

Chapter 2

Government investment



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Chapter 2

Government investment

Government investment has remained resilient since the start of the COVID-19 crisis. It has grown each year since 2020 – both in real terms and as a share of gross domestic product (GDP) – with EU government investment performing better than after previous crises. Government investment grants (mostly targeting the private sector) also grew substantially in recent years. Public and private investment in infrastructure has been strengthening since 2018.

The European Union’s decision to put budget rules on hold during the pandemic buoyed investment, and it will be further fuelled by the availability of financing under the Recovery and Resilience Facility, which will provide sizeable funds for some countries. While progress is being made on measures and targets for the EUR 723 billion [Recovery and Resilience Facility](#)¹, it has been slightly slower than planned because of high inflation, a lack of administrative capacity and long planning leads for some projects.

Local and regional governments are key players in planning and implementing government investment. They therefore have an important role to play in sustaining the current investment surge. Investment by regions and local governments is beneficial in countries with a high quality of governance and more developed financial systems, but it is hindered by a lack of available workers with the necessary skills (including administrative skills) and by economic turbulence.

Maintaining the current high level of government investment is crucial. EU governments might find it challenging to sustain public investment in the medium term, as they will face difficult trade-offs when they once again have to adhere to EU budget rules. The general escape clause of the [Stability and Growth Pact](#), which paused the budget rules, will be deactivated in 2024. At the same time, government investment is key to achieving policy goals like net-zero carbon emissions and digitalisation. Furthermore, experience shows that public investment has a catalytic effect on private investment, meaning that a slowdown in government investment could weigh on private investment in general and, importantly, on spending to address climate change.

¹ The Recovery and Resilience Facility is the centrepiece of [NextGenerationEU](#), the European Union’s recovery plan following the COVID-19 crisis. Through the facility, the European Commission raises funds by borrowing on the capital markets. These funds are then made available to EU members to implement ambitious reforms and investments.

Introduction

Government investment in the European Union has remained resilient over the past three years, despite a series of crises such as the COVID-19 pandemic, disruptions in global supply chains, surging energy prices and political instability caused by Russia's invasion of Ukraine. Overall, government investment has recovered from the protracted slump caused by the fiscal consolidation that followed the euro sovereign debt crisis. The lessons learnt in that episode – along with the activation of the general escape clause of the Stability and Growth Pact – led governments to move to protect investment in the wake of the COVID-19 pandemic. The added pressures on government finance caused by the energy crisis acted as a drag on government investment, but did not derail it.

The big structural challenges of climate change and digitalisation require even more significant investment to transform the economy. While most investment will have to come from the private sector, government investment has a role to play in providing public goods and catalysing private investment. The looming reintroduction of EU fiscal rules in 2024, higher levels of government debt and a weak economy all present governments with difficult trade-offs.

This chapter consists of four sections and three boxes. The first section reviews the evolution of government investment since the COVID-19 pandemic, focusing on the aftermath of the energy crisis. The second section looks at subnational government investment (regional and local), emphasising its importance in public investment and outlining the obstacles that various municipalities or regional authorities face when making investments. The third section underlines the importance of the plans EU members submitted under the Recovery and Resilience Facility and the likely effect those plans have had on government investment and the overall economy from 2021, as well as in the medium term.

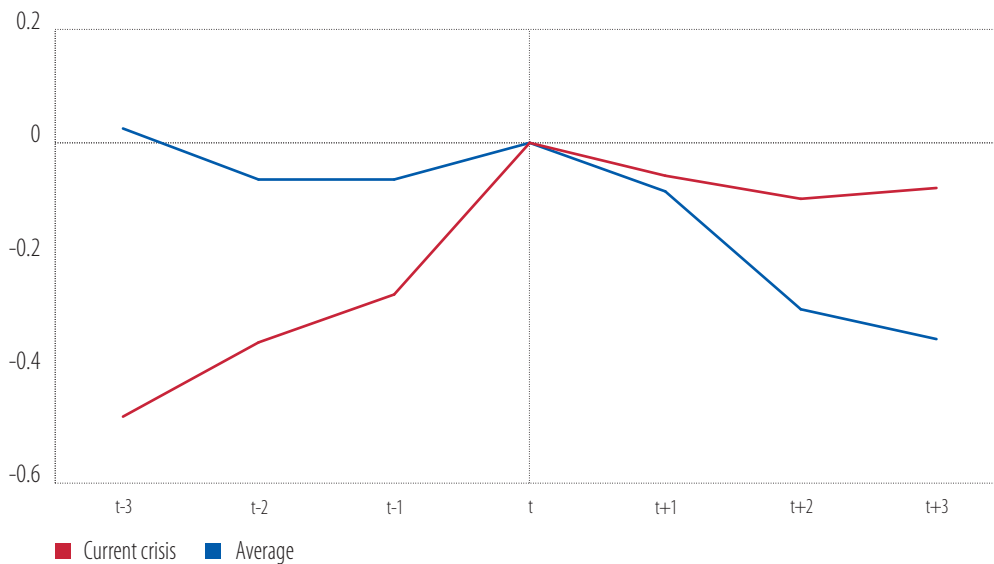
The analysis stresses how important it is for EU governments to accelerate national investment plans to take full advantage of the substantial funding available not only through the Recovery and Resilience Facility, but also through the [European Structural and Investment Funds](#) and the [Just Transition Fund](#), which was created to protect regions and countries that risk being negatively affected by the green transition. All levels of government need to address a variety of obstacles impeding the rapid and effective implementation of important investment projects. The fourth section outlines the risk that pressure to stabilise country finances will have hurt public and private investment. The last section concludes with policy implications.

Government capital expenditures remain resilient despite challenges

Compared to previous crises, government investment remained remarkably resilient from 2020 to 2023. Using a panel dataset of 26 Organisation for Economic Co-operation and Development (OECD) member countries since 1970, Larch et al. (2022) show that government investment declines following major economic downturns. The authors estimate an average decline of about 0.3 percentage points of GDP three years after an economic crisis (Figure 1).² The strength of EU government investment since the COVID-19 pandemic therefore appears remarkable. Investment remained muted during the 2020 pandemic shock, with investment as a share of GDP increasing before recording a very marginal decline relative to its unusually high 2020 level. The overall decline in the share for the first half of 2023 is less than one-third of the average decline observed by Larch et al. Overall, EU government investment after 2020 remained well above the level in the three years preceding 2020.

² This equates to an 8% decline in the investment rate.

Figure 1
Government investment around economic crises (% GDP)



Source: Larch et al. (2022), EIB staff calculations based on Eurostat and OECD national accounts.

Note: Economic crisis is defined as a decline of real GDP relative to the previous by more than one standard deviation, computed on the sample of Larch et al. (2022). The red line plots the difference of EU general government investment each year with its value in 2020, as a share of GDP. The blue line plots the average difference between general government investment each year, as a share of GDP, with its value in the year of a major economic downturn. The computation is based on the dataset of Larch et al. (2022). Data for 2023 (t+3 on the current-crisis line) are for the first half of 2023.

Strong government investment despite a string of crises

The post-pandemic period has been challenging for fiscal policy in the European Union. The pandemic stimulus, the war in Ukraine and the energy crisis, which fuelled a burst of inflation, put a serious strain on government budgets. While high inflation raised more tax revenue than expected, costly policies to address the energy crisis and a slowing economy meant that countries across the European Union had to revisit spending planned in 2022 budgets. In these challenging conditions, government investment and capital expenditures more generally continued to grow, but at a progressively slower pace.

Despite these challenges, nominal government investment in the European Union increased by nearly 10% in the first half of 2023 compared to same period in 2022. This increase continues a gradual acceleration from 4.7% in 2020 to 7.3% in 2022. The increase in 2023 was particularly strong in Central and Eastern Europe, where it reached 23.5% (Table 1).³ In Southern Europe, nominal investment grew by 13.9%, following a soft patch in 2022. These growth rates were above the rate of nominal GDP growth (Table 1), thereby pushing up the investment rates in 2023. By comparison, government investment rates in 2022 were broadly stable in the European Union as a whole and declined slightly in Southern, Central and Eastern Europe (Figure 2), but they were still well above their 2019 levels.

³ Figures for 2023 refer to the percentage change in the first half of 2023 relative to the same period in 2022.

Table 1
Nominal government investment and GDP (% change from the previous year)

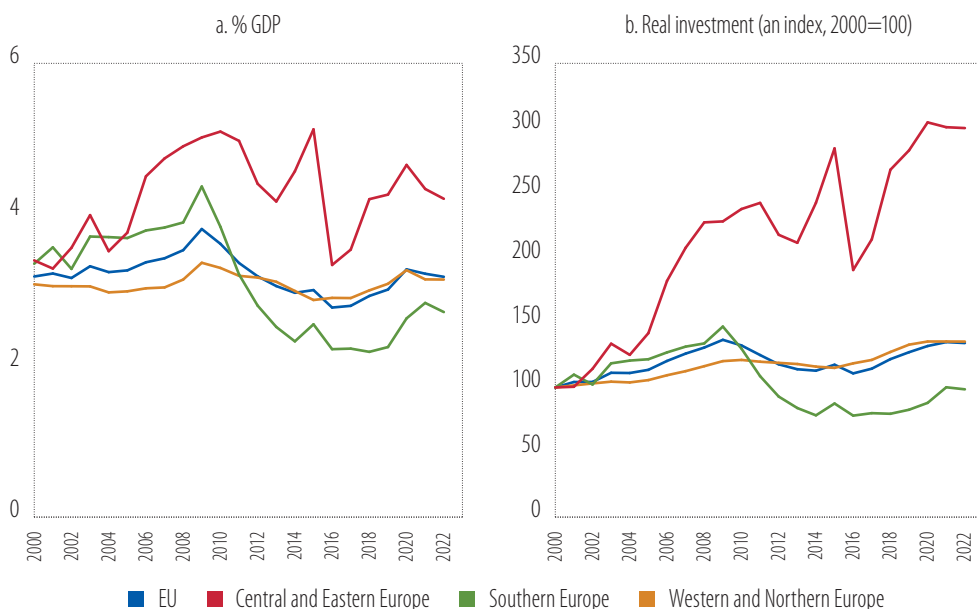
	2019	2020	2021	2022	2023
Government investment					
European Union	6.5	4.7	6.5	7.4	9.9
Western and Northern Europe	6.4	3.3	3.8	7.6	6.0
Southern Europe	5.4	6.9	18.9	4.6	13.9
Central and Eastern Europe	8.9	6.8	2.9	10.8	23.5
GDP					
European Union	3.6	-3.9	8.7	8.7	7.2
Western and Northern Europe	3.5	-2.4	8.1	7.6	6.1
Southern Europe	2.4	-8.5	9.5	8.8	7.6
Central and Eastern Europe	7.1	-2.4	10.5	14.6	13.8

Source: EIB staff calculations based on Eurostat national accounts.

Note: Values for 2023 are for the first half of the year compared to the same period in 2022.

Real investment in the European Union also grew strongly in the first half of 2023 (4.1%) after slowing in 2021 and 2022.⁴ This relative slowdown to some extent reflects unexpectedly high inflation. In 2022, prices paid for investments in the European Union rose by 7.9% and the GDP deflator rose by 5.1% – well above their values in 2021.⁵ The estimated real investment of the general government in 2022 stagnated in two EU countries and declined in 12 others.

Figure 2
General government investment



Source: Government finance statistics, Eurostat and EIB staff calculations.

Notes: Real government investment is calculated by deflating gross fixed capital formation (GFCF) for the government in current prices using the implicit price deflator for total investment.

4 In the absence of a deflator for government investment, real government investment is computed using the implicit price deflator for total investment, which arguably has a different composition to that for government investment.

5 Investment price inflation is measured by the growth rate of the implicit price deflator for total gross fixed capital formation.

Government investment for 2022 fell short of forecasts, recording a slightly disappointing figure given its strong performance since 2020. Surprise inflation and a vigorous response from central banks meant that government forecasts quickly became outdated in the course of 2022. At a time when most EU governments had just set their budgetary plans for 2022, the European Commission's 2022 winter forecast expected average inflation of 3.9% for the year. It turned out to be 9.2%. Even in its spring forecast in May 2022, the European Commission had expected 6.8%. The main driver of inflation in the European Union was skyrocketing energy prices (see Chapters 1 and 5 and EIB, 2023a).

Table 2

Government investment and inflation in 2022 (annual % change)

	Government investment		GDP		Inflation	
	EC forecast	Actual	EC forecast	Actual	EC forecast	Actual
European Union	13.7	7.3	6.9	8.6	6.8	9.2
Western and Northern Europe	10.3	7.6	6.5	7.6	6.0	8.2
Southern Europe	22.2	4.1	6.8	8.8	6.0	8.6
Central and Eastern Europe	17.7	11.2	9.4	14.5	10.6	13.7

Source: Government finance statistics, Eurostat, the European Commission's annual macroeconomic (AMECO) database and EIB staff calculations.

Note: EC forecast refers to 2022 spring forecast of the European Commission. Inflation is measured as the annual rate of change of the harmonised index of consumer prices (HICP).

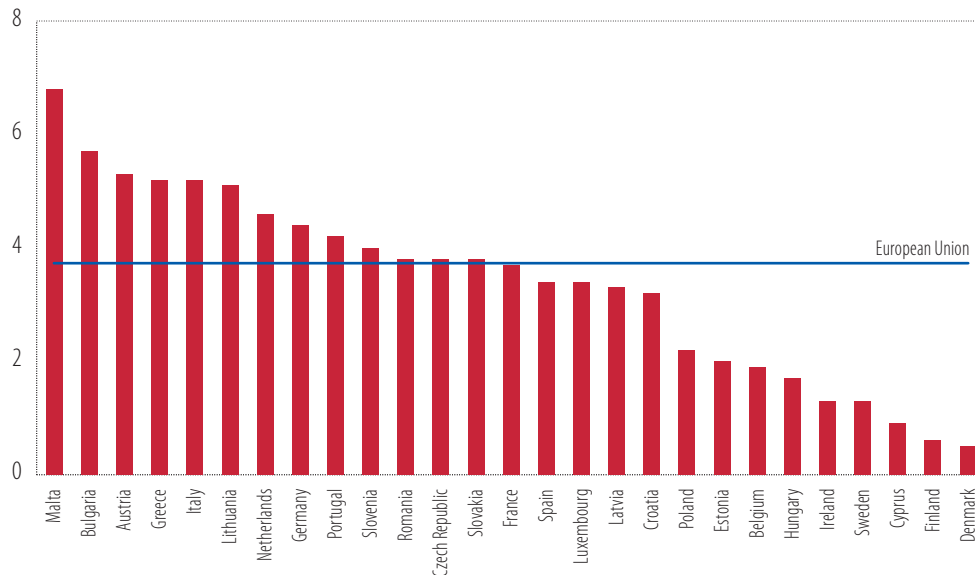
Large, unexpected shocks can force governments to reprioritise spending outlined in current budgets. Governments typically finalise their budgetary plans in the second half of the preceding year and parliaments turn them into law by the end of that year. When times are calm, budgets are implemented with little or no change to plans. Otherwise, governments must reshuffle spending or go back to their parliaments to amend budgets.

