INVESTMENT REPORT 2024/25

INNOVATION INTEGRATION AND SIMPLIFICATION IN EUROPE

European Investment Bank | Group

Chapter 2

How to maximise the impact of government investment

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Investment Report 2024/2025: Innovation, integration and simplification in Europe

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Chapter 2

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About the report

The annual EIB report on investment and investment finance is a product of the EIB Economics Department. The report provides a comprehensive overview of the developments and drivers of investment and investment finance in the European Union. It combines an analysis and understanding of key market trends and developments, with a thematic focus explored in greater depth. This year, the focus is Europe's ability to marshal the investment needed for the green transition and to support innovation. The report draws extensively on the results of the annual EIB Investment Survey (EIBIS) and the EIB Municipalities Survey, combining internal EIB analysis with contributions from leading experts in the field.

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Chapter 2

How to maximise the impact of government investment

The public sector has played an important role in the economy since the pandemic. Governments' coordinated response to the pandemic and a later spike in energy prices reinforced the economy and maintained a focus on economic transformation and investment. Since the beginning of 2020, current and capital expenditure by governments has accounted for nearly one-third of gross domestic product (GDP) growth, substantially exceeding the long-term average.

In the European Union, government investment grew at a record pace in 2023 and continued to rise in the first half of 2024. Having expanded considerably since 2019, government investment in the European Union increased faster in 2023 than it had since at least 1996. Government investment climbed to 3.5% of GDP – nearly a full percentage point above the lowest reading in 2017. This growth has been underpinned by coordinated policies at the EU level, a reprioritising of investment, finance provided by the Recovery and Resilience Facility (RRF) and the temporary suspension of EU fiscal rules. The rapid growth continued in 2024, when government investment increased 10% in the first half of the year compared to the same period in 2023.

Infrastructure investment, both public and private, also grew, underpinned by the energy sector. Infrastructure investment as a share of GDP has continued an upward trend that began in 2018. Squeezed by the energy crisis, the European Union emphasised investment in improving the energy sector's resilience and in accelerating the green transition.

On the national level, recovery and resilience plans are giving renewed impetus to government investment. Disbursements from the RRF have picked up as EU members begin to implement investment projects. This has spurred government investment.

The reinstatement of EU fiscal rules will require difficult trade-offs – especially when the Recovery and Resilience Facility winds down in 2026. Several countries will need to overhaul their finances to comply with reworked EU fiscal governance rules. Some countries have relied heavily on RRF funds to sustain strong government investment, and they will need to make difficult decisions when the RRF expires in 2026. European structural and cohesion funds might alleviate these trade-offs in some regions, but countries must make effective use of these funds. Only about 6% of cohesion funds dedicated in the 2021-2027 budget period had been spent at the end of 2024, and about 30% have been allocated to selected projects.

Government capital spending has catalysed overall investment since the pandemic. The recent acceleration of government investment and the extensive use of investment grants have given a boost to overall investment in the European Union. RRF money and European structural and cohesion funds have also lifted private investment.

The EU single market and tight economic integration mean that the effects of government investment in one country spills over to the rest of the European Union. These spillover effects lead to higher output and private investment not only in the country of origin but also in the rest of the European Union. EU efforts to coordinate investment at the individual country level have enhanced these effects. This coordination will become even more important as some countries will face increased fiscal pressures when complying with the revised fiscal rules. EU coordination can also benefit from the substantial experience that has been gained in using EU financial instruments to leverage public resources in ways that best catalyse public investment.

EU governments invest significant resources to improve people's overall well-being and skills, which is a key driver of competitiveness. These resources need to be used effectively and efficiently. Spending by EU governments on health and education, as well as on affordable and social housing, is some of the highest among members of the Organisation for Economic Co-operation and Development (OECD). The impact this investment has on human capital varies from one country to the next, and cannot always be linked to spending. More closely monitoring how spending affects outcomes would improve its effectiveness at helping different social groups and improving competitiveness.

Introduction

The recent Letta (Letta, 2024) and Draghi reports (Draghi, 2024) on the state of the EU economy have stressed the need for increased investment. Ursula von der Leyen, the president of the European Commission, is focusing her mandate on investment, particularly investment that addresses structural challenges to EU economic stability and growth. This investment needs to happen despite the reinstatement of EU fiscal rules, which have been revised under the overhauled governance framework. Structural challenges include shifting demographics like an ageing population, which strains public pension systems and healthcare services; economic disparities between EU members, which leads to uneven development; and social cohesion. The European Union also needs to invest heavily in the digital and green transitions, which require substantial investment in technology and sustainable infrastructure. Another high priority is European defence, particularly in the current geopolitical context. Strong government investment is crucial to addressing these challenges.

This chapter is presented in three sections and four boxes. The first section reviews recent developments in government investment and infrastructure finance, and progress in implementing national recovery and resilience plans. It includes Box A discussing the macroeconomic effects of government investment in the European Union. The second section looks at the challenges to government investment in the near and medium term. It includes two boxes: Box B looks at experience that the European Union already has in leveraging public-sector resources to deliver on investment, while Box C explores the interaction between institutional quality and public spending on research and development (R&D) that supports private investment. The third section takes stock of government investment and policies in areas related to human capital, namely education, health and housing. It includes Box D on the effect of government spending on human capital.

The analysis in this chapter stresses the importance of EU structural funds and the RRF in sustaining government investment even as the European Union begins to apply overhauled fiscal rules. It also makes the point that improving government efficiency will help make countries' finances more sustainable.

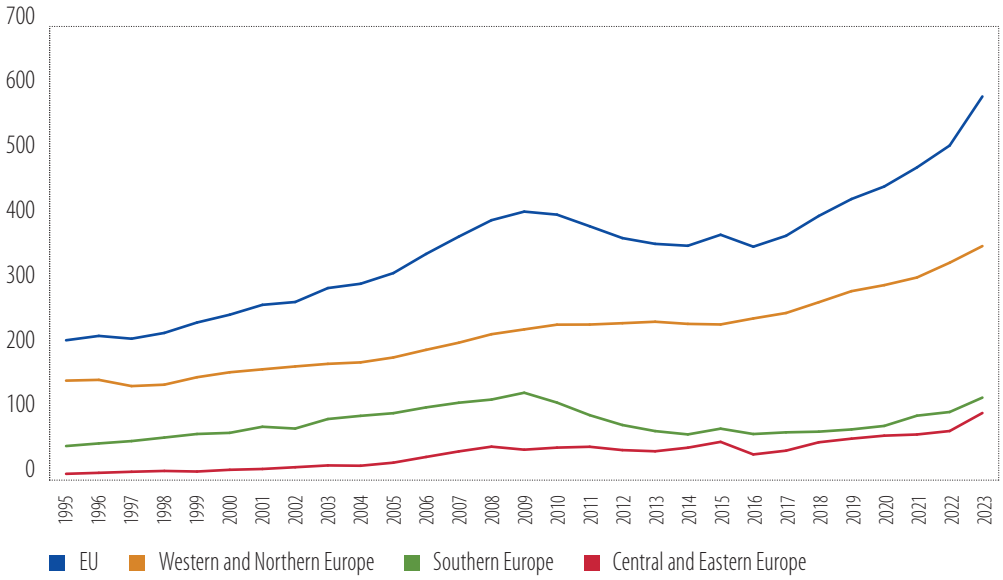
Government investment remains strong

This section provides an overview of recent developments in government investment in the European Union. It shows that EU government investment has remained resilient since the COVID-19 crisis – backed by substantial RRF financing, the phase-out of expensive efforts to address the energy crisis in 2022-2023 and the suspension of EU fiscal rules. Government investment also remained high as countries spent on new infrastructure to deal with the energy crisis and reduced supplies from Russia, and to advance the transition to clean energy. These aggregate trends are corroborated with investment data from local governments gathered during the latest wave of the EIB Municipalities Survey 2024.

Government investment grew at record speed in 2023 and continued to expand robustly in 2024

In the European Union, gross fixed capital formation by the government grew at a record rate of 15% in 2023 (Figure 1).[1] The increase was especially high in Southern European countries (21%) and in Central and Eastern Europe (37%). High inflation has contributed somewhat to these growth rates. The GDP deflator, which takes inflation into account, rose by 6.1% and the investment deflator increased by 4.4% in 2023. However, even after correcting for the relatively high inflation, government investment increased 10% in 2023, the biggest rise since at least 1996.[2]

Figure 1
Gross fixed capital formation of EU governments (EUR billion)

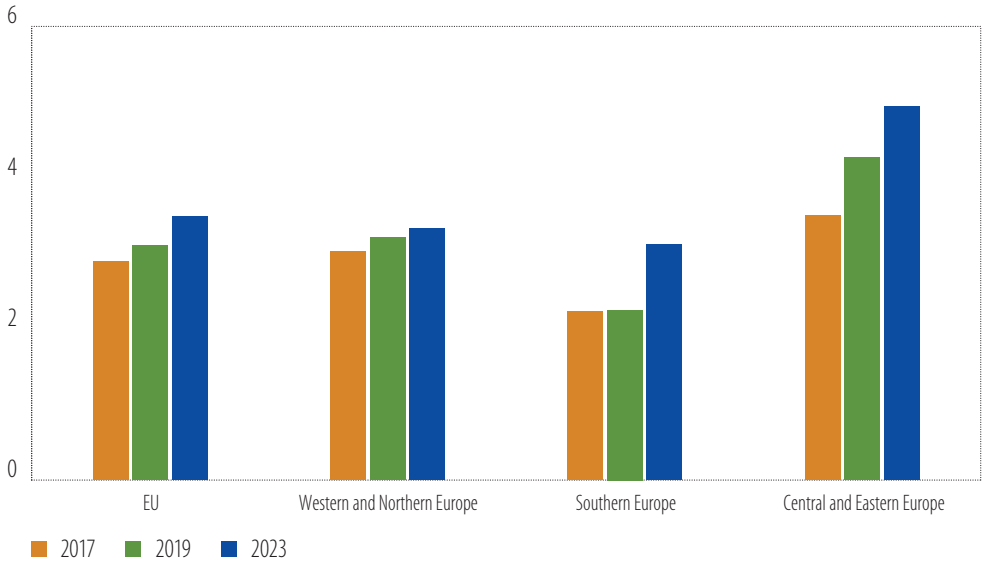


Source: *Eurostat and EIB staff calculations.*
Note: *Western and Northern Europe includes Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, the Netherlands and Sweden. Southern Europe includes Cyprus, Greece, Italy, Spain, Malta and Portugal. Central and Eastern Europe includes Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.*

After remaining depressed for years after the European debt crisis, government investment in the European Union has accelerated steadily since 2017, consistently outpacing GDP growth each year (Figure 2). This rise pushed up government investment rates (investment as a share of GDP), bumping them up closer to the highs of the late 1990s and the brief years of fiscal stimulus that followed the global financial crisis. Southern Europe particularly suffered from low government investment during and after the European sovereign debt crisis, and has also benefited from the pickup since 2017. As a result, EU government investment rose to 3.5%. of GDP, almost one full percentage point higher than the low of 2017.

1 In this chapter, gross fixed capital formation (GFCF) by the government is sometimes also referred to simply as government investment.
2 Government investment was transformed into real terms using the price deflator.

Figure 2
Investment rates of EU governments (% GDP)



Source: *Eurostat and EIB staff calculations.*
Note: *See notes under Figure 1 for the composition of the country groups.*

Increased investment by regional and local governments was largely responsible for the rise in 2023. Local and regional governments accounted for about two-thirds of the increase in government investment across the European Union. That contribution was even stronger in Western and Northern Europe (80%). It was less pronounced (about 40%) in Central and Eastern Europe, where government finances tend to be more centralised.

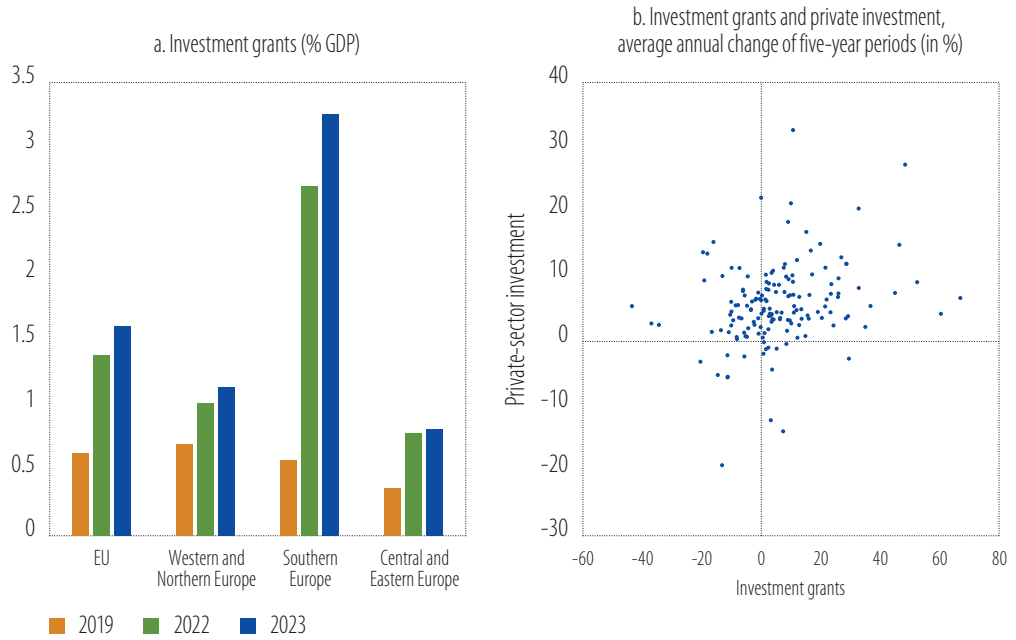
In addition to government investments, EU countries also increased spending on investment grants.[3] Government investment grants picked up substantially in 2020, accounting for 1.6% of EU GDP, a gain of 1 percentage point from 2019 to 2023 (Figure 3a). The contribution of Southern European countries was especially high. Government investment grants in Southern Europe increased by 2.5 percentage points of GDP, virtually matching the share of government investment. Much of this spending came from EU countries' efforts to sustain their economies during the COVID-19 and energy crises. Governments incentivised private investment with funds that supported capital expenditure. This is confirmed by the robust relationship seen between investment grants and growth in private investment (Figure 3b).[4] The funds available for investment grants also expanded substantially with the deployment of the RRF.

The combination of public investment and investment subsidies has strengthened private investment. While the relationship between public and private investment is complex, there are substantial synergies between the two. Analysis in Chapter 3 confirms the positive effects of public grants on business capital expenditure. Academic research has also found that public investment substantially reinforces private investment in many countries (Afonso et al., 2024; Pereira, 2000). Furthermore, increases in government investment that are coordinated at the EU level are shown to have significant spillover effects on output and private investment in individual domestic economies, as well as in other EU members (Box A). When looking at the impact public investment has on private investment, spillover effects from coordinated government investment account for 12% of the total multiplier effect.

3 Investment grants consist of capital transfers in cash or in kind by the government to residents or non-residents to finance all or part of the cost of their acquiring fixed assets.

4 In a panel regression, the annual growth of private investment is robustly positively related to the annual growth of investment grants, controlling for past and present GDP growth, time fixed effects and country fixed effects. The data cover the EU members from 1995 to 2023.

Figure 3
Government investment grants and private-sector investment



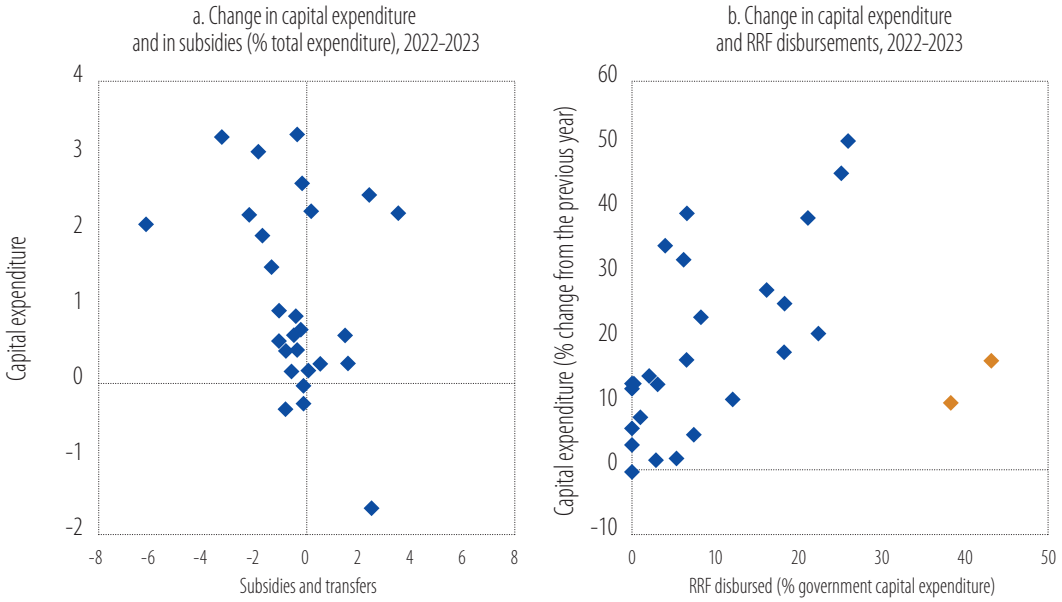
Source: *Eurostat and EIB staff calculations.*
Note: *See notes under Figure 1 for the composition of the country groups. Payable investment grants for the government in percent of GDP (panel a) and the annual rate of change averaged over periods of five years (panel b). Private-sector investment is the difference between total investment and government investment and is measured in five-year averages of the annual rate of change. Observations in panel b represent a country-five-year-average rate of growth for the European Union from 1995 to 2023.*

Budget constraints intensify the trade-offs between current spending and investment. The increase in government investment in 2023 was associated with reductions in government expenditure on non-investment subsidies and transfers (Figure 4a). In 2022, governments in the European Union faced a trade-off between sustaining the pace of government investment and mitigating the harsh consequences of the energy crisis on households and businesses. Consequently, real government investment slowed in 2022 (European Investment Bank (EIB), 2024). Policies to address the energy crisis were phased out gradually in 2023, giving governments leeway to invest again.

