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Economic and monetary developments

Overview

While the overall economic situation is expected to improve over 2021, there remains uncertainty surrounding the near-term economic outlook, relating in particular to the dynamics of the coronavirus (COVID-19) pandemic and the speed of vaccination campaigns. The rebound in global demand and additional fiscal measures are supporting global and euro area activity. But persistently high infection rates, the spread of virus mutations, and the associated extension and tightening of containment measures are weighing on euro area economic activity in the short term. Looking ahead, the ongoing vaccination campaigns, together with the envisaged gradual relaxation of containment measures, underpin the expectation of a firm rebound in economic activity in the course of 2021. Inflation has picked up over recent months mainly on account of some transitory factors and an increase in energy price inflation. At the same time, underlying price pressures remain subdued in the context of weak demand and significant slack in labour and product markets. While the latest staff projection exercise foresees a gradual increase in underlying inflation pressures, it confirms that the medium-term inflation outlook remains broadly unchanged from the staff projections in December 2020 and below the Governing Council's inflation aim.

In these conditions, preserving favourable financing conditions over the pandemic period remains essential. The Governing Council assesses financing conditions by looking at a holistic and multifaceted set of indicators, spanning the entire transmission chain of monetary policy from risk-free interest rates and sovereign yields to corporate bond yields and bank credit conditions. Market interest rates have increased since the start of the year, which poses a risk to wider financing conditions. Banks use risk-free interest rates and sovereign bond yields as key references for determining credit conditions. If sizeable and persistent, increases in these market interest rates, when left unchecked, could translate into a premature tightening of financing conditions for all sectors of the economy. This is undesirable at a time when preserving favourable financing conditions still remains necessary to reduce uncertainty and bolster confidence, thereby underpinning economic activity and safeguarding medium-term price stability. Against this background and based on a joint assessment of financing conditions and the inflation outlook, the Governing Council expects purchases under the pandemic emergency purchase programme (PEPP) over the next quarter to be conducted at a significantly higher pace than during the first months of this year.

Economic and monetary assessment at the time of the Governing Council meeting of 11 March 2021

The global economy rebounded from the recession induced by the coronavirus pandemic faster than expected in the December 2020 Eurosystem staff

macroeconomic projections. Meanwhile, headwinds to growth intensified as the pandemic worsened at the turn of the year. A resurgence in new infections led governments to reimpose stringent lockdowns, particularly in advanced economies. The adverse impact of these measures on global growth is already visible in incoming data. The pandemic remains the key factor shaping economic developments looking ahead. Vaccination efforts have gradually gathered pace, although at varying speeds across countries. However, the level of immunisation is still too low to allow the containment measures to be lifted. The fiscal stimulus package in the United States approved last December and the EU-UK trade deal support the outlook for the euro area's external environment this year. Global GDP growth (excluding the euro area) is projected to be 6.5% in 2021, before decelerating to 3.9% in 2022 and 3.7% in 2023. This follows the estimated 2.4% contraction in global GDP in 2020. The EU-UK trade deal and the stronger projected recovery in advanced economies explain the upward revisions to euro area foreign demand. It is projected to increase by 8.3% this year and by 4.4% and 3.2% in 2022 and 2023 respectively, implying upward revisions of 1.7 percentage points in 2021 and 0.3 percentage points in 2022. Risks to the baseline projections for global growth are tilted to the upside, as the additional fiscal stimulus planned by President Biden represents a key upside risk. Model simulations suggest that it will raise the level of real GDP in the United States by 2-3% and take the economy above its potential, although the impact on inflation is likely to be moderate.

Financial conditions in the euro area have tightened somewhat since the Governing Council's meeting in December 2020, amid positive risk sentiment. Over the review period (10 December 2020 to 10 March 2021) the forward curve of the euro overnight index average (EONIA) shifted upwards and became steeper. Currently, the forward curve does not signal expectations of a rate cut in the very near term. Euro area long-term sovereign bond spreads remained stable, as the rise in yields was driven by the increase in risk-free rates, supported by robust risk sentiment underpinned by monetary and fiscal stimulus. The prices of risk assets increased accordingly. In foreign exchange markets, the nominal effective exchange rate of the euro weakened slightly.

Following the strong rebound in growth in the third quarter of 2020, euro area real GDP declined by 0.7% in the fourth quarter. Looking at the full year, real GDP is estimated to have contracted by 6.6% in 2020, with the level of economic activity for the fourth quarter of the year standing 4.9% below its pre-pandemic level at the end of 2019. Incoming economic data, surveys and high-frequency indicators point to continued economic weakness in the first quarter of 2021 driven by the persistence of the pandemic and the associated containment measures. As a result, real GDP is likely to contract again in the first quarter of the year. Economic developments continue to be uneven across countries and sectors, with the services sector being more adversely affected by the restrictions on social interaction and mobility than the industrial sector, which is recovering more quickly. Although fiscal policy measures are supporting households and firms, consumers remain cautious in the light of the pandemic and its impact on employment and earnings. Moreover, weaker corporate balance sheets and elevated uncertainty about the economic outlook are still weighing on business investment.

Looking ahead, the ongoing vaccination campaigns, together with the gradual relaxation of containment measures – barring any further adverse developments related to the pandemic – underpin the expectation of a firm rebound in economic activity in the course of 2021. Over the medium term, the recovery of the euro area economy should be supported by favourable financing conditions, an expansionary fiscal stance and a recovery in demand as containment measures are gradually lifted.

This assessment is broadly reflected in the baseline scenario of the March 2021 ECB staff macroeconomic projections for the euro area. These projections foresee annual real GDP growth at 4.0% in 2021, 4.1% in 2022 and 2.1% in 2023. Compared with the December 2020 Eurosystem staff macroeconomic projections, the outlook for economic activity is broadly unchanged.

Overall, the risks surrounding the euro area growth outlook over the medium term have become more balanced, although downside risks remain in the near term. On the one hand, better prospects for global demand, bolstered by the sizeable fiscal stimulus, and the progress in vaccination campaigns are encouraging. On the other hand, the ongoing pandemic, including the spread of virus mutations, and its implications for economic and financial conditions continue to be sources of downside risk.

Euro area annual inflation increased sharply to 0.9% in January and February 2021, up from -0.3% in December 2020. The upswing in headline inflation reflects a number of idiosyncratic factors, such as the end of the temporary VAT rate reduction in Germany, delayed sales periods in some euro area countries and the impact of the stronger than usual changes in HICP weights for 2021, as well as higher energy price inflation. On the basis of current oil futures prices, headline inflation is likely to increase in the coming months, but some volatility is expected throughout the year reflecting the changing dynamics of the factors currently pushing inflation up. These factors can be expected to fade out of annual inflation rates early next year. Underlying price pressures are expected to increase somewhat this year due to current supply constraints and the recovery in domestic demand, although pressures are expected to remain subdued overall, also reflecting low wage pressures and the past appreciation of the euro. Once the impact of the pandemic fades, the unwinding of the high level of slack, supported by accommodative fiscal and monetary policies, will contribute to a gradual increase in inflation over the medium term. Survey-based measures and market-based indicators of longer-term inflation expectations remain at subdued levels, although market-based indicators have continued their gradual increase.

This assessment is broadly reflected in the baseline scenario of the March 2021 ECB staff macroeconomic projections for the euro area, which foresees annual inflation at 1.5% in 2021, 1.2% in 2022 and 1.4% in 2023. Compared with the December 2020 Eurosystem staff macroeconomic projections, the outlook for inflation has been revised up for 2021 and 2022, largely due to temporary factors and higher energy price inflation, while it is unchanged for 2023. HICP inflation excluding energy and food is expected to be 1.0% in 2021 and 1.1% in 2022, before increasing to 1.3% in 2023.

Monetary dynamics in the euro area continued to reflect the impact of the coronavirus pandemic. Broad money (M3) growth stood at 12.5% in January 2021, after 12.4% in December and 11.0% in November 2020. Strong money growth continued to be supported by the ongoing asset purchases by the Eurosystem, which remain the largest source of money creation. In the context of a still heightened preference for liquidity and a low opportunity cost of holding the most liquid forms of money, the narrow monetary aggregate M1 continues to be the main contributor to broad money growth. Developments in loans to the private sector were characterised by somewhat weaker lending to non-financial corporations and resilient lending to households. The monthly lending flow to non-financial corporations continued the moderation observed since the end of the summer. At the same time, the annual growth rate of loans to non-financial corporations remained broadly unchanged, at 7.0%, after 7.1% in December, still reflecting the very strong increase in lending in the first half of the year. The annual growth rate of loans to households remained broadly stable at 3.0% in January, after 3.1% in December, amid a solid positive monthly flow. Overall, the Governing Council's policy measures, together with the measures adopted by national governments and other European institutions, remain essential to support bank lending conditions and access to financing, in particular for those most affected by the pandemic.

As a result of the very sharp economic downturn during the coronavirus pandemic, coupled with an unprecedentedly strong fiscal reaction, the general government budget deficit in the euro area is estimated to have increased to 7.2% of GDP in 2020, from 0.6% in 2019. The March 2021 ECB staff macroeconomic projections see the deficit ratio declining to 6.1% of GDP in 2021 and to 2.4% at the end of the projection horizon in 2023. Even though this path will increase euro area general government debt to 95% of GDP in 2023, about 11 percentage points higher than before the crisis, it should be noted that the adverse impact on the fiscal position will likely be somewhat smaller than was generally expected in the initial phase of the pandemic. Still, an ambitious and coordinated fiscal stance will remain critical. To this end, support from national fiscal policies should continue given weak demand from firms and households relating to the ongoing pandemic and the associated containment measures. As a complement, the Next Generation EU package will play a key role by contributing to a faster, stronger and more uniform recovery. It will increase economic resilience and the growth potential of EU Member States' economies, particularly if the funds are deployed for productive public spending and this is accompanied by productivity-enhancing structural policies.

The monetary policy decisions

On 11 March 2021 the Governing Council took the following decisions in order to preserve favourable financing conditions over the pandemic period for all sectors of the economy to underpin economic activity and safeguard medium-term price stability.

1. The Governing Council decided to continue to conduct net asset purchases under the pandemic emergency purchase programme (PEPP) with a total envelope of €1,850 billion until at least the end of March 2022 and, in any case,

until the Governing Council judges that the coronavirus crisis phase is over. Based on a joint assessment of financing conditions and the inflation outlook, the Governing Council expects purchases under the PEPP over the next quarter to be conducted at a significantly higher pace than during the first months of this year. The Governing Council will purchase flexibly according to market conditions and with a view to preventing a tightening of financing conditions that is inconsistent with countering the downward impact of the pandemic on the projected path of inflation. In addition, the flexibility of purchases over time, across asset classes and among jurisdictions will continue to support the smooth transmission of monetary policy. If favourable financing conditions can be maintained with asset purchase flows that do not exhaust the envelope over the net purchase horizon of the PEPP, the envelope need not be used in full. Equally, the envelope can be recalibrated if required to maintain favourable financing conditions to help counter the negative pandemic shock to the path of inflation. Furthermore, the Governing Council will continue to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2023. In any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

2. Net purchases under the asset purchase programme (APP) will continue at a monthly pace of €20 billion. The Governing Council continues to expect monthly net asset purchases under the APP to run for as long as necessary to reinforce the accommodative impact of the ECB's policy rates, and to end shortly before the Governing Council starts raising the key ECB interest rates. In addition, the Governing Council also intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

3. The Governing Council decided to keep the key ECB interest rates unchanged. They are expected to remain at their present or lower levels until the inflation outlook robustly converges to a level sufficiently close to, but below, 2% within the projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics.

4. Finally, the Governing Council will continue to provide ample liquidity through its refinancing operations. In particular, the third series of targeted longer-term refinancing operations (TLTRO III) remains an attractive source of funding for banks, supporting bank lending to firms and households.

The Governing Council will also continue to monitor developments in the exchange rate with regard to their possible implications for the medium-term inflation outlook. It stands ready to adjust all of its instruments, as appropriate, to ensure that inflation moves towards its aim in a sustained manner, in line with its commitment to symmetry.

1 External environment

The March 2021 ECB staff macroeconomic projections indicated that the global economy had rebounded faster than expected from the recession following the outbreak of the coronavirus (COVID-19) pandemic. However, at the turn of the year headwinds to growth then intensified as a resurgence in new infections led governments to reimpose more stringent lockdowns, particularly in advanced economies. The adverse impact of these measures on global growth is already visible in incoming data. The pandemic remains the key factor shaping economic developments looking ahead. Vaccination efforts have gradually gathered pace, although at varying speeds across countries. Yet, the level of immunisation is still too low to allow the containment measures to be lifted. The fiscal stimulus package in the United States approved last December and the EU-UK trade deal support the outlook for the euro area's external environment this year. Global GDP (excluding the euro area) is projected to increase by 6.5% in 2021, before slowing to 3.9% in 2022 and 3.7% in 2023. This follows the estimated contraction of global GDP to 2.4% in 2020. The EU-UK trade deal and the stronger projected recovery in advanced economies explain the upward revisions to the euro area foreign demand. It is projected to increase by 8.3% this year and by 4.4% and 3.2% in 2022 and 2023 respectively, implying upward revisions of 1.7 percentage points in 2021 and 0.3 percentage points in 2022. Risks to the baseline projections for global growth are tilted to the upside, as the additional fiscal stimulus planned by President Biden represents a key upside risk. Model simulations suggest that it will raise the level of real GDP in the United States by 2-3% and bring the economy above its potential, although the impact on inflation is likely to be moderate.

Global economic activity and trade

The global economy rebounded from the recession induced by the pandemic faster than expected. Global investment – benefiting from favourable financing conditions amid strong monetary policy support – is already close to pre-pandemic levels. However, the recovery in global consumption, supported by fiscal measures to bolster income and preserve jobs, continues to lag, as prevailing containment measures weigh on contact-intensive services. Global (excluding the euro area) real GDP growth rebounded strongly, by 7.4%, in the third quarter of 2020, which was 0.7 percentage points more than expected in the December 2020 Eurosystem staff macroeconomic projections. A more dynamic pace of recovery was observed in both advanced and emerging market economies. Following this V-shaped rebound, the recovery in global economic activity is expected to continue into the fourth quarter of 2020 at a robust but more moderate pace of 2.1%, which is still stronger than in the previous projections.

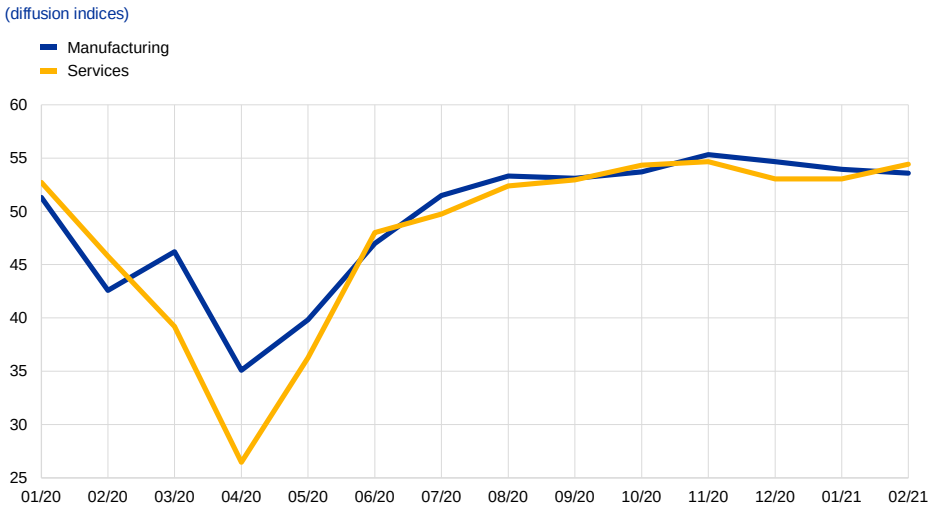
Headwinds to the recovery intensified as the global pandemic worsened at the turn of the year. A rise in new infections led governments to reimpose more stringent lockdowns, particularly in advanced economies. By contrast, containment measures in emerging market economies were tightened less. However, overall, the renewed

lockdowns imply a setback to global growth in the first quarter of 2021, as evidenced by high-frequency trackers of economic activity in key advanced economies.

Survey data signal strong growth momentum, but also reveal heterogeneity across sectors and countries. The global (excluding the euro area) composite Purchasing Managers' Index (PMI) output signals continued recovery of the world economy in early 2021. Following somewhat less dynamic increases at the turn of the year, it stood close to its long-term average in February, largely on account of faster growth in the services sector. By contrast, the pace of global (excluding the euro area) manufacturing PMI output continues to moderate, although it remains firmly in expansionary territory (Chart 1). The composite PMI output data suggest strengthening economic activity in the United States, China, India and Russia, while pointing to declining activity in the United Kingdom, Japan and Brazil.

Chart 1

Global (excluding the euro area) output PMI



Sources: Markit and ECB calculations.
Note: The latest observations are for February 2021.

Global financial conditions remain accommodative, notwithstanding recent tightening triggered by the sell-off in sovereign bond markets. Since the December 2020 Eurosystem staff macroeconomic projections, the progress made on vaccine approvals and distribution, as well as the start of vaccination campaigns has lifted investor confidence. Combined with a last-minute Brexit trade deal and supportive economic policies, this benefited cyclical and risky assets. Overall, global financial conditions remain highly accommodative both in advanced and emerging market economies. More recently, the improved outlook for the global economy, underpinned by positive developments related to the pandemic and news regarding the additional fiscal stimulus in the United States, prompted a sell-off in global sovereign bond markets. Global equity markets initially benefited from optimism about the outlook. However, this upward trend came to a halt in late February, when concerns about the sharp increase in yields triggered a widespread sell-off in equity markets. Meanwhile, a market-based measure of inflation expectations in the United

States derived from the prices of inflation-protected bonds increased to its highest level since 2014.

The outlook for the global economy continues to be shaped by how the pandemic evolves and the associated containment measures. Tighter containment measures helped to stabilise the recent waves of new infections, which together with the increase in vaccination rollout, holds the promise that the pandemic can be better contained and thus lockdown measures gradually lifted. At the same time, the impact of social distancing measures on contact-intensive services remains significant, although their overall economic impact is likely to be more limited than that of the March-April 2020 lockdowns. This reflects the fact that lockdowns became more targeted, and economic agents adjusted their behaviour to limit the negative impact of the lockdowns on activity. Against this backdrop, the pace of the global recovery is projected to slow significantly in the first quarter of 2021, before rebounding thereafter.

Among positive news, the fiscal stimulus package approved in the United States in December 2020 and the EU-UK trade deal imply a stronger outlook for 2021. These policy news items, both signalled as upside risks to the global outlook in the December 2020 Eurosystem staff macroeconomic projections and now included in the baseline, are projected to provide further support to growth. In the United States, the fiscal stimulus agreed in December last year amounts to USD 900 billion (4.4% of GDP). It is earmarked for direct income support for households and businesses and is projected to raise US activity this year. Moreover, the EU-UK trade deal replaces the "no deal" Brexit assumption underpinning the previous projections. It ensures tariff-free goods trade and zero quotas between the EU and the United Kingdom (similar to the EU-Canada Comprehensive Economic and Trade Agreement), thereby boosting activity and trade in the UK economy over the projection horizon.

Overall, global GDP (excluding the euro area) is projected to increase by 6.5% in 2021, before slowing to 3.9% and 3.7% in 2022 and 2023 respectively. This follows the estimated 2.4% contraction in global real GDP growth in 2020. Growth has been revised upwards by 0.7 percentage points in 2021, as the positive impact of a carry-over from the growth surprises towards the end of last year and more supportive economic policies are only partly offset by the negative impact on growth of stricter containment measures in the near term. Global real GDP (excluding the euro area) growth remains broadly unchanged for 2022-23 compared to the previous projections.

In the United States, the outlook for activity is supported by the fiscal stimulus enacted in late December. Following a stronger-than-expected rebound in the second half of 2020, economic activity slowed at the turn of the year, as containment measures were tightened in view of a deteriorating pandemic situation.[1] Since it is assumed that the pandemic situation will improve in the course of this year, the economy is projected to recoup these losses. In response to the slowdown, however, additional fiscal stimulus of 4.4% of GDP was passed in December, which is expected to boost growth this year. Following a slowdown in consumer spending in late 2020, the government stimulus cheques provided a boost to households' income and the

[1] For a comparison of the economic performance of the United States and the euro area during the pandemic, see Box 1 entitled "Economic developments in the euro area and the United States in 2020" in this issue of the Economic Bulletin.

savings ratio. High-frequency credit card data and retail sales showed a strong rebound in January. While inflation remained stable in January, inflation expectations are on the rise. Headline consumer price inflation remained unchanged at 1.4%, and core inflation decreased to 1.4% in January. However, the short-term inflation outlook points towards strong base effects, mainly from oil prices, which may push inflation to above 2%. Additionally, the stronger growth outlook raised market-based inflation expectations to 2.2%.

The large additional fiscal stimulus planned by the new administration represents a key upside risk to current projections. The additional fiscal package totalling USD 1.9 trillion (8.9% of GDP) includes a renewal of unemployment benefits, additional one-off payments to households and an increase in both local and state spending to finance public health efforts and education. It represents a significant upside risk to the current projection baseline. Model simulations suggest that it would raise the level of real GDP in the United States by between 2-3% and bring the economy above its potential, while the impact on inflation appears to be moderate. It would also imply positive spillovers to growth in other economies, including in the euro area.[2]

In the United Kingdom, the strict lockdown and destocking are likely to push growth back into negative territory in the first quarter of 2021. The better-than-expected GDP outcome in the fourth quarter of 2020 mostly reflected specific factors, such as higher government spending and Brexit-related stockpiling. It also suggests that the COVID-19-related mobility restrictions towards the end of the year constrained activity much less than during the strict lockdown in spring 2020. For this year, however, survey data and high-frequency activity trackers indicate a sharp economic downturn owing to the renewed hard lockdown at the start of the year, suggesting a significant decline in real GDP growth in the first quarter of 2021. A negative contribution from inventories may aggravate the downturn, as initial disruptions at the EU-UK border together with lower levels of uncertainty on completion of the trade deal have contributed to some destocking. According to an industry survey, UK exports to the EU fell by an estimated 68% in January 2021 compared with a year earlier. Looking ahead, if fast progress on vaccination alleviates the health situation, further gradual loosening of the containment measures is likely in the course of the second quarter. This could kick off a rebound in growth, supported by a rise in consumption and a pick-up in private investment. The EU-UK trade deal, which ensures tariff-free and zero quotas goods trade, helped avoid trade disruptions at the turn of the year. Therefore, compared with the December 2020 Eurosystem staff macroeconomic projections baseline assumption of a “no deal” Brexit, the economy is projected to follow a more positive output and trade trajectory over the projection horizon. Annual consumer price inflation increased slightly in January to 0.7% from 0.6% in December, but is expected to pick up sharply in the near term. The rebound in energy and gas prices, following last year’s fall, and the end of the temporary cut in VAT in the hospitality sector in April will push up consumer prices.

[2] For further details, see the box entitled “Risks to the global and euro area outlook related to the American Rescue Plan” in the ECB staff macroeconomic projections for the euro area, March 2021.

In China, economic activity surprised positively in the fourth quarter, suggesting that the recovery from the pandemic continues unabated. Activity recovered swiftly on the back of a rebound in production, supported by government investment and strong external demand. Overall, the Chinese economy has returned to its pre-pandemic growth trajectory. China's GDP grew by 2.3% in 2020 and the latest higher-frequency data still suggest continued robust growth, albeit pointing to a more moderate momentum. However, with policy support focused on investment and credit, financial stability risks could increase further. Consumption recovered more gradually, but consumer confidence has grown substantially over the past year, and consumption expenditure has almost fully recovered to 2019 levels as fears about a resurgence of the virus have subsided. A swift recovery from the pandemic shock in China also suggests that the scarring effects are likely to be limited.

In Japan, economic activity proved to be more resilient than initially expected in the final quarter of 2020. After a marked rebound in the third quarter, real GDP grew by a stronger-than-expected 3% in quarterly terms, supported by a marked recovery in private business investment, as well as robust private consumption and export growth. This notwithstanding, an upsurge in COVID-19 cases triggered tighter containment measures in early January. Activity in the first quarter is expected to decline as a result, although more moderately compared with spring 2020. Annual consumer price inflation rose significantly to -0.6% in January from -1.2% in December, as a larger drag from energy price declines was more than offset by a marked pick-up in core inflation (excluding food and energy).

In central and eastern European EU Member States, economic growth continued to recover in the fourth quarter of 2020. Looking ahead, the worsening pandemic and strict lockdowns are likely to weigh temporarily on the recovery in early 2021. Assuming that COVID-19 restrictions will be eased in the coming months, activity is projected to gradually regain momentum, supported by an accommodative fiscal and monetary stance.

In large commodity-exporting countries, the pace of recovery is subdued, while room for further policy support is limited. In Russia, the recovery in the third quarter benefited from broad policy support and improved infection control. However, tighter lockdowns enacted to control rising new infections are estimated to weigh on activity in the near term. In the course of 2021, however, an improvement in the pandemic situation is likely to support growth. Moreover, the economy is likely to benefit from the rise in oil prices recorded in recent months. In Brazil, authorities launched a sizeable fiscal policy stimulus package, including direct cash pay-outs to low-income households, which supported economic recovery last year. However, as the impact of fiscal support declined and the pandemic then worsened, growth is estimated to moderate in the near term.

In Turkey, real GDP growth rebounded sharply in the third quarter, and the recovery continued in the fourth quarter. A swift recovery was supported largely by strong credit growth, while the negative impact of containment measures was mostly limited to the hospitality and tourism sectors. However, as the policy stimulus is gradually reduced, growth is expected to moderate going forward, particularly in credit-driven personal consumption. Over the medium term the recent shift in policy

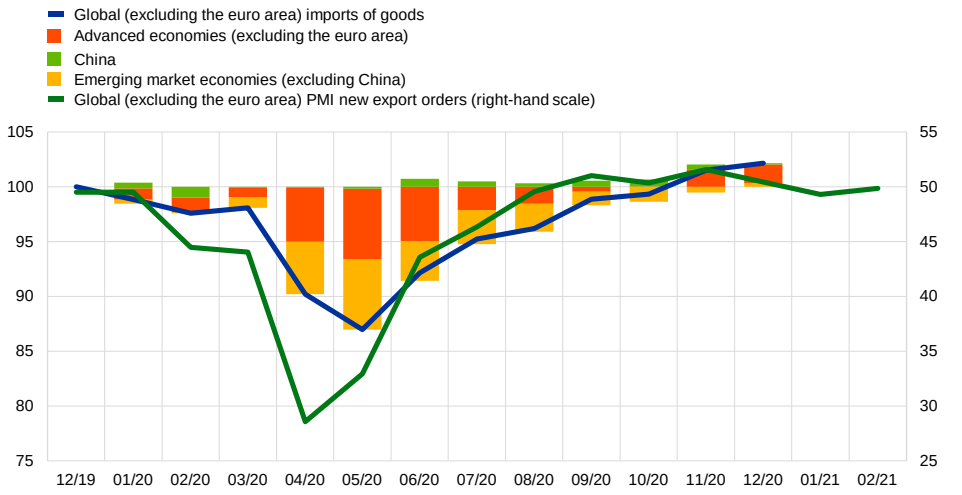
direction, particularly by the central bank, is expected to push growth below the historical average.

The recovery in global trade was dynamic, as trade in goods recovered swiftly along with global industrial production. Global (excluding the euro area) goods' imports had already returned to their pre-pandemic levels in late 2020, while international trade in services remains depressed. Nominal trade data suggest that global trade in services in November remained about 27% below its level at the end of 2019, with travel and tourism-related services accounting for a large share of this loss. Emerging pressures on global supply chains are adding headwinds to the recovery of global trade in the near term. The sharp recovery in manufacturing activity in the second half of 2020 and the related surge in new export orders put pressure on supply in certain markets and shipping capacity globally. This has lengthened suppliers' delivery times, as evidenced by the historically high levels of global PMI indicators for delivery times. Shipping costs have also increased sharply, partly owing to an unbalanced trade recovery. The strong recovery in trade in China and east Asia led to a shortage of shipping containers, which lie idle in ports in Europe and North America. New export orders are another signal of softening dynamics in the global manufacturing sector, which in January declined below the expansionary threshold for the first time since last September and remained there in February (Chart 2).

Chart 2

Global (excluding the euro area) imports of goods and new export orders

(left-hand scale: index, December 2019 = 100; right-hand scale: diffusion index)



Sources: Markit, CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations.
Note: The latest observations are for February 2021 for the PMI data and December 2020 for global merchandise imports.

Global (excluding the euro area) imports have been revised strongly upwards and are projected to increase by 9.0% in 2021, before slowing to 4.1% and 3.4% in 2022 and 2023 respectively. This follows the estimated contraction of global trade at 9.1% in 2020. Compared with the December 2020 Eurosystem staff macroeconomic projections, global imports and, in particular, euro area foreign demand were revised significantly upwards owing to the EU-UK trade deal and to a lesser extent owing to projected stronger recovery in advanced economies. This implies that euro area foreign demand is projected to increase by 8.3% this year and

by 4.4% and 3.2% in 2022 and 2023 respectively, resulting in upward revisions of 1.7 percentage points in 2021 and 0.3 percentage points in 2022. For 2023 euro area foreign demand remains unchanged compared with the December projections. More positive data towards the end of last year, together with the stronger imports projected for the euro area's key trading partners, suggest that the gap relative to the pre-pandemic path has narrowed markedly, as it has for global real GDP growth.

Risks to the baseline projections for global growth are tilted to the upside. Further to the abovementioned additional fiscal stimulus planned by President Biden's administration and in line with the previous projection rounds, two alternative scenarios for the global outlook are used to illustrate the uncertainty surrounding the future course of the pandemic. These scenarios reflect the interplay between the evolution of the pandemic and the associated path of containment measures.[3] Other risks to the global outlook relate to a faster-than-expected reduction in savings accumulated during the pandemic in advanced economies, which could in turn support private consumption and imports. By contrast, a sudden repricing of risk in financial markets could result in capital outflows and currency depreciation in vulnerable emerging market economies, thus derailing their recovery. Moreover, tight production capacities in IT-related industries and container shortages in the shipping sector could increase risks to global value chains and global trade. In addition, high and increasing indebtedness across advanced and emerging market economies represent additional downside risks to growth over the medium term.

Global price developments

Commodity prices have increased significantly, and oil prices are close to pre-pandemic levels. Brent crude oil prices increased by close to 35% compared with the December 2020 Eurosystem staff macroeconomic projections amid unilateral supply cuts by Saudi Arabia, improving global demand prospects underpinned by the robust recovery in global manufacturing and growth expectations for the United States. In addition, oil prices benefited from a global rally in risky assets. This increase in oil prices pushed the futures curve into backwardation, meaning that current oil prices are above those assumed at the end of the projection horizon. Metal prices also benefited from buoyant global demand amid supply restrictions in some key world exporting countries, increasing by 10% since the December projections. Both metal and food commodity prices have risen well above their pre-pandemic levels.

Global headline inflation increased in January owing to a less negative contribution from energy prices. Annual consumer price inflation in member countries of the Organisation for Economic Co-operation and Development (OECD) increased to 1.5% in January from 1.2% in December 2020 (Chart 3). Food price inflation was broadly stable, while the drag from energy price inflation eased somewhat. Core consumer price index inflation excluding food and energy increased slightly to 1.7% in January from 1.6% in the previous month. Headline annual consumer price inflation increased across all advanced economies but remained in

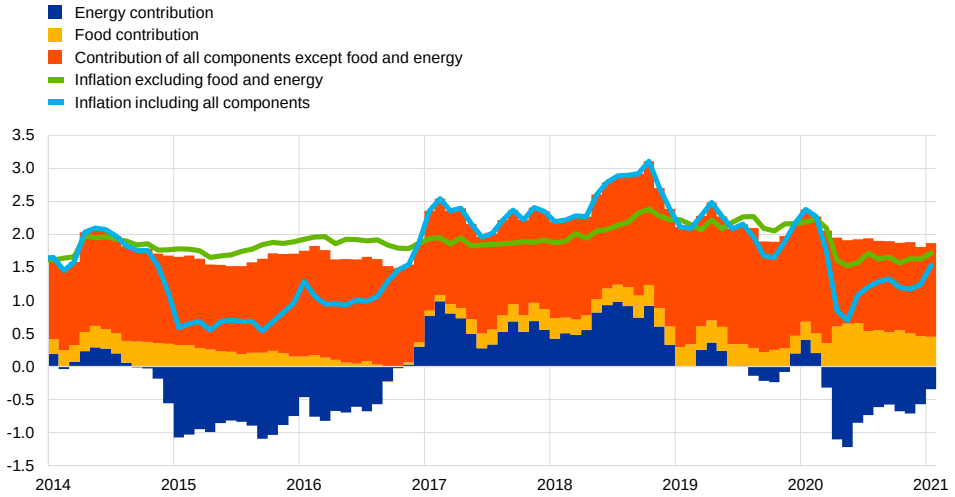
[3] For further details, see the box entitled "Alternative scenarios for the euro area economic outlook" in the ECB staff macroeconomic projections for the euro area, March 2021.

negative territory in Japan. Among major non-OECD emerging market economies, in China, annual headline inflation fell back into negative territory after picking up temporarily in December.

Chart 3

OECD consumer price inflation

(year-on-year percentage changes; percentage point contributions)



Sources: OECD and ECB calculations.
Note: The latest observations are for January 2021.

Sharply increasing commodity prices are expected to push up global consumer prices. In the near term the rise in headline inflation will be further accentuated by the positive base effect owing to the initial reaction of global commodity prices to the pandemic shock in spring 2020. This pattern is also evident from euro area competitors' export prices in national currency, which are expected to rise dynamically in the course of 2021. However, this increase in inflation is likely to be transitory, given a substantial a degree of slack in the global economy, particularly in the labour market.

2 Financial developments

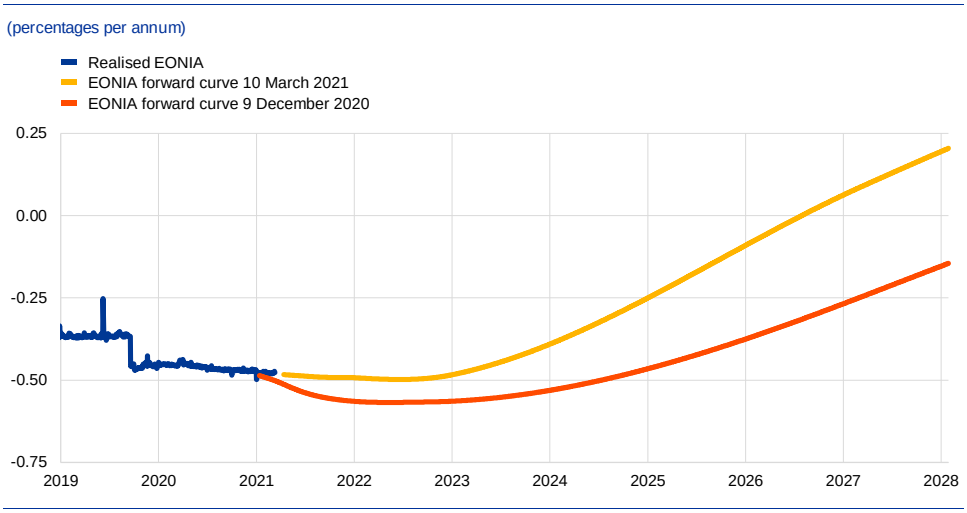
Over the review period (10 December 2020 to 10 March 2021) the forward curve of the euro overnight index average (EONIA) shifted upwards and became steeper. Currently, the forward curve does not signal expectations of a rate cut in the very near term. Euro area long-term risk-free rates rose, partly driven by spillovers from the United States, while sovereign bond spreads remained broadly stable. Equity prices increased. In foreign exchange markets, the nominal effective exchange rate of the euro weakened slightly.

The euro overnight index average (EONIA) and the new benchmark euro short-term rate (€STR) averaged -48 and -56 basis points respectively over the review period.[4] Excess liquidity increased by €241 billion to around €3,692 billion. This rise mainly reflects asset purchases under the pandemic emergency purchase programme and the asset purchase programme, which were partly offset by voluntary repayments of targeted longer-term refinancing operations and liquidity-absorbing autonomous factors.

The EONIA forward curve shifted upwards over the review period, especially at long horizons, and also became steeper (Chart 4). The mild inversion of the curve at short-term maturities that was visible in the path prevailing in December has disappeared in an environment of more favourable sentiment towards the recovery. The trough of the curve, which is 2 basis points below the current EONIA level of -50 basis points, corresponds to April 2022. The curve thus indicates that financial markets are not pricing in an imminent rate cut. Overall, EONIA forward rates remain below zero for horizons up to mid-2026, reflecting continued market expectations of a prolonged period of negative interest rates.

Chart 4

EONIA forward rates



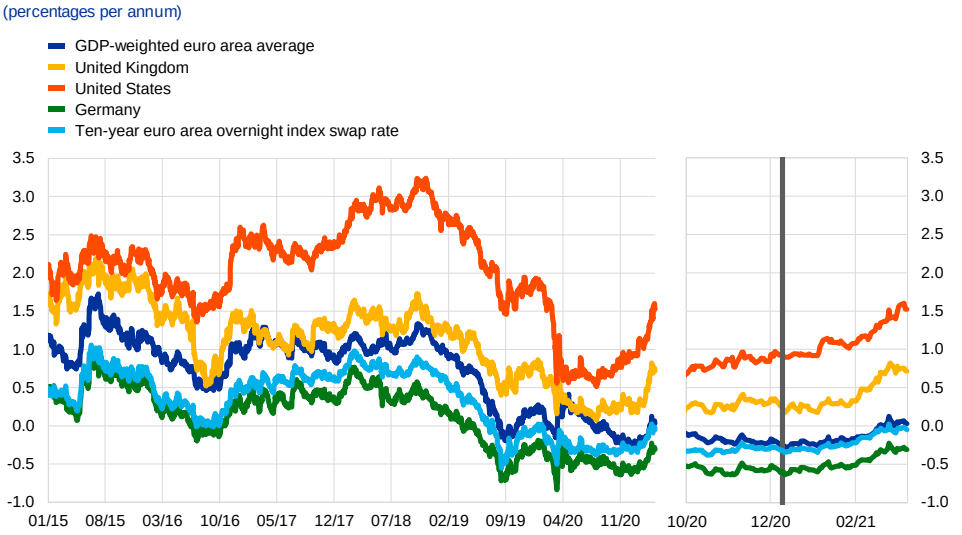
Sources: Refinitiv and ECB calculations.

[4] The methodology for calculating the EONIA changed on 2 October 2019; it is now calculated as the €STR plus a fixed spread of 8.5 basis points. See the box entitled "Goodbye EONIA, welcome €STR!", *Economic Bulletin*, Issue 7, ECB, 2019.

Euro area long-term sovereign bond yields increased together with their global counterparts, albeit by significantly less, to stand notably higher than they were at the time of the December meeting of the Governing Council (Chart 5). Led by an increasingly positive economic outlook for the United States, sustained by expectations for sizeable fiscal stimulus by the new US administration under President Joe Biden, long-term sovereign bond yields tightened sharply on a global scale. Specifically, the GDP-weighted euro area ten-year sovereign bond yield increased by 28 basis points to reach 0.03%. The ten-year sovereign bond yields in the United States and in the United Kingdom increased even more strongly, rising by 62 and 51 basis points and reaching 1.52% and 0.72%, respectively.

Chart 5

Ten-year sovereign bond yields

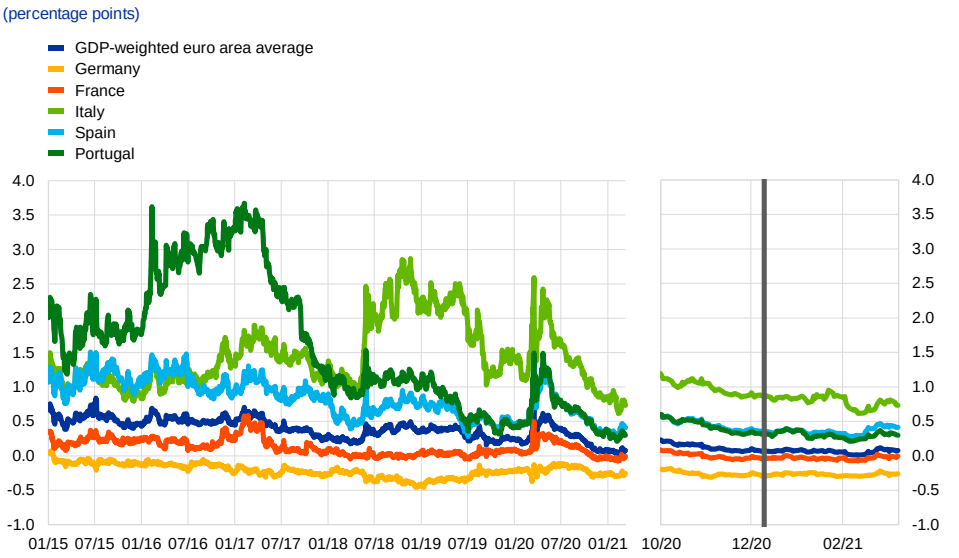


Sources: Refinitiv and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 10 December 2020. The latest observations are for 10 March 2021.

The long-term spreads of euro area sovereign bonds relative to overnight index swap rates remained fairly stable, as yields increased largely in tandem with risk-free rates in most jurisdictions (Chart 6). Italian sovereign spreads declined noticeably in the run-up to the formation of a new government by former ECB President Mario Draghi, and Italian sovereign spreads briefly reached a new multi-year low before increasing again. In particular, over the review period, the Italian and Portuguese ten-year spreads narrowed by 12 and 1 basis points, to stand at 0.73% and 0.30%, respectively. Over the same period, the German, French and Spanish ten-year spreads marginally increased by 1, 1 and 6 basis points and reached -0.26%, -0.01% and 0.41%, respectively.

Chart 6

Ten-year euro area sovereign bond spreads vis-à-vis the overnight index swap rate

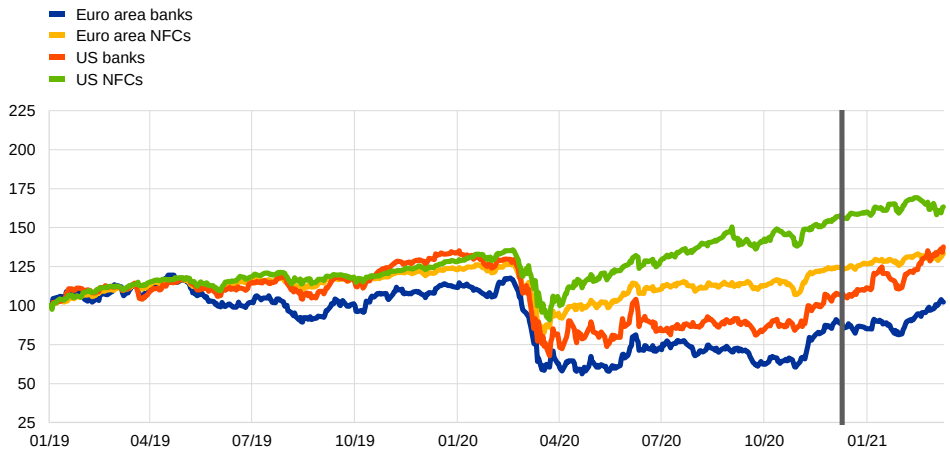


Sources: Refinitiv and ECB calculations.
Notes: The spread is calculated by subtracting the ten-year overnight index swap rate from the ten-year sovereign bond yield. The vertical grey line denotes the start of the review period on 10 December 2020. The latest observations are for 10 March 2021.

Equity prices increased on both sides of the Atlantic, reaching record highs over the review period in the United States, as risk sentiment remained supportive (Chart 7). Except for some volatility, equity prices in the euro area and the United States generally trended up, before only partially receding in the United States towards the end of January. Financial stocks recorded particularly notable gains both in the United States and in the euro area. Overall, the stock prices of euro area and US non-financial corporations (NFCs) increased by 7.4% and 4.4% respectively. The equity prices of euro area and US banks increased by 16.5% and 26.9% respectively, with the US index having fully recovered the losses recorded since the beginning of the pandemic.

Chart 7

Euro area and US equity price indices

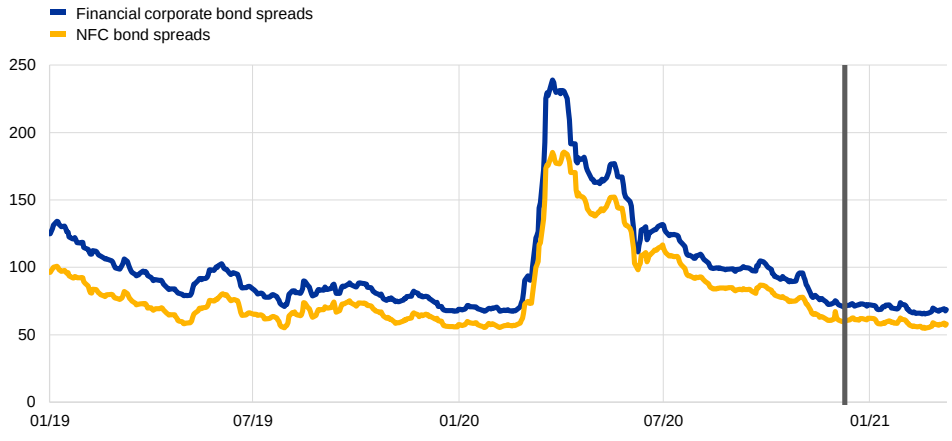


Sources: Refinitiv and ECB calculations.
Notes: The vertical grey line denotes the start of the review period on 10 December 2020. The latest observations are for 10 March 2021.

Euro area corporate bond spreads remained broadly unchanged (Chart 8). Over the review period, the investment-grade NFC bond spread and financial sector bond spread (relative to the risk-free rate) narrowed by 2 and 4 basis points, respectively, to stand in line with their pre-pandemic levels. Overall, there have been only minor movements in corporate bond spreads since the December meeting of the Governing Council.

Chart 8

Euro area corporate bond spreads



Sources: Markit iBoxx indices and ECB calculations.
Notes: Spreads are calculated as asset swap spreads to the risk-free rate. The indices comprise bonds of different maturities (with at least one year remaining) with an investment-grade rating. The vertical grey line denotes the start of the review period on 10 December 2020. The latest observations are for 10 March 2021.

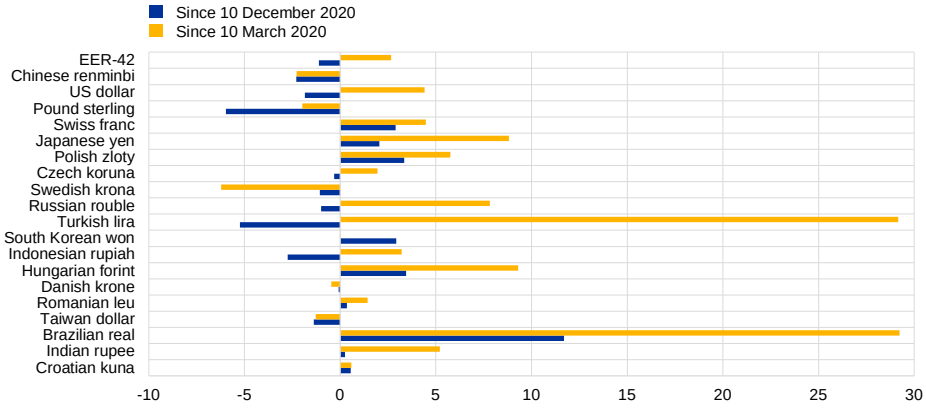
In foreign exchange markets, the euro depreciated slightly in trade-weighted terms (Chart 9). While the nominal effective exchange rate of the euro, as measured against the currencies of 42 of the euro area's most important trading partners, depreciated by 1.1% over the review period, it remained only 2.7% below the historic

high reached in December 2008. This reflected diverging bilateral exchange rate developments in a market environment characterised by increasing risk appetite. The euro depreciated against the US dollar (by 1.8%), the Chinese renminbi (by 2.3%) and the pound sterling (by 6.0%) while strengthening against the Swiss franc (by 2.9%) and the Japanese yen (by 2.0%). The euro also mostly strengthened against the currencies of non-euro area EU Member States in central and eastern Europe.

Chart 9

Changes in the exchange rate of the euro vis-à-vis selected currencies

(percentage changes)



Source: ECB.
Notes: EER-42 is the nominal effective exchange rate of the euro against the currencies of 42 of the euro area's most important trading partners. A positive (negative) change corresponds to an appreciation (depreciation) of the euro. All changes have been calculated using the foreign exchange rates prevailing on 10 March 2021.

3 Economic activity

Following the strong rebound seen in the third quarter of 2020, euro area real GDP contracted again in the fourth quarter, falling by 0.7% quarter on quarter, leaving output almost 5% below pre-pandemic levels. Economic developments continue to be uneven across sectors and countries, with the service sector being the most affected by the restrictions on social interaction and mobility. Although fiscal policy measures are continuing to support households and firms, consumers remain cautious in the light of the pandemic and its impact on employment and earnings. However, corporate investment remains relatively resilient, despite weaker corporate balance sheets and elevated uncertainty. Overall, incoming data, surveys and high-frequency indicators point to continued economic weakness in the first quarter of 2021, driven by the evolution of the pandemic and the associated containment measures. As a result, real GDP is likely to contract again in the first quarter of the year. Looking further ahead, however, the roll-out of vaccines allows for greater confidence in the resolution of the health crisis, which should reduce uncertainty, barring any further adverse developments relating to the pandemic. Over the medium term, the economic recovery in the euro area should also be supported by favourable financing conditions, a supportive fiscal stance and a recovery in demand as containment measures are gradually lifted.

This assessment is broadly reflected in the baseline scenario of the March 2021 ECB staff macroeconomic projections for the euro area. Those projections foresee annual real GDP growth of 4.0% in 2021, 4.1% in 2022 and 2.1% in 2023. The outlook for economic activity is broadly unchanged compared with the December 2020 Eurosystem staff macroeconomic projections. Overall, while the risks surrounding the short-term growth outlook for the euro area remain on the downside, medium-term risks have become more balanced. On the one hand, the improved prospects for global demand, the significant fiscal stimulus across the euro area and the roll-out of vaccines are all cause for optimism. On the other hand, however, the ongoing pandemic (including the spread of new variants of the virus) and its implications for economic and financial conditions continue to be sources of downside risk.

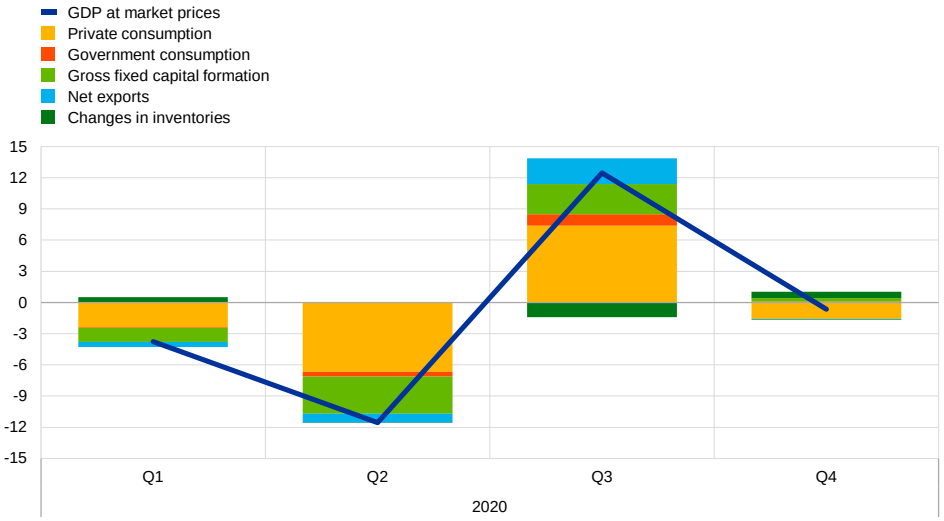
Following a modest contraction in output in the fourth quarter of 2020, economic activity in the euro area is expected to remain weak in the first quarter of 2021. Real GDP declined by 0.7% quarter on quarter in the fourth quarter of 2020, following growth of 12.5% in the third quarter (Chart 10). That was, however, better than the 2.2% contraction that had been foreseen in the December 2020 Eurosystem staff macroeconomic projections. The fall in output in the fourth quarter was mainly due to domestic demand, particularly private consumption. Although output in the fourth quarter was still almost 5% below the pre-pandemic level seen a year earlier, the better than expected outcome for that quarter resulted in a positive carry-over effect on growth in 2021 totalling 2.2%. On the production side, developments in the fourth quarter varied significantly across sectors. While value added in the service sector declined markedly, output in the industrial sector (excluding construction) increased further. Indeed, with strong growth having already been seen in the third quarter, the rebound in industrial output in the second half of 2020 broadly offset the sharp decline seen in the first half of the year. Box 4 takes

stock of the impact of pandemic-related containment measures across economic sectors in the largest euro area countries, as well as looking at how that impact has changed over time. Overall, euro area output is estimated to have fallen by 6.6% in 2020 – somewhat more than in the United States. As Box 1 explains, this may be related to the stricter lockdowns seen in the euro area and the more expansionary fiscal policy in the United States.

Chart 10

Euro area real GDP and its components

(quarter-on-quarter percentage changes; quarter-on-quarter percentage point contributions)



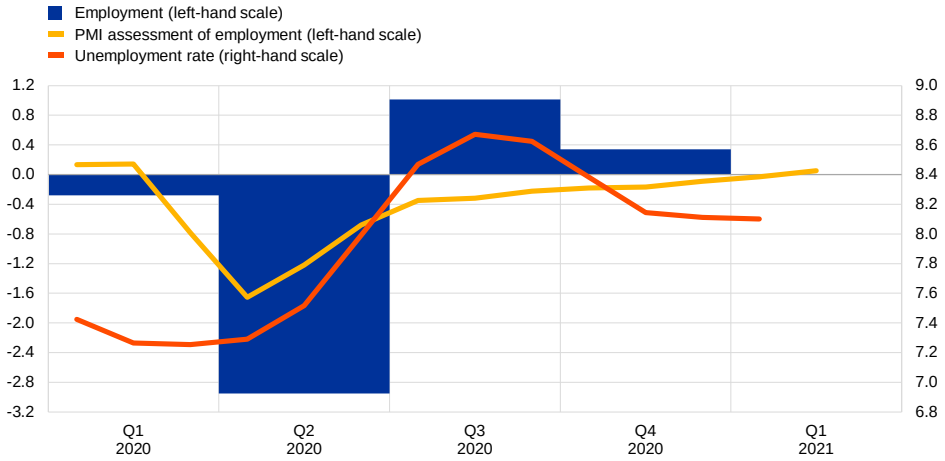
Source: Eurostat.

The euro area labour market continues to benefit from significant policy support, while employment has seen increases in recent months and the unemployment rate has been broadly stable. The extensive use of job retention schemes continues to support employment, thereby mitigating the impact on the unemployment rate, supporting household income and limiting economic uncertainty. Employment rose by 0.3% quarter on quarter in the fourth quarter of 2020, following an increase of 1.0% in the third quarter (Chart 11). However, despite that improvement, employment was still 1.9% lower in the fourth quarter than it had been one year earlier prior to the pandemic. Hours worked continue to play an important role in the adjustment of the euro area labour market. Total hours worked declined by 1.6% quarter on quarter in the fourth quarter (following an increase of 14.8% in the third quarter), standing almost 6.5% below the level seen at end-2019. Meanwhile, the unemployment rate stood at 8.1% in January 2021, broadly unchanged from November 2020 and down from just under 8.7% in August 2020, but still some 0.8 percentage points higher than the pre-pandemic level recorded in February 2020. Workers covered by job retention schemes were estimated to account for around 5.9% of the labour force in January 2021, down from almost 20% in April 2020. However, the number of workers covered by such schemes has been rising since October 2020 as a result of renewed containment measures in some countries.

Chart 11

Euro area employment, the PMI assessment of employment and the unemployment rate

(left-hand scale: quarter-on-quarter percentage changes, diffusion index; right-hand scale: percentages of the labour force)



Sources: Eurostat, Markit and ECB calculations.
Notes: The two lines indicate monthly developments; the bars show quarterly data. The PMI is expressed as a deviation from 50 divided by 10. The latest observations are for the fourth quarter of 2020 for employment, February 2021 for the PMI and January 2021 for the unemployment rate.

Short-term labour market indicators have partially recovered, but still point to some vulnerabilities in the euro area labour market. In February 2021, the composite PMI employment indicator moved into expansionary territory for the first time since the onset of the coronavirus (COVID-19) pandemic, albeit remaining in contractionary territory in some countries and the low-tech service sector. Households' unemployment expectations remained elevated in that month amid subdued demand for labour. Looking ahead, the substantial numbers of workers who are still covered by job retention schemes may pose upward risks to the unemployment rate going forward.

Consumer spending lost momentum around the turn of the year, declining by 3.0% quarter on quarter in the fourth quarter of 2020. In January 2021, retail trade fell by 5.9% month on month, while new car registrations declined by 22% over the same period (falling to their lowest level since June 2020). With the second wave of the pandemic leading to a renewed increase in household savings, bank deposit inflows for households remained high in January (following a temporary dip in December). Large numbers of households remain unaffected by the immediate impact of the pandemic in terms of their income, and those households have continued to accumulate substantial amounts of involuntary savings. At the same time, households' expectations for the next 12 months as regards the general economic situation, their personal financial situation and their plans to make major purchases have not improved significantly since May of last year.

Corporate investment (proxied by non-construction investment) remains relatively resilient, having increased further in the fourth quarter of 2020. Non-construction investment has been supported by strong investment in intellectual property products, probably partly as a result of the need for further digitalisation of the economy in response to the pandemic. Meanwhile, investment in machinery and

equipment increased only modestly at the end of 2020, following exceptionally strong growth in the third quarter. In recent months, corporate investment has been supported by strong foreign demand, as reflected in the growth of industrial orders for capital goods from outside the euro area, as well as the improvements seen in manufacturing firms' export order books in the period to February. Recent survey data are also consistent with investment remaining resilient in the first quarter of 2021. Indeed, increases in business confidence and production expectations in the capital goods sector (particularly in February) suggest that investment is likely to grow further in the coming months. The outlook for investment will probably continue to be driven mainly by the manufacturing sector, whereas service sector firms (which have generally been more affected by the pandemic and the associated containment measures) are, according to recent surveys, more likely to have delayed or cancelled investment plans. Looking further ahead, increases in firms' debt burdens and a potential increase in bankruptcies may pose a threat to the ongoing recovery in investment.

Housing investment remained resilient in the fourth quarter of 2020, despite the renewed increase in pandemic-related restrictions, although the short-term outlook remains uncertain. Housing investment increased slightly in the fourth quarter, rising by 0.5% quarter on quarter, but remained some 3% below the level seen at end-2019. However, recent indicators point to some moderation in the pace of recovery in the short term, partly as a result of the renewed mobility restrictions seen in recent months. This may even derail the progress made in the second half of 2020 in terms of returning to pre-pandemic levels of housing investment. On the demand side, European Commission survey data on consumers' intentions to renovate their houses over the next 12 months point to a weakening of housing expenditure in the short term, albeit with differences across countries. On the supply side, despite some signs of recovery in building permits and order books, the latest confidence indicators suggest that weakness in short-term prospects for business activity could weigh on firms in the real estate sector and (to a lesser extent) the construction sector. Within the construction sector, PMI output indicators for the first two months of 2021 suggest that firms in the residential segment have brighter prospects than their counterparts in the commercial segment.

Euro area trade continued to expand at a robust rate in the fourth quarter of 2020, largely as a result of further increases in manufacturing trade. Trade growth in the fourth quarter was driven by (i) consolidation of the recovery seen in the third quarter, (ii) growth in consumer goods exports to the United Kingdom, Brazil and Asia, and (iii) increased energy imports from Norway and Russia, with those three factors making contributions of roughly equal size. However, exports to non-euro area countries were the sole driver of growth in December, supported by extraordinary stockpiling of EU goods in the United Kingdom ahead of the end of the Brexit transition period. At the start of 2021, the cost of exporting from the euro area to the United Kingdom rose, delivery times lengthened, and containerised exports experienced an abrupt contraction (according to maritime trade data). The resulting effect on trade is likely to be temporary, as leading indicators for January and February point to further growth in manufacturing exports in the first quarter of 2021. Whereas consumer goods were the main driver of new export orders in the fourth quarter, developments in the

first two months of 2021 reflected improvements in the capital and intermediate goods sectors. Further evidence of an ongoing normalisation of manufacturing trade is provided by incoming data on shipping rates, which returned to pre-pandemic levels in February. At the same time, however, trade in services remains heavily impaired, with protracted lockdowns continuing to prevent any substantial improvement.

Conjunctural indicators point to continued moderation in economic activity in the first quarter of 2021. Survey data remain at low levels broadly consistent with a modest further contraction in the first quarter of this year, despite moderate improvements relative to the fourth quarter of 2020. The flash composite output PMI, which declined from 52.4 in the third quarter to 48.1 in the fourth quarter, has recently increased somewhat, averaging 48.3 over January and February. This improvement reflects developments in the service sector (albeit it suggests that services are still in contractionary territory). In contrast, the manufacturing output PMI declined marginally in the first two months of 2021 (compared with the fourth quarter of 2020) but remained in expansionary territory. Looking specifically at pandemic-related measures, although the composite Stringency Index has remained close to the levels seen at its peak in April 2020, high-frequency mobility indicators for euro area countries have started to improve in recent months. Overall, the short-term outlook continues to be surrounded by considerable uncertainty.

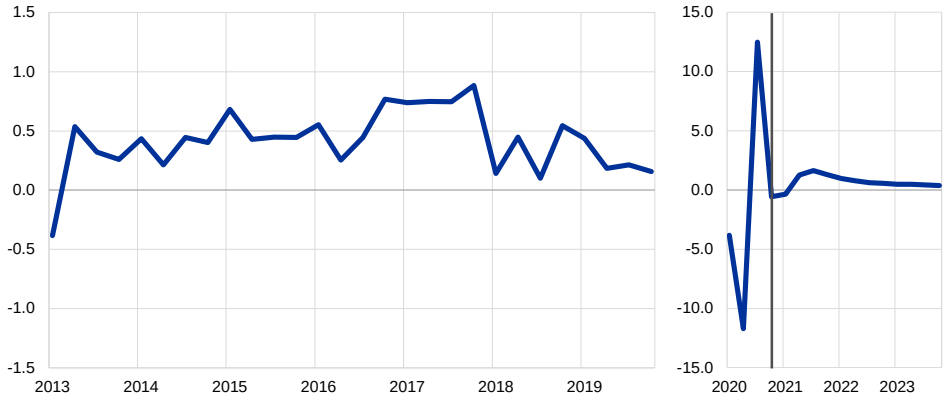
The recent intensification of the COVID-19 pandemic has weakened the short-term outlook for the euro area economy but has not derailed its recovery. Efforts to ramp up the production and distribution of vaccines (which should allow for the relaxation of containment measures), combined with substantial support from monetary and fiscal policies (including Next Generation EU funds) and better prospects for global demand, should result in a robust recovery as of the second half of 2021. This is reflected in the March 2021 ECB staff macroeconomic projections for the euro area, which foresee annual real GDP growth of 4.0% in 2021, 4.1% in 2022 and 2.1% in 2023 (Chart 12). That assessment is broadly unchanged compared with the December 2020 projections. Real GDP is expected to exceed its pre-pandemic level in the second quarter of 2022. Nevertheless, short-term risks to the growth outlook remain tilted to the downside owing to the resurgence of the virus, the emergence of new mutations and the associated containment measures. At the same time, the risks surrounding the growth outlook for the euro area over the medium term have become more balanced. In addition, the Biden administration's American Rescue Plan, which came too late to be included in the baseline projections, is likely to result in some positive spillovers for the euro area.[5]

[5] See Box 4 of the article entitled "ECB staff macroeconomic projections for the euro area, March 2021", which was published on the ECB's website on 11 March 2021.