The energy shock in 2022 and subsequent policies to offset the impact on households and businesses arguably pushed EU members to reprioritise spending. Original budgets at the start of the fiscal year can be compared with actual revenues and expenditures at the end of that year to gauge the extent of this reprioritisation. The European Commission's spring forecast can be used to approximate original budgets, as it incorporates budgetary plans for the current year in its projections. The forecast is also made early in the year, so its projections have not yet been influenced by changes to planned revenues and expenditures.

The sizeable policy response to the energy crisis was not budgeted by national governments for 2022. As electricity and gas prices rose sharply in 2022, EU governments began deploying compensation packages for households and businesses to mitigate the shock. Most EU countries pledged and spent substantial resources (Figure 3), a large portion of which had not been foreseen. Higher inflation helped to some extent as tax and other revenues were also higher than expected, but this was generally not enough to finance unexpected spending. Governments were therefore forced to shuffle spending.

Spending on subsidies and transfers deviated the most from 2022 forecasts. Comparing the European Commission's 2022 spring forecast to the final reality shows that the share of subsidies in total expenditures in the European Union was 0.5 percentage points higher than projected, meaning that overall subsidies increased 13%. The difference is higher in Southern Europe (1.2 percentage points) and smaller in other countries (0.3 percentage points in Western and Northern Europe, and 0.5 percentage points in Central and Eastern Europe). Other transfers were also significantly higher than forecast, such as compensation provided to businesses for losses caused by extraordinary events. For the European Union as a whole, the share of these transfers in total expenditures rose 0.8 percentage points, while in Southern Europe they increased 1.5 percentage points compared to the original forecast.

Figure 3
Earmarked and allocated funding to shield households and businesses from the energy crisis (% GDP), from September 2021 to January 2023



Source: Bruegel. See also Sgravatti, Tagliapietra, Trasi, & Zachmann (2021).

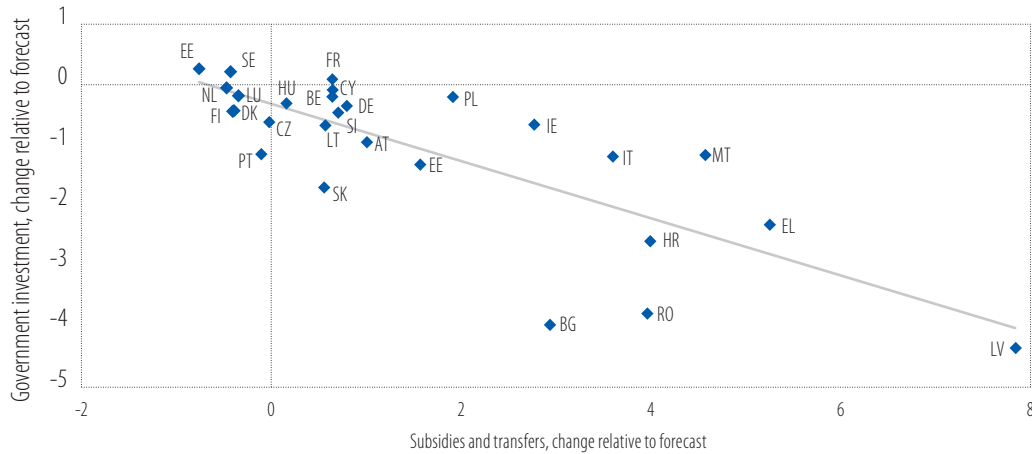
Note: The authors only include measures that are provisional and motivated by the energy crisis while they exclude pre-existing ones. Estimated numbers also include funding earmarked but not yet allocated. All figures are relative to 2021 GDP.

In parallel to these increases, investment as a share of total expenditures decreased 0.4 percentage points at the EU level. As the share of subsidies and transfers rose, investment's share of total expenditures declined compared to the 2022 spring forecast. The largest decline was in Central and Eastern Europe (1.2 percentage points) and the smallest in Western and Northern Europe (0.2 percentage points). There is also a fair amount of variation within these groups. The size of the decline in investment's share was inversely related to the size of the increase in subsidies and transfers (Figure 4). Despite this reprioritisation and decline relative to expectations, EU government investment for 2022 remained well above its 2019 level, in nominal terms and as a share of GDP.

The relative deprioritisation of government investment in 2022 does not appear to have affected government investment grants. EU government expenditure on investment grants increased substantially for a third consecutive year in 2022. The average annual rate of growth in investment grants since the start of the COVID-19 pandemic is 34%, pushing spending on investment grants to 1.3% of GDP. It was 0.6% of GDP in 2019. The size of this increase equates to 3% of total investment in the European Union or 22% of total government investment.

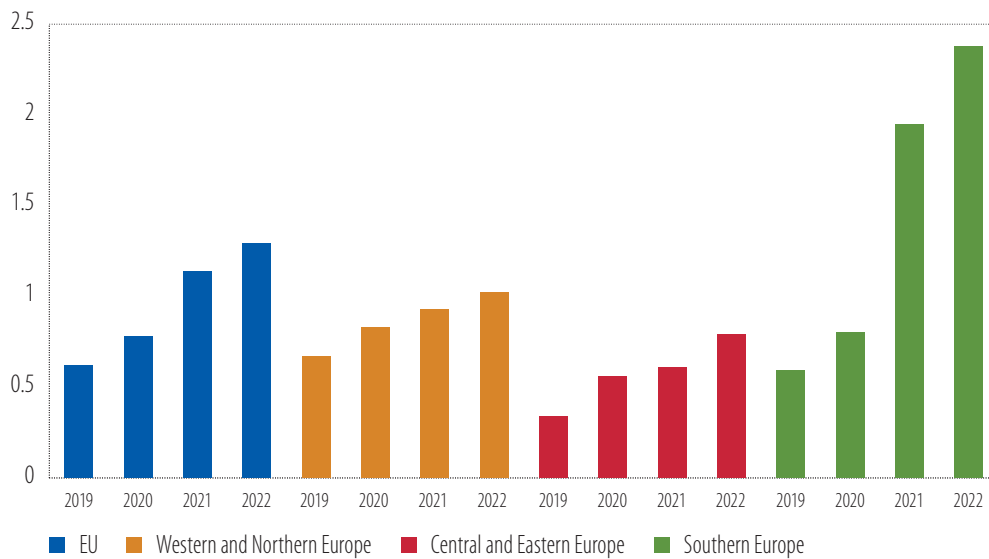
Investment grants were particularly high in Southern Europe in 2022 (Figure 5). This is due mostly to Italy and, to a lesser extent, Greece. While investment grants are not a substitute for government investment as they typically finance private investment, they do contribute directly to a country's total investment. The high amount of investment grants currently being paid by the general government is consistent with the simultaneously high rates of private investment in late 2022 and early 2023.

Figure 4
Change in government investment and in subsidies and transfers of general government budgets in the European Union relative to the 2022 spring forecast of the European Commission (% total expenditures)



Source: AMECO database of the European Commission and EIB staff calculations.
Notes: Subsidies and transfers include the following expenditure categories: subsidies, transfers in kind to households and other transfers. Changes are computed between the outcome of a category relative to total expenditures in 2022 and the projected value for this category relative to projected total expenditures in the 2022 spring forecast of the European Commission.

Figure 5
Investment grants paid by the government (% GDP)



Source: Government finance statistics, Eurostat. EIB staff calculations.

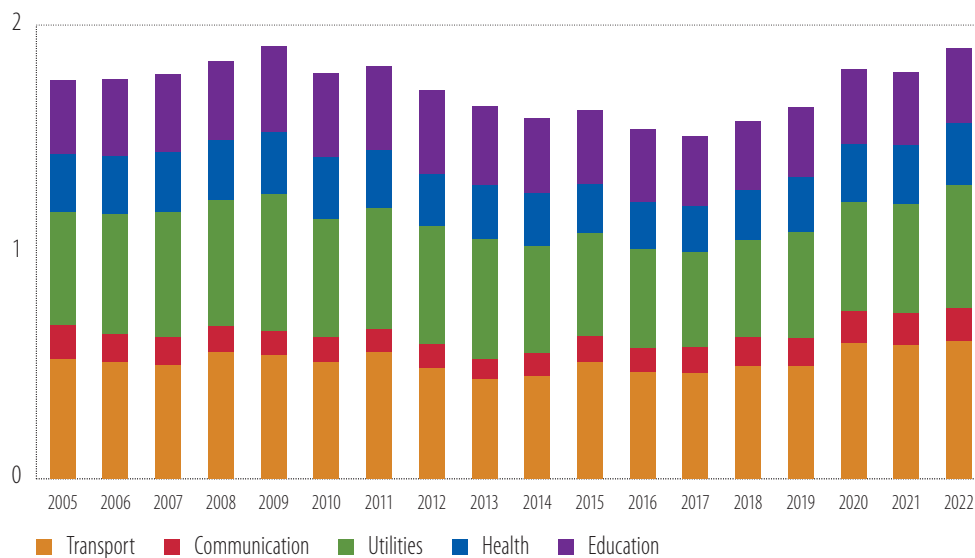
Infrastructure investment has been growing since 2018

Infrastructure stands at the crossroads between public and private investment. Infrastructure is built and financed by the government and the private sector, but the government maintains a crucial role in planning and regulating infrastructure construction. This section presents facts and figures on infrastructure investments and the role of the public and private sectors.⁶

Infrastructure investment increased significantly in the European Union in 2022, returning to the highs reached before the global financial crisis. Infrastructure investment continued to grow in 2022, reaching 1.9% of GDP in the European Union (Figure 6). This increase was particularly strong in Central and Eastern Europe, bringing infrastructure investment in the region back to levels before the global financial crisis. Growth was similarly strong in Southern Europe, but infrastructure investment there remains well below the highs seen before the global financial crisis. Infrastructure investment has also been expanding in Western and Northern Europe.

The relative importance of transport and communications has gradually increased. Infrastructure investment can be grouped into five key activity sectors: utilities, transport, communication, health and education. Three important trends are worth noting (Figure 6). First, the share of transport infrastructure increased since 2020 in tandem with the return of government investment. Second, the share of the communication sector has been growing, albeit gradually, over the past decade. Third, infrastructure investment in utilities is also rising, with particularly strong growth in 2022 (possibly driven by the recent push to improve Europe's energy security).

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



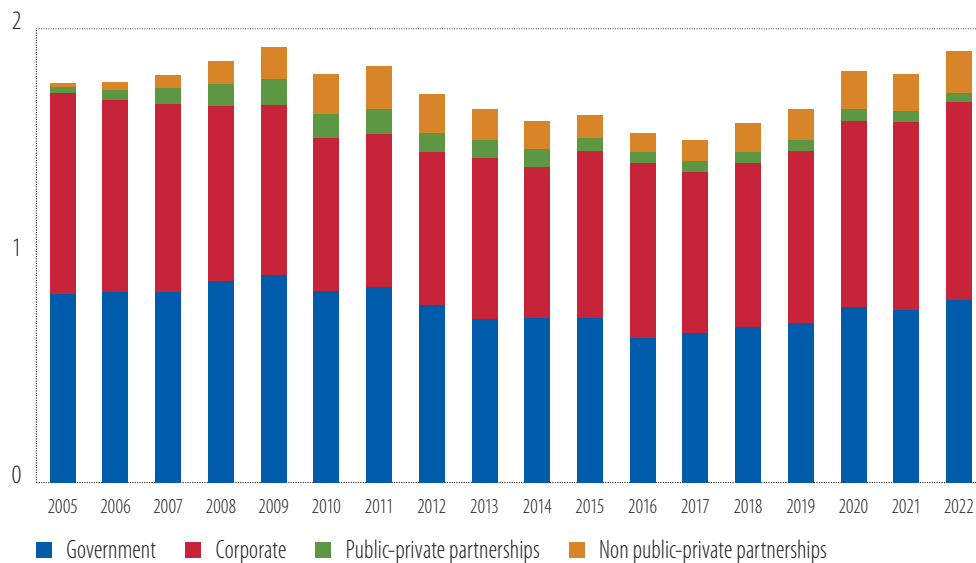
Source: Eurostat, IJGlobal, European PPP Expertise Centre (EPEC), EIB staff calculations.

The recent growth in infrastructure investment comes from the private and the public sector. Strong growth from businesses and the government continued in 2022 (Figure 7). Governments contributed more to the increase in Southern Europe and Central and Eastern Europe. Project financing through public-private partnerships (PPP) and other special purpose vehicles remain at levels similar to those seen in previous years.

⁶ Data on infrastructure investment are not readily available as infrastructure is not separately classified 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 further enhancements in Revoltella et al. (2016).

Government infrastructure investment is approaching the highs reached before the global financial crisis. This is partly a catch up following a period of fiscal retrenchment across the European Union and particularly in Southern Europe, when many infrastructure assets were inadequately maintained and only a few were upgraded or newly built. The growth of government infrastructure investment also reflects efforts to meet ambitious climate and digitalisation targets. It bodes well for the European economy, as modern and properly functioning infrastructure is crucial for competitiveness and economic growth, yielding social benefits for many years.