Disbursements of recovery and resilience funds are providing an additional boost to government capital expenditure in the European Union. In 2022 and 2023, disbursements amounted to EUR 166 billion – about 10% of the sum of government gross fixed capital formation (GFCF) and investment grants in those two years. While only a fraction of total RRF disbursements pays for government capital expenditure, RRF funds have noticeably alleviated fiscal trade-offs (Figure 4b).[5] At the same time, the pace of absorption of EU cohesion and structural funds has slowed substantially, as countries have prioritised putting RRF funds to work. By the end of 2024, only about 6% of EU cohesion and structural funds had been spent.

5 See also the last part of this section on the progress of RRF disbursement, as well as the first part on the share of RRF financing that goes to government investment.

Figure 4
Capital expenditure, subsidies and recovery and resilience disbursements



Source: *Eurostat and the European Commission.*
Note: *The two outliers in panel b are Greece and Portugal (yellow diamonds), where RRF disbursements for investment projects are concentrated in the later years of the RRF.*

Box A
How government investment affects the overall EU economy

Public investment can drive economic growth by providing public goods and by stimulating the broader economy. It can spur private investment and economic growth by spilling over through the business links and value chains that connect the investing region or sector to other areas.

The scope of such spillovers may differ by sector and geography. This exercise studies the extent of two such spillovers: spillovers from public investment to private investment and spillovers between EU members.

It uses a large dynamic spatial general equilibrium model called RHOMOLO developed by the Joint Research Centre of the European Commission. Each NUTS 2[6] region in a country is shocked with fresh public investment equal to 0.1% of GDP, spread equally over a five-year investment period.[7]

Public investment buoys private investment

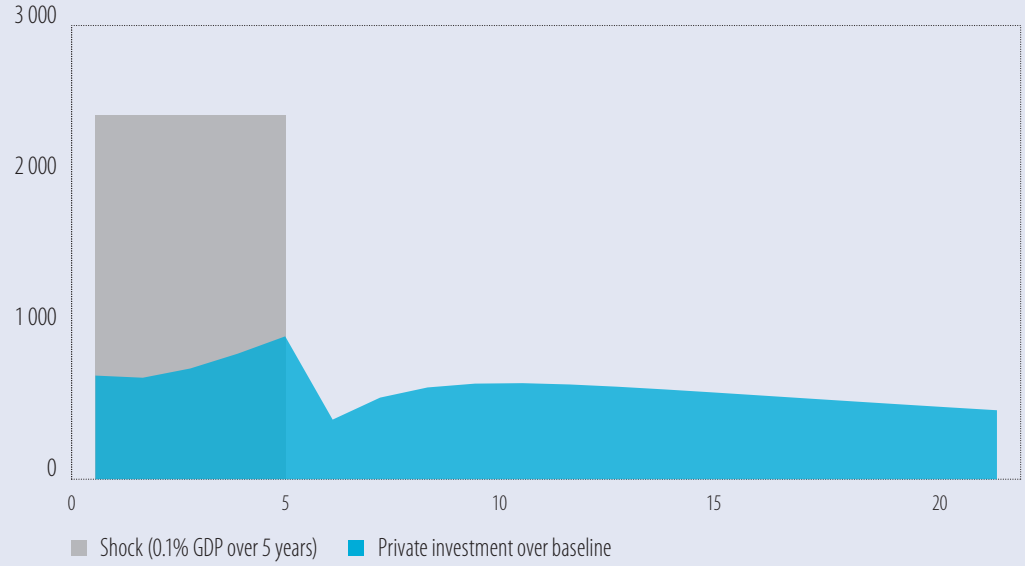
Public investment will directly affect private investment during implementation by activating supply chains (for example, building new roads stimulates investment in construction). As the investment activity comes to a close, this effect ends. However, public investment continues to stimulate private investment through enabling factors like better transport or more competitive production. These effects can support value chains, spur local production or even foster imports.

6 NUTS refers to the Nomenclature of Territorial Units for Statistics, or La nomenclature des unités territoriales statistiques in French. It is used to reference the administrative divisions of countries for statistical purposes.

7 The shock is split, with 25% of the impact going to transport. Of that 25%, one-quarter is assigned to each of the NACE Rev. 2 sectors of RHOMOLO: B to E (electricity supply), C (manufacturing), F (construction) and G to I (transportation and storage). The remaining 75% goes to non-transport public infrastructure.

The effect will largely be limited to a specific region because it will depend on the local economy as well as developments in other countries. The model estimates that an increase in public investment of 0.1% of GDP would increase private investment by 0.037% in the short run (one to two years), and by 0.018% in the long run (20 years). This means that **one euro of additional public investment would generate close to one euro of additional private investment over 20 years**. Both types of investment will push GDP higher through new public goods, higher private investment and higher productivity.

Figure A.1
The effect of a 0.1% shock on public investment (EUR million, change a year after intervention)



Source: *Results, using RHOMOLO-EIB, a joint exercise between the EIB and the Joint Research Centre of the European Commission. RHOMOLO stands for Regional Holistic Model.*

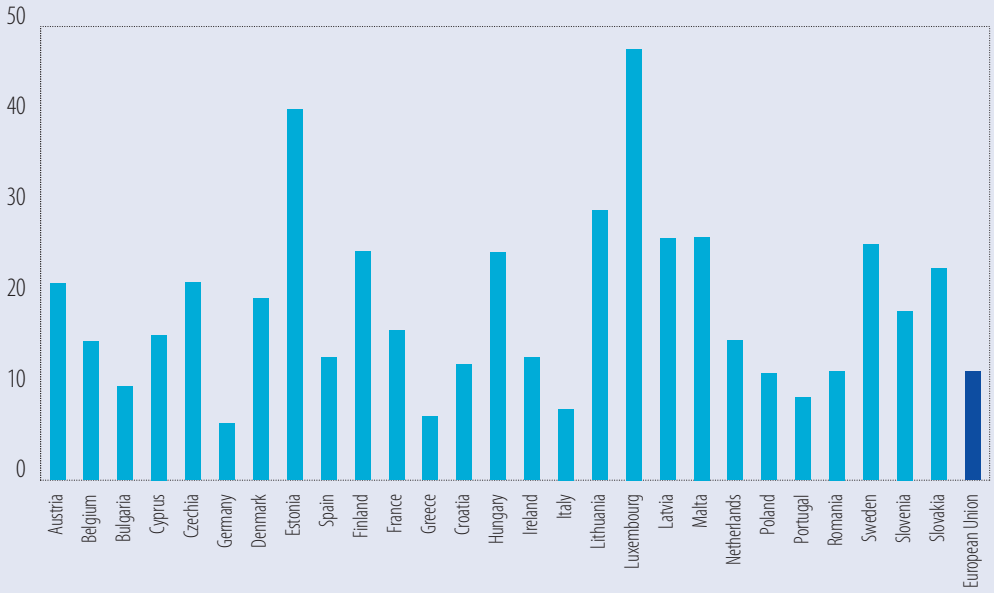
The total impact of a shock to public investment leads to GDP above the baseline scenario by 0.034% in the short run. GDP is still higher 20 years after the start of the investment, at which point the effect drops to 0.023. This includes the GDP impact generated by increased private investment. Similar exercises show that the multiplier can be higher under more balanced investment programmes that also support private investment, as these programmes can result in public resources being better leveraged to crowd in private finance.

Investment programme spillovers from one country to another

Typically, more integrated economic trade and value chains result in stronger investment effects being diffused throughout an economy and across regions. As some effects of unilateral investment programmes spill over to other regions, the reverse can also be observed, as investment in other regions spills over to a specific country. Coordinated investment programmes could therefore be beneficial, to the extent that investment in other regions benefits the domestic economy in question.

Smaller and more integrated countries would be more exposed to such spillovers, as they internalise the spillover effects less. Instead, those effects would be diffused more generally through the value chains of other EU members. When an economy expands and begins to adjust structurally (for example, through changes to its competitive position, transport and trade), spillover effects account for a sizeable share of the overall impact.

Figure A.2
The long-term effect on GDP of spillovers created when countries invest at the same time (in %)



Source: Results, using RHOMOLO-EIB, a joint exercise between the EIB and the Joint Research Centre of the European Commission.

At the EU level, spillovers explain some 12% of the total impact of government investment on GDP. In other words, 12% of the change in GDP due to government investment emanates from government investment in other EU countries.

In the two types of effects modelled, the results show that economic links will result in spillover effects that are not confined to direct investment, and that investment programmes should take this into account.

- Public investment will spill over to private investment. A balanced investment programme that includes the private sector may have a bigger impact on economic growth.
- Spillovers between countries are significant. The more an economy is integrated into the broader EU economy and the more specialised it is, the greater the spillover effect. Coordinated investment programmes help the broader EU economy to internalise spillover effects.

Strong infrastructure investment is underpinned by the energy transformation

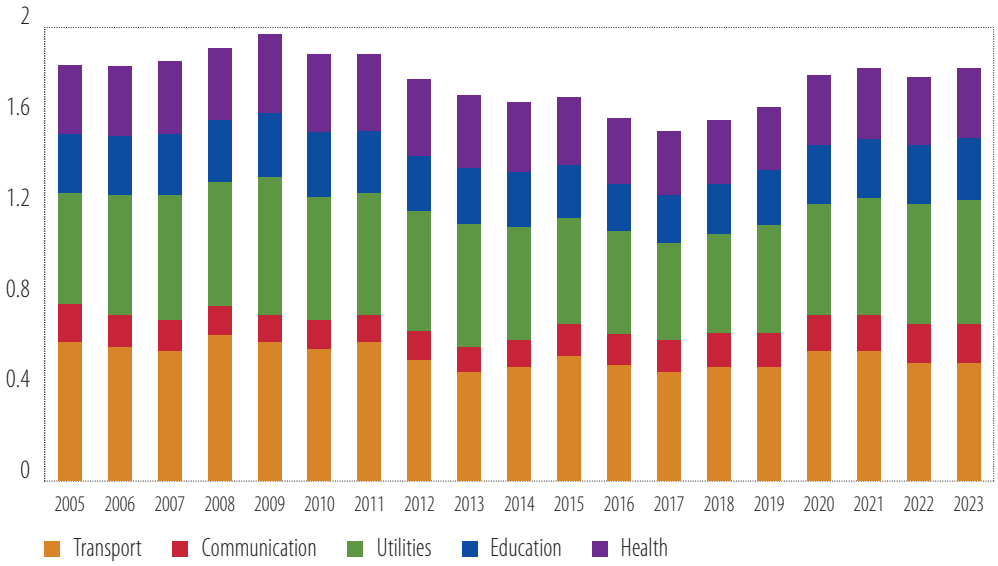
Infrastructure investment is a critical part of overall investment, and encompasses the development of buildings and structures essential for societal progress. As a cornerstone of the twin digital and green transition, infrastructure plays a pivotal role in driving sustainable transformations. A large part of national infrastructure is public – financed by the government or responsible public entities – but private investment also plays an increasingly relevant role. In this section, we delve into infrastructure investments, highlighting key statistics and the dynamic interplay between public and private contributions.[8]

8 Data on infrastructure investment are not readily available, as infrastructure is not classified separately in national account statistics. More details on the methodology underlying the consistent EU-wide infrastructure finance database used in this section can be found in Wagenvoort et al. (2010) and Revoltella et al. (2016).

Infrastructure investments in the European Union remain remarkably resilient. In 2023, infrastructure finance continued its upward trajectory, reaching close to 1.8% of GDP across the European Union (Figure 5). While infrastructure investments in Western and Northern Europe have grown (although at a slower pace since the end of the pandemic), infrastructure investments in Central and Eastern Europe have only recently returned to pre-crisis levels. Despite expanding steadily in Southern Europe throughout 2023, infrastructure investment in this region remained significantly below its pre-crisis benchmarks.

While the distribution of investment across sectors has remained relatively stable over time, infrastructure investments in utilities have grown steadily. Infrastructure investments can be categorised into five main sectors: utilities, transport, communication, health and education. Two notable trends have emerged (Figure 5). First, in 2023 communication's share continued to increase steadily, following a decade-long upward trend. Second, utilities are expanding steadily, and saw rapid growth in 2023 fuelled by investments in energy security. Interestingly, a sizeable portion of the energy generation capacity created by projects started in 2023 and not financed under public-private partnerships (PPP) is now derived from investments in solar and wind infrastructure – equal to 19.9 GW (81% of the capacity created in 2023) or EUR 22.7 billion (36% of total non-PPP project financing). This trend underscores the ongoing transition towards renewable energy sources, highlighting the growing commitment to sustainable and environmentally friendly solutions.

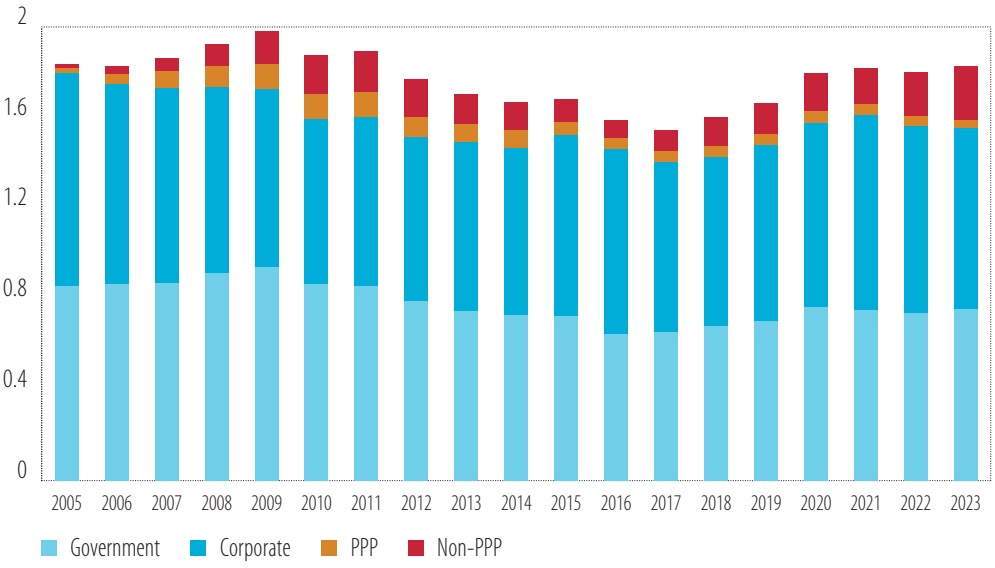
Figure 5
Infrastructure finance in the European Union (% GDP)**, by sector**



Source: Eurostat, IJGlobal, European PPP Expertise Centre (EPEC), EIB staff calculations.

Government financing has increasingly driven growth in infrastructure investment since the pandemic. In 2023, public financing increased its contribution to 0.75% of GDP in the European Union (Figure 6), while the role of the private sector remained sizable and stable. In Western and Northern Europe non-PPP special purpose vehicles are gaining importance. Conversely, in Central and Eastern Europe, the recent rise in infrastructure financing is predominantly supported by government investment. Meanwhile, project financing through public-private partnerships has remained relatively subdued, consistent with trends observed in previous years.

Figure 6
Infrastructure finance in the European Union (% GDP)**, by type**



Source: Eurostat, IJGlobal, EPEC, EIB staff calculations. PPP stands for public-private partnerships.

