efficient Ukrainian manufacturers of traditional armaments and cutting-edge drones. Many of the intermediate inputs needed in Ukraine would probably also come from Europe.

Even with a limit of 5% of GDP, the ESF would have enough firepower to support Ukraine for many years to come. This would constitute a powerful message to Russia that Europe really is serious about doing 'whatever it takes' to stop its war on Ukraine and democracy

in Europe. The aim of the ESF would, of course, not be to prolong the fighting, but to make it more likely that Putin agrees to stop his aggression. Even when the fighting stops, Ukraine will need financial support, including for its reconstruction. The ESF could also finance these expenditures.

Details: timing, participation, the UK and decision-making

Given the precarious situation of Ukraine, time is of the essence. The EFSF was set up in a few months: euro area finance ministers decided to establish it in May and by July it was already operational. Bond issuance came somewhat later, when the national parliaments of enough participating countries had ratified the treaty. The ESF could thus be up and running this summer.

It would not be necessary to have all EU members on board. The fund could achieve a lending volume of over €500 billion if only the four largest EU members and the Nordic countries participate.

The involvement of the UK would be the opposite of the situation in 2010. The UK, then a member of the EU, did not want to participate in a euro area rescue operation. Today, although outside the EU, the UK is very willing to participate in a European initiative to rescue Ukraine. Its contribution to the ESF would constitute about 15% of the fund. Norway's contribution could also be significant if the country were to offer a higher amount than one based on GDP.

The decision-making mechanisms of the EFSF could also serve as a blueprint for the ESF. The main decision-making body of the ESF should be formed of the finance ministers of the participating countries, with the defence ministers as alternatives. Major decisions, such as enlarging the size of the fund or engaging in new activities, would be taken by unanimity.

As with the EFSF, decisions on ramping up support in a crisis could be taken by a supermajority. For the EFSF (and later the European Stability Mechanism) this was 85%.[58]

The ESF should be considered an emergency measure that could morph into a more complete EU-based security and defence mechanism. But this will take time. The EFSF was meant to be temporary. It was later incorporated into a permanent structure, the European Stability Mechanism, when it became clear that the euro area needed a permanent rescue fund. Likewise, the ESF should also be considered a stepping stone towards a more permanent financing mechanism for European security and defence.

58 The EFSF should not be confused with the European Financial Stability Mechanism (see European Commission, 'European Financial Stabilisation Mechanism (EFSM)'), which was an EU-based fund, limited to a cost of €60 billion to the EU budget because of the understandable reluctance of the non-euro area members to run risks just to save a common currency that they did not participate in. More recently the Mechanism has been used to provide some financing to Ukraine.

	Programme 1	Programme 2	Programme 3	Programme 4
	Raising European productivity by using AI	**Improving the EU's critical minerals supply chain resiliency**	**Integrating Ukraine's military-industrial sector fully to cost-consciously rearm**	**Creating a European Security Fund**
Project 1	Abandon large-scale EU public investments in creating EU-based LLMs and associated 'supercomputer centres'. Instead focus public investments on promoting AI literacy among the broader EU workforce to maximise AI diffusion and specialised AI application development.	Promote the 'China + X' diversification of critical minerals sources and pursue deep general FTAs with new partner countries towards this goal, avoiding wasting resources on narrow 'critical minerals deals' or domestic EU production/ processing targets.	Immediately provide the necessary EU funds to enable the Ukrainian military-industrial complex to produce at 100% capacity.	Establish an ESF on an intergovernmental basis among a European coalition of the willing to provide Ukraine with long-term loans at concessionary rates.
Project 2	Deprioritise implementing the EU Capital Markets/Savings and Investment Unions, and focus on generating more actual 'risk capital' in the EU that is willing to fund EU upstart and growth companies.	Dramatically increase public funding for basic materials research to maximise the chances of 'innovative substitution' for potentially expensive critical minerals.	Immediately invite Ukraine to become a full member of all EU defence-industrial institutions.	Let participating countries provide loan guarantees for ESF bonds issued for up to 5% of national GDP.

	Programme 1	Programme 2	Programme 3	Programme 4
Project 3	Proceed without delay to complete EU-level simplification and deregulation to provide private European businesses with better incentives to invest.	Mandate far higher EU critical minerals 10-year recycling targets in accordance with the most ambitious private-sector forecasts	Immediately lift all EU and member state restrictions on sharing military technology with Ukrainian entities.	Enable the ESF to provide Ukraine with a steady annual loan flow of €100 billion+ from the second half of 2025.

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