Figure 7
Infrastructure finance in the European Union (% GDP), by institutional sector



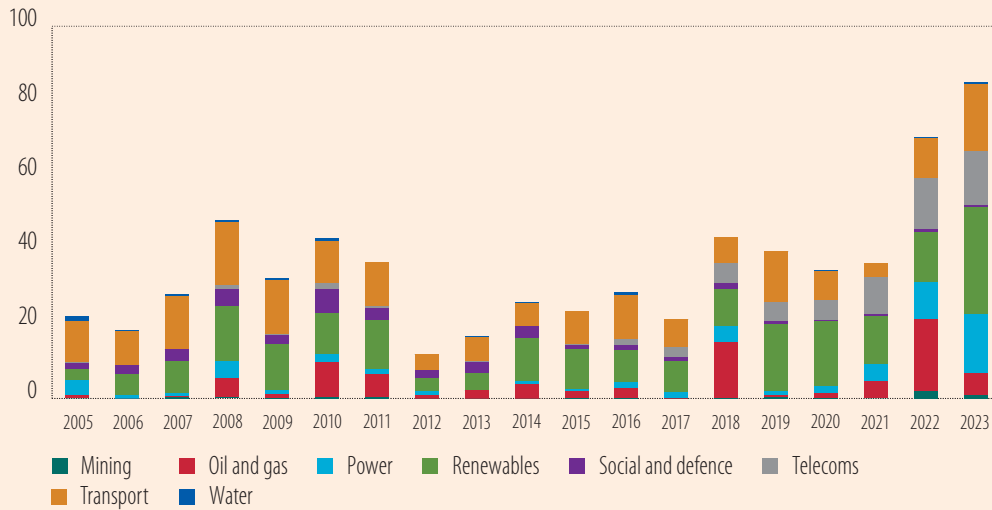
Source: Eurostat, IJGlobal, EPEC, EIB staff calculations.

Box A
Trends in infrastructure project finance

This box explores the trends that can be seen in detailed project-level infrastructure investment data. Over the past decade, an average of 10% of infrastructure investment in Europe has used financing that does not involve public-private partnerships, namely special purpose vehicles. While not fully representative of total infrastructure financing, the granularity of the project-level data does make it possible to zoom in further on sectoral and sub-sectoral trends not visible in the aggregate data. The analysis below considers only projects that have reached financial closure, and can therefore realistically be expected to be completed over the next few years.

Like other types of investment financing, project finance was hit hard by the global financial crisis in 2008 but has regained importance over the past few years (Figure A.1). The first visible sectoral trend is the decline in the relative share of the transport sector and, to a lesser extent, the social and defence sectors. Renewable electricity generation has accounted for a substantial share of investment over the past two decades. The telecom sector, on the other hand, has grown in importance in recent years. More recently, an uptick in the oil and gas sector is noticeable in 2022 after Russia invaded Ukraine. As illustrated below, the energy investments appear to be primarily driven by projects in transmission and distribution. Early data for 2023 show continued growth of project finance in the European Union, with renewable energy playing an important role.

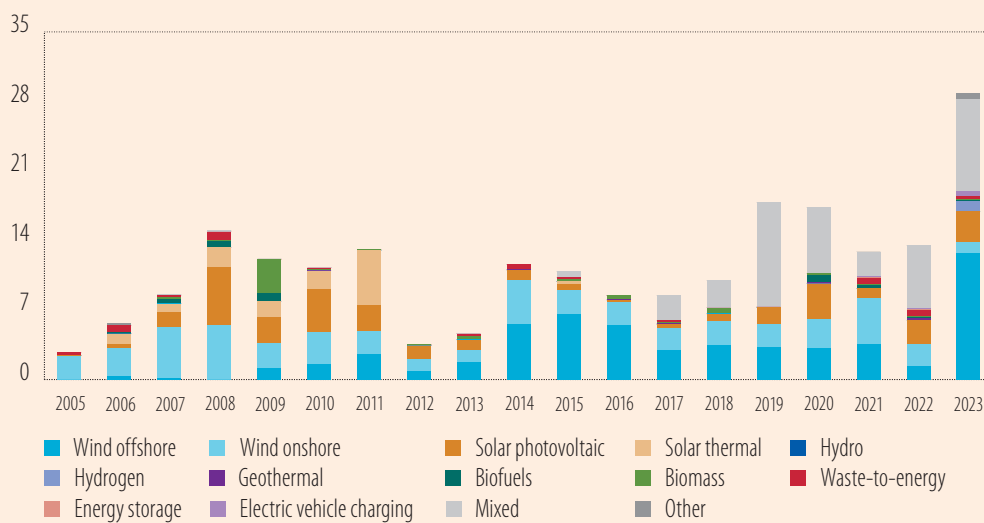
Figure A.1
Total project-financed infrastructure (transaction volumes, EUR billion)



Source: IJGlobal, EIB staff calculations.

Figure A.2 breaks down renewable energy into sub-sectors. The overall evolution in project financing of renewable energy follows the trends observed for project-financed infrastructure as a whole. Since the global financial crisis, however, the prevalence of solar projects has decreased substantially, especially for solar projects employing solar thermal energy. Importantly, this does not exclude solar thermal infrastructure being realised via other financing or policies. At the same time, project financing for onshore wind remained relatively stable and offshore wind infrastructure picked up, with four large offshore projects in Poland, Germany and France expected to push up infrastructure investment in renewable energy in 2023.

Figure A.2
Project financing of renewable energy (transaction volumes, EUR billion)



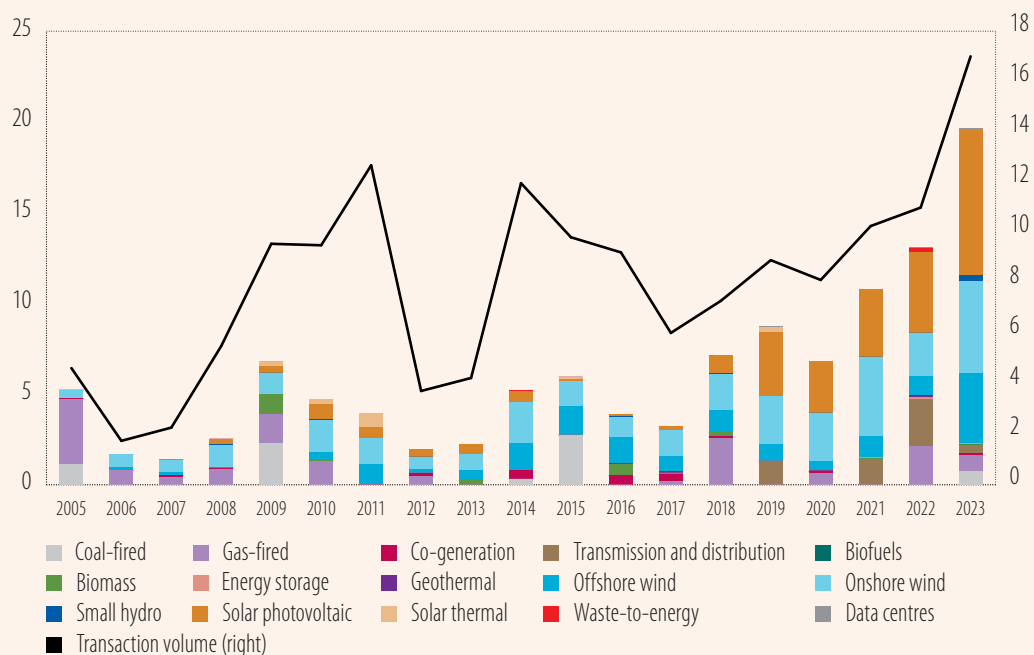
Source: IJGlobal, EIB staff calculations.

Notes: Mixed covers projects for which multiple sectors are assigned.

In addition to the overall monetary values of infrastructure projects, the project-level data makes it possible to map the corresponding capacity for power-generating projects in the power, renewable energy and telecom sectors. Despite a slowdown after the global financial crisis, project-financed power generation has increased more or less steadily over the past decade, with a bigger role for solar photovoltaics and onshore wind technologies. More recently, the Russian invasion of Ukraine and the resulting concerns over energy security have also spurred projects in the more traditional power sector, particularly in transmission and distribution systems.

Figure A.3

Power-generating projects (left axis: capacity in GW; right axis: EUR billion)



Source: JGlobal, EIB staff calculations.

Note: Co-generation refers to a power plant that generates electricity and heat for central heating.

Local and regional governments play an essential role in public investment

Subnational governments play a pivotal role in reaching the required levels of investment. Understanding the drivers and obstacles that local and regional governments (subnational) face in implementing their investment plans is key to accelerating the implementation of the Recovery and Resilience Facility and, more generally, the ambitious investment plans related to the green transition and digitalisation of the EU economy.

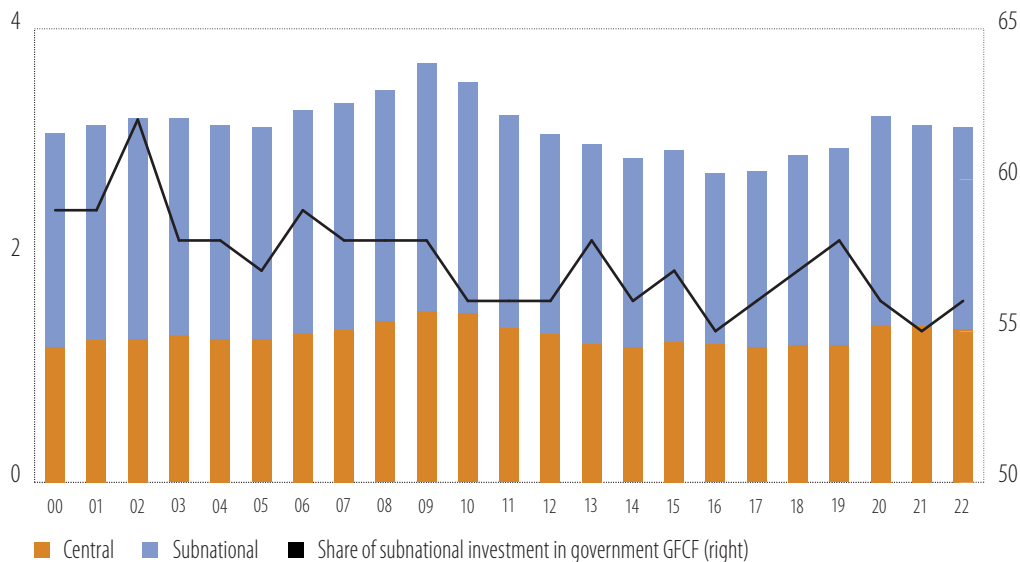
Subnational government investment is substantial and more volatile than central government investment

This investment declined more than central government investment during the fiscal consolidation following the euro debt crisis. On average, subnational governments account for more than half of public investment in the European Union (Figure 8). Their role in total public investment decreased after the

global financial crisis in 2008, as local public investment suffered more cuts.⁷ This was particularly true in Western, Northern and Southern Europe. More recently, public investment at the subnational level has followed the upward trend of central government investment in the European Union, increasing from 1.5% of GDP in 2016 to 1.8% in 2022.

Subnational government accounts for a similar share of investment regardless of the region, while central government investment shares are substantially larger in Central and Eastern Europe. Central governments in Central and Eastern Europe report substantially higher levels of investment as a share of GDP than central governments in Western and Northern Europe and Southern Europe (Figure 9). Subnational government investment in different regions are nevertheless comparable. Historically, subnational governments in Southern Europe reported higher levels of investment. However, regional and local investment in Southern Europe fell sharply following the global financial crisis. This has increased again since 2017 in line with the rest of the European Union, but remains below levels seen before the global financial crisis.

Figure 8
Central and subnational public investment (left axis: % GDP; right axis: in %), EU average



Source: Eurostat.

Notes: Public investment as measured by GFCF in the national accounts. Average shares: 59% for 2000-2008, 56% for 2009-2011 and 56% for 2009-2022.

Central, regional and local investment tend to move together, particularly in Central and Eastern Europe. Central and subnational public investment in Western and Northern Europe shows limited fluctuations (Figure 9). Moreover, changes to investment at each level of government are only weakly correlated. In contrast, government investment in Central and Eastern Europe shows substantial fluctuations, while changes at the different levels of government are strongly correlated. In Southern Europe these shifts are less substantial, but are similarly correlated between the different levels of government.⁸

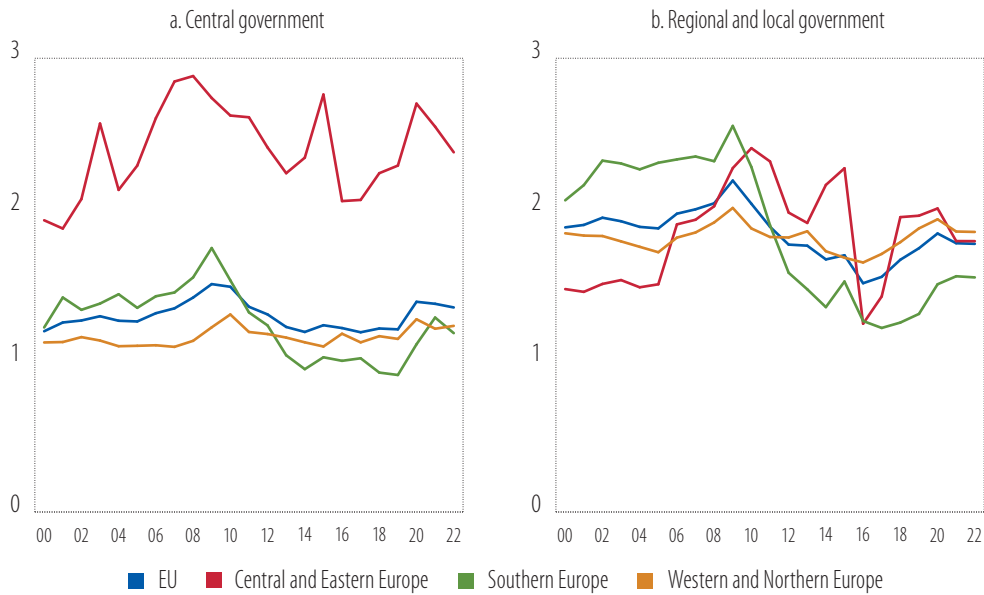
Sub-national public investments tend to increase as the economy strengthens. Analysis of historical public investment data in the European Union shows that real subnational gross fixed capital formation changes by more than 1% as real GDP grows by 1%, meaning that it moves with the economic cycle.

⁷ The share of subnational governments in capital transfers has also decreased significantly since the global financial crisis: from 37% on average in 2000-2008 to 30% on average in 2009-2022. In many countries, the fiscal consolidation in the aftermath of the global financial crisis limited local governments' fiscal space while economic growth was still weak. Moreover, this was worsened by reductions in fiscal transfers from central governments following austerity at the central level.

⁸ In-house analysis shows that the co-movement between central and subnational levels of public investment in Central and Eastern Europe and in Southern Europe persists when controlling for the cycle and other controls as well as country and year fixed effects (van der Wielen, 2024).