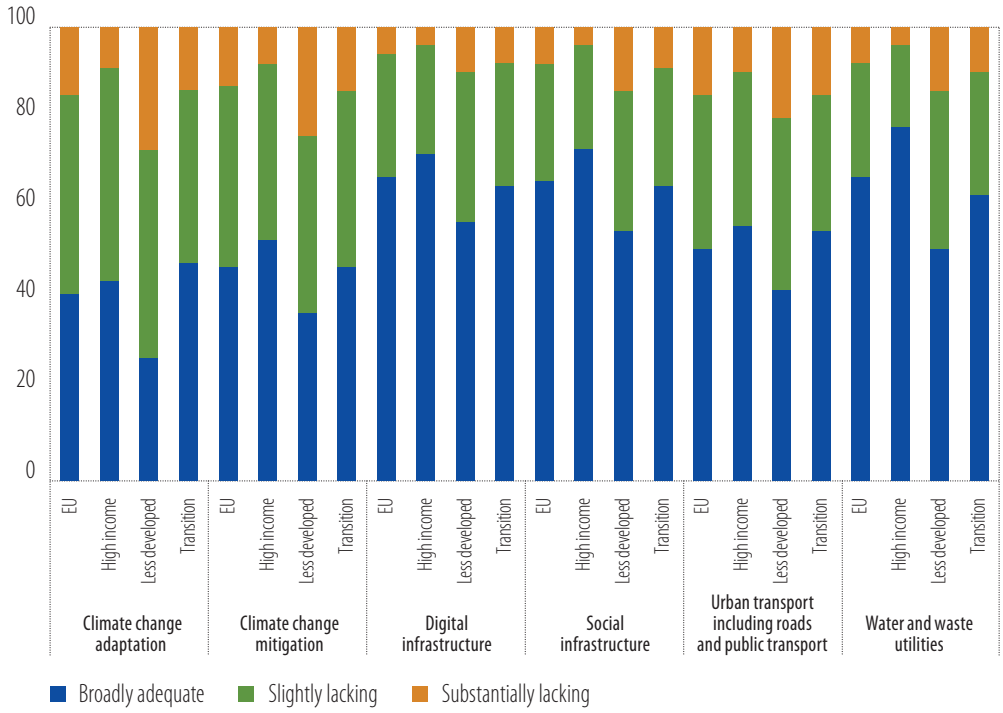
Assessing public investment by local authorities using the EIB Municipalities Survey

Local authorities play a pivotal role in the successful implementation of government infrastructure investment programmes. Over the past two decades, local and regional governments accounted for more than half of public investment in the European Union. With their local knowledge and administrative capabilities, these governments can facilitate infrastructure projects that are closely tailored to the specific requirements of the area. This includes essential infrastructure like public transport networks, electricity grids, wastewater systems and the modernisation of public buildings like schools, hospitals and social housing. Building on their understanding of local needs and priorities, local authorities ensure that infrastructure investments yield maximum social and economic benefits. Below, we talk about how local governments view infrastructure investment, drawing on the latest wave of the EIB Municipalities Survey.

More than half of municipalities view the level of investment in technical infrastructure as broadly adequate, except for climate change-related infrastructure. More than 50% of EU municipalities consider the level of infrastructure investment in the past three years to be broadly adequate in four of the six infrastructure areas (assets) covered by the EIB Municipalities Survey. Investment is most frequently said to be adequate for digital infrastructure and for water and waste utilities (in both areas, 67% of municipalities are satisfied with their investment). However, this figure drops to 41% of municipalities for investment in climate change adaptation, and only 47% for climate change mitigation. While satisfaction with the level of climate change-related investment has increased over time, it still lags behind the other categories. Satisfaction with social infrastructure has not changed, while it has deteriorated slightly for urban transport.

Local government perceptions of investment vary substantially among cohesion regions and across asset types (Figure 7). Overall, less-developed regions regard investment levels less positively, across assets. The gap is especially broad for climate change adaptation (from 17 points for transition regions to 21 points for high-income regions) and water and waste utilities (from 12 points for transition regions to 27 points for high-income regions).

Figure 7
Infrastructure investment over the past three years (% of municipalities)



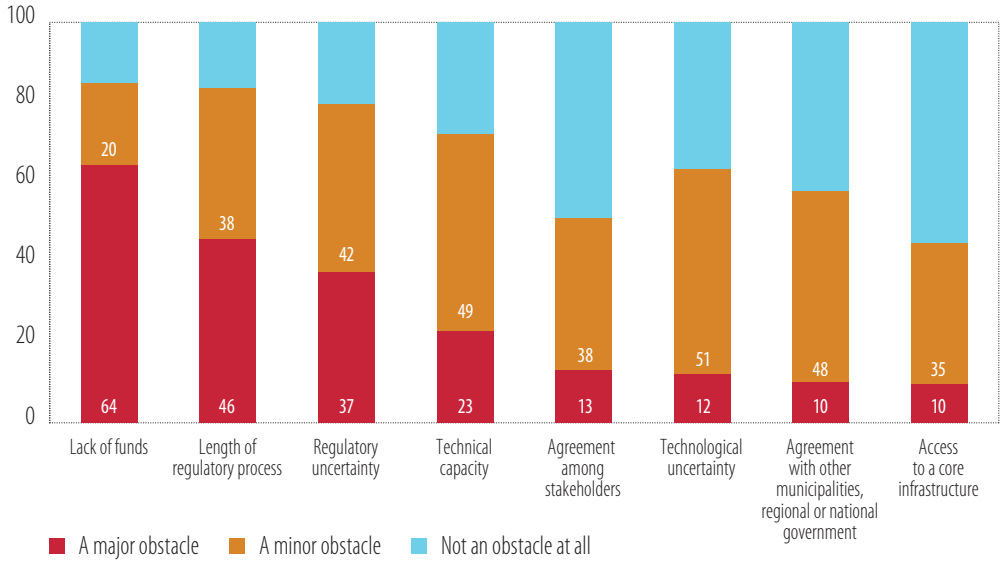
Source: *EIB Municipalities Survey 2024. All municipalities, excluding don't know and no response. The number of responses varies across areas.*
Note: *High income refers to regions with GDP per capita greater than 100% of the EU average. Transition regions have GDP per capita of 75% to 100% of the EU average. Less developed regions have GDP per capita of less than 75% of the EU average.*
Question: *In the last three years, between the start of 2021 and the end of 2023, would you say that within your municipality/city the level of investment in infrastructure projects was broadly adequate, slightly lacking or substantially lacking in each of the following areas?*

Financial constraints are a major obstacle for 64% of EU municipalities, while regulatory burdens and technical capacity are challenges common to all regions. Insufficient funding and regulatory hurdles, like the length of the approval process and the resulting uncertainty, continue to be the primary barriers to municipal infrastructure investment (Figure 8). These obstacles are more problematic in less developed and transition regions. For almost three-quarters of municipalities in less developed regions, a lack of funds or financing is a major obstacle to investment. About half of municipalities in Southern Europe say regulatory hurdles are a major barrier. Finally, municipalities also have significant difficulty hiring skilled workers to implement infrastructure investment programmes, an issue exacerbated by the shortage of experts with environmental and engineering skills.

Municipalities' plans show continued investment in climate change. Municipalities plan to increase their infrastructure investment, compared to the past three years, in social infrastructure, climate change mitigation and climate change adaptation. Almost nine out of ten municipalities will increase investment at least in one of these areas, and four out of five will increase it in all three of them.

Structurally, planned infrastructure investment has shifted towards modernisation. When analysing the structure of planned infrastructure investment, municipalities' intention to spend on maintenance and repairs has not changed significantly since 2020. However, the share of new investments has declined as efforts to modernise existing infrastructure have increased (from two-fifths to almost one-half in 2024).

Figure 8
Main obstacles to municipal infrastructure investment (% of respondents)



Source: *EIB Municipalities Survey 2024.*
Note: *All municipalities, excluding don't know and no response. The number of responses varies across activities.*
Question: *To what extent is each of the following an obstacle to the implementation of your infrastructure investment activities? Is it a major obstacle, a minor obstacle or not an obstacle at all?*

Sustaining government investment in the medium term

The pickup in government investment over the past few years has been and will remain essential to transforming the EU economy – and it should accelerate further if the European Union is to meet the structural challenges it faces, such as ageing, social cohesion and the digital and green transition. However, sustaining this increase in the medium term could prove difficult as governments face increasing pressure on their finances, particularly with the end of RRF financing and borrowing costs that have risen since 2022. This section reviews the effects of these factors on government investment in the medium term. It provides an overview of the current state of RRF disbursements and highlights the role of EU funds in supporting public investment. Drawing on these findings, it discusses risks to the outlook for public investment.

The implementation of recovery and resilience projects is gradually speeding up, with countries prioritising that spending over cohesion and structural funds

With more than two full years left until the end of the implementation period, the Recovery and Resilience Facility has reached about the halfway point in its lifetime. The RRF has been instrumental to the increase in government investment in the European Union over the past two years (EIB, 2024), making it an opportune time to assess its implementation and impact so far.[9] The analysis here first

9 The European Central Bank has published its own assessment of the implementation of the RRF, focusing on the programme's expected impact (Bankowski et al., 2024). Parts of this study are of relevance to the analysis here. First, it has been confirmed that, despite some implementation risks, RRF disbursement is gaining traction. Second, according to the ECB assessment, around 70% of total RRF expenditure consists of government investment and capital transfer with high fiscal multipliers. In addition, the RRF contributed a cumulative 0.7% to GFCF in 2021-2023, but that figure should rise to 1.6% in 2024-2026. Third, RRF reforms have improved the quality of EU members' institutions, further enhancing growth.

looks at total disbursements. With the exception of unconditional payments made at the beginning of the RRF, money is disbursed as investment plans meet each agreed milestone. At the end of September 2024, disbursement stood at 41% of total requested allocations: EUR 267 billion had been disbursed, out of a total of EUR 650.2 billion (Table 1). Two large countries, France and Italy, stand out for their high absorption rates. France has already received 76.7% of its allocated funds (EUR 40.3 billion), while Italy has received 58.4% (EUR 194.4 billion). Based on this snapshot, the real pace of implementation should increase across the European Union in the next two years, albeit only moderately.

Table 1

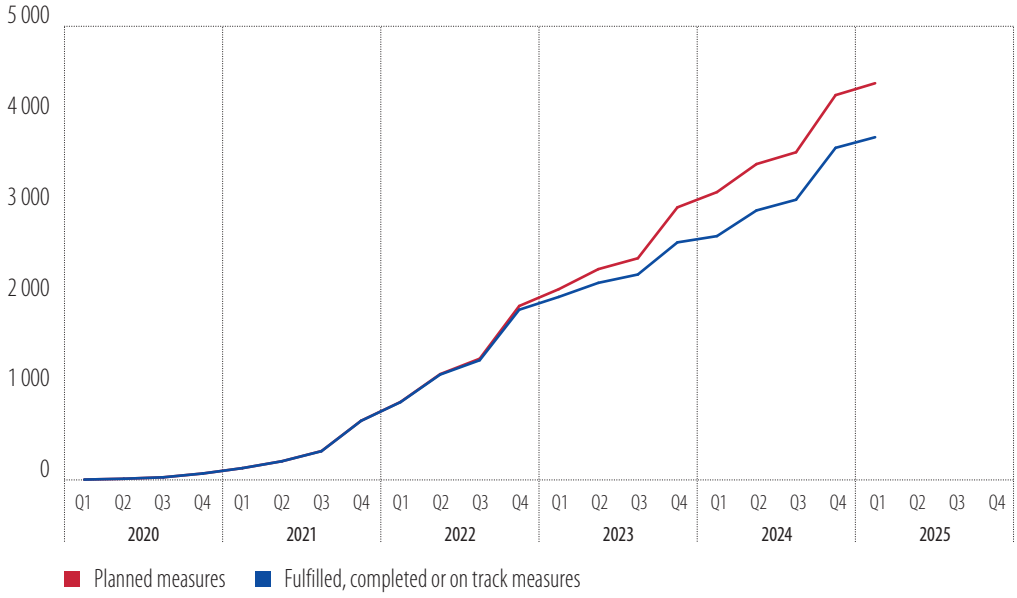
Recovery and resilience disbursements (EUR billion)**, by year**

					Total allocations		(disbursed)
	2021	2022	2023	2024 *	Grants	Loans	
Austria			1.2		3.961		30.1%
Belgium				1.5	5.034	0.264	29.2%
Bulgaria		1.4			5.689		24.1%
Croatia		1.4	0.7	2.4	5.787	4.254	44.7%
Cyprus	0.026	0.085	0	0.152	1.02	0.2	21.5%
Czechia			2.0	0.7	8.409	0.818	29.2%
Denmark			0.54	0.42	1.626		59.3%
Estonia			0.38	0.12	0.953		53.0%
Finland				0.50	1.949		25.6%
France		7.4	16.0	7.5	40.27		76.7%
Germany	2.3		4.0		30.325		20.6%
Greece	1.7	3.6	7.2	4.8	18.22	17.728	47.9%
Hungary			0.78	0.14	6.512	3.918	8.8%
Ireland				0.32	1.154		28.1%
Italy	15.9	42.0	35.0	20.5	71.78	122.602	58.4%
Latvia		0.2		0.60	1.969		40.7%
Lithuania			1.0	0.38	2.298	1.552	35.2%
Luxembourg	0.012		0.02		0.083		39.0%
Malta			0.11	0.06	0.328		50.7%
Netherlands				1.3	5.441		24.5%
Poland			5.1	6.3	25.277	34.541	19.0%
Portugal	0.4	1.2	6.3	0.7	16.325	5.891	38.2%
Romania		4.5	2.8	2.1	13.566	14.942	33.0%
Slovakia		0.4	2.3		6.408		41.7%
Slovenia			0.8		1.613	1.072	31.3%
Spain	10.0	12.0	6.0	20.3	79.854	83.16	29.6%
Sweden					3.446		0.0%
	30.2	74.1	92.1	70.9	359.3	290.9	41.1%

Source: *RRF scoreboard.*
Note: *2024 figures are until the end of September. At the time of writing, Sweden had not yet received any payments.*

The implementation of most recovery and resilience programmes are on track. By the end of 2024, countries had reported on 4 372 investment measures.[10] Comparing the planned achievements up to the first quarter of 2024 with actual implementation, 44.7% are marked as fully completed and assessed, 40% as completed but not yet assessed, and 15.3% as not completed. Looking ahead to the first quarter of 2025, the sum of those milestones and targets marked as fully completed and assessed (32.5%), completed but not assessed (31%), or on track (22.8%) is slightly higher than the sum of the three categories in first quarter of 2024 (85%). Of measures with target dates up until first quarter of 2025, 11.1% are labelled as not completed while 2.5% are delayed. Thus, the gap between the number of planned and realised milestones and targets, which was growing until last year (EIB, 2024), peaked at 15% in the first quarter of 2024 (Figure 9) and then stabilised.[11]

Figure 9
Gap between plans and realisations in recovery and resilience implementation
(count of measures)



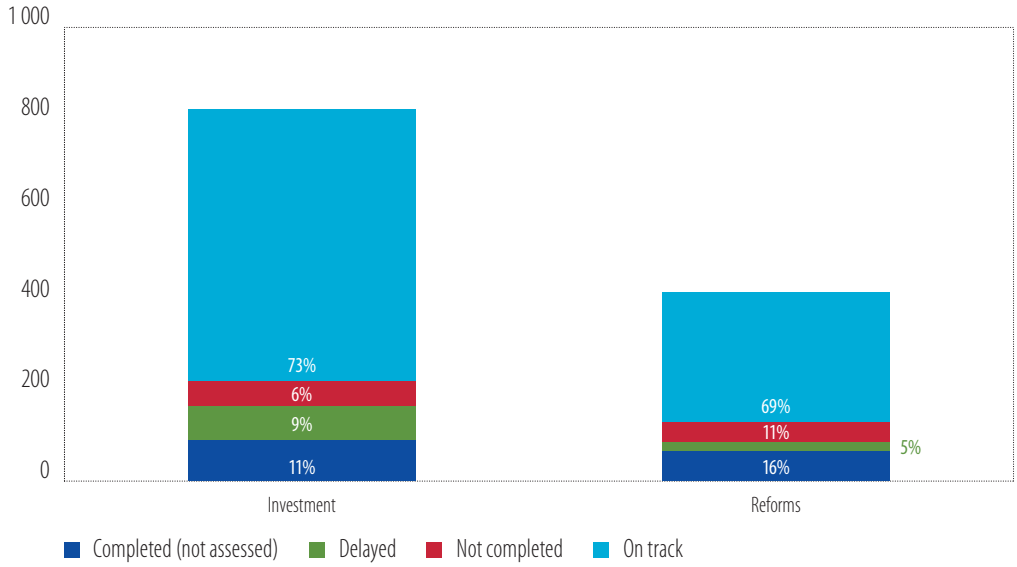
Source: EIB staff calculations based on EU members' data on RRF implementation.

