

Chapter 2 **Gross fixed capital formation** 

# EUROPEAN INVESTMENT BANK INVESTMENT REPORT 2020/2021

# Building a smart and green Europe in the COVID-19 era

Part I Investment and investment finance

# Chapter 2 **Gross fixed capital formation**



#### Investment report 2020/2021: Building a smart and green Europe in the COVID-19 era

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The EIB annual report on Investment and Investment Finance is a product of the EIB Economics Department, providing a comprehensive overview of the developments and drivers of investment and its finance in the European Union. It combines an analysis and understanding of key market trends and developments with a more in-depth thematic focus, which this year is devoted to European progress towards a smart and green future in a post-COVID-19 world. The report draws extensively on the results of the annual EIB Investment Survey (EIBIS) and the EIB Municipality Survey. It complements internal EIB analysis with contributions from leading experts in the field.

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# Chapter 2

# Gross fixed capital formation

Investment in the European Union fell precipitously at the onset of the coronavirus outbreak. This decline followed a slowdown in investment that had gradually set in during 2019 and was exacerbated by government restrictions on movement and business activity, especially in the second guarter of 2020.

**Uncertainty and a sharply deteriorating economy, however, are the main reasons for the extraordinary decline in investment.** While activity partially recovered in the third quarter, uncertainty is likely to continue to dampen investment in the near term, especially as new restrictions are introduced to contain the second coronavirus wave in the fourth quarter of 2020.

**Elevated uncertainty, along with deteriorating firm finances, are likely to further impede corporate investment.** The cash flows of non-financial corporates have retreated well into negative territory, causing these firms to draw down their cash balances, which might eventually eat into their net worth. This weakened position damages firms' ability to finance investment, internally and externally. Investment weakness is likely to persist even as economic conditions gradually improve.

The coronavirus outbreak is likely to prompt increased digitalisation and, in the medium term, to cause shifts in supply chains and product portfolios. Many of the companies bearing the brunt of the ongoing crisis see a permanent reduction in employment as another longer-term consequence. Policymakers should take action to ease the reallocation of labour to avoid large increases in structural unemployment.

**Government investment in 2020 may be another victim of the pandemic.** Even though policy support has been strong, there are signs that government investment levels might decrease across EU Member States. The decline in government investment must be halted and reversed from 2021 onwards. Redirecting investment from current to capital expenditure seems to be the sustainable option. It can be further supported by debt issuance for countries with sound fiscal positions.

### Introduction

The initial impact of the coronavirus pandemic on investment in the European Union has surpassed the effects of the global financial crisis. In just two quarters, investment declined to the same extent as in the first year of the recession in 2008-2009. While there is no financial crisis to worry about yet, there are signs that investment may take a long time to recover. The purpose of this chapter is to trace the impact of the pandemic on investment and provide an analysis of the main drivers. The first section outlines the general investment trends in the European Union. Using the latest wave of the EIB Investment Survey (EIBIS), the second section explores the developments in corporate investment in 2019-2020 and expectations for 2021. The third section provides an overview of infrastructure investment through 2019 and information about infrastructure projects in the first half of 2020. The fourth section takes a closer look at government investment in the European Union in 2019, as well as the plans for 2020-2021. The last section draws conclusions about the implications for policy.

# **Aggregate investment dynamics**

### Investment growth continued until the end of 2019, but the pace slowed

Aggregate investment rates continued to rise throughout 2019 in most EU members as investment growth outpaced growth in real gross domestic product (GDP) (Figure 1). The investment rate in the European Union rose above its long-term average at the end of 2019. This rise was also seen in Western and Northern Europe and in Central and Eastern Europe. The aggregate investment rate in Southern Europe, however, was 1.5 percentage points below the average of the past 25 years.

In 2019, aggregate investment in the European Union grew about 3% relative to 2018. Half of this pace of growth resulted from higher investment in buildings and structures, including dwellings (Figure 2a). Investment in other buildings and structures, which includes infrastructure investment (discussed separately in this chapter), expanded at faster rates in Central and Eastern Europe. The investment in buildings and structures was supported by higher government capital expenditure and investment grants from the European Structural and Investment Funds (Figure 3c). Austria, France, Germany and Portugal also saw significant investment increases in buildings and structures.

These positive developments notwithstanding, aggregate investment growth slowed down in the European Union in the second half of 2019 (Figure 2a). The slowdown was due to weakening international trade amid intensifying disputes between the United States and its main trading partners (EIB, 2019). In 2019 and early 2020, before the coronavirus pandemic drew all the attention of analysts and commentators, European economic discourse focused mostly on the weakening of the German economy as a result of falling exports.

Investment rate in this chapter stands for the share of investment to GDP in percent. Unless stated otherwise, both investment and GDP are measured in real, 2015 chain-linked volumes. In this chapter, investment and gross fixed capital formation have the same meaning and are used interchangeably.

<sup>2</sup> Belgium, Estonia, Finland, Hungary, Lithuania, Slovenia and Sweden saw a slight decline in 2019.

Figure 1
Gross fixed capital formation (GFCF) in the European Union and the United States (% of real GDP)

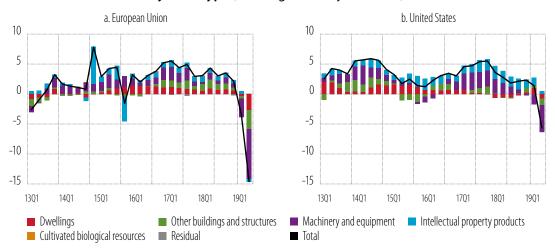


Source: Eurostat, Organisation for Economic Co-operation and Development (OECD) national accounts and ElB staff calculations.

Note: Real investment and GDP are in euro 2015 chain-linked volumes and US dollar 2014 chain-linked volumes for the European Union and the United States, respectively. The aggregate for Western and Northern Europe does not include Ireland, due to the high volatility of Irish data that obscures group-wide developments.

Figure 2

Real GFCF and contribution by asset type (% change from a year earlier)



Source: Eurostat and OECD national accounts; EIB staff calculations.

Note: Panel a shows data for the European Union without Ireland, due to high volatility of Irish investment data that obscures EU-wide developments.

Part of the slowdown came from investment in machinery and equipment and in buildings and structures, including dwellings. Investment ran out of steam first in Southern Europe in early 2019 (Figure 3b), mostly due to a pronounced slowdown in Italy. By the third quarter of 2019, the phenomenon had spread to Western and Northern Europe, as investment growth waned in Austria, the Nordic countries and Germany (Figure 3a).

Unlike the European Union, investment in the United States was driven almost entirely by acquisitions of equipment and intellectual property and did not slow down in 2019 (Figure 2b). The United States has outperformed the European Union on investment in these two asset types throughout the past ten years, increasing the gap between the two economies. These types of investment are particularly important as they are likely to contribute to firm productivity and competitiveness and, as a consequence, aggregate economic productivity (EIB, 2018 and EIB, 2019).

Figure 3
Real GFCF and contribution by asset type, European Union (% change from a year earlier)



Source: Eurostat and EIB staff calculations.

# Investment in the European Union fell precipitously with the arrival of the global pandemic

The large decline in investment in the first half of 2020 was commensurate with the contraction in GDP. Investment in the European Union dropped 19% relative to the second quarter of 2019, while GDP fell 14%.<sup>3</sup> This movement follows the usual business cycle pattern where investment declines more than overall GDP in recessions and bounces back more vigorously in expansions. By way of comparison, GDP in the first quarter of 2009 declined by 5.3% relative to the first quarter of 2008, whereas investment fell 11%. What was extraordinary about the decline in 2020 is that it all happened in just two quarters. This speed of events is a clear consequence of the government measures to tame the spread of the pandemic.

<sup>3</sup> Excluding Ireland, whose large investment swings over the course of 2019 are not related to COVID-19, investment and GDP both declined by 14%.

Economic activity collapsed around mid-March, as most European governments began implementing drastic measures to curtail the pandemic. Investment might have already started to decline three weeks earlier, at the end of February when financial-market volatility jumped sharply in Europe. The decline in confidence indicators in February, reversing the gains of the previous three months, also supports this hypothesis. As a result, gross fixed capital formation (GFCF) in the European Union slid nearly 4% compared with the first quarter of 2019, with countries in Western and Northern Europe showing the same trend. As previously stated, the contraction was mostly due to falling investment in machinery and equipment (Figure 2a and Figure 3a). In Southern Europe, the downtrend in machinery and equipment investment was reinforced by a similar decline in investment in buildings and structures, including dwellings (Figure 3b). In Central and Eastern Europe, an increase in investment in other buildings and structures offset the decrease in equipment investment (Figure 3c).