The effect is stronger in Central and Eastern Europe and Southern Europe. Similarly, evidence supports the earlier observation that investment (as a percentage of GDP) dropped significantly after the global financial crisis (by an average of around 0.5% of GDP in the European Union as a whole). In addition to responding to the business cycle, local and regional investment is also sensitive to electoral cycles. It increases by almost 0.2% of GDP in the year of a national election.

Figure 9
Average public investment (% GDP), by region



Source: Eurostat.

Notes: Public investment as measured by GFCF in the national accounts.

Given the differences in the institutional set up, the roles of central and local governments in different EU members vary significantly. In addition to differences in the levels of public investment, EU members differ in the degree to which public investment is implemented by lower levels of government (Figure 10).⁹ For example, following repeated state reforms further decentralising powers, 78% of government investment in Belgium is now made by local and regional governments. In Malta, Cyprus and Hungary, on the other hand, the majority of public investment in 2022 was made by the central government. Moreover, the institutional setting can diminish co-movements and changes in the short run to investment at the different government levels, with stronger federalism enhancing independence at the various levels and therefore limiting in tandem movements.¹⁰

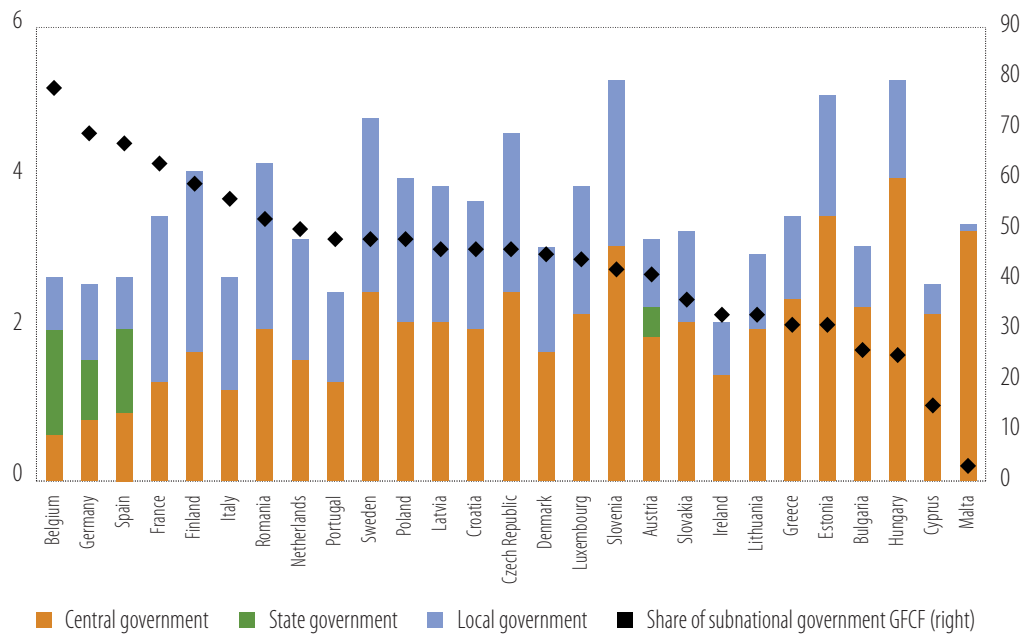
Local and regional investments cover areas that are key to the green transition, further highlighting their importance in making the transition a success. Lower levels of government spend more on investment for environmental protection, housing and amenities, and culture and recreation (Figure 11).¹¹ Importantly, one-third of subnational public investment focuses on economic affairs (including transport, communications, economic development, energy and construction) and is thus closely linked to the challenges of the transition, emphasising the importance of supporting and maintaining local and regional authorities' ability to plan and execute investments.

⁹ These institutional differences are also reflected in the share of public spending taken on by subnational authorities. Nevertheless, gross fixed capital formation constitutes a bigger component of a government's spending (excluding transfers) for lower levels of government. For example, gross fixed capital formation makes up more than a quarter of local government spending in Romania, Greece, Ireland, Cyprus and Luxembourg.

¹⁰ The analysis in this section draws on van der Wielen (2024).

¹¹ Compared to the central government, subnational governments spend less on gross fixed capital formation for defence, public order and safety.

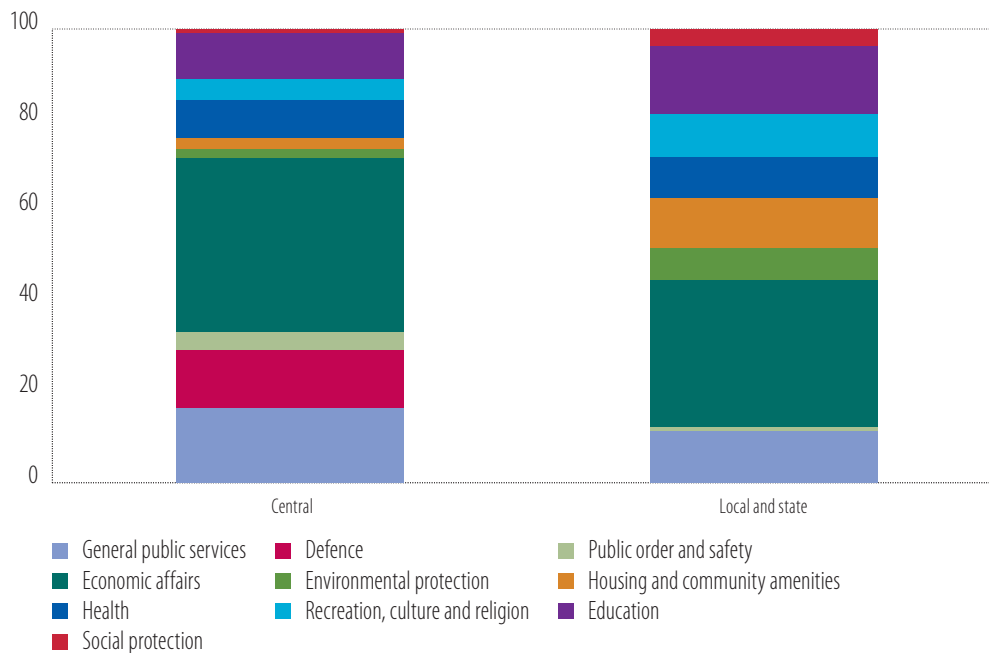
Figure 10
Central and subnational public investment (left axis: % GDP; right axis: in %)



Source: Eurostat.

Notes: Public investment as measured by GFCF in the national accounts. Data for 2022.

Figure 11
Public investment (in %), by economic activity

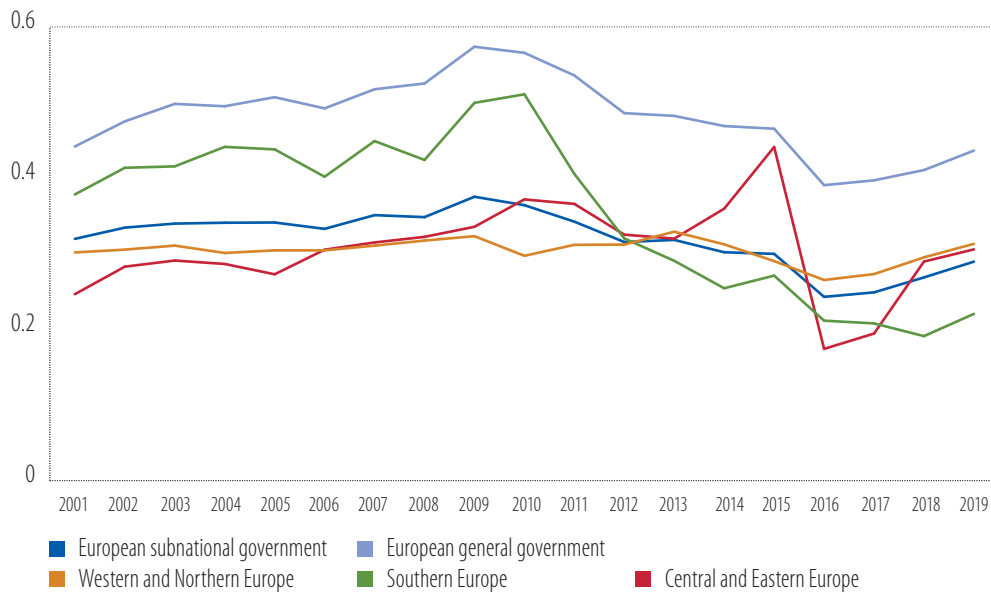


Source: Eurostat.

Notes: The latest data available is for 2021.

Local and regional governments provide an average of two-thirds of public investment directed towards climate change (Figure 12). The trends observed for total subnational public investment also hold for climate investments, with their levels as a percentage of GDP declining after the global financial crisis and increasing again in more recent years.

Figure 12
Subnational climate investment (% GDP)



Source: OECD, Eurostat.

Notes: Climate-significant public investments can be distinguished from non-climate related public investments by linking the functional classification of government spending to the EU taxonomy (OECD, 2022). Doing so, the share of subnational investment in climate-significant investments by the government amounted to 66% of GDP in 2019, the latest year for which data are available. Data on climate-significant investments are unavailable for Cyprus and Malta, and only partially available for Slovakia.

Nevertheless, more than 60% of municipalities express dissatisfaction with their investment in climate mitigation and adaptation infrastructure (EIB, 2023b). Most municipalities (88%) surveyed for the [EIB Municipality Survey](#) view their infrastructure investments in the past three years as insufficient in at least one area. Notably, municipalities are particularly dissatisfied with their investment in climate mitigation and adaptation, although their satisfaction has improved slightly compared to 2020. Municipalities in less developed regions are more likely to consider their past investments in climate change adaptation as substantially lacking.

Administrative efficiency and financial development are crucial for local and regional investment

Understanding the factors supporting or constraining public investment is vital, given the EU focus in recent years on the effective implementation of investment programmes. The efforts to accelerate the disbursement and implementation of investment projects under the Recovery and Resilience Facility and other EU funds (as outlined in further detail below) shows that the success of public investment projects depends on a variety of factors, not all of which are within policymakers' control.

Box B

Analysing subnational public investment drivers and constraints

This discussion on impediments to subnational government investment builds on a two-pronged empirical analysis (van der Wielen, 2024). A dataset is assembled to cover EU countries from 1995 to 2021. It includes public investment expenditure at the national and subnational levels, macroeconomic and financial conditions, and various indicators of institutional features.

First, country-year panel models are estimated to study short-term and long-term determinants of local and regional investment. The analysis studies short-term determinants by gauging the effects of a variety of factors on the annual growth of real investment. It then tests for more structural relations by studying the effect of structural factors on the share of subnational public investment in GDP. This improves the understanding of structural differences between local and regional investment in different countries.

Second, the country-year panel analysis is complemented with a region-year panel study. Instead of relying on regionalised public investment data (which also includes the central government's investment in the region), the analysis relies on regional data collected from national sources (Brasili et al., 2023). It covers 13 EU members: 11 countries with NUTS 2-level data and two countries with NUTS 1-level data.¹² Despite the more limited availability of fully regional public investment data, the panel supports the main findings of the analysis using the country-year panel.

Government efficiency and regulatory quality support the implementation of public investment.

Another possible measure of a government's efficiency and business friendliness is the time it takes to perform certain key parts of the investment process. Longer delays in building a warehouse, for example, are associated with lower subnational public investment. An additional week of delay dampens subnational investment 0.03%.¹³ Alternatively, subnational investment is typically found to be higher in countries with higher quality regulations.

A one percentile higher rank in the World Bank's World Governance Indicator for regulatory quality is associated with a similar increase in local and regional investment. This point is also supported by the results of the latest EIB Municipality Survey. Challenges posed by the regulatory environment remain one of the primary obstacles to municipalities' infrastructure investment.¹⁴ The survey results indicate that the length of the regulatory process strongly affects 42% of municipalities surveyed, and regulatory uncertainty is a major obstacle for 38% of municipalities (EIB, 2023b).

Higher financial development goes hand-in-hand with higher levels of local and regional investment.

A higher degree of financial development, as measured by the International Monetary Fund (IMF) financial development index, supports subnational investments in the short and long run. In the short run, the efficiency of financial institutions appears to be key, with a one point increase in the index increasing the annual percentage change in subnational public investment by as much as 0.5 percentage points. In the longer run, the depth of financial markets plays a role in supporting investment. A one point increase in the index is associated with 0.02 percentage points of GDP more in local and regional investment.

Financial and economic development are also closely linked to the funding sources available to and employed by subnational governments. Municipalities in more developed regions report greater use of capital market finance and commercial bank loans, while less developed and transition regions rely more on national promotional banks and EU-funded financial instruments (EIB, 2023b). This also explains why

¹² 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.

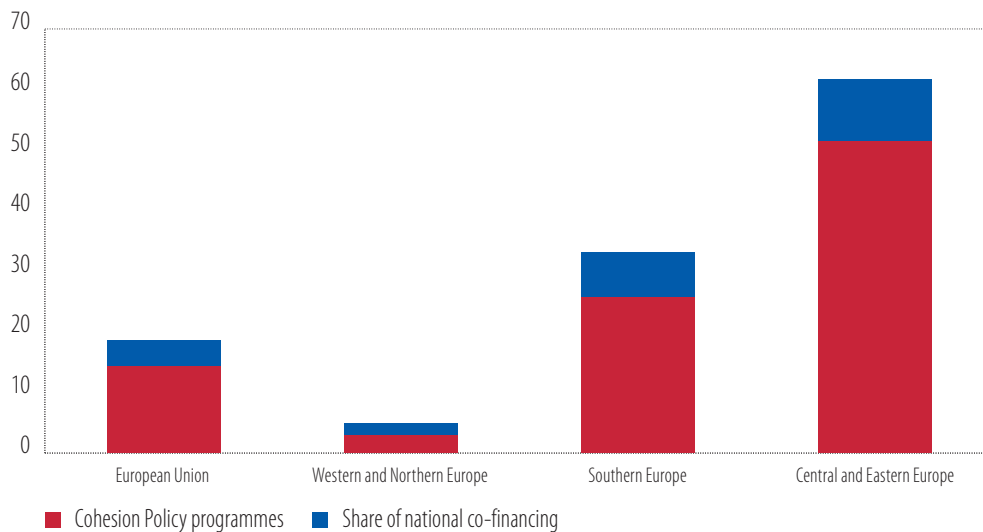
¹³ It takes an average of 26 weeks to build a warehouse in the European Union.