The first two years of the Recovery and Resilience Facility was marked by countries' instituting reforms required to receive the funds, which meant that actual investments began in earnest in 2024 (Figure 10). As investment-related projects take longer to implement, in the first years of the RRF countries focused more on reforms than on actual investments. By the end of 2023, 1 591 measures were classified as reforms, and 1 413 measures were classified as investment operations. In 2024, the number of planned investment measures was almost twice that of reforms (821 vs. 416). Investment measures are more frequently delayed (9.3% vs. 4.8% of reforms), while reforms are more often classified as not completed (11.1% vs. 6.5% of investment measures).

10 Due to the performance-based governance design of the RRF, each EU member must show they have fulfilled certain requirements (milestones and targets) for each approved project before receiving subsequent payments. Payments are disbursed after EU members have made a documented request. In addition, EU members must provide semi-annual implementation reports. In the sixth reporting round in April 2024, countries reported on 4 372 measures.

11 In a forward-looking assessment, it is expected to decline to 13.5% in the first quarter of 2025.

Figure 10
Status of investments and reforms in 2024 (count of measures)



Source: *EIB staff calculations based on EU members' data on RRF implementation.*

Recovery and resilience measures related to intangible investment, R&D and NextGenerationEU policies are implemented more swiftly than others. Similar to the findings in European Investment Bank (2024), a text-based search of descriptions of different measures was used to investigate the areas under- or overrepresented among measures that are not completed and/or delayed – keeping in mind that delayed measures only appear in the forward-looking assessment, while measures not completed only appear in the backward-looking assessment. Intangible investments, and in particular, measures with the keywords research or innovation are underrepresented in both categories (Table 2). The same is true for measures that include the keyword green transition. Measures related to these areas do not seem to suffer from major impediments to implementation. These results are similar to, and possibly more pronounced than, the results from last year.

Table 2
Areas where recovery and resilience implementation has been relatively quick, 2020-2024

	Research	Innovation	NextGenerationEU | Policy	Green transition
Total	5.4	5.4	5.7	1.6
Delayed	2.1	2.1	4.2	1.0
Not completed	3.7	4.5	5.6	0.2

Source: *EIB staff calculations based on EU members' data on RRF implementation.*
Note: *The calculation is based on a text search using the keywords indicated in the columns. NextGenerationEU is the European Union's EUR 648 billion stimulus package to refocus the economy on sustainable growth.*

Investment measures related to construction, like infrastructure or climate-related assets, tend to lag behind (Table 3). Construction projects are overrepresented among the delayed or not completed measures, which is consistent with European Investment Bank (2024) findings. A very broad keyword like infrastructure or build is included in the description of one-fifth of the measures. The share of delayed measures in this subset is 8.4 percentage points higher than the average, and the share of not completed measures is 2.6 percentage points higher. Using only infrastructure as a keyword captures around half of these measures, and this keyword is greatly overrepresented among the delayed or

not completed measures. The same holds for keywords related to climate change and infrastructure, like solar or wind or hydrogen.[12] The subset of measures containing any of the keywords digital transformation, digital, energy, twin or transition is overrepresented among the delayed measures, but not among the measures not completed.

To some extent, the slow progress of construction projects can be explained by local governments' inability to effectively administer these projects. One explanation for the overrepresentation of certain kinds of reforms and investments in the delayed or not completed categories is that responsible authorities face unexpected hurdles or limits on their capacity to implement these measures. It might also show that authorities need to increase their capacity to plan implementation properly. Deployment of the RRF may well be an opportunity for some local governments to build expertise and increase their effectiveness.

Table 3
Areas with bottlenecks in recovery and resilience implementation, 2020-2024

	Infrastructure	Infrastructure | Build	Municipal | Authority	Solar | Wind | Hydrogen	Digital transformation	Digital | Energy | Twin | Transition
Total	11.8	19.7	10.7	4.5	3.1	31.0
Delayed	15.6	28.1	11.5	8.3	4.2	36.5
Not completed	15.9	22.3	13.0	6.2	2.3	29.5

Source: *EIB staff calculations based on EU members' data on RRF implementation.*
Note: *The calculation is based on text search with the keywords indicated in each column.*

The Recovery and Resilience Facility is an unprecedented, large-scale experiment that may have a lasting impact on the economy and how economic policy is implemented. With two years remaining for implementation and 60% of the resources yet to be distributed, much still needs to be done for the RRF. However, evidence that the gap between plans and action has stabilised is reassuring. Projects involving construction, like infrastructure, and those involving local authorities take longer to implement. As Box C illustrates, overcoming these challenges could improve the quality of government institutions.

RRF implementation has improved, underscoring the need to continuously evaluate and assess its progress. A common Europe-wide focus on reforms and investment has allowed public and private spending to accelerate in certain important areas of EU policy. Because the RRF is designed to be used in individual countries, it does not focus on financing cross-border projects. However, it has resulted in improving the ability of many countries to absorb and effectively utilise public funds and financing, as shown by the decrease in delayed measures reported. The system is also evolving over time. At the same time, interest is growing in financial instruments that can extend the life of the RRF.

12 Note that the overrepresentation is smaller when the description includes keywords like municipal or authority.

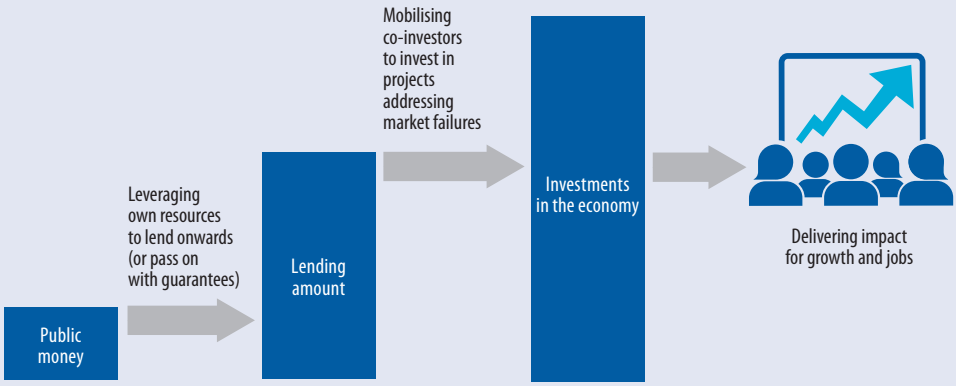
Box B

Leveraging public resources to support investment

At a time of enormous investment needs and limited resources, it is important to take stock of the experience that the European Union already has in leveraging public-sector resources to crowd in investment through public financial instruments or institutions. Magnifying the effect of limited public capital in this way works in three stages: leveraging public resources to enable lending, crowding in other investors to finance operations and, ultimately, delivering amplified impact in the economy.

Figure B.1

Using leverage to maximise resources



Source: *European Investment Bank.*
Note: *Indicative values only, depending on risk profile, product mix, market environment, additional EU support (especially guarantees), etc.*

1. **Leveraging public funds for lending:** Public resources can be used to provide guarantees, or channel equity into a purpose-created investment vehicle. This allows a financial institution to provide more loans, guarantees and equity products in turn. How much underlying capital can be directly leveraged depends on the risk profile of the operations and the financing provided. Riskier operations consume more capital and typically reduce the possibility of leveraging funding.

2. **Attracting co-investments:** To stretch the public resources leveraged in support of economic investments, other private and public investors should be crowded in to co-finance the operation directly. There are several ways in which financing can crowd in other investors, including by allowing institutions to pass on the longer maturities and lower interest rates they receive on their capital market financing, or by de-risking pre-bankable strategic technology investments. How much investment is supported in the economy through co-financing depends on factors like the nature of the financial products, the economic situation, risk perceptions, and specific features of the sector and project in question.

3. **Economic impact:** The supported investments have both direct and indirect effects on the economy. The direct effects of operations encompass their impact on the local economy and other regions through inputs like labour employed during project implementation. Indirect effects include the induced effects on the economy, such as higher productivity (EIB, 2022a).

The degree to which public capital can be leveraged, the amount of co-financing that can be crowded in, and the final impact of financed activities depend on a number of factors.[13] There is a trade-off between derisking and volumes that can be reached by optimising the public financial institution's balance sheet. Blending operations that bring in private financing often use financial instruments classed as riskier investments (such as first-loss provisions, mezzanine tranches and guarantees), with implications for the financial institution's asset quality and for how much funding can be drawn from capital markets. More financing can be crowded in from private investors where there is greater uncertainty or risk associated with the private investment, including in periods of adverse macroeconomic volatility. The higher quality the technical planning and implementation of investment, the greater its positive impact on economic activity (Chakraborty and Dabla-Norris, 2011; Pritchett, 2000). The extent of market needs matters, too. Countries with a low initial stock of public capital have been found to have significantly higher public investment multipliers than countries with a high initial stock (Vegh et al, 2019).

The European Union has experience with several instruments that leverage public sector money to mobilise private investment. For example:

- The EIB Group, an institution created through capital contributions from EU members, uses its own resources to issue bonds in the market and support investment. Own funds of the EIB Group (made up of the European Investment Bank and the European Investment Fund) of some EUR 81 billion are leveraged to a signed loan, guarantee and equity portfolio of more than EUR 625 billion. For this, it issues bonds to support its lending and equity investments, largely drawing from private investors (three-quarters from fund managers/insurers/pension funds and bank treasuries). Most of these investors are in Europe (two-thirds), but some are abroad (one-third) (EIB, 2023).

- The European Fund for Strategic Investment (EFSI) was created at the time of the Juncker plan. EFSI supplemented the EIB Group's own resources with a specialised instrument designed to support investment. EFSI allocated resources in the form of a guarantee to the EIB Group, expanding the group's operations and providing countercyclical support to the EU economy. Public funding of EUR 21 billion initially, later increased to EUR 33.5 billion, was mobilised in a way that enabled the EIB Group to approve EUR 96.8 billion of financing by the end of 2022. This supported total investment financing in the EU of over EUR 500 billion (EIB, 2022b). How much investment can be supported depends on the risk of the underlying investments, and the need in the economy.

- InvestEU is another initiative designed to leverage EU budget resources. At the core of InvestEU are guarantees from the EU budget of EUR 26.2 billion. These funds are used to back investments that are being financed by implementing partners, such as the EIB or government agencies. InvestEU builds on the successful model of the Juncker plan and various earlier EU financial instruments, making it simpler, more efficient and more flexible for European companies and projects to get funding. The InvestEU guarantee increases the risk-bearing capacity of the implementing partners, and will enable them to support at least EUR 372 billion in additional investments from 2021 to 2028. Every euro of this guarantee is expected to support EUR 14.2 of total investment, building on the ability of implementing partners to raise funds and encouraging the co-financing of investment priorities through public and private sources (European Commission, 2022).

13 These outcomes depend on a range of variables, as well as regulatory capital requirements, mandatory buffers, etc. See, for example, Basel III https://www.bis.org/publ/bcbs189.pdf, https://finance.ec.europa.eu/regulation-and-supervision/financial-services-legislation/implementing-and-delegated-acts/capital-requirements-directive-crd-4_en

At a time when EU investment needs are high, EU members should continue to build on past experience in leveraging public resources, making the most efficient use of the EU budget to bring in private resources in support of EU investment priorities.

Box C

Interactions between institutional quality and public R&D spending to support private investment

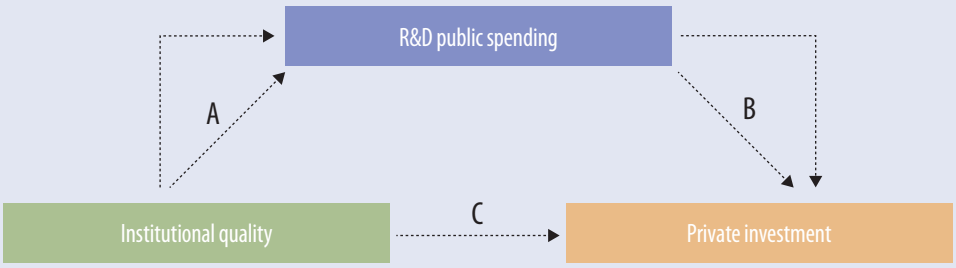
The Draghi report (Draghi, 2024) emphasised the need to mobilise public and private resources in a way that generates large investments. However, the public sector also needs to help create a business environment that provides the right incentives for private investors. Recent research has examined how public and private investment complement each other, and this box looks at these interactions from a new perspective (EIB, 2024).

Public support for R&D is important considering the external factors and market failures associated with innovation and knowledge creation. This is especially true in the European Union, where private R&D spending by one country might impact developments in other countries or across the broader European Union. That is why R&D is among the more frequently mentioned European public goods (Fuest and Pisani-Ferry, 2019). The Letta (Letta, 2024) and Draghi reports call for stronger support for R&D. Less than one-tenth of support for R&D comes from EU programmes, with the rest coming from individual countries, which compete with one another to some extent (Draghi, 2024).

If governments can create an environment that fosters private initiatives, such as a good judicial system, contract enforcement and a general rule of law, the corporate sector can better plan and implement private investments (Figure C.1, path C). Good institutions also enable authorities to plan spending in the long term, beyond the political cycle, including for higher education and R&D (see Figure C.1, path A). This, in turn, can further support private investment by making it easier for firms to find the skills they need, and by producing R&D successes they can benefit from (see Figure C.1, path B). Institutions can thus shape private investment in two ways: directly and through public investment in R&D.

Figure C.1

Impact of institutional quality on private investment mediated through public R&D spending

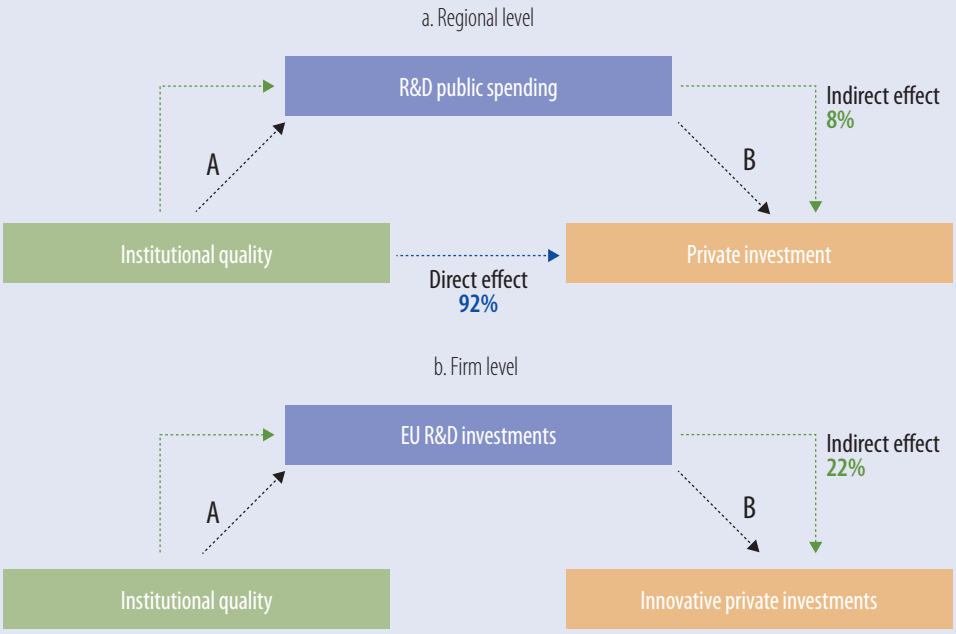


Source: *European Investment Bank.*

Improving institutions and increasing public R&D spending have a positive and significant impact on private investment, based on analysis of aggregate data on R&D public spending, private

investment and institutional quality.[14] The results also confirm the strong influence institutional quality has on public R&D expenditure – meaning the indirect impact it has on private investment. The ratio of indirect effects to total effects is 0.08, meaning that 8% of the effect of the change in the institutional quality index on private investment is mediated by public R&D expenditure. This shows that quality of institutions matters in maximising the impact and catalytic effect of public intervention in R&D.[15]

Figure C.2
Drivers of private investment



Source: *Eurostat, Annual Regional Database of the European Commission (ARDECO), University of Gothenburg, EIB Investment Survey, the European Commission's Kohesio database and EIB staff calculations.*
Note: *The two illustrations represent the direct and mediated effect of institutional quality on private investment, highlighting the relative coefficient. Panel a uses aggregated regional data, and panel b uses disaggregated firm-level data.*

When the analysis is repeated using firm-level data on private investment for innovative products and NUTS 3-level data on EU investment in R&D, the results confirm the direct and indirect impact of institutional quality on private investment.[16] The ratio of the indirect effect to the total effect is 0.22, meaning that about 22% of the effect of institutional quality on private investment is mediated by EU funding for R&D in the NUTS 3 region where the firm is located. A direct relationship between institutional quality (which is measured at the NUTS 2 level) and the firm-

14 The statistical analysis uses mediation to explore the underlying mechanism by which institutional quality and public investment in R&D influence private investment. Eurostat data for gross domestic expenditure on research and development is used for public R&D spending, private investment at the regional level comes from ARDECO (Joint Research Centre of the European Commission, taking investment at constant prices by branches and subtracting O-Q NACE categories from total investment to get the proxy for private investment), and data on the European quality of government index comes from the University of Gothenburg (2010, 2013, 2017, 2021 and 2024 editions).