Investment declined far less in the United States than in the European Union. This was despite a much smaller difference in the decline in GDP between the two economies. The US deterioration was consistently much smaller across asset types, but followed a very similar pattern to Europe. On both sides of the Atlantic, investment in machinery and equipment declined the most, followed by investment in other buildings and structures and investment in dwellings. Investment in intellectual property increased in the United States in the second quarter of 2020 compared with the same period a year earlier, while in the European Union it declined and helped push down total investment by an additional 0.5 percentage points.

Restrictions imposed across EU Member States acted as a major barrier to investment in the second quarter of 2020. A significant part of the precipitous decline is most likely due to these severe restrictions. The drop in investment in EU countries in the second quarter is clearly associated with the governmental or self-imposed curbs on movement (Figure 4). This kind of restriction explains, in particular, the varying declines in investment in buildings and structures across the different countries, as shown in Figure 3.4.5 The restrictions on movement were lifted at the end of the second quarter and the beginning of third quarter. GDP showed a partial rebound in third quarter, so we can expect some of the decline in investment to be reversed in that quarter. That said, the recovery might prove to be unimpressive as two very important factors determining investment decisions gain prominence – uncertainty and the impact of corporate liquidity and net worth.

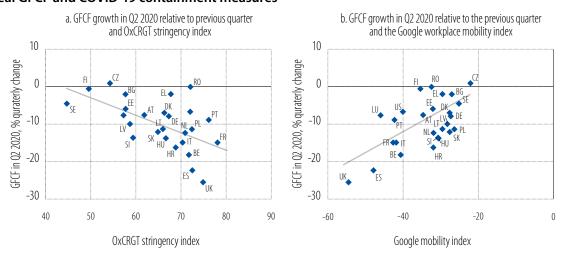
Elevated uncertainty has a powerful negative effect on investment that is widely documented in the academic literature (Leahy and Whited, 1996; Guiso and Parisi, 1999; Butzen, Fuss, and Vermeulen, 2003; Bloom, Bond, and van Reenen, 2007). As fixed assets are generally more difficult to liquidate, firms are reluctant to invest in this area during periods of elevated uncertainty because their sensitivity to demand shocks would increase as a result. The tendency to postpone this type of spending when uncertainty is high reduces the effectiveness of policies aimed at stimulating investment, and more aggressive policy actions are required. (Bloom, Bond, and van Reenen, 2007; Bloom, 2014).

While uncertainty seems to have partially subsided after the initial shock in March 2020, it is still elevated and is likely to remain so for some time (Figure 5). Early evidence suggests that higher uncertainty is taking a toll on business investment (Figure 6). The share of respondents in the EIBIS 2020 that say uncertainty is a major obstacle to investment explains about one-sixth of the decline in total investment in the first half of 2020. Similarly, differences in respondents' views about their business prospects, which is arguably another measure of uncertainty, explains around 13% of the variation in aggregate investment across countries.

<sup>4</sup> For instance, not all countries interrupted construction works fully during the second quarter of 2020, which resulted in different investment outcomes in buildings and structures across EU countries. In addition, buying a new property requires a great deal of social interaction and the barriers to this varied in the different countries.

<sup>5</sup> The Google mobility trends index explains around 60% of the variation of investment in buildings and structures across countries.

Figure 4
Real GFCF and COVID-19 containment measures



Source: ElB staff calculations based on data from Eurostat, OECD national accounts, Oxford COVID-19 Government Response

Tracker, Blavatnik School of Government and Google community mobility reports.

Note: The OxCRGT stringency index records the strictness of "lockdown style" policies that primarily restrict people's behaviour.

Higher values indicate more restrictions. The Google index tracks visits to the workplace and shows the deviation in mobility on a given day from the median value, for the corresponding day of the week, during the five-week period 3 January to 6 February 2020. A higher, less negative number indicates mobility that is closer to usual. Both indices are daily and averaged over April, May and June.

Figure 5
Euro STOXX 50 volatility index provides a forward-looking measure of uncertainty



Source: Refinitiv Datastream and EIB staff calculations.

a. GFCF and uncertainty as an obstacle to investment b. GFCF and standard deviation of corporate views on sector-specific outlook 10 10 0 0 GFCF, change relative to Q4 2019 GFCF, change relative to Q4 2019 -10 -10 -20 -20 **◆**UK -30 -40 -40

1.0

-50

0.60

0.65

0.70

0.75

Dispersion of views on sector-specific outlook

0.80

0.85

Figure 6
Investment growth in Q2 2020 and measures of uncertainty

Source: EIBIS 2020, Eurostat, OECD national accounts and EIB staff calculations.

Uncertainty is a major obstacle

Lockdowns and social distancing across the European Union have led to a large decline in corporate cash flows because firms are not able to reduce costs proportionally to the decrease in revenues (Chapter 3). Figure 7 shows the steep decline in the gross entrepreneurial income of non-financial corporations, which is the closest approximation in the European System of National Accounts to aggregated firm-level cash flow. The decline was more than twice the falloff seen in the past two recessions, one which was sparked by the global financial crisis and the other by Europe's sovereign debt crisis. Lower cash flows mean lower liquidity which will eventually undermine the net worth of firms, affecting their ability to borrow and invest. Expectations that firm's net worth will decline are already affecting investment decisions, but that negative sentiment will intensify in the coming year. A lack of investment could push down firms' net worth even further, creating a negative loop.





Source: Eurostat.

-50

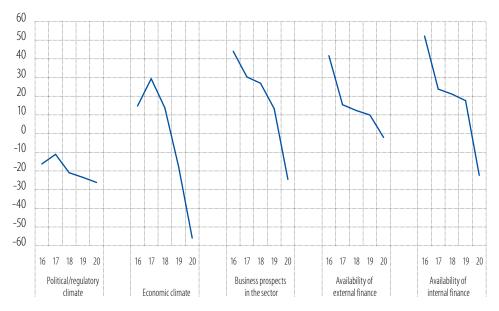
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# **Corporate investment**

### Investment cycle and outlook

The near-term outlook for firms deteriorated significantly with the onset of the coronavirus pandemic. Expectations of non-financial corporations about the overall economic climate, as well as the business prospects in their own sectors and the availability of finance, had already deteriorated in 2019, as documented in last year's edition of the investment report (EIB, 2019). Still, the situation had worsened considerably by this summer with the EIBIS 2020 survey (Figure 8). A net balance of 6 57% of firms in the European Union expect the economic climate to deteriorate in the next 12 months. About 25% (in net terms) expect business prospects to deteriorate in their sector or industry. The ability of firms to fund their own investments is expected to deteriorate. The percentage of firms that said they expected a net improvement in their ability internally finance their investments over the following 12 months was 18% in 2019. By 2020, however, 23% (in net terms) of firms said they expected the situation to deteriorate in the next 12 months. Expectations about the availability of external finance are broadly neutral following the massive interventions from the European Central Bank, national governments and the European Union (see Chapters 1 and 3).

Figure 8
Investment drivers in the European Union, firms expecting an improvement/deterioration (net balance)



Source: EIBIS 2016, EIBIS 2017, EIBIS 2018, EIBIS 2019 and EIBIS 2020.

Base: All firms (excluding don't knows/refusals to respond).

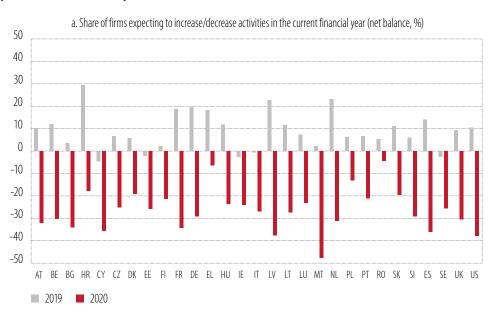
Question: Do you think that each of the following will improve, stay the same, or get worse over the next 12 months?

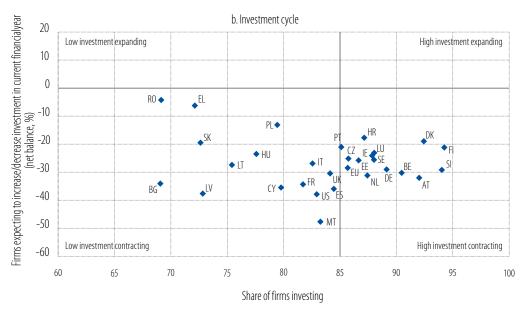
**Expected investment for the current year also plummeted, in line with the extraordinary deterioration in economic sentiment (Figure 9).** Planned investment changed from an EU average of 13% (in net terms) of firms expecting an increase in 2019 compared to the prior year, to an EU average of 28% (in net terms) of firms expecting a decrease in investment in 2020 compared to the prior year. Country variations are significant (Figure 9a) – from a 60 percentage point deterioration in Latvia to a 9.6 percentage point

<sup>6</sup> The net balance here means the difference between the firms that expect improvement and those that expect a deterioration as a share of total respondents.

contraction in Romania. As discussed above, some of this decline can be explained by the pandemic. While it is still too early to assess the direct impact of government lockdowns and other restrictions on investment, those restrictions are expected to account for only part of the decline, given their relatively short duration. Deteriorating expectations about the economy and substantial uncertainty about the "new normal" will most likely explain a significant portion of the decline in investment in 2020.