¹⁴ The importance of regulatory barriers is also supported by the case-based evidence (EIB, 2016) and documented for (sustainable) infrastructure investment (OECD, 2023).

the overall reliance on EU funding at the regional level varies considerably between different European regions: from 62% for countries in Central and Eastern Europe to 5% for countries in Western and Northern Europe (Figure 13), with an individual country range of 1.4% in Denmark to 114% in Portugal.¹⁵

On average, cohesion policy funding represented one-fifth of EU public investment over the 2014-2020 budget period. Cohesion funds are EU funds directly targeted at EU regions. They contribute to the funding of subnational public investment, which, as explained above, is an important component of total public investment. Regional governments across Europe are expressing concerns about their role and involvement in the implementation of the Recovery and Resilience Facility, as this is administered at a national level.

Figure 13
The role of EU-financed programmes (2014-2020 cohesion funds as a % of total public investment)



Source: EIB staff calculations based on data from the Open Data Portal for European Structural and Investment Funds (ESIF), maintained by the European Commission.

A lack of skills and economic volatility constrain local and regional investment

Higher national public debt dampens subnational investments. Investment by local and regional governments decreases when countries have higher debt-to-GDP ratios, which leads to lower levels of investment in the longer run. A debt-to-GDP ratio of 1 percentage point higher has been associated with local and regional investment that is 0.01% to 0.02% of GDP lower. The relationship underscores the importance of sound and sustainable public finances. The higher debt burden and corresponding debt service payments limit governments' ability to spend on other priorities.

Recent inflationary pressures are likely to weaken local and regional investments in the short term. Historically, higher prices – measured by price indices for the manufacturing sector – are correlated with annual decreases in real subnational public investment. On average, when inflation is around the central bank's target, subnational public investment is unaffected by prices. However, in times of higher inflation, a 1 percentage point increase in prices is estimated to depress subnational investment by as much as 0.3% from one year to the next.

¹⁵ As the share exceeds 100% for some countries, it can be concluded that not all EU-financed projects are classified as public investment. In fact, they include a wide variety of expenditure categories.

The limited availability of skilled labour constrains local and regional investments. Whereas higher public investment is typically observed in countries with older (or ageing) populations, labour markets and their composition do play a role. In the EIB Municipality Survey, municipalities report facing a shortage of experts with environmental and climate assessment skills, hindering local investments (EIB, 2023b). Multicountry analysis confirms this. A higher share of employment in science and technology coincides with increasing local and regional investment. In contrast, societies with a larger share of people in households with lower work intensity, where fewer members work or members work less hours, show lower levels of local and regional investment.

The implementation of the Recovery and Resilience Facility is key

The implementation of the Recovery and Resilience Facility is affecting current and future EU public investment. Created in 2020 as a response to the COVID-19 crisis, the facility was adapted following the Russian invasion of Ukraine, which prompted the energy crisis and fuelled a rise in inflation. A major change was the inclusion of [REPowerEU](#), the EU plan to reduce dependence on Russian sources of energy, under the Recovery and Resilience Facility umbrella. Following the change, EU members were allowed to submit additional chapters to their national investment plans. In total, 20 EU members submitted new chapters relating to energy investments covered by [REPowerEU](#) and 25 asked to revise parts of their investment plans to take into account new circumstances, including major price changes.¹⁶ The section focuses on the support the Recovery and Resilience Facility could provide to public investment.

The Recovery and Resilience Facility provides a boost to public investment

Most governments intend to use Recovery and Resilience Facility financing to top up domestic private and public investment. Not all funds from the facility will go to financing investment. National plans also include current spending or capital transfers, which for countries like Spain constitute a major part of the total investment funding. However, the facility plays a distinct role in supporting public investment, particularly for some EU members.

Recovery and Resilience Facility financing will bolster public investment in EU countries. According to official government projections, resources from the facility will raise public investment in Italy, Portugal, Greece, Latvia, Romania, Slovakia and Slovenia (Table 3). For other countries (like Hungary and to some extent Croatia), these resources will likely be used in place of national funding without necessarily increasing the investment rate.

Table 3
Public investment (% GDP) according to the stability and convergence programmes, by year and programme

	Year	2019	2020	2021	2022	2023	2024	2025	2026
Greece	2019	3.9	4.1	4.3	4.1				
	2023	2.5	3.1	3.6	3.5	4.8	5.4	5.7	5.5
	2023 RRF financed			0.1	0.3	0.8	1.3	1.5	1.4

¹⁶ The European Commission is investing a substantial amount of political capital in this considerable effort, as it is the first time a central European fiscal capacity has been created. For further details, see the outline of the debate on the fiscal framework in Chapter 1 of this report.

	Year	2019	2020	2021	2022	2023	2024	2025	2026
Italy	2019	2.2	2.4	2.4	2.5				
	2023	2.3	2.6	2.9	2.7	3.3	3.8	3.7	3.4
	2023 RRF financed			0.2	0.9	1.2	1.7	1.7	0.7
Latvia	2019	5.1	4.9	4.7	4.4				
	2023	5.1	5.7	5.2	4.4	5.1	5.9	5.7	4.8
	2023 RRF financed				0	0.4	0.8	0.7	0.4
Portugal	2019	2.1	2.3	2.5	2.6	2.6			
	2023	1.8	2.3	2.6	2.5	3.2	3.4	3.5	3.4
	2023 RRF financed				0.1	0.7	0.8	0.8	0.6
Romania	2019	3.5	3.3	3.4	3.3				
	2023	3.5	4.6	4.2	4.2	5.2	5.5	6.3	7
	2023 RRF financed				0	0.8	1.2	1.7	2.2
Slovakia	2019	2.7	2.7	2.5	3.1				
	2023	3.6	3.4	3.1	3.3	5.1	4	3.8	2.9
	2023 RRF financed				0.6	1	0.6	0.4	0.2
Slovenia	2019	4.1	4.1	4.1	4.1				
	2023	3.8	4.1	4.7	5.2	6.4	5.5	5.1	4.3
	2023 RRF financed			0.2	0.1	0.5	0.7	0.8	0.4

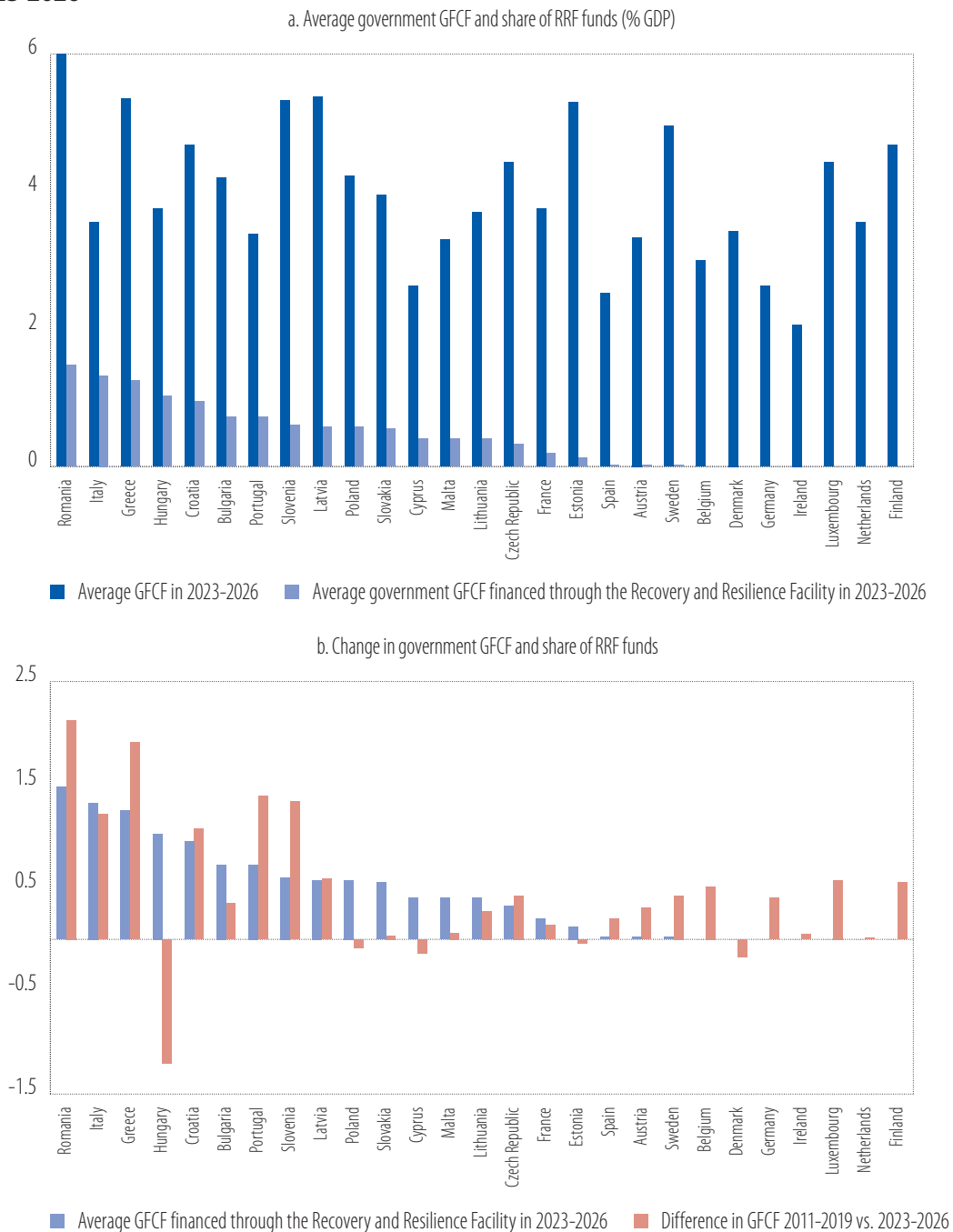
Source: *Stability and convergence programmes 2019 and 2023.*

Note: *RRF refers to the Recovery and Resilience Facility.*

The Recovery and Resilience Facility is expected to fund significant growth in government investment, particularly for larger countries. The additional boost provided by the facility can be assessed by comparing pre-crisis average investment from 2011 to 2019 with the projected average investment in the period during which the financing can be used (2023 to 2026). According to the information included in the stability and convergence programmes of EU members, the Recovery and Resilience Facility will play an important role in supporting public investment in most Southern, Central and Eastern European countries. In these countries, the extra funds will result in an increase in capital spending for 2023-2026 compared to the average for 2011-2019 (Figure 14).

The projected increase in government investment relative to the pre-pandemic average nearly matches the Recovery and Resilience Facility funds committed to Italy, Croatia, Latvia and the Czech Republic. These funds also constitute a very large share of GDP for Romania and Greece, and the share of government investment financed with them exceeds the projected increase for Bulgaria, Lithuania, Slovakia and France. Public investment in Estonia, Cyprus, Poland and Hungary is expected to be lower from 2023 to 2026 compared with 2011 to 2019.

Figure 14
The role of the Recovery and Resilience Facility in supporting public investment, 2023-2026



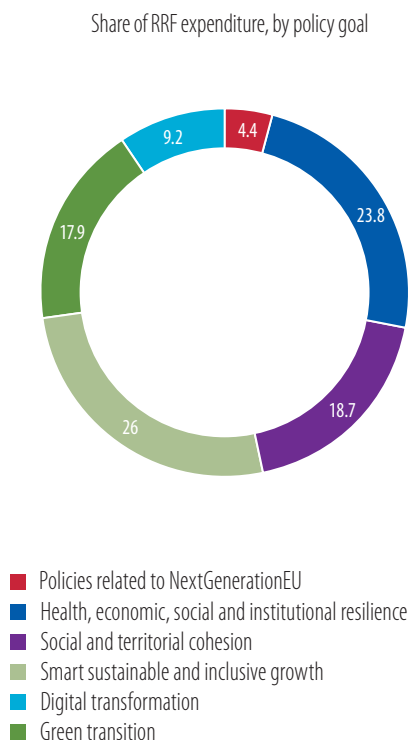
Source: EIB staff calculations based on EU members' stability and convergence programmes.

Recovery and Resilience Facility disbursements have experienced delays

By November 2023, 64 payments from the Recovery and Resilience Facility (including early funds not tied to specific projects) had been made, amounting to EUR 176 billion. To put things into perspective, total EU government investment in 2021 and 2022 were EUR 972 billion.¹⁷ The European Commission (2023a) report on the facility includes ongoing disbursements, progress made on common indicators and the allocation of spending to each specific investment area. Spain has already received three instalments for specific projects, while five other countries have received two payments. The rest of the payments have not been tied to specific projects. The European Commission tracks investment for the green transition, digitalisation and education using common indicators, such as additional installed renewable power or the number of additional dwellings with high-speed internet connections. It also includes case studies to illustrate successful investments in different countries.

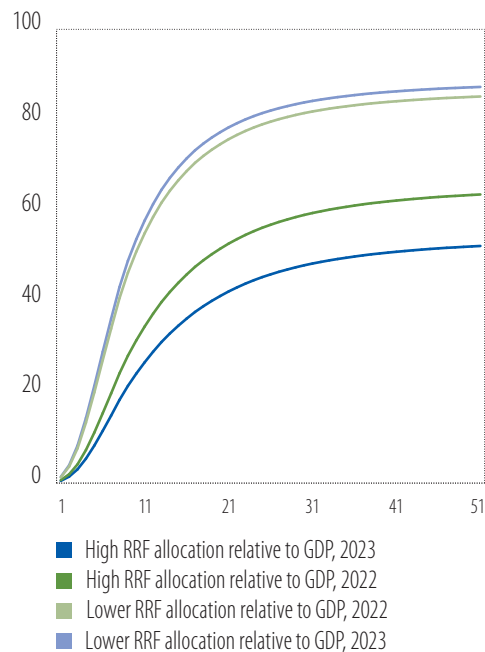
Disbursements for key targets differ from the funds committed at the end of 2023. In the European Commission plans, green investments account for 37% of total Recovery and Resilience Facility financing while digital investments make up 20%. Plans by EU members call for an even larger share of funds to go toward the investment areas: 40% for green projects and 26% for digital projects. However, so far, green disbursements have only accounted for 18% of funds and digital 9%, as shown in Figure 15. This lag is concerning considering the pressing need to invest heavily in these areas, particularly in green projects.

Figure 15
Government spending financed by the Recovery and Resilience Facility



Source: [European Commission RRF factsheet September 2022](#).