Chart 12

Euro area real GDP (including projections)

(quarter-on-quarter percentage changes)



Sources: Eurostat and the article entitled "ECB staff macroeconomic projections for the euro area, March 2021".
Notes: In view of the unprecedented volatility of real GDP in 2020, this chart uses a different scale from 2020 onwards. The vertical line indicates the start of the projection horizon. The chart does not show ranges around the projections, reflecting the fact that, in the present circumstances, the standard computation method for those ranges (which is based on historical projection errors) would not provide a reliable indication of the unprecedented uncertainty surrounding current projections.

4 Prices and costs

According to Eurostat's flash estimate, euro area annual inflation was 0.9% in February 2021, which was unchanged compared to January 2021 but a substantial increase from -0.3% in December 2020. On the basis of current oil futures prices, headline inflation is likely to increase in the coming months, but some volatility is expected throughout the year, reflecting the changing dynamics of the factors currently pushing inflation up. These factors can be expected to fade out of annual inflation rates early next year. Underlying price pressures are expected to increase somewhat this year owing to current supply constraints and the recovery in domestic demand, although pressures are expected to remain subdued overall, reflecting, among other things, low wage pressures and the past appreciation of the euro. Once the impact of the coronavirus (COVID-19) pandemic fades, the unwinding of the high level of slack, supported by accommodative fiscal and monetary policies, will contribute to a gradual increase in inflation over the medium term. Survey-based measures and market-based indicators of longer-term inflation expectations remain at subdued levels, although market-based indicators have continued their gradual increase. This assessment is broadly reflected in the baseline scenario of the March 2021 ECB staff macroeconomic projections for the euro area, which foresees annual inflation at 1.5% in 2021, 1.2% in 2022 and 1.4% in 2023. Compared with the December 2020 Eurosystem staff macroeconomic projections, the outlook for inflation has been revised up for 2021 and 2022, largely owing to temporary factors and higher energy price inflation, while it is unchanged for 2023

HICP inflation increased sharply at the beginning of this year compared to the end of last year. After four consecutive months at -0.3%, HICP inflation increased to 0.9% in January 2021 and remained at this rate in February. According to Eurostat's flash estimate, the unchanged rate in February 2021 was the result of less negative energy inflation being offset by a decline in HICP excluding energy and food (HICPX) inflation. HICPX inflation decreased to 1.1% in February from 1.4% in January, but was substantially higher than the 0.2% recorded in the last four months of 2020.

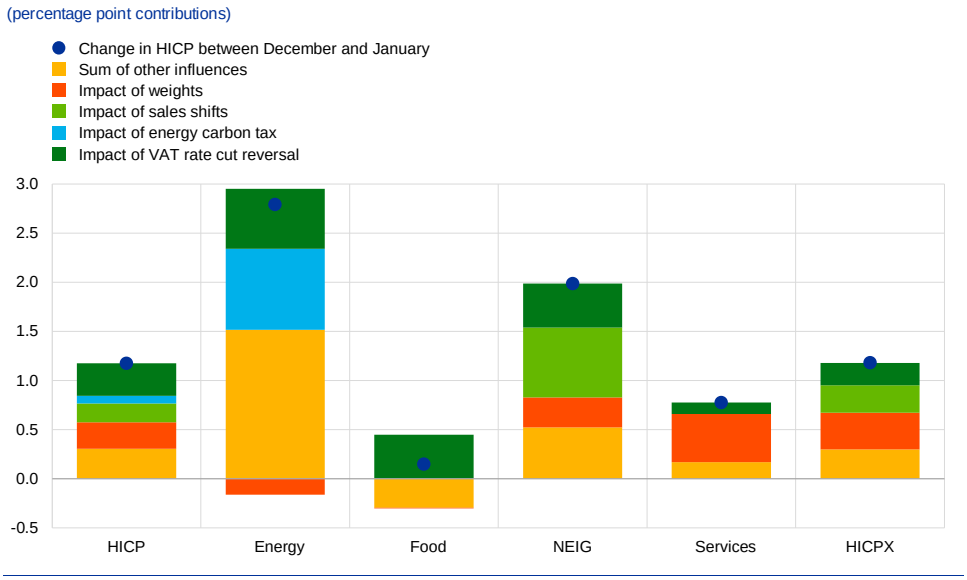
The upswing in headline inflation in January reflected several factors that were mostly temporary and of a statistical nature (Chart 13). First, the impact of stronger than usual changes in HICP weights for 2021 associated with changes in household consumption patterns during the COVID-19 pandemic played a significant role. This was especially the case for travel and recreation-related services. The change in expenditure weights contributed 0.3 percentage points to HICP inflation in January.[6] Second, the reversal of the German VAT rate cut appears to have been broadly symmetric in magnitude to the impact of the rate decrease in July 2020 and contributed about 0.3 percentage points to the uptick in HICP inflation. Third, changes in the timing and magnitudes of seasonal sales in a number of euro area countries implied a substantial rise in non-energy industrial goods (NEIG) inflation. However, even when accounting for these factors, there remains some upward impact on both

[6] However, this impact will change across the year and was estimated at 0.1 percentage points in February. For more information, see the box entitled "HICP weights in 2021 and their implications for inflation" in this issue of the Economic Bulletin. The impact of the weight change can only be reliably estimated with the full release.

headline HICP inflation and HICPX inflation from the sum of other factors (yellow bars in Chart 13).

Chart 13

Change in headline inflation between December 2020 and January 2021



Sources: Eurostat and ECB staff calculations.
Notes: The sales shifts apply to Italy and France. Both the energy carbon tax and the VAT rate cut reversal relate to Germany.

The recent increase in HICP inflation was also due to successively less negative energy inflation. After standing at -6.9% in December 2020, energy inflation increased to -4.1% in January 2021 and further to -1.7% in February. The less negative rate in January reflected recent higher oil prices in euro, while in February the rate also reflected a base effect from the drop in oil prices at the onset of the pandemic last year. Other factors that contributed to the less negative energy inflation rate included the reversal of the VAT rate cut and the introduction of the carbon surcharge in Germany and higher electricity prices, particularly in Spain, owing to cold weather.

Price imputations became more prevalent in January and February, implying somewhat more uncertainty surrounding the signal for underlying price pressures. After the share of price imputations had returned to very low rates during the summer of 2020, towards the end of the year it began to rise as COVID-19 containment measures were tightened again. In February 2021, 14% and 19%, respectively, of the items in the HICP and the HICPX were imputed.

While exclusion-based measures of underlying inflation edged up, model-based measures remained broadly unchanged in January (latest available data).[7] HICP inflation excluding energy, food, travel-related items, clothing and footwear (HICPXX) increased to 1.2% in January 2021, from 0.8% in the previous month, while the persistent and common component of inflation (PCCI) remained unchanged at 1.2%. The Supercore indicator rose slightly from 0.5% in December 2020 to 0.7% in January 2021 (Chart 14). The measures were also affected by some

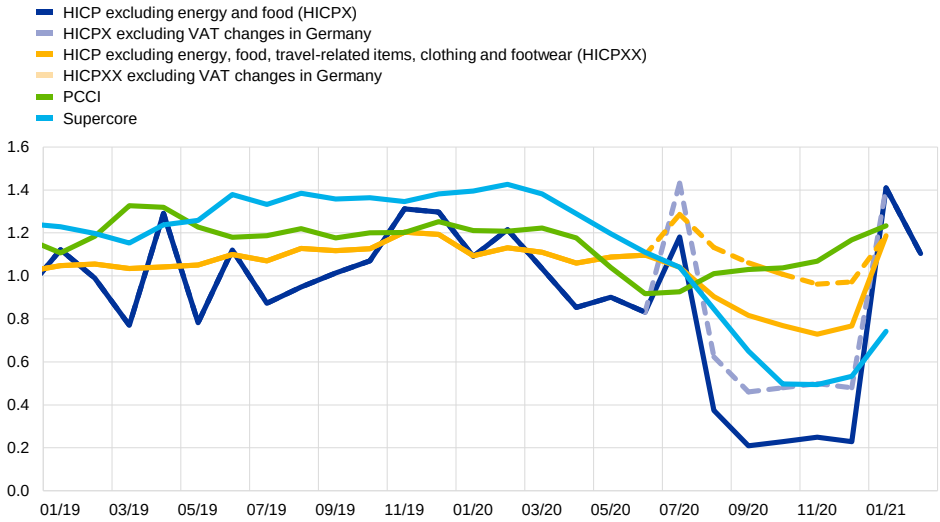
[7] For a description of exclusion-based and model-based measures of underlying inflation, see the article entitled "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4, ECB, 2018.

of the temporary factors mentioned above, such as the reversal of the VAT rate cut in Germany.

Chart 14

Measures of underlying inflation

(annual percentage changes)



Sources: Eurostat and ECB calculations.
Notes: For HICPX and HICPX excluding VAT changes in Germany, the latest observations are the February 2021 flash estimate. For the rest, the latest observations are January 2021.

Pipeline price pressures for non-energy industrial goods inflation remained broadly stable at the later stages, while pressures at the earlier stages intensified. For non-food consumer goods, domestic producer price inflation was 0.6% in January, continuing to hover close to its long-term average. Import price inflation for non-food consumer goods remained at low levels, with the monthly profile largely mirroring movements in the euro nominal effective exchange rate. At the earlier input stages, both producer and import price inflation for intermediate goods continued to increase in January, probably reflecting a further easing of downward pressures from oil and other commodity prices.[8]

Wage setting continues to be affected by the government support schemes. This is reflected, for instance, in the divergence between growth in compensation per employee and growth in compensation per hour. The gap between the two widened again in the fourth quarter of 2020 as the take-up of short-time work and temporary lay-off schemes increased as a result of the renewed lockdown measures at the end of last year. Annual growth in compensation per employee increased slightly to 0.7% in the fourth quarter from 0.6% in the third quarter, after a very negative rate of -4.5% in the second quarter. Annual growth in compensation per hour, on the other hand, rebounded again to 5.1% in the fourth quarter from 3.4% in the third quarter of 2020 (see Chart 15). These divergent developments reflect the impact of short-time work and temporary lay-off schemes, under which workers maintained their employment

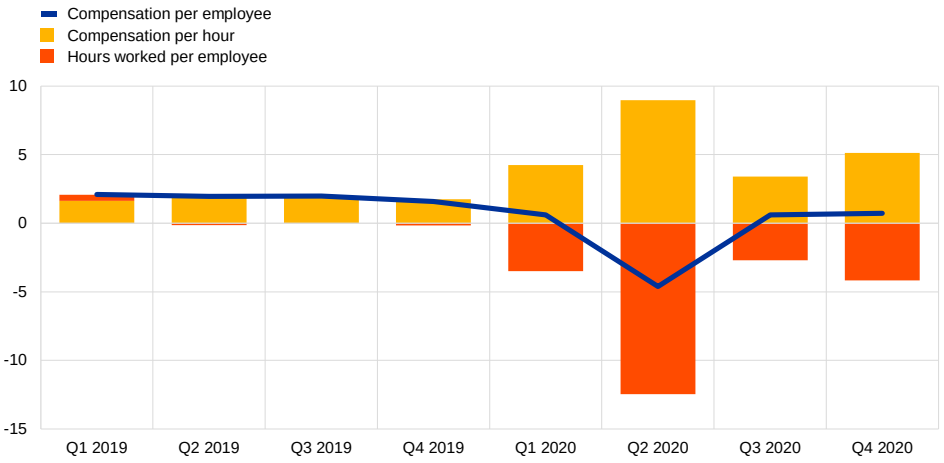
[8] Producer price inflation for intermediate goods increased to 0.9% in January, from -0.1% in the previous month, while import price inflation for intermediate goods increased to 0.1% from -0.8% over the same period.

status but only received part of their usual compensation, while actual hours worked per person declined sharply.[9] Growth in negotiated wages, which is not directly affected by developments in hours worked and the recording of benefits from job retention schemes, increased to 1.9% in the fourth quarter of 2020, after 1.7% and 1.6% in the second and third quarters respectively. This upward movement reflected the impact of one-off payments at the end of the year, but even discounting for this impact, negotiated wage growth remained relatively robust at 1.6% in the fourth quarter, as the data still include agreements concluded before the onset of the pandemic.

Chart 15

Decomposition of compensation per employee into compensation per hour and hours worked

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2020.

Market-based indicators of inflation expectations continued to rise in tandem with the global reflation trend (Chart 16). The increase in euro area market-based indicators of inflation expectations over the review period mainly reflected three global factors: an improvement in risk sentiment owing to the start of COVID-19 vaccinations and decreasing rates of infection; renewed fiscal stimulus in the United States under the Biden administration; and a buoyant recovery in commodity prices. During the first part of the review period, short and medium-term indicators of market based-inflation expectations edged higher, but then partially fell back in line with their international peers around mid-February. However, towards the end of the month euro area inflation-linked swap (ILS) rates moved upwards again. By the beginning of March, both short and long-term market-based indicators of inflation expectations stood above their pre-pandemic levels. Nevertheless, levels of short and longer-term forward ILS rates have continued to be very subdued recently and do not suggest a return of inflation to the ECB's aim over the foreseeable future. Survey-based indicators of inflation expectations show some signs of having levelled off close to their

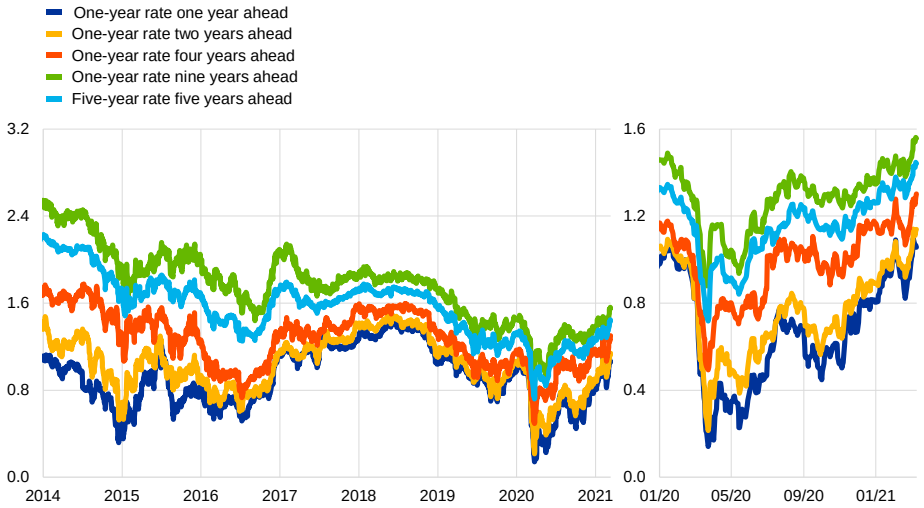
9 Job retention schemes are also likely to have contributed to the resilience of profit margins. Even though profit margins deteriorated somewhat in the fourth quarter, they remained resilient relative to the depth of the recession. See the box entitled "The role of profit margins in the adjustment to the COVID-19 shock" in this issue of the Economic Bulletin.

historically low levels. According to the ECB Survey of Professional Forecasters (SPF) for the first quarter of 2021 (conducted in early January 2021), longer-term inflation expectations were unchanged at 1.7%.

Chart 16

Market-based indicators of inflation expectations

(annual percentage changes)



Sources: Thomson Reuters and ECB calculations.
Note: The latest observations are for 10 March 2021.

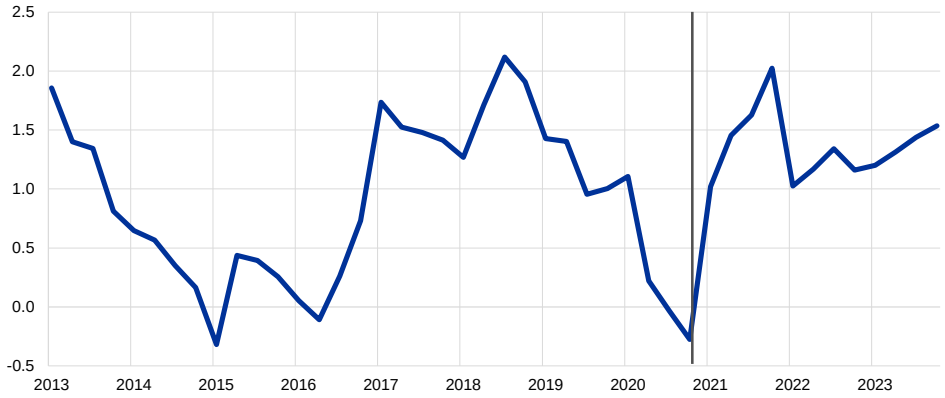
The March 2021 ECB staff macroeconomic projections foresee headline inflation being subject to some volatility in the coming months, but gradually increasing over the projection horizon. The baseline projections point to headline HICP inflation averaging 1.5% in 2021, 1.2% in 2022 and 1.4% in 2023 (Chart 17). Compared with the December 2020 Eurosystem staff macroeconomic projections, the projection for HICP inflation was revised up for 2021 and 2022, but remained unchanged for 2023. The upward revision in 2021 reflects an upward revision of HICP energy inflation as well as the impact of the temporary factors explaining the recent upswing in inflation. Over the medium term, as the impact of temporary factors drops out of the annual rates, inflation is expected to fall back to 1.0% at the beginning of 2022, before increasing gradually to 1.4% in 2023. HICP inflation excluding energy and food is expected to be 1.0% in 2021 and 1.1% in 2022, before increasing to 1.3% in 2023. The effects of the US fiscal package on euro area HICP inflation are expected to be moderate, with a cumulative impact of about 0.15 percentage points over the projection horizon.[10]

[10] For more details, see Box 4 in the article entitled "ECB staff macroeconomic projections for the euro area, March 2021" on the ECB's website.

Chart 17

Euro area HICP inflation (including projections)

(annual percentage changes)



Sources: Eurostat and the article entitled "ECB staff macroeconomic projections for the euro area, March 2021", published on the ECB's website on 11 March 2021.
Notes: The vertical line indicates the start of the projection horizon. The latest observations are for the fourth quarter of 2020 (data) and the fourth quarter of 2023 (projections). The cut-off date for data included in the projections was 16 February 2021.

5 Money and credit

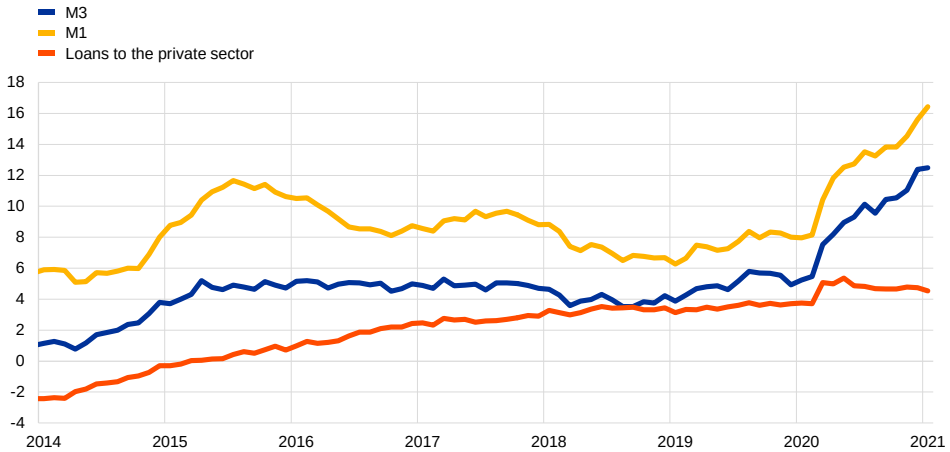
Monetary dynamics in the euro area continued to reflect the implications of the coronavirus (COVID-19) pandemic. In January money growth stabilised at robust levels, reflecting the continued demand for liquidity by firms and households. Domestic credit remained the dominant source of money creation, with Eurosystem purchases being the most prominent contributor. The timely and sizeable measures taken by monetary, fiscal and supervisory authorities continued to support the flow of credit to the euro area economy at favourable terms. The total external financing volumes of firms continued to level off in the fourth quarter of 2020. The overall cost of external financing of firms has levelled off since October 2020, as the cost of market-based debt and equity has moderated, while bank lending rates have remained stable.

Broad money growth stabilised at robust levels in January. Monetary dynamics continued to reflect the COVID-19 pandemic, which has triggered an exceptional preference for liquidity. The annual growth rate of the broad monetary aggregate M3 stood at 12.5% in January, after 12.4% in December 2020 (Chart 18). The annual growth rate of the most liquid monetary aggregate, M1, which comprises overnight deposits and currency in circulation, accelerated further to 16.4% in January, after 15.6% in December, thus strongly contributing to M3 growth. These developments reflect not only the liquidity positions being built up by firms and households amid continuing heightened uncertainty, but also – in the case of households – some forced savings owing to reduced opportunities to consume. The strong growth in money was also the result of sizeable support measures taken by the ECB and supervisory authorities, as well as by national governments, to ensure that sufficient liquidity is provided to the economy to address the economic consequences of the pandemic.

Chart 18

M3, M1 and loans to the private sector

(annual percentage changes; adjusted for seasonal and calendar effects)



Source: ECB.
Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observations are for January 2021.

Overnight deposits continued to be the main contributor to M3 growth. The annual growth rate of overnight deposits increased to 17.1% in January, after 16.3% in

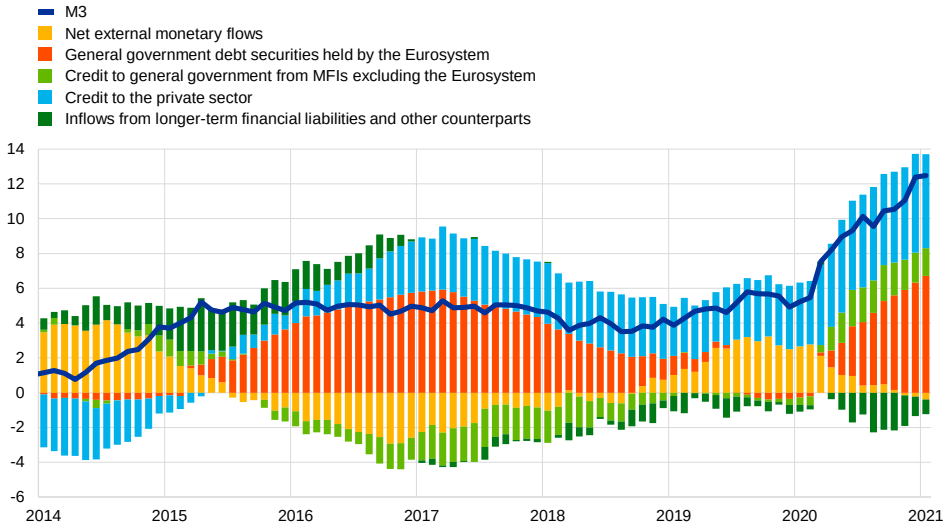
December. Money holders' preference for overnight deposits reflected precautionary motives and the very low level of interest rates, which reduces the opportunity cost of holding such instruments. The growth in deposits was mainly driven by holdings of firms and households. In the case of firms, growth in deposit holdings varied across countries, reflecting differences in the liquidity needs of firms and support measures provided by national governments. The annual growth rate of currency in circulation increased from 11.3% in December to 12.3% in January. By comparison, other short-term deposits and marketable instruments continued to make a modest contribution to annual M3 growth, mirroring the low level of interest rates and the search-for-yield behaviour of investors.

Domestic credit remained the main source of money creation, with Eurosystem purchases being the most prominent contributor. Since October 2020, the Eurosystem's net purchases of government securities under the ECB's asset purchase programme (APP) and pandemic emergency purchase programme (PEPP) have been the largest contributor to M3 growth (the red portion of the bars in Chart 19). Credit growth to the private sector, which made a sizeable but decreasing contribution to M3 growth, was the second largest contributor (the blue portion of the bars in Chart 19). The flow of credit from the banking sector (excluding the Eurosystem) to the public sector has moderated over recent months (the light green portion of the bars in Chart 19). Net external monetary flows were broadly balanced in 2020 (the yellow portion of the bars in Chart 19), while longer-term financial liabilities and other counterparts had a negative impact on money growth (the dark green portion of the bars in Chart 19). This was mainly due to developments in other counterparts, in particular repurchase agreements, while favourable conditions for targeted longer-term refinancing operations (TLTROs) continued to support banks' funding substitution, resulting in net redemptions in long-term bank bonds.

Chart 19

M3 and its counterparts

(annual percentage changes; contributions in percentage points; adjusted for seasonal and calendar effects)



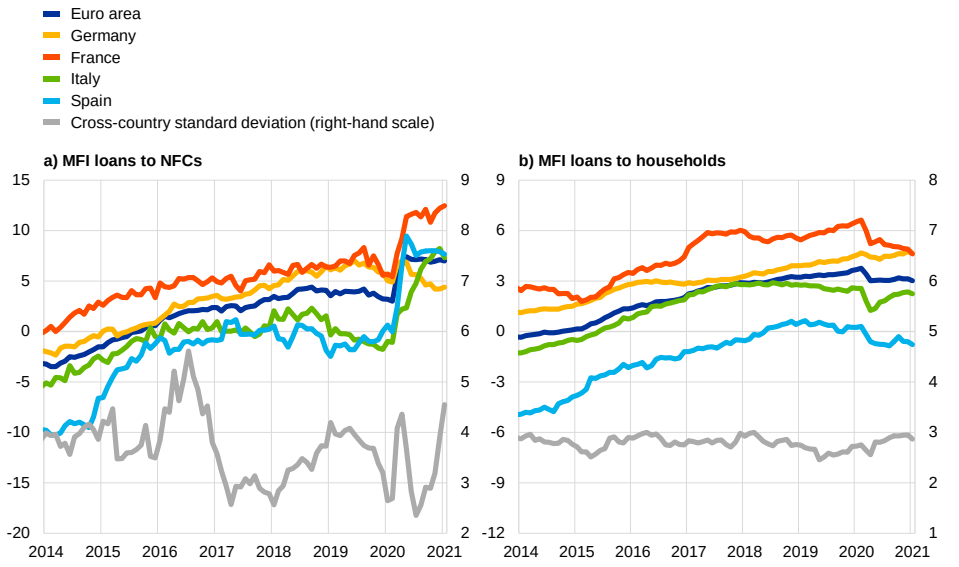
Source: ECB.
Notes: Credit to the private sector includes monetary financial institution (MFI) loans to the private sector and MFI holdings of debt securities issued by the euro area private non-MFI sector. As such, it also covers purchases by the Eurosystem of non-MFI debt securities under the corporate sector purchase programme and the PEPP. The latest observations are for January 2021.

Loan growth to the private sector moderated. The annual growth rate of monetary financial institution (MFI) loans to the private sector decreased to 4.5% in January, after 4.7% in December, but remained well above its pre-pandemic level (Chart 18). The annual growth rate of loans to firms stood at 7.0% in January, after 7.1% in December, while growth in loans to households decreased from 3.1% to 3.0% during this period (Chart 20). Shorter-term dynamics in loans to firms continued their moderation, with the monthly lending flow turning slightly negative in January, reflecting the previous build-up of liquidity buffers, low loan demand for investment purposes, and early signs of tightening pressure on the supply of credit. Firms' reliance on longer-term loans has continued to increase at the expense of shorter-term loans.

Chart 20

MFI loans in selected euro area countries

(annual percentage changes)



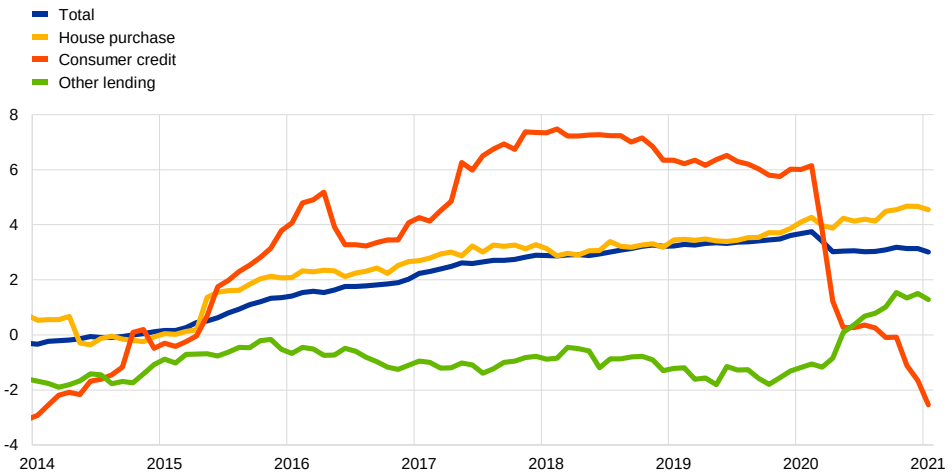
Source: ECB.
Notes: Loans are adjusted for loan sales and securitisation; in the case of non-financial corporations (NFCs), loans are also adjusted for notional cash pooling. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for January 2021.

Total lending to households also moderated. While loans to households for house purchase have remained broadly stable since September 2020, with annual growth at 4.5% in January, consumer credit continued its sharp decline, the beginning of which coincided with the start of the pandemic (Chart 21). The annual growth rate of consumer credit declined to -2.5% in January, after -1.7% in December. The strong decrease in this loan type is related to the intensification of lockdown measures since November 2020. In contrast, the annual growth of other lending to households stood at 1.3% in January, after 1.5% in December. Despite some improvement since May 2020, development in this loan category, which was largely explained by lending to small firms (sole proprietors and unincorporated partnerships), has remained subdued. While small firms were particularly affected by the slowdown in economic activity, they also benefited from government support to meet their financing needs.

Chart 21

MFI loans to households by purpose

(annual percentage changes; adjusted for seasonal and calendar effects)



Source: ECB.
Notes: The series for total loans to households is adjusted for loan sales and securitisation. The latest observation is for January 2021.

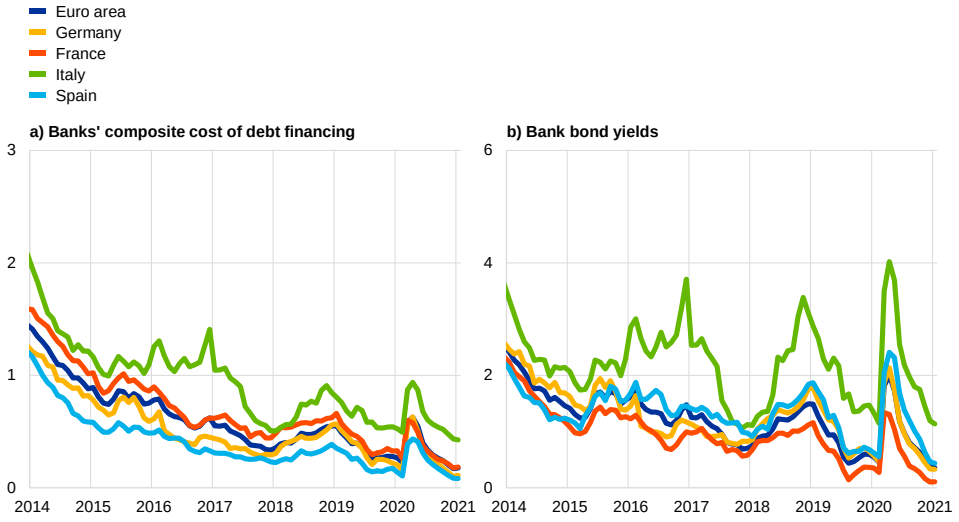
In the euro area, household gross indebtedness, calculated as total debt over disposable income, has increased further in recent quarters and has significantly exceeded its pre-pandemic level. While this development mirrors the economic consequences of the pandemic, which has tended to compress disposable income, there was heterogeneity across countries. At the same time, the household saving rate increased steeply, reflecting a combination of forced savings owing to lower consumption caused by the shutdowns and precautionary savings following the slump in consumer confidence and heightened uncertainty.

Banks have continued to benefit from favourable funding conditions, while increased credit risk is weighing on their balance sheets and profitability. The composite cost of debt financing for euro area banks remained below its pre-pandemic level, also owing to monetary policy support (Chart 22). The ECB's APP and PEPP have put downward pressure on yields and banks partly replaced market-based funding with TLTROs at very favourable conditions. Both factors also supported market conditions for bank bonds. Moreover, prices for covered bank bonds are being directly supported by the ECB's third covered bond purchase programme (CBPP3). In addition, deposit rates of euro area banks, which account for the majority of bank funding, remained unchanged at historical lows in January 2021, thereby contributing to favourable bank debt funding conditions amid the effective pass-through of negative rates. Indeed, euro area banks have increasingly charged negative interest rates on non-financial corporation (NFC) deposits held with them since the onset of the COVID-19 crisis. At the same time, a large part of banks' deposit funding, in particular retail deposits, tends to remain at or above zero, which compresses their net interest margins. The prospect of credit losses owing to the deterioration in borrowers' creditworthiness and low bank profitability is likely to weigh on banks' intermediation and loss-absorption capacity. As shown by the January 2021 euro area bank lending survey, banks tightened their credit standards again in the fourth quarter of 2020, reflecting their heightened risk perception as a result of the pandemic.

Chart 22

Composite cost of debt financing of banks

(composite cost of deposit and unsecured market-based debt financing; percentages per annum)



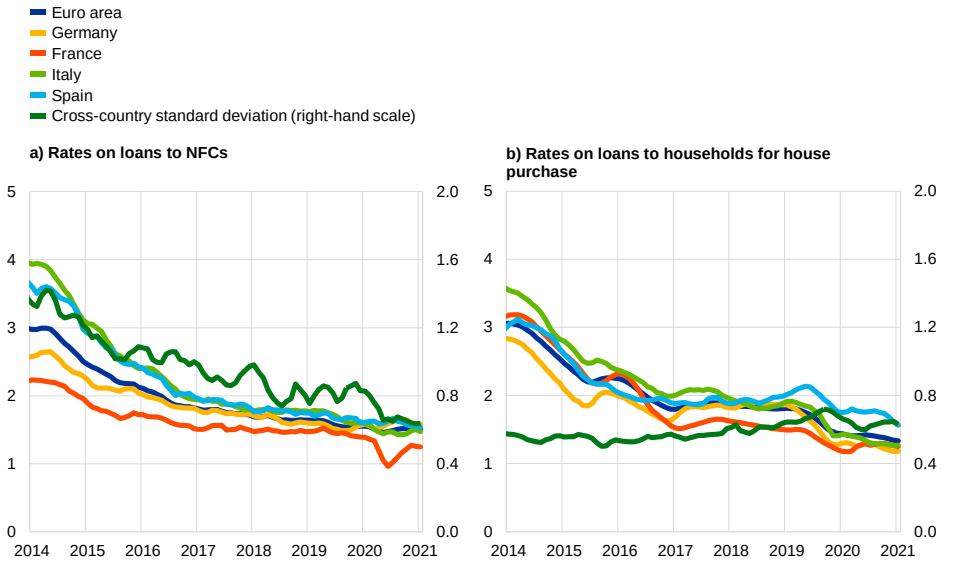
Sources: ECB, Markit iBoxx and ECB calculations.
Notes: The composite cost of deposits is calculated as an average of new business rates on overnight deposits, deposits with an agreed maturity and deposits redeemable at notice, weighted by their corresponding outstanding amounts. Bank bond yields refer to monthly averages of senior-tranche bonds. The latest observations are for January 2021.

Bank lending rates remained stable at levels close to their historical lows. In December, composite bank lending rates for loans to firms stood at 1.51%, while those for loans to households for house purchase fell to a new historical low of 1.33% (Chart 23). This development was widespread across euro area countries. However, the spread between bank lending rates on very small loans and those on large loans widened, while remaining below pre-pandemic levels. There are concerns that the severe and protracted economic impact of the pandemic on firms' revenues, households' employment prospects and overall borrower creditworthiness will put upward pressure on bank lending rates. Two factors explain the benign reaction of bank lending rates to the pandemic thus far. First, the measures taken by the ECB, bank supervisors and governments have offset the procyclical impact of the pandemic shock on credit supply. In this respect, the TLTROs will continue to contribute to downward pressure on lending rates. Second, bank lending rates tend to be less responsive in the short term as banks temporarily absorb fluctuations in their cost components in an effort to maintain client relationships.

Chart 23

Composite bank lending rates in selected euro area countries

(percentages per annum; three-month moving averages)



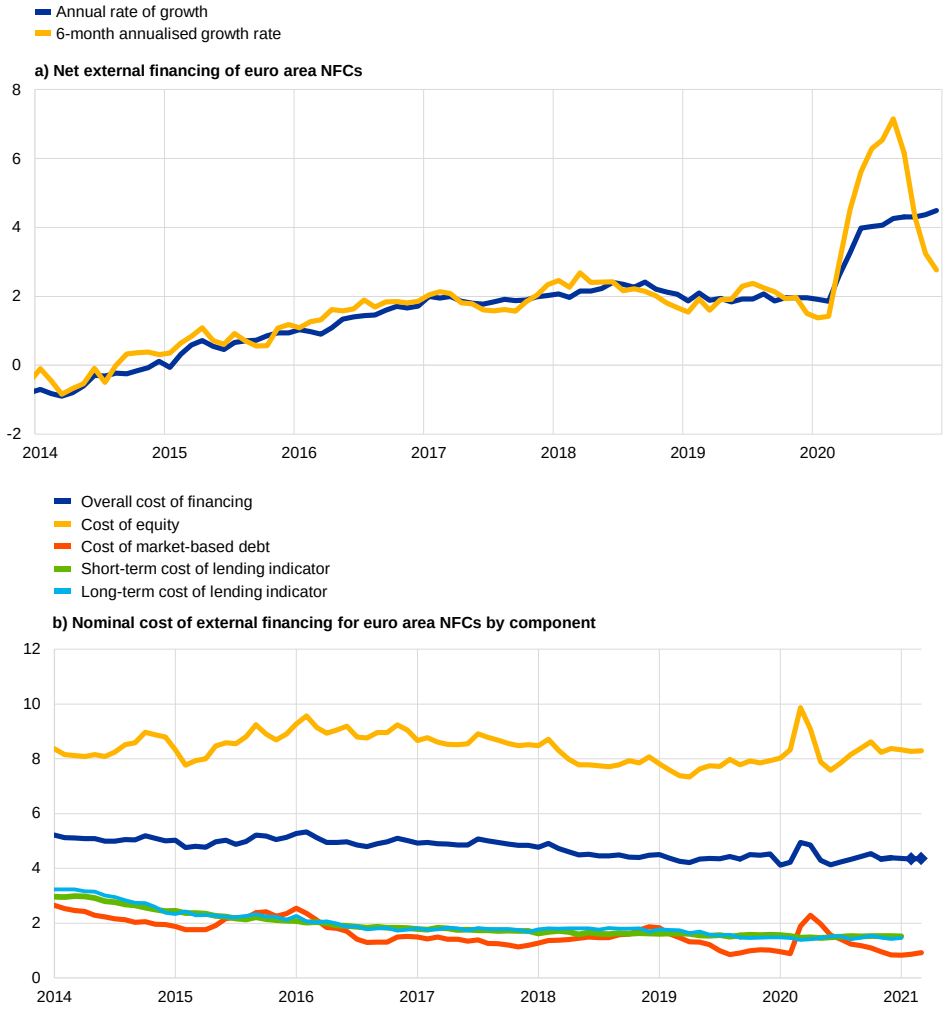
Source: ECB.
Notes: The indicator for the total cost of bank borrowing is calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The cross-country standard deviation is calculated using a fixed sample of 12 euro area countries. The latest observations are for January 2021.

The total external financing volumes of firms continued to level off in the fourth quarter of 2020. The annual growth of external financing has increased slightly further in recent months, up to 4.5% in December 2020, while shorter-term financing dynamics continued to decline from the peak observed in the summer of 2020 (panel (a) of Chart 24). This development is explained by lower growth in bank lending to NFCs and firms' reduced net issuance of debt securities. Meanwhile, net issuance of listed and unlisted shares was broadly stable. The slowdown mostly reflected two factors: first, firms built up sizeable liquidity buffers in the first wave of the pandemic, thus reducing the need for additional emergency borrowing; second, firms' immediate financing needs declined, owing to the postponement of planned fixed investment amid the worsening outlook for short-term growth. At the same time, external financing flows continued to benefit from favourable financing conditions. The overall nominal cost of external financing for NFCs, comprising bank lending, debt issuance in the market and equity finance, stood at 4.4% at the end of January (panel (b) of Chart 24). This level was around 60 basis points lower than the March 2020 local peak and 20 basis points higher than the historical low in June 2020. Since end-October 2020, the overall cost of financing has declined by around 20 basis points, mostly on account of the lower cost of market-based debt and equity. The long-term cost of bank lending has also declined by several basis points. Between the end of January and the end of the reference period (10 March 2021), the overall cost of financing is estimated to have remained stable as a slight increase in the cost of market-based debt, resulting from a higher risk-free rate and only marginally declining corporate bond spreads, was offset by a decline in the cost of equity.

Chart 24

External financing of euro area NFCs

(percentage changes – panel (a); percentages per annum – panel (b))



Sources: Eurostat, Dealogic, ECB, Merrill Lynch, Bloomberg, Thomson Reuters and ECB estimates.
Notes: Panel (a) – Net external financing is the sum of MFI loans, net issuance of debt securities and net issuance of listed shares. MFI loans are adjusted for sales, securitisation and cash pooling activities. Panel (b) – The overall cost of financing for NFCs is calculated as a weighted average of the costs of bank borrowing, market-based debt and equity, based on their respective amounts outstanding. The dark blue diamonds indicate the nowcasts of the overall cost of financing for February 2021 and March 2021, assuming that bank lending rates remain unchanged at their January 2021 levels. The latest observations for panel (a) are for December 2020. The latest observations for panel (b) are for 10 March 2021 for the cost of market-based debt (monthly average of daily data), 5 March 2021 for the cost of equity (weekly data) and January 2021 for the cost of lending (monthly data).

6 Fiscal developments

As a result of the very sharp economic downturn during the coronavirus (COVID-19) pandemic and the strong fiscal reaction, the general government budget deficit in the euro area is estimated to have increased to 7.2% of GDP in 2020, from 0.6% in 2019. Thereafter, the March 2021 ECB staff macroeconomic projections see the deficit ratio declining to 6.1% of GDP in 2021 and to 2.4% at the end of the projection horizon in 2023. Even though this path would increase the euro area general government debt ratio to around 95% of GDP in 2023, i.e. about 11 percentage points higher than before the crisis, the fiscal position is likely to be somewhat less affected than was generally expected in the initial phase of the pandemic. Still, an ambitious and coordinated fiscal stance will remain critical. To this end, support from national fiscal policies should continue, given weak demand from firms and households amid the ongoing pandemic and the associated containment measures. As a complement, the Next Generation EU (NGEU) package will play a key role by contributing to a faster, stronger and more uniform recovery. It will increase economic resilience and the growth potential of EU economies, particularly if the funds are deployed for productive public spending and accompanied by productivity-enhancing structural policies.

According to the March 2021 ECB staff macroeconomic projections, the euro area general government budget balance deteriorated strongly in 2020 but is projected to improve gradually thereafter.[11] The general government deficit ratio for the euro area is estimated to have increased from 0.6% of GDP in 2019 to 7.2% of GDP in 2020, and projected to decline to 6.1% in 2021 and further to 3.1% and 2.4% in 2022 and 2023 respectively (see Chart 25). The rise in the budget deficit in 2020 is to a large extent attributable to a deterioration in the cyclically adjusted primary balance on the back of economic support measures amounting to around 4¼% of GDP. The largest part of this was additional spending, particularly in the form of transfers and subsidies to firms and households, including through short-time work or furlough schemes. The deficit increase is also the result of a large negative cyclical component, in line with a sharp drop in output in the euro area.[12] The subsequent improvement in the budget balance is projected to be driven initially by a recovery in the cyclically adjusted primary balance, as part of the emergency measures is projected to have a lower cost than in 2020 and additional recovery measures will be funded by NGEU grants.[13] In 2021, governments have prolonged emergency measures in the light of the new round of lockdown restrictions, expanded their size and/or adopted new support measures, estimated to total 3¼% of GDP. Lower interest payments and an improvement in the cyclical component also contribute to the improved budget balance projected for 2021. However, the contribution from the economic cycle is expected to improve significantly from 2022 only, and should remain negative

11 See the "ECB staff macroeconomic projections for the euro area, March 2021", published on the ECB's website on 11 March 2021.

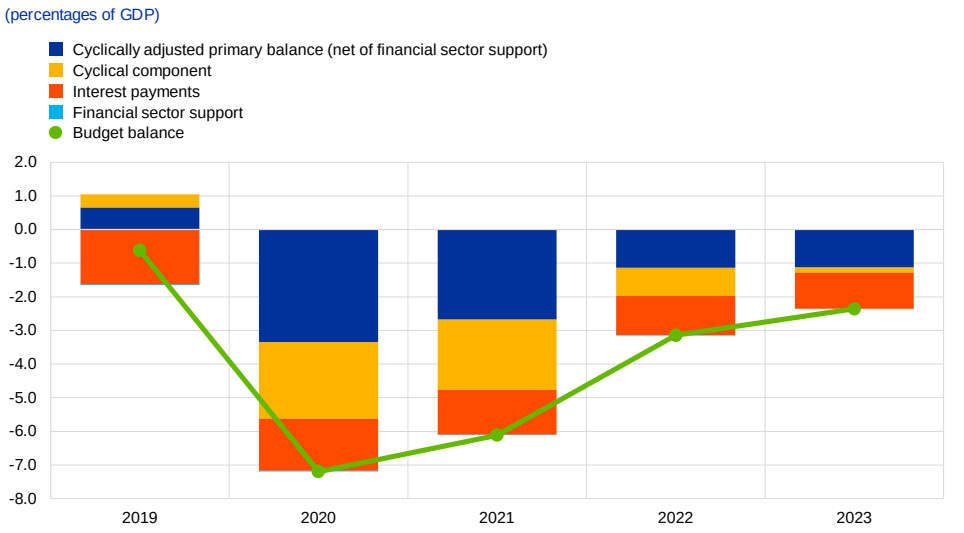
12 It should be noted that there is at present an unusually high degree of uncertainty surrounding the breakdown of budget developments into cyclical and trend components.

13 Additional fiscal recovery measures amounting to about 0.5% of GDP for 2021 (broadly maintained over the projection horizon) will be funded by NGEU grants, which improve the revenue side of the government budget of the EU country beneficiaries. The overall impact on the budget balance will be neutral in the years when grants are disbursed, as there will be a counterbalancing effect of higher expenditure. These grants provide a further fiscal stimulus compared with 2020.

throughout the projection horizon. As most of the additional pandemic-related emergency measures approved for 2021 are temporary and expected to be reversed, they contribute to the improvement in the cyclically adjusted primary balance in 2022.

Chart 25

Budget balance and its components



Sources: ECB and March 2021 ECB staff macroeconomic projections.
Note: The data refer to the aggregate general government sector of the euro area.

These fiscal projections are, however, surrounded by exceptional uncertainty, not least as regards the size, timing and composition of NGEU spending but also more generally, as economic policies react as the pandemic evolves.

The aggregate fiscal stance was highly expansionary in 2020 and should be broadly neutral in 2021 after adjusting for the expected revenue-increasing impact of countries' receipt of NGEU grants. The fiscal stance is estimated to have been highly accommodative, at 4.2% of GDP, in 2020. In 2021 it is still projected to be broadly neutral, after adjusting for NGEU grants on the revenue side.[14] The expected tightening of the fiscal stance from very high levels of support will thus be postponed to 2022 (amounting to 1.5 percentage points of GDP), followed by neutral developments in 2023 in a no-policy change scenario building upon the measures taken into account in the projections. This notwithstanding, the level of fiscal support to the economic recovery remains large over the projection horizon, as reflected by the overall primary fiscal balance remaining substantially negative, improving only gradually to -1.3% of GDP in 2023.

In addition to the fiscal support for their economies, euro area countries have provided sizeable loan guarantee envelopes to bolster the liquidity position of firms. In total, these guarantees amounted to around 17% of GDP for the euro area as

[14] The fiscal stance reflects the direction and size of the stimulus from fiscal policies to the economy, beyond the automatic reaction of public finances to the business cycle. It is measured here as the change in the cyclically adjusted primary balance ratio net of government support to the financial sector. The fiscal stance needs to be adjusted to account for the impact of NGEU grants on the revenue side (see also the previous footnote). For more details on the concept of the euro area fiscal stance, see the article entitled "The euro area fiscal stance", *Economic Bulletin*, Issue 4, ECB, 2016.

a whole in 2020 and are expected to continue providing liquidity support into the current year, with the size of the envelopes and take-up rates differing substantially across countries. The loan guarantees are contingent liabilities for governments and any amount of guarantees called on will therefore constitute additional public spending that raises government debt.

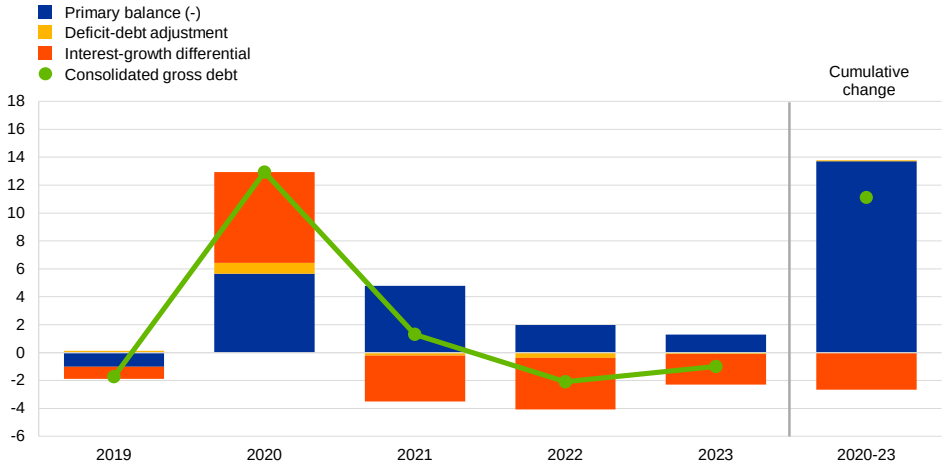
The budget balance in 2020 is estimated to have been better than previously projected but the outlook for 2021 has not been revised. Compared with the December 2020 Eurosystem staff macroeconomic projections, the euro area general government budget balance as a share of GDP has been revised up by 0.8 percentage points for 2020. This is mainly due to discretionary fiscal measures in response to the pandemic being slightly smaller than initially foreseen and revisions in other spending and non-discretionary factors (as captured by a less negative cyclically adjusted balance), as well as to a slightly less negative impact of the economic cycle. The balance in 2021 is unrevised, with a somewhat more favourable impact of the business cycle offsetting the additional budgetary costs of higher emergency spending (as captured by the downward revision of the cyclically adjusted primary balance). For 2022 and 2023, the balance has been revised up significantly owing to more favourable projected contributions from both the economic cycle and the cyclically-adjusted primary balance.

The euro area aggregate public debt-to-GDP ratio increased strongly in 2020 and is projected to peak at around 98% in 2021, before declining gradually to about 95% in 2023. Debt ratio increases of 12.9 and 1.3 percentage points in 2020 and 2021, respectively, largely reflect high primary deficits and, in 2020, very adverse interest-growth differentials. In 2020, the increase is also attributable to a significant deficit-debt adjustment due to policy measures related to the pandemic such as liquidity support to firms and households. In 2022 and 2023, declining but still significant primary deficits are more than offset by favourable contributions from improving interest-growth differentials, as economic activity is projected to recover (see Chart 26). As a result, at the end of the projection horizon in 2023, the debt-to-GDP ratio is seen standing around 11 percentage points above its pre-crisis level of 84% in 2019. It should, however, be noted that the crisis has had a somewhat smaller adverse impact on the fiscal position than was generally expected in the initial phase of the crisis. For instance, in the June 2020 Eurosystem staff macroeconomic projections, the debt-to-GDP ratio was seen peaking at a level over 3 percentage points higher than in the latest ECB staff projections.

Chart 26

Drivers of change in public debt

(percentage points of GDP)



Sources: ECB and March 2021 ECB staff macroeconomic projections.
Note: The data refer to the aggregate general government sector of the euro area.

A continued coordination of fiscal policy remains critical to ensure that the euro area moves into a sustained recovery phase. To contain the impact on countries' underlying fiscal positions, fiscal measures should remain, as far as possible, temporary in nature and should be made still more targeted to contain permanent scarring effects on the euro area economy. Fiscal sustainability will be helped by the recovery expected in 2021, especially once COVID-19 vaccines are progressively rolled out to a larger share of the population, but importantly also by financing conditions which should continue to be supportive. It remains essential, though, that Member States gradually reduce budgetary imbalances once economic activity has sufficiently recovered. This process can be amplified by a decisive shift towards a growth-friendlier composition of public finances and structural reforms that raise the growth potential of euro area economies. The NGEU's Recovery and Resilience Facility can provide important support in this respect, not least by accelerating the green and digital transitions.

Boxes

1 Economic developments in the euro area and the United States in 2020

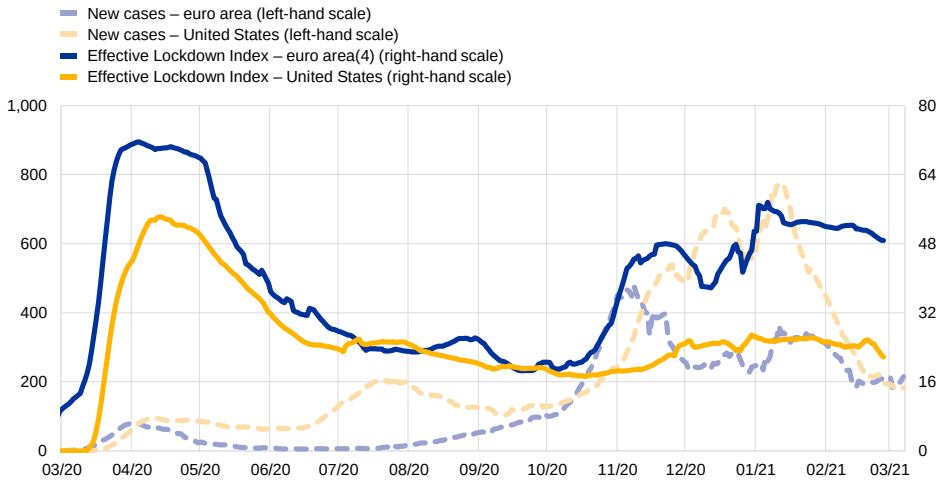
Prepared by Malin Andersson, Cristina Checherita-Westphal, Ramon Gomez-Salvador, Lukas Henkel and Matthias Mohr

The coronavirus (COVID-19) pandemic has profoundly affected both Europe and the United States. Despite the pandemic reaching the United States later than the euro area and US population density being lower, the number of new COVID-19 cases has generally been higher in the United States than in the euro area, particularly so from mid-November 2020 to the end of February 2021. This higher incidence of infection in the United States may reflect the effectiveness of lockdown policies as measured by Goldman Sachs' Effective Lockdown Index (ELI) (Chart A).[1] To the extent that the United States was subject to fewer restrictions than the euro area, the short-term responsiveness of the economy to policy stimulus was also likely greater. Against this background, the box compares economic developments in the euro area and the United States, focusing on 2020.

Chart A

COVID-19 infection in the euro area and the United States and the effectiveness of lockdown policies

(left-hand scale: new cases of infection per 1 million people, seven-day moving average; right-hand scale: Effective Lockdown Index)



Sources: ECB staff calculations, Oxford Economics and Goldman Sachs.
Notes: Goldman Sachs' Effective Lockdown Index (ELI) is a combination of the Oxford COVID-19 Government Stringency Index and Google Mobility data. The latest observations are for 7 March 2021 for new COVID-19 cases and 26 February 2021 for the Effective Lockdown Index. Euro area(4) refers to the PPP-weighted indices for Germany, France, Italy and Spain.

In 2020 real GDP declined more in the euro area than in the United States, possibly related to several factors. While the more severe lockdowns in the euro

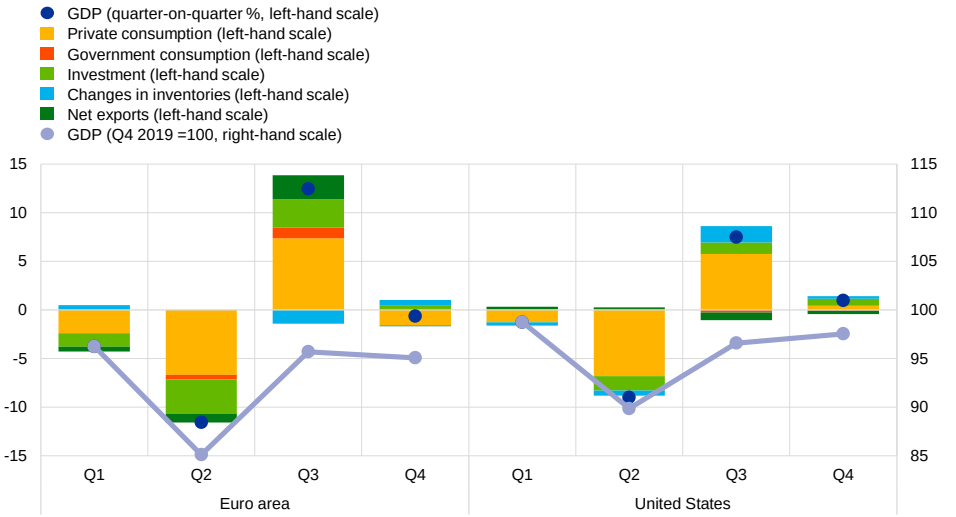
[1] See Aron, J. and Muellbauer, J. "The US excess mortality rate from COVID-19 is substantially worse than Europe's", VoxEU, 29 September 2020.

area have likely been an important factor behind this stronger decline in GDP, differences may also relate, inter alia, to different economic structures, growth potential and policy responses, as well as the timing of the pandemic waves. The cumulative activity loss in the fourth quarter of 2020, compared with pre-crisis levels, amounted to 4.9% in the euro area and 2.4% in the United States (Chart B). In both regions, based on 2019 figures, about three-quarters of real value added was related to the adversely affected services sector, while only 15% and 11%, in the euro area and the United States respectively, stemmed from the manufacturing sector. Across demand components, private consumption contributed to GDP by broadly similar amounts in the two regions throughout the year, despite almost twice as much income support being provided in the United States (Chart C). This suggests that the smaller-sized but more targeted policies in the euro area (i.e. through short-time work schemes) might have been effective in cushioning an even larger fall in consumption. In the first two quarters of 2020, euro area firms postponed their investment plans to a larger extent than US firms, the euro area corporates appearing to be more sensitive to increasing uncertainty, falling demand and reduced profits. In contrast, the euro area saw a stronger cumulated rebound in investment in the second half of the year. Exports were more adversely affected in the euro area in the first half of 2020 owing to the economy's exposure to China and Eastern Europe, while the United States was more negatively impacted by weak foreign demand from Canada and Latin America in the first half of the year, and from the euro area (and the rest of Europe) thereafter. Overall, the net trade contributions were more subdued in the United States than in the euro area.

Chart B

Real GDP and expenditure components for the euro area and the United States in 2020

(left-hand scale: quarterly percentage changes, percentage point contributions; right-hand scale: Q4 2019 = 100)



Sources: ECB staff calculations, Eurostat and US Bureau of Economic Analysis.

In 2020 the discretionary fiscal policy response to the COVID-19 crisis was very substantial in both the euro area and the United States, although the response in the latter was stronger (Chart C). In the euro area, the fiscal response to the

pandemic consisted mainly of subsidies and transfers to firms and households, including job retention schemes.[2] Support to households and firms was also the main driver in US fiscal policy, particularly via direct transfers and unemployment benefits. Government consumption growth was higher in the United States than in the euro area and included a larger increase in health-related expenditure. Overall, while consistent data comparisons are difficult, the discretionary component of the fiscal response to the pandemic is estimated to have amounted to about 4¼% of GDP in the euro area and about 7¾% of GDP in the United States.

If the impact of automatic stabilisers is included, the total fiscal impulse in the euro area in 2020 comes closer to the equivalent impulse in the United States. Automatic stabilisers – proxied as the change in the cyclical component and other factors – are assessed to have been larger in the euro area.[3] Together with the discretionary measures, their fiscal impact amounts to close to 7% of GDP in the euro area compared with around 10% of GDP in the United States. This total fiscal impulse, or broadly speaking the budget balance cost of the pandemic, corresponds to the estimated change in the primary balance from 2019 to 2020. Caveats to these comparisons stem from the lack of fully consistent data, the timing of the forecast and the assessment methods used, as well as the unavailability of the final budget execution for 2020.

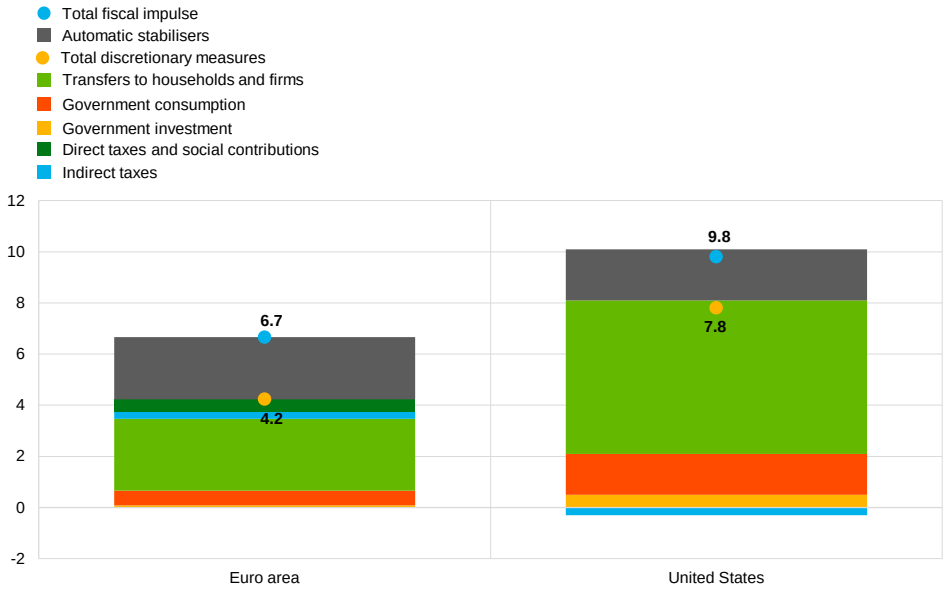
2 For a review of the support measures in the euro area countries, see the article entitled "The initial fiscal policy responses of euro area countries to the COVID-19 crisis", *Economic Bulletin*, Issue 1, ECB, 2021.