Figure 9
Corporate investment dynamics





Source: EIBIS 2019 and EIBIS 2020.

Base: All firms (excluding don't knows/refusals to respond). Share of firms investing shows the percentage of firms whose investment per employee is greater than EUR 500. The y-axis crosses the x-axis at the EU average in the previous four waves.

Note: Net balances show the differences between firms expecting to increase investment activities in the current financial year

and firms expecting to decrease them.

Figure 10
Barriers to investment by country

	Demand for products or services	Availability of staff with the right skills	Energy costs	Access to digital infrastructure	Labour market regulations	Business regulations and taxation	Availability of adequate transport infrastructure	Availability of finance	Uncertainty about the future
EU	50	73	56	42	63	65	40	48	81
Austria	45	77	50	39	63	63	35	40	77
Belgium	50	81	54	35	56	64	38	40	78
Bulgaria	47	79	57	29	56	55	47	44	86
Croatia	54	87	69	47	67	75	46	47	85
Cyprus	61	89	88	57	62	71	58	61	89
Czech Republic	67	80	60	35	65	66	37	55	84
Denmark	38	61	32	18	37	31	21	23	70
Estonia	48	81	41	23	52	31	23	34	66
Finland	71	71	42	27	57	50	29	45	85
France	25	65	39	25	68	67	24	44	80
Germany	51	83	64	52	62	69	42	43	78
Greece	62	65	69	53	71	86	60	70	92
Hungary	37	54	44	16	37	37	26	39	66
Ireland	61	72	66	50	56	67	49	53	88
Italy	70	72	69	63	78	68	64	69	96
Latvia	79	88	79	52	71	77	55	70	87
Lithuania	53	75	53	37	53	57	30	52	75
Luxembourg	33	75	49	30	47	45	39	34	75
Malta	52	80	65	40	54	54	60	56	85
Netherlands	25	46	19	7	29	32	12	21	53
Poland	65	82	75	42	64	67	39	60	88
Portugal	52	73	78	37	73	79	39	48	92
Romania	50	72	56	30	65	64	63	55	82
Slovakia	52	63	62	40	64	69	41	52	65
Slovenia	51	71	54	25	62	55	35	47	84
Spain	76	74	76	65	80	85	66	72	97
Sweden	46	72	34	22	39	39	23	33	75
United Kingdom	60	73	60	53	56	64	46	47	88

Source: EIBIS 2019.

Note:

Base: All firms (excluding don't knows/

refusals to respond).

A red circle means that the share of mentions of a particular obstacle is in the top quartile; a green circle means that it is in the bottom quartile; an orange circle that it is between the two. The size of the circle and the number inside indicate the share of firms mentioning an area (as either a minor or a major obstacle).

Firms in almost all countries in the EIBIS see uncertainty about the future as the most significant impediment to investment in 2020 (Figure 10). Uncertainty has overtaken the availability of workers with the right skills as firms' major concern. Firm perceptions vary substantially depending on the country. In Spain, 97% of non-financial firms say uncertainty is an impediment to investing, whereas in the Netherlands, only 53% do. The second largest impediment in almost all countries is the availability of staff with the right skills. In Austria, Cyprus and Lithuania, lack of skills ties with uncertainty as the most reported impediment to investment. In Belgium, Croatia, Estonia, Germany, Latvia and Luxembourg, the availability of staff with the right skills is the top impediment to investment for non-financial firms, unchanged from the past two years.

### Short-term impact of the pandemic

In the European Union, 45% of firms have decided to reduce their investments in 2020 because of the COVID-19 crisis. Nearly half of these firms say they will postpone their investments. Another 40% of these firms will change or rescale their pre-pandemic plans and only slightly less than 5% intend to abandon their investment plans altogether. Six percent (net) of firms that did not change their investment because of the pandemic say they will increase investment in 2020, while more than 40% in this group have not changed their investments relative to 2019. Slightly more than half of the firms that have not changed their plans are large, profitable firms for which the availability of finance is not a great concern.

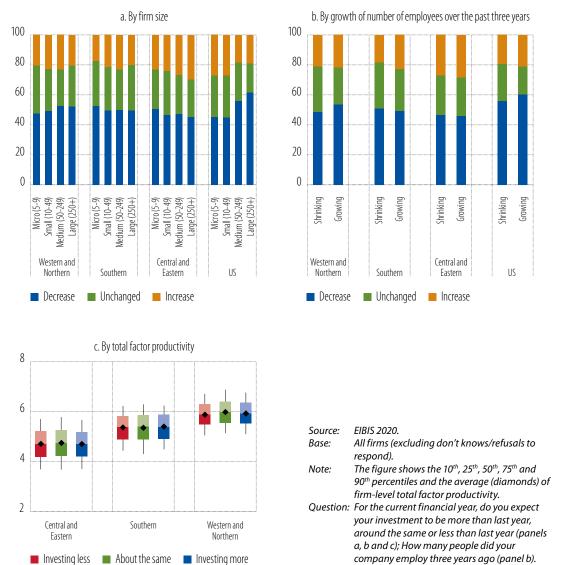
Plans to adjust investment in 2020 vary little across firm size or other characteristics. The share of firms reducing their investments in 2020 is remarkably similar across size classes (Figure 11a). In previous EIBIS waves, the share of medium and large firms increasing investment was, on average, 10 percentage points higher than for micro and small firms. In the United States and in Western and Northern Europe, a bigger share of medium and large firms are reducing their investments in 2020 compared to smaller firms. Differences in investment plans are likewise small or non-existent across firms with different growth dynamics over the past three years, or different average and median productivity profiles (Figure 11b and Figure 11c).

Firms cut employment radically following the coronavirus outbreak. In EIBIS 2020, the pandemic caused about 55% of firms to reduce to some extent their staff through layoffs, redundancies, unpaid temporary leave and cuts to working hours. The share varies significantly across regions – from 45% in Central and Eastern Europe to slightly more than 60% in Southern Europe. Medium and large firms tend to make smaller adjustments that affect up to a quarter of their employees, whereas smaller firms tend to make larger adjustments that involve half or more of their employees.

Regions where firms are more likely to reduce employment because of the pandemic are likely to see cuts in investment as well. Firms that reduced employment due to the COVID-19 crisis are twice as likely to have also revised downwards their investment plans due to the pandemic (Figure 12a). This is the case for all three regions within the European Union as well as for the United States.

<sup>7</sup> The remaining firms answered yes to all available options, probably referring to a portfolio of investment projects.

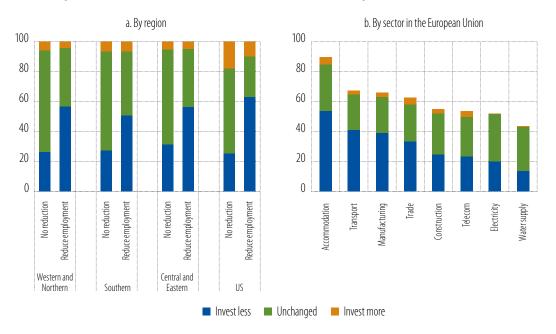
Figure 11
Change in investment in 2020 (% of all firms)



The impact of COVID-19 on firms' investment plans varied by sector (Figure 12b). The bars on Figure 12b plot the share of firms in each sector that reduced employment due to the pandemic. Each bar is further split according to the pandemic's impact on investment plans. For the hospitality sector (accommodation), for instance, 89.6% of firms took measures to reduce their labour input, and 53% of these firms also reduced investment plans as a result of the coronavirus. In contrast, slightly more than 40% of firms in the water sector took steps to reduce their labour force, while only 14% of these firms reduced their investment plans because of the pandemic. The ranking in Figure 12b is not surprising, given that the operations of these businesses, especially in the first four sectors, were the most affected by government restrictions and social distancing measures. At the opposite end of the spectrum, utility companies were the least affected by the measures to contain the pandemic and, accordingly, their investment plans were less affected.