15 Public investment can also have an impact on institutional quality. Planning for the long term, and using public resources prudently and efficiently may also help authorities improve their capabilities. In this case, public R&D promotes private investment directly through the channels described above, and indirectly through its impact on local authorities' capabilities. Findings confirm this relationship between public investment in R&D and institutional quality as well, showing partial mediation with a smaller effect.

16 The data source for firm-level investment is the EIB Investment Survey (Question 18: What proportion of the total investment was for developing or introducing new products, process or services?). For EU funding in R&D, it is the Kohesio database (data on the NUTS 3 level covering the 2014-2021 period of the multiannual financial framework).

level figures is difficult to establish. However, there is a clear relationship between institutional quality and public investment in R&D, and this investment clearly has a positive impact on corporate decision-making.

It seems obvious that better institutional quality would result in better use of scarce public resources. However, the analysis sheds light on a further element: Institutional quality is crucial to enhancing the spillover effects from public intervention in R&D to overall private investment. The relationship between institutional quality and public intervention may not be sufficiently appreciated in the policy debate.

EU funds play a significant role in sustaining government investment

When recovery and resilience funds expire in 2026, some EU members may struggle to replace EU support for government investment with their own resources. With a financing budget of EUR 650 billion, the RRF is a powerful policy tool that has been instrumental in boosting government investment in the European Union over the past two years (EIB, 2024). The RRF will expire at the end of 2026, with no apparent successor programme. Many fear a drop off in government investment in some EU members after 2026.[17] And yet there is no publicly available estimate of how much RRF funds are contributing to government investment. We have therefore estimated this contribution, using data for the hundred largest beneficiaries of the RRF in each EU country. These data are reported and updated continuously on the European Commission's Recovery and Resilience Scoreboard. According to our calculations, government investment in several EU members has benefited substantially from RRF financing.

The estimated share of government investment financed with recovery and resilience funds over the current EU budget cycle varies widely across countries. We classify private and public beneficiaries to disentangle public investment from capital transfers.[18] The estimated share of public investment financed with RRF funds over the multiannual implementation period is large in some countries, ranging from 0.1% for Luxembourg to 60.2% for Greece (Table 4).

In countries in Central and Eastern Europe, EU resources contributed almost one-third of total government investment. Using the methodology outlined in the data annex of this report, we calculate the share of government investment financed by EU cohesion policy. According to these estimates, EU cohesion policy provides significant support for government investment in Central and Eastern Europe, ranging from 8.8% in Slovenia to 44.4% in Bulgaria (Table 5). Although smaller, this support remains significant in Southern European countries, ranging from 6.6% in Italy to 33.8% in Greece. Its contribution to government investment in Western and Northern Europe is, however, marginal: between 0.1% in Austria and the Netherlands and 1.2% in Germany.

These differences stem not only from the varying levels of cohesion funds allocated to each country, but also the ways each country uses the funds. Countries in Central and Eastern Europe are more likely to use EU funds to finance government investment. Slovenia uses 56% of its allocated EU funds for government investment, and Romania uses 81.2%. Countries in Western and Northern Europe use a smaller share of their EU funds for government investment, ranging from 13.5% in Austria to 51.5% in France.

17 Bear in mind that implementation of the 2021-2027 multiannual financial framework began with a larger delay than usual, and that by end-2024 only 10% of the total resources had been spent. The remaining resources should at least partially alleviate a drop off in government investment.

18 In this classification, we use artificial intelligence, a repository of legal entities per country, internet research and expert judgement. It is based on several assumptions. First, although we can determine whether a funding recipient is a public-sector operator or a private undertaking, we cannot specify whether it benefits from public investment and government expenditure. Therefore, the final evaluation of the RRF's potential contribution to public investment is an upper bound. Second, when a recipient benefits from multiple measures, the amounts are not broken down by measure. Third, we use data from the list of the hundred largest beneficiaries, and not population data, and can therefore only assume that the real total share of public investment financed with RRF funds is similar to that for the hundred largest beneficiaries.

Table 4

The potential role of the Recovery and Resilience Facility in supporting public investment

	Public GFCF over six years	Hundred largest beneficiaries of RRF funds	RRF funds classified as public investment*	RRF allocations overall	RRF allocations considered as public investment	Public GFCF funded through RRF
	EUR bn	%	%	EUR bn	EUR bn	%
Austria	93.9	98.3	28.6	4.0	1.1	1.2
Belgium	95.6	82.7	63.7	5.3	3.4	3.5
Bulgaria	15.3	73.7	37.9	5.7	2.2	14.1
Croatia	21.7	98.7	42.6	10.0	4.3	19.7
Cyprus	5.4	97.6	80.4	1.2	1.0	18.2
Czechia	80.4	92.5	92.7	9.2	8.6	10.6
Denmark	72.5	57.3	36.4	1.6	0.6	0.8
Estonia	13.1	54.6	91.3	1.0	0.9	6.7
Finland	69.9	100.0	46.3	1.9	0.9	1.3
France	678.3	99.8	99.3	40.3	40.0	5.9
Germany	642.9	91.2	28.9	30.3	8.8	1.4
Greece	48.7	70.1	81.5	35.9	29.3	60.2
Hungary	57.5	100.0	63.9	10.4	6.7	11.6
Ireland	68.7	99.4	98.4	1.2	1.1	1.7
Italy	362.0	100.0	90.4	194.4	175.7	48.6
Latvia	11.8	99.9	80.2	2.0	1.6	13.4
Lithuania	15.7	76.8	47.3	3.9	1.8	11.6
Luxembourg	21.1	100.0	30.8	0.1	0.0	0.1
Malta	4.0	69.0	72.5	0.3	0.2	5.9
Netherlands	191.9	94.9	70.1	5.4	3.8	2.0
Poland	201.6	100.0	21.0	59.8	12.6	6.2
Portugal	41.2	100.0	65.2	22.2	14.5	35.1
Romania	87.4	100.0	97.7	28.5	27.9	31.9
Slovakia	27.1	100.0	91.9	6.4	5.9	21.7
Slovenia	18.5	100.0	86.2	2.7	2.3	12.5
Spain	241.3	99.0	79.5	163.0	129.6	53.7
Sweden	163.4	96.9	55.8	3.4	1.9	1.2

Source: *The annual macro-economic database (AMECO) of the European Commission's Directorate General for Economic and Financial Affairs, RRF scoreboard.*

Note: *The six-year public GFCF period is for 2020-2025 (the latest six-year period available, including forecasts). The RRF implementation runs from February 2021 to the end of 2026. Classified projects are those in which the beneficiary is identified (private or public). The remaining projects are discarded for the purposes of the calculations. *The percentage is for the hundred largest beneficiaries.*

Adding up the estimated shares of recovery and resilience and EU cohesion funds reveals that a number of countries rely heavily on EU financing for government investment (Figure 11). Countries in Central and Eastern Europe and in Southern Europe rely significantly on EU funds to finance government investment. According to our estimates, over the past two years, Greece has funded nearly

all its government investment with EU funds. Bulgaria, Croatia, Italy and Spain have financed more than half of their government investment programmes with EU funds. In the case of Greece, Italy and Spain, most funds came from the RRF. The RRF will come to an end just as the European Union begins to enforce tighter fiscal rules under its new governance framework. As a result, government investment could be underfunded in these countries.

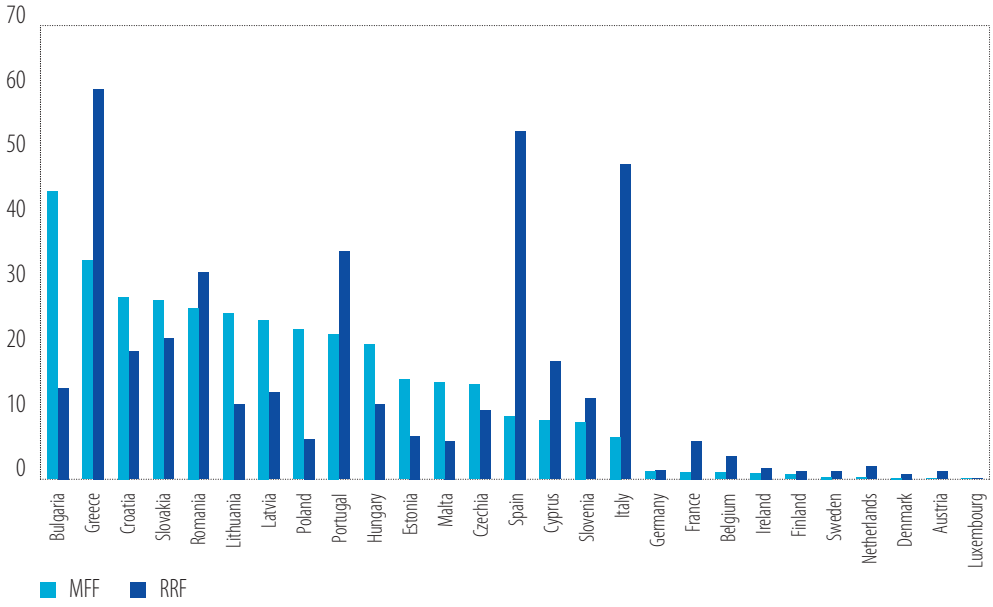
Table 5

The potential role of the current EU budget in supporting public investment

Public GFCF	A	B	C	D	E	F
	Seven years of GFCF (from AMECO) (EUR bn)	Cohesion policy funds 2021-2027 (EUR bn)	Share of investment financed by national governments	Weights of EU cohesion policy on public investment ((100-C)*B/A)	Proportion of cohesion policy funds that can be considered as investment	Adjusted weight (D*E)
Austria	106 300	2 888	63.1%	1.0	13.54%	0.1
Belgium	108 100	5 740	56.4%	2.3	43.78%	1.0
Bulgaria	17 400	12 900	17.0%	61.5	72.14%	44.4
Croatia	24 200	10 236	14.9%	36.0	78.26%	28.2
Cyprus	6 000	1 487	34.9%	16.1	56.26%	9.1
Czechia	90 300	26 711	21.2%	23.3	62.64%	14.6
Denmark	82 500	941	51.5%	0.6	27.94%	0.2
Estonia	14 600	5 187	35.0%	23.1	66.58%	15.4
Finland	80 400	3 173	38.9%	2.4	30.76%	0.7
France	779 500	28 600	41.3%	2.2	51.45%	1.1
Germany	726 600	39 429	49.6%	2.7	42.45%	1.2
Greece	53 200	25 734	20.2%	38.6	87.50%	33.8
Hungary	66 700	26 136	16.9%	32.6	63.96%	20.8
Ireland	76 800	2 131	53.6%	1.3	76.06%	1.0
Italy	403 500	74 067	43.1%	10.5	62.69%	6.6
Latvia	13 400	5 215	15.0%	33.1	74.31%	24.6
Lithuania	17 200	7 831	19.9%	36.5	70.42%	25.7
Luxembourg	23 700	87	57.5%	0.2	72.34%	0.1
Malta	4 600	1 199	35.5%	16.8	88.79%	14.9
Netherlands	219 600	3 495	55.9%	0.7	35.26%	0.2
Poland	224 500	92 026	18.0%	33.6	68.83%	23.1
Portugal	45 100	30 895	26.8%	50.1	44.78%	22.4
Romania	95 200	45 080	31.3%	32.5	81.20%	26.4
Slovakia	30 600	16 147	22.0%	41.2	66.97%	27.6
Slovenia	20 400	4 516	28.2%	15.9	55.66%	8.8
Spain	268 600	52 628	32.4%	13.2	73.69%	9.8
Sweden	186 700	4 026	57.2%	0.9	37.33%	0.3

Source: *European Commission's AMECO dataset and EIB staff calculations based on the Kohesio dataset.*
Note: *The proportion of a project's expenditure classified as public investment in the Kohesio database is used to determine the weight of the cohesion policy contribution to public investment for 2021-2027.*

Figure 11
Potential annual contribution of EU funds to public investment (% of total)



Source: *EIB staff calculations based on the Kohesio dataset and the RRF scoreboard.*
Note: *This graph combines the information contained in tables 4 and 5 above. MFF stands for multiannual financial framework, the seven-year EU budget.*

Transitioning to the new fiscal rules may take a toll on government investment

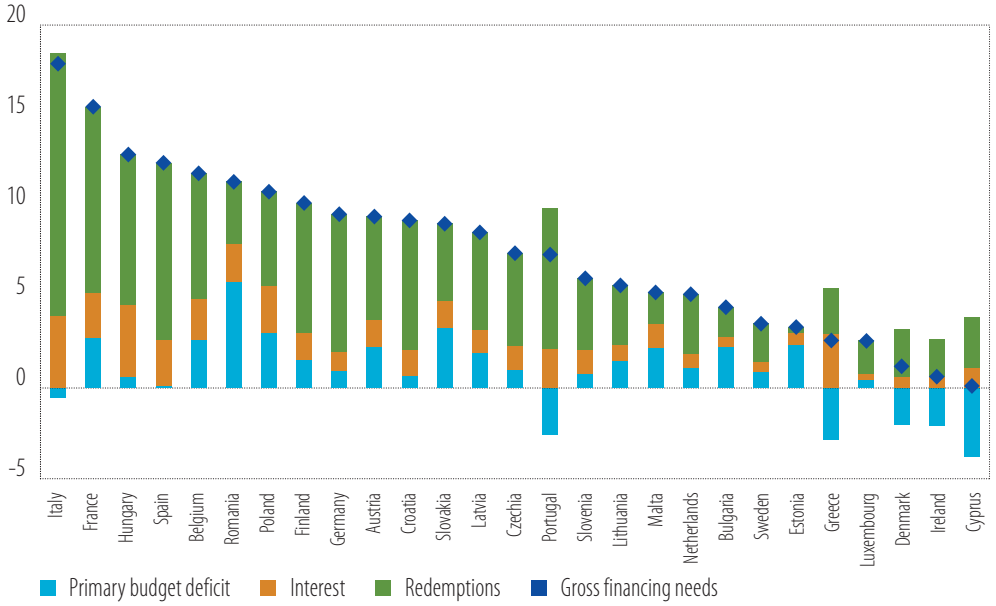
EU gross government debt stood at 80.8% of GDP at the end of 2023, 3.5 percentage points higher than in 2019, prior to the COVID-19 crisis. Aggregate debt in the European Union increased during the COVID-19 crisis to 89.5%, and subsequently fell from 2021 to 2024, declining 6 percentage points of GDP. High inflation in 2022 and 2023 helped erode some of the debt. More concerning than the overall debt surge are the wide differences in debt among EU members, especially the large ones. Debt-to-GDP ratios range from 23% in Estonia to 153% in Greece.

In 2023, 11 EU members reported a budget deficit above 3% of GDP. The COVID-19 crisis and the energy crisis deteriorated the finances of many EU governments, weakening their ability to adapt to overhauled EU fiscal rules. Consequently, many government budgets are under pressure, especially since the revised EU economic governance framework entered into force in April 2024.

Higher borrowing costs are making it difficult for countries to get their finances in order. Gabriele et al. (2017) argue that high debt is easier to sustain if it does not generate substantial financing needs, emphasising that debt needs to be rolled over easily if it is to remain sustainable. Several EU governments will need to raise significant funds in 2025 (Figure 12) – for one of them, close to 20% of GDP. Debt rollovers are also likely to come with interest rates that are still relatively high. While the European Central Bank has a set of instruments to address diverging bond yields in euro area members, the soaring cost of debt poses a risk to EU governments' ability to strengthen their finances while continuing to invest in the short and medium term.[19]

19 The Transmission Protection Instrument is a bond-buying scheme by the European Central Bank that is designed to prevent the spread in borrowing costs between euro-area governments from widening too much. The instrument also counters unwarranted and disorderly dynamics in sovereign debt markets that threaten the transmission of monetary policy across the euro area.