3 Automatic fiscal stabilisers refer to elements built into government revenues and expenditures that reduce fluctuations in economic activity without the need for discretionary government action. For more details on the size and effectiveness of automatic stabilisers in the euro area countries, including a comparison with the United States, see the article entitled "Automatic fiscal stabilisers in the euro area and the COVID-19 crisis", *Economic Bulletin*, Issue 6, ECB, 2020. In practice, it is difficult to fully distinguish between automatic stabilisers and discretionary measures. Some measures can be considered quasi-automatic fiscal stabilisers, while other non-discretionary factors (such as revenue shortfalls or windfalls) are usually not captured in the cyclical component.

Chart C

Fiscal impulse in response to the pandemic in the euro area and the United States in 2020

(percentage point contributions to changes in the primary budget balance-to-GDP ratio)



Sources: ECB staff calculations, March 2021 ECB staff macroeconomic projections for the euro area, Eurosystem staff estimates for the discretionary measures for the euro area, and IMF World Economic Outlook, October 2020 for the United States.
Notes: The total fiscal impulse refers to items with an impact on the budget balance, i.e. discretionary fiscal measures in response to the COVID-19 crisis and automatic stabilisers (proxied as the change in cyclical component and other factors). The total fiscal impulse broadly corresponds to the change in the general government primary balance from 2019 to 2020. For the euro area, for consistency across countries, parts of the job retention schemes (related to regular rules) in Germany and Belgium are included under discretionary measures.

Additional liquidity support was provided in both the euro area and the United States. Governments extended various forms of liquidity support to firms, which in the euro area consisted of guarantees for loans within a total envelope of 17% of the combined GDP of member countries (5.7% in the United States).[4] Other liquidity support measures in the euro area took the form of substantial tax deferral schemes and capital injections.

The monetary policy reaction was significant but stronger in the United States than in the euro area. In terms of the monetary policy reaction, while both the ECB and the US Federal Reserve System responded forcefully to the pandemic shock, the decline in the federal funds rate from 1.50-1.75% to 0-0.25% and the depreciation of the US dollar provided additional stimulus in the United States.

In the euro area the substantial increase in employed workers covered by job retention schemes left the unemployment rate broadly unchanged, while in the United States those layoffs that were temporary in nature caused the US unemployment rate to rise (Chart D).[5] The euro area would have recorded a much larger decline in employment had all workers subject to job retention schemes, as indicated by the yellow portion of the bars in Chart D, become unemployed or inactive.

4 The take-up rate of these guarantees has been rather low at the euro area aggregate.

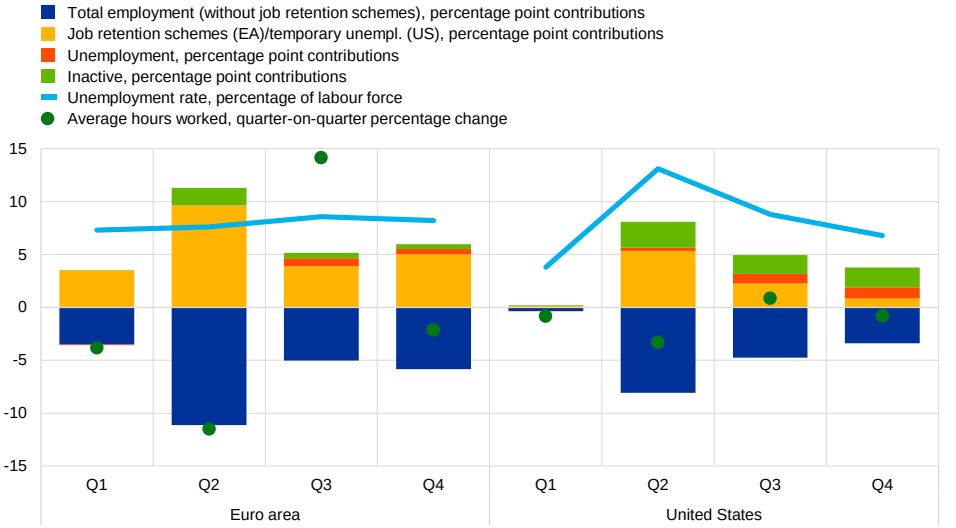
5 See the article entitled "The impact of the COVID-19 pandemic on the euro area labour market", *Economic Bulletin*, Issue 8, ECB, 2020.

These schemes prevented unemployment and inactivity in the euro area from increasing by amounts comparable to those observed in the United States. By the end of the fourth quarter of 2020, employment in the euro area was 1.9% below its level for the fourth quarter of 2019, while in the United States it had fallen by 5.5% over the same period, as recourse to job retention schemes in the euro area increased again with new lockdowns and the US employment recovery slowed.[6] Recourse to job retention schemes in the euro area implied a stronger adjustment through average hours worked.

Chart D

Labour market developments in the euro area and the United States in 2020

(percentage point contributions to quarterly percentage changes in the working age population; percentages of labour force; quarterly percentage changes)



Sources: ECB staff calculations, Eurostat and US Bureau of Labor Statistics.
Notes: For the euro area, the blue portion of the bars does not include employed workers in job retention schemes. For the United States, the red portion of the bars does not include temporarily unemployed workers.

During the pandemic, the rates of both headline and underlying inflation have declined strongly in the euro area and the United States due to falling oil prices and a significant drop in demand. Underlying inflation in the United States fell more quickly in the first half of the year before increasing moderately thereafter, while in the euro area it declined moderately at first and was further subdued in the second half of the year, partly on account of the temporary VAT reduction in Germany (Chart E). In both the euro area and the United States, the decrease in underlying inflation is mainly attributed to items that are adversely impacted by social distancing. The most severely hit items include travel-related/transportation services and clothing and footwear/apparel.[7] While the inflationary contribution from other goods was positive in

6 Without temporary layoffs, as a proxy to euro area job retention schemes, the US unemployment rate falls below 5% over 2020.

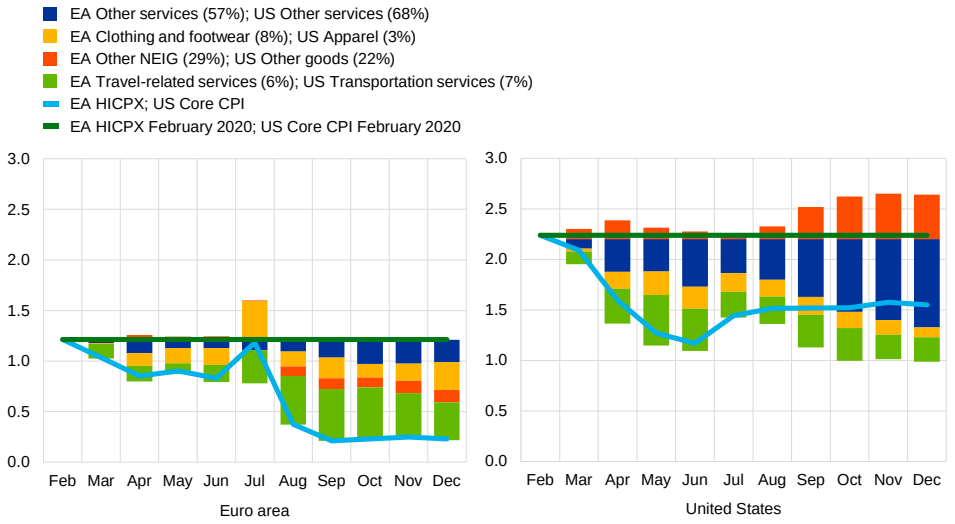
7 In the euro area, international travel accounts for most of the negative price impact from travel; see the box entitled "Prices for travel during the COVID-19 pandemic: is there commonality across countries and items?" *Economic Bulletin*, Issue 1, ECB, 2021.

the United States, they were negative in the euro area (Chart E).[8] When correcting for the impact of the German VAT reduction, the fall in the Harmonised Index of Consumer Prices excluding energy and food (HICPX) in the euro area in the second half of 2020 would have been less pronounced but still significantly below pre-pandemic levels[9].

Chart E

Underlying inflation in the euro area and the United States in 2020

(annual percentage changes; percentage point contributions with respect to February 2020)



Sources: ECB staff calculations, Eurostat and US Bureau of Labor Statistics.
Notes: Shares in the underlying basket are given in brackets. For the euro area, HICPX stands for the HICP excluding energy and food. For the United States, the core CPI excludes food and energy prices. The latest observations are for December 2020.

In conclusion, more stringent pandemic-related measures and, to some extent, the lower level of fiscal support in the euro area than in the United States may have contributed to the different economic outcomes. Inflation was more subdued in the euro area, also on account of special factors like the temporary reduction in German VAT. Euro area policies appear to have been more supportive of employment, while in the United States the focus was on broader income policies.

8 Part of the differences in inflation rates can potentially be explained by differences in the basket weights of items. However, weight differences are unlikely to explain fully the different developments since the onset of the pandemic: for example, other non-energy industrial goods (NEIG) inflation has been declining in Europe (also on account of the temporary German VAT reduction), whereas non-apparel goods inflation has contributed positively to US inflation in recent months. For the impact of changes in HICP weights in euro area inflation in 2021, see Box 6 in this issue of the Economic Bulletin.

9 See, for example, Chart 8 in *Economic Bulletin*, Issue 1, ECB, 2021.

2 The euro area capital stock since the beginning of the COVID-19 pandemic

Prepared by Julien Le Roux

This box examines the latest developments in the euro area stock of capital and its main drivers. More specifically, it discusses the role played by investment and the depreciation and retirement of fixed assets in explaining capital stock developments. It also shows the extent to which recent developments are similar to those experienced during the great financial crisis and the subsequent euro area sovereign debt crisis.[1] The analysis relies primarily on European Central Bank (ECB) quarterly estimates of capital stock, which are based on a constrained optimisation model using annual data from Eurostat (with a lag of two years) and temporal disaggregation techniques.[2] Therefore, especially the recent data and analysis should be considered with caution and may be subject to significant revisions in the future.

The stock of capital is a pivotal factor in supply side analysis. Hence, the analysis of the changes in the capital stock is critical in order to estimate how potential growth has been affected during the coronavirus (COVID-19) crisis.[3] Moreover, capital per worker – or capital intensity – is also key to assessing labour productivity trends. Therefore, understanding the evolution of the capital stock in the recent period matters for the analysis of the medium-term and long-term effects of the COVID-19 crisis on supply factors and potential growth.

The real capital stock growth is estimated to have decreased moderately in the wake of the COVID-19 crisis. After having risen steadily since the beginning of 2017, the euro area real stock of capital increased by 1.0%, on a year-on-year basis, in the second and third quarters of 2020, after a 1.1% increase in the first quarter of 2020 (Chart A). This relative stability of the stock of capital hides the effects that the crisis may have on the value of the stock. The asymmetric sectoral nature of the pandemic shock may mean significant capital stock value losses at the sectoral level. For instance, airlines have already written down value of some assets.[4] This valuation effect is not visible, at least in the short term, on the volume of the capital stock. Moreover, the limited effect of the crisis on the stock of capital conceals large heterogeneity across assets. At the asset level, machinery and equipment on the one

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1 In this box, the focus is on both public and private capital stock. However, most of the euro area capital stock and investment are made up of private assets (about 85% for both investment and capital stock).

2 See Hofmeister, Z. and van der Helm, R., "Estimating non-financial assets by institutional sector for the euro area", *Statistics Paper Series*, No 23, ECB, May 2017. The methodology is mainly based on a temporal disaggregation of the annual capital stock using quarterly Gross Fixed Capital Formation (GFCF) as a quarterly profile indicator. The temporal disaggregation is applied at the first difference of the annual capital stock; the resulting quarterly capital stock (including the forecasted most recent quarters) is subsequently balanced as required to ensure balanced asset by sector matrix. Regarding the cases where annual data for capital stock is not available given its two-year publication lag, these annual figures are derived using a Permanent Inventory Method (PIM) or the so called "capital accumulation equation". The coefficients for the most recent years, where not available, are extrapolated based on past developments, "inverse" PIM, or expert information.

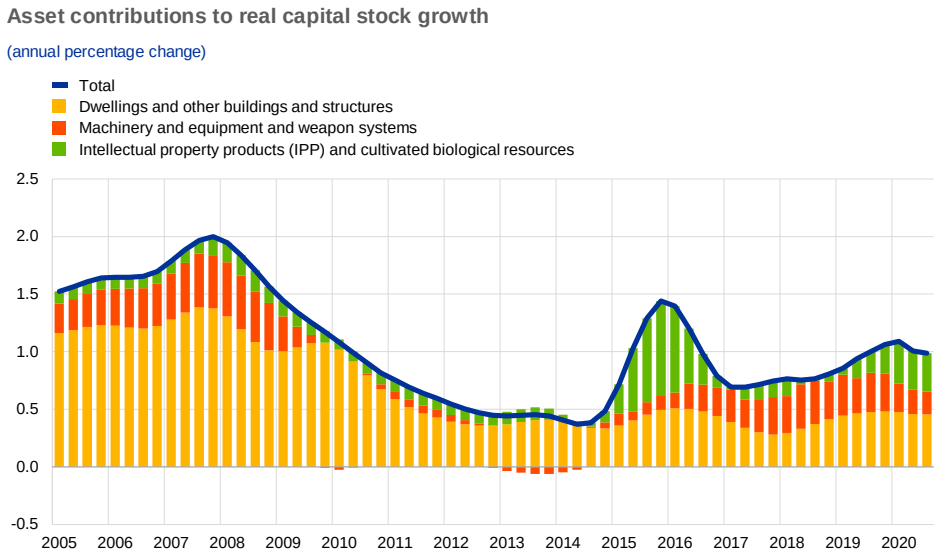
3 See the article entitled "The impact of COVID-19 on potential output in the euro area", *Economic Bulletin*, Issue 7, ECB, 2020.

4 See "All you need to know about aircraft values in 2021", International Bureau of Aviation, February 2021.

hand, intellectual property products (IPP) on the other hand, contributed significantly to the decline in real capital stock. By contrast, the contribution of dwellings and other buildings and structures to the deceleration was more muted (Chart A).

Chart A

Resilient capital stock growth so far



Source: ECB staff calculations based on Eurostat data

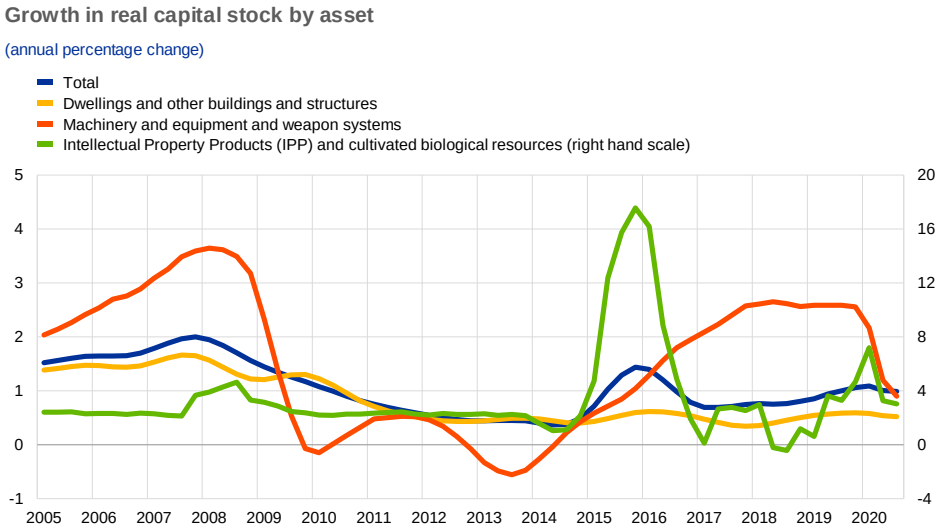
Overall, the growth of the real stock of capital has remained relatively stable since the pandemic hit. Looking at the first quarters of 2020 and trying to draw some comparisons with what occurred during the crises of 2008 and 2011 is a challenging exercise. The COVID-19 crisis is not over yet and is of a different nature from the great financial crisis and the sovereign debt crisis, which were both economic crises arising from financial crises. The pandemic is hitting service activities more severely, while it affects the most capital-intensive sectors, like manufacturing, somewhat less heavily. Following the great financial crisis, the growth of the stock of capital gradually fell from an annual average of more than 1.5% before 2008 to around 0.4% in the period from 2011 to 2014 (Chart A). The recovery in capital stock growth only began at the beginning of 2014, driven by the combined rebound in machinery and equipment and IPP assets. However, these medium-term to long-term developments are not yet visible in the aftermath of the COVID-19 crisis. Currently, as in 2008 and 2011, capital growth in machinery and equipment has been severely affected by the COVID-19 crisis (Chart B). Conversely, investments in dwellings and other buildings and structures remain resilient so far – to the same extent as in 2008 and 2011. However, in this regard, the 2008 crisis had long-term adverse effects. Finally, on IPP, comparisons with the great financial crisis are complicated by the relocation of sales proceeds and intangible assets of multinational enterprises in some countries in recent years.[5] After three observable quarters of crisis, the deceleration in the stock of

[5] In recent years several large multinational companies have relocated their corporate activities, in particular their underlying IPP, to Ireland. As a result, the sales (output) generated using intellectual property contributed strongly to Irish investment and capital stock. See Khder, M. and Montornès, J., "The impact of multinationals' transfers on Irish GDP", *Eco Notepad*, No 202, Banque de France, February 2021.

capital in IPP is stronger than was observed in 2008 and in 2011, but the starting point is also higher (Chart B).

Chart B

Total capital stock growth and the growth heterogeneity across assets



Source: ECB staff calculations based on Eurostat data.

The muted fall in the growth of the capital stock is likely the result of lower investment partially offset by somewhat reduced depreciation.[6] Gross fixed capital formation dropped in the euro area in the first half of 2020, adversely affecting capital stock. The initial data available, albeit tentative, suggest that lower depreciation rates supported capital stock developments.

The COVID-19 shock negatively affected the capital stock in the euro area, mainly through lower investment. Despite supportive financing conditions, the high level of uncertainty adversely affects investment decisions, notably business investment. The decline in domestic demand and falling corporate margins dampen investment expenditures. Hence, on a year-on-year basis, total gross fixed capital formation dropped by 20% in the second quarter of 2020, and by 4.3% in the third quarter of 2020. The pandemic has sharply curbed investment, whereas during the great financial crisis the decline was slower and less steep (Chart C, panel a).

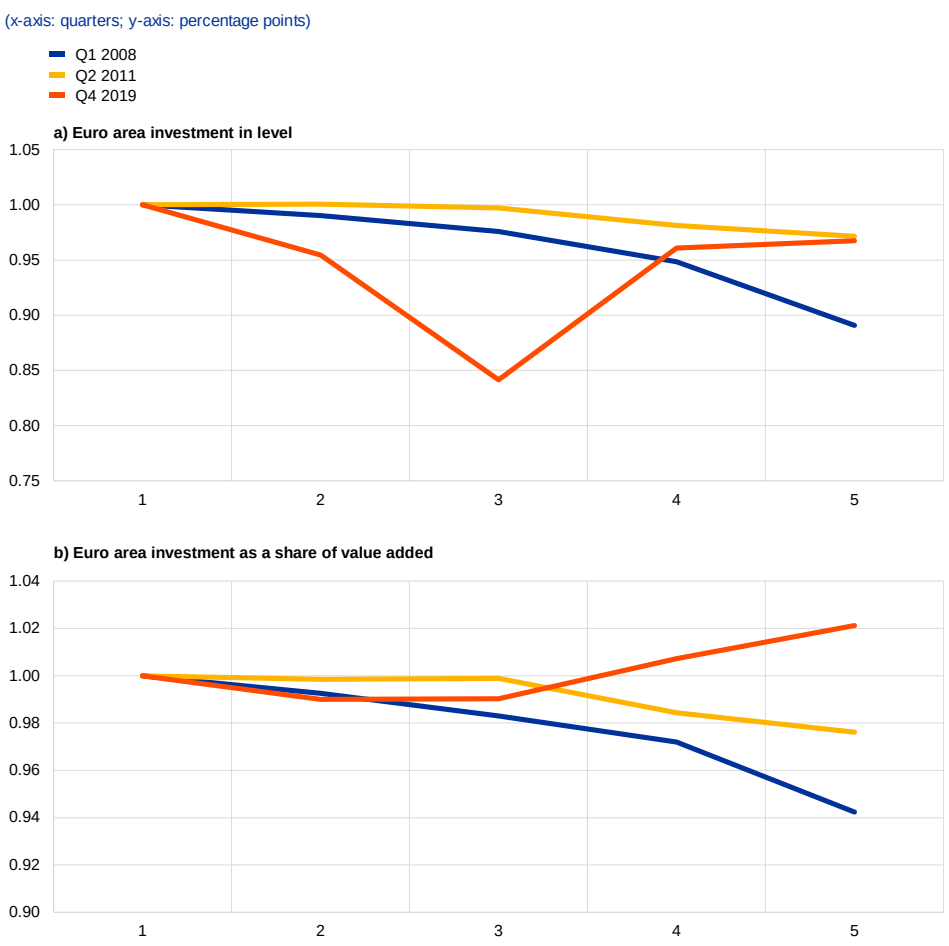
Despite the record low investment growth observed in the first half of 2020, the decline in investment growth has not been as strong as might have been expected. Changes in investment are typically of a magnitude larger than that of value added – a phenomenon commonly referred to as the "accelerator effect". The accelerator effect did not hold during the COVID-19 crisis. In 2020, in the largest euro area countries, changes in investment were of a magnitude comparable to value

6 The net capital stock estimates are generally based on the perpetual inventory method (PIM), which can be approximated by the capital accumulation equation that links the net capital stock (NCS_t) to investment ($GFCF_t$), retirement and depreciation rates δ_t and revaluation β_t: $NCS_t = (1 - \delta_t + \beta_t)NCS_{t-1} + GFCF_t$. For the sake of simplicity, in this box, the so-called depreciation rate includes both scrapped (or retired) assets and consumption of fixed capital, which accounts for the wear and tear of the capital required for production.

added (Chart C, panel b).[7] Several explanations can be put forward to explain the resilience of gross fixed capital formation. Non-financial corporations have generally entered the pandemic with sound balance sheets and the credit channel has been kept open to them. Social distancing and teleworking are also likely to amplify the need for investment in digital technology. Furthermore, a need to reorganise supply chains may have led to the emergence of new investment opportunities. These factors contributed to the resilience of capital stock growth.

Chart C

The fall in euro area investment: a comparison with past recessions



Source: ECB staff calculations.
Notes: The chart shows developments in total gross fixed capital formation over the course of each recession, where the first quarter preceding the recession is set equal to one. The quarter preceding the recession is displayed in the legend. Ireland is excluded from the sample, given the large volatility affecting investment in Ireland in recent years.

The lower depreciation rate partially offset the decline of investment's implication for the capital stock. Theoretically, capital retirement and depreciation might have been affected differently by COVID-19. On the one hand, company liquidations may lead to some of the capital assets being retired before the end of their service life. However, on the other hand, the lifespan of existing assets may be extended thanks to less intensive utilisation, for example if they were idle during the

7 See "Economic outlook - February 2021", Institut national de la statistique et des études économiques, Paris, p. 30-31.

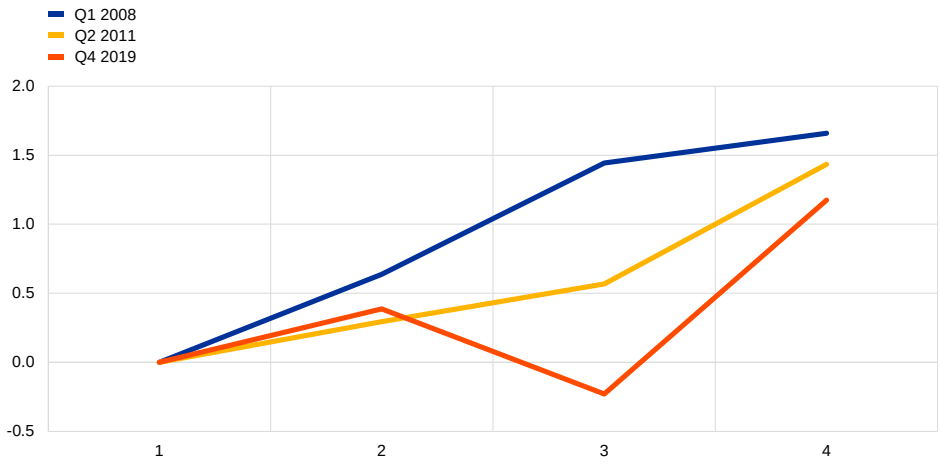
lockdown. It has also been argued that capital depreciation would be procyclical and linked to periods of higher maintenance of the capital in downturn periods.[8] During the first three quarters of 2020, some evidence suggests that the effect of a lower wear and tear of the capital dominated, leading to a decrease in the depreciation of the stock of capital. From the data on capital stock and investment, it is possible to extract a rate of depreciation, which, albeit with some degree of uncertainty, seems to have declined in the euro area and its largest countries in the first quarters of 2020. Moreover, the consumption of fixed capital, which does not, however, account for capital scrapping[9], has decelerated over 2020 (Chart D). It reflects the lower use and wear and tear of production capacities. Meanwhile, existing policy measures, in the form of loan guarantees and a partial sharing of wage costs in the context of short-time work schemes, has likely shielded companies from liquidation and prevented capital retirement. Therefore, it looks as if, at least temporarily, the rate of depreciation has also supported the evolution of the capital stock.

Chart D

The fall in consumption of fixed capital: a comparison with past recessions

Consumption of fixed capital per unit of value added in the largest euro area countries

(x-axis: quarters; y-axis: percentage points)



Source: ECB staff calculations
Notes: The chart shows the cumulated changes in consumption of fixed capital per unit of value added, where the first quarter preceding the recession is set equal to one. The quarter preceding the recession is displayed in the legend. Due to the volatility of some series or the absence of data in some countries, this chart represents the overall change observed in Germany, France, Italy and Spain.

Looking ahead, the long-term effects of the COVID-19 crisis on the capital stock are very uncertain, notably in a context of major structural changes. The time lag of two years for the release of official statistical data on capital stock makes the assessment of recent and current changes difficult. On the one hand, it cannot be ruled out that the pandemic could have long-term scarring effects on the stock of capital. The end of targeted support policy measures could lead to increasing business failures and capital retirement as well as lower investment growth. On the other hand, the pandemic might also trigger, or accelerate, structural change in the

8 Albonico, A., Pappa, E. and Sarantis, K., "Capital maintenance and depreciation over the business cycle", *Journal of Economic Dynamics and Control*, Vol. 39, Issue C, Elsevier, 2014, pp. 273-286.

9 On average, for the euro area, the consumption of fixed capital accounts for half of the capital depreciation, the rest being made up of scrapping capital.

economy. The Next Generation EU package, for instance, will further underpin national investment efforts. Other long-term factors could also affect the stock of capital to a large extent. For instance, climate change is expected to lead to a renewal of the capital stock. The recent European Investment Bank (EIB) annual corporate survey finds that two in three EU firms have either made, or are planning on making, investments to tackle the impacts of weather events and reduce carbon emissions.[10]

[10] See "EIB Group survey on investment and investment finance 2020", European Investment Bank, 1 December 2020.

3 Liquidity conditions and monetary policy operations from 4 November 2020 to 26 January 2021

Prepared by Daniel Gybas and Christian Lizarazo

This box describes the ECB's monetary policy operations and liquidity developments during the seventh and eighth reserve maintenance periods of 2020. Together these two maintenance periods ran from 4 November 2020 to 26 January 2021 (the "review period"). On 10 December, the Governing Council of the ECB introduced a number of policy adjustments. It decided to increase the envelope of the pandemic emergency purchase programme (PEPP) by €500 billion, to a total of €1,850 billion, and to extend its time horizon by nine months, to at least the end of March 2022. In addition, three additional targeted long-term refinancing operations (TLTRO III) were offered and the period over which considerably more favourable terms apply was extended by twelve months, to June 2022. For a comprehensive overview of the measures refer to the eighth issue of the Economic Bulletin 2020.

The level of central bank liquidity in the banking system continued to rise during the review period. This was largely due to asset purchases conducted under the asset purchase programme (APP) and the PEPP along with the settlement of TLTRO III.6, combined with a moderate decline in the net autonomous liquidity factors.

Liquidity needs

The average daily liquidity needs of the banking system, defined as the sum of net autonomous factors and reserve requirements, declined by €18.2 billion to €2,026.3 billion in the review period. The decline to below the levels observed during the previous review period, i.e. during the fifth and sixth maintenance periods of 2020, was attributable to a decline in the net autonomous factors by €20.1 billion to €1,881.5 billion, which outweighed a modest increase in the minimum reserve requirements by €1.8 billion to €144.8 billion (see the section of Table A entitled "Other liquidity-based information").

The decline in net autonomous factors was in turn driven primarily by lower government deposits, marking a partial reversal of the upward trend that had been observed since March 2020. Government deposits declined by €141.1 billion (or 19%) to €588.7 billion. Overall, despite the decline from the record highs reached in September 2020, government deposits are still more than two times higher than their average level of €213.1 billion for the same period (4 November until 26 January) in previous years (2020, 2019 and 2018). The extraordinarily rapid growth in government deposits between March and September 2020 was likely motivated by a change in the cash management by euro area governments during the coronavirus (COVID-19) crisis. However, while the decline in government deposits during the review period could indicate the start of a normalisation process, any such process may remain sensitive to COVID-19 crisis dynamics. The decline in government deposits was partially compensated for by an increase in banknotes in circulation (of

€31.8 billion, to €1,416.7 billion) and a rise in other autonomous factors (of €32.0 billion, to €915.7 billion). In total, liquidity-absorbing autonomous factors decreased by €77.4 billion to €2,921.0 billion. This was partially offset by a decline in liquidity-providing autonomous factors by €57.2 billion to €1,039.8 billion. The decline was driven by lower net assets denominated in euro. Overall, the net liquidity-absorbing effect from autonomous factors declined by €20.1 billion to €1,881.5 billion. Table A shows an overview of the autonomous factors discussed above and their changes.

Table A

Eurosystem liquidity conditions

Liabilities

(averages; EUR billions)

	Current review period 4 November 2020 to 26 January 2021						Previous review period: 22 July 2020 to 3 November 2020	
	Seventh and eighth maintenance period		Seventh maintenance period: 4 November to 15 December		Eighth maintenance period: 16 December to 26 January		Fifth and sixth maintenance period	
Autonomous liquidity factors	2,921.0	(-77.4)	2,966.1	(-56.7)	2,875.8	(-90.3)	2,998.3	(+149.0)
Banknotes in circulation	1,416.7	(+31.8)	1,403.9	(+14.8)	1,429.4	(+25.5)	1,384.9	(+27.3)
Government deposits	588.7	(-141.1)	647.0	(-101.9)	530.3	(-116.7)	729.7	(+146.7)
Other autonomous factors (net)[1]	915.7	(+32.0)	915.2	(+30.4)	916.1	(+1.0)	883.7	(-25.1)
Current accounts above minimum reserve requirements	2,850.3	(+287.6)	2,816.7	(+163.3)	2,883.9	(+67.2)	2,562.7	(+529.6)
Minimum reserve requirements[2]	144.8	(+1.8)	144.0	(+0.4)	145.5	(+1.5)	142.9	(+2.6)
Deposit facility	561.2	(+125.8)	535.4	(+74.7)	586.9	(+51.5)	435.4	(+104.8)
Liquidity-absorbing fine-tuning operations	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.
1) Computed as the sum of the revaluation accounts, other claims and liabilities of euro area residents, capital and reserves.
2) "Minimum reserve requirements" is a memo item that does not appear on the Eurosystem balance sheet and therefore should not be included in the calculation of total liabilities.

Assets

(averages; EUR billions)

	Current review period 4 November 2020 to 26 January 2021						Previous review period: 22 July 2020 to 3 November 2020	
	Seventh and eighth maintenance period		Seventh maintenance period: 4 November to 15 December		Eighth maintenance period: 16 December to 26 January		Fifth and sixth maintenance period	
Autonomous liquidity factors	**1,039.8**	**(-57.2)**	**1,092.9**	**(-3.1)**	**986.7**	**(-106.2)**	**1,097.0**	**(+41.6)**
Net foreign assets	856.8	(-8.4)	865.1	(+0.7)	848.6	(-16.5)	865.2	(-42.1)
Net assets denominated in euro	183.0	(-48.8)	227.8	(-3.8)	138.1	(-89.7)	231.8	(+83.7)
Monetary policy instruments	**5,437.7**	**(+395.1)**	**5,369.6**	**(+184.7)**	**5,505.8**	**(+136.2)**	**5,042.6**	**(+744.3)**
Open market operations	5,437.7	(+395.1)	5,369.6	(+184.7)	5,505.8	(+136.2)	5,042.6	(+744.3)
Tender operations	1,773.9	(+125.9)	1,754.9	(+45.8)	1,792.9	(+38.0)	1,648.0	(+435.5)
MROs	0.4	(-0.9)	0.5	(-0.8)	0.3	(-0.2)	1.3	(+0.7)
Three-month LTROs	0.9	(-0.7)	0.9	(-0.3)	0.9	(-0.0)	1.6	(-0.6)
TLTRO II operations	22.5	(-17.9)	29.3	(-4.7)	15.7	(-13.6)	40.4	(-242.4)
TLTRO III operations	1,724.2	(+141.5)	1,699.0	(+49.8)	1,749.4	(+50.4)	1,582.7	(+890.8)
Bridge LTROs	0.0	(+0.0)	0.0	(+0.0)	0.0	(+0.0)	0.0	(-228.6)
PELTROs	25.9	(+3.9)	25.3	(+1.8)	26.6	(+1.3)	22.1	(+15.7)
Outright portfolios	3,663.8	(+269.2)	3,614.7	(+138.9)	3,712.9	(+98.2)	3,394.6	(+308.8)
First covered bond purchase programme	0.5	(-0.0)	0.5	(-0.0)	0.5	(-0.0)	0.5	(-0.2)
Second covered bond purchase programme	2.8	(-0.1)	2.8	(-0.0)	2.7	(-0.0)	2.8	(-0.1)
Third covered bond purchase programme	287.3	(+1.5)	286.8	(-0.0)	287.8	(+1.0)	285.8	(+3.5)
Securities markets programme	28.6	(-4.5)	28.6	(-3.4)	28.6	(+0.0)	33.1	(-3.6)
Asset-backed securities purchase programme	29.7	(+0.1)	29.9	(+0.6)	29.6	(-0.3)	29.6	(-1.2)
Public sector purchase programme	2,337.1	(+53.9)	2,329.0	(+29.0)	2,345.2	(+16.2)	2,283.2	(+53.1)
Corporate sector purchase programme	249.9	(+17.6)	247.9	(+9.7)	252.0	(+4.1)	232.3	(+15.3)
Pandemic emergency purchase programme	727.9	(+200.6)	689.4	(+103.0)	766.5	(+77.1)	527.3	(+242.0)
Marginal lending facility	0.0	(+0.0)	0.0	(+0.0)	0.0	(-0.0)	0.0	(-0.0)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.

Other liquidity-based information

(averages; EUR billions)

	Current review period 4 November 2020 to 26 January 2021						Previous review period: 22 July 2020 to 3 November 2020	
	Seventh and eighth maintenance period		Seventh maintenance period: 4 November to 15 December		Eighth maintenance period: 16 December to 26 January		Fifth and sixth maintenance period	
Aggregate liquidity needs[1)]	2,026.3	(-18.2)	2,017.5	(-53.2)	2,035.0	(+17.5)	2,044.5	(+109.8)
Net autonomous factors[2)]	1,881.5	(-20.1)	1,873.5	(-53.6)	1,889.5	(+16.0)	1,901.6	(+107.3)
Excess liquidity[3)]	3,411.4	(+413.4)	3,352.1	(+238.0)	3,470.8	(+118.7)	2,998.0	(+634.5)

Source: ECB.
Notes: All figures in the table are rounded to the nearest €0.1 billion. Figures in brackets denote the change from the previous review or maintenance period.
1) Computed as the sum of net autonomous factors and minimum reserve requirements.
2) Computed as the difference between autonomous liquidity factors on the liability side and autonomous liquidity factors on the asset side. For the purpose of this table, items in the course of settlement are also added to net autonomous factors.
3) Computed as the sum of current accounts above minimum reserve requirements and the recourse to the deposit facility minus the recourse to the marginal lending facility.

Interest rate developments

(averages; percentages)

	Current review period: 4 November 2020 to 26 January 2021						Previous review period: 22 July 2020 to 3 November 2020	
	Seventh and eighth maintenance period		Seventh maintenance period: 4 November to 15 December		Eighth maintenance period: 16 December to 26 January		Fifth and sixth maintenance period	
MRO	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)	0.00	(+0.00)
Marginal lending facility	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)	0.25	(+0.00)
Deposit facility	-0.50	(+0.00)	-0.50	(+0.00)	-0.50	(+0.00)	-0.50	(+0.00)
EONIA[1)]	-0.475	(-0.01)	-0.471	(-0.00)	-0.478	(-0.01)	-0.468	(-0.01)
€STR	-0.559	(-0.01)	-0.556	(+0.00)	-0.562	(-0.01)	-0.553	(-0.01)

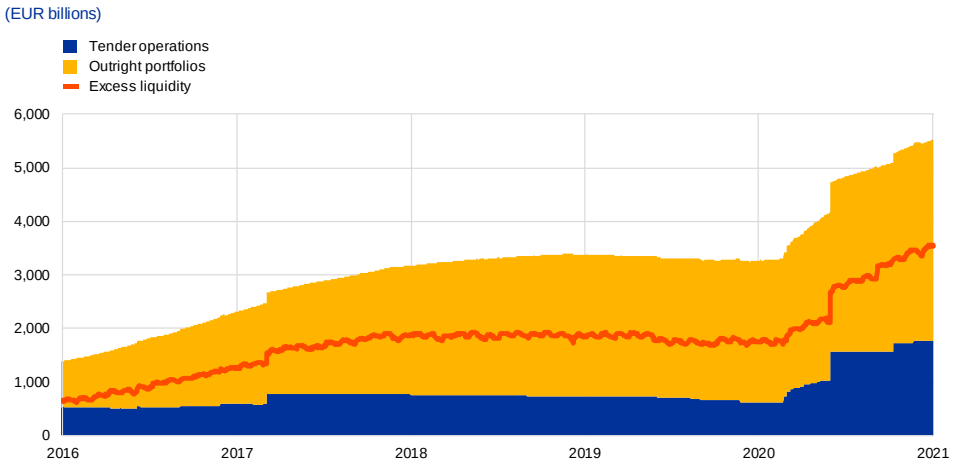
Source: ECB.
Notes: Figures in brackets denote the change from the previous review or maintenance period.
1) Computed as the euro short-term rate (€STR) plus 8.5 basis points since 1 October 2019. Differences in the changes shown for the euro overnight index average (EONIA) and the €STR are due to rounding.

Liquidity provided through monetary policy instruments

The average amount of liquidity provided through monetary policy instruments increased by €395.1 billion to €5,437.7 billion during the review period (see Chart A). Around 68% of the increase is the result of ongoing net purchases under the asset purchase programmes, primarily the PEPP, while the remaining 32% is the result of credit operations, above all the allotment of TLTRO III.6 in December.

Chart A

Evolution of liquidity provided through open market operations and excess liquidity



Source: ECB.
Note: The latest observation is for 26 January 2021.

The average amount of liquidity provided through credit operations increased by €125.9 billion during this review period, largely as a result of the settlement of the sixth operation in the TLTRO III programme. The average increase of €141.5 billion in the liquidity provided through TLTRO III was partially offset by maturities and/or voluntary early repayments under the TLTRO II programme, as counterparties shifted from the TLTRO II to the TLTRO III. On average, maturities and repayments under the TLTRO II programme amounted to €17.9 billion. The PELTRO added an extra of €3.9 billion in liquidity. The main refinancing operation (MRO) and three-month LTROs continue to play only a marginal role, with the average recourse to both regular refinancing operations decreasing by €1.6 billion to €1.3 billion compared with the previous review period.

At the same time, outright portfolios increased by €269.2 billion to €3,663.8 billion, due to net purchases under the APP and the PEPP. Average holdings in the PEPP amounted to €727.9 billion, representing an increase of €200.6 billion in relation to the average of the previous review period. Purchases under the PEPP represented the largest increase by far across all asset purchase programmes, followed by the public sector purchase programme (PSPP) and the corporate sector purchase programme (CSPP), with average increases of €53.9 billion to €2,337.1 billion and €17.6 billion to €249.9 billion, respectively.

Excess liquidity

Average excess liquidity increased by €413.4 billion to €3,411.4 billion (see Chart A). Banks' current account holdings in excess of minimum reserve requirements grew by €287.6 billion to €2,850.3 billion while the average recourse to the deposit facility increased by €125.8 billion to €561.2 billion. The partial exemption of excess liquidity holdings from negative remuneration at the deposit facility rate under the two-tier system applies only to balances held in the current accounts. Banks

therefore have an economic incentive to hold reserves in the current account instead of the deposit facility up to the limit of the exemption granted under the two-tier system. Balances held in excess of the exempted amount are often left in the deposit facility on account of operational convenience and/or regulatory treatment.

Interest rate developments

The average €STR stayed essentially unchanged during the review period compared with the previous review period. The €STR averaged -55.9 basis points during this review period compared with an average of -55.3 basis points during the previous one. As of October 2019, the EONIA is calculated as the €STR plus a fixed spread of 8.5 basis points. Therefore, it moved, and will continue to move, in parallel with the €STR. ECB policy rates –the rates on the deposit facility, the main refinancing operation and the marginal lending facility – were left unchanged during the review period.

4 The impact of containment measures across sectors and countries during the COVID-19 pandemic

Prepared by Niccolò Battistini and Grigor Stoevsky

The measures enacted to contain the coronavirus (COVID-19) pandemic had a varied impact on economic activity across sectors and countries in the euro area in 2020. The bans on public events, strict lockdowns and restrictions on numerous activities in the spring of 2020 had a dramatic effect on the economy, with euro area GDP declining by 15% in the first half of the year. Since then, both public authorities and households and firms have learned how best to respond to more targeted containment measures to alleviate their economic impact. However, there is still significant uncertainty about the evolution of the pandemic, the containment measures and the associated economic effects. Against this background, this box explores the heterogenous economic impact of COVID-19 containment measures across sectors and across the five largest euro area countries, and also studies how this impact has changed over time.[1]

Activities requiring social interaction were the most heavily affected across all the euro area countries analysed. However, country-specific economic structures (sectoral composition and degree of openness), containment measures (subnational and cross-sector composition of policies), economic policy responses and institutional features contributed to significant cross-country heterogeneity in the observed economic losses in 2020 (Chart A).[2] Compared with the euro area aggregate, Germany and the Netherlands recorded smaller overall economic losses, as recreational services represent a smaller share of total real gross value added (GVA) in Germany (20% in 2019 compared with 22.5% for the euro area as a whole) and were less affected in both countries.[3] There were larger drops in activity in Spain and Italy, while France was broadly in line with the euro area aggregate. However, as the relatively large losses observed in Italy were also partly driven by foreign demand developments, the direct detrimental impact of containment was broadly comparable to the average for the euro area (as shown below).

1 The analysed sectors cover the whole economy, namely: agriculture (NACE Rev. 2 classification: A); other industry (B, D and E); manufacturing (C); construction (F); trade, transport, accommodation and food (G, H and I); information and communication (J); finance and insurance (K); real estate (L); professional and technical (M and N); public administration (O, P and Q); and arts and entertainment (R, S, T and U).

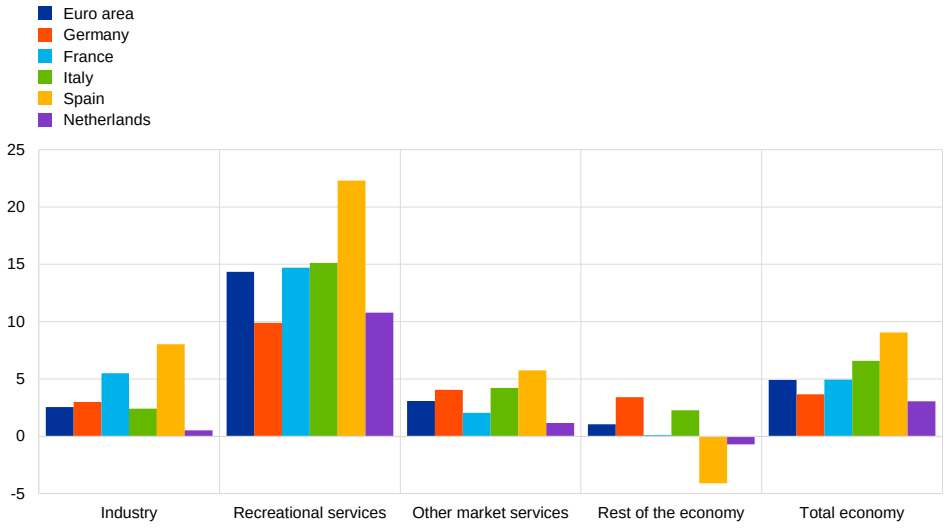
2 For an overview of how the discretionary fiscal measures related to COVID-19 varied across countries, see the article entitled "The initial fiscal policy responses of euro area countries to the COVID-19 crisis", *Economic Bulletin*, Issue 1, ECB, 2021. For an analysis of the impact of institutional features on the effectiveness of containment policies across countries, see "Lessons learnt or squandered? The evolving policy response and effectiveness of measures to deal with the pandemic", Organisation for Economic Co-operation and Development, forthcoming.

3 The smaller economic losses observed for recreational services in Germany and the Netherlands are due, among other factors, to the smaller negative effects from disruptions in international tourism for these two countries compared with other large euro area countries. See the box entitled "Developments in the tourism sector during the COVID-19 pandemic", *Economic Bulletin*, Issue 8, ECB, 2020, and the box entitled "Impact of the COVID-19 lockdown on trade in travel services", *Economic Bulletin*, Issue 4, ECB, 2020.

Chart A

Economic losses by sector across the five largest euro area countries

(loss in real GVA in Q4 2020 as a percentage of the GVA level in Q4 2019)



Sources: Eurostat, Hale, T. et al. (see footnote 4), Eurosystem and ECB calculations.
Note: Industry includes the NACE Rev. 2 classification sectors B, C, D, E and F; recreational services includes G, H, I, R, S, T and U; other market services includes J, K, L, M and N; rest of the economy includes A, O, P and Q; and total economy refers to real GDP.

We use a cross-sector vector autoregression (VAR) model to quantify the direct effects of the containment measures. A formal econometric approach is applied to sectoral data for the euro area and its five largest member countries. The econometric framework compares sectoral activity, measured by real GVA, with a proxy for the stringency of national containment measures – the Oxford Stringency Index (OSI) – which is comparable across countries.[4] To control for the different economic structures of euro area countries in terms of both production networks and degrees of openness, the model also links sectoral activity to a measure of country-specific foreign demand.[5] This allows us to identify the direct sector-specific impact of national containment policies while controlling for the effects of external factors, such as disruptions in global supply chains due to different sectors being more or less export-oriented.

The model accounts for the possibility of changes in the economic impact of COVID-19 containment measures over time. These changes stem from a process of learning, both for public authorities – as they adjust the composition of measures at subnational and sectoral level – and private households and firms – as they adapt to

4 See Hale, T., Angrist, N., Cameron-Blake, E., Hallas, L., Kira, B., Majumdar, S., Petherick, A., Phillips, T., Tatlow, H. and Webster, S., "Oxford COVID-19 Government Response Tracker," Blavatnik School of Government, 2020. The aggregate euro area OSI is computed as a 2019 GDP-weighted average of the OSI for 18 euro area countries (information for Malta is not available). Each national OSI is a composite index summarising different containment and closure policies, such as school closures and restrictions on movement. The OSI is only available at national level and does not capture variations in containment measures across regions within a country.

5 Country-specific foreign demand is derived based on a weighted average of the import volumes of trading partners and is a measure used in the ECB/Eurosystem staff macroeconomic projections. See the box entitled "The international environment", *ECB staff macroeconomic projections for the euro area*, ECB, March 2021; "A guide to the Eurosystem/ECB staff macroeconomic projection exercises", ECB, July 2016; and Hubrich, K. and Karlsson, T., "Trade consistency in the context of the Eurosystem projection exercises: an overview", *Occasional Paper Series*, No 108, ECB, March 2010.

minimise economic losses. This box presents results based on estimated sector elasticities (both constant and time-varying), which enable us to ascertain the sensitivity of the total economy (real GDP) to the stringency of containment measures.[6] The evolution of the time-varying elasticities reflects the process of economic agents learning lessons over time, as well as the countervailing persistence of the scarring effects of restrictions.[7]

While domestic containment measures had a severe impact on recreational services, the retrenchment in manufacturing was largely driven by external factors. Recreational services, including trade, transport, accommodation, food activities, arts and entertainment, exhibit the highest (absolute) elasticities to OSI changes, indicating that they were the sectors most heavily hit by the containment measures (Chart B). While the initial lockdowns also affected production facilities, the average impact on manufacturing of the restrictions in 2020 was relatively small, as activity in this sector is, to a relatively large extent, driven by developments in foreign demand. Indeed, the high elasticity of manufacturing to foreign demand (not shown) reflects the sector's high degree of openness to international trade. This hints at the additional cost of disruptions in global supply chains during the early phases of the pandemic and explains the strong recovery of the sector thereafter, as international trade rebounded in the second half of 2020. Finally, agriculture exhibits a negative elasticity and actually seems to have benefited from the restrictions, on average, possibly due to agricultural production processes requiring limited social interaction and being supported by sustained demand.

6 The results for real GDP are obtained by weighting results for each sector with their respective share of total real GVA in the fourth quarter of 2019.

7 The estimation is based on country and sector-specific data for real GVA from the first quarter of 1995 to the fourth quarter of 2020. Formally, the cross-sector VAR model, estimated separately for each country, can be represented as follows:

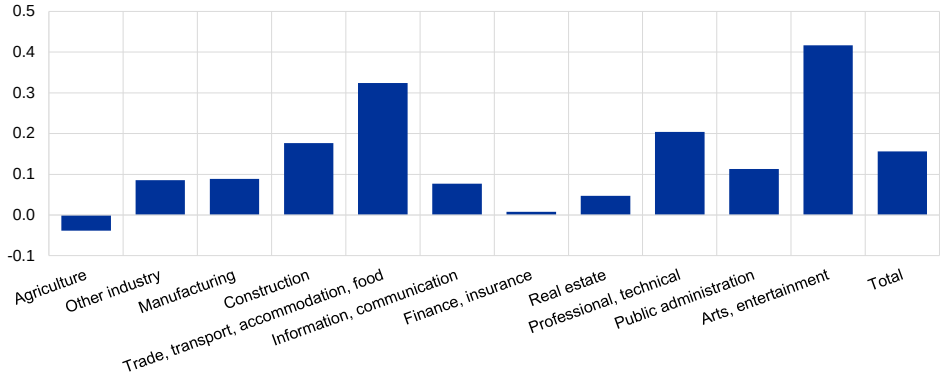
$$Y_t = A + B\,Y_{t-1} - C_t\,\Delta s_t + D\,W_t + u_t$$
$$C_t = C_{t-1} + e_t$$

where Δ refers to the first-difference operator and $Y_t = [y_{1,t}, \ldots, y_{s,t}, \ldots, y_{11,t}]$ denotes the vector of quarter-on-quarter growth rates of real sectoral GVA in quarter t. The vector error term u_t captures the residual aggregate economic effects that are influencing sectoral economic activity and are not directly related to containment measures or foreign demand. Moreover, A is a vector of constant parameters referring to the average sector-specific real GVA growth rate, B is a matrix of autoregressive parameters accounting for the intra- and inter-sectoral dynamics and C_t refers to the vector of parameters for the constant or time-varying sector-specific elasticities with respect to the first differences of s_t, i.e. economic impact. The path of the elasticities also captures the learning effects. The variables s_t are the stringency of containment measures, proxied by the average OSI in quarter t. Utilising the model over the forecast period requires assumptions about the future values of the OSI and the time-varying elasticities. After obtaining constant elasticity estimates with standard techniques, we use the Kalman filter to estimate the time-varying sensitivities, which are assumed to follow a random walk. The assumption that coefficients follow a random walk stochastic process is common in the macroeconomic literature. See, among others, the seminal contribution by King, R., Plosser, C., Stock, J. and Watson, M., "Stochastic Trends and Economic Fluctuations," *American Economic Review*, Vol. 81, No 4, 1991, pp. 819-840.

Chart B

Sector elasticities to the stringency of containment in the euro area

(impact of a 1-point decrease in Oxford Stringency Index (OSI) on real gross value added (GVA) quarter-on-quarter growth, percentage points)



Sources: Eurostat, Hale, T. et al., op. cit., Eurosystem, O*NET and ECB calculations.
Notes: The reported sector elasticities are estimated with the constant-parameter cross-sector VAR model. "*Total*" refers to real GDP.

Containment measures have particularly affected sectors with non-teleworkable, contact-intensive occupations. While the heterogeneity of the direct impact of restrictions could reflect various sector-specific characteristics, recent evidence suggests that social distancing measures have had a greater impact on sectors where there are less opportunities for remote work (i.e. non-teleworkable occupations). Among those sectors, activities with a higher frequency of in-person teamwork or face-to-face customer interaction (i.e. contact-intensive occupations) have been most affected.[8] This is confirmed by the positive correlation between the estimated sector elasticities and an index of non-teleworkable occupations (Chart C: blue dots), excluding agriculture, as well as the positive correlation between the same elasticities and an index of contact-intensive, non-teleworkable occupations (Chart C: yellow dots), including agriculture.[9]

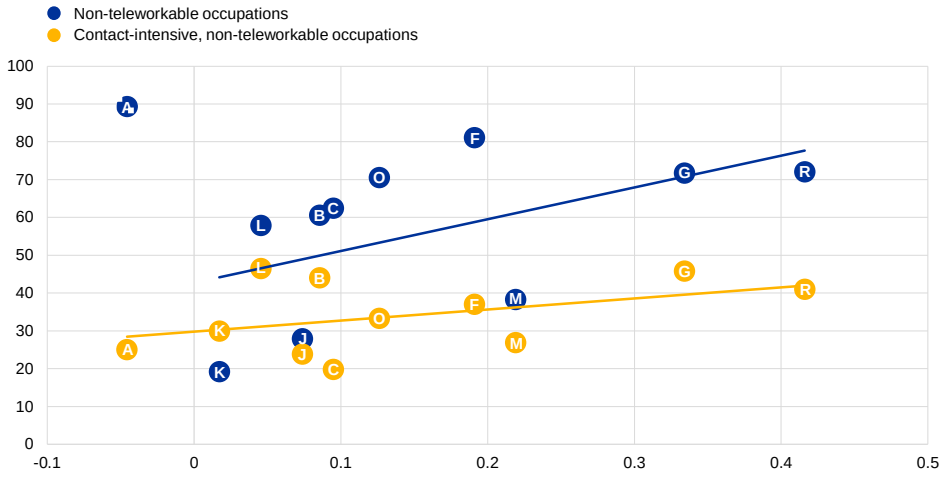
8 See Dingel, J. and Neiman, B., "How Many Jobs Can be Done at Home?", *Discussion Papers, No 14584, Centre* for Economic Policy Research, April 2020; and Koren, M. and Pető, R., "Business disruptions from social distancing", *PLoS ONE*, September 2020.

9 Agriculture is a non-teleworkable occupation but is not contact-intensive, so it has been treated as an outlier for the first correlation.

Chart C

Correlation of sector elasticities with types of occupation in the euro area

(x-axis: sector elasticities, percentage points; y-axis: share of workers in non-teleworkable occupations or contact-intensive, non-teleworkable occupations, percentages)



Sources: Eurostat, Hale, T. et al., op. cit., Eurosystem, O*NET and ECB calculations.
Notes: The reported sector elasticities are estimated with the constant-parameter cross-sector VAR model. One-letter labels refer to the following sectors: agriculture (A); other industry (B); manufacturing (C); construction (F); trade, transport, accommodation and food (G); information and communication (J); finance and insurance (K); real estate (L); professional and technical (M); public administration (O); and arts and entertainment (R). Granular data on occupations are based on the O*NET dataset (see O*NET OnLine, National Center for O*NET Development, 2020). The index of non-teleworkable occupations is constructed as 100 minus the index of teleworkable occupations in Dingel, J. and Neiman, B., op. cit. The index of contact-intensive, non-teleworkable occupations is produced by Koren, M. and Pető, R., op. cit., by combining an index of non-teleworkable occupations with a composite index of face-to-face teamwork, customer interactions, physical presence and communication. These granular data are aggregated into the 11 sectors based on value-added weights for NACE Rev. 2, two-digit level branches from the World Input-Output Database 2014 data for the euro area. The solid blue line corresponds to the trend between the sector elasticities and non-teleworkable occupations for all sectors excluding agriculture. The solid yellow line corresponds to the trend between the sector elasticities and contact-intensive, non-teleworkable occupations for all sectors.

The impact of containment measures has differed across countries and has changed over time, as economic agents have learned how to cope with restrictions. The estimated time-varying elasticities capture this change (Chart D). The rapid spread of the pandemic meant that these learning effects had little impact in the first half of 2020, as indicated by the strong increase in the sensitivity of activity in an environment of tightening restrictions. This was common across most sectors (Chart D, panel a), especially recreational services and industry (including manufacturing, construction and other industry), and most countries (Chart D, panel b), especially Spain. In contrast, these learning effects had a significant effect in the second half of 2020. In the third quarter, the elasticities strongly increased while restrictions loosened, allowing for a strong rebound in activity. The learning process strengthened further in the fourth quarter, as the elasticities fell sharply amid a renewed tightening of measures, alleviating the economic contraction. This effect was relatively strong in the industrial sector, as well as in Germany and the Netherlands. While there is strong evidence of learning over time, the model cannot determine whether the main factors behind this were more targeted (or localised) containment measures implemented by authorities or improved behavioural responses from households and firms.[10] Overall, while the levels of containment were largely comparable, the smaller economic losses in Germany and the Netherlands implied

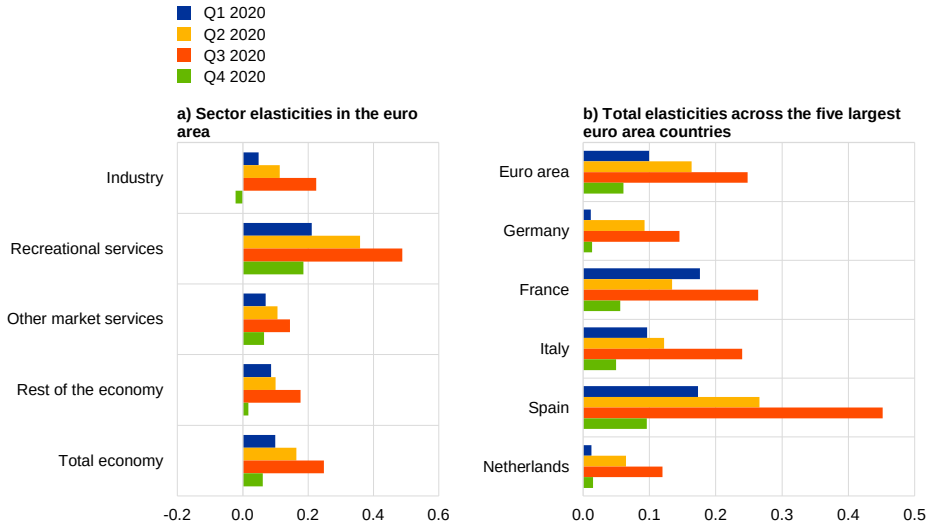
[10] The behavioural responses include practices aimed at minimising disruptions to activity. These disruptions can be caused by voluntary social distancing in response to rising infections and delays in vaccinations, among other things. See also Chapter 2 in "World Economic Outlook," International Monetary Fund, October 2020.

relatively small estimated elasticities, while the higher losses in Spain implied higher elasticities. The results also suggest that the average detrimental economic impact of containment in France and Italy in 2020 was broadly comparable to the estimated impact for the euro area as a whole.

Chart D

Estimated elasticities over time in the euro area

(impact of a 1-point decrease in OSI on real GVA quarter-on-quarter growth, percentage points)



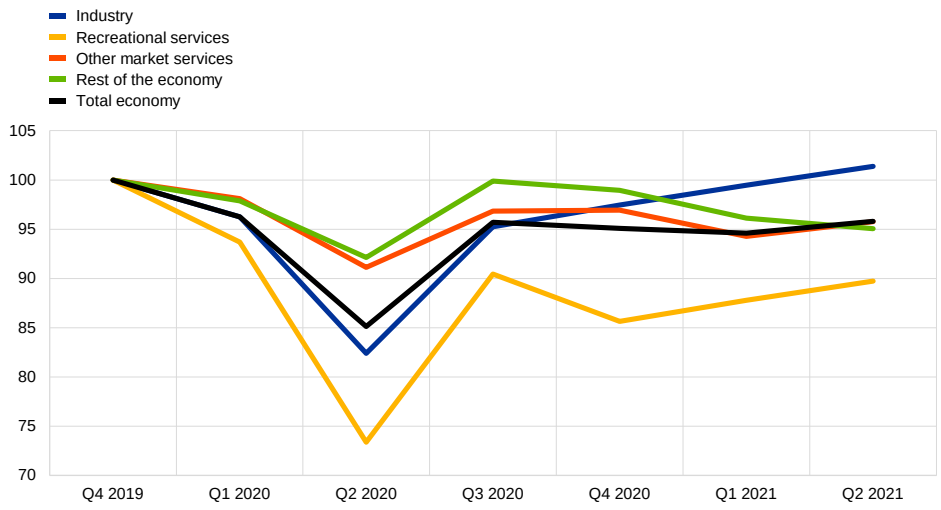
Sources: Eurostat, Hale, T. et al., op. cit., Eurosystem and ECB calculations.
Note: "*Total economy*" refers to real GDP.