Uncertainty, deteriorating economic sentiment, and the uneven impact of social distancing measures are behind the sector divergence. Many businesses in the hospitality, transport, retail and manufacturing sectors were not able to carry out their investment activities, especially at the beginning of the second quarter of 2020, as they were constrained by social distancing measures. Despite easier conditions in the third quarter, however, it seems that most firms are unwilling to make up the lost ground. Firms are postponing their investment plans amid uncertainty and expectations of a further deterioration in business prospects and the general economic outlook (Figure 13a and Figure 13b).

Figure 12
COVID-19 impact on use of labour services and on investment plans



Source: EIBIS 2020.

Base: All firms (excluding don't knows/refusals to respond).

Note: Sectors correspond to the NACE Rev. 2 classification of economic activities in the European Union as follows: manufacturing is section C; electricity is section D (electricity, gas, steam and air conditioning supply); water supply is section E (water supply; sewerage, waste management and remediation activities); construction is section F; trade is section G (wholesale and retail trade; repair of motor vehicles and motorcycles); transport is section H (transportation and storage); accommodation is section I (accommodation and food service activities); and telecoms is section J (information and

communication).

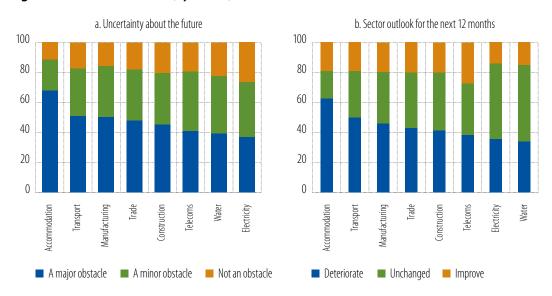
Question: Thinking about the impact of coronavirus, have you had to put staff temporarily on leave, make staff redundant or unemployed or reduced the number of hours they work compared to before the coronavirus pandemic? Has your company's overall investment expectations for 2020 changed due to coronavirus? Will your company invest more, invest less or keep investment broadly the same?

Optimism about a rebound in investment in 2021 may be premature, however. While increased uncertainty and the deterioration in the economy in the first half of 2020 had the strongest impact on investment, firms also said they expected difficulties with finance, especially internal finance. This should come as no surprise as cash flows have retreated well into negative territory, especially in some sectors (see also the analysis in Chapter 3).

Firms that are more affected by the pandemic are significantly more pessimistic about their ability to finance investment internally over the next 12 months (Figure 14). The decline in sales caused by the lockdown resulted in low or negative cash flows for many firms. Some of those firms were obliged to draw down their liquidity as a result, which will affect their overall capital and, ultimately, their net worth (Chapter 3). These firms have lower internal funds to finance investment and are more likely to

face worsening conditions for external finance because of their lower net worth.<sup>8</sup> Furthermore, the firms most affected by the crisis are often small and therefore even more exposed to finance difficulties. Unless these firms receive fresh capital, their investments are very likely to remain low beyond 2020, even in an economic recovery.

Figure 13
Change in investment in 2020 (by sector)



Source: EIBIS 2020.

Base: All firms (excluding don't knows/refusals to respond).

Note: See explanations about sectors in the notes to Figure 12.

Question: Thinking about your investment activities, to what extent is uncertainty about the future an obstacle? Is it a major obstacle, a minor obstacle or not an obstacle at all? Do you think that business prospects specific to your sector or industry will

improve, stay the same, or get worse over the next 12 months?

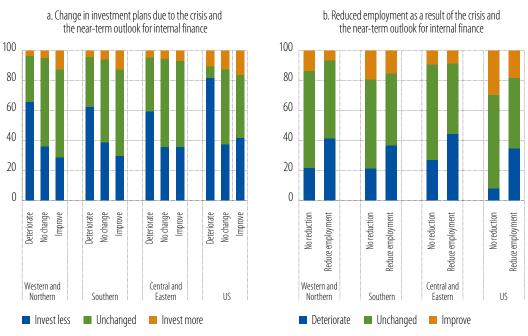
Less competitive firms with small cash holdings plan to invest less in 2020 (Maurin and Pal, 2020). Firms that were not profitable in 2018-2019 are much more likely to have pulled back their investment plans as a result of the pandemic, especially in Western and Northern Europe and in Southern Europe (Figure 15a). In previous EIBIS waves, these firms were typically less productive than profitable firms and their liquidity was significantly lower. Figure 15b plots the cash-to-total assets ratio as a function of previous-year pre-tax profits, calculated using the matched EIBIS-Orbis database. It shows that less profitable firms hold much less cash, as a share of total assets, than profitable ones. Firms with higher cash buffers can withstand a shock to cash flow much better, and they are better able to survive the shock and to continue to grow and invest (Joseph, Kneer, van Horen and Saleheen, 2020).

<sup>8</sup> See Bernanke and Gertler (1989) on the importance of net worth for the cost of external finance over the business cycle.

<sup>9</sup> Average productivity (log tfp) of profitable firms is 11% higher and median productivity is 8% higher. Similarly, average and median labour productivity of profitable firms is 6% and 4.6% higher than for unprofitable firms.

<sup>10</sup> The Data annex of this report provides information about this dataset.

Figure 14
Impact of the COVID-19 crisis on internal finance



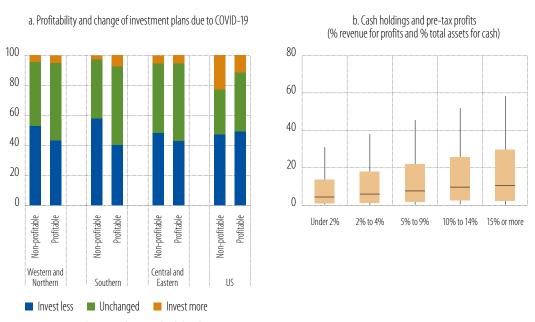
Source: EIBIS 2020.

Base: All firms (excluding don't knows/refusals to respond).

Question: Do you think that availability of internal finance will improve, stay the same, or get worse over the next 12 months?

Thinking about the impact of the coronavirus, have you had to put staff temporarily on leave, make staff redundant or unemployed or reduce the number of hours they work compared to before the coronavirus pandemic? Has your company's overall investment expectations for 2020 changed due to coronavirus? Will your company invest more, invest less or keep investment broadly the same?

Figure 15
Profitability and cash holdings' effect on investment



Source: EIBIS 2020 and EIBIS-Orbis matched database.

Note: The figure shows the 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 90<sup>th</sup> percentiles of firm-level cash to total assets.

### Longer-term impact of the pandemic

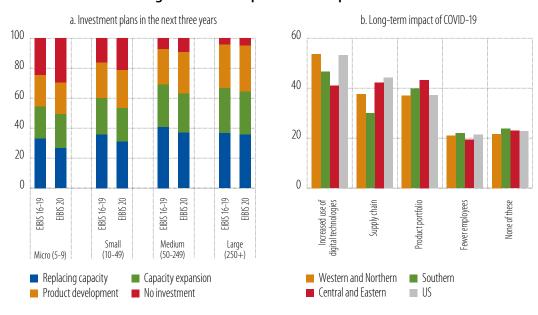
While the pandemic may be brought under control sometime in the near future, it may have a permanent effect on the economy. The size and nature of the shock caused by the pandemic are such that it will likely trigger sweeping, structural changes in the economy, altering how we work, commute, travel and spend our holidays for many years to come. The evolution will likely modify investment priorities and employment patterns. Firms that do not invest in adapting to these changes might be left unprepared for future challenges.

The share of firms that do not have any investment plans in the next three years has increased compared to the average from 2016 to 2019 (Figure 16a). The share of small firms that do not plan to invest in the next three years has risen even faster. Smaller firms face greater difficulties in coping with the economic shock caused by the pandemic. The evidence is corroborated in Figure 15. Smaller firms that do not plan to invest over the next three years have significantly lower median productivity than smaller firms that plan to invest. The difference in productivity is largely absent for medium and large firms. It is therefore very likely that the consequences of the coronavirus on investment and productivity will be felt acutely in the medium term.

**Digital technology is likely to become more widely used.** Half of the firms in the European Union expect the use of digital technologies to increase because of the COVID-19 crisis. The share of firms that expect digital technology to increase is higher in Western and Northern Europe (53%) and on par with firms in the United States (Figure 16b). In Southern and Central and Eastern Europe, the share is somewhat lower, but still above 40%. These high percentages underline the importance of investing in digital technologies if firms are to remain competitive (see Chapter 7).

**Supply chains will change, along with product and service portfolios.** More than a third of firms in the European Union expect long-term effects on their supply chains and product portfolios. These views were expressed in the wake of significant supply-chain disruptions in the first and second quarters of 2020. The results support expectations about structural changes in supply chains and in industries whose products and services are built around social interaction and face-to-face contact.