Figure 12
Gross financing needs of EU governments for 2025 (% GDP)



Source: *Bloomberg and the AMECO database.*

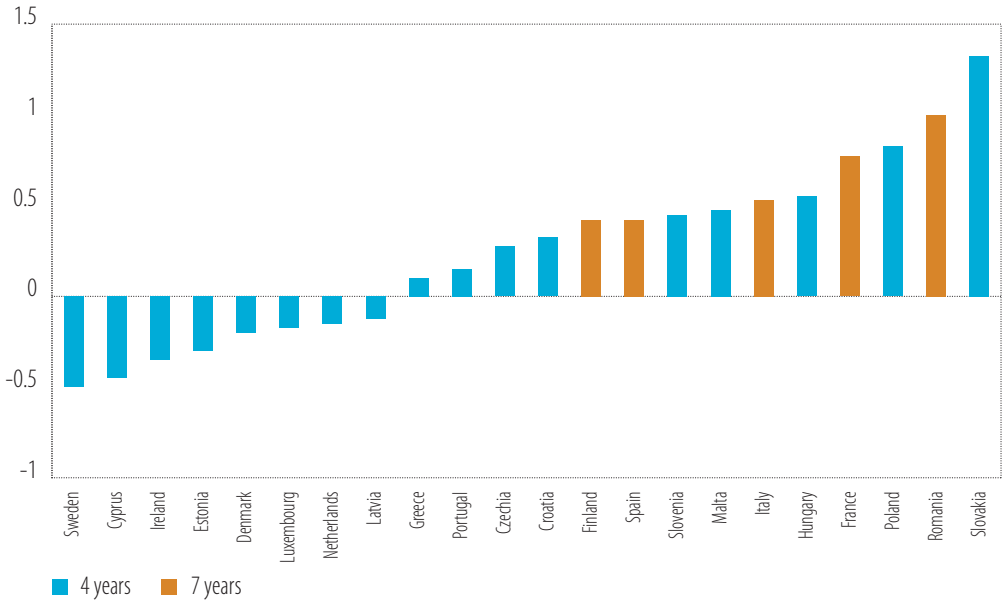
The recent reform of the Stability and Growth Pact improved its design and provides more safeguards for public investment. The reformed pact now highlights a single operational indicator, focuses on finances in the medium term and includes more ways for individual countries to fiscally adjust. The revised framework aims to safeguard reforms and investment in strategic areas. Each EU member should present a structural plan for the medium term that sets out its fiscal path, as well as priority public investments and reforms that function together to ensure gradual, sustained debt reduction and sustainable, inclusive growth.[20]

The new fiscal framework allows countries to adjust their finances more gradually, shielding government investment. The newly agreed fiscal rules allow governments to extend the fiscal adjustment period from four years to up to seven. To qualify for an extension, a country must carry out significant reforms and investments that enhance its growth potential, improve resilience and support fiscal sustainability. In addition, the reforms and investments must serve common EU priorities, such as the green and digital transitions, social resilience and other strategic objectives. Darvas et al. (2024) estimate that for several countries, extending the adjustment period from four years to seven years would allow for an average annual adjustment that is 0.5% of GDP smaller.

Of the countries that met the deadline for submitting their plans, only five have taken advantage of the new investment-friendly provision in the EU fiscal rules (Figure 13). Darvas et al. (2024) warn that the strong incentive for investment and reforms provided by the extension of the adjustment period may be undermined by the minimum adjustment requirements. For instance, if a country is under an excessive deficit procedure, the minimum average annual adjustment is 0.5% of GDP, which is still quite demanding. Furthermore, the provisions require countries to sustain investment levels they had during the RRF, even after the facility ends in 2026. Countries that have taken large RRF loans to finance government investment will find it difficult to maintain this level of investment.

20 The reference trajectory covers an adjustment period of four years. The adjustment period can be extended by up to three years if the EU member underpins its national medium-term fiscal-structural plan with a set of verifiable reforms with clear deadlines and investments that align with certain recommendations, including with respect to country-specific investment priorities. Countries requesting an extension must not allow nationally financed public investment to fall below the level attained in the years preceding the start of the plan.

Figure 13
Average annual change in EU members' structural budget balance (% GDP)



Source: *National medium-term structural plans available as of 6 February 2025, and EIB staff calculations.*
Note: *Calculations use the projected structural budget balance under the baseline adjustment scenario submitted in national medium-term plans.*

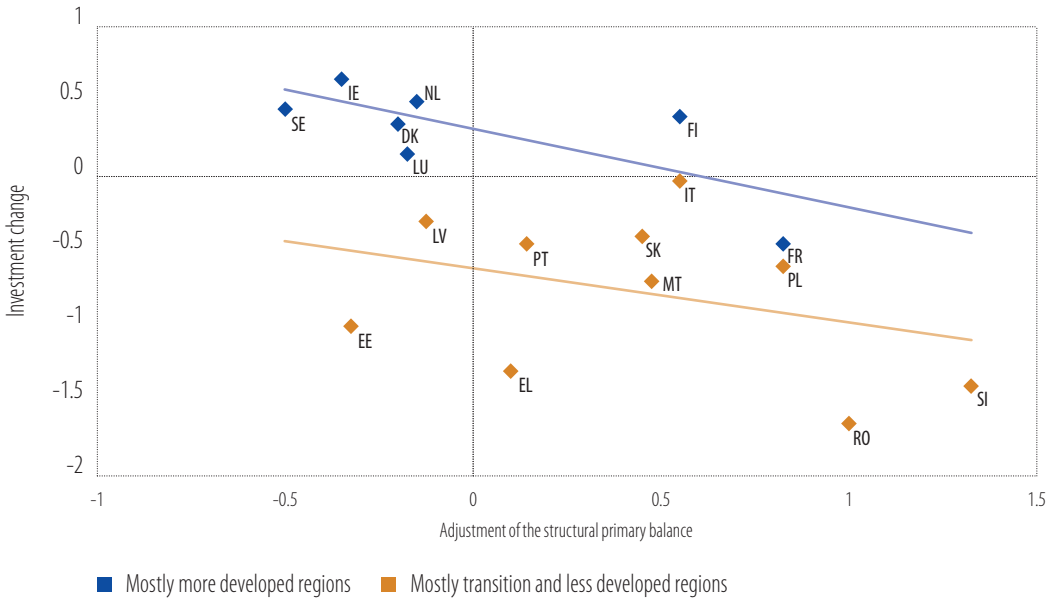
The required fiscal adjustment is substantial for some countries (Figure 13). Four EU countries must increase their structural primary balances by more than 3% of GDP over the adjustment period. This is a significant fiscal adjustment. Experience shows that governments tend to sacrifice investment when they are forced to choose between spending for the long term and more immediate constraints on public finances (Larch and van der Wielen, 2024). Kolev and Schanz (2024) find that countries that announce a fiscal consolidation equal to 1% of GDP reduce government investment by 4% after four years.

The size of fiscal adjustments is thus negatively associated with projected government investment – but European funds might help neutralise part of this effect (Figure 14). National medium-term fiscal-adjustment plans also contain projections on the share of government investment that will be financed with national funds during the adjustment period.[21] This allows the average annual fiscal adjustment to be assessed according to the impact on government investment, comparing the period after the RRF expires in 2026 with the years of RRF financing (2023-2024). Countries expecting larger adjustments will cut nationally financed government investment more. While this is sobering news, there is a silver lining. Countries that project the largest declines in government investment actually finance large shares of that investment with EU structural and cohesion funds (Table 5). Thus, even if nationally financed government investment is low, overall government investment will likely be closer to the average in 2023-2024. For instance, the projected decline in Greece and Romania is more than offset when the share of government investment financed with EU funds is taken into account.[22]

21 Not all national medium-term fiscal-structural plans include such a projection, however. Of the 21 countries that submitted these plans before 9 November 2024, only 17 contain a projection of nationally financed government GFCF for the adjustment period.

22 Assuming that the historical share of government investment financed with EU funds remains the same after 2026.

Figure 14
Fiscal adjustment and change in government investment (% GDP)**, 2023-2028**



Source: *National medium-term fiscal-structural plans and EIB staff calculations.*
Note: *The investment change is calculated as the difference between the projected average, nationally financed government investment for the post-RRF period 2027-2028 and the average total government investment for the period 2023-2024, expressed as a percent of GDP. The adjustment of the structural primary balance is the average annual adjustment that each country proposed in their medium-term fiscal-structural plans for the four- or seven-year period of adjustment starting in 2025.*

Although fiscal rules do not reduce government investment in the long term, the reintegration of the fiscal framework might force countries to make difficult trade-offs in the short term. The academic literature finds that, on balance, fiscal rules do not negatively affect government investment.[23] In the European Union specifically, compliance with the commonly agreed fiscal rules is not the problem. On the contrary, governments that follow fiscal rules have the space to spend on investment (Larch and van der Wielen, 2024). This assessment is based on more than 25 years of compliance with fiscal rules in the European Union. In 2025, however, EU governments will have to make a big adjustment. Fiscal rules have been suspended for five years, and during that time government deficit and debt rose sharply in most EU economies. This transition presents difficult trade-offs, especially for those countries with high debt and deficits.

Government investment in human capital

EU governments invest significant resources in improving people's skills and knowledge, as human capital is a key driver of competitiveness. Human capital can be defined as the skills, knowledge, experience and attributes of individuals that can be used to create economic value. Human capital is thus inherently private property that provides private economic returns to its owner. For that owner, higher human capital leads to higher lifelong earnings and a lower likelihood of spells of involuntary unemployment (Becker, 1962). But in addition to these private returns, human capital accumulation has positive effects for the aggregate economy (Fournier, 2016). Investing in education and health improves the productivity of the workforce, leading to higher economic output and growth. A healthier, more

23 See Brändle and Elsener (2024) for a recent review.

educated population is better positioned to innovate, adapt to modern technologies and perform efficiently. Countries with higher levels of human capital are better placed to attract investment and create high-value industries. A more productive workforce generates higher tax revenues and reduces the need for social welfare programmes, yielding long-term fiscal benefits. All of this is crucial for maintaining and enhancing a country's competitive edge in a globalised economy.

The gains for society go beyond economic benefits. Enhancing human capital can break the cycle of poverty and help reduce inequalities, ensuring that all people can succeed regardless of their socioeconomic background. It reduces the burden of disease and increases life expectancy, bringing down future healthcare costs. Investment in human capital also contributes to social stability by reducing crime rates and promoting civic engagement. Educated individuals are more likely to participate in democratic processes and contribute positively to society (Ponzetto and Toriano, 2014).

When investing in human capital, governments create a virtuous cycle of growth, equity and stability that benefits society as a whole. Individuals may not invest enough in their own education or health due to a lack of information, financial constraints or underestimating the long-term benefits. The existence of these market failures further strengthens the case for government involvement, which can help correct these failures through a wide range of policies, including direct expenditure. This section reviews the role of governments in human capital investment in the European Union. It starts with a comparison of government spending in health and education – two major determinants of human capital – across EU members and major economies outside the European Union. An analysis of the effectiveness of government spending shows that the quality of institutions matters.

EU governments spend heavily to develop human capital

A portion of current government spending contributes to investment in human capital. In a narrow sense, the term "investment" refers to spending to acquire fixed assets. But some current government expenditures could also be considered investment, as they directly or indirectly finance human capital accumulation. In the European Union, investment spending only makes up about 5% of total government expenditure on health and education. Buildings and equipment alone cannot provide education and health services that build human capital – this requires government spending on the people and systems that provide health and education services as well. Similarly, as argued in Chapter 4, providing social and affordable housing goes beyond governments' buying and building dwellings. Housing also contributes to maintaining and enhancing human capital.

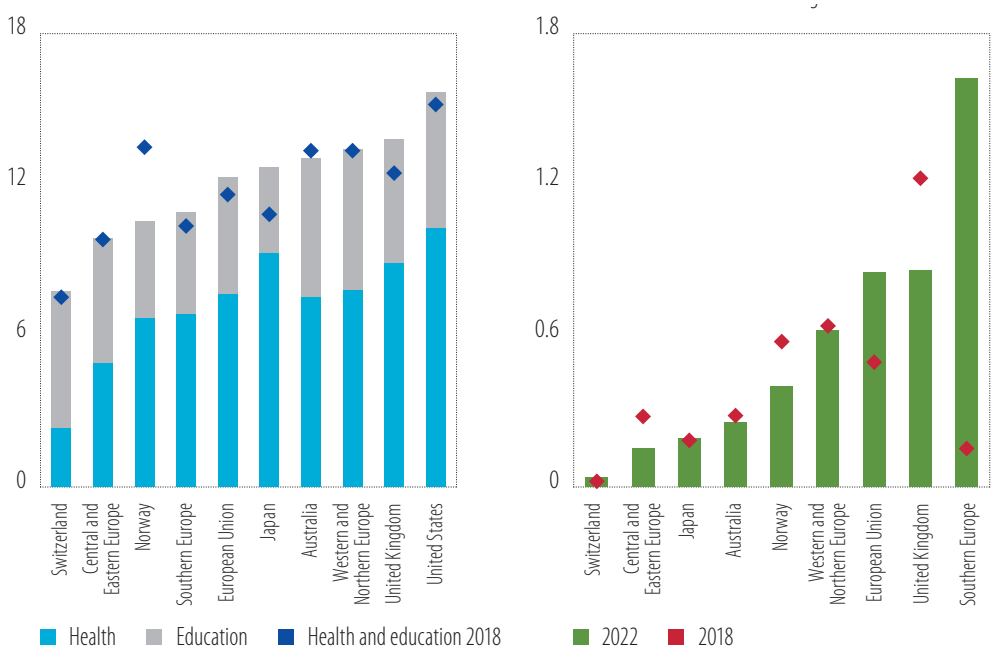
On average, government spending on health and education accounts for 12% of GDP in the European Union, with wide variation across EU members (Figure 15a). As a share of GDP, Sweden spends twice as much on health and education (14.2%) as Ireland does (7.4%). On average, EU members in Western and Northern Europe spend a higher share of GDP, while those in Central and Eastern Europe spend a lower share. The figures for Western and Northern Europe are comparable to other advanced economies, like the United Kingdom, Australia or Japan. In the European Union, health and education combined are the second-largest government expenditure, outpaced only by social security (19% of GDP). Outside the European Union, Japan, the United Kingdom and the United States spend more than the EU average on health and education, while Korea, Norway and Switzerland spend less.[24]

For the European Union, government spending on health and education has increased 0.7 percentage points of GDP from 2018 to 2022 (Figure 15a). Higher health spending in Southern Europe accounts entirely for the increase. Outside the European Union, government spending on health and education increased in Japan, Korea, the United Kingdom and the United States. While

24 The marked decline in Norway from 2018 to 2022 stems from high oil and gas prices in 2022, which lead to a 60% increase in GDP. Oil and gas constitute a substantial share of Norwegian exports.

governments in Japan and Korea increased spending on health and education, the increases in the United Kingdom and the United States went entirely to healthcare, while education spending declined.

Figure 15
Government spending on health, education and housing (% GDP)



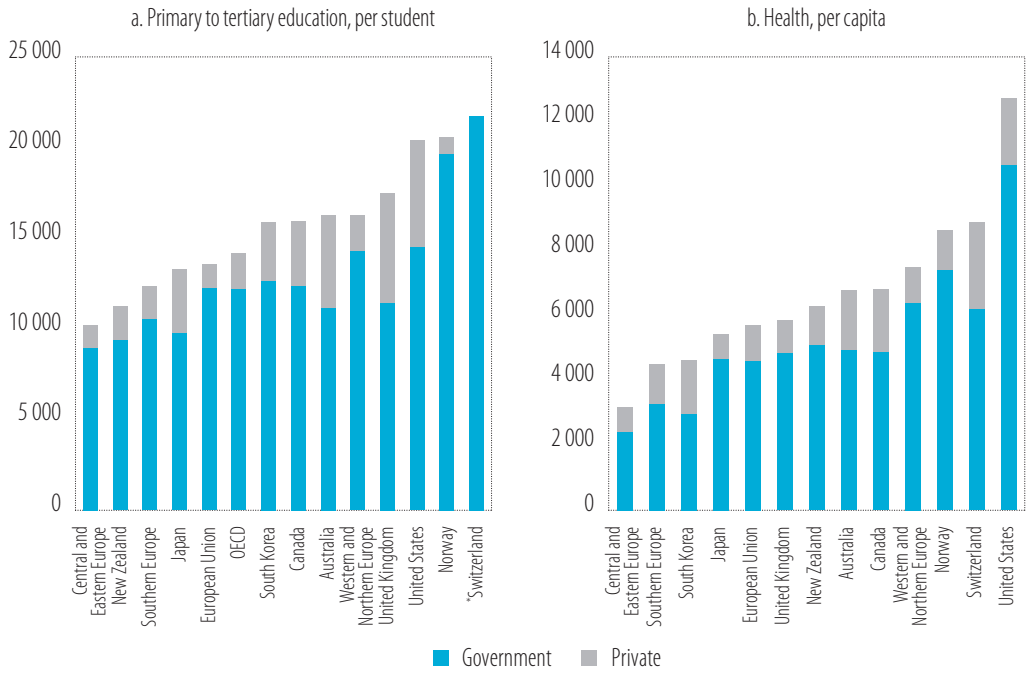
Source: *Eurostat and OECD government finance statistics.*
Note: *Education expenditure includes government spending on pre-primary, primary, secondary and higher education. Government spending on social and affordable housing here includes classification of the functions of government (COFOG) spending categories 6.1 Housing and community amenities: Housing development and 10.6 Social protection: Housing. For Greece, the data on total expenditure on housing are for 2019.*

Government expenditure on affordable and social housing in the European Union is slightly less than 1% of GDP (Figure 15, right panel). This spending varies substantially across the European Union. In 2022, spending in Italy was 30 times higher than in Slovakia, as a share of GDP. The second highest share, in France, is 12 times higher than in Slovakia. Outside the European Union, the share in the United Kingdom is roughly the same as the EU average. Other OECD countries for which data are available have substantially lower spending on housing as a share of GDP.