The recovery in economic activity is expected to remain heterogeneous across sectors during the first half of 2021, altering the composition of activity. The cross-sector VAR model can be used to break down the real GDP growth profile of the March 2021 ECB staff macroeconomic projections into sector-specific real GVA profiles (Chart E). These profiles reflect the historical cross-sector interactions and estimated elasticities, the assumed foreign demand and pandemic-related restrictions, and the assumed impact of containment measures in the future. According to these results, recreational services are set to bear the brunt of the pandemic over the short term, falling short of their pre-crisis level by around 10% by mid-2021. Other (non-recreational) market services are projected to remain below their pre-pandemic level by around 4%. In contrast, the industrial sector is projected to continue to fare well in the current phase of the pandemic and, by the second quarter of 2021, to exceed the level it had in the fourth quarter of 2019 by around 1%. Overall, these mechanical model-based extrapolations imply a continued reallocation of activity across market services, away from contact-intensive sectors and towards sectors less affected by social distancing and containment measures.

Chart E

Sector breakdown of real GDP in the euro area

(index, Q4 2019 = 100)



Sources: Eurostat, Hale, T. et al., op. cit., Eurosystem and ECB calculations.
Note: The model-implied sector developments are based on the March 2021 projections for real GDP and foreign demand in the first and second quarters of 2021.

To summarise, containing the COVID-19 pandemic has had a heterogenous economic impact across sectors and countries, and over time. Targeted containment measures and the behavioural responses of economic agents have helped limit the economic costs of restrictions. Looking forwards, the large divergence in the economic impact of containment measures across sectors is likely to persist, at least in the short term.

5 The role of profit margins in the adjustment to the COVID-19 shock

Prepared by Elke Hahn

Profit margins are an integral part of domestic price setting and have had an impact on the response of euro area inflation to the coronavirus (COVID-19) shock. Growth in the GDP deflator remained robust in the first half of 2020, despite the sharp fall in economic activity. This box illustrates that developments in profit margins in terms of unit profits (i.e. gross operating surplus per unit of GDP) have been exceptional during the crisis, including in comparison to past recessions, and have shaped GDP deflator-based inflation developments. The box also elaborates on likely sources of the unusual profit margin response and examines developments in more granular profit indicators in main institutional sectors since the start of the crisis.

Developments in the GDP deflator and its components have been exceptional since the start of the COVID-19 crisis (Chart A). Despite the recession, the annual growth rate of the GDP deflator rose to 2.3% in the second quarter of 2020, from 1.8% in the first quarter, before slumping to rates around 1.0% in the following two quarters. This was the largest movement between two quarters in the history of the series. However, rather than reflecting genuine changes in domestic price pressures, the hump in the profile of the GDP deflator appears to reflect mainly statistical measurement effects.[1] At the same time, changes in the components of the GDP deflator also went far beyond those observed in past crises. In particular, unit labour costs posted a sharp temporary increase in the second quarter, and unit taxes less subsidies on production made an unprecedentedly large negative contribution to the GDP deflator. The latter reflected government support measures implemented in the context of job retention schemes, while in the third and fourth quarters lower recourse to these schemes in view of the rebound in economic activity led to a significant

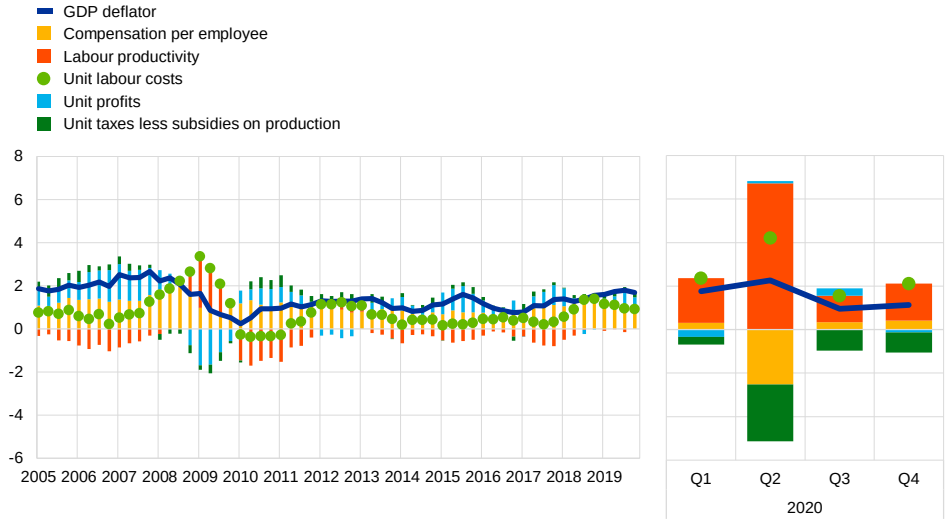
[1] The GDP deflator implicit in national accounts is derived by dividing nominal GDP by real (chain-linked volume) GDP. As a result, it can be analysed from the expenditure, income and production side of GDP. The breakdown of the GDP deflator from the production side shows that the increase in the annual growth rate of the GDP deflator in the second quarter of 2020 was largely accounted for by the deflator of the "public administration, defence, education, human health and social work activities" sector. The deflator of the public sector increased in the second quarter because nominal output did not fall by as much as real output. Many national statistical institutes (NSIs) have experienced difficulties in measuring non-market output owing to the COVID-19 crisis, and Eurostat was urged to provide specific guidance in this field (see "Guidance on non-market output in the context of the COVID-19 crisis", Eurostat, May 2020). According to this guidance, deviating from the conventional "sum of costs" approach for output in current prices because of temporary changes in activity is not justified and the legal requirement of the European System of Accounts (ESA 2010) in this respect should continue to be followed. This also ensures a harmonised approach across EU Member States. The fact that, as it currently stands, there was a counterintuitive development in the deflator of the public sector in the second quarter of 2020 could be partly due to insufficient information being available to NSIs at that point in time. Revisions to these results in subsequent GDP releases and once the complete annual results for 2020 become available later in 2021 cannot be excluded.

decline in this contribution.[2] Job retention schemes also had a substantial impact on developments in profit margins during the crisis, as discussed below.[3]

Chart A

GDP deflator and components

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2020.

Total profits declined sharply during the COVID-19 crisis in both the non-financial corporation (NFC) sector and the household sector (Chart B). Both the gross operating surplus of NFCs and the gross mixed income of the smaller unincorporated enterprises covered by the household sector, which together account for roughly three quarters of total economy profits, dropped significantly in the second quarter of 2020 and much more strongly than during the great financial crisis.[4] In the third quarter of 2020 much of the decline in profits in the previous quarter was recouped. The same was true for most of the more specific profit indicators available for the NFC sector. Only net retained earnings, which have developed relatively favourably in recent years, remained at a more modest level.

2 The recording of such government support measures in national accounts differs across euro area countries because of the way the support is provided by national governments. In some countries the support is provided as a subsidy to employers who pass it on to employees in the form of compensation. This implies a dampening impact on the "taxes less subsidies on production" component of the GDP deflator and a corresponding upward impact on compensation per employee.

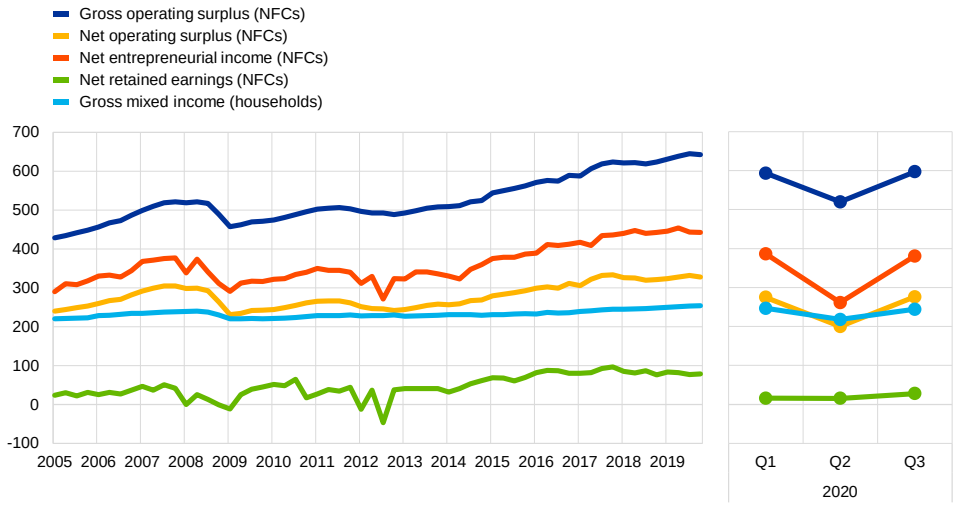
3 For more information on the effects of job retention schemes on wages, see the box entitled "Developments in compensation per hour and per employee since the start of the COVID-19 pandemic" in the article entitled "The impact of the COVID-19 pandemic on the euro area labour market", *Economic Bulletin*, Issue 8, ECB, 2020.

4 The gross operating surplus of the household sector is not considered here as it mainly refers to the activities of owner-occupied housing.

Chart B

Profits in the NFC sector and the household sector

(EUR billions)



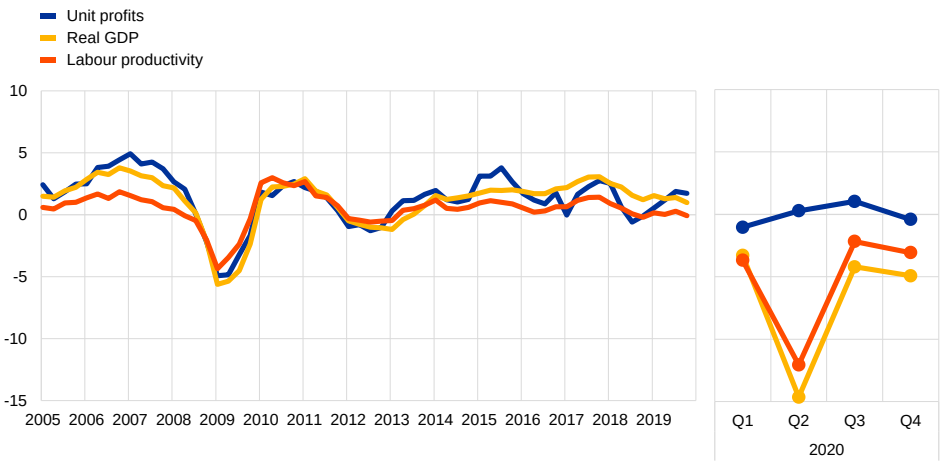
Sources: Eurostat, ECB and author's calculations.
Note: The latest observations are for the third quarter of 2020.

Despite the overall fall in profits, unit profits have shown resilience relative to the depth of the recession. Developments in unit profits are highly cyclical and tend to strongly co-move with cyclical indicators like GDP and labour productivity (Chart C). However, in the second quarter of 2020 the typical cyclical co-movement of unit profits with real economic activity broke down. This can be clearly seen when a comparison is made with developments during and after the great financial crisis. In the second quarter of 2020 unit profits were weak, but held up much better than implied by typical cyclical co-movement, even providing a small positive contribution to the GDP deflator, despite the strong fall in GDP. In the third and fourth quarters of 2020 unit profits remained weak and disconnected from the sharp cyclical rebound, but were still stronger than implied by the cyclical situation as reflected in, for instance, developments in GDP. While statistical measurement effects are likely to have played a role in developments in unit profits, they cannot explain their observed resilience.

Chart C

Unit profits, real GDP and labour productivity

(annual percentage changes)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2020.

Empirical evidence based on past recessions points to non-linearities and relatively more moderate cyclical adjustments of unit profits during recessions than during expansions (Chart D).[5] The results from a threshold vector autoregressive model indicate that a demand shock has a proportionally smaller effect on inflation in recessions than in expansions on account of a smaller response in unit profits, and this behaviour also appears to have prevailed during the COVID-19 crisis.[6] The estimated non-linearity in the response of unit profits also helps to explain why inflation tended to fall by less in past recessions than signalled by linear models, a behaviour referred to as "missing disinflation". Nonetheless, the resilience of profit margins during the COVID-19 crisis is exceptional, even when compared with past recessions.

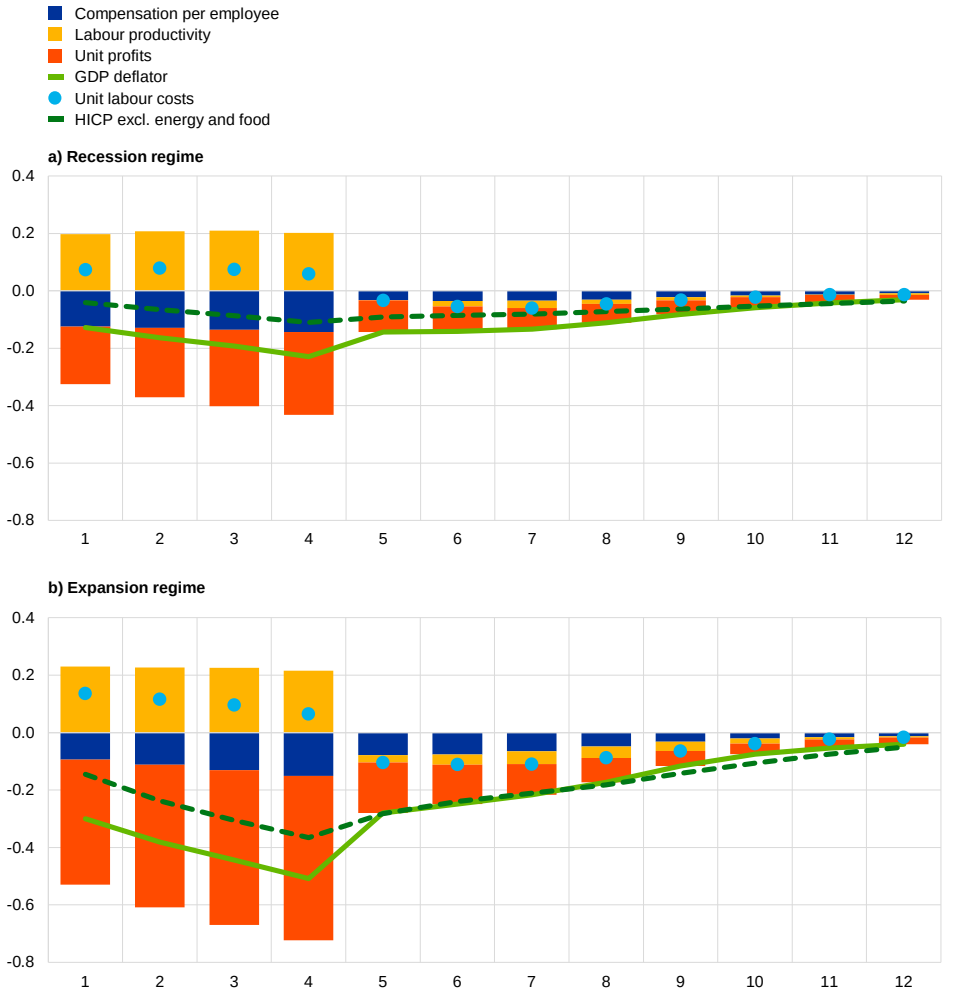
5 See Hahn, E., "The wage-price pass-through in the euro area: does the growth regime matter?", *Working Paper Series*, No 2485, ECB, October 2020.

6 For supply shocks, no non-linear behaviour between recessions and expansions was found in the empirical analysis.

Chart D

Response of GDP deflator and components and of HICP excluding energy and food to adverse demand shocks in recessions and expansions

(annual percentage changes, percentage point contributions)



Source: Hahn, E. (2020).
Notes: The x-axis refers to the horizon of the impulse responses in quarters. The magnitude of the demand shock corresponds to a 1% decline in real GDP over the first year. It is assumed that indirect taxes net of subsidies respond proportionally to real GDP such that this component does not contribute to changes in the GDP deflator.

Job retention schemes have played an important role in the resilience of unit profits during the COVID-19 crisis.[7] In the early stages of a downturn firms generally strive to retain workers, even at the cost of lower profit margins. This downward pressure on profit margins can be alleviated by government wage support schemes. Such schemes have been much more common during the COVID-19 crisis than during previous recessions, and this probably explains the resilience of profit margins in the current crisis when compared to past recessions.

To conclude, while profits have fallen more strongly during the COVID-19 crisis than during earlier recessions, relative to activity they have shown a high degree of resilience. This has contributed to the attenuation of downward

[7] For more information on job retention schemes, see the article entitled "The impact of the COVID-19 pandemic on the euro area labour market", *Economic Bulletin*, Issue 8, ECB, 2020.

pressures on inflation during this period. It is likely that the strong resilience of profit margins during this crisis reflects both the normal resilience of profit margins in recessions and the impact of job retention schemes. As job retention schemes are likely to remain in force as long as the COVID-19 crisis persists, profit margins may be expected to remain relatively resilient given the activity developments.

6 2021 HICP weights and their implications for the measurement of inflation

Prepared by Eduardo Gonçalves, Lukas Henkel, Omiros Kouvavas, Mario Porqueddu and Riccardo Trezzi

The coronavirus (COVID-19) pandemic and the resulting lockdown measures have triggered extraordinary changes in consumption patterns since early 2020. Households increased their relative expenditure share of certain categories in the HICP basket at the expense of others. This box discusses these changes in consumption and their implications for inflation measurement.

HICP weights for 2021 were updated using data that also reflect 2020 household consumption expenditure.[1] The HICP is designed around a fixed basket approach according to which HICP weights are updated at the beginning of each year with a view to reflecting the previous year's household consumption. These HICP weights are kept fixed until December of each year.[2] Because household consumption patterns tend to change gradually, using the consumption shares dating back to the previous year (instead of the current year) to compute current inflation typically has little impact. For the COVID-19 period, however, this means that the HICP weights used for compiling annual inflation in 2020 did not duly reflect the major changes in household spending triggered by the pandemic. The large shifts in 2020 household consumption are thus now reflected in the latest HICP weights that were used to compute the 2021 HICP inflation rates.[3]

The latest annual HICP weights which were introduced at the beginning of 2021 show large shifts across categories. Chart A shows the values of the HICP weights used for compiling inflation in 2020 and 2021 by special aggregates and their historical distribution over the 2012-19 period (the grey "whiskers"). The largest weight decreases can be observed in services, in particular recreation and transport, while the weight of food items and housing services increased the most.[4] The magnitude of the shifts can be better understood by looking at the distribution of historical changes (left-hand side of Chart A). For certain categories, these changes are unprecedented. Almost all items show a change in 2021 well outside the 75% interval of historical changes and many changes are significantly outside the historical boundary. For

1 For more information, see Eurostat methodological note. The extent to which this guidance was followed by national statistical institutes is heterogenous.

2 The HICP is a Laspeyres-type index obtained by annually chain-linking 13-month (December to December) indices. December of each year is the overlap or link month in which the new and old basket of products are priced and the indices are aligned accordingly. For further details, see Eurostat HICP Methodological Manual and the legal requirements, as described in Article 3 of the HICP Implementing Act.

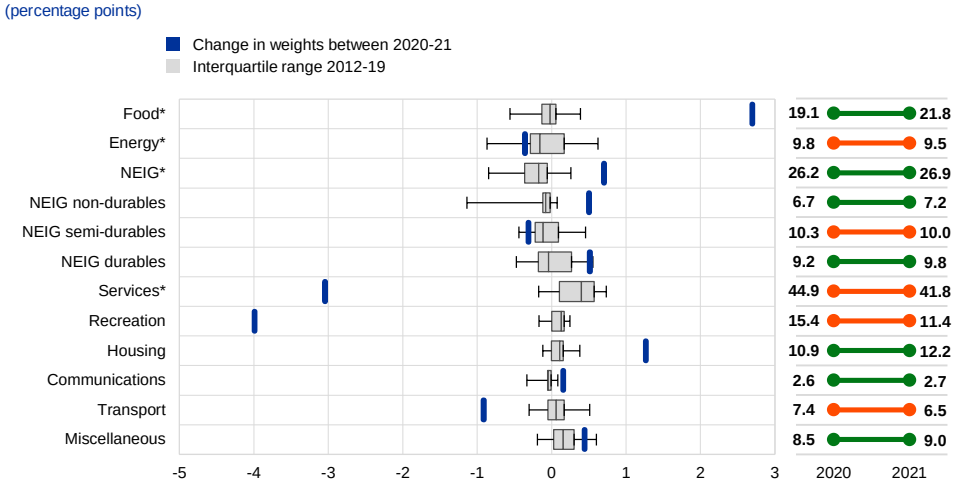
3 For previous ECB analyses on this topic, see Consumption patterns and inflation measurement issues during the COVID-19 pandemic, *Economic Bulletin*, Issue 7, ECB, 2020, and Inflation measurement in times of economic distress, *Economic Bulletin*, Issue 3, ECB, 2020.

4 The HICP spending weights are relative weights. Therefore, the weight of an item increases not only if expenditure in that item increases more than overall expenditure (such as for food items in 2020) but also if expenditure remains roughly unchanged and households cut overall expenditure (such as for housing services in 2020).

instance, the change in weight for recreation was around 20 standard deviations of the historical distribution.

Chart A

HICP weights: levels and historical changes distributions



Sources: Eurostat and authors' calculations.
Notes: The chart shows the HICP weights in 2020 and 2021 (right-hand side). A green/red line indicates whether the weights increased/decreased. The chart also shows the weight changes (blue markers on left-hand side) and their historical distributions (grey "whiskers" on left-hand side). Categories highlighted with "*" denote main special aggregates. Categories not highlighted are sub-aggregates, included in the main aggregates. The grey "whiskers" report the median, 25th percentile, 75th percentile, minimum, and maximum of the historical distribution. NEIG stands for "non-energy industrial goods". Historical ranges are based on the sample from 2012 (the first year in which annual HICP weights became available) to 2019.

The change in weights had an upward impact on HICP inflation in January 2021.

Chart B shows the change in spending weight and the corresponding change in the inflation rate by granular spending categories.[5] The size of the bubble reflects the 2021 HICP spending weight. The items with the largest decrease in the consumption share show, on average, the largest decrease in inflation.[6] Intuitively, with the change to 2021 weights, the HICP currently assigns more weight to categories with a higher-than-average inflation rate, while it assigns less weight to items with a lower-than-average inflation rate. Hence the shift in weights results in a higher aggregate inflation rate than would have been the case without shifts in consumption shares.

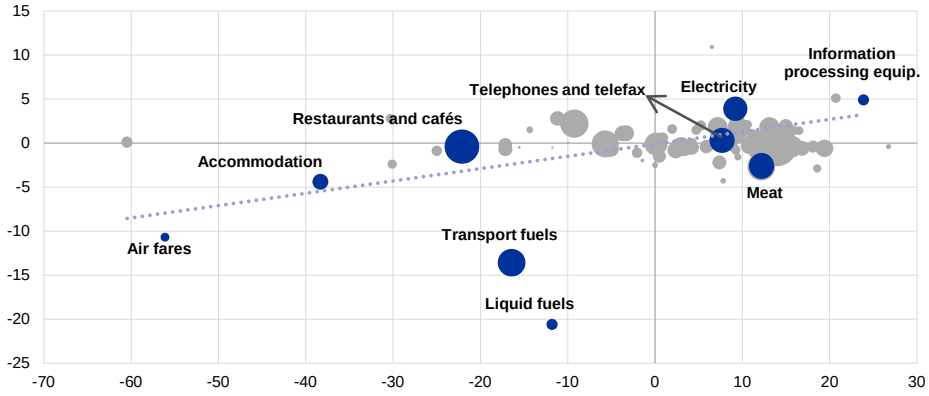
5 Chart B plots HICP items at the COICOP 4-digit level of aggregation. COICOP stands for classification of individual consumption according to purpose. The HICP uses the COICOP classification system, for further details see Eurostat HICP Methodological Manual.

6 Considering the annual inflation rate in January 2021 rather than the change in annual inflation rates between January 2020 and January 2021 leads to very similar results.

Chart B

Changes in HICP weights and inflation by granular spending categories

(x-axis: percentage change in HICP weights between 2020 and 2021; y-axis: change in annual inflation rates between January 2020 and January 2021)



Sources: Eurostat and authors' calculations.
Notes: The chart shows the correlation between the change in HICP weights (x-axis) and the change in the year-over-year HICP inflation rate (y-axis). Each bubble represents an HICP item at the COICOP-4 level of aggregation. Bubbles are scaled according to the 2021 HICP weights. Blue bubbles indicate selected items. The blue dotted line is a linear fit of the data.

A counterfactual exercise can quantify the upward impact of the change in weights on the January 2021 HICP inflation rate. Based on the published HICP inflation rates for January 2021, we have constructed a counterfactual HICP index using the 2020 weights instead of those from 2021 (Chart C).[7] The difference between the published HICP inflation rates (blue bars) and our counterfactual inflation rates (yellow bars) in the upper panel of Chart C reflects the impact of the new weights on aggregate inflation. Headline inflation is around 0.3 percentage point higher than the counterfactual inflation rate. The HICP excluding energy and food (HICPX) inflation rate is around 0.4 percentage point higher, as the impact of the weights on food and energy inflation is limited. Nevertheless, as shown in the lower panel of Chart C, the effect across countries was heterogenous.[8]

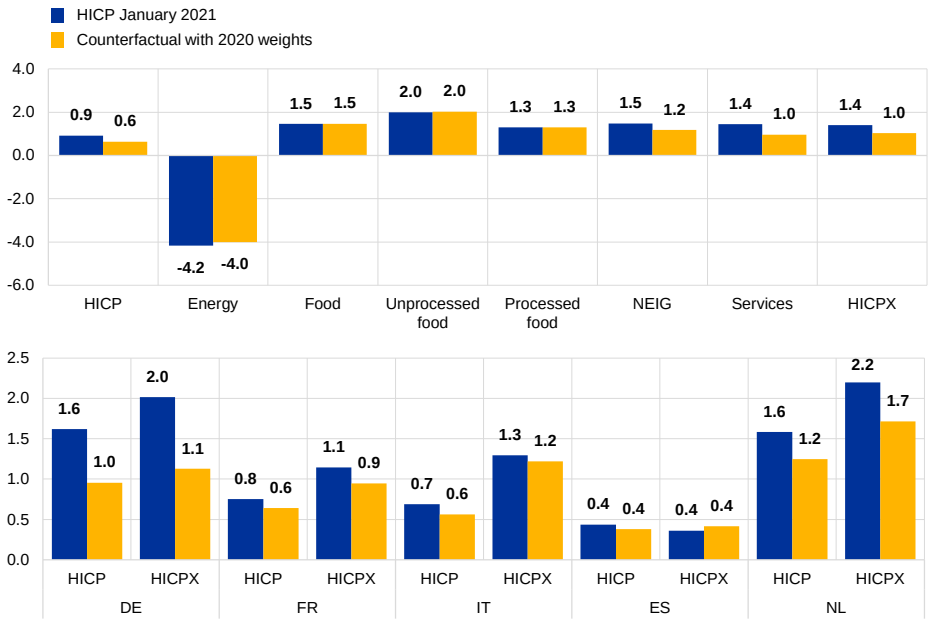
7 In order to reproduce the exact HICP methodology, in our counterfactual exercise we used data at the COICOP 5-digit level of aggregation.

8 Differences in the weight effect across countries can be caused by two factors. First, the size of the change in the country-level category weights. Cross-country differences in weight changes can reflect different developments in consumption patterns, but also the weight updating procedure used by national statistical institutes and the extent to which this duly reflected the 2020 consumption patterns. Second, differences across countries might also reflect differences in category-level inflation rates, while interacting with weight changes.

Chart C

Published year-over-year HICP inflation rates and counterfactual inflation rates

(percentages)



Sources: Eurostat and authors' calculations.
Notes: The chart shows the year-over-year HICP inflation rate in January 2021 (blue bars) and the counterfactual rates constructed using the 2020 weights (yellow bars). NEIG stands for "non-energy industrial goods". HICPX stands for "HICP excluding energy and food".

The change in weights will continue to affect HICP inflation rates throughout 2021. The magnitude and the sign of the weight impact on annual HICP inflation could change over the course of the subsequent months. While in January 2021 the weights of categories with above-average inflation rates were increased, these categories might not continue to exhibit above-average inflation rates throughout the year. As price developments in individual categories change from month to month, the weight effect on annual HICP inflation develops accordingly. The chain-linking nature of the HICP index could potentially amplify these effects.[9] Chain-linking indices at a low (high) level of the index implies that even when weights and prices return to their pre-pandemic levels, the indices themselves might not fully return to previous levels. For example, this was the case for the transport fuel sub-index, which was at a low level when the indices were linked (December 2020). In parallel, the weight was reduced, minimising future contributions from this item to the energy index. This could again lead to the energy index not fully returning to previous levels, even if both prices and weights return to their previous levels.

HICP weights will likely continue to affect the measurement of inflation more than usual over the next few years. The pandemic triggered significant changes in household spending patterns in 2020, with these shifts now being reflected in the 2021

9 Chain-linking is a methodological consequence of a price index, with regular weight updates being performed. As explained in Chain linking over December and methodological changes in the HICP: view from a central bank perspective, "Generally, the value in a linking period – month or year – affects a chain-linked time series from the point in time at which the recent index is linked to that value. Chain-linked index series are "path dependent", i.e. affected by the values of each linking period, which have a permanent impact on the time series.", *Statistics Paper Series*, ECB, February 2021.

HICP weights, and consequently also in measured inflation, across 2021. Looking further ahead, the weights of the HICP basket categories could change significantly once again in 2022, depending on whether and how spending patterns (re)adjust in the light of the expected economic recovery and the ensuing developments in the COVID-19 pandemic.

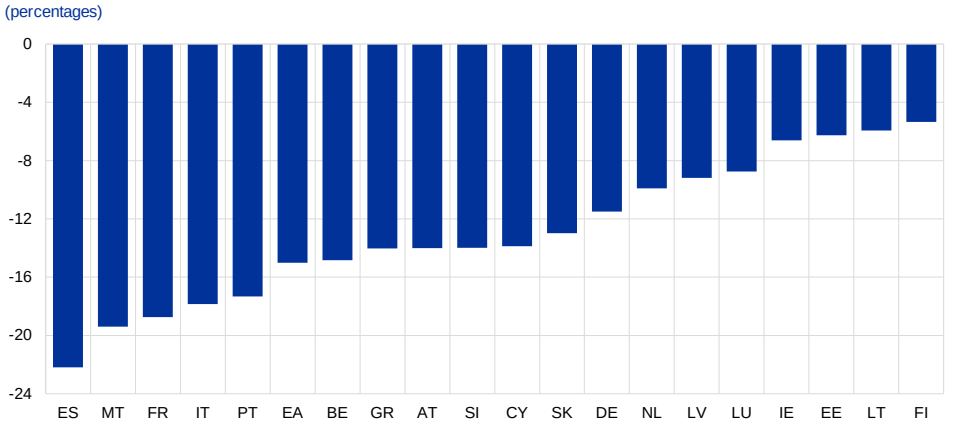
7 Towards an effective implementation of the EU's recovery package

Prepared by Nico Zorell and Sander Tordoir

While the coronavirus (COVID-19) pandemic is a common shock affecting all euro area countries, its economic impact has not been uniform. The decline in real GDP between the fourth quarter of 2019 and the second quarter of 2020, which corresponds to the peak-to-trough change in most countries, varied between 5% and 22% across euro area countries (Chart A).[1] The heterogeneous fallout from the COVID-19 shock reflects differences across countries in public health dynamics and containment measures, as well as economic factors such as the sectoral specialisation of the economy, the resilience of labour and product markets, and varying degrees of fiscal space.[2] According to projections by European and international institutions, there is a risk that growth differentials will persist during the recovery phase and impair income convergence in the euro area in the medium term.

Chart A

Change in real GDP between the fourth quarter of 2019 and the second quarter of 2020



Source: Eurostat.
Note: EA refers to the "euro area".

The European Union's Next Generation EU (NGEU) instrument, in force since 19 February 2021, has opened a new chapter in Europe's policy response to the COVID-19 pandemic.[3] The main objective of the instrument is to support the recovery and lay the foundations for a greener, more digital and more resilient European economy. To this end, the European Commission has been authorised to

1 Similar heterogeneity can be observed in the employment response to the COVID-19 shock. See the article entitled "The impact of the COVID-19 pandemic on the euro area labour market", *Economic Bulletin*, Issue 8, 2020.

2 The COVID-19 crisis has also aggravated macroeconomic vulnerabilities in euro area countries, as documented by the European Commission in its most recent *Alert Mechanism Report*. In particular, the report points to increased public and private indebtedness, subdued growth prospects and corporate sector weaknesses. See European Commission, "Alert Mechanism Report 2021", November 2020.

3 For details on the governance of NGEU and its fiscal aspects, see the box entitled "The fiscal implications of the EU's recovery package", *Economic Bulletin*, Issue 6, ECB, 2020.

raise up to €750 billion (around 5% of EU GDP) on the capital markets on behalf of the EU. The funds can be used to provide grants of up to €390 billion and loans of up to €360 billion to EU Member States, to be disbursed by the end of 2026. With an envelope of €672.5 billion, the Recovery and Resilience Facility (RRF) constitutes the centrepiece of NGEU. The RRF allocation key ensures stronger fiscal support for countries that are more vulnerable to and adversely affected by the COVID-19 crisis. To receive support, Member States need to prepare recovery and resilience plans with an investment and reform agenda that addresses the country-specific recommendations issued in the context of the European Semester.[4] Climate and digitalisation objectives need to feature prominently. At least 37% of the expenditure envisaged by Member States should contribute to climate objectives and at least 20% of total investment should support digital transformation. The RRF funds will be disbursed in instalments when milestones and targets identified in the approved plans have been reached.

If implemented effectively, the recovery package has the potential to contribute to a faster, stronger and more uniform economic recovery, while promoting the resilience and growth potential of the euro area economy. The recovery instrument is expected to provide a sizeable demand stimulus, particularly in countries that are large net recipients of the funds. The fact that 13% of the funds are paid as advances underlines the importance attributed by European decision-makers to this stabilisation effect. Over the medium term the investment and reform projects funded by NGEU could support the resilience, growth potential and convergence of the euro area economy. Thus, the recovery package could help ensure that monetary, fiscal and structural policies, although implemented independently in the euro area, act in a mutually reinforcing way. By mitigating the heterogeneous fallout from the COVID-19 pandemic, the recovery package could also strengthen the effectiveness of monetary policy in the euro area.

The effectiveness of the recovery package will depend on the achievement of an adequate balance of mutually reinforcing investments and reforms. In this regard, a careful review of the national recovery and resilience plans to verify their full compliance with the assessment criteria set out in the relevant EU regulation is of the utmost importance. The European Semester's country-specific recommendations and EU legislation in the areas of climate and digitalisation, such as the EU taxonomy for sustainable activities,[5] can serve as useful signposts for investment and reform priorities. The minimum targets for climate and digital RRF expenditure coupled with the requirement for RRF expenditure to finance additional investments can raise the level of ambition. In general, the more NGEU is oriented towards productive investment rather than current expenditure, the more pronounced its potential impact on long-term growth is likely to be.[6] NGEU will provide on average around 1% of GDP in terms of grants per year. By comparison, public investment stood at 3% of euro area

4 The European Semester provides a framework for the coordination of economic policies across the European Union. For more details, see The European Semester in your country.

5 See Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment.

6 See Bańkowski, K., Ferdinandusse, M., Hauptmeier, S., Jacquinot, P. and Valenta, V., "The macroeconomic impact of the Next Generation EU instrument on the euro area", *Occasional Paper Series*, No 255, ECB, Frankfurt am Main, January 2021.

GDP in 2019. Ambitious and targeted reforms in the national recovery and resilience plans can further strengthen the growth potential, convergence and resilience. There is ample evidence that the medium-term growth differentials among euro area countries can partly be attributed to differences in economic structures and institutions.[7] Moreover, countries with weaknesses in this area can suffer up to twice the output loss compared with the best-performing countries in the event of a common shock.[8] The reform leg of the RRF can thus help to generate a long-term dividend in terms of growth and resilience to shocks. Plans with coherent and ambitious investment and reform pillars can be more effective than the sum of their parts. The growth effects of additional public investment could help offset the possible short-term macroeconomic costs associated with some structural reforms.[9] At the same time, well-targeted structural reforms could reduce administrative bottlenecks to public investment and help stimulate private investment, thereby amplifying the impact of NGEU.[10]

To ensure a timely and efficient absorption of recovery funds for productive public spending, special attention should be paid to bolstering administrative capacity and reducing implementation bottlenecks. The European Commission expects that around 20% of all NGEU funds will be paid out in 2021 and 2022, while the remaining funds will be disbursed by the end of 2026. The envisaged speed of NGEU disbursements is significantly faster than that observed for structural funds in the regular EU budget. The EU's Multiannual Financial Framework (MFF) cycle runs for seven years, although actual disbursement can take place with a grace period of some years into the next period.[11] During the last two MFF cycles, however, less than 50% of the EU structural funds committed to euro area countries were paid out over a time horizon comparable to that of NGEU, i.e. over six years (Chart B). The absorption speed also varied substantially across euro area countries. By tying down administrative resources, the ongoing COVID-19 pandemic could further complicate the absorption of funds. It remains to be seen whether the RRF's reliance on national rather than regional administrative bodies, its broad policy priorities and the absence of co-financing requirements will facilitate quicker fund absorption than typical EU budget projects. Even so, absorption speed is an imperfect proxy for the effective and efficient use of EU funds. As documented by the European Court of Auditors, the rush to absorb EU funds towards the end of an EU budget cycle can lead to wasteful spending.[12] This suggests that the quality and capacity of public administration are likely to be decisive factors in the successful use of NGEU funds and could be a

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7 See Masuch, K., Moshammer, E. and Pierluigi, B., "Institutions, public debt and growth in Europe", *Working Paper Series*, No 1963, ECB, September 2016.

8 See Sondermann, D., "Towards more resilient economies: the role of well-functioning economic structures", *Working Paper Series*, No 1984, ECB, November 2016. Similarly, euro area countries with pre-existing macroeconomic vulnerabilities are more likely to experience deep economic downturns in the event of a shock. See Sondermann, D. and Zorell, N., "A macroeconomic vulnerability model for the euro area", *Working Paper Series*, No 2306, ECB, August 2019.

9 In this regard, the prioritisation and careful sequencing of investments and reforms is crucial.

10 See Consolo, A., Langiulli, M. and Sondermann, D., "Business investment in euro area countries: the role of institutions and debt overhang", *Applied Economics Letters*, Vol. 26(7), 2019.

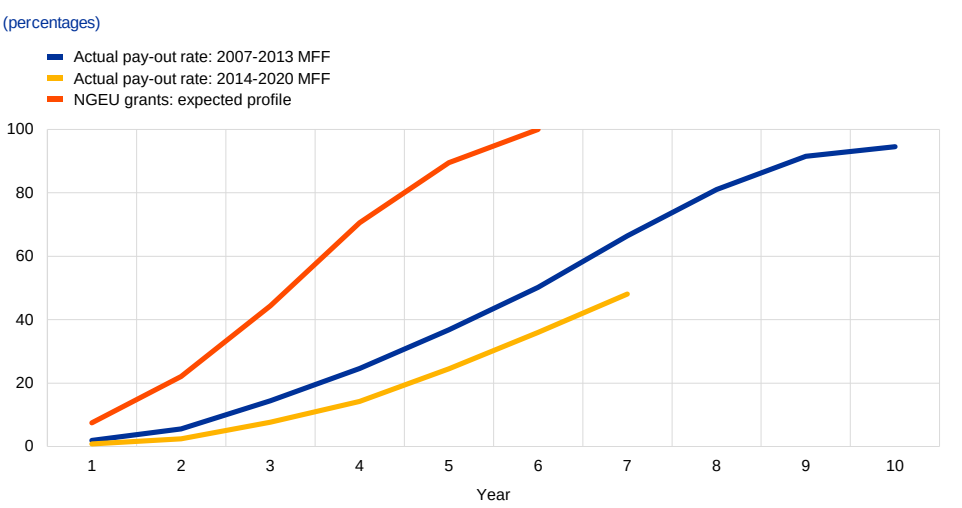
11 For the 2014-2020 MFF this grace period was three years, contrary to the two-year grace period for the MFF of 2007-2013 and 2021-2027.

12 See European Court of Auditors, "Commission's and Member States' actions in the last years of the 2007-2013 programmes tackled low absorption but had insufficient focus on results", *Special Report*, No 17, 2018.

promising area for reform. While it can take some time before capacity-enhancing public sector reforms unfold their full potential, an effective use of the European Commission's Technical Support Instrument (TSI) could ease national capacity constraints, particularly in the short term.[13] This instrument can help Member States to manage the life cycle of investment and reform projects, strengthening the capacity to prepare, implement, monitor and evaluate them. Similarly, by laying a harmonised and clear legal infrastructure, EU legislation may ease and speed up implementation.

Chart B

Historical pay-out rates for EU structural funds and envisaged pay-out rates for NGEU



Sources: European Commission and ECB staff calculations based on Darvas, Z., "Will European Union countries be able to absorb and spend well the bloc's recovery funding?", *Bruegel Blog*, 24 September 2020.
Notes: Year 1 is the first year of the respective programme, i.e. 2007 for the 2007-2013 MFF, 2014 for the 2014-2020 MFF and 2021 for NGEU. The 2007-2013 MFF covers the Cohesion Fund, European Regional Development Fund and European Social Fund, while the latter is excluded in the 2014-2020 MFF. The MMF pay-out rate is the share of the total amount committed in the EU budget to a Member State that has been paid out by the Commission. The MFF-related calculations cover only euro area countries (unweighted average). The NGEU profile shows the disbursements expected by the European Commission.

Adequate national control and audit systems could also play a crucial role in ensuring an effective implementation of the recovery package. As highlighted in the European Commission's guidance to Member States for preparing their recovery and resilience plans, such control systems could include precautionary measures to prevent corruption, fraud and conflicts of interest.[14] Timely completion of the procedures on environmental impacts and well-defined procedural arrangements for collaboration between the central and local administrations to avoid competence conflicts would also be conducive to a smooth implementation of the investment and reform projects. Ensuring a sufficient focus on these aspects would likely enhance the overall macroeconomic impact of the recovery package.

[13] A key objective of the TSI is to support Member States in the preparation and implementation of their recovery and resilience plans, for instance through the provision of expertise, human resources and training. The instrument is endowed with a budget of €864 million over the current EU budget period.

[14] See European Commission, "Guidance to Member States recovery and reconciliation plans", *Staff Working Document (2021) 12 final*, 22 January.

Articles

1 Monetary policy and inequality

Prepared by Maarten Dossche, Jiří Slačálek and Guido Wolswijk

1 Introduction

The issue of economic inequality began to receive increased attention after the global financial crisis. During that period, the increase in unemployment, the heterogeneous evolution of house and stock prices, and the fall in interest rates all affected households in very different ways. Income and wealth inequality has risen in most advanced economies since the early 1980s, with some countries now seeing levels comparable to those recorded at the start of the 20th century, raising increasing concerns regarding the political and economic consequences of that trend.[1]

More recently, there has also been a greater focus on the interaction between monetary policy and inequality. In response to the global financial crisis, monetary policy embarked on a prolonged period of monetary accommodation, with unconventional measures (such as forward guidance and asset purchases) being used to lower and flatten the yield curve. As such measures tend to have a larger impact on the price of long-term assets than changes in short-term interest rates, this has given rise to concerns that monetary policy is mainly benefiting wealthier households.[2] In addition, given the growing recognition that the pass-through of monetary policy is dependent on the distribution of income and wealth, central banks have begun to pay more attention to the heterogeneity of households.[3] These developments have been supported by a wealth of new academic research on the role that household heterogeneity plays in the transmission of macroeconomic shocks and policies.[4]

This article reviews the latest evidence on economic inequality and its interaction with monetary policy, with a particular focus on the euro area. Section 2 analyses both secular trends and cyclical fluctuations in the distribution of

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1 See Piketty, T., *Capital in the Twenty-First Century*, Harvard University Press, 2013. Differences in income and wealth are typically correlated with various economic characteristics (such as people's level of education, professional experience and skills). However, those economic characteristics are not the only drivers of economic inequality. People's income and wealth are also correlated with various sociological characteristics (such as their age, gender, race, marital status and religion). In addition, public policies (e.g. as regards tax, education, housing and urbanisation) and social norms (e.g. discrimination) interact with those economic and sociological characteristics. Thus, the drivers of inequality are manifold and lie at the intersection of economics, sociology and public policy.

2 Inequality was, for example, one of the topics that came up most at listening events organised in the context of the review of the ECB's monetary policy strategy, with many participants arguing that monetary policy should play a more prominent role in addressing inequality. See the ECB's summary report on that listening exercise: https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview001.en.html

3 See Yellen, J., "Macroeconomic Research After the Crisis", speech delivered at the Federal Reserve Bank of Boston, 14 October 2016.

4 See, for example, Ahn, S., Kaplan, G., Moll, B., Winberry, T. and Wolf, C., "When Inequality Matters for Macro and Macro Matters for Inequality", *NBER Macroeconomics Annual*, Vol. **32**, 2017, pp. 1-75.

income and wealth in the euro area (a distinction that matters, since the interaction between monetary policy and inequality is arguably fairly cyclical in nature). Section 3 then considers the channels through which monetary policy may affect the distribution of income and wealth, looking at them from both a theoretical and an empirical perspective. Section 4 looks at how heterogeneity in household income and wealth affects the transmission of monetary policy to household spending. And Section 5 summarises the implications of these findings for monetary policy, as well as considering a number of aspects that require further research.

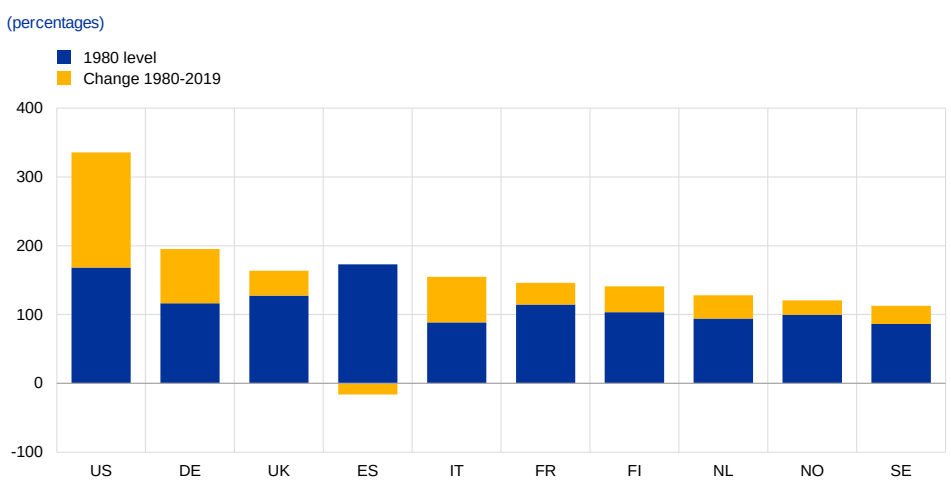
2 Analysis of trends and cycles in inequality

Secular trends in income and wealth inequality

In most advanced economies, income inequality has increased since the 1980s. This trend is illustrated by Chart 1, which shows the pre-tax national income of the top 10% of households as a percentage of the pre-tax national income of the bottom 50% of households. We can see that income inequality is substantially higher in the United States than it is in the European countries in that chart. What is more, the United States also saw the strongest increase over the period 1980-2019. By contrast, the three Nordic countries (Finland, Norway and Sweden) have relatively low levels of income inequality. It is also noticeable that only one country – Spain – saw a decline in income inequality over the period in question.

Chart 1

Income inequality 1980-2019



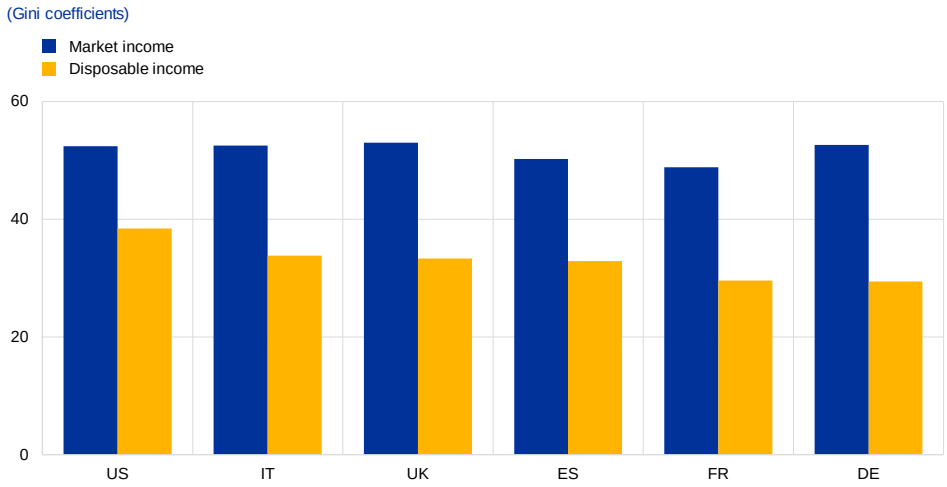
Source: World Inequality Database.
Notes: This chart shows the pre-tax national income of the top 10% of households as a percentage of the pre-tax national income of the bottom 50% of households. Pre-tax national income is defined as the sum of all pre-tax personal income flows accruing to owners of labour and capital, before taking account of the operation of tax/transfer systems, but after taking account of the operation of pension systems.

Income taxation and government transfers have a dampening effect on income inequality, with the precise nature of that impact varying across countries on the basis of their tax systems. If we compare the distribution of disposable income

with that of market income for the four largest euro area countries, the United Kingdom and the United States (Chart 2), the dampening effect of direct taxation (e.g. via progressive income taxes) and transfers is evident. The degree of income inequality is indicated by the Gini coefficient, which measures the extent to which the distribution of income among individuals/households deviates from a perfectly equal distribution, with a value of 0 indicating absolute equality and a value of 100 signalling full inequality (whereby the top income group receives all income). Most notably, we can see that the amount of income redistribution carried out by the government is far higher in the European countries (average decline of 20 basis points in the Gini coefficient) than it is in the United States (decline of 14 basis points). However, it is not clear, a priori, to what extent the higher degree of redistribution in Europe can explain the more limited *increase* in income inequality in the European countries in question (as shown in Chart 1). Two recent studies concluded that the difference between Europe and the United States in terms of the increase in income inequality is driven mainly by market income – i.e. income *before* redistribution.[5]

Chart 2

Reduction of Gini coefficients through governments' direct taxes and transfers



Source: Standardized World Income Inequality Database, versions 8 and 9.[6]
Notes: This chart is based on data for 2017. Market income is broadly defined as income before tax and transfers; disposable income is defined as income after tax and transfers that is available for spending and saving.

Consumption is substantially less concentrated than net wealth, which may suggest that economic well-being is more evenly distributed than wealth.

Consumption inequality is sometimes regarded as a better indicator of the standard of living and welfare than income or wealth-based measures.[7] As Chart 3 shows, the Gini coefficient of consumption expenditure is typically lower than that of disposable income, reflecting the fact that higher-income households have a higher saving rate.

5 See Blanchet, T., Chancel, L. and Gethin, A., "Why is Europe more equal than the United States?", *WID Working Papers*, No 2020/19, 2020; and Bozio, A., Garbinti, B., Goupille-Lebret, J., Guillot, M. and Piketty, T., "Predistribution vs. Redistribution: Evidence from France and the U.S.", *CEPR Discussion Papers*, No 15415, 2020.

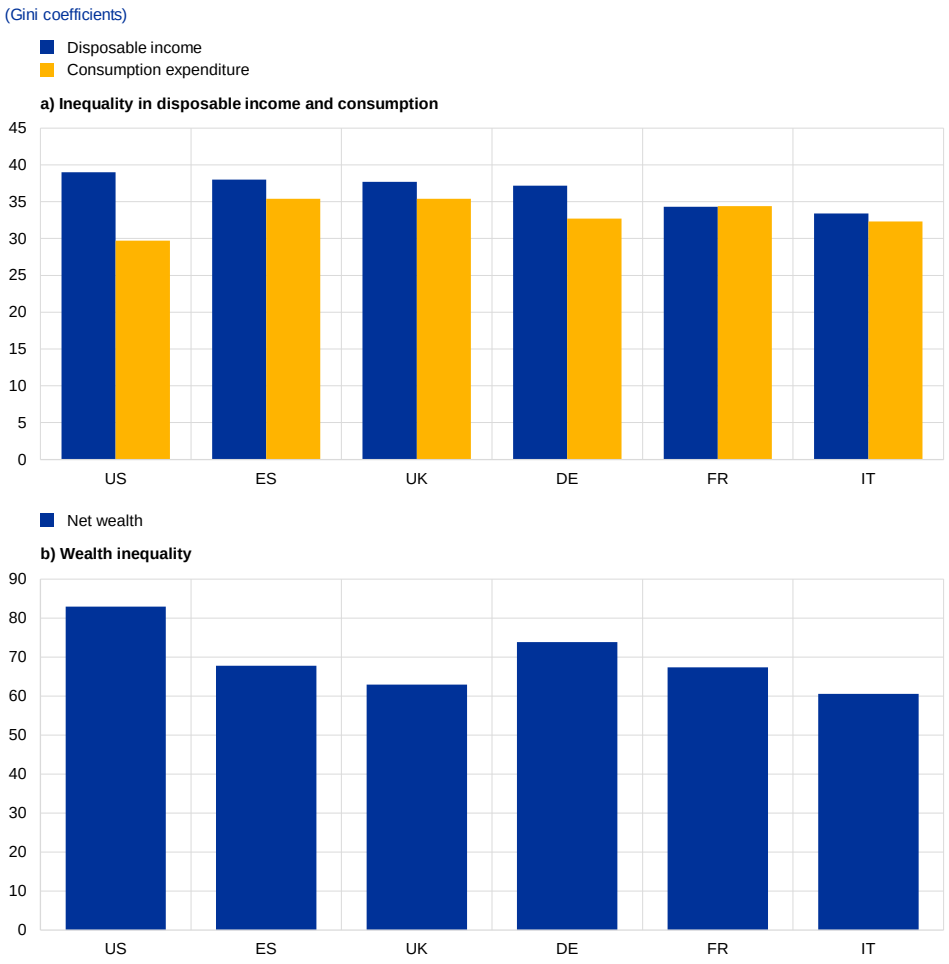
6 See Solt, F., "The Standardized World Income Inequality Database, Versions 8-9", 2019.

7 See Attanasio, O. and Pistaferri, L., "Consumption Inequality", *Journal of Economic Perspectives*, Vol. 30(2), 2016, pp. 3-28. The authors of that article also warn against focusing on total consumption, on the basis that consumption baskets tend to differ greatly across socio-economic groups.

The recent rise in wealth inequality has been shown to be a result not only of higher (gross) saving rates, but also of higher returns for wealthier households, suggesting that greater concentration of capital income may be an important driver of wealth inequality.[8] The Gini coefficient of net wealth, which is defined as assets (housing, deposits, bonds, equity, etc.) minus liabilities (mortgages, personal loans, etc.), is almost double that of consumption.

Chart 3

Gini coefficients of disposable income, consumption and net wealth



Sources for panel a: Standardized World Income Inequality Database, versions 8 and 9 (net income), for the United States; World Income Inequality Database for consumption in Italy; Eurostat (based on EU Statistics on Income and Living Conditions (EU-SILC)) for all other data.
Sources for panel b: 2020 ECB Household Finance and Consumption Survey (HFCS) for euro area countries; UK Office for National Statistics for the United Kingdom; World Inequality Database (net personal wealth) for the United States.
Note on panel a: Data for European countries relate to the latest available EU-SILC reference year, which is between 2013 and 2018.
Note on panel b: All data relate to 2017.

The main factors driving increases in inequality include globalisation, technological progress and changes in taxation. Globalisation and skill-biased technological change have adversely affected the wages and employment of

[8] See Fagereng, A., Guiso, L., Malacrino, D. and Pistaferri, L., "Heterogeneity and persistence in returns to wealth", *Econometrica*, Vol. 88, 2020, pp. 115-170; and Fagereng, A., Holm, M.B., Moll, B. and Natvik, G., "Saving Behavior Across the Wealth Distribution: The Importance of Capital Gains", *NBER Working Papers*, No 26588, 2019.

lower-skilled labour and benefited higher-skilled labour and owners of capital.[9] At the same time, declines in the progressivity of the tax system have contributed to increases in post-tax inequality.[10] A recent study summarised potential drivers of inequality at the various economic stages – i.e. policies in the pre-production stage focusing on people entering the workforce (e.g. as regards access to education or the job market), production policies affecting workers (e.g. as regards unionisation or the minimum wage), and post-production policies redistributing income.[11] Its findings suggest that the rise in income and wealth inequality has been driven mainly by structural policies (e.g. policies on education, taxation and market regulation).

Excessive inequality may entail macroeconomic costs and dampen economic growth. For example, to the extent that it reflects inequality of access to education or finance, economic growth may suffer as a result of the economy failing to use its full potential. Moreover, aggregate demand may be depressed as a result of higher-income households having a lower propensity to consume.[12] Indeed, empirical studies seem to conclude that very high levels of inequality may well curb economic growth in advanced economies.[13] However, while redistributive policies (e.g. higher tax rates) may limit the degree of inequality, they may also cause distortions that reduce overall welfare. Thus, the socially optimal degree of economic inequality is not easy to determine, reflecting the complex nature of the interaction between its various drivers.

Monetary policy is not likely to be a substantial driver of increases in inequality, but it should not ignore them either. Advanced economies have tended to adopt fairly similar monetary policy strategies in the period since the 1980s, so it seems unlikely that monetary policy is helping to drive the cross-country variation that has been observed. Nevertheless, monetary policy may still need to take those developments into account, especially if they consistently depress aggregate demand or place downward pressure on the natural rate of interest.[14] Governments have instruments at their disposal that are better suited to addressing excessive levels of inequality, such as taxation (e.g. progressive taxes on income, wealth and inheritance), transfers, market regulation, and access to education and health services.

9 See Bourguignon, F., "World changes in inequality: an overview of facts, causes, consequences and policies", *BIS Working Papers*, No 654, 2017; and Rodrik, D., *Has Globalization Gone Too Far?*, Institute for International Economics, 1997.

10 See Chancel, L., "Ten facts about inequality in advanced economies", *WID Working Papers*, No 2019/15, 2019.

11 See Blanchard, O. and Rodrik, D. (eds.), *Combating Inequality: Rethinking Government's Role*, MIT Press, 2021.

12 See, for example, Mian, A., Straub, L. and Sufi, A., "Indebted Demand", mimeo, Harvard University, 2019, which looks at the marginal propensity to consume out of permanent income.

13 See, for instance, the overview in Ostry, J., Berg, A. and Tsangarides, C., "Redistribution, Inequality, and Growth", *IMF Staff Discussion Notes*, No SDN/14/02, 2014.

14 See Rachel, L. and Summers, L., "On Secular Stagnation in the Industrialized World", *Brookings Papers on Economic Activity*, spring 2019, pp. 1-54.

Inequality and the business cycle

The cyclicality of income inequality differs across countries, while wealth inequality tends to be procyclical. While lower-income households tend to be more affected by recessions as a result of the greater sensitivity of their labour income (see below), higher-income households tend to be more exposed to the business cycle as a result of capital income (e.g. profits) making up a larger percentage of their total income. Since the distribution of labour and capital income differs across countries, the cyclicality of income inequality can also differ.[15] Wealth inequality, on the other hand, tends to be mostly procyclical. The procyclicality of profits and equity prices means that equities are not conducive to smooth consumption over the business cycle. With only wealthier households being willing to shoulder such risk (in exchange for a risk premium), that procyclicality helps to explain both the limited levels of participation in the stock market and the substantial equity premium.[16] Consequently, the cyclical properties of certain asset prices can become a longer-term determinant of wealth inequality.

The cyclical sensitivity of earnings differs across households, which gives macroeconomic stabilisation policies a role to play in averting longer-term increases in inequality. Chart 4 reports "worker betas" for the euro area, which measure the elasticity of labour income in relation to changes in aggregate GDP growth.[17] As the chart shows, the labour income of workers in lower-income households is more sensitive to changes in GDP growth (see also Box 1, which focuses specifically on the coronavirus (COVID-19) crisis). For those workers, the welfare costs of business cycles are likely to be substantial, especially as they are less able to smooth consumption as a result of their tighter liquidity and credit constraints. Overall, the cyclical behaviour of earnings suggests that macroeconomic stabilisation policies – whether monetary or fiscal – can play an important role in dampening cyclical increases in income inequality. To the extent that cyclical job losses lead to persistent or even permanent scars on people's labour market opportunities, these policies can also help to mitigate income and wealth inequality in the longer term.[18]

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15 See Clemens, M., Eydam, U. and Heinemann, M., "Inequality over the Business Cycle – The Role of Distributive Shocks", *DIW Discussion Papers*, No 1852, 2020.

16 See Guvenen, F., "A Parsimonious Macroeconomic Model for Asset Pricing", *Econometrica*, Vol. 77, 2009, pp. 1711-1750.

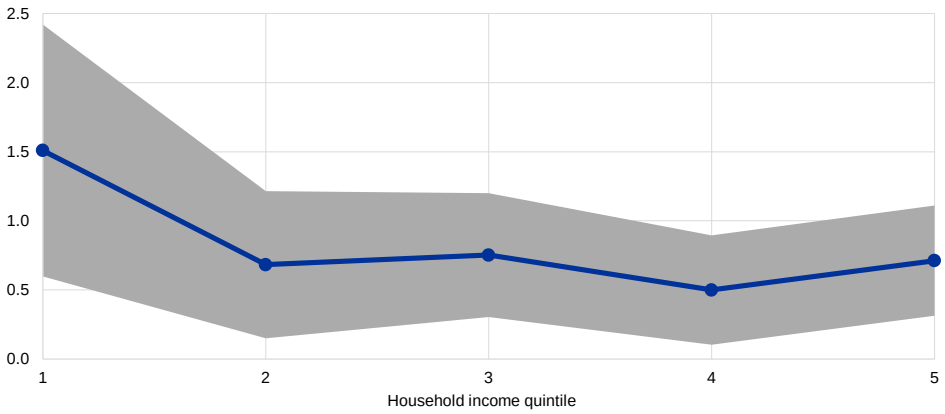
17 See Castañeda, A., Díaz-Giménez, J. and Ríos-Rull, J.-V., "Exploring the income distribution business cycle dynamics", *Journal of Monetary Economics*, Vol. 42, 1998, pp. 93-130; and Guvenen, F., Schulhofer-Wohl, S., Song, J. and Yogo, M., "Worker Betas: Five Facts about Systematic Earnings Risk", *American Economic Review*, Vol. 107(5), 2017, pp. 398-403. See also the box entitled "Household income risk over the business cycle", *Economic Bulletin*, Issue 6, ECB, 2019. While this pattern may be somewhat less pronounced at the level of the euro area as a whole, that box documents significant variation across larger euro area countries, which may potentially be related to differences in labour market institutions.

18. See Heathcote, J., Perri, F. and Violante, G., "The Rise of US Earnings Inequality: Does the Cycle Drive the Trend?", *Review of Economic Dynamics*, Vol. 37, Supplement 1, 2020, pp. S181-S204.