Figure 16
Firms' assessment of the longer-term consequences of the pandemic



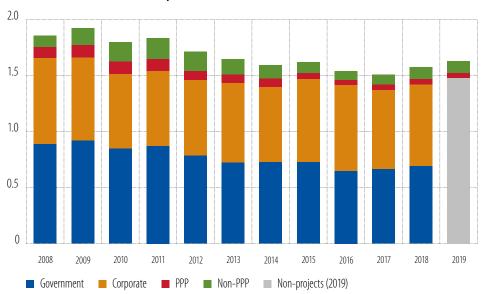
Source: EIBIS 2020.

About 20% of all firms estimate that the job cuts they made during the pandemic will be permanent. This share is constant across the European Union and in the United States. The aggregate effect of such a shock will be felt differently across the various countries, depending on their labour market institutions (Nickell, 1997). Economies whose labour markets are highly regulated may see a significant increase in structural unemployment, which could last for several years. While structural unemployment may not increase much in countries with more flexible regimes, a significant reduction of employment remains a challenge.

### Infrastructure investment

Following a decade of contraction, the share of infrastructure investment in overall economic activity has been increasing since 2018 (Figure 17). The government and corporate sectors combined account for some 90% of EU infrastructure investment. While their shares are broadly equal, it was the corporate sector that provided the impetus for the recovery from the global financial crisis. The government sector's share of infrastructure investment, on the other hand, contracted severely in 2016 when it barely attained 42% of overall infrastructure investment activity. In 2017 and 2018, it contributed to the recovery of infrastructure investment, with its share rising to 44%.11 The share of project-based infrastructure investment remains just shy of 10% after a rebound in 2017. Previously, its share had steadily contracted from a high of some 16% in 2011 to a low of 8% in 2016. About two-thirds of projects are not carried out as a public private partnership (PPP). Since 2011, the aggregate value of PPP investments has declined steadily, whereas the aggregate value of non-PPP projects declined more forcefully through 2016 and have steadily risen since.

Figure 17 EU infrastructure investment by sector (% GDP)



Source: Note:

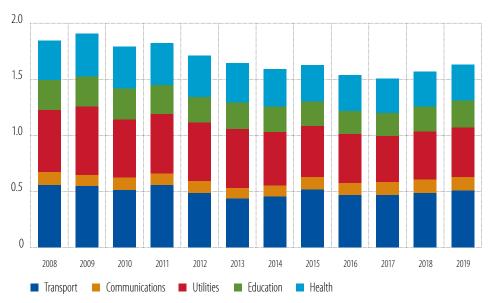
EIB calculations, European PPP Expertise Centre (EPEC), Eurostat, IJ Global.

Annual infrastructure investment in EU27 by institutional sector as a share of GDP, expressed as a percentage. Infrastructure projects are either PPP or non-PPP. The remainder is split between government and corporate investment; for 2019, data to calculate the government component are not available at the time of publication. Relevant data series are not published for Belgium, Croatia, Lithuania, Poland or Romania. Slight deviations from the 2018 results are due to a refinement in the estimate of depreciation of infrastructure investment, as well as the Brexit-induced recomposition to EU27.

The relative contribution of the corporate and government sectors to the 2019 increase remains to be seen, as EU data on government infrastructure investment had yet to be published at the time of writing.

In terms of asset type, investment in communications infrastructure has been the most dynamic component of the rebound. Education and transport infrastructure investment provided further support (Figure 18). Transportation and utilities constitute some 60% of infrastructure investment assets. Though broadly equal in parts, the share of utilities has been declining steadily since a high of 33% in 2013, reaching a low of 27% in 2019. The share of social infrastructure assets in health and education is fairly stable, constituting about one-third of investment; typically, health accounts for about 60% of this though education steadily increased its share from 39% in 2016 to 43% in 2019. The smallest and most volatile share of infrastructure investment is attributable to communications. In 2019, it accounted for just over 7% of infrastructure investments.

Figure 18
EU infrastructure investment by asset class (% GDP)



Source: Note:

urce: EIB calculations, EPEC, Eurostat, IJ Global.

Annual infrastructure investment in EU27 by infrastructure asset as a share of GDP, expressed as a percentage. Data missing for Belgium, Croatia, Lithuania, Poland and Romania. Where data are not yet available, the sector share is assumed constant – this is generally the case for 2019 with Spain, Italy, Cyprus and Portugal, the areas of education, health and transport in the Netherlands, as well as with Denmark generally for 2018 and 2019. Slight deviations from the 2018 results are due to a refinement in the estimate of depreciation of infrastructure investment as well as the Brexit-induced recomposition to EU27.

Following a decade of a highly uneven contraction, the recent EU rebound has seen Southern Europe falling further behind. Central and Eastern Europe as well as Southern Europe led a decadelong contraction in EU infrastructure investment's share of GDP, which bottomed out in 2017. Driving the revival is a rebound in Western and Northern European Member States, where the share of investment in GDP reached 1.8% in 2019, exceeding pre-crisis peak levels. Throughout 2018, the bulk of the increase was carried by the corporate sector, with support from government investment, while private sector projects provided some marginal dynamism. In 2019, Central and Eastern Europe provided further impetus to the revival, with the share of infrastructure investment in GDP reaching 1.9% in 2019, more than half of the pre-crisis highs. Here, government activities have become the mainstay of infrastructure investment, accounting for nearly two-thirds of 2018 volumes, whereas the corporate sector continues to wane, accounting for merely one-third. Projects have dwindled to barely 3% of infrastructure activity. It remains to be seen how the closing of the EU budget cycle will affect investment in the coming years and whether the predominant position of government investment will continue. In Southern Europe, government investment provided some tentative stabilisation in 2018 and the overall share in GDP increased to 1.12% in 2019, here again just over half of the pre-crisis level. Non-PPP projects have more than doubled since 2016 to 0.12% of 2019 GDP.

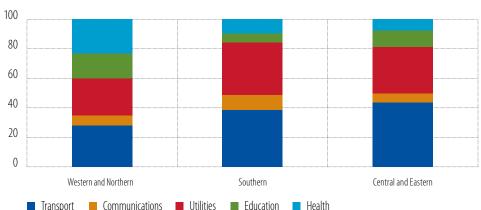


Figure 19
Regional shares of infrastructure investment by asset class

Source:

EIB calculations, EPEC, Eurostat, IJ Global

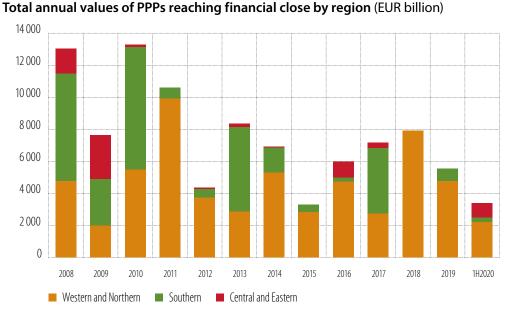
Shares of infrastructure investment by infrastructure asset and by EU27 region in 2019 expressed as a percentage. Regions are Western and Northern, Southern, and Central and Eastern. Data missing for Belgium, Croatia, Lithuania, Poland and Romania. Where data are not yet available, the sector share is assumed constant – this is generally the case for 2019 with Spain, Italy, Cyprus and Portugal, the areas of education, health and transport in the Netherlands as well as with Denmark generally for 2018 and 2019. Slight deviations from the 2018 results are due to a refinement in the estimate of depreciation of infrastructure investment as well as Brexit-induced recomposition to EU27.

Communications' share of infrastructure investment has remained elevated since 2015 (Figure 19). In Western and Northern Europe, three-quarters of infrastructure investment is accounted for in broadly equal measures by utilities, transport and health; the remaining quarter is dominated by education, with communications representing 7%. Transport and utilities constitute around three-quarters of investment for both Central and Eastern and Southern Europe. In Central and Eastern Europe, the bulk of the remainder is dedicated to education. In Southern Europe, communications remains the third-largest sector, with a share in excess of 10% of overall infrastructure investment, well ahead of the corresponding shares elsewhere, whereas the shares of education, health and utilities have dipped below their average in recent years. Considering their relatively small size, health and education represented a disproportionate share of the decade-long contraction in infrastructure investment in Southern Europe.

PPPs in the European Union remain concentrated in Western and Northern European Member States, with a continued decline in the number of projects reaching *financial close*<sup>12</sup> accompanied by an increase in average value (Figure 20). Compared to the period preceding the global financial crisis, annual volumes had declined to less than half in 2018. In the wake of the sovereign and banking crisis in the euro area, a saddle (high) point emerged in 2013 and 2014, following which volumes declined until 2019, when they constituted a mere third of the 2010 high. Activity in 2019 remained thin in Southern Europe and at best sporadic in Central and Eastern Member States. Over the first half of 2020, the number and total value of projects reaching financial close was broadly in line with the very low levels of 2019.