Figure 16
Cumulative share of contracts signed after the submission deadline (% of signed offers)



Source: *Tenders Electronic Daily (TED) database and EIB staff calculations.*

Notes: *The X-axis indicates the number of weeks after the submission deadline. See also footnote 18.*

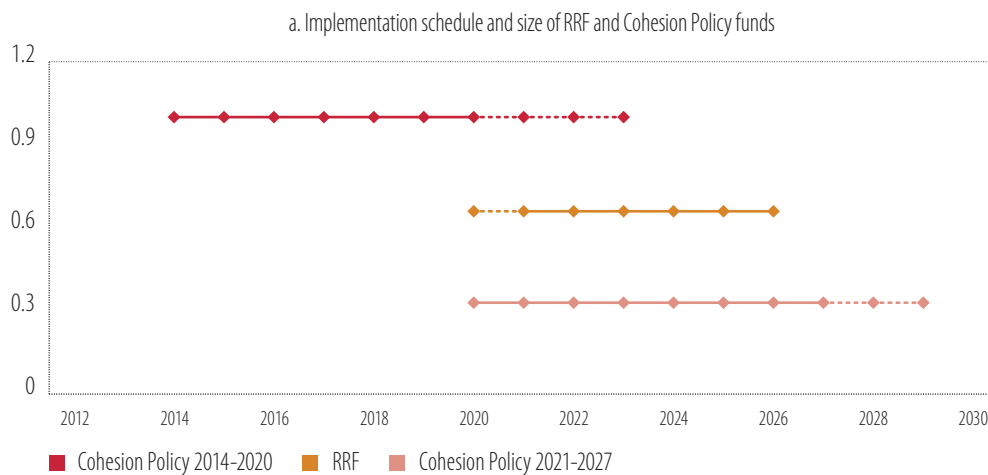
¹⁷ Not all Recovery and Resilience Facility-financed spending can be classified as public investment, however, as explained in this report.

In some countries, the sheer volume of Recovery and Resilience Facility financing makes it difficult for country administrators to use funds effectively and on time. Many countries with large allocations from the facility also benefit from large infusions of money from the European Structural and Investment Funds (ESIF). Some countries had already experienced delays in using up ESIF financing from the previous programming period (which ended in 2021 and had a final payment deadline of end 2023). Countries may struggle to put the Recovery and Resilience Facility to use in the allotted time frame, considering that the financing cannot be extended beyond 2026. As of June 2023, EU countries had spent 84% of ESIF resources for the 2014-2020 programming period.

Public procurement data also highlights the difficulties some countries are having in deploying Recovery and Resilience Facility funds. This is particularly the case for EU countries that received a high share of funds from the facility relative to their GDP, namely Bulgaria, Croatia, Greece, Italy, Portugal and Romania. These countries have taken longer to award contracts. The delays in using funds were further aggravated in 2023 compared to 2022. Figure 16 illustrates the problem using the share of contracts signed after the submission deadline for firms' offers.¹⁸ For countries that received a high share of Recovery and Resilience Facility funds, 40% of contracts had been signed after 13 weeks in 2022, but only 31% in 2023.

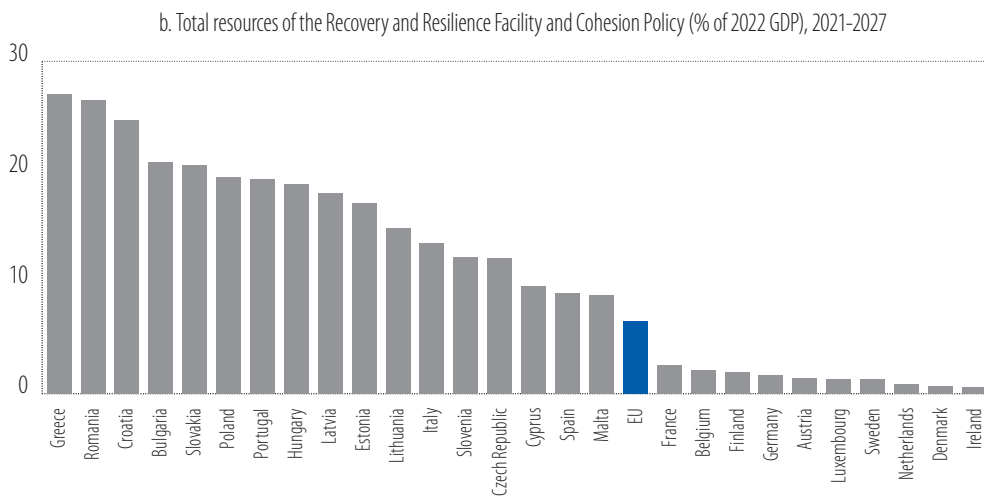
Looking forward, the overlap between various large EU financing sources may further complicate implementation. Investments using cohesion funds available in the 2021-2027 programming period, which need to be spent by 2029 (two years after the end of the programming period), have barely started. While no progress reports are available yet, the sheer size of Recovery and Resilience Facility and 2021-2027 Cohesion Policy funds makes their timely and effective use even more challenging, particularly in some countries.¹⁹ One complication is that the governance of the two programmes is different. The Recovery and Resilience Facility is more centralised and executed in partnership with national governments, while the implementation of Cohesion Policy is more local or regional.

Figure 17
Implementation overlaps between RRF and Cohesion Policy funds (% GDP)



¹⁸ The figures are partial effects from a Cox estimation of signature delays on fixed effects for a number of procurement elements: the year in which firms had to submit offers; whether goods, services or work were procured; the type of good, service or work; the level (regional or national) at which the contracting authority operated; the value of the procurement; and the importance of the Recovery and Resilience Facility allocation for the procuring country. The data source is the [TED database](#). The estimates are restricted to the contract notices and contract awards, including by utilities, that result from open tenders for public investment, to make the dataset more homogenous. The data has been further filtered to sift out the types of works, goods and services that are procured for public investment. Contract award values have been cleaned for improbable figures.

¹⁹ In five countries the combined amount exceeds 20% of GDP for the total period, keeping in mind that Recovery and Resilience Facility financing should be spent by the end of 2026.



Source: RRF scoreboard, Kohesio database and EIB staff calculations.

Widening gap between plans and achievements

The governance of the Recovery and Resilience Facility focuses on performance. Each EU member must prove the successful achievement of pre-agreed targets before receiving a payment. Payments are semi-annual and follow documented requests by EU members. In addition, each country must provide an analysis of its project implementation every six months.

EU countries reported the results of their Recovery and Resilience Facility monitoring to the European Commission in October 2023. 44% of milestones and targets that were planned to be achieved by the third quarter of 2023 are marked as fulfilled, 38% as completed but not yet assessed, and 18% as not completed. Compared to the previous reporting round, this represents a 1 percentage point decrease in the share of uncompleted projects. Of the milestones and targets due in 2023, 37% were reported to be on track while 25% were completed, and 8% delayed – a 6 percentage point increase compared to the previous reporting round.²⁰

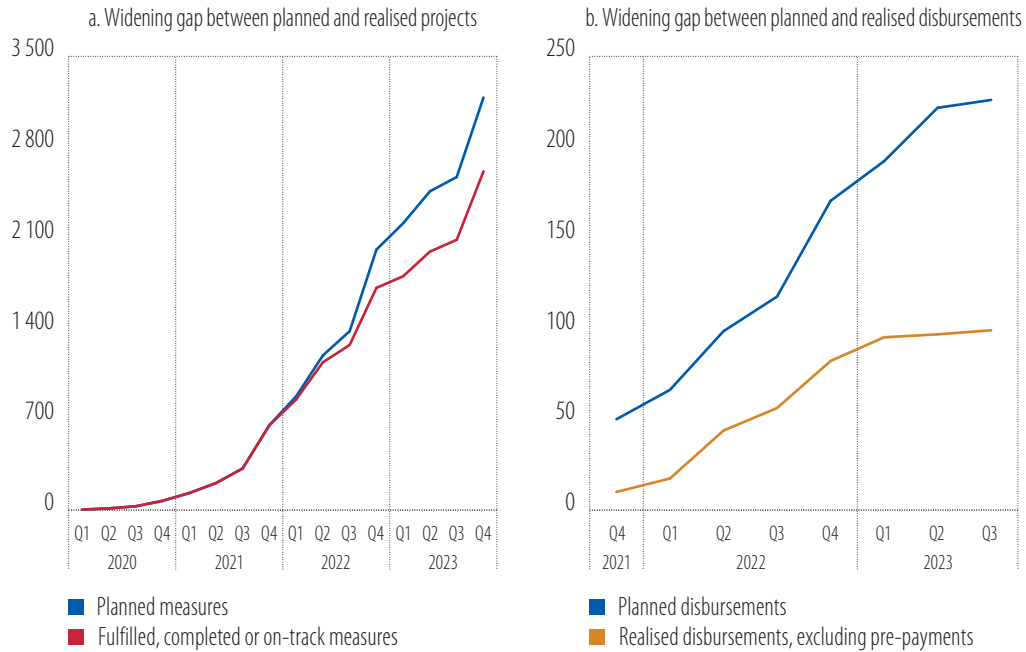
A gap opened between the number of milestones countries planned to hit by the end of 2021 and the reality. The gap has been growing since then (Figure 18, left-hand panel). EU countries send requests for disbursements to the European Commission after submitting a periodic report on the implementation of reforms or investments.²¹ The first payments based on agreements between EU members and the European Commission were planned to take place in the fourth quarter of 2021. As shown in the right-hand panel of Figure 18, a gap opened up between planned and completed disbursements at the very beginning. This gap has since widened further, from EUR 40 billion in the fourth quarter of 2021 to EUR 127 billion in the third quarter of 2023.

Countries appear to have been pushing through reforms, while investment is moving more slowly. The higher number of milestones and targets related to reforms that were supposed to be implemented by the end of 2023 signals that investments may take more time to execute. In 2022, the share of uncompleted investments was 21.5% and the share of reforms was 21.7%, a similar result. As Figure 19 shows, more investments were expected to be completed in 2023 than reforms, and the majority were on track (69.2%). In 2023, a higher number of investments were not completed (179) than reforms (134). However, this is because of a higher number of planned investment projects than reforms. In total, 25.9% of investment measures have not been completed, compared with 26.6% of reforms.

²⁰ The analysis focuses on 3 182 measures for all Member States.

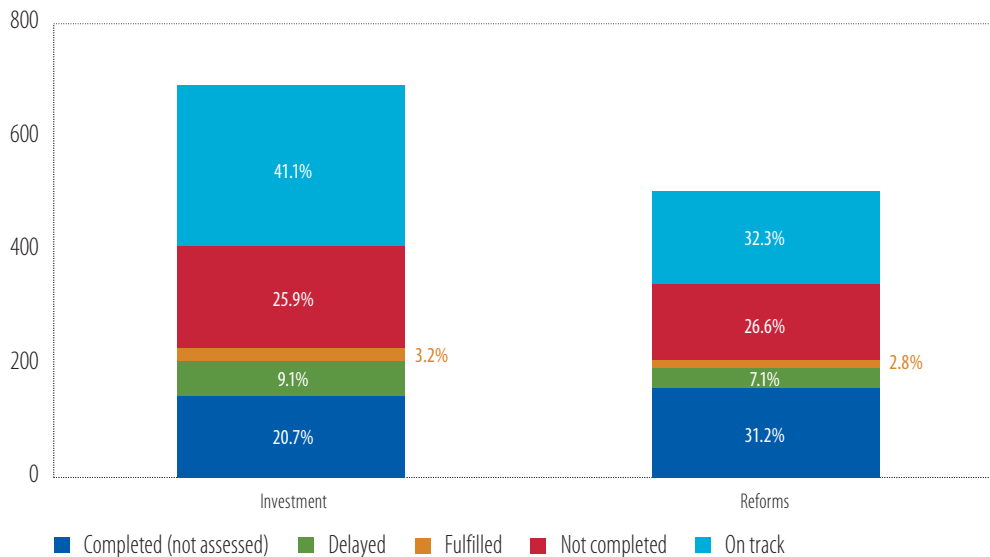
²¹ Pre-financing payments are an exception as they are not conditional on the implementation of milestones or targets.

Figure 18
Gap between plans and projects realised in RRF implementation



Source: EIB staff calculations based on data reported by EU members on their implementation of RRF measures, operational agreements and the [Recovery and Facility Resilience scoreboard](#).

Figure 19
Status of investment and reforms in 2023



Source: EIB staff calculations based on data reported by EU members on their RRF implementation.

Table 4
Areas with relatively faster RRF implementation (% of total projects planned), 2020-2023

	Total	Delayed	Not completed
Research	6.2	0	6.6
Innovation	5.9	2	5.5
Next generation or policy	6.3	1	6.2
Green transition	1.6	0	0.6

Source: EIB staff calculations based on data reported by EU members on their RRF implementation.

Note: The calculation is based on text searches using the keywords indicated in the rows.

Measures related to innovation or the green transition are delayed or not completed less often. A text-based search of national plans makes it possible to detect areas that are under- or overrepresented among delayed and incomplete measures.²² Research and innovation or policies related to [NextGenerationEU](#) are underrepresented among measures delayed in 2022, meaning that they do not seem to suffer excessively from impediments to implementation (Table 4). The green transition and innovation were also underrepresented among incomplete measures, indicating that their implementation had been speedier. However, policies to regenerate the economy were neither under nor overrepresented among incomplete measures in 2022.

Infrastructure-related investment suffers the most from not being completed. The share of not completed infrastructure investment is 7 percentage points higher than infrastructure’s overall share of investment (Table 5). When the analysis is extended to include measures related to infrastructure or buildings, the results are similar. Among other things, infrastructure projects can be delayed because of disruptions to the supply chain or price increases, which can cause delays in the tendering process. Not-completed investments are overrepresented in projects related to municipalities or local authorities; solar, wind or hydrogen; and digital transformation. Solar, wind and hydrogen, along with digital transformation, are also overrepresented in delayed measures.

Table 5
Areas with bottlenecks in RRF implementation (% of total projects planned), 2020-2023

	Total	Delayed	Not completed
Infrastructure	11.8	11.1	17.8
Infrastructure or buildings	19.7	20.2	24.4
Local or authority	13.7	11.1	14.2
Solar or wind or hydrogen	3.7	4.4	4.5
Digital transformation	3	4	3.2

Source: EIB staff calculations based on data reported by EU members on their RRF implementation.

Note: The calculation is based on text searches using the keywords indicated in the rows.