Chart 4

"Worker betas" across the income distribution in the euro area

(income elasticity of individual workers in relation to GDP growth)



Source: "Household income risk over the business cycle", *Economic Bulletin*, Issue 6, ECB, 2019.
Notes: This chart is based on average data for Germany, Spain, France and Italy. It indicates the estimated elasticity of labour income in response to changes in aggregate GDP growth across the household income distribution. Individuals are sorted into income quintiles on the basis of their household income in the two previous years to avoid any spurious correlation between exposure and sorting. Household income is based on EU-SILC variable HY020 (total disposable household income) in the longitudinal data file, with the EU-SILC longitudinal data file clone from the GSOEP being used for Germany. The grey shading indicates 95% confidence intervals.

Box 1

COVID-19 and income inequality in the euro area

Prepared by Maarten Dossche, Aleksandra Kolndrekaj and Jiří Slačálek

While the COVID-19 pandemic has severely reduced the economic well-being of all households, its effects have varied depending on households' occupations and the structure of their expenditure. This box presents evidence for the euro area on the basis of household-level data on labour income, consumption and saving.

The adverse implications for labour income have been particularly pronounced for younger workers, women and households with lower levels of income. Panel a of Chart A shows, for each age category, the percentage of total employees that work in sectors which have been directly affected by the lockdown restrictions imposed on account of the virus.[19] Those measures have particularly affected sectors where physical distancing rules are difficult to follow, such as hospitality, travel, arts and entertainment. Panel a documents two findings: first, that employees in lockdown-affected sectors are more likely to be younger workers, with the pandemic having an especially strong impact on employees under the age of 25; and second, that women are substantially more likely to work in sectors that have been affected by the lockdown (a finding that holds across nearly all age brackets). Correspondingly, as panel b shows, the effect of COVID-19 is regressive across the income distribution, with the unemployment risk being skewed towards households in lower quintiles. These results are consistent with evidence from other countries indicating that the pandemic is likely to aggravate household inequality. For example, several studies conducted in the United States and the United Kingdom have shown that the percentage of employees working in sectors affected by

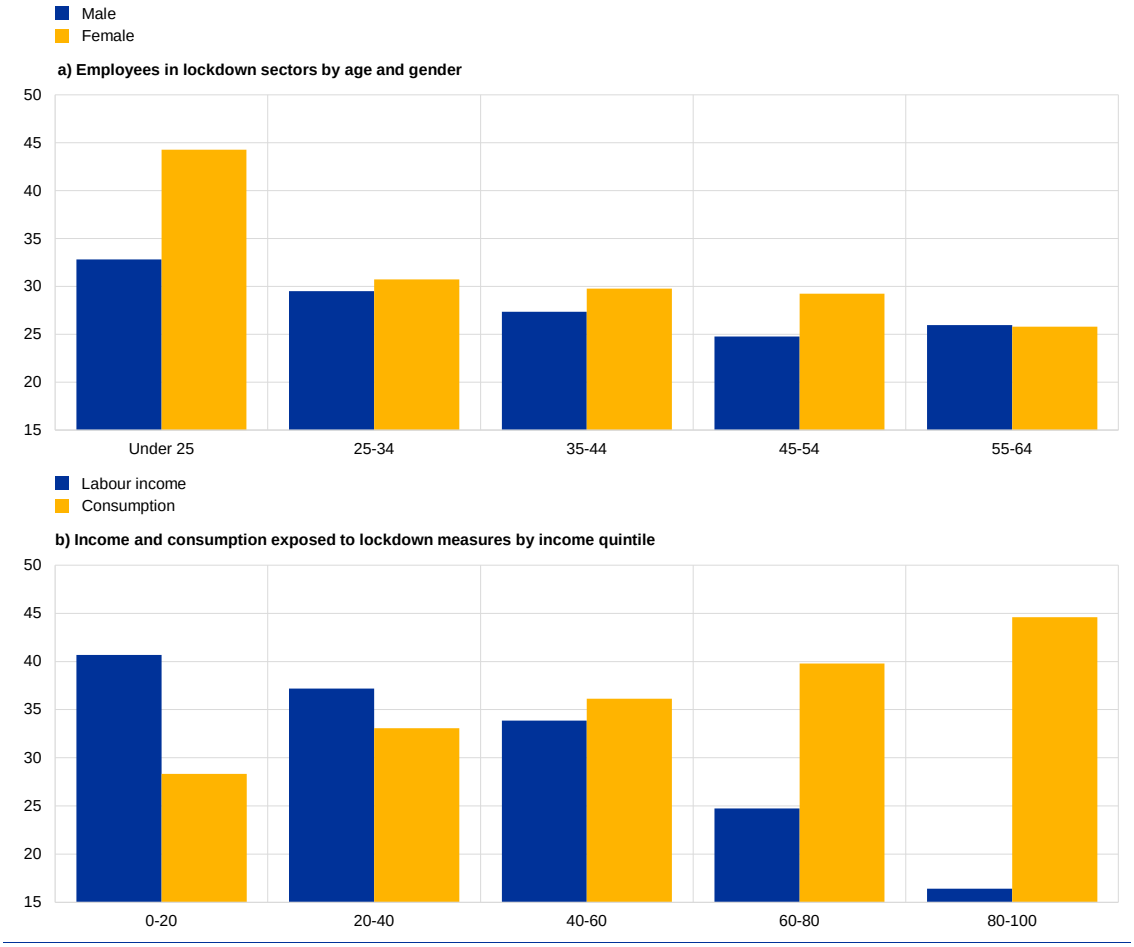
[19] The following sectors are classified as being subject to lockdown measures: wholesale and retail trade, and the repair of motor vehicles and motorcycles; transport and storage; accommodation and food service activities; and arts, entertainment and recreation (in line with Joyce, R. and Xu, X., "Sector shutdowns during the coronavirus crisis: which workers are most exposed?", Briefing Note BN278, Institute for Fiscal Studies, 2020).

lockdown measures is particularly high for individuals in the lower part of the income distribution.[20] As a result, the pandemic is likely to amplify existing income inequalities, in line with the findings for previous pandemics.[21]

Chart A

Impact of COVID-19 broken down by age, gender and income quintile

(percentages)



Source for panel a: EU-SILC (2017 data for Ireland and Slovakia; 2018 data for all other countries).
Sources for panel b: EU-SILC (2017 data for Ireland and Slovakia; 2018 data for all other countries) and Eurostat Household Budget Survey.
Notes on panel a: This panel shows, for each age category, the percentage of total employees (broken down by gender) that are working in lockdown sectors. The following sectors are considered to be subject to lockdown measures: wholesale and retail trade, and repair of motor vehicles and motorcycles; transport and storage; accommodation and food service activities; and arts, entertainment and recreation (sectors G, H, I and R respectively in the Statistical Classification of Economic Activities in the European Community (NACE classification)).
Notes on panel b: This panel shows, for each income quintile, the percentage of total income and consumption that is exposed to lockdown measures. Exposed consumption includes spending on restaurant food, transport services, holidays, hotels and cultural services, as well as postponable spending (such as purchases of motor vehicles, clothing, footwear, furnishings and furniture).

In contrast to labour income, the decline in household consumption has been particularly pronounced in the upper parts of the income distribution, with high-income households strongly reducing their spending on non-essentials, which make up almost 45% of the total expenditure of households in the

[20] See Béland, L.-P., Brodeur, A. and Wright, T., "COVID-19, Stay-At-Home Orders and Employment: Evidence from CPS Data", *IZA Discussion Papers*, No 13282, May 2020; Mongey, S., Pilossoph, L. and Weinberg, A., "Which workers bear the burden of social distancing policies?", *Covid Economics*, Issue 12, 2020, pp. 69-86; and Joyce, R. and Xu, X., op. cit.

[21] See Furceri, D., Loungani, P., Ostry, J. and Pizzuto, P., "Will Covid-19 affect inequality? Evidence from past pandemics", *Covid Economics*, Issue 12, 2020, pp. 138-157.

top quintile.[22] Those households have made a disproportionate contribution to the substantial increase seen in the aggregate saving rate, both because goods and services affected by lockdown measures make up a larger percentage of their total consumption, and because their income has been less affected.

Fiscal policies, combined with the ECB's monetary policy measures, have helped to mitigate the economic fallout from the COVID-19 crisis. While the ECB's accommodative monetary policy has ensured favourable financing conditions for the whole economy, targeted fiscal transfers (e.g. job retention schemes) have softened the blow for those households that have been most affected.

3 Monetary policy and household inequality

How does monetary policy affect income and wealth inequality?

The economic literature has identified three main channels through which a change in the monetary policy stance can have distributional consequences for household wealth and income. The first is the savings remuneration (and cost of debt) channel, which stems from differences in the size and composition of household balance sheets. Because of those differences, a change in interest rates will have opposing effects on the economic conditions of net borrowers and net savers. The second is the asset price channel, which stems from the heterogeneity of household portfolios and the diverse capital gains (or losses) that are produced when the monetary policy stance changes. In this respect, asset price movements induced by expansionary policies are more likely to benefit the wealthy (and, in some cases, the middle class) to the extent that they hold longer-term assets (as explained in more detail in Box 3). The third channel relates to household income and arises because the elasticity of employment relative to the business cycle is heterogeneous across individuals and dependent on individual characteristics.

Monetary policy and inequality: empirical evidence from the euro area

Net interest income reacts differently across households in response to a reduction in the interest rate. This mainly depends on the extent to which households' interest-bearing assets have short maturities and their mortgages have adjustable rates.[23] As the estimates in Chart 5 show, the net interest income of poorer households has not been greatly affected by the fall in interest rates, since they tend to have low levels of both debt and interest-bearing assets. In contrast, the net interest

[22] "Non-essentials" are defined here as items that are subject to lockdown measures, which include spending on restaurant food, transport services, holidays, hotels and cultural services, as well as postponable spending (such as purchases of motor vehicles, clothing, footwear, furnishings and furniture).

[23] See Auclert, A., "Monetary Policy and the Redistribution Channel", *American Economic Review*, Vol. 109(6), 2019, pp. 2333-2367; and Tzamourani, P., "The Interest Rate Exposure of Euro Area Households", *European Economic Review*, forthcoming.

income of middle-class households has increased as interest rates have declined, mainly because they have relatively high levels of mortgage debt. Finally, richer households have recorded a net loss of interest income, since they tend, on average, to be less indebted.[24] Thus, the direct impact of lower interest rates does not seem to increase income inequality.

Chart 5

Changes in net interest income across the income and wealth distribution

(EUR per household; change in annual net interest income, 2007-19)

Source: Dossche et al., op. cit.
Notes: "Rich" households are defined as the top 20% of the net wealth distribution (financial and non-financial wealth); "middle-class" households are the 60% of the overall population that are at the top of the income distribution of non-rich households; "poor" households are the 20% of the overall population that are at the bottom of the income distribution of non-rich households.

An easing of monetary policy affects household labour income via two main channels. The first involves unemployed people finding jobs – and generally experiencing a substantial increase in income as a result (the earnings heterogeneity channel).[25] The probability of this outcome depends on people's demographic characteristics (age, level of education, marital status, number of children, etc.). The second involves increases in the wages of employed individuals (the income composition channel).

The easing of monetary policy through the ECB's asset purchase programme (APP) has substantially reduced the unemployment rate in the lower part of the income distribution.[26] Panel a of Chart 6 estimates the decline in the unemployment rate which can be attributed to the APP for each of the five quintiles of the income distribution, calculating those declines four quarters after the APP shock (which is represented here by an unanticipated drop in the interest rate term spread – the difference between long and short-term interest rates – of 30 basis points). The aggregate decline in the unemployment rate (which totals around 0.7 percentage

[24] See Dossche, M., Hartwig, J. and Pierluigi, B., "The redistribution of interest income in the euro area, 2007-2019", mimeo, 2020.

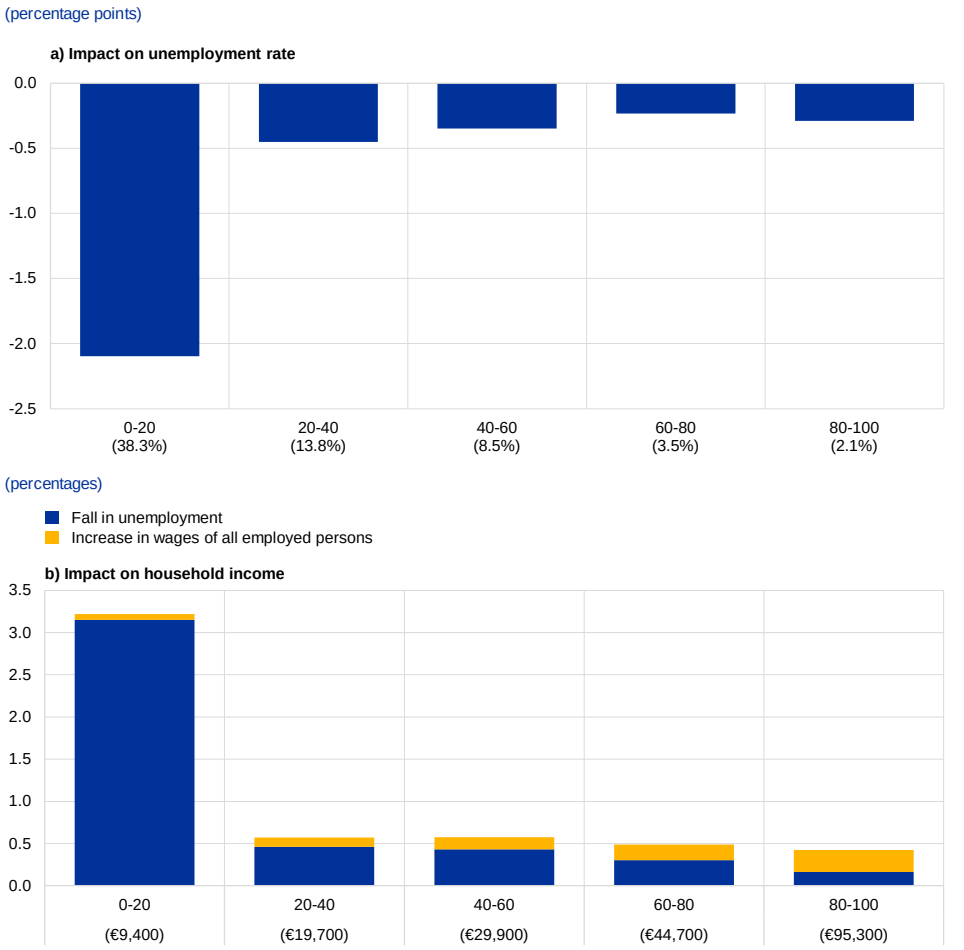
[25] Similarly, workers who avoid being made redundant do not experience a loss of income (which they would otherwise do).

[26] See Lenza, M. and Slačálek, J., "How does monetary policy affect income and wealth inequality? Evidence from quantitative easing in the euro area", *Working Paper Series*, No 2190, ECB, October 2018. For more information on the APP, see: https://www.ecb.europa.eu/mopo/implement/app/html/index.en.html

points) affects individuals very differently, mainly benefiting households with incomes in the lowest quintile. Their unemployment rate falls by more than 2 percentage points, while the unemployment rates of all other income quintiles fall by less than 0.5 percentage points.

Chart 6

Impact of monetary easing via the APP



Source: Lenza, M. and Slačálek, J., op. cit.
Notes: Panel a shows the decline in the unemployment rate for the various quintiles of the household income distribution four quarters after the materialisation of the APP shock. The figures in parentheses in that panel show the initial unemployment rate for each quintile. Panel b shows the percentage change in mean income for the various quintiles, as well as breaking that change down into the extensive margin (earnings heterogeneity channel) and the intensive margin (increase in wages). The figures in parentheses in that panel show the initial level of mean gross household income for each quintile. For the purposes of this chart, the euro area has been modelled by aggregating data for Germany, Spain, France and Italy.

The decline in unemployment is found to be a substantial driver of wage increases across the income distribution, particularly in the lower quintiles.

Panel b of Chart 6 breaks the overall increase in mean income down into (i) the part that is due to the decline in unemployment (the earnings heterogeneity channel) and (ii) the part that is due to the increase in wages for all workers (the income composition channel). The earnings heterogeneity channel has a particularly strong impact in the bottom quintile, where wage growth plays a very small role. However, it also accounts for the bulk of the total impact on income in three of the other four quintiles (with the top quintile being the exception).

Overall, the labour market impact of the APP is estimated to result in some reduction in income inequality. Changes in unemployment rates substantially affect household incomes, with incomes increasing considerably on account of households either starting to or continuing to earn wages (instead of receiving unemployment benefits). The mean income of the lowest quintile rises by more than 3%, while those of other quintiles increase by around 0.5%.

The APP also has an impact on the distribution of wealth via the portfolio composition channel. The APP boosts the value of some household assets (stocks, bonds and housing), which affects around two-thirds of all households who hold them. Because stocks are mostly held by wealthier households, an increase in stock prices tends, by itself, to lead to an increase in wealth inequality. However, that increase is offset by the parallel rise in house prices. Housing is fairly evenly distributed across euro area households, with a large percentage (around 60%) owning their main residence.[27] Moreover, housing accounts for around 70-80% of the total value of all household assets.[28] When the effects on stock prices and house prices are combined, the Gini coefficient of net wealth – a broad measure of inequality – remains broadly unchanged.

These findings are consistent with the growing body of literature estimating the distributional effects of monetary policy.[29] Two recent studies, for example, concluded that the overall effect that unconventional monetary policy measures have had on income and wealth inequality has been fairly small.[30] The Deutsche Bundesbank, meanwhile, has concluded that non-standard monetary policy measures have probably reduced income inequality, while their impact on the distribution of wealth is less clear.[31] For the Portuguese economy, the Banco de Portugal has found that while increases in house prices tend to reduce wealth inequality, rises in the value of self-employment businesses and marketable financial wealth increase it.[32] Meanwhile, recent work focusing on cross-racial differentials in the United States has found that while an accommodative monetary policy stance tends to reduce

27 See Adam, K. and Tzamourani, P., "Distributional consequences of asset price inflation in the Euro Area", *European Economic Review*, Vol. 89, 2016, pp. 172-192.

28 The impact on households also varies depending on the structure and size of their assets and liabilities: while highly leveraged households (who often have low levels of net wealth) benefit more than wealthy households, households with few assets gain very little (or nothing at all).

29 See, for example, Colciago, A., Samarina, A. and De Haan, J., "Central Bank Policies and Income and Wealth Inequality: A Survey", *Journal of Economic Surveys*, Vol. 33, 2019, pp. 1199-1231.

30 See Casiraghi, M., Gaiotti, E., Rodano, L. and Secchi, A., "A 'reverse Robin Hood'? The distributional implications of non-standard monetary policy for Italian households", *Journal of International Money and Finance*, Vol. 85, 2018, pp. 215-235; and Bunn, P., Pugh, A. and Yeates, C., "The Distributional Impact of Monetary Policy Easing in the UK Between 2008 and 2014", *Staff Working Papers*, No 720, Bank of England, 2018. The first of those two papers, which uses Italian data, also finds that non-standard measures do not hurt savers, as the decline in the remuneration of assets is offset by support for labour income and capital gains.

31 See Deutsche Bundesbank, "Distributional Effects of Monetary Policy", *Monthly Report*, September 2016, pp. 13-36.

32 See Banco de Portugal, "Distribution Mechanisms of Monetary Policy in the Portuguese Economy", *Economic Bulletin*, May 2017, pp. 93-110.

cross-racial differences in unemployment (and thus earnings), it exacerbates wealth differentials.[33]

Box 2
Monetary policy and regional inequality

Prepared by Sebastian Hauptmeier, Fédéric Holm-Hadulla and Katerina Nikalexi

In many parts of the world, the economic fortunes of poorer and richer regions have diverged in recent years. In Europe, for example, regional disparities have intensified since the start of EMU, notably on account of hysteresis following the global financial crisis.[34] A recent paper confirms that divergent dynamics emerged in the euro area after the financial crisis, in that the upper parts of the income distribution experienced a solid recovery following the contraction in 2009, whereas the lower parts experienced continued declines in GDP per capita.[35] Moreover, a recent box in the Economic Bulletin documents the same type of divergence in labour markets.[36]

That increase in regional inequality has attracted attention, but the contribution made by monetary policy has not yet been considered. Most of the debate has focused on tax and transfer systems or underlying shifts in economic structures as the key forces shaping the dynamics of regional inequality.[37] However, it is natural to wonder whether those forces have been exacerbated or mitigated by economic policies at the macro level. And of the various policy domains, monetary policy is an interesting candidate, given its important role in steering macroeconomic outcomes over the last decade.

In that context, this box seeks to shed light on the dynamic impact that exogenous changes in short-term policy rates have had on the GDP of cities and other regional units in the euro area. In deriving those exogenous changes, the empirical model that is used here controls for key macroeconomic variables (such as euro area GDP and HICP inflation) that typically form part of the central bank reaction function. Thus, the identification strategy posits that, controlling for macro conditions, monetary policy does not respond to economic activity at the regional level.

The results point to pronounced heterogeneity in the regional patterns of monetary policy transmission. For instance, panel a of Chart A compares the dynamic response of regional output to a monetary policy shock at the 5th and 95th percentiles of the distribution. In both parts of the distribution, output expands following the rate cut, but the expansion is much stronger at the lower end. Moreover, that gap widens over time. Indeed, while output in the upper part of the distribution returns to its previous level, the impact on output proves to be persistent in the lower part. As a consequence, the easing of monetary policy mitigates regional inequality and policy tightening aggravates it.

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33 See Bartscher, A., Kuhn, M., Schularick, M. and Wachtel, P., "Monetary Policy and Racial Inequality", *CEPR Discussion Papers*, No 15734, January 2021. The main reason for the adverse effect on wealth differentials is that black households in the United States are less likely to hold equity and own a house than white households.

34 See Hudecz, G., Moshammer, E. and Wieser, T., "Regional disparities in Europe: should we be concerned?", *ESM Discussion Papers*, No 13, July 2020.

35 See Hauptmeier, S., Holm-Hadulla, F. and Nikalexi, K., "Monetary policy and regional inequality", *Working Paper Series*, No 2385, ECB, March 2020.

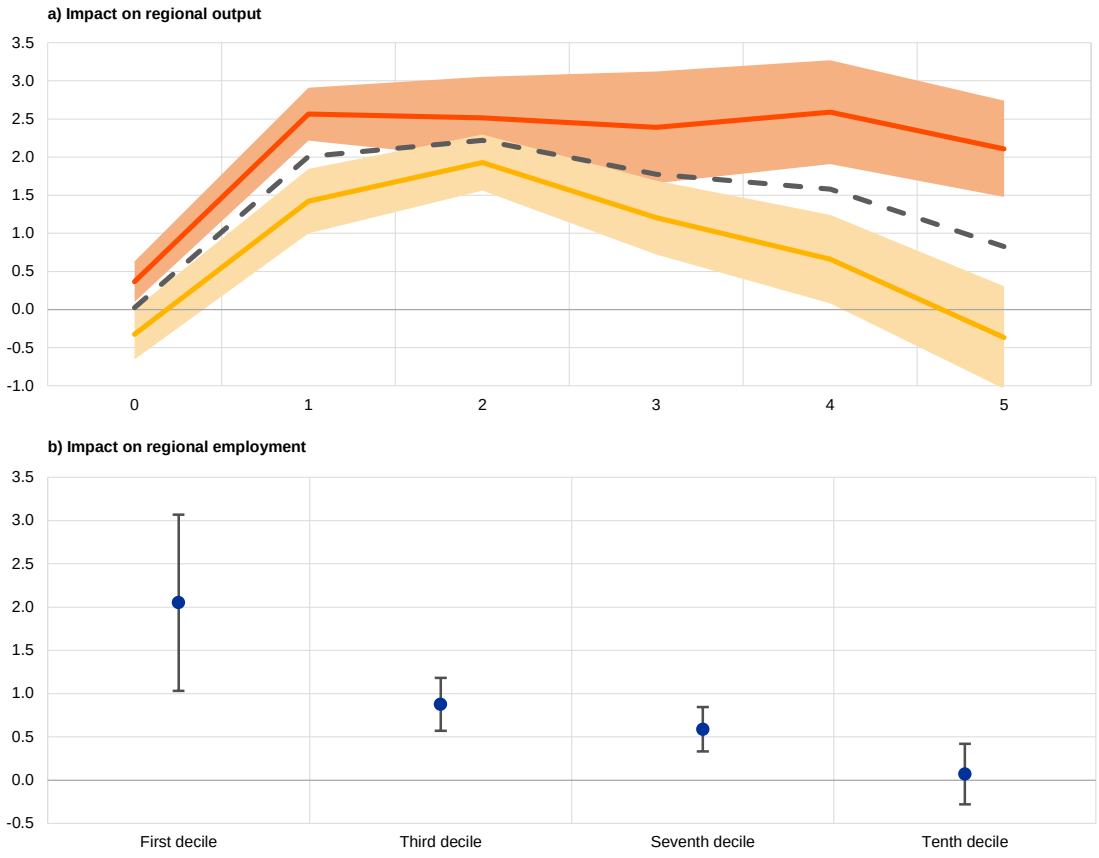
36 See the box entitled "Regional labour market developments during the great financial crisis and subsequent recovery", *Economic Bulletin*, Issue 4, ECB, 2020.

37 See Austin, B., Glaeser, E. and Summers, L., "Saving the Heartland: Place-Based Policies in 21st Century America", *Brookings Papers on Economic Activity*, spring 2018.

Chart A

Impact of monetary policy at regional level

(percentages)



Source: Hauptmeier et al., op. cit.
Notes on panel a: This panel shows the impact that a 100 basis point interest rate cut has on regional GDP (in percentages). The horizontal axis indicates the IRF horizon (in years). Lines denote point estimates, and shaded areas denote 90% confidence intervals. The red line depicts estimates for the 95th percentile of the conditional distribution of GDP at regional level; the yellow line depicts the 5th percentile; the dashed line depicts the mean.
Notes on panel b: This panel shows the impact that a 100 basis point interest rate cut has on employment five years later (in percentages) across various deciles of the distribution of regional per capita GDP. Dots indicate point estimates; bars denote 90% confidence intervals. Regions are defined in accordance with Eurostat's NUTS 3 classification.

These findings illustrate the role that is played by the distributional effects of monetary policy (including along geographical lines). Moreover, while discussions regarding the unequal geographical impact of euro area monetary policy typically focus on cross-country differences, this analysis shows that the issue of geographical heterogeneity runs deeper than that: interregional heterogeneity becomes more accentuated at more granular geographical levels, and that heterogeneity, in turn, profoundly alters the implications of a given monetary policy stance in different parts of the economy.

In line with a long-standing body of literature,[38] Hauptmeier et al. (op. cit.) point to labour markets as a likely driver of such developments: employment's response to monetary policy shocks is particularly persistent, and long-lasting effects are particularly pervasive across the distribution of regional per capita GDP. As panel b of Chart A shows, statistically significant and economically relevant employment effects can still be seen five years after a monetary policy shock, right up to the seventh decile of the distribution of regional per capita GDP. Overall, these findings add to a growing body of

[38] See, for instance, Blanchard, O. and Summers, L., "Hysteresis and the European Unemployment Problem", *NBER Macroeconomics Annual*, Vol. 1, 1986, pp. 15-78.

literature suggesting that monetary policy may trigger long-lasting effects, with greater implications for welfare than if it merely smoothed out temporary fluctuations in economic activity.[39]

4 Heterogeneity and the transmission of monetary policy to household spending

Whereas the previous section focused on the impact that monetary policy has on income and wealth inequality, this section looks at the ways in which the distribution of income and wealth shapes the transmission of monetary policy to households. Specifically, it estimates the manner in which the transmission of monetary policy to consumption varies across individual households on the basis of the structure of their income and wealth, their marginal propensity to consume (MPC) and the ways in which their income responds to aggregate shocks.

Direct and indirect transmission channels for monetary policy

The effects that monetary policy has on individual households can be grouped together in two broad categories: *direct* and *indirect*.

Direct effects are the immediate, partial-equilibrium consequences of the change in interest rates. These include the impact that the different interest rate paths have on households' net financial income (net interest rate exposure). This is often the main channel highlighted by commentators. It is heterogeneous across households, depending on the composition of their asset and liability portfolios. For example, a reduction in policy rates will reduce interest payments for households with outstanding debt (as explained above), especially if their loans have variable rates. It will also reduce the financial income of households that are not indebted, but hold short-maturity assets (whose real returns will temporarily fall). A second direct effect of monetary policy involves changes to households' saving incentives (intertemporal substitution). This effect is also heterogeneous, since it mostly applies to households that have a stock of liquid savings and are therefore able to temporarily adjust them without paying large transaction costs.

Indirect effects operate through the general equilibrium responses of prices and wages (and thus labour income and employment). When policy rates are reduced, the resulting direct increase in household expenditure (and investment by firms) leads to an increase in output and exerts upward pressure on employment and wages. This indirect effect, which works via the increase in labour income (especially in the lowest quintile, as described in the previous section), leads to additional increases in aggregate demand. It, too, will have heterogeneous consequences to the extent that different sources of earnings (e.g. wages versus income from private

[39] See, for example, Blanchard, O., "Should we reject the natural rate hypothesis?", *Journal of Economic Perspectives*, Vol. 32(1), 2018, pp. 97-120; and Jordà, Ò, Singh, S.R. and Taylor, A.M., "The Long-Run Effects of Monetary Policy", *NBER Working Papers,* No 26666, 2020.

businesses) or different pools of unemployed workers (e.g. low versus high-skilled individuals) display differing degrees of elasticity in their response to the change in aggregate expenditure.

Empirical estimates for the euro area

The economic literature is increasingly finding evidence that individual households behave differently in terms of the ways in which their consumption responds to income shocks – i.e. that households differ in their marginal propensity to consume.[40] Authors have found it useful to classify households on the basis of the amount of liquid assets that they hold. Households with few liquid assets tend to have large MPCs, and they are often described as "hand-to-mouth", because they tend to consume all of their income.[41] They can be either "poor" (if they do not own any assets) or "wealthy" (if they have positive illiquid wealth (e.g. they own their home), but have very limited liquid assets and large spending commitments (e.g. a sizable mortgage)).[42] In contrast, unconstrained (or "non-hand-to-mouth") households behave in line with the permanent income hypothesis: their spending patterns remain essentially unchanged in response to a transitory increase in income. On the basis of that classification, 10% of euro area households are "poor hand-to-mouth", 12% are "wealthy hand-to-mouth" and 78% are "non-hand-to-mouth".

In order to estimate the size of the various transmission channels to consumption, we need both aggregate and micro-level data on household portfolios and income.[43] As regards aggregate data, vector autoregressive models can be used to estimate the manner in which aggregate earnings and asset prices respond to monetary policy. In addition, micro-level data are necessary in order to quantify households' exposure to interest rate risk, inflation risk, asset prices and labour income risk.

As Chart 7 shows, spending by hand-to-mouth households increases more strongly than spending by non-hand-to-mouth households in response to an easing of monetary policy. A 100 basis point cut in real interest rates increases consumption by poor hand-to-mouth households by almost 1% and increases

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40 Studies have tended to approach this issue in one of two ways. The first involves examining real life events (such as unexpected tax rebates for households), measuring the consumption response to income shocks using survey data (see, for example, Jappelli, T. and Pistaferri, L., "The Consumption Response to Income Changes", *Annual Review of Economics*, Vol. 2, 2010, pp. 479-506). The second involves surveys, whereby individuals are asked how their spending would respond in hypothetical or actual scenarios (see, for example, Jappelli, T. and Pistaferri, L., "Fiscal Policy and MPC Heterogeneity", *American Economic Journal: Macroeconomics*, Vol. 6(4), 2014, pp. 107-136; and Christelis, D., Georgarakos, D., Jappelli, T., Pistaferri, L. and Van Rooij, M., "Asymmetric Consumption Effects of Transitory Income Shocks", *The Economic Journal*, Vol. 129, Issue 622, 2019, pp. 2322-2341).

41 Essentially, hand-to-mouth households hold either (i) positive net liquid assets that are worth less than two weeks of income or (ii) negative net liquid assets that are worth less than two weeks of income minus their credit limit.

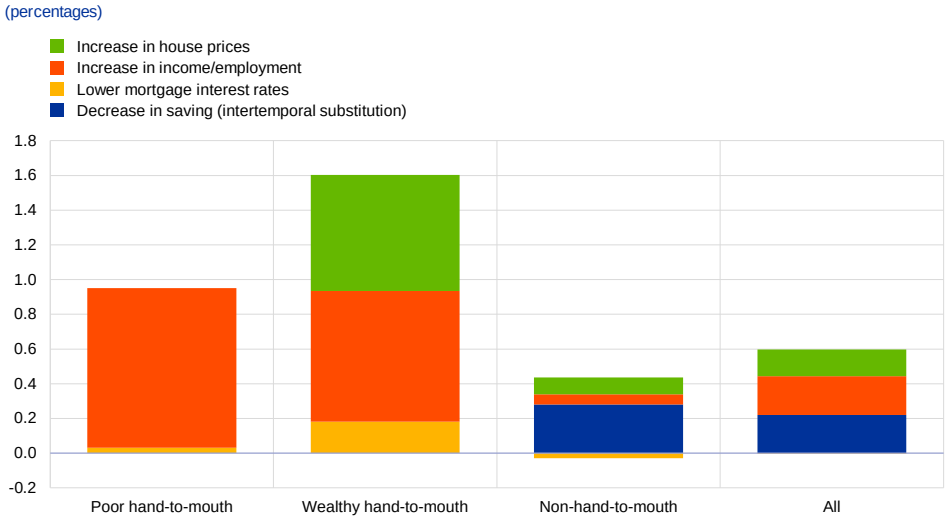
42 See, for example, Kaplan, G., Moll, B. and Violante, G., "Monetary Policy According to HANK", *American Economic Review*, Vol. 108(3), 2018, pp. 697-743; and Weidner, J., Kaplan, G. and Violante, G., "The Wealthy Hand-to-Mouth", *Brookings Papers on Economic Activity*, Vol. 48, spring 2014, pp. 77-153.

43 This section summarises the main results of Slačálek, J., Tristani, O. and Violante, G., "Household Balance Sheet Channels of Monetary Policy: A Back of the Envelope Calculation for the Euro Area", *Journal of Economic Dynamics & Control*, Vol. 115, 2020, Article 103879.

consumption by wealthy hand-to-mouth households by 1.6%, while consumption by other households increases by just 0.5%.

Chart 7

Estimated impact on consumption of a 100 basis point cut in real interest rates in the euro area



Source: Slačálek et al., op. cit.
Notes: This chart shows the impact that a 100 basis point cut in real interest rates has on consumption one year later, breaking that impact down into (i) the standard intertemporal substitution effect (which reduces saving), (ii) the cash flow channel resulting from the decline in mortgage interest rates, (iii) the income channel resulting from increases in employment and wages, and (iv) the housing wealth effect caused by increases in house prices. The size of those effects varies depending on households' wealth. In the euro area, 10% of households are poor hand-to-mouth, 12% are wealthy hand-to-mouth and 78% are non-hand-to-mouth. For the purposes of this chart, the euro area has been modelled by aggregating data for Germany, Spain, France and Italy.

When monetary policy is eased, consumption by hand-to-mouth households is mostly stimulated via indirect effects, while consumption by non-hand-to-mouth households is mostly stimulated via the intertemporal substitution channel. The impact of indirect effects is heavily skewed towards hand-to-mouth households, as they tend to have lower incomes and benefit disproportionately from the new jobs and the corresponding employment income. The effect that this channel has on consumption is amplified because those households have larger MPCs than other households. The intertemporal substitution channel plays a major role for non-hand-to-mouth households that have significant stocks of savings, while the other transmission channels (operating through changes in house prices and, in particular, changes in net financial income) play a smaller role in quantitative terms.[44]

Accounting for differences across households is important when assessing the impact that monetary policy has on aggregate consumption. In general, monetary policy has only a temporary impact on the economy, with its effects tending to dissipate in the long run. Thus, other factors, such as globalisation or the ways in which individual tax systems redistribute income and wealth (e.g. by means of progressive taxation), will tend, in the long run, to be more important drivers of

[44] House prices affect consumption primarily via the easing of collateral constraints, allowing households to borrow more in order to finance consumption. The impact of this effect is skewed towards constrained households (see, for example, Paiella, M. and Pistaferri, L., "Decomposing the Wealth Effect on Consumption", *The Review of Economics and Statistics*, Vol. 99(4), October 2017, pp. 710-721).

inequality than monetary policy. However, our results indicate that monetary policy can indeed be effective in supporting household consumption during downturns.

Box 3
Capital gains, welfare and consumption

Prepared by Maarten Dossche and Dimitris Georgarakos

The recent lowering of interest rates by means of the reduction of policy rates and net asset purchases has contributed to capital gains for longer-term assets.[45] This raises two questions. First, to what extent have those capital gains contributed to wealth inequality? And second, to what extent have they generated wealth effects on consumption, thereby stimulating aggregate activity? Economic theory suggests that finding answers to these questions may not be particularly straightforward.

It is not true, for example, that equity holders always benefit via capital gains when interest rates fall.[46] Indeed, one needs to look at whether their assets have longer durations than their liabilities. Unhedged interest rate exposures (UREs) – the difference between all maturing assets and liabilities at a given point in time – are the best measure of households' balance sheet exposure to interest rate changes. People whose financial wealth is invested primarily in short-term deposits tend to have positive UREs, while those with large variable rate mortgage liabilities tend to have negative UREs. A fall in interest rates redistributes wealth away from the first group towards the second.

Importantly, liabilities also include consumption plans, and assets also include human capital. Thus, capital gains resulting from lower interest rates have no effect on households whose dividend streams are equal to their planned consumption. Instead, lower interest rates benefit households who hold long-term assets for the purpose of financing short-term consumption (e.g. older households who hold equity shares or long-term bonds), through the capital gains that they generate. And they hurt households who finance a long-term consumption stream (e.g. retirement) using short-term assets (e.g. pre-retirement income), by lowering the rate at which they can invest their earnings. These conclusions have been derived from a stylised model, and some of the underlying assumptions may not, in practice, always apply (e.g. owing to bequest motives). Overall, however, economic theory makes it clear that even if two different households hold the same amount of wealth and their wealth is composed in exactly the same way, the welfare effects of capital gains on their portfolios may vary, depending on their consumption and investment plans.

Likewise, rising house prices on account of a fall in interest rates should generate a heterogeneous wealth effect on consumer spending. One should expect to see older home-owning households increasing their consumption when house prices rise.[47] Again, however, households will alter their consumption in different ways, depending on their investment plans. A recent study provides

45 See Altavilla, C., Carboni, G. and Motto, R., "Asset Purchase Programmes and Financial Markets: Evidence from the Euro Area", *International Journal of Central Banking*, forthcoming.

46 See Auclert, A., op. cit.; and Moll, B., "Comment on Hubmer, Krusell and Smith (2020), 'Sources of U.S. Wealth Inequality: Past, Present, and Future'", *NBER Macroeconomics Annual*, forthcoming. Note, however, that increases in equity prices on account of higher expected dividends will always increase the welfare of equity holders, regardless of whether they plan to buy, sell or keep their portfolios unchanged.

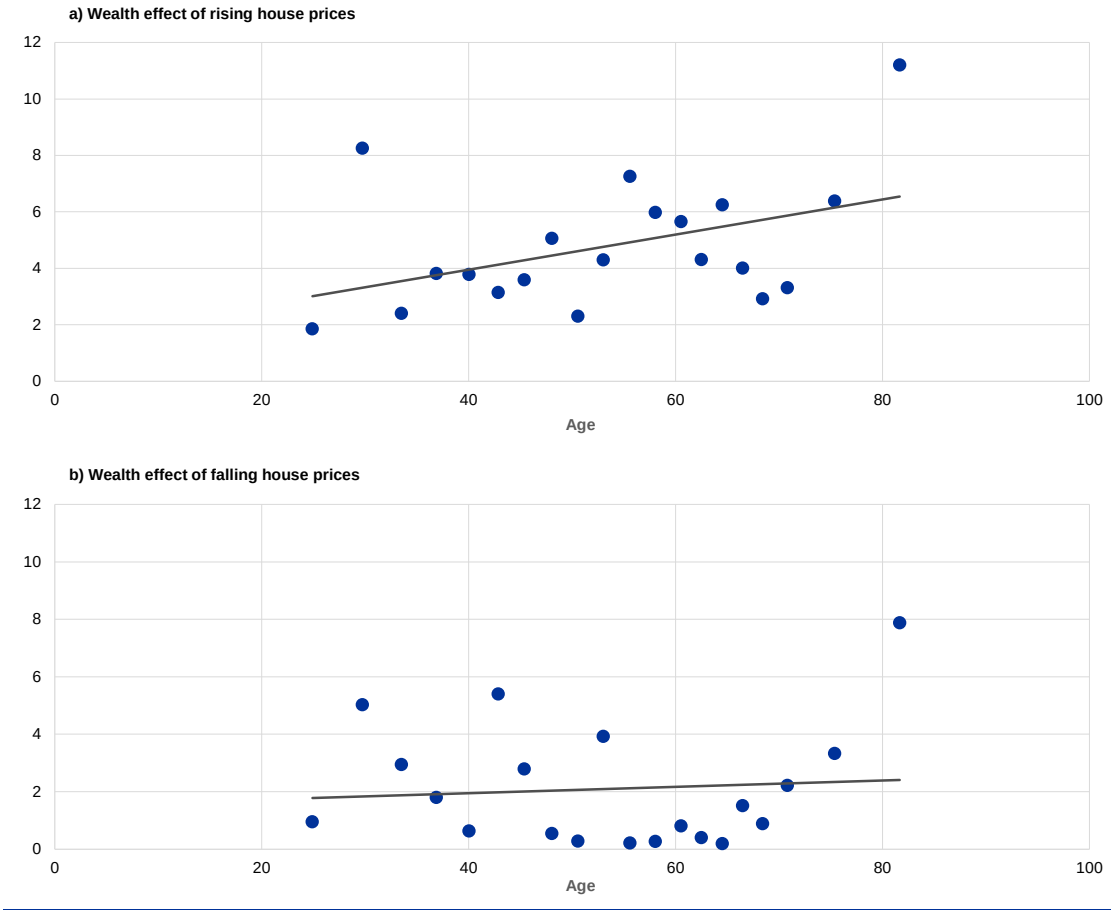
47 See Campbell, J. and Cocco, J., "How do house prices affect consumption? Evidence from micro data", *Journal of Monetary Economics*, Vol. 54, 2007, pp. 591-621. Younger renting households will not necessarily reduce their consumption, as the present value of their human capital (which is a long-term asset) is likely to rise in a similar way to house prices. However, if house prices increase on account of higher rents, younger households can be expected to reduce their consumption if their wages (i.e. the returns on their human capital) remain unchanged.

empirical confirmation of those intuitive conclusions.[48] Using survey data from the Netherlands, it finds significant heterogeneity in wealth effects, with more than 90% of homeowners reporting no reaction to either positive or negative housing wealth shocks. This corresponds to an average wealth effect of between 2% and 5%, in line with econometric estimates linking changes in aggregate housing wealth with aggregate realised consumption.[49] Moreover, it also finds, in line with economic theory, that the wealth effects of rising house prices are larger for older households (panel a of Chart A). Finally, it finds that the increase in consumption which stems from a positive housing wealth shock is greater (in absolute terms) than the decline in consumption which is triggered by a negative shock of an equal size (panel b of Chart A). This is consistent with the existence of a collateral channel mechanism over and above the pure wealth effect. Increases in the value of people's homes allow additional borrowing and spending, while declines in value do not necessarily require households to reduce their borrowing, given that the loan-to-value constraint is only binding at the time of the loan's origination.

Chart A

The relationship between wealth effects and age

(percentages)



Source: Christelis et al., op. cit. in footnote 48.

[48] See Christelis, D., Georgarakos, D., Jappelli, T., Pistaferri, L. and Van Rooij, M., "Heterogeneous Wealth Effects", *CEPR Discussion Papers*, No 14453, 2020.

[49] See the article entitled "Household wealth and consumption in the euro area", *Economic Bulletin*, Issue 1, ECB, 2020.

Overall, recent literature suggests that capital gains and greater wealth inequality on account of declines in interest rates do not automatically translate into increases in the welfare or consumption of benefiting households. In order to acquire a thorough understanding of the interaction between monetary policy and inequality, more research needs to be carried out into the role played by households' investment plans in this regard.[50]

5 Conclusion

In many advanced economies, inequality has been on the rise for several decades, mainly as a result of factors other than monetary policy. While income and wealth inequality have tended to rise in most advanced economies, there is significant cross-country heterogeneity, both in the extent to which inequality has increased and in the current levels of inequality. In the euro area, for example, income and wealth inequality are both generally lower than in the United States. While some drivers of rising inequality are common to most countries (e.g. globalisation), policies other than monetary policy have been key in explaining those cross-country differences. After all, most advanced economies have, since the 1980s, tended to adopt fairly similar monetary policy frameworks, with inflation remaining low and stable. What is more, to the extent that cyclical job losses lead to permanent scars on people's employability, monetary policy has actually helped to prevent longer-term increases in income and wealth inequality on account of the business cycle.

Indeed, the easing of monetary policy would seem, overall, to have dampened economic inequality in recent years. The direct effects of such easing are heterogeneous as a result of differences in households' ownership of housing and, accordingly, the prevalence of mortgages. More importantly, the easing of monetary policy clearly has an inequality-reducing impact via its indirect effects, resulting in increased employment for lower-income households in particular. While the ECB has neither the mandate nor the instruments that it would need to specifically target the distribution of income and wealth, its current policies generally seem to have an equalising impact through their contribution to macroeconomic stabilisation.

The heterogeneity of households plays a key role in the transmission of monetary policy. As households differ substantially in terms of the composition of their wealth, the sensitivity of their income to the business cycle, and their propensity to consume, the distribution of income and wealth plays a key role in shaping the transmission of monetary policy to economic activity and inflation. While recent improvements to models and data have contributed to a better understanding of this part of the monetary transmission channel, several puzzles remain (as Box 3 showed). Consequently, the ECB continues, like many other central banks, to invest in new macroeconomic models and data sources in order to improve its understanding of the ways in which its policies affect inequality and the manner in which household heterogeneity shapes the transmission of its policies.

[50] As emphasised in Moll, B., op. cit.

2 Making sense of consumers' inflation perceptions and expectations – the role of (un)certainty

1 Introduction

Prepared by Aidan Meyler and Lovisa Reiche

Understanding households' inflation expectations is important for monetary policymakers

Inflation expectations play a key role in the monetary transmission mechanism. Other things being equal, when economic agents anticipate that inflation will increase, they perceive the real interest rate to fall. As a result, they spend more and save less to optimise their consumption and investment over a long horizon. Inflation expectations also play an important role in the wage and price-setting process and are thus an important determinant of future inflation. Therefore, understanding the nature of economic agents' inflation expectations and how they are formed is crucial for monetary policymakers.[1]

This article presents and analyses data on euro area consumers' quantitative inflation perceptions and expectations

This article analyses consumers' inflation expectations using data available from the European Commission Consumer Survey (ECCS). There are several ways of measuring inflation expectations: they can be derived from financial market instruments, surveys of professional forecasters and business or household surveys. This article focuses on consumer inflation perceptions and expectations taken from the harmonised ECCS.[2] These data go back to 1985. However, up to 2004 the data only provide qualitative information on respondents' perceptions and expectations on the direction and speed of price changes. Quantitative data on the magnitude of inflation were collected systematically in the ECCS from 2004 onwards.[3] This analysis helps address some of the more puzzling stylised facts of these inflation expectations, namely that: (a) the average perception/expectation has tended to be systematically above, although co-moving with, actual inflation; (b) there is an apparent negative correlation between inflation expectations and economic sentiment; (c) there is substantial heterogeneity both across countries and across individuals in terms of the levels of inflation expectations.

1 See, for example, Draghi, M., Introductory Statement, European Central Bank, 22 October 2015 and Yellen, J., "Comments on Monetary Policy at the Effective Lower Bound", *Brookings Papers on Economic Activity*, Economic Studies Program, The Brookings Institution, Vol. 49, No 2, Fall, 2018, pp. 573-579.

2 Consumer inflation perceptions relate to perceived price changes in the past, and consumer inflation expectations refer to expected price changes in the future.

3 These data were made publicly available in aggregated form for the EU and the euro area and include breakdowns by socio-economic category following a study by Arioli R., Bates, C., Dieden, H., Duca, I., Friz, R., Gayer, C., Kenny, G., Meyler, A. and Pavlova, I., "EU Consumers' Quantitative Inflation Perceptions and Expectations: An Evaluation", *European Economy - Discussion Paper, No 038*, European Commission Directorate General Economic and Financial Affairs, November 2016. They have been reported quarterly since early 2019 by the European Commission in its European Business Cycle Indicators (EBCI) publication. See also European Commission, "New data set on consumers' quantitative estimates of past and expected inflation in the euro area and the EU", European Business Cycle Indicators (EBCI) – 1st Quarter 2019, *Technical Paper*, No 31, pp. 17-22, 12 April. The data are available for download here (under Consumers – Qualitative and Quantitative Inflation perceptions).

Inflation perceptions and expectations are linked to sociodemographic characteristics and to economic sentiment

Some of the stylised facts of consumer inflation expectations can be explained by sociodemographic characteristics and economic sentiment. Our analysis confirms previous findings in the literature that consumers are likely to have higher inflation perceptions and expectations if they are younger, female, have lower levels of formal education and belong to lower income groups.[4] Furthermore, we confirm that consumers that report being in a better financial situation and who have positive expectations about the economy as a whole are associated with lower inflation expectations, and that this also holds when controlling for sociodemographic factors.[5]

We also offer explanations for both the bias in quantitative inflation expectations vis-à-vis actual inflation and their negative relationship with economic sentiment. The bias seems to be related to the fact that agents who are more uncertain typically report their inflation expectations using round figures (in multiples of five). Furthermore, those who have a negative attitude about the economy as a whole also tend to be more uncertain about the inflation outlook and to report higher inflation expectations. This explains why reported inflation expectations might increase in periods of economic uncertainty.

In exploring these issues, this article is structured as follows. Section 2 provides an overview of aggregate euro area consumers' inflation perceptions and expectations. Section 3 describes the framework for looking at inflation expectations through the lens of uncertainty. Section 4 examines the impact of specific sociodemographic characteristics and economic sentiment variables on the likelihood that individuals are uncertain about inflation and thus report rounded expectations. Section 5 discusses how the (un)certainty framework helps explain reported inflation expectations, and Section 6 concludes.

4 For a first assessment (of Swedish consumers), see Jonung, L., "Perceived and Expected Rates of Inflation in Sweden", *The American Economic Review*", Vol. 71(5), 1981, pp. 961-968; and for a more recent overview of the euro area, see Arioli et al. (2016, op. cit.). A study by Bryan, M. and Venkatu, G., "The Demographics of Inflation Opinion Surveys", *Federal Reserve Bank of Cleveland Economic Commentary*, October 2001, argues that these differences cannot be explained purely by different consumption baskets across these different socio-economic groups.

5 This has been pointed out for Italian consumers in Del Giovane, P., Fabiani, S. and Sabbatini, R., "What's behind "inflation perceptions"? A survey-based analysis of Italian consumers", *Temi di discussione (Working papers)*, No 655, Banca d'Italia, January 2008; and for the European level by Ehrmann, M., Pfajfar, D. and Santoro, D., "Consumers' Attitudes and Their Inflation Expectations", *International Journal of Central Banking*, February 2017, pp. 225-259.

2 The nature of consumers' inflation expectations

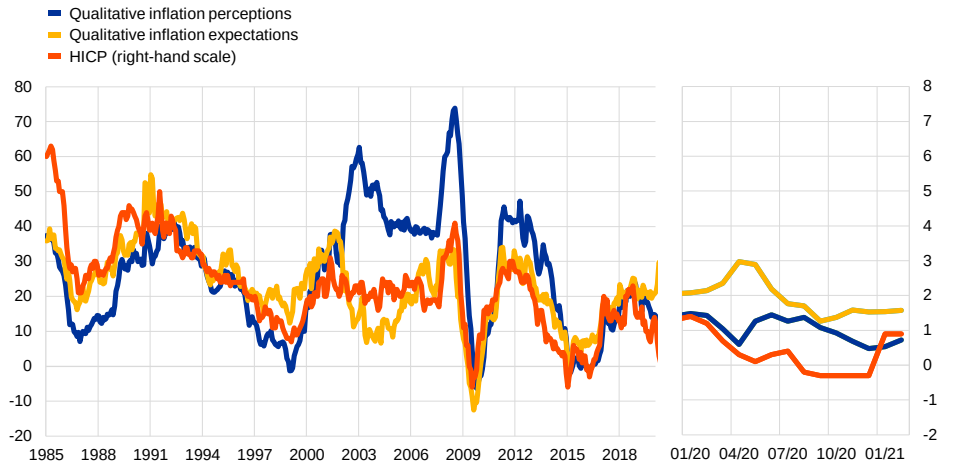
Consumers' qualitative inflation perceptions and expectations broadly co-move with actual inflation, but there are some noteworthy divergences

Consumers' qualitative inflation perceptions and expectations have tended to broadly co-move with actual inflation. The qualitative responses to the questions on inflation perceptions and expectations are summarised using a balance statistic.[6] The broad upswings and downswings in inflation and their turning points are relatively well matched by the balance statistics (Chart 1). The most noticeable divergence is in consumers' inflation perceptions following the introduction of the euro notes and coins. More recently, in March and April 2020, as the first wave of the coronavirus (COVID-19) pandemic and related lockdowns impacted European economies, there was an unprecedented divergence between consumers' inflation perceptions and their expectations, with the former falling, but the latter rising (Box 1). However, a significant drawback of these qualitative measures is that there is no direct way of mapping these onto quantitative perceptions and expectations.

Chart 1

Changes in euro area consumers' qualitative inflation perceptions and expectations and actual HICP inflation

(left-hand scale: balance statistics; right-hand scale: HICP inflation as percentages)



Sources: European Commission DG-ECFIN and Eurostat.
Note: The latest observations are for February 2021.

Average quantified inflation perceptions and expectations have been significantly higher than actual inflation

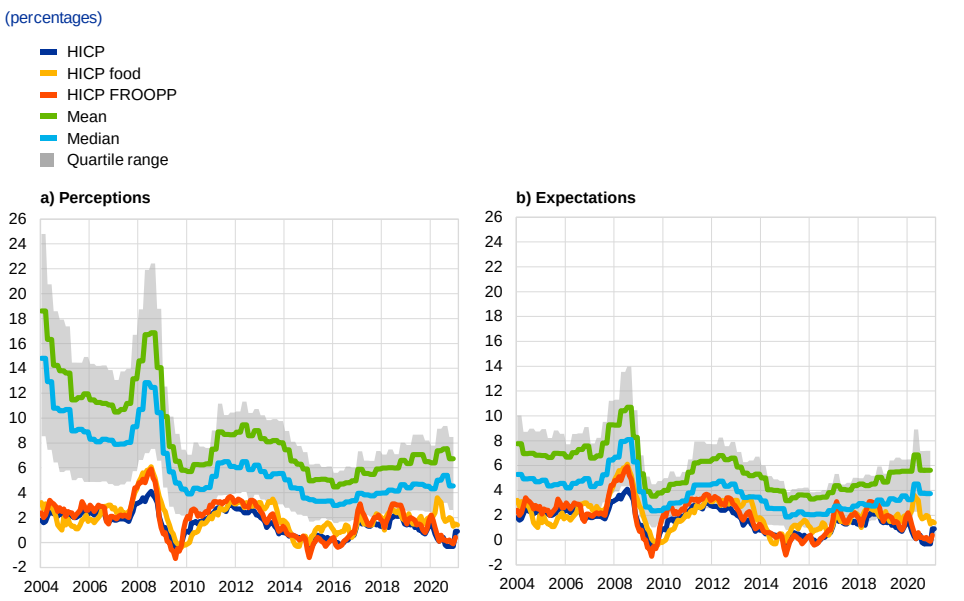
When asked to quantify their inflation perceptions and expectations, consumers, on average, tend to report significantly higher figures than actual inflation. Chart 2 presents the quantitative inflation perceptions and expectations reported by euro area consumers in the ECCS. For perceptions, the mean since 2004, at 8.7%, is substantially above the average HICP inflation over the same period

6 For consumers' qualitative inflation perceptions, the balance statistic is calculated using replies to the question "How do you think that consumer prices have developed over the last 12 months? They have: (a) risen a lot; (b) risen moderately; (c) risen slightly; (d) stayed about the same or (e) fallen". Respondents may also respond "don't know". For consumers' qualitative inflation expectations, the balance statistic is calculated in response to the question "By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will: (a) increase more rapidly; (b) increase at the same rate; (c) increase at a slower rate; (d) stay about the same; (e) fall". Respondents may also respond "don't know". For both perceptions and expectations, the balance statistic is calculated as a+(b/2)-(d/2)-e, where a-e are the percentages of consumers responding with a, b, d and e.

(1.5%).[7] The lower quartile (i.e. the 25th percentile) averaged 3.6%, which is also substantially above actual inflation. While the degree of over-quantification is lower for expectations, it is still substantial. The mean since 2004 has been 5.7% (3.8% for the median). The lower quartile has averaged 2.0%, which indicates that approximately 75% of consumers reported inflation expectations higher than 2%.

Chart 2

Changes in euro area consumers' quantitative inflation perceptions and expectations and different measures of inflation



Sources: European Commission DG-ECFIN and Eurostat.
Notes: The grey shading represents the inter-quartile range (i.e. the range from the first to the third quartile) of consumers' quantitative inflation perceptions and expectations. FROOPP refers to "frequent out-of-pocket purchases". The latest observations are for February 2021 (HICP and HICP food), January 2021 (HICP FROOPP) and the fourth quarter of 2020 (perceptions and expectations).

The correlation with actual inflation has tended to be slightly lagging for perceptions and broadly contemporaneous for expectations

The peak correlation with actual inflation has tended to be slightly lagging for inflation perceptions and broadly contemporaneous for inflation expectations. While this should be the case for perceptions, in the case of expectations, if consumers were able to anticipate inflation, one would expect to see the peak correlation with some lead (i.e. the peak correlation of expectations would be with inflation some months ahead). Table 1 shows that the contemporaneous correlation of quantitative expectations with different measures of HICP inflation over the period 2004-2020 is somewhat higher than for quantitative perceptions, while the reverse holds for the qualitative figures. Overall, however, no single expectation or perception measure correlates more than the others with actual inflation across all HICP measures and time periods. Over the most recent five-year period (the figures in brackets in Table 1), the correlation of the quantitative estimates with actual inflation is relatively low, except for food price inflation. This reflects in part a structural break in the data for Germany in May 2019 (owing to a change to the survey mode – see footnote 16), as well as the impact of the coronavirus pandemic in 2020 (Box 1).

7 This is also the case when considering the median (which can attenuate the impact of outliers) with an average of 6.2%, Over the past five years (2016-2020) the mean (6.0%), median (4.1%) and lower quartile (2.3%) of inflation perception are also above average actual inflation (1.0%).

Table 1

The contemporaneous correlation of consumers' qualitative and quantitative inflation perceptions and expectations with various measures of inflation

(correlation coefficients)

	Perceptions qualitative	Perceptions quantitative	Expectations qualitative	Expectations quantitative
HICP inflation	0.85 [0.74]	0.68 [0.17]	0.78 [0.59]	0.82 [0.06]
HICP FROOPP	0.79 [0.74]	0.62 [0.21]	0.76 [0.60]	0.78 [0.10]
HICP food inflation	0.83 [0.57]	0.65 [0.61]	0.73 [0.79]	0.81 [0.69]

Source: ECB staff calculations.
Notes: Contemporaneous correlation coefficients over the period 2004-2020. Numbers in brackets denote the correlation over the five-year period 2016-2020. FROOPP refers to "frequent out-of-pocket purchases".

3 Looking at consumers' inflation expectations through the lens of uncertainty

Rounding is a practicable measure of uncertainty

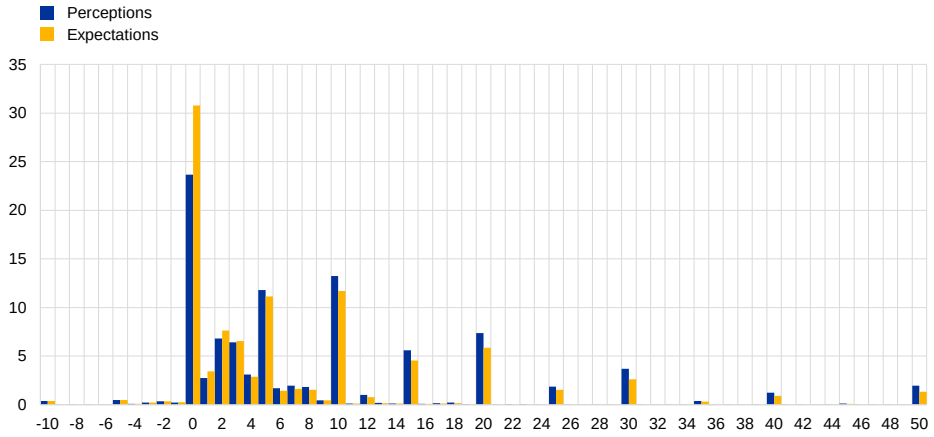
The apparent rounding observed in consumers' quantitative inflation expectations points to uncertainty in reported inflation expectations. A considerable share of euro area consumers reports their quantitative expectations (and perceptions) using round numbers (most notably multiples of 5 and 10), while other consumers report to single digits or even to decimals. Chart 3 shows noticeable peaks at 0%, 5%, 10%, 15% and 20%, with a smaller distribution of respondents reporting to single digits. The modal responses of this latter group are around 2%-3% and thus not as biased as the aggregate numbers.[8] According to communications and linguistics theory, round numbers –typically multiples of five or of ten, depending on the context – are frequently used to convey that a quantitative expression should be interpreted as imprecise. We use the "round numbers suggest round interpretations" principle to identify the existence of an uncertainty channel which may influence reported inflation expectations.[9]

8 The broad pattern of some consumers rounding to multiples of 5 and others reporting to single digits or decimals has also been observed for US and Japanese data on consumer expectations. For the United States, see Binder, C., "Measuring uncertainty based on rounding: New method and application to inflation expectations", *Journal of Monetary Economics*, Elsevier, Vol. 90(C), 2017, pp. 1-12; and for Japan, see Abe, N. and Ueno, Y., "The Mechanism of Inflation Expectation Formation among Consumers", *RCESR Discussion Paper Series*, No DP16-1, Hitotsubashi University, March 2016.

9 For additional references to the communications and linguistics literature, see Binder (2017, op. cit.) and Krifka, M., "Approximate Interpretations of Number Words: A Case for Strategic Communication" in Hinrichs, E. and Nerbonne, J. (eds.), *Theory and Evidence in Semantics*, Stanford: CSLI Publications, 2009. Consumer inattention has also been used to explain some of the stylised features of observed consumers' inflation expectations (see, for example, Kamdar, R., "The Inattentive Consumer: Sentiment and Expectations", *Meeting Papers*, No 647, Society for Economic Dynamics, 2019, pp. 109-132. However, it is difficult to reconcile inattention with the increased rounding that is observed at times of heightened uncertainty (when consumers should be more attentive than normal).