<sup>12</sup> Volumes of euros associated with the financial close indicate the contracted value of the project and are therefore distinct from the actual levels of investment during any one year of the project's cycle.

Investment and investment finance



Source: Note:

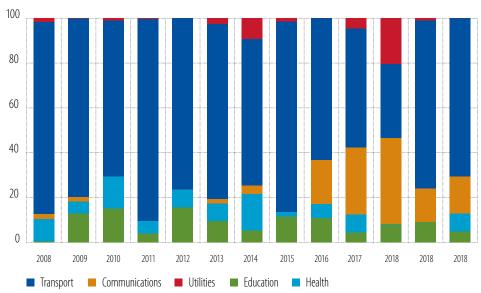
Total annual value in billion euro of PPPs brought to financial close in EU27. 2020 includes deals brought to financial close by 30 June 2020.

Communications projects have represented the second largest area of activity since 2016, with transport typically accounting for the bulk (Figure 21). Since 2016, transport projects have constituted some 56% of the total value of projects and nearly 40% of the number. Activity in 2017 was unusually low on both counts. Over the same period, communication projects have constituted an average of 20% of projects and one-quarter of their value. PPPs in communication essentially involve broadband roll-outs, notably in France but also in Austria, Poland and Greece. While education projects account for nearly one-quarter of the number, the value averaged around 8% of the total for the period.

The number and total value of infrastructure projects rebounded markedly in 2018 and remained at that level throughout the first half of 2020 (Figure 22). Activity from 2019 onwards was predominantly in Western and Northern Member States, after activity in Southern Member States briefly returned to pre-euro area crisis levels in 2018. Activity through the first six months of 2020 reached about half the full-year levels. Compared with the levels for the first six months of previous years, the total value of projects brought to financial close was high in 2020, even if the concentration in Western and Northern Europe rose significantly and the number of projects was lower.

Since 2016, non-PPP project financing has become more important for communications equipment (Figure 23). Utilities – notably energy – remain the principal asset class financed in non-PPP projects, typically accounting for three-quarters of the total value and more than four-fifths of the number of projects. There has been a notable increase in the share of transport and especially communications projects since 2016, with the latter also helping to prop up volumes in the first half of 2020.

Figure 21
Annual distribution of PPP projects reaching financial close by asset class (in %)

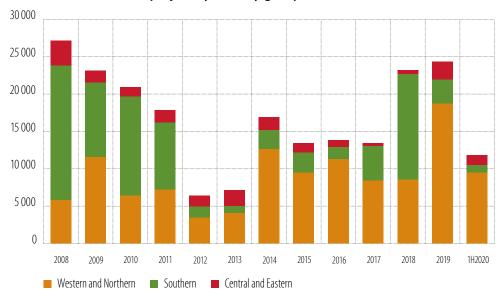


Source:

Note:

Distribution across asset class of the total annual value in euros of PPPs brought to financial close in EU27. 2020 includes deals brought to financial close by 30 June 2020.

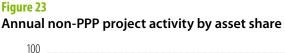
Figure 22
Annual value of non-PPP project by country group (EUR billion)

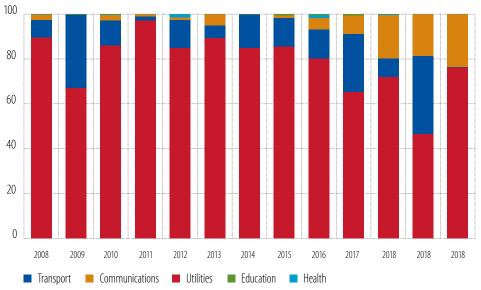


Source: Note:

IJ Global.

Total annual value in billion euros of non-PPP projects brought to financial close in EU27. 2020 includes deals brought to financial close by 30 June 2020.





Source: Note:

: IJ Global.

Distribution across asset class of the total annual value in euros of non-PPP projects brought to financial close in EU27. 2020 includes deals brought to financial close by 30 June 2020.

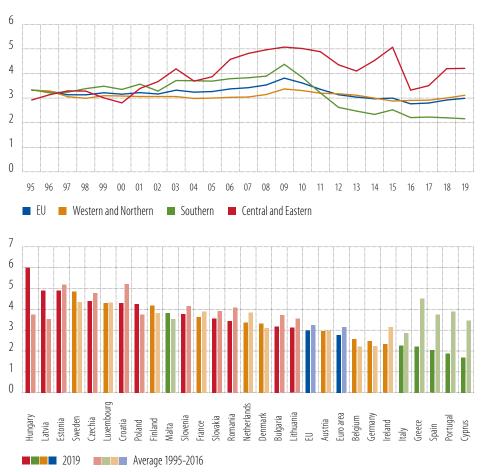
## **Government investment**

Government investment showed a mild upward trend in the European Union before the coronavirus outbreak. As a share of GDP, government investment reached 3% in 2019 (from 2.8% in 2016, the lowest level in 25 years) compared with an average of 3.2% for 1995 to 2016. It increased in Western and Northern Europe and in Central and Eastern Europe, but continued to decline slightly in Southern Europe. In 2019, investment spending came to 4.2% of GDP in Central and Eastern Europe, 3.1% in Western and Northern Europe and 2.2% in Southern Europe. The low level of investment was fairly consistent across Southern Europe, without major differences between countries, except Malta, which had a much higher share at 3.8%. The differences among countries in the other regions is much greater, ranging from 3.1% in Lithuania to 6% in Hungary in Central and Eastern Europe, and from 2.3% in Ireland to 4.9% in Sweden for Western and Northern Europe.

In the last three years, capital transfers and investment have fallen below the average witnessed in 1995-2016. Interest spending registered a larger drop, while primary current expenditure is higher than its historical average. This suggests that the wide reduction in the debt service burden has not translated into support for capital spending. The balance between current and capital expenditure, particularly in Southern Europe, has tilted in favour of current spending.

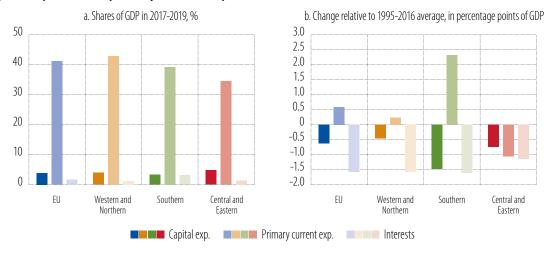
<sup>13</sup> The level was 1.7% in Cyprus, 1.9% in Portugal, 2.0% in Spain, 2.2% in Greece and 2.3% in Italy.

Figure 24
Government investment as a share of GDP



Source: European Commission's AMECO database, top panel country groups' time series, bottom panel 2019 vs. 1995-2016 average.

Figure 25
Capital expenditure, primary current expenditure and interest



Source: European Commission's AMECO database.

The COVID-19 crisis caused current spending to rise notably, which was reflected in the budget plans of EU Member States. EU members first submitted (at the end of April 2020) streamlined versions of their Stability and Convergence Programmes, including a first assessment of the pandemic's impact on policies and public accounts. Then, around mid-October, members of the euro area submitted their draft budget plans for 2021. Combining these two sources with the European Commission's autumn economic forecast allows us to assess the pandemic's impact on fiscal policy.

Current expenditure increased substantially in 2020. Table 1a shows that revenues, as a share of GDP, are roughly constant, meaning that they are declining in line with the contraction in GDP. Total expenditure, on the contrary, is increasing as a share of GDP because of the emergency measures taken by Member States, the vast majority of which go under the heading of primary current expenditure. This category of spending is growing significantly as a share of GDP (from 41.2% to 48.4%) and compared with the 2019 level (up 10.8%). The bulk of the spending is for unemployment benefits and subsidies to support incomes. The jump in current expenditure will be partially re-absorbed in 2021, when its share of GDP should decline to 45.9%. Current spending is also expected to dip in 2021, by 0.2%.

Table 1
Government budgets as a share of GDP, nominal growth rates year-on-year

a. Share of GDP, %										
		Investment			Primary current spending			Total revenues		
	2019	2020	2021	2019	2020	2021	2019	2020	2021	
EU	3.0	3.4	3.4	41.2	48.4	45.9	46.1	46.2	45.7	
Western and Northern	3.1	3.4	3.4	42.9	49.4	47.1	48.0	47.5	47.1	
Central and Eastern	4.2	4.7	4.7	34.7	41.1	38.8	39.9	40.3	40.0	
Southern	2.2	2.6	2.7	39.6	48.9	45.7	44.0	45.3	44.4	

b. Annual growth,	%								
	Invest	Investment		Primary current spending		Total revenues		Nominal GDP	
	2020	2021	2020	2021	2020	2021	2020	2021	
EU	5.2	5.9	10.8	-0.2	-5.8	5.2	-5.7	5.3	
Western and Northern	4.5	5.9	10.3	0.3	-5.5	4.9	-4.3	5.3	
Central and Eastern	5.6	4.5	12.7	-1.5	-6.5	5.2	-5.0	4.4	
Southern	7.5	6.8	11.5	-1.3	-6.3	6.3	-9.8	5.7	

Source: European Commission's AMECO database, European Commission's autumn forecasts.