These results point to potential difficulties local governments are facing in planning and executing investments, particularly in the energy transition and in digitalisation. The results echo the findings of the EIB Municipality Survey 2022, in which close to one-third of municipalities (31%) said a lack of expertise in assessing environmental and climate projects were holding back infrastructure investments.

²² Areas are defined based on keywords contained in a project description, such as research, innovation, municipality or solar.

Overall, scaling up investments in specific areas might be slower because of difficulties local and regional governments have in planning and executing investments. Supply chain disruptions and price increases might cause bottlenecks in the implementation of Recovery and Resilience Facility investment projects, which can be illustrated by the visible gap building up between the planned and realised number of reforms and investments and between the planned and actual disbursements.

The ability of the Recovery and Resilience Facility to support EU investment hinges crucially on its governance and functioning. The nature and characteristics of mounting delays in specific areas warrant closer examination. Price increases, for instance, have drastically altered the cost of infrastructure and other construction projects. Other delays relate to the large and varied nature of projects, which involve multiple levels of local and regional governments. Improving the ability of these governing structures to push through investments is crucial if Europe is to maintain move forward in the digital, green and energy transitions.

The resilience of government investment should be a policy priority

The reintroduction of EU fiscal rules in 2024 could push governments to cut spending or look for new tax revenue. Expected weak economic growth in 2024 combined with the growing cost of national debt will put pressure on government budgets. This might force some governments to cap spending growth or increase revenue, or both, to ensure the sustainability of their financing.

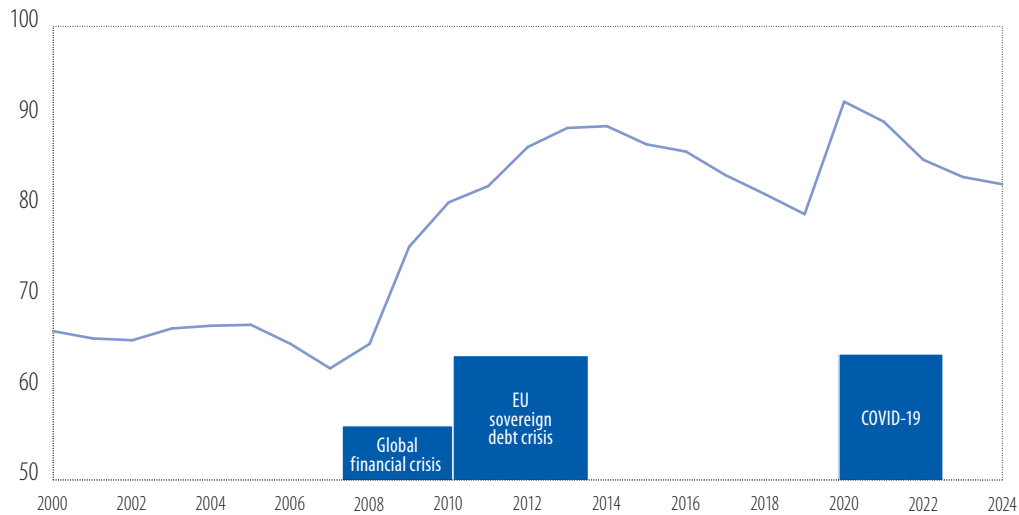
This section shows that government investment is usually particularly hard hit in times of fiscal retrenchment. The spending cuts and other fiscal tightening that followed Europe's sovereign debt crisis hurt competitiveness and economic growth. This section shows that, since public investment is also a catalyst for private investment, scaling back public investment now could result in lower total investment in the future.

The looming reintroduction of EU fiscal rules may jeopardise government investment

Many EU countries have struggled with high levels of government debt since the start of the global financial crisis in 2007. The global financial crisis and Europe's sovereign debt crisis led to a notable increase in EU debt as a share of GDP, although the share started to decline steadily after 2014 as EU governments tightened fiscal policy. Debt levels bounced back again during the COVID-19 pandemic in 2020, but governments quickly took measures to improve the situation, and by 2021 and 2022 debt had fallen back to 2014 levels. That said, 13 EU countries still had debt that exceeded 60% of GDP in 2022, and six of those had debt that surpassed 100% of GDP. Eleven countries had a budget deficit that exceeded 3% of GDP. While this number is much lower than that of previous crises – 22 in 2009 and 25 in 2020 – the debt levels remain close to record highs.

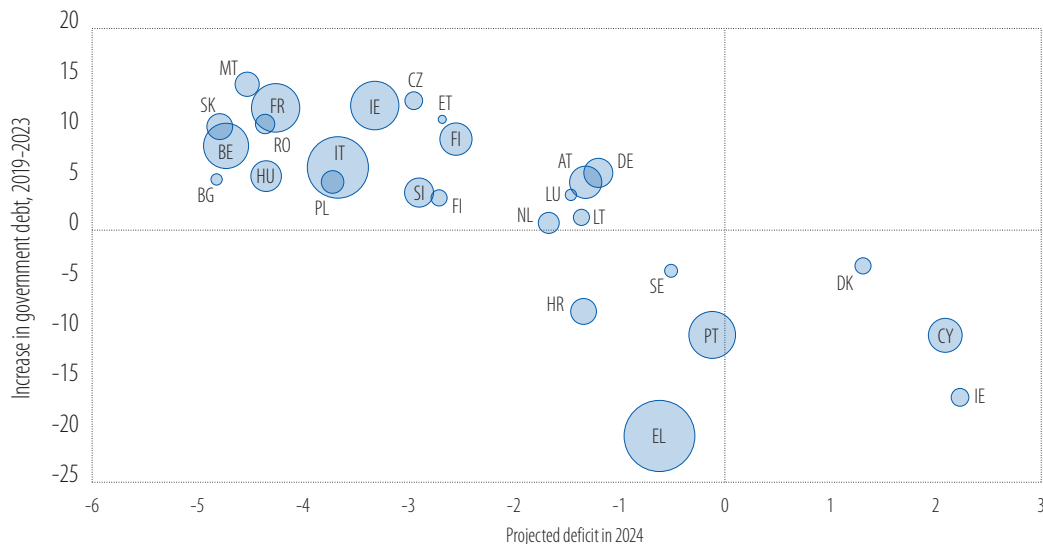
As a result, the deactivation of the general escape clause of the Stability and Growth Pact may prove challenging for some EU members. The reintroduction of – albeit modified – fiscal rules three years after the activation of the general escape clause comes at a time when EU countries have very different pictures of financial health (Figure 21). Those that have kept their deficits under control since 2019 are expected to do better in 2024. They also tend to have smaller debt levels. A few countries that had high levels of government debt in 2019 have increased it further, and they expect to have high fiscal deficits next year as well. Ten countries are expected to have deficits exceeding 3% of GDP, five of which already have government debt that surpasses 100% of GDP.

Figure 20
EU gross public debt and changes in the fiscal framework (% GDP)



Source: AMECO.
Note: The blue boxes highlight the recession/crisis periods.

Figure 21
Increases in government debt and deficits (% GDP)



Source: AMECO database of the European Commission, updated with 2023 autumn forecast.
Note: The size of the bubble reflects gross government debt at the end of 2023.

The deactivation of the general escape clause comes with changes to the European Union’s fiscal framework. The European Commission opened a public consultation for fiscal governance reform at the beginning of 2020 (before the COVID-19 pandemic) and resumed it in 2022. The reforms focus on several flaws that had become apparent even before the pandemic hit. The framework resulted in fiscal policies that moved with the business cycle, as opposed to making up for the slack in times of slow growth; it treated investment spending similarly to other expenditure despite its importance in supporting future growth; and it had gradually become very complex, making compliance difficult. The large increase in public debt after 2019 increased the urgency of revising the EU fiscal rules.

The agreed framework substitutes the existing approach with one using debt sustainability analysis. According to the proposal, each country whose debt exceeds 60% or whose deficit exceeds 3% should receive from the European Commission a plan (EU Council, 2023) for a fiscal trajectory to follow based on debt sustainability analysis and measured by a single indicator (net expenditure). Each EU member should define on these grounds its multiyear fiscal plan – which will be assessed by the European Commission and agreed upon with the European Council – to set out at least a yearly adjustment of the country's debt and/or the deficit. The time horizon given for the fiscal trajectories can be lengthened from four to seven years if the country undertakes investment or growth-enhancing reforms.

The Recovery and Resilience Facility is temporarily shielding government investment, even under the old fiscal rules. The analysis (see Table 6) shows that Recovery and Resilience Facility grants provide an investment buffer that could result in structural primary surpluses in the European Union. The grants and the primary surpluses are quite similar in size, particularly for Southern, Central and Eastern European countries. With the new rules, investments and reforms related to the Recovery and Resilience Facility automatically qualify certain EU members for a longer adjustment period. However, when the facility expires in 2026, many EU countries may find themselves under pressure to consolidate fiscally. They might resort to cutting public investment, which is usually the first victim of fiscal consolidation. At the same time, investment needs in the European Union are growing to match ambitious climate change and digitalisation targets.

Table 6
RRF grants and the projected improvements in the structural primary surplus (% GDP)

	2022	2023	2024	2025	2026
Expenditure financed with RRF grants (% GDP)					
European Union	0.41	0.44	0.31	0.25	0.17
Western and Northern Europe	0.22	0.14	0.12	0.06	0.00
Southern Europe	1.08	1.14	0.54	0.51	0.49
Central and Eastern Europe	0.10	0.66	0.86	0.82	0.45
Change in structural primary balance (% GDP)					
European Union		0.00	1.00	0.50	0.40
Western and Northern Europe		-0.80	1.10	0.60	0.30
Southern Europe		1.70	0.90	0.30	0.50
Central and Eastern Europe		0.60	0.80	0.10	0.10

Source: EIB staff calculations based on EU members' stability and convergence programmes.

Note: Introduced in the EU fiscal framework.

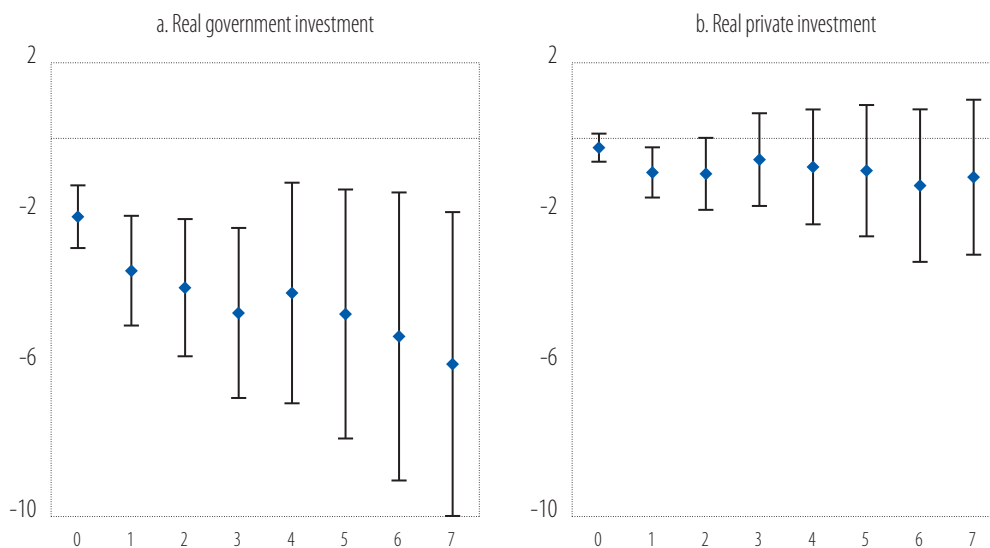
Rising interest payments on debt are putting additional pressure on government budgets in the medium term. The long maturity of EU countries' debt softened the impact of interest rate hikes in 2023. In the medium term, however, the debt service burden will weigh heavily on government budgets, especially for highly indebted countries. This will further increase the pressure to cut spending, likely with negative consequences for government investment.

Fiscal consolidation usually results in slashing government investment. Historically, cuts to government investment have played an outsized role in fiscal consolidation. Streamlining budgets usually requires a mix of expenditure cuts and revenue increases, with the revenue being more significant in large-scale consolidations (OECD, 2011). Many fiscal consolidation efforts have concentrated on the largest expenditure items, such as public-sector wages and social security spending. Some smaller expenditures, however, have suffered disproportionately. Government investment is a typical example, as it is reduced significantly, even though it generally comprises only about 5% of spending. For example, Blöchliger et al. (2012) find that government investment spending as a share of GDP was cut in half, on average, during 13 major rounds of consolidation from 1981 to 2000. They posited that investment could be particularly vulnerable to cuts because it encountered less political resistance than reductions in entitlements.

The decline in government investment following fiscal consolidation is not only large, but also long-lasting. A forthcoming paper (Kolev and Schanz, 2024) identifies fiscal consolidations constructed using the historical approach of Alesina, Favero, and Giavazzi (2019). A local projection method (Jordà, 2005) is used to trace out the cumulative response of real government investment to fiscal consolidation in 16 OECD countries from 1978 to 2014. The results illustrate the significant and persistent effects of fiscal consolidations on government investment. Even seven years after the announcement of a fiscal consolidation, real government investment remains below the pre-announcement level, with an overall decline of 6% for a fiscal consolidation of 1% of GDP (Figure 22, left-hand panel).

Fiscal consolidations that focus on cutting spending are more detrimental to government investment. Comparing the response of government investment to fiscal consolidations based on spending with those that are more tax-based reveals that spending cuts result in bigger and longer-lasting declines in real government investment. Government investment recovers in about six to seven years following consolidation based on raising revenue by increasing taxes, while in the case of consolidation based on spending cuts, it remains nearly 8% lower, even seven years after the announcement.²³

Figure 22
Cumulative response of real investment to a fiscal consolidation (% change), by number of years after the announcement



Source: Kolev and Schanz (2024).

Note: The black lines represent 95% confidence intervals. Based on data from 16 OECD countries from 1978 to 2014.

Private investment is also affected by fiscal consolidations. Spillover effects from government investment to private investment together with reduced incentives to promote investment, such as tax increases or the removal of tax breaks and subsidies, also weigh on private investment (Figure 22, right-hand panel). Real private investment declines about 1% in the year following the announcement of a fiscal consolidation of 1% of GDP. Investment in non-residential construction and equipment investment are most affected. While investment in intellectual property products (which are tightly linked to innovation) is the least affected, it declines significantly only during tax-based fiscal consolidations. The estimated decline is still economically significant – about 3.5% relative to its level before the consolidation announcement – and is delayed, occurring about three years after the announcement.