Chart 3

Distribution of responses (2004-2020)



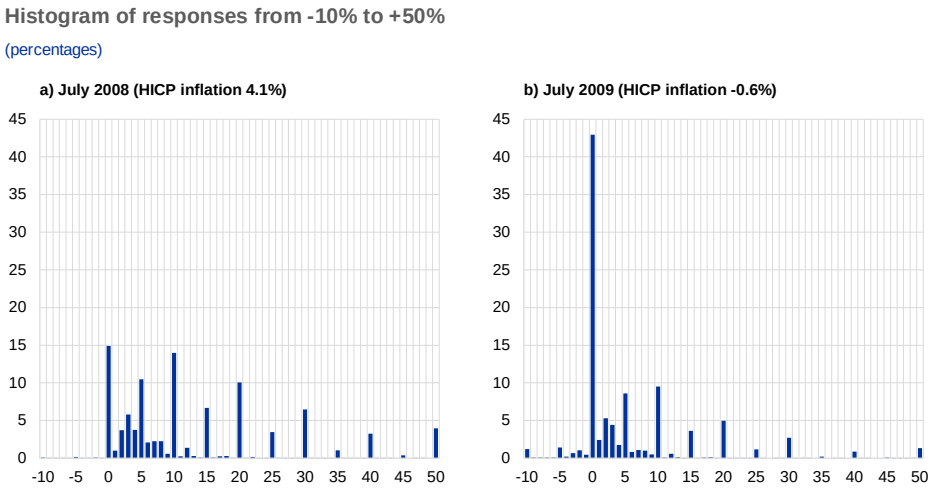
Sources: European Commission DG-ECFIN and ECB staff calculations.
Note: Histogram constructed at integer level.

The uncertainty framework is flexible enough to accommodate different periods of inflation

The uncertainty framework is flexible enough to help provide an understanding of average inflation expectations over the period 2004-2020, as well as in specific periods when inflation has been relatively high and relatively low respectively. For instance, the left panel of Chart 4 shows the distribution of quantitative inflation expectations in July 2008 (when overall HICP inflation was 4.1%). At this time, there were noticeable peaks at multiples of 10 as high as 50%, while the share of respondents reporting 0% inflation was relatively low. Among those who reported to single digits or even more precisely, the modal answer was 3%-4%. One year later, in July 2009, when overall HICP inflation had declined to -0.6%, the overall distribution shifted significantly to the left and there was a very strong peak in those reporting 0%, as well as some reporting negative values.

Chart 4

Distribution of responses at specific points in time

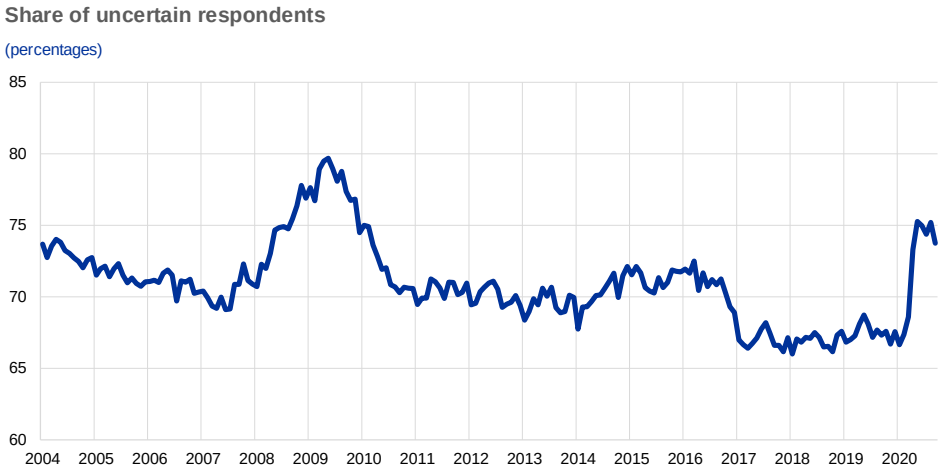


Sources: European Commission DG-ECFIN and ECB staff calculations.

The uncertainty framework (and in particular rounding behaviour) allows the share of uncertain consumers in every month to be calculated. The overall distribution of quantitative expectations is seen as a composite of three categories of reporting, namely in (i) digits and decimals, which are not multiples of five or ten, (ii) multiples of five, which are not multiples of ten, and (iii) multiples of ten. Those reporting in digits and decimals can, on average, be considered more "certain", whereas those reporting in multiples of five and ten can be considered "uncertain". The respective shares of each group in the overall survey population can be derived for each survey month.[10] On average, approximately one-third of respondents are more certain, while two-thirds are more uncertain (report to multiples of 5 or 10). These weights fluctuate but show notable increases in the share of uncertain respondents around the time of the global financial crisis and, more recently, since the onset of the coronavirus pandemic (Chart 5).

Chart 5

Increase in uncertainty during periods of economic distress



Sources: European Commission DG-ECFIN and ECB staff calculations.
Notes: The chart shows the share of individuals that report in multiples of five and ten when asked about their inflation expectations. The latest observation is for September 2020.

Inflation estimates co-move strongly with actual inflation, suggesting consumers are knowledgeable about broad inflation regimes

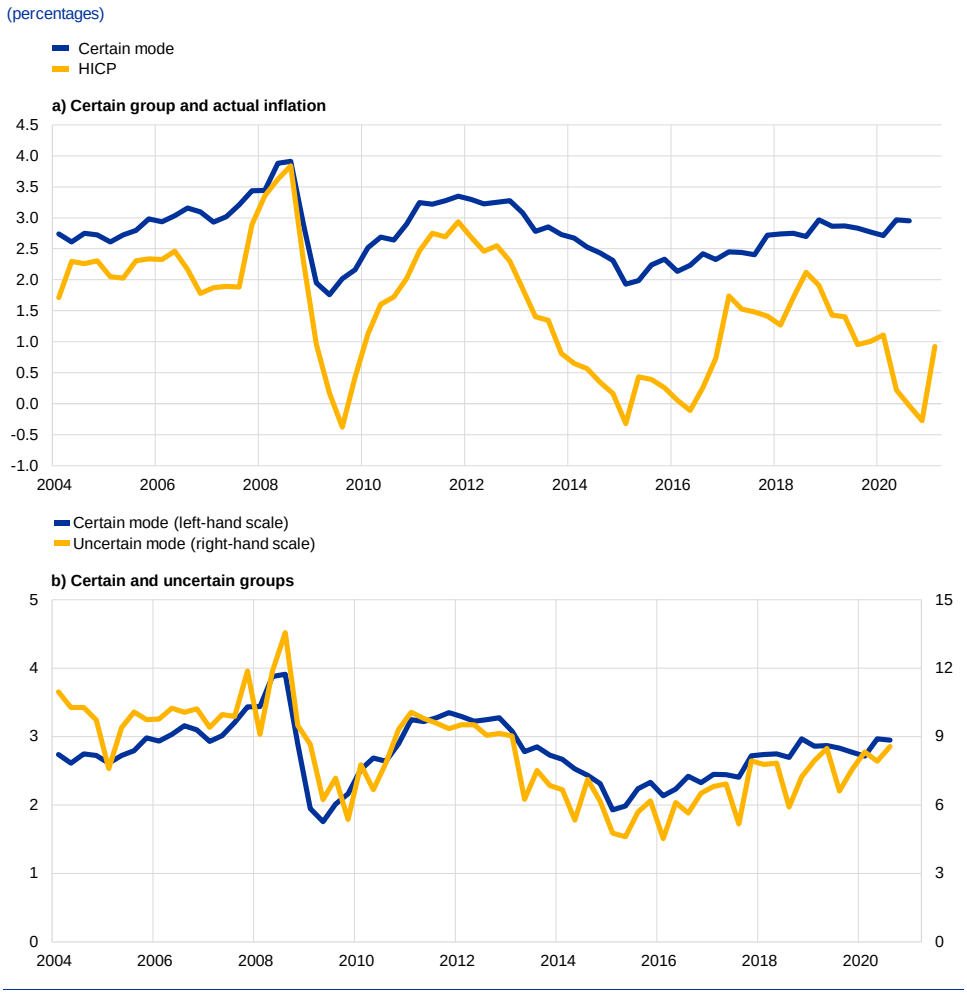
While uncertain respondents may not precisely quantify inflation, they appear able to capture the broad developments in inflation. The upper panel of Chart 6 shows that the modal expectations of certain consumers are not too far off, and evolve broadly along with, actual inflation. The lower panel shows that, although the modal expectations of consumers who are more uncertain are substantially higher than those who are certain (shown on different axes), they co-move very closely.[11] This suggests that, while less certain consumers may find it hard to precisely articulate their inflation expectations, they are able to distinguish low and high inflation just as well as more certain consumers. Thus, even if their level of expected inflation is biased with respect to actual inflation, the changes over time correlate closely.

10 As a portion of those reporting in multiples of five might be more "certain", fitting distributions to the data allows the share of uncertain consumers to be calculated by adding the relative weights of groups (ii) and (iii). In technical terms, a mix of three log-normal distributions, on supports of (i) single digits, (ii) multiples of five, and (iii) multiples of ten, are fitted using maximum likelihood methods. For more details, see Arioli et al. (2016, op. cit.).

11 The mode shows the highest portion (or most common part) of the distributions. As the distributions tend to have long right-hand tails, their means tend to be above the mode.

Chart 6

Modal inflation expectations of the "certain" group and the "uncertain" group



Sources: European Commission DG-ECFIN, Eurostat and ECB staff calculations.
Note: The latest observations are for September 2020 (certain and uncertain mode) and February 2021 (HICP).

Box 1

Consumers' inflation expectations during the COVID-19 pandemic – applying the uncertainty framework

During the early months of the first wave of the coronavirus (COVID-19) outbreaks and lockdowns in Europe, there was an extraordinary movement in consumers' inflation expectations, in particular compared with that for perceptions. In March and April 2020 consumers' quantitative inflation expectations rose, while their quantitative perceptions fell slightly and, for the first time, mean expectations for future inflation were higher than perceptions of past inflation.[12] However, this divergence was short-lived, as by June the differential between perceptions and expectations had reverted to around the level observed in the months prior to the start of the pandemic.

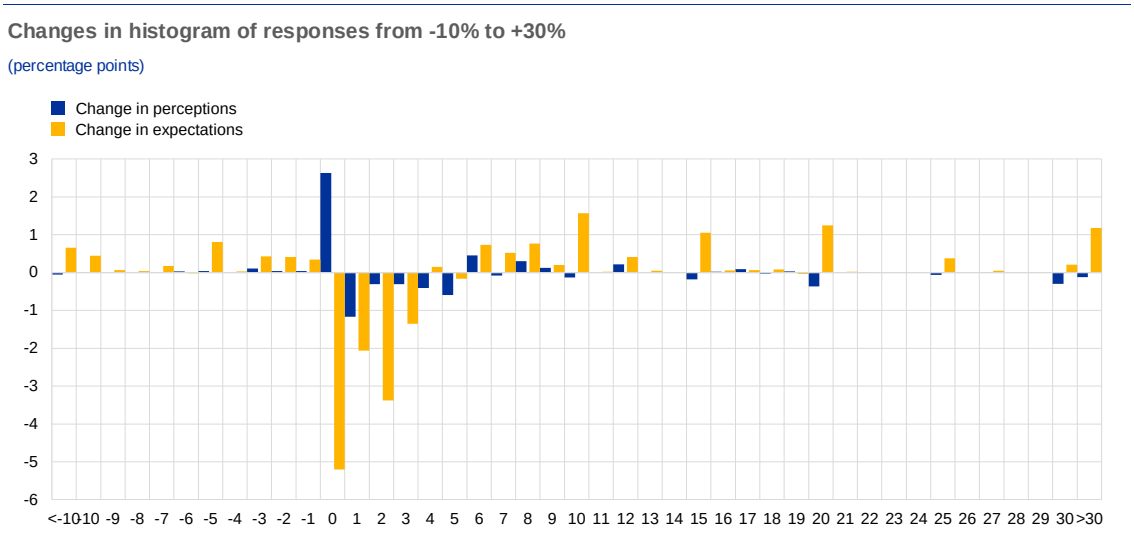
[12] There were also unprecedented developments in the qualitative estimates. The balance statistic for consumers' perceptions of past inflation fell between February and April 2020, whereas that for expectations of future inflation rose. The balance statistic for inflation perceptions fell from 14.2 in February to 5.9 in April, whereas that for expectations of future inflation rose from 21.1 in February to 29.2 in April. The difference between the qualitative perceptions and expectations balance statistics reached its lowest level (-23.3) since the early 1990s.

It is challenging to reconcile these movements in inflation perceptions and expectations between February and June with actual inflation developments. While overall HICP inflation fell from 1.2% in February to 0.3% in April (in line with the movements in perceptions, but not those in expectations), it stood at 0.3% in June (neither explaining the reversion in perceptions nor that in expectations). The annual rate of change in the so-called FROOPP (frequent out-of-pocket purchases) index showed a broadly similar evolution, although it declined slightly more sharply than overall inflation between February and April (from 1.8% to 0.6%). It also stood at the same rate (0.6%) in June as in April, and thus cannot explain the reversion in perceptions or expectations. The annual rate of change in food prices rose from 2.1% in February to 3.6% in April, before easing over the following months. These developments in food price inflation could therefore potentially partly explain the changes in expectations but not the changes in perceptions.

Viewing consumers' quantitative inflation perceptions and expectations through the lens of uncertainty can help explain their apparently puzzling evolution. Chart A shows the change in the share of consumers reporting specific inflation perceptions and expectations in April 2020. For perceptions, there was a noteworthy increase in the share reporting unchanged prices (i.e. zero inflation), which is largely in line with actual inflation, which fell close to zero. For expectations, there was a decline in the share of consumers reporting zero or digits from 1%-4%, with noticeable increases in those reporting multiples of five (in particular 10%, 15%, 20%, 25% and 30%). Thus, when viewed through the uncertainty lens and the use of rounded numbers, it is possible to rationalise the simultaneous decrease in perceptions (in line with actual inflation) and increase in expectations (an uncertainty shock).[13]

Chart A

Changes in inflation perceptions and expectations from March to April 2020



Sources: European Commission DG-ECFIN and ECB staff calculations.
Note: The chart shows the changes in the share of respondents for each answer from March to April 2020.

[13] This assessment is broadly in line with that from a specific survey carried out by the Banca d'Italia between April and May 2020, in which it was reported that the role of pessimism is evident in that expected inflation was higher among respondents that expected a significant reduction in their income. For further details, see "Italian households' assessments and expectations during the current public health emergency", Annual Report for 2019, Banca d'Italia, pp. 69-71.

4 What determines whether individuals are (un)certain?

Sociodemographic and opinion characteristics can be shown to partially determine consumer (un)certainty

Whether a consumer is certain about price developments can depend on sociodemographic characteristics and economic sentiment. To analyse this, we look at the "probability that a consumer is certain" about inflation and try to explain this using a range of sociodemographic and economic sentiment variables.[14] The sociodemographic variables include characteristics, such as age, level of formal education, gender and income quartile. In addition, sentiment indicators are used, which take the form of expressed economic opinions on the expected personal financial and general economic situation, a qualitative inflation assessment about inflation in the next 12 months and opinions on unemployment development, as well as on the timing of purchases and savings. Selected results are displayed in Chart 7 and Chart 8. On average, and other things being equal, a higher income and higher level of formal education contribute positively to an individual's estimated probability of being certain. Certainty increases further with age and if respondents are male. At the same time, respondents tend to be less certain if they are more negative about their personal finances, the general economic situation including unemployment and their ability to purchase and save.[15] These patterns hold robustly across most time periods and euro area countries in our sample.

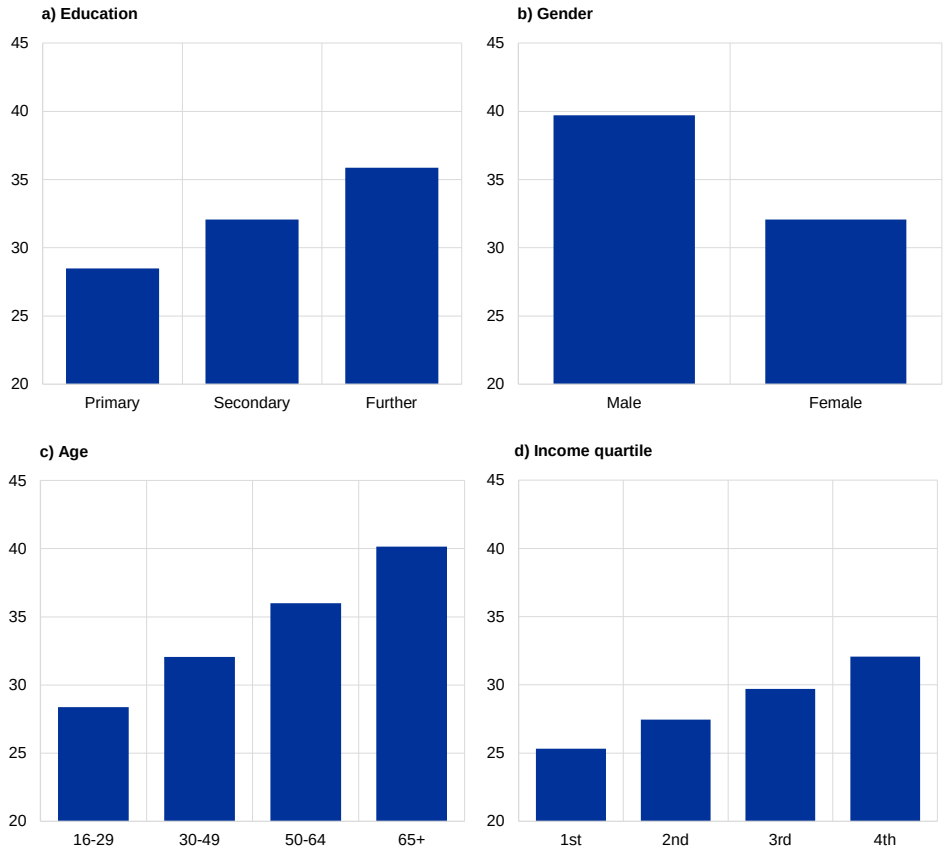
14 Similarly to Section 3, the measure of (un)certainty used in this study is based on the rounding of quantitative inflation expectations. If an estimate is a multiple of 5, the respondent is classified as "uncertain", while all others are classified as being "certain". This creates a binary variable which allows the probability that a consumer is certain about inflation expectations/perceptions given their characteristics to be estimated. The estimation then follows a maximum likelihood regression using a logit functional form. Potential misclassification in the dependent variable is accounted for, given that individuals may either be certain but still respond in multiples of five, or may be uncertain but reply with a digit that is not a multiple of five. The method is identical to that proposed in Hausman, J., Abrevaya, J. and Scott-Morton, F., "Misclassification of the dependent variable in a discrete response setting", *Journal of Econometrics*, Vol. 87(2), 1998, pp. 239-269.

15. In addition, the level of actual inflation (measured by the overall HICP) and GDP growth in the respective time period and geography is included to capture more structural differences in the panel of respondents. It is found that a higher level of actual inflation and the qualitative level of expected inflation reduces overall certainty.

Chart 7

Estimated probability that a consumer is certain about inflation expectations – sociodemographics

(percentages)

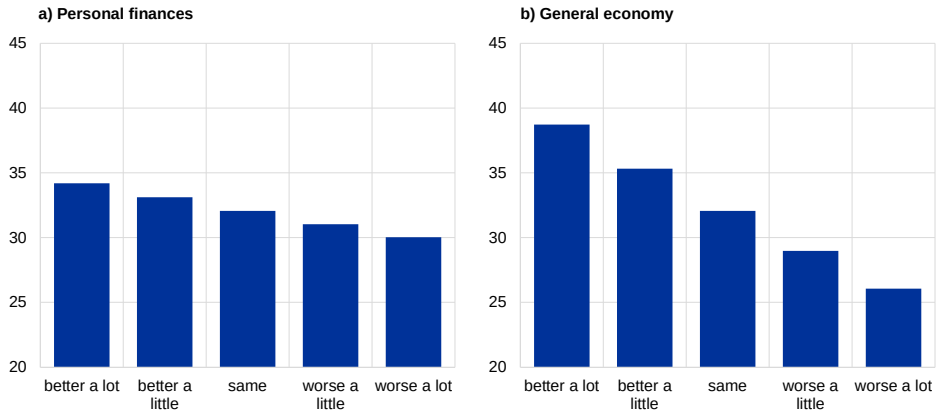


Sources: European Commission DG-ECFIN, Eurostat and ECB staff calculations.
Notes: The charts display the estimated probability that an individual is certain about inflation by subcategory of each variable, assuming modal values for all other variables. All estimated effects are statistically significant at the 99% confidence level.

Chart 8

Estimated probability that an individual is certain about inflation expectations – economic sentiment

(percentages)



Sources: European Commission DG-ECFIN, Eurostat and ECB staff calculations.
Notes: The charts display the estimated probability that an individual is certain by subcategory of each variable, assuming modal values for all other variables. All estimated effects are statistically significant at the 99% confidence level.

The correlation between uncertainty and inflation expectations holds across countries

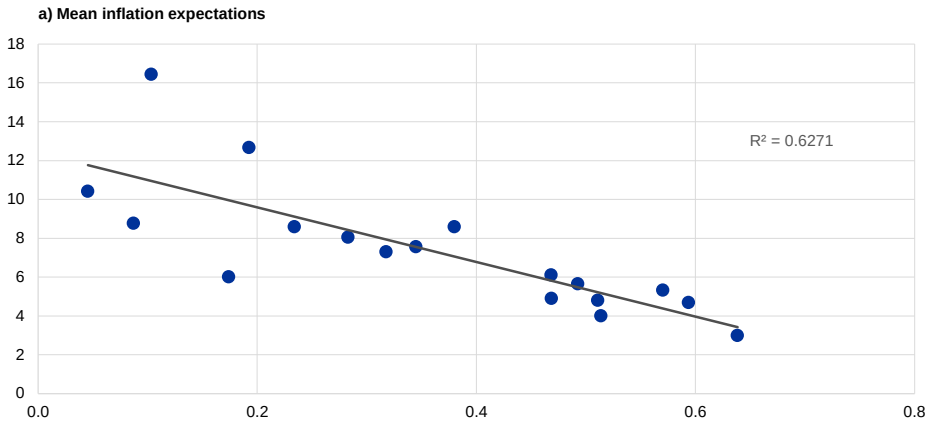
The probability that an individual is certain about inflation expectations differs significantly across euro area countries. The upper panel of Chart 9 shows that those countries where consumers are estimated to be more certain also have a lower mean inflation expectation across the time periods. While there is also some correlation between the mean inflation expectation and the average rate of actual inflation (see the lower panel of Chart 9), it is much lower. This suggests that the certainty channel plays an important role in explaining the differences in reported inflation expectations across countries in our sample.[16] However, thus far, the analysis has simply identified sociodemographic characteristics and economic sentiment indicators that suggest whether consumers may be more or less uncertain about their inflation expectations. How much these factors contribute to reported inflation expectations is considered below.

16 Note that "certainty" (as measured in rounding) can be affected by the survey mode and design in each country. For example, switching from phone to online surveys might have an impact on the propensity of people to respond in much larger (and often rounded) numbers, seemingly increasing "uncertainty". For example, in May 2019 Germany changed its survey mode from face-to-face interviews in respondents' homes to an online survey with Computer Aided Web Interviewing (CAWI), which resulted in a significant increase in the share of respondents reporting rounded estimates. In addition, when responding to the survey, some countries do not allow for respondents to provide decimals, while others may cap responses (for example, at less than 20). This could impact the observed certainty for a given country.

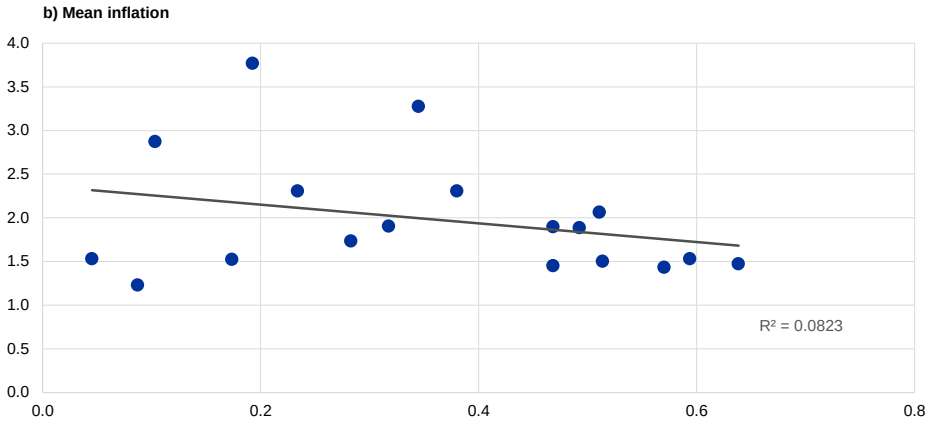
Chart 9

Negative relationship between certainty and inflation expectations across countries

(x-axis: estimated probability that a consumer is certain about inflation for a modal individual in each country; y-axis: mean inflation expectation (January 2004 – September 2020))



(x-axis: estimated probability that a consumer is certain about inflation for a modal individual in each country; y-axis: mean HICP (January 2004 – September 2020))



Sources: European Commission DG-ECFIN, Eurostat and ECB staff calculations.
Notes: The probability that an individual is certain is estimated using the same modal individual, assuming different nationalities. The mean inflation expectation describes the mean of the individually weighted means for each survey month. The 18 dots represent all euro area countries, except for Ireland where consistent data on the quantitative question are only available since May 2016.

5 Does this (un)certainty framework help explain and foster greater understanding of inflation expectations?

A large part of consumers' inflation overestimation can be explained by consumer uncertainty

The role of (un)certainty in consumers' quantitative inflation expectations is estimated with a model. First, the linear effects of sociodemographic and economic sentiment variables on quantitative inflation expectations are estimated.[17] Moreover, to control for potentially different macroeconomic environments, actual inflation (HICP), inflation forecasts by Consensus Economics and GDP growth by country and time are incorporated. The (un)certainty framework is then used to split the sample.

[17] A simple linear regression framework is used with the response to the two quantitative questions as the dependent variable respectively. This implies an assumption of linear effects which is deemed justified given that individuals respond in rather broad categories and since it facilitates interpretation of the results.

This makes it possible to show whether the effect of these sociodemographic and economic opinion variables differs between more and less certain consumers.

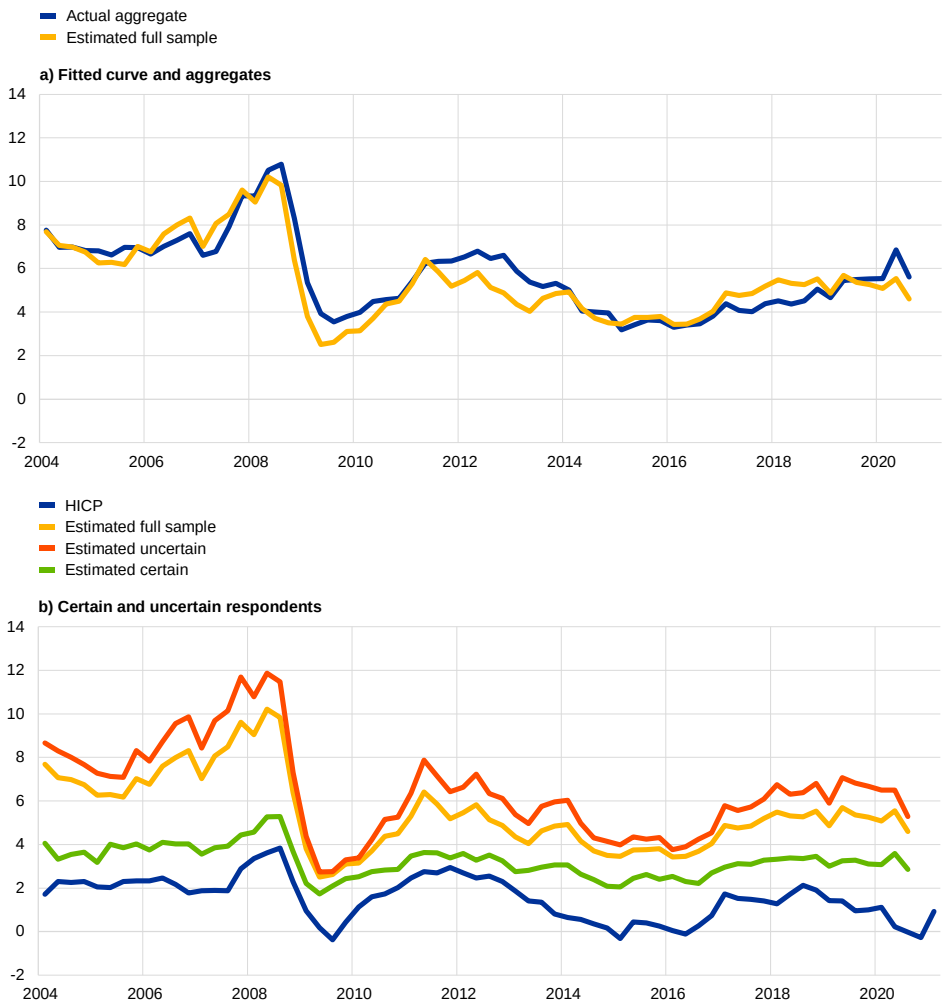
Consumer characteristics allow us to develop a model of inflation expectations that fits the data well

At the aggregate level, this model replicates stylised facts on the impact of sociodemographics and economic sentiment on inflation expectations.[18] This study finds that the same characteristics described in the previous section as contributing to greater uncertainty (for example, lower age, lower income group and lower formal education or a worse economic sentiment and a lower ability to save) also contribute to higher expectations. This appears intuitive, given that rounded numbers (i.e. 5, 10 and 15) are typically a lot higher than the reported digits with a median of 2 over the reference period. The fitted values from the model closely match the actual measured inflation expectations. Using this model to estimate the inflation expectation of an "average" person (i.e. mean values in all categories) and averaging across countries for the whole sample period yields a value close to the measured mean expectations (Chart 10, Panel a).

[18] See, for example, Jonung (1981, op. cit.); Bryan and Venkatu (2001, op. cit.); Arioli, et al. (2016, op. cit.); Del Giovane, Fabiani and Sabbatini (2009, op. cit.); Ehrmann, Pfajfar and Santoro (2017, op. cit.).

Chart 10

Estimated inflation expectations – fitted versus survey results



Sources: European Commission DG-ECFIN, Eurostat and ECB staff calculations.
Notes: This chart displays the estimated inflation expectation calculated for a mean individual (i.e. an individual with mean characteristics in each category) in each country. HICP country weights are then used to aggregate across the euro area. The latest observation is February 2021 for HICP and September 2020 for other series.

The large gap between actual and expected inflation can be explained by uncertainty measured in rounding

Dividing the sample into the "certain" and "uncertain" groups explains a large part of the so-called inflation expectation conundrum, i.e. the overestimation of inflation in consumer surveys.[19] Applying the above model to each group separately shows that sociodemographic and sentiment variables have a smaller impact on the inflation expectations of the "certain" group (Table 2). The difference in inflation expectations between the "certain" and "uncertain" groups is visualised in Chart 10, panel b and estimated over all time periods separately. It suggests that the differential in inflation estimates observed between socioeconomic groups and respondents of diverging economic assessments can at least in part be explained by

[19] A study by Abildgren, K. and Kuchler, A., "Revisiting the inflation perception conundrum", *Journal of Macroeconomics*, Vol. 67, 2021) describes the issue of overestimation bias in inflation perceptions and expectations across countries and time periods, and suggests various explanations. The term "inflation perceptions conundrum" is coined in that article but is also found here to be equally applicable in the context of expectations.

the different levels of certainty these groups of respondents have. These results also hold in a model version that controls for perceptions, given their strong link with expectations.[20] However, it should be noted that even consumers who are certain overestimate inflation. Therefore, the certainty channel should not be considered in isolation from other hypothesised reasons, including psychological aspects of loss aversion, seasonality and the idea that consumers might have in mind different and very heterogeneous baskets (including house prices, for instance) when estimating inflation.[21]

Table 2

Contribution of "certainty" to the level of inflation expectations

Magnitude of coefficients in the model

(coefficients from a linear model with inflation expectations as the dependent variable)

		All respondents	Certain respondents	Uncertain respondents
Sociodemographic	Age	-0.35	-0.08	-0.40
	Education	-0.51	-0.12	-0.62
	Female	1.03	0.19	1.23
	Income	-0.22	-0.07	-0.26
Sentiment	Personal finances	0.97	0.38	1.16
	Economic situation	1.19	0.50	1.47
	Unemployment	-1.15	-0.33	-1.51
	Purchases	-0.01*	0.01*	-0.06
	Savings	0.36	0.15	0.43
	Ability to save	0.41	0.16	0.49
Macroeconomic	HICP inflation	0.72	0.48	0.76
	HICP forecast	1.55	0.58	1.69
	GDP growth	0.13	0.04	0.19
R^2		0.21	0.16	0.21
Number of individuals		2,522,504	842,807	1,679,697

Source: ECB staff calculations.
Notes: * denotes not statistically significant at the 99% confidence level. All other coefficients are statistically significant at the 99% level. The coefficients show the relative magnitude and direction of a unit change in one of the individual variables on the inflation expectations, holding all other variables at a constant level. For example, holding all other factors constant, being female increases inflation perceptions by 1.03 percentage point when estimated for the whole sample, 1.23 when estimated for uncertain respondents and 0.19 when estimated for certain respondents. Note that, contrary to the other sentiment questions, for the question on unemployment, a low (high) value implies a negative (positive) situation. For more details on the wording of the questionnaire, see the European Commission's User Guide.

6 Conclusion

Inflation (un)certainty is an important framework for analysing consumers' quantitative inflation expectations

Inflation (un)certainty is a channel that sheds light on some of the more puzzling aspects of reported quantitative inflation expectations. First, the

[20] In Duca-Radu, I., Kenny, G. and Reuter, A., "Can consumers' inflation expectations help stabilise the economy?", *Research Bulletin*, No 79, European Central Bank, 12 January 2021, ECCS data are used to examine the link between inflation expectations and consumption. This study finds that the raw relationship between readiness to spend and inflation expectations is, on average, negative and quite unstable. They attribute this to the unobserved factors and consumer-specific characteristics which may have an impact on reported inflation expectations. When inflation expectations are normalised (based on the current inflation perception), it finds a more stable and positive relationship with the readiness to spend.

[21] For a summary of the available literature, see Abildgren and Kuchler (2021, op. cit.).

(un)certainty lens helps explain why we can observe high estimated aggregates despite rather low inflation. This is because in conditions of uncertainty many consumers report rounded numbers, whereby they often quantitatively overestimate inflation. Second, since rounding is more prevalent in some sociodemographic groups, it also helps explain why we observe higher levels of inflation perceptions and expectations for specific population characteristics. However, it should be borne in mind that, although consumers who are less certain may not precisely quantify future inflation, their expectations identify relatively low and high inflation in a similar manner to more consumers who are more certain and in broad alignment with the actual inflation cycle.

The reported negative correlation between the economic outlook and inflation estimates may be caused by increased uncertainty

Furthermore, the uncertainty channel is also a possible explanation for the negative correlation sometimes observed between the economic outlook and inflation expectations. It thus offers an alternative perspective to the view that this negative correlation is a so-called supply-side interpretation of inflation, whereby individuals interpret an increase in expected inflation as unambiguously adverse.[22] We show that this correlation could reflect increased uncertainty, which, in turn, increases reported inflation expectations.

However, there remain aspects of consumers' inflation expectations that cannot be addressed using the data considered in this article. For instance, as we do not observe the same individual over time, it is challenging to understand how expectations are formed and the extent of their economic impact. In the future, the ECB's Consumer Expectations Survey (CES), which was launched as a pilot in 2020 and has a genuine panel structure, could offer a more in-depth view of consumer expectations over time, their formation and how consumers understand and react to monetary policy.[23]

[22] Candia, B., Coibion, O. and Gorodnichenko, Y., "Communication and the Beliefs of Economic Agents", paper presented at Federal Reserve Bank of Kansas City's Jackson Hole Economic Policy Symposium, 28 August 2020.

[23] For more information, see the ECB Consumer Expectations Survey.

3 The paradox of banknotes: understanding the demand for cash beyond transactional use

Prepared by Alejandro Zamora-Pérez

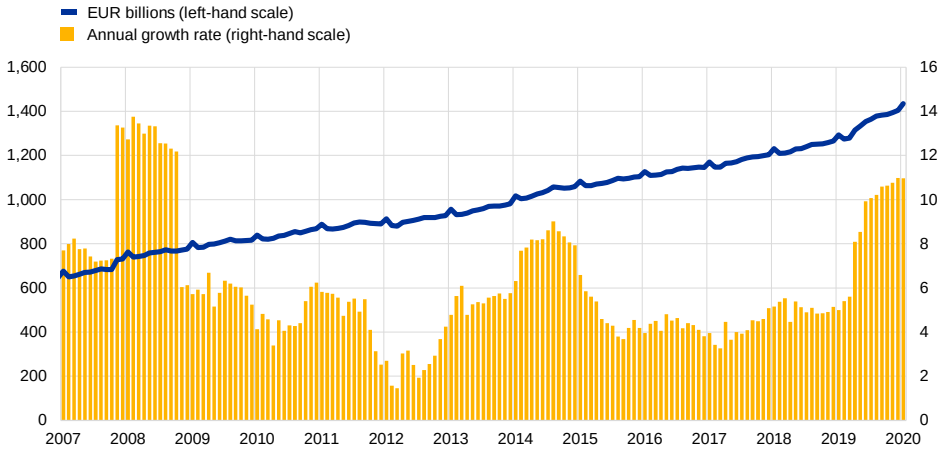
1 Introduction

A phenomenon referred to as the "paradox of banknotes"[1] has been observed in the euro area; in recent years, the demand for euro banknotes has constantly increased while the use of banknotes for retail transactions seems to have decreased. Recent payment surveys indicate that the share of cash transactions in the euro area has decreased. This, together with ongoing digitalisation in retail payments, might have been expected to lead to a decrease in the demand for cash.[2] However, this reduction in demand has not occurred. In fact, the number of euro banknotes in circulation has increased since 2007 (see Chart 1). This seemingly counterintuitive paradox can be explained by demand for banknotes as a store of value in the euro area (e.g. euro area citizens holding cash savings) coupled with demand for euro banknotes outside the euro area. This article will use the available evidence to explain this phenomenon in more detail.

Chart 1

Euro banknote circulation

(left-hand scale: value, EUR billions, non-seasonally and non-calendar adjusted; right-hand scale: percentages)



Source: ECB.
Notes: The latest observation was made in December 2020. Euro banknote circulation is the sum of all banknotes issued on net (issued minus returned) from Eurosystem central banks since the introduction of the euro. This includes banknotes held by banks, companies and citizens in the euro area and abroad.

The growth in circulation of euro banknotes has been strong since they were introduced, even when considering the ratio of euro banknotes to GDP, or to the

1 This phenomenon has also been observed with other currencies, particularly those with a strong foreign demand; the term was coined in Bailey, A., "Banknotes in Circulation: Still Rising: What does this Mean for the Future of Cash?", Speech at the Banknote 2009 Conference, Washington DC, 2009.

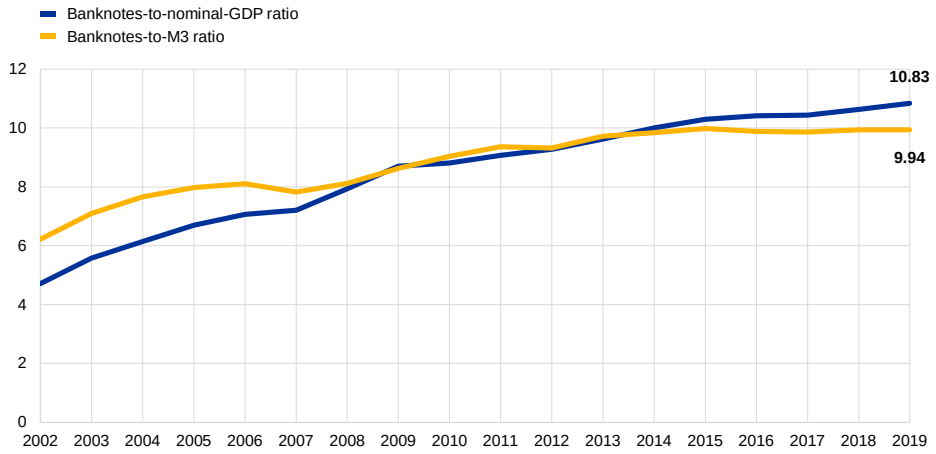
2 For simplicity, specific references to coins (2% of euro cash value) are not made throughout this article.

broad monetary aggregate M3.[3] This growth in circulation has intensified during the coronavirus (COVID-19) pandemic. At the end of 2020, the value of euro banknotes in circulation amounted to €1,435 billion, increasing by 11% from €1,293 billion in 2019 (Chart 1). Due to the COVID-19 pandemic, this annual growth rate was exceptionally high when compared with previous years (5% annual growth in the past 10 years on average). The only time the growth rate was higher was during the months following the Lehman Brothers collapse in September 2008.[4] However, the growth of euro banknote circulation has been remarkably strong since they were introduced even when compared to some other macroeconomic magnitudes; for example, the ratios of euro banknotes to nominal gross domestic product (NGDP) and to M3 have increased over the years (see Chart 2), amounting to 10.83% and 9.94% at the end of 2019, respectively. This suggests there are unique determinants behind the high demand for euro banknotes, other than the development of the activity of the domestic economy (NGDP) and distinct from factors influencing other monetary assets/liabilities (M3).

Chart 2

Euro banknotes over euro area nominal gross domestic product and M3

(percentages, year-end figures)



Sources: ECB.
Notes: The latest observation was made in December 2019.

Understanding the drivers of increasing banknote circulation is important for central bank core activities such as cash and liquidity management, retail payment strategies and monetary policy. Central bank cash and liquidity management activities can be improved by a good understanding of the demand for cash. For instance, if cash is widely used as a safe haven during times of potential market turbulence, it may be mandatory to hold substantial strategic contingency stocks of banknotes to meet extraordinarily high demand during periods of crisis.[5] Furthermore, understanding the demand for cash can shape well-informed retail payment strategies, for example by enabling projections for the future use of means of

[3] M3 or "broad money" is the sum of currency in circulation, deposits and other liquid monetary liabilities

[4] This and other events influencing the value of banknotes in circulation are described in the article entitled "Trends and developments in the use of euro cash over the past ten years", *Economic Bulletin*, Issue 6, ECB, Frankfurt am Main, 2018.

[5] See Panetta, F., "Beyond monetary policy – protecting the continuity and safety of payments during the coronavirus crisis", *The ECB Blog*, 28 April 2020.

payments, or even assessing the potential demand of a cash-like central bank digital currency (CBDC). In addition, the size and growth of some components of cash demand have relevant implications when assessing the monetary policy stance and its implementation in a low interest rate environment.[6]

To shed light on the paradox of banknotes, it is important to identify the main uses of banknotes, although this is a difficult endeavour because cash usage is mostly unobservable. The value of euro banknotes in circulation can be broken down into three components: the value of banknotes (a) held for domestic transactions, (b) stored domestically and (c) demanded outside the euro area (both for transactions and as a store of value). Estimating the size of these components is key to understanding the paradox of banknotes. However, making such estimations is a highly complicated process because cash is used anonymously. The data collected by the European Central Bank (ECB) refers only to flows of banknotes through the central and commercial banks, so only a small part of the cash cycle is observable. There are also grey areas where it is impossible to define when a banknote is held for transactions or as a store of value. Nevertheless, it is possible to learn about the different uses of banknotes through direct (i.e. surveying cash users) and indirect approaches. These will be explored in the present article in Sections 2 and 3. Section 4 will address the COVID-19 developments during 2020, remarking on the importance of cash during crises.

2 Transactional use of cash in the euro area

Estimates of the value of banknotes held for transactions in the euro area can be produced using indirect approaches but these are subject to limitations. Indirect approaches use available ECB data on euro cash coupled with a set of assumptions to produce estimates of the portion of the value of banknote circulation used for domestic transactions. However, the reliability of these methods depends on the particular assumptions employed, and therefore they should be considered with an appropriate level of caution. The following looks at three approaches: (i) the seasonal method, (ii) the return frequency method and (iii) an analysis of the issuance of the Europa Series (i.e. the second series of euro banknotes). These provide insights as to the size and nature of domestic transactional demand for banknotes.

The seasonal method indicates that in 2019 between 13% and 30% of the value of banknote circulation was held for the purpose of euro area transactions, yielding a central estimate of 21.5% (€280 billion). The share of banknote circulation used for euro area transactions can be estimated using the seasonal method.[7] This method exploits the strong monthly seasonality of banknote demand to divide total circulation into domestic transactional demand and the rest of the demand components (domestic store of value and foreign demand). This means that estimates

[6] See Assenmacher, K., Seitz, F. and Tenhofen, J., "The use of large denomination banknotes in Switzerland, *International Cash Conference 2017 War on Cash: Is there a Future for Cash*? Deutsche Bundesbank, Constance, 2017, pp. 148-199.

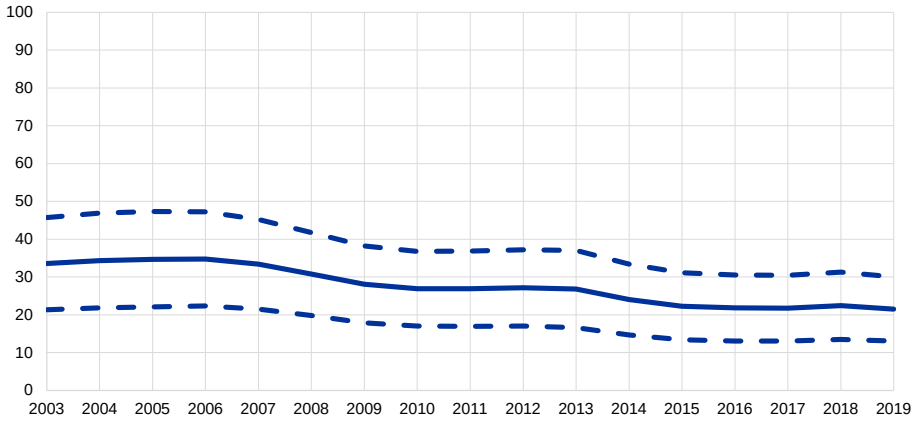
[7] A formal description of the method, as used in this section, can be found in *ibid.*, pp. 148-199. Vault cash and the €10-banknote circulation, corrected for carrying capacity (see more of this below), are selected as benchmarks.

of this decomposition are produced by comparing the seasonality of total banknote circulation with the seasonality of a benchmark variable that is purely transactional.[8] As the reliability of this method strongly depends on the benchmark, two series were selected to produce an upper and a lower bound. Results indicate that, in 2019, between 13% and 30% of the value of euro banknote circulation was used for transactions in the euro area (see Chart 3). The central estimate of 21.5% (€280 billion) is considered to be a good approximation[9] but should still be interpreted with caution. It is also worth noting that both benchmarks indicate that the share of circulation used for domestic transactions has decreased over the years.

Chart 3

Estimates of the share of value of euro banknotes held for domestic transactions according to the seasonal method

(percentage of total circulation)



Sources: Author's calculation, ECB.
Note: The solid line represents the central estimate and the dashed lines represent the lower and upper bound. The latest observation was made in December 2019.

According to the return frequency method, in 2019 between 15% and 25% of the value of euro banknote circulation was held for transactions in the euro area, yielding a central estimate of around 20% (€260 billion). Different denominations of euro banknotes return to Eurosystem central banks at varying frequencies.[10] Banknotes returning less often are partly circulating in domestic channels more distant from central banks and partly stored domestically or held abroad. As with the seasonal method, it is possible to produce an upper and lower bound of the active circulation by using the return frequency of purely transactional denominations as benchmarks

8 The seasonality of domestic cash transactions cannot be observed. Benchmark variables that have been used to effectively capture domestic cash transactions are small denominations like the €10 banknote or vault cash; see the article entitled "Trends and developments in the use of euro cash over the past ten years", op. cit., and Bartzsch, N., Rösl, G. and Seitz, F., "Currency movements within and outside a currency union: The case of Germany and the euro area", *The Quarterly Review of Economics and Finance*, Vol. 53, No 4, Elsevier, Amsterdam, 2013, pp. 393-401.

9 The seasonality of transactional demand is likely to be underestimated for the €10 banknote series (not all €10 banknotes are used for transactions) and overestimated for vault cash series (safety stocks during peak demand periods heighten the seasonality).

10 The return frequency for a certain denomination is the number of returned banknotes over a year divided by that year's average circulation; for a detailed explanation, see the article entitled "Trends and developments in the use of euro cash over the past ten years", op. cit.

(making two extreme assumptions). This is narrower than the interval estimated using the seasonal method.

An analysis of the introduction of the second series of euro banknotes provides further information on how the different denominations of banknotes circulate. The introduction of the second series of euro banknotes and the subsequent replacement of the first series provides valuable information. The saturation rates of different banknote denominations (i.e. number of banknotes of the second series in circulation over total number of banknotes from the first and second series) follow a specific type of pattern which can be analysed by fitting curves to the data.[11] Chart 4 illustrates this for €5 (typically transactional, like the €10 and €20 denominations) and €50 denominations (used for transactions but also as a store of value domestically and abroad like other high value denominations €100 and €200). An interesting pattern emerges: the curves start flattening before the new series saturate 100% of the circulation, reaching a steady-state saturation rate called the "carrying capacity". This means that a portion of banknotes from the first series may never return to the Eurosystem because they may be either permanently stored domestically or – as is perhaps more likely – lost or held abroad. For low (typically transactional) denominations one would expect that most banknotes return to the central bank. They exhibit a higher carrying capacity (around 86% and 89%) than higher-value denominations (for example, the €50 has a projected carrying capacity of 70%). Also, as one would expect, the €5 denomination (mostly used for transactions) has a steeper curve, meaning that it reaches the carrying capacity quicker than the €50 (used for transactional purposes but also as a store of value both domestically and abroad).[12] These patterns are also observable with other denominations. This shows that the higher the value, the higher the likelihood that a banknote is used as a store of value domestically or abroad; similarly, the higher the value, the higher the likelihood it is held as a store of value for a long time.

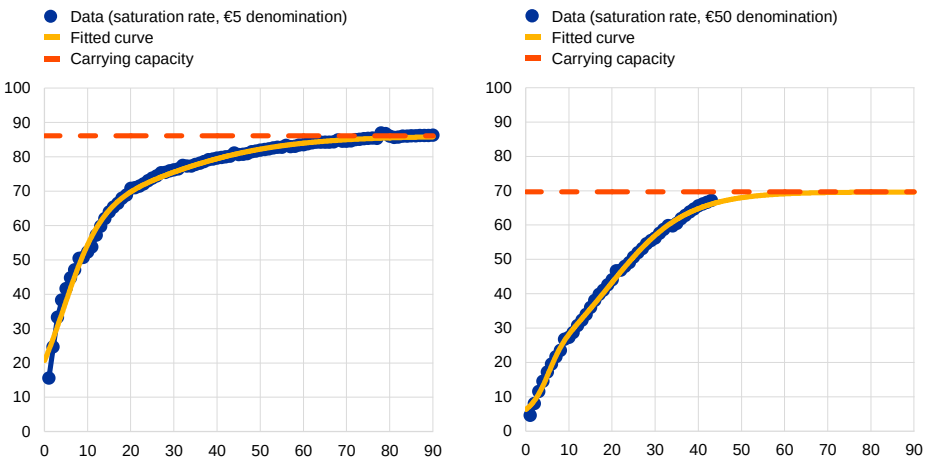
11 Logistics models that assume circulation can be divided into two distinct compartments provide the best fit. This matches the intuitive assumption that a portion of banknotes actively circulate and return quickly to the central bank, while others return more slowly as they are circulating in distant channels or stored.

12 This simple graphical analysis can be made more precise by interpreting the first and second derivatives of the curves. This enables accurate assessment of when the return of banknotes for the different denominations accelerates and decelerates.

Chart 4

Analysis of the €5 and €50 banknote saturation rates

(percentages, monthly data)



Source: ECB and author's calculations; latest observation November 2020.
Notes: The saturation rate is the number of banknotes of the second series in circulation over total number of banknotes.

A recent ECB household survey[13] shows that the total value of cash transactions by citizens in 2019 amounted to €1,993 billion and that cash is still the most used means of (retail) payment, although the share of cash payments has decreased. Although indirect methods can provide valuable estimates of the use of cash for transactions domestically, direct methods such as payment surveys are necessary to supplement our indirect knowledge. As explained in more detail in Box 1, the cited ECB survey shows that, in 2019, cash was the most used means of payment in the euro area for point-of-sale (POS) and person-to-person (P2P) transactions and non-negligible in other types of transactions. However, the share of cash payments has decreased in the past three years by six percentage points. According to the survey, euro cash has been used for 117 billion physical and online transactions, corresponding to a value of €1,993 billion.

Box 2

Domestic transactional use of cash, evidence from the SPACE survey

Prepared by Chiara Litardi and Alejandro Zamora-Pérez

The ECB Study on Payment Attitudes by Consumers in the Euro Area (SPACE)[14] shows the relevant role of cash in daily transactions; 72% of the transactions at the point of sale (POS)[15] (representing 47% in value terms) and 83% of person-to-person (P2P) transactions (57% in value) are made in cash.[16] The significant difference between number of transactions and value is due to the more

[13] See "Study on the payment attitudes of consumers in the euro area (SPACE)", ECB, Frankfurt am Main, December 2020.

[14] ibid.

[15] The POS category is the most common type of person-to-business payment and it includes transactions at: supermarkets; small shops for day-to-day items (e.g. bakery, drug store); street vendors or markets (e.g. newspaper, florist); shops selling durable goods (e.g. clothing, toys, electronics); petrol stations; restaurants; bars; cafés; hotels; venues for culture, sport or entertainment; vending or ticketing machines; offices of public authorities or post offices; services outside the home (e.g. hairdresser, dry cleaning); and all other physical locations.

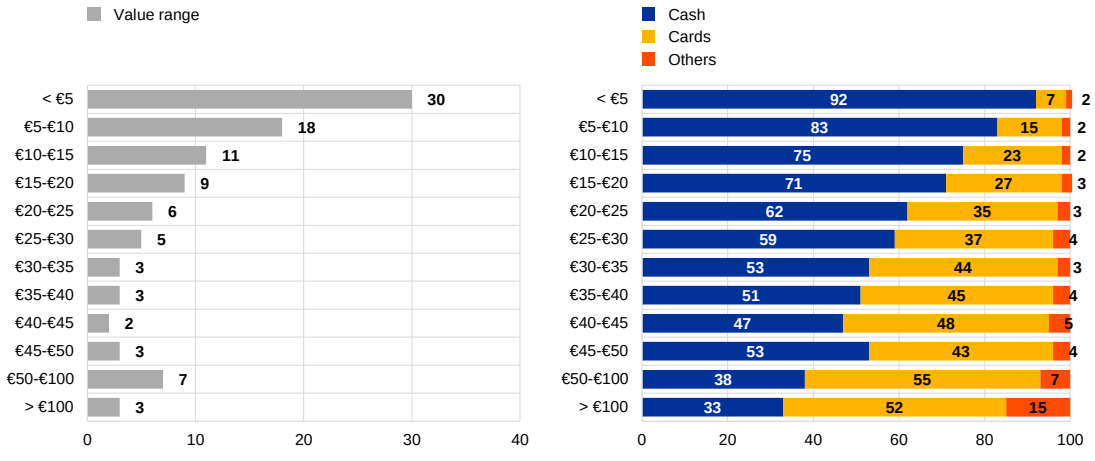
[16] Considering POS and P2P combined it is 73% in number and 48% in value.

frequent use of cash for low-value transactions. For both POS and P2P combined, payments below €15 represent most of the transactions made as shown in Chart A (left-hand panel). 92% of payments below €5 are made in cash while only 33% of transactions above €100 (which represent only 3% of all POS and P2P transactions) are paid in cash (see Chart A, right-hand panel).

Chart A

Use of payment instrument at POS and P2P, by value range

(x-axis: percentage, share in all transactions; y-axis: value, transactions)



Sources: ECB, De Nederlandsche Bank, Dutch Payments Association and Deutsche Bundesbank.

Even if cash is the most used means of payment in POS and P2P transactions, its usage compared to other payment instruments has decreased in the last three years when a similar survey was conducted[17]. Since 2016, the share of cash payments has decreased by six percentage points both in terms of number of transactions and value, both for POS (from 78% of transactions and 53% of value three years ago) and P2P (from 89% of transactions and 63% of value).

Other person-to-business payments where cash is used are the recurring payments such as to pay electricity bills, telephone bills or rent, with large differences across countries and types of service. Around 6% of citizens in the euro area pay electricity bills in cash, with a high variability across countries (ranging from 1% to 38%). The use of cash is lower for rent (4%) and phone bills (5%), also with significant differences in euro area countries.

As a means for transaction, the use of cash for business-to-person payments is non-negligible, although it has declined since 2016. According to SPACE, 13% of euro area citizens still get some regular income in cash. Around one in ten respondents received up to half or more than half of their income in cash. In terms of occupation, self-employed citizens receive income in cash more often; on average, 26% of them have received at least part of their income in this way.

[17] See Esselink, H. and Hernandez, L., "The use of cash by households in the euro area", *Occasional Paper Series*, No 201, ECB, Frankfurt am Main, November 2017.

3 The non-transactional demand of banknotes

The central estimates of the previous section suggest that around 80% of the value of banknotes in circulation was not actively used for domestic transactions in 2019, and this share has risen over the years. The following section will present the available evidence on the remaining components of cash demand, namely foreign demand and domestic store of value.

The circulation of euro banknotes outside the euro area

A recent comprehensive study[18] on the foreign demand for banknotes suggests that between 30% and 50% of the value of euro banknotes was held abroad in 2019 and this share has been increasing in recent years. In December 2019 the total cumulated (i.e. net) euro banknotes shipped in and out of the euro area via banking channels only represented 13% of total banknote circulation in terms of value. However, the study clarifies that there are several channels through which banknotes can flow in and out of the euro area, such as non-registered remittances or tourism. This is why several indirect approaches were used to more accurately investigate this topic. According to a method developed by the ECB, in 2019 around 30% of the total value of banknotes in circulation was held abroad.[19] This share goes up to 50% for the same year when using the seasonal (estimates for 2018) and age of banknote methods (estimates for 2019). These two methods compare certain characteristics (such as seasonality or the lifespan of banknotes) of the euro banknote population with other, otherwise similar, reference countries' banknote populations.[20] Interestingly, both the ECB method and the seasonal method[21] suggest that this share has been increasing over the years (from around 20% in 2008 to around 30% in 2018 and from over 35% in 2008 to over 50% in 2018, respectively). The wide interval resulting from the different methods reflects the complexity of estimating the size of the foreign demand component of euro banknotes. As explained in relation to the indirect approaches used in Section 2, the reliability of these methods depends on a variety of assumptions, and thus the results should be taken with a certain degree of caution.

There are many reasons why in developing and transition economies there is a high demand for national cash in general and foreign strong currencies in particular.[22] The literature normally attributes the high use of cash in developing and transition countries to both supply-side problems (such as underdeveloped payment infrastructures and the lack of access to credible saving alternatives) as well as demand-side factors (lack of trust in banks, deeply entrenched habits or unfavourable perceptions towards electronic payments). For the use of US dollar outside the United States, it has been found that some of the factors that influence its foreign demand are

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18 Lalouette, L., Zamora-Pérez, A., Rusu, C., Bartzsch, N., Politronacci, E., Delmas M., Rua, A., Brandi, M. and Naksi, M., "Foreign demand for euro banknotes", *Occasional Paper Series*, No 253, ECB, Frankfurt am Main, 2021.

19 See "Estimation of euro currency in circulation outside the euro area", ECB, April 2017.

20 In the study, the chosen references were the Canadian dollar for the seasonal method and the Danish krone for the age of banknotes method. For more on both methods, see Lalouette, L. et al., op. cit., 2021.

21 The age of banknotes only provides an estimate for 2019 due to data unavailability.

22 A literature review can be found in Lalouette, L. et al., op. cit., 2021.

high historical inflation in those countries, size of the domestic market, global and local economic uncertainty and past dollar use. Recent evidence from a survey conducted regularly by the Oesterreichische Nationalbank (OeNB) also provides valuable findings on the determinants of euro banknote demand, although it is limited to central, eastern and south-eastern European economies. These determinants include limited trust in the local financial systems and in local currency, stronger individual preferences for cash, or expectations of the future adoption of the euro.

A macroeconometric model of euro banknote demand and quantitative and qualitative analyses of the determinants of euro net shipments find that mostly local factors (from countries demanding banknotes) influence foreign demand.[23] Different approaches indicate that the local economic activity of foreign countries has an impact on the overall demand for euro banknotes; also, local inflation, local unemployment and the nominal USD/EUR exchange rate influence euro net shipments. The influence seems to be mainly driven by medium- and high-denomination banknotes. Notably, apart from store-of-value and safe-haven asset demand, in some regions (Americas, Middle East, Asia and western non-EU countries) tourism seems to be the most important factor influencing demand.

The use of euro banknotes for domestic store of value

Between 27.5% and 50% of the value of banknote circulation is thought to be stored in the euro area in 2019, meaning that per-adult cash reserves (of euro area citizens as well as of banks and companies) range between €1,270 and €2,310. Using the estimates that around 20% of the value in circulation was used for domestic transactions and between 30% and 50% was held abroad, this means that in 2019 between 27.5% and 50% was used for store-of-value purposes in the euro area.[24] This implies that the amount of cash reserves per-adult ranged between €1,270 and €2,310. It should be stressed that this per-adult amount includes people's holdings, but also cash held by euro area monetary financial institutions (MFIs) and companies. This breakdown by sectors has not been determined so far.

Although cash held by MFIs in normal conditions is mostly held for transaction purposes, the developments of vault cash in recent years can provide a hint of the amount of cash used for store-of-value purposes. Generally, MFIs hold cash in their vaults mainly for the purpose of transactions. Chart 5 shows that, after the rate of the ECB's deposit facility went into negative territory (more obviously, when it was decreased in March 2016 from -0.3% to -0.4%) a visible break in the series can be observed, hinting that storing cash was made relatively more attractive. As vault cash was rather stable from 2009 to the moment when the deposit facility rate first became negative in June 2014, it is likely that most of the €30 billion (60%) increase from then until the end of 2019[25] was for the purpose of storing value. Despite its pronounced increase, vault cash only represented around 7% of total banknote circulation at the

23 ibid.

24 These figures are calculated as a residual value from the previous estimates of the other components and the wide intervals reflect the uncertainty surrounding the previous calculations.