The European Commission's autumn economic forecast suggests notable growth in public investment in the aftermath of the COVID-19 crisis. Investment's share of GDP is projected to increase to 3.4% in 2020, up from 3% in 2019. Compared to 2019, the amount spent on government investment will rise by 5.2% in nominal terms. The levels are not homogeneous across regions. In 2020, investment growth will be a little weaker in Western and Northern Europe (4.5% in 2020) and stronger in Southern Europe (7.5%) while in Central and Eastern Europe, public investment will grow by 5.6%. Government investment's share of GDP will increase in all three regions. In 2021, the share will continue to increase in Southern Europe (2.7%), with nominal growth of 6.8%. The share will stabilise at 3.4% in Western and Northern Europe and at 4.7% in Central and Eastern Europe.

<sup>14</sup> Note, however, that part of the medical equipment purchased to tackle the epidemic is classified as investment.

Governments are planning more investment to support the recovery, particularly in 2021. The expenditure targets included in the draft budget plans for 2021 submitted by euro area members suggest a more expansionary path, with a more prominent role for government investment. The largest differences between these plans and the European Commission's forecasts of the target share of GDP for government investment are for Greece (6.6% vs. 4.1%), Estonia (6.7% vs. 5.9%), Italy (3.4% vs. 2.7%), Slovenia (6.24% vs. 5.8%), Spain (2.8% vs. 2.4%) and France (4.2% vs. 3.9%). If achieved, these targets will imply notably stronger investment growth, particularly in Southern Europe. For example, the Greek draft budget plan foresees an increase in the share of investment in GDP from 2.2% in 2019 to 3.6% in 2020 and 6.6% in 2021. Those increases will bring the share of investment in GDP in Southern Europe almost in line with the EU average (3.3% vs. 3.6%) in 2021.

Table 2
Government investment: Draft budget plans and European Commission's autumn economic forecast

	Draft budget plans					European Commission autumn economic forecast				
	Share of GDP, %		%	Change YoY, %		Share of GDP, %			Change YoY, %	
	2019	2020	2021	2020	2021	2019	2020	2021	2020	2021
EU	3.0	3.4	3.6	5.2	12.9	3.0	3.4	3.4	5.2	5.9
Western and Northern	3.1	3.4	3.5	4.5	8.9	3.1	3.4	3.4	4.5	5.9
Southern	2.2	2.6	3.3	7.5	32.8	2.2	2.6	2.7	7.5	6.8
Central and Eastern	4.2	4.7	4.8	5.6	5.4	4.2	4.7	4.7	5.6	4.5

Source: European Commission's autumn economic forecast and euro area members' draft budget plans.

The prospect of activating the Recovery and Resilience Facility and the Multiannual Financial Framework (MFF) for the 2021-2027 budget period is enabling Member States to focus on capital expenditure in their 2021 budgets. The European Union's recovery programme allows for a longer-term perspective. Without it, the marked increase in public deficits may have reduced governments' ability to support the recovery by spending on investment. This is particularly evident when comparing the draft budget plan submitted in October with the European Commission's spring forecasts. Aggregating the numbers shows that the planned increase in investment in 2021 is EUR 40 billion higher, with a share of GDP that is around 0.3% higher than in the forecast. Many draft budget plans include references to the RRF, a central pillar of the NextGenerationEU recovery programme, as a key factor in the medium term.

Some Member States have discussed or already approved plans that aim to support the economy amid the COVID-19 crisis. Early June, Germany approved a large package worth EUR 52.8 billion for 2020-2021 that mainly consists of government investment. Part of the package includes EUR 15 billion supporting e-mobility, EUR 11 billion for artificial intelligence, communication technologies and networks, and EUR 15.3 billion for the digitalisation of public administration and local authorities. Investment in hydrogen technology (EUR 9 billion) and R&D (EUR 2.3 billion) is also planned. France has designed a support package that includes EUR 4.6 billion for the aerospace industry, including military and civil security purchases, along with EUR 8 billion for the automotive sector and its supply chain. The Spanish government set EUR 1 billion aside for strengthening science, technology and innovation and established a regional fund for investments in education (EUR 2 billion) in addition to EUR 9 billion for healthcare spending. As part of their extraordinary measures, many countries allocated funds to shoring up the automotive industry, which remains the easiest way to stimulate demand and activate a large and mainly local production chain. This effort involves incentives for renewing vehicle fleets, favouring low-emission vehicles. The automotive initiative includes the European Union's largest Member States, namely France, Spain, Germany and Italy.

<sup>15</sup> Draft budget plans also suggest higher investment spending for 2020 but to a smaller extent (around 0.1% of GDP).

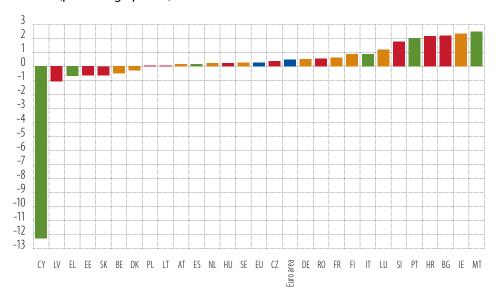
In 2020-2021, a substantial increase in capital transfers will appear on many public sector balance sheets. Capital spending, which includes investment and capital transfers, is projected to show a massive increase in 2020. Many governments have allocated considerable resources to shore up firms. Examples include the hardest-hit sectors, such as air transport, along with innovative firms or start-ups, firms in the utilities sector or, in general, "strategic" companies as shown in Table 3. Not all of these funds will necessarily be used and, even if they are, the equity injections by governments will likely be only temporary as the shareholdings will be sold to private investors at a later date.

Table 3
Programmes providing equity support for large, strategic firms or small businesses/startups

	Large or strategic firms	Small businesses
Germany	100	2
France	20	3.9
Spain	10	
Denmark	1.3	
Ireland	2	
Italy	45	2

Source: Bruegel, Bank of Spain, IMF Policy Tracker<sup>16</sup>.

Figure 26
Capital expenditure as a share of primary current expenditure, 2020-2021 change relative to 2017-2019 (percentage points)



Source: European Commission's AMECO database and EIB staff calculations.

Policymakers should keep in mind that historically, government investment has tended to decline substantially following a surprise contraction in GDP (Box A). We argue that this time, the outcome should be different. As a share of GDP, government investment has approached a 25-year low following several years of fiscal consolidation in the wake of the global financial crisis. Infrastructure needs in many

<sup>16</sup> Bruegel, The fiscal response to the economic fallout from the Coronavirus (Aug. 2020); Bank of Spain DO 2019 Fiscal policy measures in response to the health crisis in the main euro area economies, the United States and the United Kingdom. IMF https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.

European regions have been increasing after years of underinvestment (EIB, 2017; EIB, 2018). Furthermore, the biggest challenges for the future of the European Union – climate change and digitalisation – require even more government investment. At the same time, current ultra-low interest rates are allowing many governments to borrow very cheaply, easing fiscal constraints. Recent high estimates of the impact of government investment on GDP lend further support for an increase (International Monetary Fund (IMF), 2020).

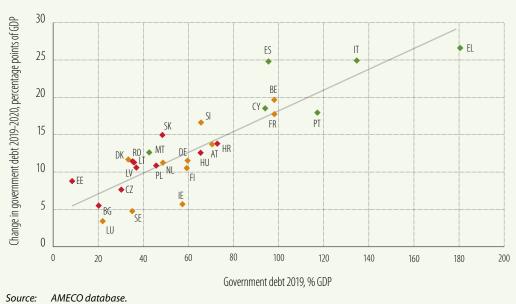
Fiscal sustainability issues, however, require a careful balance between taking on new debt and re-orienting government spending from current to capital expenditure. Low borrowing costs could quickly increase and force fiscal consolidation (Lian, Presbitero and Wiriadinata, 2020). That said, sovereign borrowing costs are historically very low as a result of central-bank purchases of sovereign debt in most EU countries. Theoretically, governments could lock in low interest rates for their bonds if they extended the maturity of their borrowing. However, investor demand for very long-term securities may be low.<sup>17</sup> In addition, debt management offices tend to caution against varying long-established issuance patterns.<sup>18</sup>

#### **Box A**

#### Government investment following recessions and fiscal consolidation

Contingent liabilities and fiscal deficits have climbed rapidly in most EU countries as economic activity collapsed and government support programmes were rolled out. In its 2020 spring forecast, the European Commission estimated that government debt to GDP in the European Union will likely increase by 15 percentage points to 94%. The increase varies substantially across Member States, from 3.4 percentage points in Luxembourg, the country with the third-lowest government debt, to 26.6 percentage points in Greece, the country with the highest (Figure A.1).