23 The estimate in tax-based fiscal consolidation after seven years is -2.97%, but it is not significant at a 5% confidence level, whereas in an expenditure-based fiscal consolidation the point estimate is -7.37% and is significantly different from 0 at the same level of confidence.

Government investment can buoy private investment

Public policies can catalyse private investment beyond the direct effects of fiscal incentives. EIB (2023a) demonstrates the role of government investment in stimulating private investment at the level of NUTS 2 regions in the European Union, which have between 800 000 and 3 million inhabitants. A follow-up study focuses on the effects of government investment in a given region on investment by firms in that region. Data on regional government investment come from the [Kohesio database](#) (Box C). This source collects data on single projects of public investment at a lower level of aggregation – namely smaller NUTS 3 regions, which tend to have 150 000 to 800 000 inhabitants – including information regarding the characteristics and the motivation of the public policy.

Increasing public investment and/or capital transfers in a firm’s neighbourhood positively affects its investment. From the firm’s perspective, investment decisions are related to perceived business opportunities and the firm’s available resources, summarised by current and lagged profits. In addition, investment growth is related to the change in a firm’s leverage, expected to have a negative effect, and the change in the maturity of its debt exposure, with longer debt maturity favouring investment decisions. Raising the level of public investment near where a firm is located has a positive effect on its decision to invest. The same is true when the level of government capital transfers in the same NUTS 3 region increases. The effect of capital transfers in the same region is estimated to be higher than that of public investment, particularly in richer regions.

Public investment and transfers can spur firms’ investment. A 1 percentage point change in the public investment ratio is associated, on average, with a 1.1 percentage point change in an average firm’s ratio of net investment to total assets a year later. A 1 percentage point increase in the ratio of capital transfers to regional value added is associated with a 3.85 percentage point increase in a firm’s net investment to total assets. To put things in perspective, in 2018 the average EU-financed public investment ratio increased by 0.1 percentage points, from 0.56% to 0.66%. The estimated effect of this on the change of the private net investment rate from 2018 to 2019 is 0.11 percentage points. In 2019, the change in average investment rates was -0.2 percentage points. Had it not been for the increase in the public investment rate, the net investment rate would have declined by 0.31 percentage points instead of 0.2.

The detailed breakdown available in the data set makes it possible to investigate the effect of specific categories of public investment on specific themes of private investment. Government policy is key to mobilising the vast resources needed for carbon neutrality. Public investments can develop the framework conditions needed to expand private investment in this area. More public investment in the climate transition makes it more likely for a firm near the public investment project to increase its own climate-related investment. The response is stronger for small and medium-sized firms.

Box C

Illustrating the effect of public investment on firm investment

This box focuses on climate change investments financed with cohesion funds to illustrate the effect of public policies on firm-level investment. The focus is on two key elements: government investment and government capital transfers.

The analysis builds on two data sources. First, the matched EIBIS-ORBIS²⁴ database provides firm-level data on corporate investment, including areas of investment, obstacles to investment, firms’ financial data and other characteristics. Several variables related to firm investment are used as dependent

²⁴ Bureau Van Dijk’s Orbis database of companies and other entities.

variables. The measures of firm investment used in the analysis are total firm investment, planned firm investment to tackle climate change, and the various measures adopted by firms that relate to climate change mitigation or adaptation.

Second, the newly available Kohesio database offers comprehensive information on public policies financed with EU cohesion funds. The database contains over 1.9 million projects with their locations and additional in-depth information enabling multiple classifications. For the analysis, projects have been classified into four categories by type of public support: public investment, capital transfers, government consumption or unclassified.²⁵ On the one hand, projects are classified as public investment when they include investments in infrastructure, education and other tangible assets aimed at promoting economic development and social welfare. On the other hand, projects are classified as capital transfer when they entail a transfer of resources to a private entity.²⁶

In addition to the general classification by type, climate change-related projects in the Kohesio database were selected for secondary classification. Overall, slightly less than one-fifth of all projects were classified as climate change-related (18.4%). In turn, projects with “Greener carbon-free Europe” as their policy objective were classified into four sub-categories: climate change adaptation, climate change mitigation, climate change adaptation and climate change mitigation, and unclassified. A project is classified as climate change adaptation when it addresses the effects of climate change and enhance resilience (1.9%). Projects classified as climate change mitigation focus on reducing greenhouse gas emissions and promoting the sustainable use of resources (16.2%). Furthermore, 0.4% of projects were classified as both climate change adaptation and climate change mitigation.

The analysis starts by estimating a baseline econometric specification based on standard firm-level investment models²⁷ (for instance, Kalemli-Özcan et al., 2022). Investment is affected by current business opportunities and the resources available to the firm, is expected to have a positive impact and is represented by current and past profits over total assets. Other factors are the firm’s leverage (measured by total debt over total assets) and the maturity of its debt exposure, with a longer debt maturity favouring investment decisions. As shown in Table B.1, column 1, the estimated relationships are aligned with expectations and the coefficients are statistically significant. To account for additional factors, fixed effects are used for firm size, NACE²⁸ Rev. 2 two-digit sectors, NUTS 2 regions and years, while NUTS 3 regions are used as a natural clustering mechanism.

The analysis then investigates the impact of public policies on firm investment. Public policies, considered via the change in European Union-financed public investment or capital transfers, are inserted into the baseline relationship (Table B.1, columns 2 to 4). Public policies are measured as the sum of all Kohesio projects’ value in a specific NUTS 3 area divided by the region’s gross value added. The estimated coefficients on these variables are statistically and economically significant. Firms’ investments are positively influenced by recent EU public investment or capital transfers close to them. Capital transfers or investment grants seem to be more effective in supporting private investment. This evidence is hardly surprising, as investment grants are only paid if a given investment occurs.

25 Classifications are based on the field of intervention encompassing more than 120 categories. For countries where the field of intervention was not available for a high share of projects, detailed project descriptions were used for classification.

26 62% of projects are classified as public investments and 21% as capital transfers. Around 20% are classified as government consumption, and the remaining 15% as unclassified.

27 Following Kalemli-Özcan et al. (2021), net investment at firm level is computed as the ratio between net fixed capital stock increase and the initial net fixed capital stock.

28 Nomenclature of Economic Activities (NACE) is the European statistical classification of economic activities.

Table B.1
Net investment of firms as explained by financial variables and public investment

Dependent variable	Firm-level investments	Firm-level investments	Firm-level investments	Firm-level investments
	(1)	(2)	(3)	(4)
Explanatory variables				
D profits/Total assets	0.196 (***)	0.191 (***)	0.187 (***)	0.188 (***)
L D profits/Total assets	0.150 (***)	0.170 (***)	0.176 (***)	0.175 (***)
D debt maturity	0.522 (***)	0.547 (***)	0.557 (***)	0.557 (***)
L D debt /Total assets	-0.471 (***)	-0.454 (***)	-0.465 (***)	-0.463 (***)
L D public investment/Value added		1.274 (*)		1.106 (*)
L D capital transfer/Value added			4.32 (**)	3.854 (**)
Fixed effects				
Year	yes	yes	yes	yes
Size	yes	yes	yes	yes
NACE 2 sector	yes	yes	yes	yes
NUTS regions	yes	yes	yes	yes
(Clustered error, clusters are NUTS 3)	(obs 397K)	(obs 397K)	(obs 397K)	(obs 397K)

Source: Based on the Kohesio dataset and the 2023 EIB Investment Survey (EIBIS).

Note: The dependent variable is D net investment/total assets, which represents the change in investment rate as defined above. In the table, D stands for first difference ($Y_t - Y_{t-1}$) and L stands for lagged one period. NUTS refers to the Nomenclature of Territorial Units for Statistics, or Nomenclature des unités territoriales statistiques in French. Statistical significance: *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

Finally, the analysis focuses on climate change investments. Public investment with cohesion funding for climate change adaptation seem to positively affect firms' adoption of climate change adaptation measures in the same NUTS 3 region (see Table B.2, columns 2 and 3). The probability of a firm having an adaptation strategy for physical climate risks and purchasing insurance increases with public Cohesion Policy investment in climate change adaptation.²⁹ It is higher for larger firms and for firms believing that climate physical risk is having a major impact on their activity. Manufacturing firms are more likely to have an adaptation strategy, and together with services firms are more likely to have insurance to offset climate-related losses.

Public investments financed with cohesion funds and contributing to climate change mitigation have a positive impact on firms' adoption of climate change mitigation measures in the same NUTS 3 region (see Table B.2, columns 4 to 6). Three measures of firm-level climate change mitigation investment are used: the incidence of firms investing in (i) new, less polluting business areas and technologies; (ii) onsite/offsite renewable energy generation; and (iii) sustainable transport options.³⁰ The probability that firms invest in these measures is higher when the NUTS 3 region experienced an above-average public investment for climate change mitigation, financed with cohesion funds in the previous year.³¹ Firms that consider the transition to be an opportunity are more likely to implement any of the above measures than firms reporting the climate transition as a risk for their activity, while firms believing

29 The variable used is the first difference of public investment as a share of value added. Standard errors are clustered at NUTS 3 level.

30 The probit estimation includes EIBIS survey observations from two years of surveys, and standard errors are clustered at NUTS 3 level.

31 Cohesion funding is captured as a first lag of the above-average public investment in climate change calculated for the NUTS 3 region covering the 2014–2020 programming period.

that the climate transition has no impact on their activity are less likely to do so. The larger the firm, the higher the probability that they will implement the climate change mitigation measures.

Table B.2
Public investment in climate change is encouraging firms to invest in climate measures

Dependent variable	Climate change	Climate change adaptation		Climate change mitigation		
	Firms' planned climate investments	Firm adaptation strategy	Firm insurance	Firm investment in new solutions	Firm investment in renewable energy generation	Firm investment in sustainable transport solutions
	(1)	(2)	(3)	(4)	(5)	(6)
Explanatory variables						
D public investment in climate change/Value added	20.15 (***)	52.995 (***)	39.594 (***)			
L above-average public investment in climate change mitigation				0.025 (***)	0.017 (**)	0.024 (**)
Major impact by physical climate risk	0.249 (***)	0.595 (***)	0.322 (***)			
Energy costs as an obstacle	0.237 (***)			0.081 (***)	0.095 (***)	-0.041
Climate transition						
Transition will have no impact on firm				-0.306 (***)	-0.146 (***)	-0.217 (***)
Firm well positioned to gain from transition				0.302 (***)	0.246 (***)	0.207 (***)
Size						
Small	0.208 (***)	0.144 (***)	0.116 (***)	0.132 (***)	0.283 (***)	0.118 (***)
Medium	0.514 (***)	0.317 (***)	0.239 (***)	0.322 (***)	0.665 (***)	0.320 (***)
Large	0.798 (***)	0.622 (***)	0.332 (***)	0.522 (***)	0.889 (***)	0.548 (***)
Sector						
Construction	-0.122 (***)	-0.033	-0.135 (***)	-0.170 (***)	-0.201 (***)	0.171 (***)
Services	-0.105 (***)	0.057 (*)	0.069 (***)	-0.155 (***)	-0.164 (***)	0.152 (***)
Infrastructure	0.013	0.024	-0.103 (***)	0.035	-0.276 (***)	0.430 (***)
Standard errors clustered at NUTS 3	(obs 45k)	yes (obs 23k)	yes (obs 23k)	yes (obs 17k)	yes (obs 17k)	yes (obs 17k)

Source: Based on the Kohesio dataset and the EIBIS.

Note: In the table, D stands for first difference ($Y_t - Y_{t-1}$) and L stands for lagged by one period. Statistical significance: *** p-value<0.01, ** p-value<0.05, * p-value<0.1.

The probability of investing in new, less polluting solutions or in renewable energy increases when firms report energy cost as a barrier to investment, while the probability of investing in sustainable transport is lower when firms perceive access to finance to be an impediment to investment. Manufacturing firms are more likely to invest in renewable energy and less likely to invest in sustainable transport than firms in the services, construction or infrastructure sectors. Service or construction firms are less likely to invest in new, less polluting solutions than their peers in manufacturing or infrastructure.

Public investment in climate change adaptation, financed with cohesion funds, seems to positively affect firms' adoption of these measures in the same NUTS 3 region. The probability of firms having an adaptation strategy for climate physical risks and buying insurance increases with cohesion-financed public investment in climate change adaptation.³² It is also higher for larger firms and for firms that consider that the physical risks of climate change have a major impact on their activity. Manufacturing firms are more likely to have an adaptation strategy, and together with services firms, they are more likely to have insurance to offset climate-related losses.

A NUTS 3 public policy variable may be a strong signal for all the firms located in the same region, however, the policy variable's coefficient is positive and significant, and the results regarding other variables are reasonable, aligning with the literature. Lagging regional variables addresses endogeneity issues between public and private investment. More in-depth analysis involving firm-level and public policy data could be informative regarding the areas where public investment is most efficient or most needed to bring in private investment.

32 The variable used is the first difference of public investment as a share of value added. Standard errors are clustered at NUTS 3 level.

Conclusion and policy implications

Governments across the European Union paid a heavy price for reducing public investment in the aftermath of the euro debt crisis. This experience led governments to maintain public investment during and after the COVID-19 crisis, demonstrating governments' understanding that public investment is not just an expenditure item in the current budget, but rather benefits society for many years.

The European Union and its members need to find ways to protect government investment from temporary shocks. Despite the fiscal challenges of the past three years, government investment has continued to grow, helped by European Union-wide initiatives, most notably the Recovery and Resilience Facility. However, government spending to address the energy crisis may have caused a slowdown in government investment in 2022, which could foreshadow a bigger hit to investment when fiscal rules return in 2024. To prevent another prolonged period of low government investment, the European Union needs a strong commitment or mechanism to protect government investment spending, particularly when fiscal rules are reintroduced.

Addressing impediments to government investment is also important. Delays in absorbing European structural and investment funds and money from the Recovery and Resilience Facility show that the availability of funds and clear investment priorities are not enough to promote investment. Local and regional governments need support and reforms to help them plan and execute needed investments.

Strengthening the European Union's ability to support public investment and provide public goods complements other efforts to improve investment. The resilience of government investment over the past two years is arguably underpinned by the availability of Recovery and Resilience Facility funds. The European Union could use lessons learned from this experience to come up with new ways to effectively deliver on EU policy goals, such as addressing climate change or digitalising the economy.

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