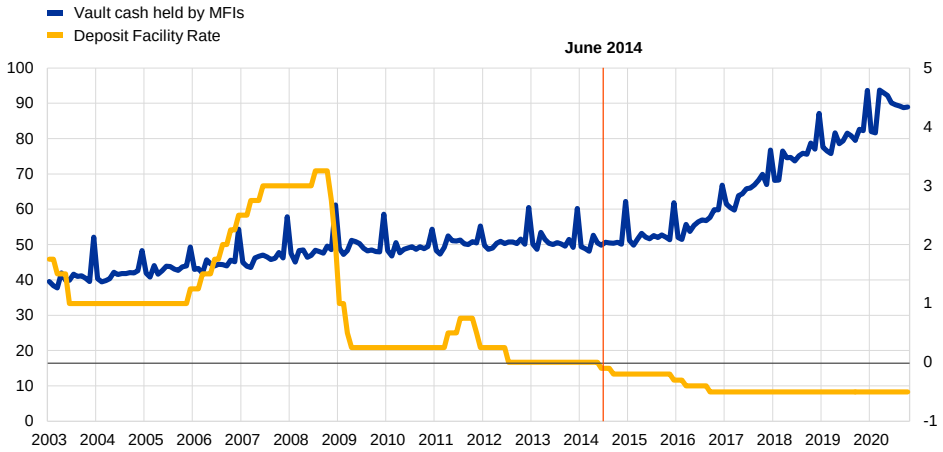
25 Considering the seasonally adjusted series (i.e. removing the seasonal peak of December).

end of 2019 so it can by no means entirely explain the increase of domestic store of value usage.

Chart 5

Vault cash held by MFIs and Deposit Facility Rate

(left-hand scale: value, EUR billion; right-hand scale: percentage points, end-of-month figures)



Source: ECB; latest observation October 2020.

In contrast to MFIs, there is neither available data on the precise amount of cash held by retailers and citizens, nor estimates on the trends of their cash holdings in recent years. At the same time, it is certain that the above change in the deposit facility rate did not affect companies (who mostly hold cash for transactions) and people living in the euro area in the same manner as it did MFIs, as neither people nor companies are able to deposit excess liquidity with the ECB. Nevertheless, as long as the opportunity cost of holding cash has decreased due to the low interest rate environment, people and companies might have been inclined to save more in cash than in other liquid assets yielding low interest. However, it is likely that, as is the case with other currencies that experienced a high increase in non-transactional demand, the low interest environment cannot fully explain the rise in demand. It is possible that other factors, such as increased uncertainty or the ageing of the population, may be at play.[26]

Household surveys, such as SPACE, provide further evidence on cash reserves held by citizens but, due to the sensitivity of the questions, respondents are thought to underreport their cash holdings. This means that survey results must also be considered with an appropriate level of caution. Box 2 presents evidence from SPACE on cash reserves, as well as from a recent nationwide survey in Germany studying the motives of why German citizens save in cash.

[26] For example, see Jobst, C. and Stix H., "Doomed to Disappear? The Surprising Return of Cash Across Time and Across Countries", *CEPR Discussion Papers*, No 12327, September 2017, and Shirai, S. and Sugandi E. A., "What Explains the Growing Global Demand for Cash?", *ADBI Working Papers*, No 1006, Asian Development Bank Institute, Tokyo, September 2019.

Box 2

Domestic cash holdings of euro area citizens: evidence from two recent surveys

Prepared by Chiara Litardi and Alejandro Zamora-Pérez

Descriptive analysis of SPACE data on cash reserves by euro area citizens

SPACE data show that around one out of three respondents kept cash reserves at home in 2019, with sizeable differences across countries. 34% of respondents declare to hold cash reserves, while 62% declared that they don't hold any cash and 4% refused to answer. In some countries, up to 50% of respondents report keeping extra cash.

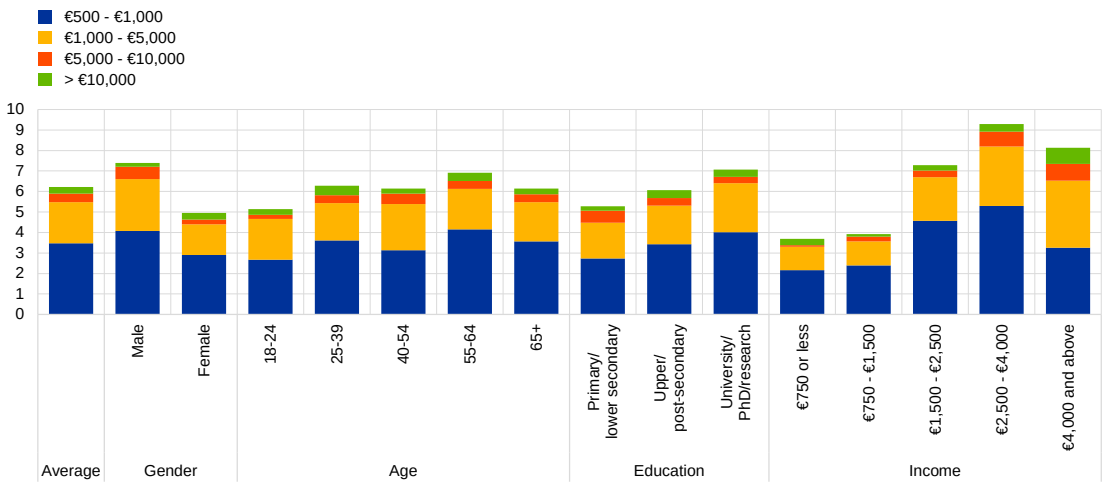
In 2019 most of the respondents holding cash at home answered that they held relatively small amounts; this suggests the bulk of citizens' cash holdings might be held by a reduced share of the population. Among those who responded that they put cash aside outside a bank, three out of four people (75%) had less than €500, while one out of ten (10%) kept between €500 and €1,000. A small portion of respondents declared high amounts, only 6% reported between €1,000 and €5,000 and 2% kept over €10,000. Some of the respondents who reported keeping cash at home refused to disclose how much cash they store (7%).

In the euro area, there are important differences across socio-demographic groups such as gender, education and income (see Chart A). Men are more likely to hold larger amounts than women and individuals with more education tend to hold higher amounts of cash than those with less education. However, this could be reflecting income inequalities within the above groups, as the survey shows that consumers with higher income level keep higher amounts of extra cash. Further research is needed to assess how the different variables influence cash holdings.

Chart A

Amount of cash reserves (€500 and above) by demographics

(Percentage of the overall population)



Sources: ECB, De Nederlandsche Bank and Dutch Payments Association and Deutsche Bundesbank.
Notes: The data on average, gender and education are for the euro area (19 countries). The data for the income groups excludes the Netherlands (18 countries). Income group is defined as the monthly household income after taxes and social security.

Results from a German study

A recent study based on survey data from Germany[27] – a country that accounts for a large share of banknote circulation in the euro area – shows that individuals in Germany held an average of €1,364 in cash in 2018. To obtain this data, the survey employed a number of confidence-boosting measures to reduce the bias of underreporting the amounts of cash reserves and gain insight into other sensitive aspects. The average amount declared (€1,364) is close to the lower bound of holdings in the euro area provided in the main text of this section (€1,270), although the figures are not directly comparable as, among other aspects, the estimates in this article also consider holdings by banks and retailers.

Regression results point that age, income and employment status have an influence on holding cash reserves. Older people tend to hold more cash outside their wallets, although the increase of holdings by age is not linear (cash reserves seem to be accumulated until shortly before retirement). The average cash amount that individuals save rises with income, and the bulk of the value of cash holdings seems to be concentrated among the top percentiles of the income distribution. Among those working, the largest reserves are held by self-employed people.

The above study also looks at the reasons why people hoard cash: factors such as doubts about the security and reliability of technical systems had an impact, whereas tax motives were not a key factor. The study asked a set of indirect questions about tax morale to develop a set of tax honesty indicators without directly asking the respondents about these matters. Although 12% of respondents declared that tax motives can explain why people choose to hold cash, there is no correlation between tax honesty indicators and keeping cash aside. Some other factors, such as concerns about security and the reliability of technical systems, appear instead to influence the decision to keep cash outside the

[27] Eschelbach, M. and Schneider, F., "Cash hoarding by German households – an empirical analysis of how much cash they store and why", Deutsche Bundesbank, Frankfurt am Main, July 2020.

wallet. Moreover, those who reported having doubts about technical systems tended to hold relatively large amounts.

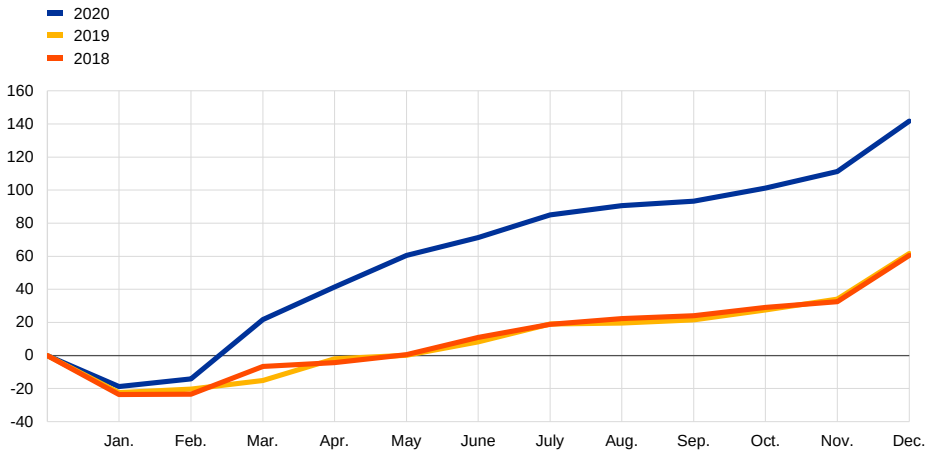
4 The increase in banknote issuance during crises: the case of the COVID-19 pandemic

During 2020 the increase in banknote circulation was abnormally high due to the COVID-19 pandemic, a trend that has also been observed in other crises periods. During different types of crises, people tend to increasingly demand cash, and the COVID-19 crisis was no exception (see Box 3). Chart 6 shows the net issuance of euro banknotes in 2020 and compares it with the previous two (normal) years. After the negative issuance at the beginning of the year (when, after Christmas, returned banknotes are always higher than issued banknotes), net issuance in 2020 started deviating from the normal growth rate once the COVID-19 pandemic spread across Europe. In the two previous years, net issuance in December was around €61 billion, while in 2020 it was over €141 billion (an €80 billion difference representing an increase of over 130%).

Chart 6

Cumulated net issuance of euro banknotes in 2020 compared with previous years

(EUR billion, cumulated net issuance, end-month figures)



Source: ECB; latest observation December 2020.

Box 3

Cash and crises

Prepared by Gerhard Rösl and Franz Seitz

It has been observed globally that, in the past, an important driver of high increases in cash holdings has been rising cash demand due to crises.[28] As can be seen in Chart A, cash demand has

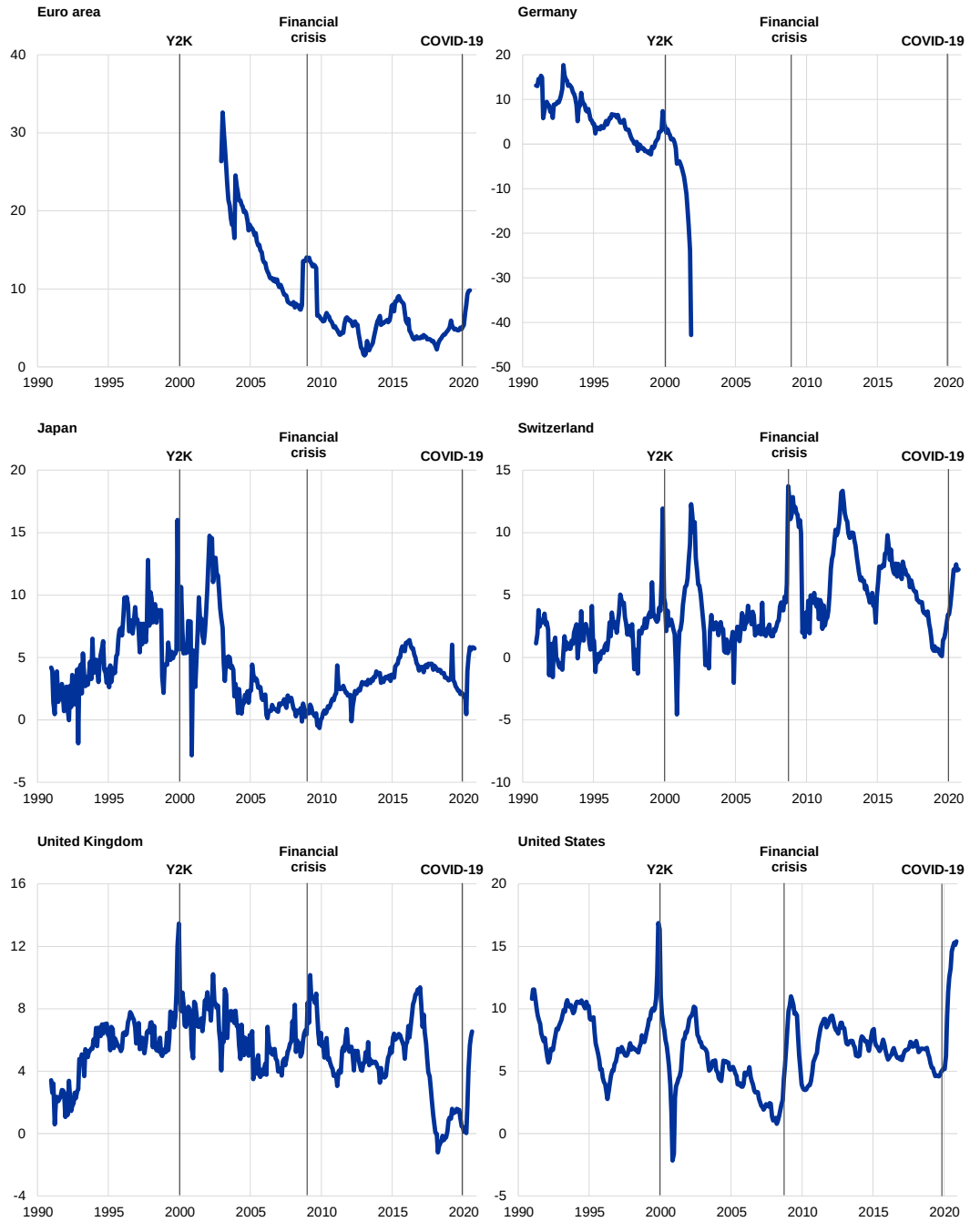
[28] A more thorough analysis of the relationship between cash and crises can be found in Rösl, G. and F. Seitz, "Cash and Crises: No surprises by the virus", *IMFS Working Papers*, No 150, Institute for Monetary and Financial Stability, Frankfurt, 2021.

increased in major currency areas during all the included crises, sometimes quite drastically. In what follows, we cover historical examples worldwide that point at the importance of cash during crises by distinguishing between three different types of crisis, namely (a) technological crises (such as the Y2K crisis), (b) financial market crises (like the great financial crisis of 2008/9) and (c) natural disasters (such as earthquakes, hurricanes or the ongoing COVID-19 pandemic).

Chart A

Annual growth rates of cash in selected countries

(local currency)



Source: Relevant national central banks.
Notes: Data refer to cash or banknotes in circulation.

The huge increase in the global demand for cash during the technological crisis around the turn of the year 2000 (Y2K) was caused by a heightened uncertainty. At that time, it was feared that the re-setting of computer program dates in order to adjust for the new millennium would have led to a shutdown of important institutions like public utilities, but also the smooth functioning of payment systems and cash withdrawals from ATMs were in question. The surge in cash in circulation (see Chart A) around the millennium was thus driven by transaction and precautionary motives as well as the desire to store value. For example, in the United States cash issuance of both small and large denominations increased by an annual rate of more than 20% at the end of 1999, whereas cash demand for Swiss francs concentrated mainly on high denominations (annual growth rate: 14%) probably reflecting a strong increase in foreign demand.[29] Domestic demand for cash around Y2K was often also fuelled by an increase in banks' vault cash, especially in the United States.

After the collapse of Lehman Brothers in October 2008, the resulting financial turmoil in the United States quickly scaled up to a global financial crisis which led to a visible increase in cash demand. In the United States, where the financial crisis originated, but also in the euro area, in Switzerland and in the United Kingdom, cash issuance went up considerably. In Japan, in contrast, which was not as heavily hit by the crisis, neither overall cash issuance nor single yen denominations showed an unusual increase. This time, store of value was obviously the dominant motive behind cash demand as especially the larger denominations increased (in the United States, the euro area, Switzerland and the United Kingdom). In the first three currency areas, this was due to domestic and foreign demand for the respective currencies.

The outbreak of COVID-19 led to a drastic downturn for the world economy in 2020, resulting in a stark decrease in turnover at the point of sale. However, global cash in circulation increased exceptionally. Regarding the demand for small and large banknote denominations, interesting differences emerged. In the United States as well as in the euro area, annual growth rates of small banknote transaction balances exceeded those of the largest denominations in mid-2020, whereas the opposite was true for banknote issuances in Switzerland and Japan.

To summarise, crisis periods have fostered cash demand in the past regardless of what kind of crisis occurs. This points to the important role that physical cash seems to play in successful crisis management.

The transactional demand for cash has decreased while contactless payments have increased, according to a 2020 ECB survey on consumers' perceptions during early stages of the pandemic. The survey to measure the impact of the pandemic on cash trend (IMPACT survey) provides an indication as to changes in payment behaviour during the first stages of the COVID-19 pandemic[30]. Although around half of the respondents reported using cash and cards in a similar manner as they had before the crisis, around 40% declared that they were using contactless payment cards more often. The same share (40%) of respondents declare that they were using cash much less often or somewhat less often. The latter group of respondents were also asked about their expected behaviour after the pandemic;

[29] See, e.g. Assenmacher, K., Seitz, F. and Tenhofen, J., "The demand for Swiss banknotes: some new evidence", *Swiss Journal of Economics and Statistics*, Vol. 155, No 14, Springer, 2019.

[30] However, it is not directly comparable to the SPACE survey. Further, some figures in the main text were from questions admitting multiple answers. See for more detail "Study on Payment Attitudes by Consumers in the Euro Area", op. cit.

around 87% indicated that they would continue to pay less often in cash when the pandemic is over. This would point towards a further decrease in transactional demand for cash, although researchers have observed that consumer perceptions or self-reported preferences are normally not indicative of payment behaviour.[31] Hence, further survey evidence after the pandemic is needed to assess whether these findings will be consolidated after the pandemic.

Reduced banknote flows in and out of Eurosystem central banks indicate that active circulation has decreased, suggesting a higher precautionary demand possibly due to increased uncertainty and reduced mobility[32]. Although during other crises there was an increase in the gross issuance of euro banknotes, during the COVID-19 pandemic it decreased compared to previous levels. The high increase in net issuance (gross issuance minus returns) is because the number of banknotes returning to the central bank decreased even more than gross issuance. This indicates that banknotes are circulating less actively than in the previous year, reflecting an impulse to keep cash reserves for precautionary savings, as well as corroborating a weaker transactional demand. Reasons for this behaviour could include increased uncertainty and reduced mobility (leading households to hold higher amounts, thereby reducing the need to go to a cash dispenser).

Euro banknote shipments data suggests that foreign demand did not account for a sizeable share of this increase, which indicates that it could be mostly due to precautionary motives within the euro area. The cumulated net shipments of euro banknotes abroad in 2020 was negative, meaning that more banknotes returned from abroad than those that were issued. This indicates that demand for banknotes from outside the euro area did not contribute to high demand. Informal channels, such as tourism or remittances, most likely did not contribute either, as these activities also decreased during the pandemic. This means that most of the demand was coming from domestic (euro area) precautionary savings.

5 Conclusions

The first step to understanding the paradox of banknotes is to acknowledge the importance of demand for cash for store-of-value purposes, as well as demand for euro banknotes outside the euro area. Although cash is still the most used means of payment at POS and P2P according to recent ECB surveys, the share of cash transactions versus other payment methods has decreased over time. However, cash demand has increased overall, and decomposing banknote circulation into its three components (euro area transactional demand, store of value inside the euro area and foreign demand) is key to explaining this increase. The share of the value of banknote circulation held for euro area transactions is thought to be between 20% and 22% (the upper and lowest bounds indicate this share may be between 13% to 30%, but these are based on extreme assumptions and central estimates are deemed

31 ibid.

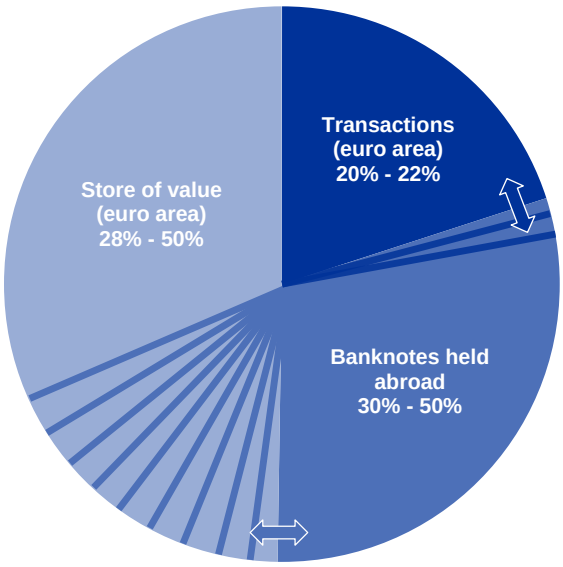
32 In March 2020, during the start of the pandemic in Europe, gross issuance increased, which was partly associated with lockdown announcements and subsequent runs on basic food (associated with higher spending). However, the rate of growth of gross issuance decreased in the following months and has not yet returned to normal levels.

reasonable). This reduced share highlights the importance of the other two components of cash demand: the store-of-value demand inside the euro area (28% to 50% of total circulation value in 2019) and the foreign demand for euro banknotes (30% to 50% in 2019). The wide intervals of the estimates indicate a high uncertainty due to the fact that the ways people actually use cash is not directly observable. This means that such estimates should be considered with appropriate caution. Figure 1 depicts the estimated size of the different components of banknote demand.

Figure 1

Estimates of components of euro banknote circulation

(percentages, rounded figures without decimals)



Source: Author's calculations and Lalouette, L. et al., op. cit., 2021.
Notes: Percentage estimates refer to value of banknotes in circulation. For the share of domestic demand the central estimates of the seasonal and return frequency methods are used. The lower and upper bounds that result from extreme assumptions are not depicted for simplicity.

The COVID-19 pandemic has intensified the euro area demand for cash for precautionary purposes (i.e. as a store of value) while the transactional demand seems to have further decreased; it is still uncertain how cash would be used after the pandemic. Survey evidence and the reduced flows of banknotes in and out of the Eurosystem central banks suggest that the demand for cash transactions has decreased. As with other crises, the increase in cash demand has been driven by precautionary motives, although this demand has come mainly from inside the euro area. Further evidence will be needed in the future to assess how cash will be used once the pandemic is over.

Statistics

Contents

Further information

ECB statistics can be accessed from the Statistical Data Warehouse (SDW):	http://sdw.ecb.europa.eu/
Data from the statistics section of the Economic Bulletin are available from the SDW:	http://sdw.ecb.europa.eu/reports.do?node=1000004813
A comprehensive Statistics Bulletin can be found in the SDW:	http://sdw.ecb.europa.eu/reports.do?node=1000004045
Methodological definitions can be found in the General Notes to the Statistics Bulletin:	http://sdw.ecb.europa.eu/reports.do?node=10000023
Details on calculations can be found in the Technical Notes to the Statistics Bulletin:	http://sdw.ecb.europa.eu/reports.do?node=10000022
Explanations of terms and abbreviations can be found in the ECB's statistics glossary:	http://www.ecb.europa.eu/home/glossary/html/glossa.en.html

Conventions used in the tables

-	data do not exist/data are not applicable
.	data are not yet available
...	nil or negligible
(p)	provisional
s.a.	seasonally adjusted
n.s.a.	non-seasonally adjusted

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP [1] (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area [2] (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2018	3.6	3.0	1.3	0.6	6.7	1.9	2.6	2.1	2.4	2.5	1.0	2.1	1.8
2019	2.8	2.2	1.4	0.3	6.0	1.3	2.1	2.2	1.8	1.8	0.5	2.9	1.2
2020	.	-3.3	-9.9	-4.8	2.3	-6.6	1.4	1.8	1.2	0.9	0.0	2.5	0.3
2020 Q1	-3.4	-1.3	-2.9	-0.6	-9.7	-3.8	2.1	2.2	2.1	0.2	0.5	5.0	1.1
Q2	-6.6	-9.0	-19.0	-8.3	11.6	-11.6	0.9	1.6	0.4	0.2	0.1	2.7	0.2
Q3	8.1	7.5	16.1	5.3	3.0	12.5	1.3	1.7	1.2	0.2	0.2	2.3	0.0
Q4	.	1.0	1.0	3.0	2.6	-0.7	1.2	1.6	1.2	0.2	-0.8	0.1	-0.3
2020 Sep.	-	-	-	-	-	-	1.3	1.7	1.4	0.5	0.0	1.7	-0.3
Oct.	-	-	-	-	-	-	1.2	1.6	1.2	0.7	-0.4	0.5	-0.3
Nov.	-	-	-	-	-	-	1.2	1.6	1.2	0.3	-0.9	-0.5	-0.3
Dec.	-	-	-	-	-	-	1.2	1.6	1.4	0.6	-1.2	0.2	-0.3
2021 Jan.	-	-	-	-	-	-	.	.	1.4	0.7	-0.6	-0.3	0.9
Feb. [3]	-	-	-	-	-	-	.	.	.	.	.	.	0.9

Sources: Eurostat (col. 6, 13); BIS (col. 9, 10, 11, 12); OECD (col. 1, 2, 3, 4, 5, 7, 8).
1) Quarterly data seasonally adjusted; annual data unadjusted.
2) Data refer to the changing composition of the euro area.
3) The figure for the euro area is an estimate based on provisional national data, as well as on early information on energy prices.

1.2 Main trading partners, Purchasing Managers' Index and world trade

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports [1]		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index [2]					
	Global [2]	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders	Global	Advanced economies	Emerging market economies
	1	2	3	4	5	6	7	8	9	10	11	12
2018	53.4	55.0	53.3	52.1	52.3	54.6	53.1	53.8	50.8	4.5	3.2	5.9
2019	51.7	52.5	50.2	50.5	51.8	51.3	50.3	52.2	48.8	-0.5	-0.3	-0.8
2020	47.5	48.8	46.5	42.4	51.4	44.0	48.5	46.3	45.3	-4.6	-4.7	-4.6
2020 Q1	46.1	47.9	47.4	44.4	42.0	44.2	46.7	45.9	46.0	-2.0	-2.0	-2.0
Q2	37.9	37.3	30.5	31.5	52.6	31.3	40.6	36.9	35.0	-8.6	-8.6	-8.5
Q3	52.0	53.1	57.5	45.6	54.7	52.4	52.6	51.7	49.0	7.8	8.7	6.8
Q4	54.2	56.8	50.5	48.2	56.3	48.1	54.6	54.0	50.8	4.4	4.9	3.8
2020 Sep.	53.0	54.3	56.5	46.6	54.5	50.4	53.1	53.0	51.0	7.8	8.7	6.8
Oct.	54.2	56.3	52.1	48.0	55.7	50.0	53.7	54.3	50.4	7.3	8.1	6.4
Nov.	54.8	58.6	49.0	48.1	57.5	45.3	55.3	54.7	51.6	5.7	6.7	4.6
Dec.	53.5	55.3	50.5	48.5	55.8	49.1	54.7	53.1	50.4	4.4	4.9	3.8
2021 Jan.	53.3	58.7	41.2	47.1	52.2	47.8	54.0	53.0	49.3	.	.	.
Feb.	54.2	59.5	49.6	48.2	51.7	48.8	53.6	54.4	49.8	.	.	.

Sources: Markit (col. 1-9); CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations (col. 10-12).
1) Global and advanced economies exclude the euro area. Annual and quarterly data are period-on-period percentages; monthly data are 3-month-on-3-month percentages. All data are seasonally adjusted.
2) Excluding the euro area.

2 Financial developments

2.1 Money market interest rates

(percentages per annum; period averages)

	Euro area [1]						United States	Japan
	Euro short-term rate (€STR) [2]	Overnight deposits (EONIA)	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	3-month deposits (LIBOR)	3-month deposits (LIBOR)
	1	2	3	4	5	6	7	8
2018	-0.45	-0.36	-0.37	-0.32	-0.27	-0.17	2.31	-0.05
2019	-0.48	-0.39	-0.40	-0.36	-0.30	-0.22	2.33	-0.08
2020	-0.55	-0.46	-0.50	-0.43	-0.37	-0.31	0.64	-0.07
2020 Aug.	-0.55	-0.47	-0.52	-0.48	-0.43	-0.36	0.25	-0.05
Sep.	-0.55	-0.47	-0.52	-0.49	-0.46	-0.41	0.24	-0.09
Oct.	-0.55	-0.47	-0.54	-0.51	-0.49	-0.47	0.22	-0.10
Nov.	-0.56	-0.47	-0.54	-0.52	-0.51	-0.48	0.22	-0.10
Dec.	-0.56	-0.47	-0.56	-0.54	-0.52	-0.50	0.23	-0.10
2021 Jan.	-0.56	-0.48	-0.56	-0.55	-0.53	-0.50	0.22	-0.08
Feb.	-0.56	-0.48	-0.55	-0.54	-0.52	-0.50	0.19	-0.09

Source: Refinitiv and ECB calculations.

1) Data refer to the changing composition of the euro area, see the General Notes.

2) The ECB published the euro short-term rate (€STR) for the first time on 2 October 2019, reflecting trading activity on 1 October 2019. Data on previous periods refer to the pre-€STR, which was published for information purposes only and not intended for use as a benchmark or reference rate in any market transactions.

2.2 Yield curves

(End of period; rates in percentages per annum; spreads in percentage points)

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area [1], [2]					Euro area [1], [2]	United States	United Kingdom	Euro area [1], [2]			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2018	-0.80	-0.75	-0.66	-0.26	0.32	1.07	0.08	0.51	-0.67	-0.45	0.44	1.17
2019	-0.68	-0.66	-0.62	-0.45	-0.14	0.52	0.34	0.24	-0.62	-0.52	-0.13	0.41
2020	-0.75	-0.76	-0.77	-0.72	-0.57	0.19	0.80	0.32	-0.77	-0.77	-0.60	-0.24
2020 Aug.	-0.58	-0.62	-0.66	-0.63	-0.37	0.25	0.58	0.30	-0.68	-0.71	-0.43	0.15
Sep.	-0.62	-0.64	-0.69	-0.71	-0.50	0.15	0.56	0.20	-0.69	-0.78	-0.58	-0.04
Oct.	-0.71	-0.75	-0.80	-0.81	-0.60	0.15	0.75	0.27	-0.81	-0.88	-0.68	-0.17
Nov.	-0.72	-0.72	-0.75	-0.75	-0.55	0.17	0.73	0.32	-0.75	-0.81	-0.62	-0.13
Dec.	-0.75	-0.76	-0.77	-0.72	-0.57	0.19	0.80	0.32	-0.77	-0.77	-0.60	-0.24
2021 Jan.	-0.62	-0.70	-0.75	-0.74	-0.51	0.19	0.99	0.46	-0.78	-0.82	-0.58	-0.04
Feb.	-0.61	-0.65	-0.67	-0.55	-0.25	0.41	1.33	0.78	-0.69	-0.66	-0.26	0.32

Source: ECB calculations.

1) Data refer to the changing composition of the euro area, see the General Notes.

2) ECB calculations based on underlying data provided by Euro MTS Ltd and ratings provided by Fitch Ratings.

2.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2018	375.5	3,386.6	766.3	264.9	172.6	115.8	173.1	629.5	502.5	278.8	292.9	800.5	2,746.2	22,310.7
2019	373.6	3,435.2	731.7	270.8	183.7	111.9	155.8	650.9	528.2	322.0	294.2	772.7	2,915.5	21,697.2
2020	360.0	3,274.3	758.9	226.8	163.2	83.1	128.6	631.4	630.2	347.1	257.6	831.9	3,217.3	22,703.5
2020 Aug.	361.8	3,297.7	785.5	207.6	161.9	78.9	123.8	641.3	677.3	355.8	253.6	841.5	3,391.7	22,874.2
Sep.	359.2	3,260.7	800.6	215.7	162.0	75.4	119.0	638.1	669.1	347.2	245.9	822.8	3,365.5	23,306.9
Oct.	355.1	3,180.4	784.7	220.4	162.0	69.8	112.9	641.0	660.8	350.5	240.0	809.1	3,418.7	23,451.4
Nov.	377.7	3,391.8	824.1	238.4	167.0	80.5	130.3	692.7	653.1	364.4	249.2	820.1	3,549.0	25,384.9
Dec.	394.0	3,530.9	852.2	249.1	170.2	88.6	140.6	718.0	697.6	373.2	252.2	814.8	3,695.3	26,773.0
2021 Jan.	403.1	3,592.2	877.5	251.5	170.7	91.6	140.8	734.6	743.4	391.6	254.3	835.5	3,793.7	28,189.1
Feb.	410.0	3,667.1	873.5	258.5	168.5	90.7	146.1	751.4	785.6	372.8	253.9	851.8	3,883.4	29,458.8

Source: Refinitiv.

2 Financial developments

2.4 MFI interest rates on loans to and deposits from households (new business) [1), 2)]

(Percentages per annum; period average, unless otherwise indicated)

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase					
	Overnight	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3)]		By initial period of rate fixation				APRC [3)]	Composite cost-of-borrowing indicator
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2020 Feb.	0.02	0.36	0.33	0.70	5.62	16.60	5.48	5.58	6.13	2.20	1.43	1.54	1.38	1.36	1.71	1.41
Mar.	0.02	0.36	0.31	0.64	5.60	16.19	5.47	5.45	5.88	2.06	1.39	1.54	1.35	1.35	1.65	1.39
Apr.	0.02	0.36	0.23	0.73	5.38	16.06	3.60	5.50	5.54	1.99	1.30	1.54	1.35	1.43	1.67	1.43
May	0.02	0.36	0.24	0.70	5.26	16.06	4.12	5.30	5.64	1.83	1.47	1.58	1.40	1.41	1.70	1.42
June	0.02	0.35	0.23	0.71	5.28	16.02	4.41	5.14	5.57	1.87	1.44	1.64	1.38	1.39	1.68	1.42
July	0.02	0.35	0.22	0.74	5.16	15.92	4.73	5.27	5.70	2.00	1.43	1.59	1.34	1.38	1.67	1.40
Aug.	0.02	0.35	0.19	0.71	5.20	15.88	5.33	5.35	5.88	1.91	1.42	1.61	1.31	1.40	1.67	1.40
Sep.	0.02	0.35	0.19	0.70	5.23	15.86	5.07	5.25	5.75	1.94	1.39	1.61	1.31	1.37	1.66	1.38
Oct.	0.02	0.35	0.20	0.69	5.18	15.83	5.14	5.26	5.80	2.03	1.37	1.56	1.27	1.36	1.64	1.36
Nov.	0.02	0.35	0.20	0.71	5.11	15.78	5.01	5.25	5.90	2.04	1.37	1.54	1.29	1.35	1.63	1.35
Dec.	0.01	0.35	0.17	0.72	4.99	15.78	4.93	5.08	5.71	1.93	1.35	1.52	1.27	1.33	1.62	1.32
2021 Jan. [p]	0.01	0.35	0.21	0.68	5.01	15.80	4.85	5.32	5.87	1.91	1.35	1.50	1.29	1.35	1.60	1.33

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

2.5 MFI interest rates on loans to and deposits from non-financial corporations (new business) [1), 2)]

(Percentages per annum; period average, unless otherwise indicated)

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Overnight	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2020 Feb.	0.00	-0.12	0.32	2.05	1.99	2.30	2.11	1.58	1.54	1.41	1.11	1.21	1.25	1.52
Mar.	0.00	-0.08	0.25	1.98	1.90	2.18	1.97	1.57	1.51	1.47	1.14	1.10	1.18	1.46
Apr.	0.00	-0.06	0.31	1.97	2.00	1.16	1.70	1.61	0.92	1.48	1.22	1.12	1.26	1.47
May	0.00	-0.10	0.39	1.89	1.87	1.21	1.62	1.54	0.86	1.56	1.23	1.07	1.31	1.46
June	0.00	-0.12	0.32	1.94	1.89	1.50	1.79	1.55	1.13	1.50	1.23	1.17	1.42	1.49
July	0.00	-0.18	0.27	1.86	1.98	1.86	1.87	1.60	1.31	1.51	1.24	1.17	1.38	1.52
Aug.	0.00	-0.20	0.39	1.83	1.88	1.90	1.94	1.57	1.40	1.49	1.29	1.31	1.20	1.51
Sep.	0.00	-0.20	0.26	1.88	1.95	2.11	1.94	1.55	1.43	1.49	1.22	1.32	1.31	1.52
Oct.	0.00	-0.21	0.26	1.82	1.95	2.21	1.96	1.56	1.46	1.50	1.22	1.42	1.40	1.53
Nov.	-0.01	-0.20	0.42	1.83	2.00	2.01	1.98	1.58	1.41	1.47	1.22	1.29	1.30	1.51
Dec.	-0.01	-0.18	0.25	1.83	2.04	1.94	1.94	1.62	1.43	1.44	1.34	1.23	1.27	1.51
2021 Jan. [p]	-0.01	-0.14	0.45	1.84	2.16	2.00	1.92	1.62	1.44	1.41	1.18	1.19	1.29	1.51

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector.

2 Financial developments

2.6 Debt securities issued by euro area residents, by sector of the issuer and initial maturity

(EUR billions; transactions during the month and end-of-period outstanding amounts; nominal values)

	Outstanding amounts							Gross issues [1]						
	Total	MFIs (including Euro-system)	Non-MFI corporations			General government		Total	MFIs (including Euro-system)	Non-MFI corporations			General government	
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Short-term														
2018	1,217	504	170	.	72	424	47	389	171	66	.	41	76	35
2019	1,283	550	181	.	85	406	61	415	177	80	.	47	73	38
2020	1,522	452	154	.	97	700	118	447	170	69	.	45	114	49
2020 Aug.	1,668	505	156	.	121	744	142	384	153	56	.	29	112	34
Sep.	1,690	511	165	.	113	754	146	453	181	63	.	43	126	40
Oct.	1,659	504	158	.	114	742	141	392	181	42	.	36	93	40
Nov.	1,626	493	153	.	116	731	132	393	193	39	.	37	83	41
Dec.	1,522	452	154	.	97	700	118	324	153	59	.	30	51	31
2021 Jan.	1,575	494	147	.	99	704	131	465	219	44	.	37	121	43
Long-term														
2018	15,744	3,687	3,162	.	1,247	7,022	627	228	64	68	.	15	75	6
2019	16,312	3,817	3,398	.	1,321	7,151	626	247	69	74	.	20	78	7
2020	17,242	3,891	3,195	.	1,449	7,982	725	295	67	70	.	27	114	16
2020 Aug.	17,191	3,928	3,172	.	1,442	7,969	680	161	21	45	.	3	85	8
Sep.	17,286	3,946	3,179	.	1,460	8,006	694	315	65	80	.	27	124	19
Oct.	17,287	3,937	3,204	.	1,456	7,978	713	275	47	78	.	27	91	32
Nov.	17,267	3,915	3,187	.	1,456	7,987	722	218	42	62	.	18	79	17
Dec.	17,242	3,891	3,195	.	1,449	7,982	725	199	38	102	.	17	36	7
2021 Jan.	17,354	3,892	3,201	.	1,457	8,069	736	308	81	55	.	21	133	19

Source: ECB.

1) For the purpose of comparison, annual data refer to the average monthly figure over the year.

2.7 Growth rates and outstanding amounts of debt securities and listed shares

(EUR billions; percentage changes)

	Debt securities							Listed shares			
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non-financial corporations
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central government	Other general government				
	1	2	3	4	5	6	7	8	9	10	11
Oustanding amount											
2018	16,961.3	4,191.4	3,332.0	.	1,318.6	7,445.8	673.5	7,023.4	465.0	1,099.2	5,459.2
2019	17,594.9	4,366.8	3,578.5	.	1,405.9	7,557.2	686.5	8,587.9	538.4	1,410.6	6,638.9
2020	18,763.9	4,343.3	3,348.5	.	1,546.3	8,682.6	843.1	8,442.0	460.7	1,351.3	6,630.0
2020 Aug.	18,859.7	4,432.8	3,328.3	.	1,563.5	8,713.2	821.9	7,723.5	395.0	1,191.2	6,137.3
Sep.	18,976.2	4,457.8	3,344.5	.	1,573.5	8,760.5	839.9	7,537.2	364.9	1,127.7	6,044.6
Oct.	18,945.6	4,440.2	3,361.7	.	1,569.6	8,720.1	854.1	7,230.6	348.2	1,102.7	5,779.7
Nov.	18,892.5	4,407.9	3,340.3	.	1,572.3	8,717.8	854.2	8,232.3	448.2	1,312.8	6,471.2
Dec.	18,763.9	4,343.3	3,348.5	.	1,546.3	8,682.6	843.1	8,442.0	460.7	1,351.3	6,630.0
2021 Jan.	18,928.9	4,385.3	3,347.8	.	1,555.8	8,773.2	866.7	8,327.8	437.5	1,344.7	6,545.6
Growth rate											
2018	1.9	1.7	3.0	.	3.3	1.9	-4.3	0.7	0.3	2.4	0.4
2019	3.1	3.8	5.0	.	5.6	1.5	1.8	0.0	0.5	0.0	0.0
2020	7.4	1.2	2.6	.	12.3	10.9	24.3	1.3	0.0	3.0	1.1
2020 Aug.	7.7	2.8	4.6	.	12.1	10.2	18.2	0.3	-0.1	0.5	0.3
Sep.	7.9	2.7	4.3	.	11.7	10.6	21.2	0.6	-0.1	0.5	0.7
Oct.	8.2	2.5	4.4	.	11.9	11.0	24.2	1.0	0.1	2.2	0.8
Nov.	7.4	1.7	2.5	.	11.7	10.7	24.4	1.2	0.0	2.1	1.1
Dec.	7.4	1.2	2.6	.	12.3	10.9	24.3	1.3	0.0	3.0	1.1
2021 Jan.	7.4	0.2	2.9	.	11.5	11.3	25.4	1.4	0.0	4.3	1.0

Source: ECB.

2 Financial developments

2.8 Effective exchange rates [1)]

(period averages; index: 1999 Q1=100)

	EER-19						EER-42	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2018	100.0	95.7	94.0	90.5	80.6	95.8	117.3	95.1
2019	98.2	93.3	92.9	88.7	78.9	93.1	115.5	92.4
2020	99.7	93.7	94.1	.	.	.	119.4	94.0
2020 Q1	97.5	91.8	92.4	88.0	78.2	92.9	115.2	91.2
Q2	98.8	93.1	93.2	88.6	81.6	93.8	118.1	93.3
Q3	101.2	94.9	95.3	90.0	78.7	94.5	121.7	95.6
Q4	101.3	94.9	95.3	.	.	.	122.3	95.7
2020 Sep.	101.6	95.0	95.6	-	-	-	122.5	95.8
Oct.	101.4	94.8	95.3	-	-	-	122.4	95.7
Nov.	100.7	94.4	94.7	-	-	-	121.6	95.2
Dec.	101.9	95.4	95.9	-	-	-	123.0	96.1
2021 Jan.	101.4	95.7	95.2	-	-	-	122.4	96.3
Feb.	100.8	95.3	94.5	-	-	-	121.5	95.8
Percentage change versus previous month								
2021 Feb.	-0.7	-0.4	-0.7	-	-	-	-0.7	-0.5
Percentage change versus previous year								
2021 Feb.	4.6	5.0	3.4	-	-	-	7.0	6.6

Source: ECB.

1) For a definition of the trading partner groups and other information see the General Notes to the Statistics Bulletin.

2.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2018	7.808	7.418	25.647	7.453	318.890	130.396	4.261	0.885	4.6540	10.258	1.155	1.181
2019	7.735	7.418	25.670	7.466	325.297	122.006	4.298	0.878	4.7453	10.589	1.112	1.119
2020	7.875	7.538	26.455	7.454	351.249	121.846	4.443	0.890	4.8383	10.485	1.071	1.142
2020 Q1	7.696	7.490	25.631	7.472	339.137	120.097	4.324	0.862	4.7973	10.669	1.067	1.103
Q2	7.808	7.578	27.058	7.458	351.582	118.410	4.503	0.887	4.8378	10.651	1.061	1.101
Q3	8.086	7.527	26.479	7.445	353.600	124.049	4.441	0.905	4.8454	10.364	1.075	1.169
Q4	7.901	7.559	26.667	7.443	360.472	124.607	4.505	0.903	4.8718	10.268	1.078	1.193
2020 Sep.	8.033	7.542	26.741	7.442	360.605	124.501	4.473	0.909	4.8602	10.428	1.079	1.179
Oct.	7.923	7.575	27.213	7.442	362.529	123.889	4.541	0.907	4.8747	10.397	1.074	1.178
Nov.	7.815	7.562	26.466	7.446	359.842	123.610	4.495	0.896	4.8704	10.231	1.079	1.184
Dec.	7.960	7.542	26.311	7.441	359.016	126.278	4.479	0.906	4.8703	10.174	1.081	1.217
2021 Jan.	7.873	7.565	26.141	7.439	359.194	126.308	4.533	0.893	4.8732	10.095	1.079	1.217
Feb.	7.814	7.573	25.876	7.437	358.151	127.493	4.497	0.873	4.8750	10.089	1.086	1.210
Percentage change versus previous month												
2021 Feb.	-0.8	0.1	-1.0	0.0	-0.3	0.9	-0.8	-2.2	0.0	-0.1	0.6	-0.6
Percentage change versus previous year												
2021 Feb.	2.4	1.6	3.3	-0.5	6.2	6.2	5.1	3.8	1.9	-4.5	2.0	10.9

Source: ECB.

2 Financial developments

2.10 Euro area balance of payments, financial account

(EUR billions, unless otherwise indicated; outstanding amounts at end of period; transactions during period)

	Total [1]			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts (international investment position)												
2019 Q4	27,829.5	27,882.0	-52.5	11,517.1	9,375.3	9,891.3	12,093.9	-85.5	5,693.1	6,412.8	813.6	14,759.7
2020 Q1	27,462.6	27,541.7	-79.1	11,265.3	9,318.6	8,883.9	11,121.5	-99.0	6,546.2	7,101.6	866.3	15,525.9
Q2	28,140.0	28,240.0	-100.0	11,316.2	9,503.7	9,854.1	11,939.3	-70.7	6,135.5	6,797.0	905.0	15,283.6
Q3	28,088.2	28,098.3	-10.1	11,165.5	9,335.2	9,972.6	12,062.8	-97.6	6,138.1	6,700.3	909.6	15,138.5
Outstanding amounts as a percentage of GDP												
2020 Q3	246.0	246.1	-0.1	97.8	81.8	87.3	105.6	-0.9	53.8	58.7	8.0	132.6
Transactions												
2020 Q1	608.6	594.5	14.1	-33.0	-59.8	-129.0	59.6	12.3	754.8	594.7	3.4	-
Q2	153.0	111.7	41.4	81.7	173.6	383.2	201.2	38.0	-353.1	-263.1	3.2	-
Q3	195.6	101.1	94.5	39.3	-15.8	86.8	113.7	-31.0	97.1	3.2	3.4	-
Q4	135.0	-11.0	146.0	-41.9	68.3	302.7	-210.8	-9.6	-118.3	131.5	2.1	-
2020 July	205.6	206.3	-0.7	64.1	39.9	9.5	59.0	5.1	127.4	107.5	-0.6	-
Aug.	48.9	-2.5	51.4	16.4	-7.5	57.8	33.4	-14.4	-12.2	-28.5	1.3	-
Sep.	-58.9	-102.8	43.8	-41.3	-48.3	19.5	21.3	-21.6	-18.2	-75.8	2.6	-
Oct.	166.5	134.1	32.4	13.2	-4.7	65.8	-18.5	-0.2	84.8	157.3	2.9	-
Nov.	219.9	188.7	31.2	34.8	100.6	85.8	-87.9	12.6	89.3	176.0	-2.6	-
Dec.	-251.4	-333.9	82.4	-89.9	-27.6	151.1	-104.5	-22.0	-292.4	-201.8	1.7	-
12-month cumulated transactions												
2020 Dec.	1,092.2	796.2	296.0	46.1	166.3	643.8	163.6	9.7	380.5	466.2	12.1	-
12-month cumulated transactions as a percentage of GDP												
2020 Dec.	9.7	7.0	2.6	0.4	1.5	5.7	1.4	0.1	3.4	4.1	0.1	-

Source: ECB.

1) Net financial derivatives are included in total assets.

3 Economic activity

3.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand								External balance [1]		
		Total	Private consumption	Government consumption	Gross fixed capital formation				Changes in inventories [2]	Total	Exports [1]	Imports [1]
						Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2018	11,588.3	11,120.3	6,222.7	2,369.0	2,431.4	1,178.2	746.0	500.7	97.2	468.0	5,575.9	5,107.9
2019	11,937.2	11,489.4	6,376.3	2,454.4	2,622.6	1,257.9	771.1	586.9	36.1	447.7	5,758.9	5,311.2
2020	11,317.6	10,865.7	5,894.3	2,552.8	2,433.4	1,205.6	678.7	542.0	-14.8	452.0	5,150.9	4,698.9
2020 Q1	2,912.3	2,818.1	1,537.3	626.8	645.4	309.7	174.8	159.3	8.5	94.2	1,389.7	1,295.5
Q2	2,599.7	2,519.4	1,343.3	629.7	540.9	272.6	142.1	124.5	5.5	80.3	1,108.2	1,027.9
Q3	2,898.3	2,760.8	1,527.4	645.3	615.7	309.3	179.1	125.5	-27.6	137.5	1,296.9	1,159.4
Q4	2,897.0	2,759.8	1,484.5	651.7	625.8	311.4	180.4	132.3	-2.2	137.2	1,350.1	1,212.9
	as a percentage of GDP											
2020	100.0	96.0	52.1	22.6	21.5	10.7	6.0	4.8	-0.1	4.0	-	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2020 Q1	-3.8	-3.4	-4.5	-0.3	-5.9	-2.8	-9.5	-7.5	-	-	-3.7	-2.9
Q2	-11.6	-11.0	-12.6	-2.2	-16.1	-12.3	-18.9	-20.8	-	-	-18.8	-18.2
Q3	12.5	10.2	14.1	4.6	13.9	13.8	26.0	0.7	-	-	16.7	11.8
Q4	-0.7	-0.6	-3.0	0.4	1.6	0.2	0.8	6.0	-	-	3.5	4.1
	annual percentage changes											
2018	1.9	1.9	1.5	1.2	3.2	3.8	3.7	1.2	-	-	3.6	3.7
2019	1.3	1.9	1.3	1.8	5.7	3.4	2.1	16.4	-	-	2.5	3.9
2020	-6.6	-6.4	-8.0	1.2	-8.3	-5.7	-12.8	-8.2	-	-	-9.4	-9.2
2020 Q1	-3.3	-1.7	-3.9	1.1	0.8	-2.8	-10.2	26.9	-	-	-3.1	0.3
Q2	-14.6	-14.0	-16.1	-1.5	-20.8	-14.5	-27.3	-25.4	-	-	-21.4	-20.6
Q3	-4.2	-4.1	-4.6	2.4	-4.6	-3.5	-8.4	-1.7	-	-	-9.0	-9.2
Q4	-4.9	-5.8	-7.6	2.5	-8.7	-2.8	-6.9	-21.8	-	-	-5.6	-7.6
	contributions to quarter-on-quarter percentage changes in GDP; percentage points											
2020 Q1	-3.8	-3.3	-2.4	-0.1	-1.3	-0.3	-0.6	-0.4	0.5	-0.5	-	-
Q2	-11.6	-10.7	-6.7	-0.5	-3.6	-1.3	-1.1	-1.1	0.0	-0.9	-	-
Q3	12.5	10.0	7.4	1.1	2.9	1.4	1.4	0.0	-1.4	2.5	-	-
Q4	-0.7	-0.6	-1.6	0.1	0.3	0.0	0.0	0.3	0.6	-0.1	-	-
	contributions to annual percentage changes in GDP; percentage points											
2018	1.9	1.8	0.8	0.2	0.6	0.4	0.2	0.0	0.1	0.1	-	-
2019	1.3	1.8	0.7	0.4	1.2	0.4	0.1	0.7	-0.5	-0.5	-	-
2020	-6.6	-6.1	-4.3	0.2	-1.8	-0.6	-0.8	-0.4	-0.3	-0.5	-	-
2020 Q1	-3.3	-1.7	-2.1	0.2	0.2	-0.3	-0.7	1.1	0.0	-1.6	-	-
Q2	-14.6	-13.6	-8.6	-0.3	-4.7	-1.5	-1.8	-1.4	0.0	-1.0	-	-
Q3	-4.2	-3.9	-2.5	0.5	-1.0	-0.4	-0.5	-0.1	-1.0	-0.3	-	-
Q4	-4.9	-5.6	-4.1	0.5	-2.0	-0.3	-0.4	-1.2	-0.1	0.7	-	-

Sources: Eurostat and ECB calculations.

1) Exports and imports cover goods and services and include cross-border intra-euro area trade.

2) Including acquisitions less disposals of valuables.

3 Economic activity

3.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Const-ruction	Trade, transport, accom-modation and food services	Infor-mation and com-munica-tion	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2018	10,384.2	174.6	2,052.2	528.1	1,964.0	500.5	476.9	1,167.2	1,207.0	1,957.5	356.2	1,204.0
2019	10,695.4	178.8	2,064.2	570.0	2,028.0	530.7	481.5	1,204.8	1,252.7	2,019.8	364.9	1,241.8
2020	10,186.0	176.8	1,930.7	558.2	1,779.9	536.1	473.2	1,214.9	1,157.0	2,045.2	314.0	1,131.6
2020 Q1	2,620.1	44.6	498.6	141.4	479.0	133.2	120.9	302.2	306.1	507.6	86.4	292.2
Q2	2,341.0	44.7	427.4	125.8	379.1	127.6	115.7	296.3	262.2	492.8	69.5	258.7
Q3	2,605.5	43.8	493.3	144.4	469.1	137.0	118.7	305.3	291.9	520.0	82.0	292.7
Q4	2,605.5	43.9	512.1	145.9	451.3	136.6	117.6	306.6	297.1	519.6	74.8	291.4
	as a percentage of value added											
2020	100.0	1.7	19.0	5.5	17.5	5.3	4.6	11.9	11.4	20.1	3.1	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2020 Q1	-3.4	-2.1	-3.8	-3.4	-6.2	-1.3	-1.0	-1.1	-3.4	-2.1	-6.8	-6.9
Q2	-11.8	0.1	-14.9	-12.3	-21.3	-4.3	-2.1	-2.5	-15.0	-6.4	-23.6	-9.5
Q3	12.2	0.6	15.9	14.2	23.4	7.2	2.9	2.5	11.6	9.1	22.5	14.4
Q4	-0.7	0.6	2.9	0.0	-4.2	-0.5	-0.5	-0.1	0.8	-1.1	-11.8	0.0
	annual percentage changes											
2018	1.9	-0.2	1.6	2.4	1.8	6.4	0.9	1.3	3.7	1.0	0.9	1.6
2019	1.3	1.0	-0.9	3.0	2.0	4.7	1.3	1.5	1.7	1.0	1.3	1.5
2020	-6.5	-1.0	-7.6	-5.8	-13.2	0.4	-1.2	-0.9	-9.0	-2.4	-17.7	-7.2
2020 Q1	-2.9	-1.6	-4.9	-3.1	-5.8	2.1	-0.5	0.4	-2.8	-1.4	-6.4	-6.3
Q2	-14.6	-1.3	-18.9	-14.8	-25.9	-4.6	-3.2	-2.4	-17.7	-7.8	-28.7	-15.2
Q3	-4.3	-0.6	-5.8	-3.2	-8.9	2.2	-0.5	-0.4	-8.3	0.4	-12.6	-3.7
Q4	-5.1	-0.9	-2.4	-3.2	-12.8	0.8	-0.8	-1.1	-7.6	-1.1	-23.2	-3.7
	contributions to quarter-on-quarter percentage changes in value added; percentage points											
2020 Q1	-3.4	0.0	-0.7	-0.2	-1.2	-0.1	0.0	-0.1	-0.4	-0.4	-0.2	-
Q2	-11.8	0.0	-2.9	-0.7	-3.9	-0.2	-0.1	-0.3	-1.8	-1.2	-0.8	-
Q3	12.2	0.0	2.9	0.8	3.8	0.4	0.1	0.3	1.3	1.9	0.6	-
Q4	-0.7	0.0	0.6	0.0	-0.8	0.0	0.0	0.0	0.1	-0.2	-0.4	-
	contributions to annual percentage changes in value added; percentage points											
2018	1.9	0.0	0.3	0.1	0.3	0.3	0.0	0.1	0.4	0.2	0.0	-
2019	1.3	0.0	-0.2	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.0	-
2020	-6.5	0.0	-1.5	-0.3	-2.5	0.0	-0.1	-0.1	-1.0	-0.5	-0.6	-
2020 Q1	-2.9	0.0	-0.9	-0.2	-1.1	0.1	0.0	0.0	-0.3	-0.3	-0.2	-
Q2	-14.6	0.0	-3.7	-0.8	-4.9	-0.2	-0.1	-0.3	-2.1	-1.5	-1.0	-
Q3	-4.3	0.0	-1.1	-0.2	-1.7	0.1	0.0	0.0	-1.0	0.1	-0.4	-
Q4	-5.1	0.0	-0.5	-0.2	-2.4	0.0	0.0	-0.1	-0.9	-0.2	-0.8	-

Sources: Eurostat and ECB calculations.

3 Economic activity

3.3 Employment [1)]

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity										
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
as a percentage of total persons employed													
2018	100.0	85.8	14.2	3.1	14.6	6.0	25.0	2.9	2.4	1.0	14.0	24.2	6.8
2019	100.0	86.0	14.0	3.0	14.5	6.0	25.0	2.9	2.4	1.0	14.0	24.3	6.7
2020	100.0	86.1	13.9	3.0	14.5	6.2	24.5	3.0	2.4	1.0	13.9	24.9	6.6
annual percentage changes													
2018	1.6	1.8	0.1	-0.4	1.5	2.7	1.5	3.9	-1.1	2.0	2.8	1.3	0.1
2019	1.2	1.4	0.0	-2.0	0.8	2.0	1.3	3.6	-0.4	1.5	1.3	1.5	0.6
2020	-1.6	-1.6	-2.0	-3.2	-1.9	0.4	-3.6	1.3	-0.7	-0.2	-2.4	0.7	-3.4
2020 Q1	0.4	0.7	-1.5	-3.4	-0.4	1.1	0.3	2.5	-0.2	-0.2	0.7	1.2	-0.3
Q2	-2.9	-3.0	-2.7	-4.0	-2.2	-0.9	-5.7	0.7	-1.1	-1.5	-4.5	0.1	-5.9
Q3	-2.1	-2.0	-2.3	-3.1	-2.7	0.8	-4.2	0.9	-1.0	0.2	-3.5	0.6	-3.7
Q4	-1.9	-2.0	-1.6	-2.3	-2.4	0.5	-4.8	1.2	-0.6	0.6	-2.3	0.8	-3.7
Hours worked													
as a percentage of total hours worked													
2018	100.0	81.1	18.9	4.3	15.0	6.8	25.8	3.0	2.5	1.0	13.8	21.7	6.1
2019	100.0	81.3	18.7	4.1	14.9	6.8	25.8	3.1	2.4	1.0	13.9	21.8	6.1
2020	100.0	81.9	18.1	4.3	14.9	6.9	24.2	3.3	2.5	1.1	13.9	23.2	5.7
annual percentage changes													
2018	1.7	2.1	0.0	0.1	1.4	3.3	1.5	4.1	-0.9	2.7	3.2	1.4	0.5
2019	0.9	1.2	-0.4	-2.6	0.2	1.8	0.9	3.7	-0.2	1.4	1.1	1.3	0.4
2020	-7.7	-7.0	-10.6	-3.5	-7.5	-6.0	-13.6	-1.7	-3.2	-6.6	-7.7	-2.0	-13.3
2020 Q1	-3.9	-3.1	-7.3	-3.8	-4.5	-4.3	-5.7	0.9	-2.8	-4.9	-2.7	-1.7	-7.6
Q2	-16.8	-15.6	-22.2	-6.8	-16.3	-17.5	-27.1	-5.7	-6.5	-16.8	-16.9	-6.4	-27.9
Q3	-4.9	-4.7	-5.7	-1.9	-5.8	-0.9	-9.1	-2.0	-2.6	-3.2	-6.6	-0.2	-6.3
Q4	-6.5	-6.1	-8.2	-2.4	-5.7	-2.8	-13.5	-0.9	-2.2	-2.6	-5.8	-0.9	-12.1
Hours worked per person employed													
annual percentage changes													
2018	0.1	0.3	-0.1	0.6	-0.1	0.6	-0.1	0.2	0.2	0.7	0.4	0.1	0.3
2019	-0.3	-0.2	-0.4	-0.6	-0.6	-0.2	-0.4	0.1	0.2	-0.1	-0.2	-0.2	-0.1
2020	-6.2	-5.5	-8.8	-0.3	-5.8	-6.3	-10.3	-3.0	-2.5	-6.4	-5.4	-2.7	-10.2
2020 Q1	-4.3	-3.8	-5.9	-0.4	-4.2	-5.4	-6.0	-1.6	-2.6	-4.7	-3.4	-2.8	-7.3
Q2	-14.3	-13.0	-20.1	-2.9	-14.4	-16.8	-22.7	-6.4	-5.5	-15.6	-13.0	-6.5	-23.3
Q3	-2.8	-2.7	-3.4	1.2	-3.2	-1.6	-5.1	-2.9	-1.6	-3.4	-3.3	-0.8	-2.7
Q4	-4.6	-4.2	-6.7	0.0	-3.4	-3.3	-9.2	-2.2	-1.6	-3.2	-3.5	-1.7	-8.8

Sources: Eurostat and ECB calculations.

1) Data for employment are based on the ESA 2010.