Figure A.1
Increase in government debt, European Union in 2020



<sup>17</sup> For this reason, the United States shelved plans in February to issue 50-year Treasury bonds in February.

<sup>18 &</sup>quot;Modern monetary theory" questions whether concerns about fiscal sustainability are overdone. The idea is that governments would not have to repay their debt at all as long as central banks monetise it. Inflation could be kept in check with countercyclical fiscal policy. Historical experience, however, shows that debt monetisation is accompanied by large fiscal deficits and high inflation.

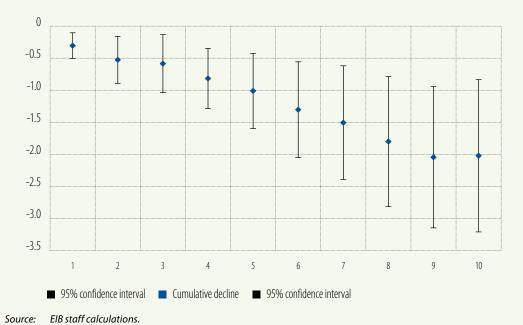
Once the health and economic crises subside, countries will need to rebuild fiscal reserves to deal with future challenges, in particular ageing, structural change, and, in the longer term, climate change (see for instance European Commission, 2020).

Cuts to government investment played an outsized role in previous rounds of fiscal consolidation. Fiscal efforts often entailed a mix in spending cuts and increases in revenues, with increases in revenues playing a bigger part in large-scale consolidations (OECD, 2011). In many countries, belt-tightening involved significant cuts to the largest expenditure items, such as public sector wages and social security spending. However, some expenditures suffered disproportionately. Government investment was sometimes cut vigorously, even though it generally comprises only about 5% of spending. For example, Blöchliger, Song and Sutherland (2012) find that government investment spending as a share of GDP was cut in half, on average, during 13 major rounds of consolidation over 1981-2000. The pressure on investment could be because those cuts encountered less political resistance than reductions in entitlements (for instance, Blöchliger et al., 2012).

In recent work, we find that the decline in investment following fiscal consolidation was not only large, but also long-lasting. We identify fiscal consolidation, following Alesina and Ardagna (2013), by sustained improvements of the cyclically adjusted primary balance. The estimation strategy is similar to Rioja, Rios-Avila and Valev (2014): the deviation from the trend in the government investment rate is regressed on indicator variables, one for each year since the start of the fiscal consolidation, and a number of relevant controls. The cumulative sum of the coefficients on these indicator variables form the impulse response of government investment to the fiscal consolidation (Figure A.2). Results illustrate the substantial and persistent effects of fiscal consolidation on government investment. After ten years, the cumulative decline in government investment is about 2 percentage points of GDP. Put differently, ten years after the start of a round of fiscal consolidation, government investment remains, on average, 0.2 percentage points of GDP below the historic trend.

Figure A.2

Deviation of government investment from trend (cumulative percentage points of GDP)

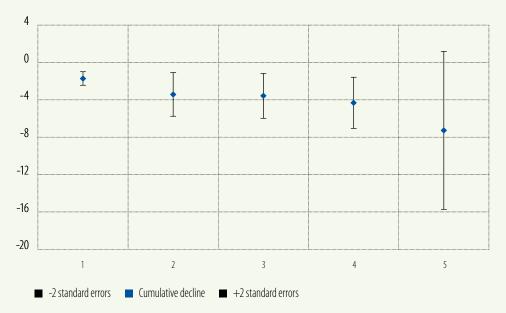


Government investment also fluctuates significantly more than current expenditure over the business cycle, independently of fiscal consolidation. This suggests that governments find it easier to adjust

public investment than current expenditure. To explore the effects of these changes, we have regressed changes in government investment on surprise declines in GDP, using local projections (Jordà, 2005) to estimate the impulse response. The results suggest that a 1% surprise drop in GDP reduces government investment cumulatively by about 3-4% over the following few years (Figure A.3).

Figure A.3

Cumulative response of government investment after a 1% surprise decline in GDP



Source: EIB staff calculations.

Given the current economic environment, our results suggest that government investment could drop substantially if past fiscal consolidation patterns prevail. For the euro area, for example, the surprise decline in GDP is about 8 percentage points this year, suggesting that government investment could fall by more than a quarter over the next couple of years. Admittedly, the contraction may be smaller. We measure growth surprise as the two-year ahead forecast error in the IMF's World Economic Outlook. Relative to forecasts made in 2019, GDP growth is likely to be surprisingly large in 2021. However, according to our analysis, the response of public investment to surprise increases in GDP is smaller, and statistically far less significant, compared to the response following a surprise drop in GDP.

Current forecasts predict that government investment will increase in most regions, at least in nominal terms, despite the pandemic shock (Table 3, main text). This would mark a welcome break with the past. Cutting government investment is not an option. Government investment as a share of GDP approached a 25-year low in most EU countries (EIB, 2019). Public infrastructure needs modernising in many countries (EIB, 2017 and EIB, 2018). Digitalisation and dealing with climate change also require large public investments over the coming decades.

# **Conclusion and policy implications**

The pandemic may continue to weigh on investment well after governments lift restrictive measures. With the partial economic rally of the third quarter of 2020 curtailed by a second wave of infections across the European Union, uncertainty about the pandemic and the economic recovery is running high. Even if governments refrain from imposing too many restrictions, investment is unlikely to pick up.

The corporate sector needs creative measures. Whole industries are affected by the declining cash flows resulting from collapsed demand. Lower sales are depleting firms' cash reserves and, ultimately, their capital and net worth. Some companies can endure a long period of subdued cash flows, because they have large cash buffers and good business prospects that allow them to borrow. The majority, however, will struggle to keep afloat and to invest to maintain competitiveness (see Chapter 3). Standard guarantee programmes and subsidised loans are only part of the solution for these companies, as they cannot take on more debt. Firms need fresh capital, but it will take time to be generated from retained earnings, if at all. Capital may also not be readily available from private investors either, given the size of the European private equity market. Government intervention, which includes providing equity or quasiequity investments along with debt restructuring, would help significantly. A multitude of proposals are circulating about the right course to take, while maintaining appropriate incentives and reducing moral hazard (Blanchard, Philippon and Pisani-Ferry, 2020; Boot, et al., 2020).

The lift-off of infrastructure investment is at stake. It took five years of economic expansion for the growth rate in infrastructure investment to turn positive. Investment in 2019 was still well below the level seen in many countries before the global financial crisis. The resurgence was due to increased investment from both the private sector and the government. Sustained high levels of uncertainty, along with mounting government deficits, could derail infrastructure investment, however. Policymakers need to focus on reassuring the private sector so that it will continue investing and implementing the current pipeline of planned infrastructure investment.

While government investment plans remain ambitious, past experience sounds a note of caution. The aggregate EU government deficit in the second quarter of 2020 was -11.4% of GDP. At the same time, government debt increased by 8.4 percentage points of GDP to 87.8% of GDP. The European Commission expects the ratio of government debt to GDP in the European Union to increase by a further 7.3 percentage points in 2020, before shedding 2 percentage points in 2021. While current market conditions, along with large-scale support from the European Central Bank, are conducive to increasing debt, history shows that markets can swing suddenly and may force through a round of fiscal consolidation. In the past, episodes of fiscal consolidation have been very detrimental to government investment. That said, the latest budgetary plans submitted by Member States to the European Commission provide some reassurance that governments are trying to avoid reducing their investments, at least for the time being.

<sup>19</sup> Infrastructure investment rate here is the share of infrastructure investment in GDP.

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# Table of contents

**Executive summary** 

Introduction

#### Part I Investment and investment finance

- 1. The macroeconomic environment
- 2. Gross fixed capital formation
- 3. Financing corporate investment

## Part | Investing in the transition to a green and smart economy

- 4. Tackling climate change: Investment trends and policy challenges
- 5. Climate change risks: Firms' perceptions and responses
- 6. Leveraging the financial system to green the European economy
- 7. Intangible investment, innovation and digitalisation
- 8. Innovating for climate change: The green and digital twin transition
- 9. Infrastructure investment in the face of digital, climate and cohesion challenges
- 10. The impact of digitalisation and climate change policies on social cohesion

Data annex

Glossary of terms and acronyms