Average government spending on health and education per person in the European Union is among the highest in OECD member countries (Figure 16). EU government expenditure per capita on health and on education per student are topped only by those of Norway, the United States and Switzerland. Within the European Union, governments in Western and Northern Europe spend the most on health and education per person. Countries in Southern Europe and in Central and Eastern Europe spend the least, and less than most advanced countries outside the European Union.

Private spending on health and education in the European Union make up a smaller part of total expenditure (Figure 16), lower than in other OECD members. Private spending accounts for, on average, about 10% of total expenditure per student and 20% of total health expenditure per capita. Within the European Union, the variation is substantial. For education, figures vary between 3% in Finland and 17% in Spain. For health, the range is from 13% in Luxembourg to 38% in Greece. Private spending levels also differ substantially, ranging from USD 294 per student in Romania to USD 2 913 per student in the Netherlands for education, and from USD 438 per capita in Croatia to USD 1 740 per capita in Belgium for health.

Figure 16
Spending on education and health (PPP USD)



Source: *OECD education and health statistics.*
Note: *Education expenditure includes 2021 spending on primary, secondary and tertiary education per student. Private sector includes households and non-educational private entities. Government health expenditure is for 2021 and includes compulsory health insurance schemes. Private spending includes voluntary health insurance schemes and out-of-pocket expenditure. The lastest figures available for South Korea are for 2021. *Data for private education spending for Switzerland is missing. PPP stands for purchasing power parity.*

The effectiveness of government spending on human capital development

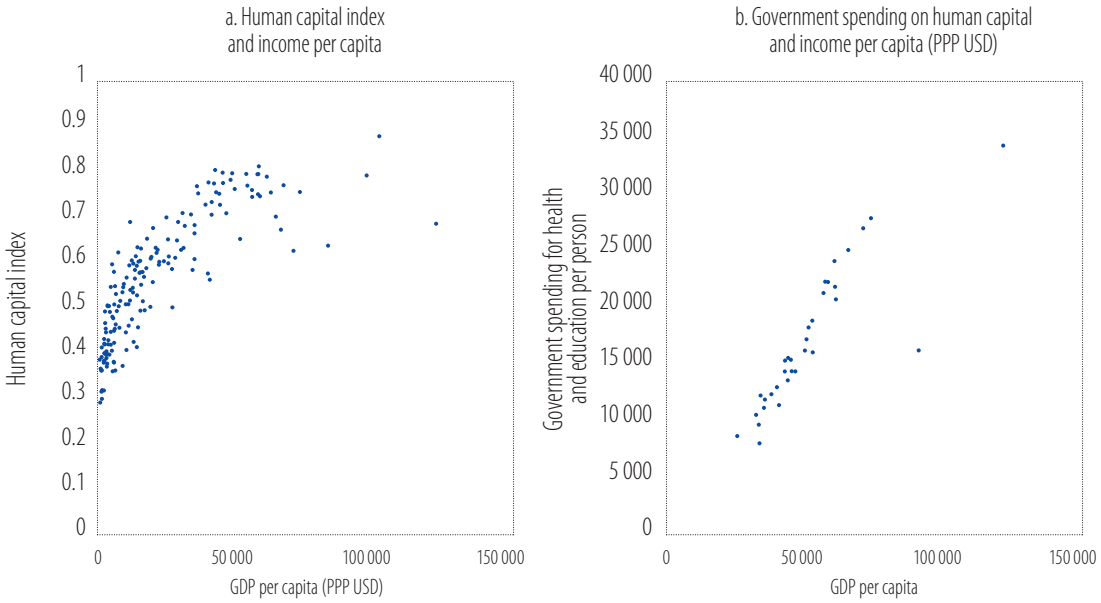
Higher income countries spend more to develop human capital, but human capital appears to disconnect from a country's income after a certain threshold (Figure 17). Human capital increases with economic development and the amount spent on health and education. The higher the income per capita, the higher government spending on health and education (Figure 17b) – per person and as a share of GDP. There is ample evidence in the literature that education outcomes in advanced countries are not well correlated with increased government spending on education.

Higher income is also associated with higher levels of human capital (Figure 17a). However, this relationship appears to be nonlinear. Below a certain income threshold, human capital levels increase quickly with income per capita. Above that threshold, however, the relationship is not so clear. Certain countries with income per capita of USD 50 000 to USD 70 000 have human capital indices that are lower than countries where income per capita is less than USD 20 000.

Comparing the effect of health and education spending on outcomes provides a way to compare the effectiveness of government spending. The vast literature on the effects of government spending on education finds that spending matters for learning outcomes, but that the relationship is not linear. The efficiency of government spending depends on teaching practices, school organisation and parental support (Hanushek and Kimko, 2000; Gundlach et al., 2001). Our intention in this report is not

to study such structural relationships, but rather to provide a benchmark for government spending on education and health in the European Union, comparing outcomes achieved per euro spent. To this end, we use data envelopment analysis techniques introduced in Farrell (1957).[25] This method provides a way to measure the efficiency of transforming inputs – in this case, the financing of the education or health system – into outputs. For outputs, we take outcomes that characterise human capital, like average scores on the OECD's Programme for International Student Assessment (PISA), the share of population with higher education, life expectancy at birth or the mortality rate of young children.[26] (See also Box D.)

Figure 17
Human capital, government spending and income per capita



Source: *Human development project and world development indicators, World Bank Group. OECD education and health statistics.*
Note: *Data for the human capital index is from 2020. GDP per capita is for 2019. Government spending for health and education is for 2021. PPP stands for purchasing power parity.*

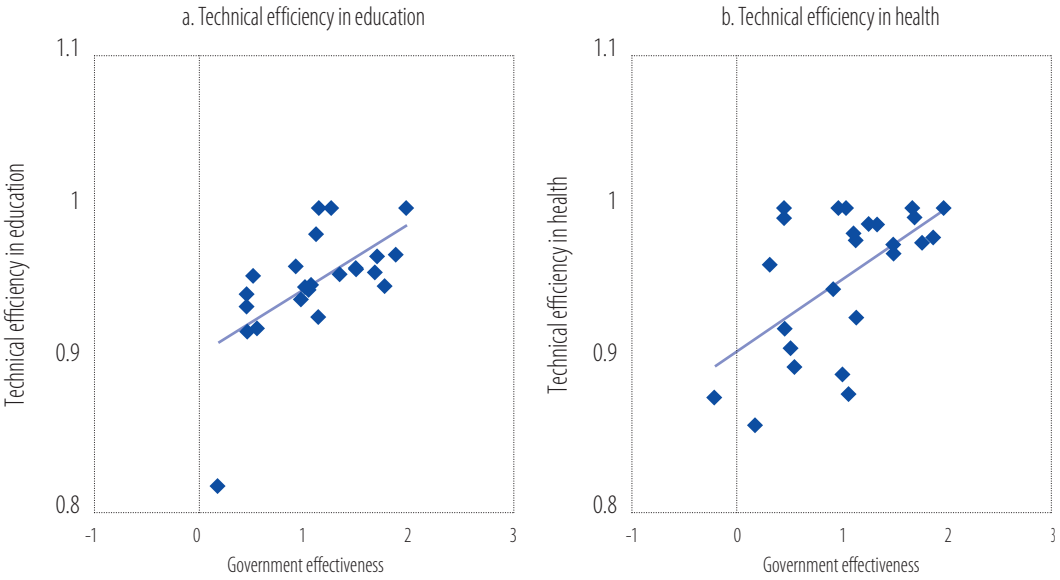
Comparing estimated efficiencies reveals that better outcomes are not necessarily more expensive. The data envelopment analysis (see Box D) shows that countries achieving the highest outcomes per euro spent are not necessarily those that spend the highest amounts per capita. By improving the efficiency of their spending, many countries could achieve better outcomes with little or no new spending, or could reduce their expenditure and still achieve the same outcomes. While the analysis provides no guidance on what underlies the efficiency of the best performers, it is worth noting that efficiency scores for education and health are positively associated with government effectiveness, as measured by the World Bank index of government effectiveness.[27]

25 An introduction to data envelopment analysis can be found, for instance, in Coelli et al. (1998).

26 PISA is an OECD programme that measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges. In 2022, 81 countries took part in the assessment. PISA scores and the other outcomes listed are standard in the literature. See for instance Afonso and St. Aubyn (2005).

27 According to the World Bank, the government effectiveness indicator captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Figure 18
Estimated technical efficiency is positively associated with measures of good governance



Source: *EIB staff calculations and the World Governance Indicators Database, World Bank Group.*
Note: *Technical efficiency is estimated using data envelopment analysis. See Box D for further information.*

The estimated efficiencies imply that, in aggregate, EU governments could save some 2.5% of GDP by becoming more effective in their intervention, without affecting human capital. If all EU governments increased their technical efficiencies in line with those achieving the highest outcomes per euro spent, the potential savings would be substantial, amounting to about three-quarters of total EU government investment. This number is clearly an upper bound, as improving government efficiency takes years and reforms are not easy to design, technically or politically. Nevertheless, striving to improve efficiency provides a viable alternative to addressing trade-offs when budgets are under pressure, especially in countries with severe fiscal constraints. As argued in Darvas et al. (2024), the combined effect of several reforms concerning social investment could substantially improve some countries' fiscal sustainability.

These findings add to the ongoing discussion on fiscal trade-offs. Consensus is building that EU governments must increase investment in fixed assets (Draghi, 2024). This, together with binding fiscal constraints, puts pressure on EU governments that face the difficult choice between increased government investment in fixed assets and increased, or at least sustained, government spending on human capital development. Finding ways to improve the impact and efficiency of spending could offset quantity. Spain's Inclusion Policy Lab is a leading example of evidence-based social policymaking.[28]

28 The Inclusion Policy Lab in Spain is an initiative of the Ministry of Inclusion, Social Security and Migration. Founded in 2021, the lab aims to strengthen social inclusion and generate scientific evidence to inform social policymaking. The lab has overseen the delivery and evaluation of 32 social inclusion projects, benefiting around 175 000 people directly or indirectly. These projects are linked to Spain's minimum income scheme, which has reached 2.2 million people. The Inclusion Policy Lab focuses on innovative social inclusion programmes and rigorous evaluations to understand what works best in reducing poverty and promoting social integration.

Box D

Linking government expenditure to human capital outcomes

We use data envelopment analysis to compare government spending on health and education against human capital outcomes. The analysis provides a simple, non-parametric technique for evaluating the efficiency of decision-making for certain groups, such as firms or government agencies. It assesses the relative efficiency (also called technical efficiency) of decision-making groups by comparing their ability to convert multiple inputs into multiple outputs. This is done without assuming any functional form of the distribution of inefficiencies or the production function.

The approach does not measure absolute efficiency. Rather, it constructs an efficiency frontier from the best decision-making groups in the sample, and uses this frontier to compare the efficiency of the other groups in the sample. The frontier can assess how much input can be proportionally reduced without changing output quantities, or how much output can be proportionally increased without changing inputs.

In our simple framework, we construct separate efficiency frontiers for the education and healthcare systems of EU members, similar to Afonso and St. Aubyn (2005). Because of missing data, we exclude from the sample Cyprus, Malta and Greece in the case of education, and Cyprus and Malta in the case of healthcare. In our simple model, the education and healthcare systems transform total expenditure in health and education, government and private, into outcomes related to human capital. Thus, the inputs in the production of human capital are expenditure on education per student and on health per capita in USD adjusted by purchasing power parity (PPP). Both expenditures are scaled by gross national income per capita to account for the effects of higher income on spending.

The model looks at outcomes related to human capital. For education, we take the simple average of PISA scores for mathematics, reading and science in 2015, 2018 and 2022, as well as higher, or tertiary, education attainment rates for 25- to 34-year-olds in these three years. For health, we use life expectancy at birth and child survival rate beyond 12 months from 2015 to 2021. These measures are standard in the literature and are also used in Afonso and St. Aubyn (2005). Efficiency frontiers are then calculated for each year, using a variable returns-to-scale technology.

Table D.1

Descriptive statistics of efficiency scores

	Minimum	First quartile	Median	Average	Third quartile	Standard deviation
Education	0.817	0.942	0.961	0.958	0.983	0.038
Health	0.857	0.937	0.980	0.965	0.996	0.037

Source: *EIB staff calculations using OECD education and health statistics.*
Note: *The statistics are computed over countries and years and are for output-oriented efficiency. The maximum efficiency is normalised to 1.*

The mean efficiency score in the education sector is 0.96. This means that, on average, countries achieve 4% less output with the same amount of inputs as the most efficient countries (Table D.1). The lowest score, 0.82, implies that the least efficient education system delivers outputs that are 18% less efficient than those of the most efficient countries, using the same amount of inputs.

While the range of efficiency scores in the health sector is not very different from that in the education sector, the distribution of efficiency scores differs substantially. It is more polarised than that of the education sector, in that it has more observations closer to the lower end and more observations closer the higher end of the distribution. Thus, a bigger divide exists in the efficiencies of EU health sectors. This divide is also regional. Countries in Central and Eastern Europe occupy the lower part of the distribution. While education is not as polarised, countries in Central and Eastern Europe still dominate the lower part of the distribution there, too.

Technical efficiency in both sectors is positively associated with the World Bank index of government effectiveness. This is the case even if we control for stable, quasi-fixed over time, country-specific characteristics and time trends (Table D.2). Without claiming causal effects, this correlation points to possible gains from reforms aimed at increasing government effectiveness in general, and at improving government spending efficiency in particular.

Table D.2

Association between efficiency scores and the World Bank's government effectiveness index: A two-way panel fixed-effects model

	Efficiency scores	
	Education	Health
Government effectiveness	0.032* (0.012)	0.011 (0.009)
	Fixed effects	
Country	Yes	Yes
Time	Yes	Yes
Sample size	72	175
R-squared	0.927	0.950
Within R-squared	0.084	0.014

Source: *EIB staff calculations using OECD education and health statistics and the World Governance Indicators database of the World Bank Group.*
Note: *Standard errors are clustered at country level. * denotes significance at the 5% confidence level.*

Finally, to quantify the aggregate effect of varying efficiencies across countries, we compute the savings gains if all countries were to achieve the same efficiency as the most efficient countries. To this end, we compute the aggregate EU ratio of extra inputs to GDP, or money needed to match the best in class, and average it over the years in the sample. Finally, assuming that the government share in total expenditure remains constant, we calculate the government share of savings as a percentage of GDP. We estimate that total savings for the European Union amount to some 2.9% of EU GDP and that the government share is 2.5%. This amount is of a similar magnitude as the GFCF of the general government in the European Union, which averaged some 3.4% of GDP over the past five years.

Government policies for affordable housing

Access to affordable housing can improve the allocation of human capital in the economy and thus raise productivity. Higher availability of affordable housing allows individuals and families to relocate more easily to areas with better job opportunities, improving overall job matching in the economy. It may also reduce the financial stress associated with high housing expenses, enabling workers to invest more in education and training, which enhances their productivity. By fostering a stable and skilled workforce, affordable housing could thus contribute to higher overall economic output and growth.

While direct government spending for affordable housing is small (Figure 15, right panel), other policies can be used to create a potentially powerful policy mix for housing affordability.

Despite the economic significance of housing, housing policies are still primarily considered social in character. Housing policy advocates make little use of the arguments articulated in urban economics and economic geography to support affordable housing. Instead, they mainly cite social and sustainability cases for intervention, such as health, environmental and climate protection, or energy conservation.

Reflecting the tendency to focus on social policies, affordable housing policies in the European Union are numerous and remarkably varied, and do not necessarily take into account the impact on competitiveness. Housing policies in Europe are formulated at all levels of government – local, regional, national and supranational. They target a wide range of affordability concerns, from assisting individual households with heating bills to incentivising multibillion-euro EU green development projects. They also use different tax, spending and regulatory tools. Variations across countries are significant. Almost all EU members apply a broad and comprehensive set of tools, but with different priorities that align with country-specific demographic, historical and sociocultural factors. Due to differences in homeownership and rental rates, two regional groupings with similar policies can be observed: approaches used in Western and Northern European countries, and those in Central and Eastern European and Southern European countries. Four policy clusters can be discerned in this complex landscape.[29]

Demand-side policies for market-based housing

Demand-side policies for the market-based housing approaches assist renters, prospective buyers and homeowners.[30] The main tools are rent controls and housing allowances. Rent controls typically address the initial rent levels, regular rent and cost increases; lease features (duration; deposit); tenant-landlord relations (restrictions on termination; notice periods); quality and maintenance standards; and, more recently, short-term holiday rentals. Although widely used, the administrative costs of rent controls and the ways they may disincentivise private investment in rental properties have not been systematically quantified.

Housing allowances use means- and/or income-related transfers to lower-income households to help them pay for rental and other housing costs. Eligibility is mostly based on a household's income, size, composition and housing costs. In most countries, housing allowances are designed as entitlement programmes, meaning that all applicants who meet the eligibility criteria receive the benefit, subject to available funding. The design of housing allowances has been the focus of much of the literature on housing affordability.

Homebuyers are some of the biggest beneficiaries of housing policies in the European Union. 18 EU members provide support, in the form of grants for the purchase or construction of a dwelling, preferential terms for mortgage loans, down payment assistance, mortgage guarantees or preferential tax treatment of housing saving schemes. Fewer countries support existing homeowners, and that support mainly includes deductions on mortgage interest payments and tax relief for specific groups (families with children, young families, elderly people, etc.).

The home ownership is associated with policy tools employed at the national level. Countries with large private rental sectors (France, Germany, the Netherlands, the Nordic countries, etc.) tend to have elaborate policies for rentals, while countries with high homeownership rates (Ireland and countries in Central and Eastern Europe and in Southern Europe) often lack such policies, and gear public support towards owners that occupy their properties. Total government spending on housing

29 The analysis that follows uses data from the OECD Affordable Housing Database.

30 While some social housing tenants pay rent, they are typically supported through social housing programmes.

allowances averaged 0.25% of GDP in 2022, ranging from less than 0.1% in Central and Eastern Europe and Southern Europe to 0.4-0.9% in France, Germany, the Netherlands and the Nordic countries.[31] Somewhat less – about 0.15% of GDP on average in 2022 – went to tax deductions to support homebuyers, with countries in Central and Eastern Europe and in Southern Europe spending less than 0.1% on average, vs. 0.4% for Sweden and 1.2% for the Netherlands. Tax revenue foregone to support existing homeowners averaged 0.6% of GDP on average in 2019, with Belgium, Finland, Luxembourg and Poland spending 0.1-0.4%, and the Netherlands and Sweden spending up to 1.3% of GDP.

Social housing policies

Social housing policies are distinct from other housing policies in several respects, because they assist more vulnerable segments of the population financially, socially or otherwise. The supply and operation of social housing is therefore planned and financed primarily by the public sector, though with significant private-sector participation in many countries. Public housing tenants are also better protected, and rents are generally more subsidised (often in combination with other social assistance) than those paid by low-income households receiving allowances for private rental housing.

Social housing comprised over 14 million dwellings or 8% of the total housing stock in the European Union in 2021. Almost all EU countries have some form of social housing. The sector is largest in Austria, Denmark and the Netherlands (over 20% of the total housing stock), moderately sized in Finland, France and Ireland (10-20% of the stock), and small in Central and Eastern Europe and Southern Europe. The share of social housing in the total housing stock has decreased by 3 percentage points since 2010, although the number of vulnerable people such as the homeless and irregular migrants has increased significantly. The decline is related to a slowdown in new social housing construction and the privatisation of the stock, whereby social dwellings are converted into market-rate rental housing (for example, in Germany).

Public spending to support social rental housing averaged 0.06% of GDP in 2022, the latest year for which figures are available. Austria and France spent 0.2%, Germany 0.07%, and other countries less than 0.05%. This spending includes the direct provision of social rental housing (typically to the local authorities that own and manage the stock), and subsidies to non-government providers (grants, public loans from specific credit institutions, interest-rate subsidies and government-backed guarantees). The correlation between the level of public spending and the size of the sector is weak, however, as eligibility criteria, rent-setting models (income-based, market-based, cost-based and utility-based) and providers vary widely, as does management (for-profit, non- or limited-profit, cooperatives, or public authorities at different levels of government).

Public support for property developers

Along with its limited ability to directly finance social housing, the public sector is also at a relative disadvantage in influencing housing supply. That is why many housing affordability policies aim to increase the supply of housing at below-market rents or prices by supporting private property developers. Typical measures include grants, low-interest loans or loan guarantees for developers for the construction of owner-occupied dwellings; reduced VAT or other tax rates paid by developers for newly built dwellings or the transformation of office space into residential homes; and the sale of plots of publicly owned land at reduced prices for building affordable housing. These dwellings typically target low- to middle-income households. Property developers are usually required to set aside a minimum share of dwellings (25% of apartments in a housing block, for example) for social housing or other tenants selected by public authorities.

Almost all EU countries have such support measures in place. In some cases, a single scheme subsidises the development of new dwellings and the households that purchase them. In others, it is

31 These figures include personal housing benefits and budgetary costs of reduced rents for social housing tenants, which in the statistics are lumped together with housing allowances for private market renters.

difficult to distinguish between support measures for affordable and social housing. The budgetary implications of public support for private developers are rarely quantified.

Public support for housing improvements and renovation

Almost universally, supply-side measures aimed at existing private homes emphasise sustainability. This may be one of the areas in which the European Union has been most active with funding and regulation. These measures target different types of dwellings (those that are of poor quality, were built in specific areas or periods, etc.) and cover things like energy efficiency upgrades, repairs, accessibility adaptations and building regeneration. Such initiatives are relevant for housing affordability because they help improve housing quality and contain energy costs for households. Typical tools include grants, tax relief, loans at preferential rates, loan guarantees and insurance programmes. The beneficiaries can be homeowners, landlords of rental properties, local governments, homeowner associations, cooperatives, etc.

Public spending on home improvements averaged 0.12% of GDP in 2022. It varied widely from one country to the next, with Italy spending about 0.5% of GDP; Austria, Estonia, Germany, Slovakia and Sweden spending 0.15% to 0.35%; and most other countries spending less than 0.01%. The same regional pattern can be seen as with other housing policies. The Netherlands has invested heavily in building new affordable housing to address shortages in urban areas. Germany, France and Austria focus on renovating existing homes to improve energy efficiency (as with eco-neighbourhoods in France). They also provide funding for new housing development that is often subject to strict energy performance standards (France, Germany and the Nordic countries). By contrast, in Central and Eastern Europe and in Southern Europe, such projects are largely driven and funded by the European Union.

Policy effectiveness and potential for reform

Considering the wide scope and variety of housing policies, analyses of their benefits and costs are rare and fragmented. Empirical work has tended to focus on single measures (rent controls, work disincentives created by housing allowances for low-income earners, etc.) implemented in individual cities or countries, with findings that are hard to generalise. This contrasts, for example, with the depth of theoretical thinking and empirical work on the distributive and allocative dimensions of housing affordability. Assessments of housing policies have therefore tended to rely on arguments for or against different approaches, and on identifying gaps in knowledge about the effects of policies.

One important insight from such assessments is that regarding housing as merely a shelter and housing policies as primarily social in character underestimates the importance of housing for the modern economy.[32] Affordable housing affects the formation of human capital, and the home is increasingly a place of lifelong learning and work. There is also a growing recognition that cities are not a passive factor in growth. They can give rise to distinctive and complex agglomeration economies that affect labour markets and spur innovation. Yet, with few exceptions, over the past decade governments and policymakers have focused on fine-tuning and tweaking existing approaches rather than reassessing the productive role of affordable housing and implementing deeper reforms.

On the positive side, one insight from the assessments of policy interventions during recent crises is that the institutional infrastructure built around housing policies can be adapted flexibly for other purposes. For example, the well-established administration of housing allowances and rent controls enabled fiscal support to be disbursed to households quickly during the COVID-19 pandemic and the energy price surge when Russia invaded Ukraine. It also facilitated the implementation of temporary moratoriums on mortgage payments and eviction bans. The decentralised implementation mechanisms of many housing policies can be viewed in the same light. Regions and municipalities are often best placed to design and manage tailored policies to provide affordable housing.

32 See, for example, Maclennan et al. (2015).

Conclusion and policy implications

Addressing the structural challenges facing the European Union requires substantial investment. The Draghi report (Draghi, 2024) emphasises the need for massive investment to speed up the green and digital transformations of the European economy, and strengthen EU competitiveness, economic security and defence. Although the private sector will make many of these investments, government investment has a substantial role to play as well. Investment is needed not only to provide critical infrastructure and public goods, but also to catalyse economic development. It spurs private investment and often complements investments in climate change or innovation.

The strong increase in government investment over the past five years is a policy success. The twin green and digital transition, along with the years of underinvestment following Europe's sovereign debt crisis, put a focus on the importance of government investment. That investment got a significant boost from the sizeable policy packages rolled out to address the COVID-19 economic crisis and the energy crisis. The Recovery and Resilience Facility and the suspension of EU fiscal rules gave governments the space needed to increase investment. The expansion of incentives and financial instruments to channel private resources towards desired investment outcomes has also been widely explored.

Coordinating a rise in public investment at the EU level brought additional benefits. As shown in the analysis here, there are significant spillover effects on output and investment when increased government investment is coordinated at the EU level. While it is still early to properly assess the impact of the RRF, it is already clear that this EU-coordinated programme has had a significant effect on government investment across the European Union at a time when large investments are needed to address structural challenges for the EU economy.

Pressure on countries to improve their finances will require them to make politically difficult decisions, particularly if they want to safeguard public investment in the short run. While the RRF and the allocation of EU structural and cohesion funds still leave some room for additional public investment, some countries may face difficult trade-offs. Although reinstating EU fiscal rules is not expected to impact public investment in the medium term, compliance will require many EU countries to make hard fiscal choices. Fiscal restraint is inherently difficult and often unpopular. Historically, fiscal adjustments have often resulted in cuts to public investment, as these cuts are less politically costly in the short term. However, the revised EU economic governance framework strives to protect public investment, and recent evidence shows that, historically, the fiscal rules laid out under the framework have not impeded government investment. Instead, government investment suffered as countries felt pressure to maintain other public spending, and they may feel that pressure again.

Improving government efficiency and public spending could free up fiscal space without reducing public services. Reforming government investment to improve the efficiency of social services such as education and health systems – effectively bringing efficiency up to the highest standards across the European Union – could free up substantial fiscal resources. This is a challenging task, and no simple reform template exists. Although such reforms take years to design, agree and implement, they can bring substantial benefits that will pay off in the long term.

References

Afonso, A., & St. Aubyn, M. (2005). Non-parametric Approaches to Education and Health Efficiency in OECD Countries. *Journal of Applied Economics, VIII*(2), 227-246.

Afonso, A., Caiado, J., & Kanaan, O. A. (2024, October). Public and Private Investments: A VAR Analysis of Their Impact on Econmic Growth in 18 Advanced Economies. *CESifo Working Papers*, 11426. https://dx.doi.org/10.2139/ssrn.5042614

Bankowski, K., Benalal, N., Bouabdallah, O., De Stefani, R., Dorrucci, E., Huber, C., Jacquinot, P., Modery, W., Nerlich, C., Rodríguez-Vives, M., Szörfi, B., Zorell, N., Zwick, C. (2024). Four Years into NextGenerationEU: What Impact on the Euro Area Economy? *ECB Occasional Paper Series No362*. Available at: https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op362~c055a591dd.en.pdf

Becker, G. S. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70, 9-49.

Brändle, T., & Elsener, M. (2024). Do Fiscal Rules Matter? A Survey of Recent Evidence. *Swiss Journal of Economics and Statistics*, 160(11).

Chakraborty, S., and E. Dabla-Norris. 2011. "The Quality of Public Investment." The *B.E. Journal of Macroeconomics* 11 (1): 1-29.

Coelli, T., Prasada Rao, D., & Battese, G. E. (1998). An Introduction to *Efficiency and Productivity Analysis*. Kluwer.

Darvas, Z., Welslau, L., & Zettelmeyer, J. (2024). Incorporating the impact of social investments and reforms in the EU's new fiscal framework. *Bruegel Working Paper 07/2024*. Available at: https://www.bruegel.org/system/files/2024-03/WP%2007_0.pdf

Draghi, M. (2024). *The Future of European Competitiveness*. Available at: https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en

European Commission (n.d.). *Recovery and resilience scoreboard*. Available at: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/index.html

European Commission (2022). InvestEU Leverage and Multiplier Effect Calculation Methodology. Available at: https://investeu.europa.eu/document/download/21e274de-9e54-4909-8db5-05760d72f16d_en?filename=InvestEU%20Steering%20Board%20-%20InvestEU%20Leverage%20and%20Multiplier%20Effect%20Calculation%20Methodology.pdf&prefLang=el

European Investment Bank (EIB) (forthcoming). EIB Municipalities Survey 2024.

European Investment Bank (EIB) (2022a). Assessing the macroeconomic impact of the EIB Group – 2022 update. Available at: https://www.eib.org/attachments/publications/assessing_the_macroeconomic_impact_of_the_eib_group_2022_en.pdf

European Investment Bank (EIB) (2022b). 2022 EFSI report – From the European Investment Bank to the European Parliament and the Council on 2022 EIB Group Financing and Investment Operations under EFSI. Available at: https://www.eib.org/attachments/strategies/2022-efsi-report-to-the-ep-and-council.pdf

European Investment Bank (EIB) (2023). European Investment Bank Financial Report 2023. https://doi.org/10.2867/972625

European Investment Bank (EIB) (2024). *Investment Report 2023/2024: Transforming for competitiveness*. European Investment Bank. https://doi.org/10.2867/29813

European Investment Bank and Joint Research Centre, *Assessing the macroeconomic impact of the EIB group – 2022 update*, European Investment Bank, 2022, https://data.europa.eu/doi/10.2867/43250

Eurostat (2024). *Eurostat Regional Yearbook*. Eurostat.

Farrell, M. J. (1957). The Measurement of Productive Efficiency. *Journal of the Royal Statistical Society. Series A (General), 120*(3), 253-290.

Fournier, J. (2016). The Positive Effect of Public Investment on Potential Growth. *OECD Economics Department Working Papers No. 1347*. https://doi.org/10.1787/15e400d4-en

Fuest, C., & Pisani-Ferry, J. (2019). A Primer on Developing European Public Goods. *EconPol Policy Report, No 16*. Available at: https://hdl.handle.net/10419/219519

Gabriele, C., Erce, A., Athanasopoulou, M., & Rojas, J. (2017). Debt Stocks Meet Gross Financing Needs: A Flow Perspective into Sustainability. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2990061

Gundlach, E., Wossmann, L., & Gmelin, J. (2001). The Decline of Schooling Productivity in OECD Countries. *The Economic Journal, 111*(471), C135-C147.

Hanushek, E. A., & Kimko, D. D. (2000). Schooling, Labor-Force Quality, and the Growth of Nations. *American Economic Review, 90*(5), 1184-1208.

Kolev, A., & Schanz, J. (2024). The effects of fiscal consolidations on investment. *EIB Working papers*.

Larch, M., & van der Wielen, W. (2024). Comply and invest: The effect of EU fiscal rules on public investment. *Bruges European Economic Research Papers, 44/2024*. Available at: https://www.researchgate.net/publication/383848779_Comply_and_invest_The_effect_of_EU_fiscal_rules_on_public_investment

Letta, E. (2024). *Much More Than a Market – Speed, Security, Solidarity: Empowering the Single Market to Deliver a Sustainable Future and Prosperity for All EU Citizens*. Available at: https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf

Maclennan, D., Ong, R., & Wood, G. (2015). Making connections: Housing, productivity and economic development. *AHURI Final Report, 251*, 1-122. Available at: http://apo.org.au/node/58319

Organisation for Economic Co-operation and Development (OECD) (2001). *The Well-being of Nations: The Role of Human and Social Capital*. OECD Publishing.

Pereira, A. M. (2000). Is all Public Capital Created Equal? *Review of Economics and Statistics, 82*(3), 513-518.

Pritchett, L. (2000). The tyranny of concepts: CUDIE (cumulated, depreciated, investment effort) is not capital. *Journal of Economic Growth*, 5, 361-384.

Ponzetto, G., & Toriano, U. (2014). Social Capital, Government Expenditures, and Growth. *CEPR Discussion Paper Series*. Available at: https://www.nber.org/papers/w24533

Revoltella, D., Brutscher, P.-B., Tsiotras, A., & Weiss, C. (2016). Linking local business with global growth opportunities: the role of infrastructure. *Oxford Review of Economic Policy, 32*(3), 410-430.

Vegh, Carlos A., Alejandro Izquierdo, Ruy E. Lama, Juan Pablo Medina, Jorge P. Puig, Daniel Riera-Crichton, and Guillermo Vuletin. "*Is the Public Investment Multiplier Higher in Developing Countries? An Empirical Investigation*." National Bureau of Economic Research, Working Paper 26478, November 2019. Available at: https://www.nber.org/system/files/working_papers/w26478/w26478.pdf

Wagenvoort, R., de Nicola, C., & Kappeler, A. (2010). Infrastructure finance in Europe: Composition, evolution and crisis impact. *EIB Papers, 15*(1), 17-39.