3 Economic activity

3.4 Labour force, unemployment and job vacancies

(seasonally adjusted, unless otherwise indicated)

	Labour force, millions	Under-employ-ment, % of labour force	Unemployment [1]											Job vacancy rate [3]
			Total		Long-term unemploy-ment, % of labour force [2]	By age				By gender				
						Adult		Youth		Male		Female		
			Millions	% of labour force		Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	% of total posts
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
% of total in 2019			100.0			82.0		18.3		51.3		48.7		
2018	162.486	3.7	13.203	8.1	3.8	10.814	7.3	2.390	16.8	6.803	7.8	6.400	8.5	2.1
2019	163.200	3.5	12.233	7.5	3.3	9.999	6.7	2.234	15.6	6.269	7.2	5.963	7.9	2.3
2020	.	.	12.706	7.8	.	.	6.9	.	17.1	6.514	7.5	6.192	8.2	1.8
2020 Q1	162.385	3.4	11.852	7.3	3.1	9.617	6.5	2.235	15.8	6.028	6.9	5.824	7.7	1.9
Q2	159.969	3.5	11.886	7.4	2.5	9.589	6.6	2.297	16.8	6.258	7.3	5.629	7.6	1.6
Q3	162.001	3.6	13.373	8.3	3.1	10.769	7.3	2.604	18.5	6.832	7.9	6.540	8.7	1.7
Q4	.	.	13.712	8.2	.	.	7.4	.	17.3	6.937	7.7	6.775	8.8	1.9
2020 Aug.	-	-	14.219	8.7	-	11.553	7.7	2.666	18.9	7.201	8.2	7.018	9.2	-
Sep.	-	-	14.167	8.6	-	11.621	7.7	2.545	18.0	7.117	8.1	7.050	9.2	-
Oct.	-	-	13.745	8.4	-	11.312	7.5	2.433	17.4	6.911	7.9	6.834	9.0	-
Nov.	-	-	13.332	8.1	-	10.952	7.3	2.379	17.2	6.719	7.7	6.613	8.7	-
Dec.	-	-	13.274	8.1	-	10.903	7.3	2.371	17.2	6.723	7.7	6.550	8.6	-
2021 Jan.	-	-	13.282	8.1	-	10.926	7.3	2.356	17.1	6.733	7.7	6.549	8.6	-

Sources: Eurostat and ECB calculations.

1) Where annual and quarterly Labour Force Survey data have not yet been published, annual and quarterly data are derived as simple averages of the monthly data. Owing to technical issues with the introduction of the new German system of integrated household surveys, including the Labour Force Survey, the figures for the euro area include data from Germany, starting in Q1 2020, which are not direct estimates from Labour Force Survey microdata, but based on a larger sample including data from other integrated household surveys.

2) Not seasonally adjusted.

3) The job vacancy rate is equal to the number of job vacancies divided by the sum of the number of occupied posts and the number of job vacancies, expressed as a percentage. Data are non-seasonally adjusted and cover industry, construction and services (excluding households as employers and extra-territorial organisations and bodies).

3.5 Short-term business statistics

	Industrial production						Con-struction produc-tion	ECB indicator on industrial new orders	Retail sales				New passenger car regis-trations
	Total (excluding construction)	Main Industrial Groupings											
		Manu-facturing	Inter-mediate goods	Capital goods	Consumer goods	Energy			Total	Food, beverages, tobacco	Non-food	Fuel	
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	88.7	32.1	34.5	21.8	11.6	100.0	100.0	100.0	40.4	52.5	7.1	100.0
	annual percentage changes												
2018	0.7	0.9	0.6	1.1	1.4	-1.5	1.8	2.8	1.6	1.4	2.0	0.6	0.9
2019	-1.3	-1.3	-2.4	-1.8	1.4	-2.1	2.1	-4.3	2.4	0.9	3.8	0.7	1.8
2020	-8.7	-9.1	-7.5	-13.3	-4.7	-5.4	-5.9	-10.7	-1.1	3.6	-2.7	-14.5	-25.0
2020 Q1	-6.0	-6.1	-5.4	-10.2	-0.6	-5.4	-3.7	-6.5	-1.3	4.8	-4.5	-10.0	-27.4
Q2	-20.1	-21.2	-19.5	-28.0	-13.2	-10.4	-15.4	-26.4	-6.7	2.9	-10.8	-29.2	-50.8
Q3	-6.9	-7.2	-5.7	-11.6	-2.2	-4.1	-2.2	-7.7	2.4	2.5	3.2	-5.0	-6.9
Q4	-1.8	-1.9	1.3	-3.8	-2.7	-2.1	-2.0	-2.1	1.1	4.4	0.6	-14.0	-9.2
2020 Aug.	-6.8	-7.3	-5.0	-12.6	-2.9	-3.2	0.4	-7.0	4.5	3.8	6.3	-3.8	-15.7
Sep.	-6.6	-7.1	-3.4	-13.1	-1.9	-2.5	-2.5	-5.8	2.5	2.7	3.5	-5.3	-1.8
Oct.	-3.7	-4.3	-1.0	-8.1	-2.2	0.5	-1.9	-3.1	4.4	5.0	5.6	-9.2	-4.8
Nov.	-0.6	-0.3	1.3	0.1	-2.6	-4.9	-0.6	-1.9	-1.9	2.4	-2.6	-18.4	-14.9
Dec.	-0.8	-1.0	4.1	-3.1	-3.2	-1.9	-2.3	-1.3	0.9	5.6	-0.6	-14.7	-8.0
2021 Jan.	.	.	.	.	.	.	.	.	-6.4	5.9	-13.6	-18.3	-18.8
	month-on-month percentage changes (s.a.)												
2020 Aug.	0.8	0.3	3.4	-1.3	-0.8	3.4	4.0	4.0	3.9	2.1	5.6	1.8	-0.6
Sep.	-0.1	0.0	0.7	0.9	1.4	-0.7	-2.9	1.1	-1.5	-1.4	-1.7	-1.6	0.9
Oct.	2.5	2.3	2.3	2.9	0.4	2.3	0.3	2.5	1.6	2.3	1.7	-3.6	3.0
Nov.	2.6	3.4	1.8	6.8	-1.2	-4.0	2.3	0.8	-5.4	-2.2	-7.3	-11.4	-7.2
Dec.	-1.6	-1.7	1.0	-3.1	-0.2	1.4	-3.7	-0.1	1.8	2.3	1.0	4.7	10.4
2021 Jan.	.	.	.	.	.	.	.	.	-5.9	1.1	-12.0	-1.1	-22.5

Sources: Eurostat, ECB calculations, ECB experimental statistics (col. 8) and European Automobile Manufacturers Association (col. 13).

3 Economic activity

3.6 Opinion surveys

(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-15	99.3	-5.2	80.6	-11.6	-15.4	-8.6	7.3	-	51.2	52.5	53.0	52.8
2018	111.8	6.7	83.7	-4.8	7.2	1.3	15.2	90.4	54.9	54.7	54.5	54.6
2019	103.6	-5.2	82.0	-6.9	6.7	-0.5	10.8	90.5	47.4	47.8	52.7	51.3
2020	88.2	-14.4	74.0	-14.3	-7.4	-12.9	-16.5	86.3	48.6	48.0	42.5	44.0
2020 Q1	100.8	-8.2	74.6	-8.6	3.6	-3.0	6.7	88.0	47.2	45.1	43.9	44.2
Q2	72.0	-27.3	70.2	-18.5	-14.5	-26.4	-39.2	85.6	40.1	34.2	30.3	31.3
Q3	88.5	-13.6	74.2	-14.4	-10.6	-11.3	-18.0	85.9	52.4	56.0	51.1	52.4
Q4	91.4	-8.8	76.9	-15.6	-8.3	-10.9	-15.4	85.6	54.6	56.7	45.0	48.1
2020 Sep.	92.3	-11.5	-	-13.6	-9.1	-8.5	-11.0	-	53.7	57.1	48.0	50.4
Oct.	92.5	-9.3	76.3	-15.5	-8.0	-6.9	-12.0	86.2	54.8	58.4	46.9	50.0
Nov.	89.3	-10.2	-	-17.6	-9.0	-12.7	-17.0	-	53.8	55.3	41.7	45.3
Dec.	92.4	-6.8	-	-13.8	-8.0	-13.2	-17.1	-	55.2	56.3	46.4	49.1
2021 Jan.	91.5	-6.1	77.5	-15.5	-7.7	-18.5	-17.7	85.1	54.8	54.6	45.4	47.8
Feb.	93.4	-3.3	-	-14.8	-7.5	-19.1	-17.1	-	57.9	57.6	45.7	48.8

Sources: European Commission (Directorate-General for Economic and Financial Affairs) (col. 1-8) and Markit (col. 9-12).

3.7 Summary accounts for households and non-financial corporations

(current prices, unless otherwise indicated; not seasonally adjusted)

	Households							Non-financial corporations					
	Saving ratio (gross)	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth [2]	Housing wealth	Profit share [3]	Saving ratio (net)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted) [1]		Annual percentage changes					Percentage of net value added		Percentage of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2017	12.2	93.7	1.7	2.3	5.4	4.3	4.1	35.0	6.9	77.3	4.1	9.6	2.7
2018	12.4	93.4	1.8	2.0	6.4	2.6	4.7	35.4	5.8	77.9	1.9	7.0	1.4
2019	12.9	93.8	1.8	2.6	4.9	5.8	3.9	34.6	5.7	77.7	2.4	3.4	1.9
2019 Q4	12.9	93.8	1.0	2.6	2.5	5.8	3.9	34.6	5.7	77.7	2.4	-8.1	1.9
2020 Q1	13.8	93.6	0.8	2.6	-0.9	2.9	4.2	33.7	4.6	78.9	2.5	1.4	2.1
Q2	16.5	95.0	-3.5	3.3	-14.8	4.0	4.4	31.2	4.1	83.6	2.8	-28.8	1.9
Q3	17.6	95.7	1.1	3.5	-2.2	3.8	4.6	30.5	3.4	83.8	3.3	-14.2	2.1

Sources: ECB and Eurostat.

1) Based on four-quarter cumulated sums of saving, debt and gross disposable income (adjusted for the change in pension entitlements).

2) Financial assets (net of financial liabilities) and non-financial assets. Non-financial assets consist mainly of housing wealth (residential structures and land). They also include non-financial assets of unincorporated enterprises classified within the household sector.

3) The profit share uses net entrepreneurial income, which is broadly equivalent to current profits in business accounting.

4) Defined as consolidated loans and debt securities liabilities.

3 Economic activity

3.8 Euro area balance of payments, current and capital accounts

(EUR billions; seasonally adjusted unless otherwise indicated; transactions)

	Current account											Capital account [1]	
	Total			Goods		Services		Primary income		Secondary income			
	Credit	Debit	Balance	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit
	1	2	3	4	5	6	7	8	9	10	11	12	13
2020 Q1	1,058.4	1,007.7	50.7	586.9	497.5	242.1	251.8	200.1	192.5	29.4	65.9	10.8	10.8
Q2	860.0	817.9	42.1	467.0	413.2	190.7	182.9	176.0	152.2	26.4	69.6	10.6	15.6
Q3	948.7	881.0	67.7	548.3	455.0	193.0	184.8	179.0	179.2	28.4	62.0	11.1	10.2
Q4	1,000.4	912.8	87.6	586.8	480.8	214.9	185.0	170.1	173.4	28.6	73.7	22.8	18.3
2020 July	310.6	293.5	17.1	178.7	149.5	63.3	60.8	59.0	62.0	9.6	21.1	3.4	3.8
Aug.	314.3	290.9	23.4	182.5	151.2	62.4	60.8	60.0	59.2	9.4	19.8	4.2	2.6
Sep.	323.7	296.6	27.1	187.0	154.3	67.4	63.2	59.9	58.0	9.4	21.2	3.5	3.8
Oct.	330.8	305.0	25.8	191.6	157.3	71.8	63.0	57.5	62.5	10.0	22.2	4.3	3.5
Nov.	336.0	310.8	25.1	195.5	162.0	72.0	61.9	58.7	58.1	9.7	28.8	4.1	3.3
Dec.	333.7	297.0	36.7	199.7	161.5	71.2	60.1	53.9	52.7	8.9	22.7	14.4	11.5
12-month cumulated transactions													
2020 Dec.	3,867.5	3,619.4	248.0	2,188.9	1,846.4	840.7	804.5	725.1	697.2	112.8	271.3	55.4	54.8
12-month cumulated transactions as a percentage of GDP													
2020 Dec.	34.2	32.0	2.2	19.4	16.3	7.4	7.1	6.4	6.2	1.0	2.4	0.5	0.5

1) The capital account is not seasonally adjusted.

3.9 Euro area external trade in goods [1] , values and volumes by product group [2]

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
			Total				Memo item:	Total				Memo items:	
	Exports	Imports		Intermediate goods	Capital goods	Consumption goods	Manufacturing		Intermediate goods	Capital goods	Consumption goods	Manufacturing	Oil
	1	2	3	4	5	6	7	8	9	10	11	12	13
Values (EUR billions; annual percentage changes for columns 1 and 2)													
2020 Q1	-1.6	-4.1	578.6	274.6	116.2	176.2	480.8	507.4	282.6	83.1	134.1	370.7	55.7
Q2	-23.6	-21.6	447.0	218.0	87.6	133.0	369.3	423.1	220.7	77.5	119.2	319.7	26.1
Q3	-8.7	-11.5	531.3	248.3	107.8	164.9	447.9	469.1	243.0	83.6	134.0	358.9	34.3
Q4	-2.9	-6.0	566.9	.	.	.	479.6	489.4	.	.	.	376.5	.
2020 July	-10.6	-14.4	172.9	80.3	35.0	54.6	145.6	154.4	80.0	28.1	43.7	116.9	11.4
Aug.	-12.5	-13.4	176.0	82.1	35.8	54.4	147.7	155.2	79.9	27.7	44.6	119.7	11.8
Sep.	-3.5	-6.9	182.4	85.8	37.0	55.9	154.7	159.5	83.0	27.9	45.7	122.2	11.1
Oct.	-9.1	-11.6	186.0	86.1	37.2	59.0	157.7	160.9	85.5	26.9	44.9	122.5	11.1
Nov.	-1.1	-4.4	189.4	89.0	36.6	59.9	160.7	164.5	86.9	28.9	45.6	127.7	11.2
Dec.	2.3	-1.4	191.6	.	.	.	161.2	164.0	.	.	.	126.3	.
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2020 Q1	-4.0	-4.7	103.8	106.5	100.5	102.7	102.3	104.0	103.4	100.7	108.9	105.0	97.5
Q2	-23.6	-16.3	81.6	86.5	76.1	79.0	79.1	92.3	90.2	94.8	97.2	91.2	81.1
Q3	-7.2	-7.0	98.5	100.1	94.9	99.4	97.9	101.7	97.1	104.5	110.5	104.0	81.1
Q4	.	.	.	.	.	.	.	.	.	.	.	.	.
2020 June	-10.6	-7.7	89.8	91.8	83.8	90.9	88.0	95.9	91.3	101.1	104.1	97.0	81.1
July	-9.7	-10.3	95.5	96.1	92.2	98.4	94.7	100.1	95.6	104.4	108.0	101.3	80.0
Aug.	-10.8	-9.7	98.0	99.5	94.8	98.3	96.9	100.6	95.7	102.9	110.2	103.6	81.2
Sep.	-1.1	-1.0	101.9	104.6	97.8	101.4	102.0	104.4	100.0	106.3	113.3	106.9	82.2
Oct.	-7.6	-6.7	103.1	103.3	98.5	106.6	103.1	104.5	101.8	102.1	110.9	106.5	83.9
Nov.	0.3	0.5	104.6	107.2	95.8	107.3	104.5	106.0	102.9	106.9	112.4	110.3	83.4

Sources: ECB and Eurostat.

1) Differences between ECB's b.o.p. goods (Table 3.8) and Eurostat's trade in goods (Table 3.9) are mainly due to different definitions.

2) Product groups as classified in the Broad Economic Categories.

4 Prices and costs

4.1 Harmonised Index of Consumer Prices [1)]

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) [2)]						Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
			Total excluding food and energy										
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2021	100.0	100.0	68.7	58.2	41.8	100.0	16.7	5.1	26.9	9.5	41.8	86.7	13.3
2018	103.6	1.8	1.0	2.0	1.5	-	-	-	-	-	-	1.7	2.1
2019	104.8	1.2	1.0	1.0	1.5	-	-	-	-	-	-	1.1	1.9
2020	105.1	0.3	0.7	-0.4	1.0	-	-	-	-	-	-	0.2	0.6
2020 Q1	104.7	1.1	1.1	0.8	1.5	0.1	0.6	1.4	0.1	-1.3	0.1	1.2	0.8
Q2	105.5	0.2	0.9	-0.6	1.2	-0.4	0.7	3.5	-0.1	-7.9	0.3	0.2	0.5
Q3	105.1	0.0	0.6	-0.7	0.7	0.0	-0.2	-1.9	0.4	0.9	-0.1	-0.1	0.4
Q4	105.0	-0.3	0.2	-0.9	0.5	0.0	0.1	0.5	-0.6	0.5	0.3	-0.4	0.6
2020 Sep.	105.0	-0.3	0.2	-1.0	0.5	0.0	0.0	0.1	-0.1	-0.4	0.0	-0.4	0.4
Oct.	105.2	-0.3	0.2	-0.8	0.4	0.1	0.0	0.4	0.1	0.4	0.1	-0.4	0.6
Nov.	104.8	-0.3	0.2	-1.0	0.6	0.1	0.1	0.7	-0.1	-0.1	0.2	-0.4	0.5
Dec.	105.2	-0.3	0.2	-1.0	0.7	0.1	0.0	-1.6	-0.1	1.6	0.2	-0.4	0.6
2021 Jan.	105.3	0.9	1.4	0.5	1.4	1.1	0.4	0.2	2.0	3.8	0.3	0.8	1.4
Feb. [3)]	105.5	0.9	1.1	.	1.2	0.0	0.2	0.2	-0.4	0.9	0.1	.	.

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing		Transport	Communication	Recreation and personal care	Miscellaneous
	Total	Processed food	Unprocessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2021	21.8	16.7	5.1	36.4	26.9	9.5	12.2	7.5	6.5	2.7	11.4	9.0
2018	2.2	2.1	2.3	1.9	0.3	6.4	1.2	1.2	1.5	-0.1	2.0	1.4
2019	1.8	1.9	1.4	0.5	0.3	1.1	1.4	1.3	2.0	-0.7	1.7	1.5
2020	2.3	1.8	4.0	-1.8	0.2	-6.8	1.4	1.3	0.5	-0.6	1.0	1.4
2020 Q1	2.2	2.0	2.8	0.0	0.5	-1.0	1.6	1.4	1.7	0.0	1.6	1.5
Q2	3.4	2.3	6.7	-2.7	0.2	-10.3	1.4	1.3	1.1	0.1	1.2	1.5
Q3	1.8	1.5	2.8	-2.0	0.4	-8.1	1.3	1.2	-0.4	-0.7	0.6	1.4
Q4	1.7	1.2	3.5	-2.4	-0.3	-7.8	1.2	1.2	-0.6	-1.5	0.6	1.3
2020 Sep.	1.8	1.4	3.1	-2.5	-0.3	-8.2	1.3	1.2	-0.6	-0.8	0.3	1.3
Oct.	2.0	1.3	4.3	-2.3	-0.1	-8.2	1.2	1.2	-0.9	-1.8	0.4	1.2
Nov.	1.9	1.2	4.2	-2.5	-0.3	-8.3	1.2	1.2	-0.6	-1.3	0.5	1.3
Dec.	1.3	1.1	2.1	-2.3	-0.5	-6.9	1.2	1.2	-0.3	-1.4	0.7	1.3
2021 Jan.	1.5	1.3	2.0	-0.1	1.5	-4.2	1.2	1.1	1.0	-0.3	1.8	1.5
Feb. [3)]	1.4	1.3	1.4	.	1.0	-1.7	.	.	.	.	.	.

Sources: Eurostat and ECB calculations.

1) Data refer to the changing composition of the euro area.

2) In May 2016 the ECB started publishing enhanced seasonally adjusted HICP series for the euro area, following a review of the seasonal adjustment approach as described in Box 1, *Economic Bulletin*, Issue 3, ECB, 2016 (https://www.ecb.europa.eu/pub/pdf/ecbu/eb201603.en.pdf).

3) Estimate based on provisional national data, as well as on early information on energy prices.

4 Prices and costs

4.2 Industry, construction and property prices

(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction [1]										Con-struction [2]	Residential property prices [3]	Experimental indicator of commercial property prices [3]
	Total (index: 2015 = 100)	Total		Industry excluding construction and energy						Energy			
			Manu-facturing	Total	Intermediate goods	Capital goods	Consumer goods						
							Total	Food, beverages and tobacco	Non-food				
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	100.0	77.3	72.1	28.9	20.7	22.5	16.5	5.9	27.9			
2018	104.1	3.3	2.4	1.5	2.7	1.0	0.4	0.1	0.6	8.4	2.4	4.8	4.1
2019	104.7	0.6	0.6	0.8	0.1	1.5	1.0	1.1	0.9	-0.1	2.0	4.2	4.6
2020	102.0	-2.6	-1.7	-0.1	-1.6	0.9	1.0	1.1	0.6	-9.7	.	.	.
2020 Q1	103.7	-1.7	0.0	0.4	-1.4	1.1	2.3	3.3	0.6	-7.4	1.5	5.0	3.9
Q2	100.2	-4.5	-3.0	-0.5	-2.7	1.0	1.1	1.5	0.6	-15.5	0.8	5.0	5.8
Q3	101.4	-2.7	-2.0	-0.3	-1.8	0.8	0.5	0.3	0.6	-9.3	0.7	5.1	.
Q4	102.6	-1.7	-1.7	0.0	-0.6	0.8	0.0	-0.5	0.7	-6.7	.	.	.
2020 Aug.	101.3	-2.6	-1.8	-0.3	-1.8	0.8	0.5	0.3	0.5	-8.7	-	-	-
Sep.	101.7	-2.3	-2.2	-0.3	-1.6	0.8	0.4	0.1	0.6	-8.3	-	-	-
Oct.	102.1	-2.0	-1.9	-0.2	-1.3	0.8	0.3	0.0	0.7	-7.7	-	-	-
Nov.	102.4	-2.0	-1.7	0.0	-0.6	0.8	0.1	-0.4	0.7	-7.6	-	-	-
Dec.	103.3	-1.1	-1.3	0.1	-0.1	0.8	-0.3	-1.0	0.6	-4.8	-	-	-
2021 Jan.	104.7	0.0	-0.6	0.7	0.9	0.8	-0.4	-1.0	0.6	-1.6	-	-	-

Sources: Eurostat, ECB calculations, and ECB calculations based on MSCI data and national sources (col. 13).

1) Domestic sales only.

2) Input prices for residential buildings.

3) Experimental data based on non-harmonised sources (see https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html for further details).

4.3 Commodity prices and GDP deflators

(annual percentage changes, unless otherwise indicated)

	GDP deflators								Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)					
	Total (s.a.; index: 2015 = 100)	Total	Domestic demand				Exports [1]	Imports [1]		Import-weighted [2]			Use-weighted [2]		
			Total	Private consump-tion	Govern-ment consump-tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% of total										100.0	45.4	54.6	100.0	50.4	49.6
2018	103.4	1.4	1.7	1.5	1.7	1.9	1.5	2.2	60.4	-0.7	-5.9	4.3	-0.3	-5.7	5.7
2019	105.2	1.7	1.4	1.1	1.8	2.1	0.7	0.1	57.2	1.6	3.7	-0.1	2.6	7.4	-2.3
2020	106.8	1.5	1.0	0.5	2.8	1.2	-1.3	-2.6	37.0	1.5	3.5	-0.3	-0.9	0.0	-1.8
2020 Q1	106.4	1.8	1.3	1.1	2.4	1.7	0.0	-1.2	45.9	1.8	7.4	-3.1	1.2	7.1	-4.9
Q2	107.4	2.3	1.3	0.7	4.7	1.1	-2.0	-4.3	28.5	-2.4	4.0	-8.1	-4.3	0.1	-9.2
Q3	106.4	1.0	0.6	0.1	2.1	0.6	-1.8	-2.8	36.5	2.1	1.9	2.4	-0.4	-1.6	1.0
Q4	107.1	1.1	0.9	0.0	2.1	1.4	-1.4	-2.2	37.4	4.4	0.8	7.9	0.0	-5.2	6.2
2020 Sep.	-	-	-	-	-	-	-	-	34.9	3.6	4.0	3.2	1.0	0.2	1.9
Oct.	-	-	-	-	-	-	-	-	34.4	2.7	2.6	2.9	0.0	-1.3	1.4
Nov.	-	-	-	-	-	-	-	-	36.5	3.7	0.7	6.6	-1.6	-7.0	5.0
Dec.	-	-	-	-	-	-	-	-	41.0	6.7	-0.8	14.0	1.6	-7.1	12.0
2021 Jan.	-	-	-	-	-	-	-	-	44.8	10.9	4.4	17.0	6.3	-0.9	14.8
Feb.	-	-	-	-	-	-	-	-	51.2	17.1	8.3	25.6	13.2	4.9	23.0

Sources: Eurostat, ECB calculations and Bloomberg (col. 9).

1) Deflators for exports and imports refer to goods and services and include cross-border trade within the euro area.

2) Import-weighted: weighted according to 2009-11 average import structure; use-weighted: weighted according to 2009-11 average domestic demand structure.

4 Prices and costs

4.4 Price-related opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu-facturing	Retail trade	Services	Construction		Manu-facturing	Services	Manu-facturing	Services
	1	2	3	4	5	6	7	8	9
1999-15	4.3	5.6	-	-4.5	32.3	56.7	56.3	-	49.7
2018	11.5	7.5	9.6	12.6	20.6	65.4	57.9	56.1	52.7
2019	4.2	7.3	9.1	7.5	18.2	48.8	57.1	50.4	52.4
2020	-1.3	1.6	-0.8	-5.8	10.9	49.0	52.1	48.7	47.2
2020 Q1	2.0	6.7	7.5	4.0	13.2	45.6	54.7	48.0	49.7
Q2	-6.9	-3.6	-7.4	-11.6	11.0	44.2	48.1	46.1	43.3
Q3	-1.7	0.9	-0.6	-7.8	12.4	49.4	52.9	49.3	47.7
Q4	1.6	2.6	-2.7	-7.8	7.0	56.7	52.6	51.6	48.3
2020 Sep.	-1.3	2.7	-0.9	-6.0	10.8	50.6	53.0	49.6	47.1
Oct.	0.5	3.2	-2.1	-7.0	9.2	52.9	53.1	50.5	48.7
Nov.	0.2	1.4	-4.0	-8.2	6.9	55.9	51.5	51.6	47.7
Dec.	4.1	3.3	-2.0	-8.3	4.7	61.4	53.1	52.6	48.4
2021 Jan.	4.8	2.8	-3.1	-6.0	5.3	68.3	53.2	52.2	47.3
Feb.	9.7	3.9	-3.2	-5.7	7.2	73.9	53.2	56.5	48.1

Sources: European Commission (Directorate-General for Economic and Financial Affairs) and Markit.

4.5 Labour cost indices
(annual percentage changes, unless otherwise indicated)

	Total (index: 2016 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages [1]
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2018	100.0	100.0	75.3	24.7	69.0	31.0	
2018	104.2	2.4	2.3	2.7	2.5	2.1	2.0
2019	106.8	2.5	2.7	1.9	2.3	2.7	2.2
2020	.	.	.	.	.	.	1.8
2020 Q1	103.1	3.5	3.6	3.0	3.1	4.4	1.9
Q2	115.0	3.6	4.5	0.6	3.5	3.7	1.7
Q3	105.0	1.5	2.1	-0.4	1.5	1.8	1.6
Q4	.	.	.	.	.	.	1.9

Sources: Eurostat and ECB calculations.
1) Experimental data based on non-harmonised sources (see https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html for further details).

4 Prices and costs

4.6 Unit labour costs, compensation per labour input and labour productivity

(annual percentage changes, unless otherwise indicated; quarterly data seasonally adjusted; annual data unadjusted)

	Total (index: 2015 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu-facturing, energy and utilities	Con-struction	Trade, transport, accom-modation and food services	Information and commu-nication	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
Unit labour costs												
2018	103.4	1.9	1.0	1.8	2.2	1.8	-0.1	0.3	4.4	1.9	2.4	2.4
2019	105.3	1.9	-1.1	3.3	1.0	1.4	0.7	0.5	2.5	1.0	2.6	1.9
2020	110.2	4.6	-1.7	3.4	4.7	6.3	1.2	0.3	0.6	6.6	5.6	15.5
2020 Q1	109.0	4.4	-0.8	4.2	2.5	5.2	2.6	-0.1	1.7	5.0	5.1	6.5
Q2	114.0	8.6	-2.9	11.4	7.3	12.3	3.3	1.7	-4.6	9.4	10.5	21.8
Q3	108.6	2.8	-1.7	1.4	5.2	3.6	-1.0	-0.6	2.5	6.3	2.8	11.3
Q4	110.0	3.9	-1.2	-0.7	5.1	6.0	1.3	0.7	2.9	6.8	5.0	25.4
Compensation per employee												
2018	105.3	2.2	1.2	1.9	1.9	2.1	2.3	2.4	3.7	2.8	2.1	3.2
2019	107.3	1.9	1.8	1.6	2.0	2.1	1.8	2.2	2.5	1.4	2.1	2.6
2020	106.6	-0.6	0.5	-2.6	-1.7	-4.3	0.3	-0.1	0.0	-0.5	2.4	-1.6
2020 Q1	107.2	0.6	1.0	-0.5	-1.8	-1.3	2.1	-0.4	2.3	1.4	2.4	0.0
Q2	102.2	-4.5	-0.2	-7.6	-7.7	-11.8	-2.2	-0.4	-5.5	-5.6	1.7	-7.7
Q3	108.4	0.6	0.9	-1.8	1.1	-1.4	0.2	-0.1	1.9	1.0	2.6	1.0
Q4	108.7	0.7	0.3	-0.7	1.2	-2.9	0.8	0.5	1.1	1.0	3.0	0.0
Labour productivity per person employed												
2018	101.8	0.3	0.2	0.2	-0.3	0.3	2.4	2.1	-0.7	0.9	-0.3	0.8
2019	101.9	0.1	3.0	-1.7	1.0	0.7	1.0	1.7	0.0	0.3	-0.5	0.8
2020	96.7	-5.0	2.2	-5.8	-6.2	-9.9	-1.0	-0.4	-0.7	-6.7	-3.0	-14.8
2020 Q1	98.4	-3.7	1.8	-4.5	-4.2	-6.1	-0.5	-0.3	0.5	-3.4	-2.5	-6.1
Q2	89.6	-12.0	2.8	-17.1	-14.0	-21.5	-5.3	-2.0	-1.0	-13.8	-7.9	-24.2
Q3	99.8	-2.2	2.6	-3.2	-4.0	-4.9	1.3	0.5	-0.6	-5.0	-0.2	-9.3
Q4	98.8	-3.1	1.5	0.0	-3.7	-8.4	-0.4	-0.2	-1.7	-5.4	-1.9	-20.2
Compensation per hour worked												
2018	105.0	1.9	0.8	2.0	0.9	1.9	2.0	2.3	2.8	2.1	2.0	2.7
2019	107.2	2.2	2.0	2.1	2.2	2.3	1.7	1.8	2.8	1.6	2.3	2.9
2020	112.8	5.2	2.5	2.9	3.9	6.2	3.0	2.0	5.2	4.7	4.8	7.4
2020 Q1	110.8	4.5	4.0	3.5	3.5	4.0	3.5	1.9	5.6	4.4	5.1	7.2
Q2	117.3	9.8	4.1	7.0	8.7	12.6	3.9	4.6	6.4	7.1	7.7	14.8
Q3	111.2	3.4	0.8	1.2	2.1	4.3	3.2	1.1	4.8	4.4	3.0	3.2
Q4	113.4	5.1	1.8	2.5	3.9	6.9	2.4	1.8	5.6	4.4	4.5	6.9
Hourly labour productivity												
2018	102.0	0.2	-0.4	0.3	-0.9	0.3	2.2	1.9	-1.4	0.5	-0.4	0.4
2019	102.4	0.4	3.7	-1.1	1.2	1.1	0.9	1.5	0.1	0.6	-0.3	0.9
2020	103.6	1.2	2.5	0.0	0.2	0.5	2.1	2.1	6.1	-1.3	-0.4	-5.1
2020 Q1	102.7	0.6	2.2	-0.4	1.3	-0.1	1.2	2.4	5.5	-0.1	0.3	1.3
Q2	105.1	2.7	5.9	-3.1	3.4	1.6	1.2	3.6	17.3	-0.9	-1.6	-1.2
Q3	103.2	0.7	1.4	0.0	-2.4	0.3	4.3	2.1	2.9	-1.7	0.6	-6.8
Q4	104.3	1.6	1.5	3.5	-0.4	0.9	1.8	1.4	1.5	-1.9	-0.2	-12.6

Sources: Eurostat and ECB calculations.

5 Money and credit

5.1 Monetary aggregates [1)]

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	M3											
	M2							M3-M2				
	M1			M2-M1								
	Currency in circulation	Overnight deposits		Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months			Repos	Money market fund shares	Debt securities with a maturity of up to 2 years		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2018	1,164.2	7,114.7	8,278.9	1,128.3	2,298.9	3,427.2	11,706.1	74.4	521.8	82.0	678.2	12,384.3
2019	1,221.5	7,726.9	8,948.4	1,073.1	2,362.4	3,435.5	12,383.9	78.7	529.1	19.4	627.1	13,011.0
2020	1,359.2	8,898.0	10,257.2	1,039.9	2,447.2	3,487.1	13,744.3	100.6	649.2	33.4	783.2	14,527.5
2020 Q1	1,265.3	8,079.2	9,344.5	1,075.1	2,368.6	3,443.7	12,788.2	109.9	538.1	48.1	696.1	13,484.3
Q2	1,302.8	8,425.2	9,728.0	1,075.3	2,400.8	3,476.1	13,204.1	95.2	582.2	20.1	697.6	13,901.7
Q3	1,330.5	8,617.0	9,947.6	1,076.9	2,423.3	3,500.3	13,447.8	100.3	612.8	7.1	720.2	14,168.1
Q4	1,359.2	8,898.0	10,257.2	1,039.9	2,447.2	3,487.1	13,744.3	100.6	649.2	33.4	783.2	14,527.5
2020 Aug.	1,321.7	8,528.8	9,850.5	1,047.6	2,414.7	3,462.4	13,312.8	91.7	593.7	10.3	695.7	14,008.5
Sep.	1,330.5	8,617.0	9,947.6	1,076.9	2,423.3	3,500.3	13,447.8	100.3	612.8	7.1	720.2	14,168.1
Oct.	1,338.1	8,683.6	10,021.7	1,060.5	2,431.8	3,492.3	13,514.0	96.3	613.9	18.4	728.7	14,242.7
Nov.	1,351.2	8,781.7	10,132.9	1,029.5	2,446.3	3,475.8	13,608.7	101.2	614.0	19.7	735.0	14,343.7
Dec.	1,359.2	8,898.0	10,257.2	1,039.9	2,447.2	3,487.1	13,744.3	100.6	649.2	33.4	783.2	14,527.5
2021 Jan. [p]	1,380.4	8,993.2	10,373.7	1,003.4	2,456.6	3,460.0	13,833.7	111.2	631.0	28.6	770.8	14,604.5
Transactions												
2018	50.6	468.0	518.6	-73.2	44.8	-28.5	490.1	-0.9	12.6	-0.9	10.8	500.9
2019	57.3	605.8	663.2	-59.7	61.5	1.7	664.9	4.1	-2.1	-56.6	-54.7	610.3
2020	137.7	1,255.4	1,393.1	-27.2	85.6	58.4	1,451.5	19.2	124.1	13.9	157.3	1,608.8
2020 Q1	43.8	347.7	391.5	0.0	6.1	6.1	397.6	30.9	9.2	26.8	66.8	464.4
Q2	37.5	343.0	380.5	2.1	32.6	34.8	415.3	-14.1	44.2	-28.8	1.3	416.6
Q3	27.7	269.0	296.8	5.6	22.9	28.5	325.3	5.9	29.8	-11.6	24.2	349.4
Q4	28.7	295.6	324.3	-35.0	24.0	-11.0	313.3	-3.5	41.0	27.6	65.1	378.4
2020 Aug.	11.0	65.8	76.8	-31.8	8.0	-23.8	53.1	-14.3	-2.8	-0.3	-17.4	35.6
Sep.	8.9	84.4	93.3	28.0	8.7	36.7	129.9	8.3	19.1	-3.9	23.5	153.4
Oct.	7.6	65.4	73.0	-17.8	8.5	-9.3	63.7	-4.0	1.1	11.7	8.7	72.5
Nov.	13.1	108.3	121.3	-29.3	14.5	-14.7	106.6	0.8	0.2	1.8	2.8	109.4
Dec.	8.0	121.9	129.9	12.1	1.0	13.0	143.0	-0.3	39.6	14.1	53.5	196.4
2021 Jan. [p]	21.2	91.5	112.7	-37.6	11.2	-26.4	86.3	10.4	-18.1	-4.4	-12.1	74.3
Growth rates												
2018	4.5	7.0	6.7	-6.1	2.0	-0.8	4.4	-1.3	2.5	-1.6	1.6	4.2
2019	4.9	8.5	8.0	-5.3	2.7	0.1	5.7	5.4	-0.4	-71.4	-8.0	4.9
2020	11.3	16.3	15.6	-2.5	3.6	1.7	11.7	24.2	23.5	75.4	25.0	12.4
2020 Q1	7.1	11.0	10.4	-3.8	1.8	0.0	7.4	47.4	2.2	51.9	9.7	7.5
Q2	9.7	13.2	12.7	-3.3	2.6	0.7	9.3	28.2	11.0	-45.8	9.4	9.3
Q3	10.5	14.4	13.8	-2.1	3.0	1.4	10.3	36.7	12.6	-66.6	12.7	10.4
Q4	11.3	16.3	15.6	-2.5	3.6	1.7	11.7	24.2	23.5	75.4	25.0	12.4
2020 Aug.	10.4	13.7	13.3	-5.1	2.9	0.3	9.6	28.3	8.5	-49.1	8.6	9.5
Sep.	10.5	14.4	13.8	-2.1	3.0	1.4	10.3	36.7	12.6	-66.6	12.7	10.4
Oct.	10.7	14.3	13.8	-2.7	3.2	1.4	10.3	23.4	15.2	-25.8	14.5	10.5
Nov.	11.1	15.1	14.5	-4.4	3.8	1.2	10.8	31.9	14.7	-15.7	15.5	11.0
Dec.	11.3	16.3	15.6	-2.5	3.6	1.7	11.7	24.2	23.5	75.4	25.0	12.4
2021 Jan. [p]	12.3	17.1	16.4	-5.4	4.0	1.1	12.2	40.1	16.1	1.5	18.2	12.5

Source: ECB.

1) Data refer to the changing composition of the euro area.

5 Money and credit

5.2 Deposits in M3 [1]

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Non-financial corporations [2]					Households [3]					Financial corporations other than MFIs and ICPFs [2]	Insurance corporations and pension funds	Other general government [4]
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2018	2,334.2	1,901.4	277.3	147.9	7.6	6,645.3	4,035.6	517.8	2,090.6	1.3	996.0	204.8	436.2
2019	2,482.3	2,068.7	256.9	150.2	6.5	7,041.2	4,397.1	492.3	2,151.0	0.8	1,032.6	217.1	468.0
2020	2,985.0	2,528.4	310.3	143.1	3.3	7,647.5	4,954.6	437.5	2,254.6	0.8	1,106.8	237.8	508.7
2020 Q1	2,610.9	2,191.4	264.0	147.9	7.6	7,173.7	4,535.9	472.2	2,165.0	0.6	1,151.4	224.3	472.6
Q2	2,869.9	2,396.8	318.7	148.3	6.2	7,349.4	4,683.7	462.8	2,202.0	0.9	1,084.7	226.5	466.0
Q3	2,958.3	2,481.3	323.3	146.9	6.9	7,491.0	4,816.7	446.5	2,226.9	1.0	1,058.2	240.4	469.6
Q4	2,985.0	2,528.4	310.3	143.1	3.3	7,647.5	4,954.6	437.5	2,254.6	0.8	1,106.8	237.8	508.7
2020 Aug.	2,937.5	2,462.6	323.7	146.9	4.3	7,437.8	4,768.3	450.7	2,217.7	1.1	1,005.9	233.7	467.9
Sep.	2,958.3	2,481.3	323.3	146.9	6.9	7,491.0	4,816.7	446.5	2,226.9	1.0	1,058.2	240.4	469.6
Oct.	2,968.9	2,488.2	328.5	147.0	5.1	7,534.8	4,856.9	443.3	2,233.5	1.1	1,052.2	236.9	479.5
Nov.	2,966.9	2,502.2	312.7	146.4	5.5	7,595.0	4,903.6	441.0	2,249.2	1.1	1,074.6	238.9	483.5
Dec.	2,985.0	2,528.4	310.3	143.1	3.3	7,647.5	4,954.6	437.5	2,254.6	0.8	1,106.8	237.8	508.7
2021 Jan. [p]	3,007.9	2,556.8	302.3	142.2	6.6	7,706.5	5,008.4	431.1	2,266.1	0.8	1,114.4	228.1	507.6
Transactions													
2018	94.6	106.8	-9.7	-1.0	-1.4	326.6	325.4	-45.0	45.6	0.5	1.7	-3.6	19.2
2019	149.6	167.1	-18.9	1.7	-0.4	394.6	360.2	-26.2	61.0	-0.5	26.9	11.0	29.7
2020	513.7	467.7	55.8	-6.9	-3.0	611.5	561.1	-53.8	104.3	-0.1	144.6	22.1	41.0
2020 Q1	126.0	120.8	6.4	-2.2	1.0	131.3	138.1	-20.6	14.0	-0.2	116.1	6.8	4.5
Q2	261.2	206.7	55.4	0.4	-1.3	177.6	149.0	-9.1	37.4	0.3	-71.4	2.7	-6.5
Q3	94.7	88.6	6.5	-1.3	0.9	144.3	134.8	-15.6	25.0	0.1	46.1	14.6	3.9
Q4	31.8	51.6	-12.6	-3.7	-3.5	158.3	139.2	-8.5	27.9	-0.2	53.9	-2.1	39.2
2020 Aug.	18.4	27.5	-7.8	-0.3	-1.0	44.3	42.3	-5.4	7.5	-0.1	-21.0	-7.6	-6.5
Sep.	20.0	18.5	-1.0	0.0	2.5	51.0	46.4	-4.5	9.1	-0.1	50.0	6.6	1.8
Oct.	9.1	6.8	4.0	0.1	-1.8	43.6	40.1	-3.2	6.6	0.1	-7.0	-3.5	9.8
Nov.	1.3	16.4	-15.1	-0.5	0.5	61.2	47.4	-2.1	15.8	0.1	25.5	2.2	4.2
Dec.	21.4	28.4	-1.5	-3.3	-2.2	53.5	51.6	-3.2	5.4	-0.3	35.4	-0.8	25.2
2021 Jan. [p]	21.6	27.2	-8.0	-1.0	3.3	59.6	53.0	-6.6	13.2	0.1	5.2	-9.8	-1.0
Growth rates													
2018	4.2	5.9	-3.4	-0.7	-16.2	5.2	8.8	-8.0	2.2	66.7	0.2	-1.7	4.6
2019	6.4	8.8	-6.8	1.2	-6.8	5.9	8.9	-5.1	2.9	-36.8	2.7	5.3	6.8
2020	20.7	22.6	21.6	-4.6	-46.9	8.7	12.8	-10.9	4.9	-6.5	14.5	10.2	8.8
2020 Q1	9.7	12.1	-2.2	-1.0	24.5	6.1	9.8	-8.5	2.4	-56.9	16.9	5.7	2.7
Q2	19.2	20.7	21.1	-1.8	-13.8	7.4	11.3	-9.4	3.6	-48.0	5.0	3.7	0.6
Q3	21.1	22.4	24.9	-3.3	23.4	7.7	11.7	-11.3	4.2	-0.2	8.2	9.9	0.9
Q4	20.7	22.6	21.6	-4.6	-46.9	8.7	12.8	-10.9	4.9	-6.5	14.5	10.2	8.8
2020 Aug.	19.9	21.3	24.6	-3.4	-31.4	7.5	11.5	-11.0	4.0	-40.8	4.8	0.8	1.1
Sep.	21.1	22.4	24.9	-3.3	23.4	7.7	11.7	-11.3	4.2	-0.2	8.2	9.9	0.9
Oct.	20.5	21.6	26.9	-3.0	-28.5	7.9	11.9	-11.4	4.4	-34.0	7.4	7.0	2.7
Nov.	20.3	21.5	24.6	-3.1	2.4	8.3	12.2	-11.1	4.9	-32.9	11.0	6.7	3.2
Dec.	20.7	22.6	21.6	-4.6	-46.9	8.7	12.8	-10.9	4.9	-6.5	14.5	10.2	8.8
2021 Jan. [p]	21.8	24.0	18.7	-5.3	65.1	9.1	13.2	-11.3	5.3	-6.3	15.6	4.7	8.3

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

3) Including non-profit institutions serving households.

4) Refers to the general government sector excluding central government.

5 Money and credit

5.3 Credit to euro area residents [1)]

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corporations [3)]	To households [4)]	To financial corporations other than MFIs and ICPFs [3)]	To insurance corporations and pension funds		
						Adjusted loans [2)]						
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2018	4,684.1	1,008.4	3,664.3	13,416.5	11,123.0	11,483.4	4,405.0	5,741.9	849.8	126.4	1,519.9	773.6
2019	4,660.7	986.8	3,662.2	13,865.4	11,452.3	11,839.5	4,475.7	5,931.1	893.5	152.0	1,562.5	850.6
2020	5,925.0	996.1	4,916.9	14,341.1	11,927.1	12,300.8	4,723.5	6,119.9	916.1	167.7	1,548.8	865.2
2020 Q1	4,794.6	1,007.2	3,775.6	14,055.9	11,692.0	12,067.7	4,605.0	5,965.4	960.7	160.9	1,564.9	799.0
Q2	5,279.2	1,005.9	4,261.6	14,244.9	11,781.7	12,163.6	4,718.4	5,995.4	912.6	155.2	1,646.7	816.6
Q3	5,737.1	1,003.0	4,722.3	14,200.5	11,868.4	12,226.5	4,731.8	6,066.1	912.6	157.9	1,517.9	814.2
Q4	5,925.0	996.1	4,916.9	14,341.1	11,927.1	12,300.8	4,723.5	6,119.9	916.1	167.7	1,548.8	865.2
2020 Aug.	5,622.8	1,000.7	4,610.3	14,173.0	11,842.5	12,206.1	4,750.5	6,031.3	904.4	156.4	1,513.6	816.8
Sep.	5,737.1	1,003.0	4,722.3	14,200.5	11,868.4	12,226.5	4,731.8	6,066.1	912.6	157.9	1,517.9	814.2
Oct.	5,803.5	1,003.7	4,788.0	14,232.9	11,900.3	12,260.0	4,738.4	6,092.6	910.3	158.9	1,528.8	803.9
Nov.	5,850.1	1,006.4	4,831.6	14,288.5	11,926.8	12,285.8	4,735.9	6,106.6	927.5	156.7	1,541.0	820.7
Dec.	5,925.0	996.1	4,916.9	14,341.1	11,927.1	12,300.8	4,723.5	6,119.9	916.1	167.7	1,548.8	865.2
2021 Jan. [p]	5,950.5	989.0	4,960.0	14,357.3	11,947.3	12,311.5	4,723.9	6,136.4	938.5	148.5	1,547.0	863.0
Transactions												
2018	91.5	-28.2	119.7	375.0	307.5	382.6	124.1	166.1	-0.3	17.7	88.5	-21.1
2019	-87.2	-23.3	-64.3	452.1	378.3	425.4	115.6	200.4	41.2	21.1	30.5	43.4
2020	1,046.4	13.3	1,033.0	737.1	539.9	560.7	288.8	209.1	26.2	15.8	169.6	27.7
2020 Q1	145.4	19.8	125.7	242.5	253.4	249.2	135.7	40.5	68.4	8.8	20.2	-31.1
Q2	465.6	-1.9	467.4	185.1	97.6	104.8	120.7	35.8	-53.3	-5.6	76.3	11.2
Q3	258.8	-2.8	261.6	154.4	105.0	86.7	28.9	72.1	1.1	2.9	44.3	5.0
Q4	176.6	-1.9	178.3	155.2	83.9	120.0	3.5	60.7	10.0	9.7	28.8	42.5
2020 Aug.	65.7	-3.7	69.5	60.4	35.8	28.6	21.7	18.8	-5.5	0.8	21.1	3.4
Sep.	96.1	2.3	93.8	30.3	25.8	21.3	-11.7	29.9	6.0	1.6	5.3	-0.8
Oct.	54.9	1.0	53.9	36.8	32.4	37.1	7.7	26.7	-2.6	0.7	11.8	-7.5
Nov.	42.8	2.9	39.5	47.4	34.6	40.2	2.1	15.1	19.6	-2.1	6.7	6.1
Dec.	78.9	-5.8	84.9	71.0	16.8	42.7	-6.2	18.9	-6.9	11.0	10.3	43.9
2021 Jan. [p]	35.0	-7.4	52.8	17.0	20.1	11.9	1.0	17.1	21.2	-19.2	-1.5	-1.7
Growth rates												
2018	2.0	-2.7	3.4	2.9	2.8	3.4	2.9	3.0	0.0	16.3	6.1	-2.6
2019	-1.9	-2.3	-1.8	3.4	3.4	3.7	2.6	3.5	4.8	16.1	2.0	5.5
2020	22.2	1.3	27.8	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.4	3.3
2020 Q1	1.6	0.4	2.0	4.3	4.8	5.1	5.0	3.3	11.3	20.7	3.0	-0.6
Q2	13.5	0.4	17.2	4.8	4.7	4.9	6.5	3.2	3.9	17.1	7.2	0.7
Q3	18.9	0.0	24.1	4.9	4.7	4.7	6.5	3.5	2.7	8.2	9.2	0.1
Q4	22.2	1.3	27.8	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.4	3.3
2020 Aug.	16.6	-0.7	21.4	5.0	4.6	4.7	6.5	3.3	2.2	11.4	10.8	1.0
Sep.	18.9	0.0	24.1	4.9	4.7	4.7	6.5	3.5	2.7	8.2	9.2	0.1
Oct.	20.3	0.0	25.9	4.9	4.6	4.7	6.3	3.6	1.7	14.0	10.4	-1.3
Nov.	21.2	0.4	27.0	5.0	4.8	4.8	6.3	3.6	4.3	7.3	10.3	-1.3
Dec.	22.2	1.3	27.8	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.4	3.3
2021 Jan. [p]	22.9	0.0	29.4	5.1	4.4	4.5	6.3	3.3	3.5	-2.6	11.9	2.9

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.

3) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

4) Including non-profit institutions serving households.

5 Money and credit

5.4 MFI loans to euro area non-financial corporations and households [1)]

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	Non-financial corporations [2)]					Households [3)]				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans [4)]					Adjusted loans [4)]			
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2018	4,405.0	4,489.1	991.4	844.2	2,569.4	5,741.9	6,024.9	682.6	4,356.4	702.9
2019	4,475.7	4,577.8	967.4	878.0	2,630.3	5,931.1	6,224.0	720.1	4,524.6	686.4
2020	4,723.5	4,841.3	898.8	1,012.2	2,812.5	6,119.9	6,389.8	700.2	4,725.1	694.6
2020 Q1	4,605.0	4,706.2	1,003.2	917.4	2,684.5	5,965.4	6,254.1	714.9	4,565.8	684.7
Q2	4,718.4	4,829.8	957.8	993.4	2,767.2	5,995.4	6,276.5	701.0	4,603.8	690.6
Q3	4,731.8	4,845.5	930.0	1,014.7	2,787.1	6,066.1	6,334.1	702.4	4,667.5	696.1
Q4	4,723.5	4,841.3	898.8	1,012.2	2,812.5	6,119.9	6,389.8	700.2	4,725.1	694.6
2020 Aug.	4,750.5	4,858.8	942.8	1,015.7	2,792.0	6,031.3	6,307.0	702.5	4,632.8	696.1
Sep.	4,731.8	4,845.5	930.0	1,014.7	2,787.1	6,066.1	6,334.1	702.4	4,667.5	696.1
Oct.	4,738.4	4,845.5	916.4	1,011.3	2,810.7	6,092.6	6,359.5	704.4	4,690.3	697.9
Nov.	4,735.9	4,842.3	911.8	1,004.9	2,819.3	6,106.6	6,376.2	701.7	4,708.6	696.4
Dec.	4,723.5	4,841.3	898.8	1,012.2	2,812.5	6,119.9	6,389.8	700.2	4,725.1	694.6
2021 Jan. [p]	4,723.9	4,838.3	889.4	1,006.6	2,827.9	6,136.4	6,404.2	697.1	4,745.6	693.6
Transactions										
2018	124.1	176.3	18.0	32.8	73.3	166.1	188.4	41.2	134.2	-9.3
2019	115.6	143.9	-13.2	43.6	85.3	200.4	217.2	40.9	168.6	-9.2
2020	288.8	325.2	-54.0	139.1	203.7	209.1	194.7	-11.9	210.7	10.3
2020 Q1	135.7	137.9	33.2	44.0	58.5	40.5	38.3	-3.7	45.0	-0.8
Q2	120.7	131.0	-39.1	80.4	79.4	35.8	29.1	-12.2	39.2	8.8
Q3	28.9	33.9	-22.5	15.9	35.6	72.1	59.7	5.8	65.0	1.3
Q4	3.5	22.4	-25.5	-1.2	30.2	60.7	67.6	-1.8	61.4	1.1
2020 Aug.	21.7	22.7	-2.8	8.3	16.2	18.8	19.5	2.5	16.0	0.3
Sep.	-11.7	-5.5	-12.9	0.8	0.4	29.9	22.1	-0.5	30.1	0.2
Oct.	7.7	2.2	-13.2	-2.9	23.8	26.7	26.4	2.2	22.7	1.7
Nov.	2.1	7.3	-2.7	-5.2	10.0	15.1	17.7	-3.7	19.3	-0.6
Dec.	-6.2	12.9	-9.6	6.9	-3.5	18.9	23.6	-0.4	19.4	-0.1
2021 Jan. [p]	1.0	-0.2	-9.4	-5.5	16.0	17.1	14.0	-2.5	20.6	-1.0
Growth rates										
2018	2.9	4.1	1.8	4.0	2.9	3.0	3.2	6.3	3.2	-1.3
2019	2.6	3.2	-1.3	5.2	3.3	3.5	3.6	6.0	3.9	-1.3
2020	6.5	7.1	-5.6	15.9	7.8	3.5	3.1	-1.7	4.7	1.5
2020 Q1	5.0	5.6	2.9	9.1	4.4	3.3	3.4	3.8	4.0	-1.2
Q2	6.5	7.2	-1.2	16.1	6.2	3.2	3.1	0.3	4.1	0.4
Q3	6.5	7.1	-3.9	17.3	6.9	3.5	3.1	-0.1	4.5	1.0
Q4	6.5	7.1	-5.6	15.9	7.8	3.5	3.1	-1.7	4.7	1.5
2020 Aug.	6.5	7.2	-3.4	16.9	6.8	3.3	3.0	0.3	4.1	0.8
Sep.	6.5	7.1	-3.9	17.3	6.9	3.5	3.1	-0.1	4.5	1.0
Oct.	6.3	6.9	-5.2	16.3	7.2	3.6	3.2	-0.1	4.6	1.5
Nov.	6.3	6.9	-4.6	15.1	7.4	3.6	3.1	-1.1	4.7	1.3
Dec.	6.5	7.1	-5.6	15.9	7.8	3.5	3.1	-1.7	4.7	1.5
2021 Jan. [p]	6.3	7.0	-5.9	14.9	7.8	3.3	3.0	-2.5	4.5	1.3

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) In accordance with the ESA 2010, in December 2014 holding companies of non-financial groups were reclassified from the non-financial corporations sector to the financial corporations sector. These entities are included in MFI balance sheet statistics with financial corporations other than MFIs and insurance corporations and pension funds (ICPFs).

3) Including non-profit institutions serving households.

4) Adjusted for loan sales and securitisation (resulting in derecognition from the MFI statistical balance sheet) as well as for positions arising from notional cash pooling services provided by MFIs.

5 Money and credit

5.5 Counterparts to M3 other than credit to euro area residents [1)]

(EUR billions and annual growth rates; seasonally adjusted; outstanding amounts and growth rates at end of period; transactions during period)

	MFI liabilities						MFI assets			
	Central government holdings [2)]	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total	Repos with central counter-parties [3)]	Reverse repos to central counter-parties [3)]
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2018	389.2	6,817.4	1,940.0	56.1	2,099.7	2,721.6	1,030.0	460.2	187.0	194.9
2019	364.2	7,058.9	1,946.1	50.1	2,156.5	2,906.2	1,455.7	452.3	178.9	187.2
2020	749.0	6,965.7	1,915.5	42.1	1,994.9	3,013.3	1,449.5	526.7	130.1	139.2
2020 Q1	409.5	7,036.5	1,937.1	47.2	2,119.9	2,932.3	1,562.5	517.4	183.7	196.5
Q2	673.3	7,042.9	1,934.5	44.1	2,080.4	2,983.8	1,562.5	531.2	159.2	174.3
Q3	806.2	7,039.7	1,934.3	43.0	2,059.7	3,002.7	1,574.2	502.1	139.9	147.3
Q4	749.0	6,965.7	1,915.5	42.1	1,994.9	3,013.3	1,449.5	526.7	130.1	139.2
2020 Aug.	819.5	7,026.8	1,938.9	43.1	2,033.7	3,011.1	1,556.6	502.5	170.4	177.6
Sep.	806.2	7,039.7	1,934.3	43.0	2,059.7	3,002.7	1,574.2	502.1	139.9	147.3
Oct.	864.3	7,038.0	1,933.5	42.7	2,036.5	3,025.3	1,578.9	529.7	148.7	154.3
Nov.	753.6	6,973.2	1,938.1	42.4	2,012.4	2,980.3	1,469.4	462.5	148.2	147.1
Dec.	749.0	6,965.7	1,915.5	42.1	1,994.9	3,013.3	1,449.5	526.7	130.1	139.2
2021 Jan. [(p)]	678.9	6,925.9	1,911.1	42.0	1,970.4	3,002.5	1,473.1	428.3	147.4	146.7
Transactions										
2018	45.5	51.0	-37.8	-4.9	16.1	77.6	88.4	42.6	16.2	23.6
2019	-24.3	107.8	-5.2	-3.3	27.3	89.0	309.4	19.4	-2.7	-2.5
2020	321.6	-34.4	-15.8	-8.0	-99.3	88.8	-28.6	141.0	-48.8	-48.0
2020 Q1	45.6	-45.4	-6.8	-2.9	-47.5	11.8	67.6	9.0	4.7	9.3
Q2	264.0	-0.3	-0.7	-3.1	-13.9	17.5	-28.9	58.5	-24.5	-22.2
Q3	69.2	10.7	-3.2	-1.1	6.1	8.9	27.4	-11.2	-19.3	-27.1
Q4	-57.1	0.6	-5.2	-0.9	-44.0	50.6	-94.6	84.7	-9.8	-8.1
2020 Aug.	63.3	3.1	4.2	-0.5	-10.9	10.2	17.3	-41.4	8.1	3.5
Sep.	-13.5	10.8	-6.0	-0.1	19.6	-2.7	23.0	1.4	-30.5	-30.3
Oct.	58.2	-11.7	0.1	-0.3	-24.3	12.9	1.6	25.7	8.8	7.1
Nov.	-110.7	-0.9	13.4	-0.2	-13.8	-0.2	-55.0	-37.2	-0.5	-7.3
Dec.	-4.7	13.1	-18.6	-0.4	-5.9	38.0	-41.2	96.2	-18.1	-7.9
2021 Jan. [(p)]	-70.2	-38.4	-6.8	-0.1	-30.7	-0.9	20.5	-106.8	17.3	7.5
Growth rates										
2018	13.0	0.8	-1.9	-8.0	0.8	2.9	-	-	8.1	7.7
2019	-6.3	1.6	-0.3	-5.9	1.3	3.2	-	-	-1.5	-1.5
2020	88.5	-0.5	-0.8	-15.9	-4.6	3.0	-	-	-27.3	-25.7
2020 Q1	11.7	0.3	-0.1	-11.1	-2.6	2.9	-	-	-0.3	0.6
Q2	81.0	-0.4	-1.3	-19.6	-3.3	2.6	-	-	-10.5	-8.8
Q3	91.8	-0.4	-0.6	-19.4	-3.1	2.1	-	-	-24.1	-25.6
Q4	88.5	-0.5	-0.8	-15.9	-4.6	3.0	-	-	-27.3	-25.7
2020 Aug.	89.8	0.0	1.2	-20.6	-4.0	2.5	-	-	-13.6	-16.6
Sep.	91.8	-0.4	-0.6	-19.4	-3.1	2.1	-	-	-24.1	-25.6
Oct.	108.5	-0.5	-0.7	-17.5	-3.6	2.2	-	-	-32.8	-34.6
Nov.	85.3	-0.7	-0.1	-17.1	-4.3	1.8	-	-	-30.0	-34.6
Dec.	88.5	-0.5	-0.8	-15.9	-4.6	3.0	-	-	-27.3	-25.7
2021 Jan. [(p)]	65.1	-0.9	-1.0	-14.0	-6.1	3.1	-	-	-13.9	-19.5

Source: ECB.

1) Data refer to the changing composition of the euro area.

2) Comprises central government holdings of deposits with the MFI sector and of securities issued by the MFI sector.

3) Not adjusted for seasonal effects.

6 Fiscal developments

6.1 Deficit/surplus

(as a percentage of GDP; flows during one-year period)

	Deficit (-)/surplus (+)					Memo item: Primary deficit (-)/ surplus (+)
	Total	Central government	State government	Local government	Social security funds	
	1	2	3	4	5	6
2016	-1.5	-1.7	0.0	0.2	0.1	0.6
2017	-0.9	-1.4	0.1	0.2	0.1	1.0
2018	-0.5	-1.0	0.1	0.2	0.3	1.4
2019	-0.6	-1.0	0.1	0.0	0.2	1.0
2019 Q4	-0.6	.	.	.	.	1.0
2020 Q1	-1.1	.	.	.	.	0.5
Q2	-3.8	.	.	.	.	-2.2
Q3	-5.0	.	.	.	.	-3.4

Sources: ECB for annual data; Eurostat for quarterly data.

6.2 Revenue and expenditure

(as a percentage of GDP; flows during one-year period)

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				Compen-sation of employees	Intermediate consumption	Interest	Social benefits	
	1	2	3	4	5	6	7	8	9	10	11	12	13
2016	46.3	45.8	12.6	13.0	15.3	0.5	47.7	44.2	10.0	5.4	2.1	22.7	3.6
2017	46.2	45.8	12.8	13.0	15.2	0.4	47.2	43.3	9.9	5.3	1.9	22.4	3.8
2018	46.5	46.0	13.0	13.0	15.2	0.5	46.9	43.2	9.9	5.3	1.8	22.3	3.7
2019	46.4	46.0	12.9	13.1	15.1	0.5	47.1	43.3	9.9	5.3	1.6	22.5	3.8
2019 Q4	46.4	46.0	12.9	13.1	15.1	0.5	47.0	43.3	9.9	5.3	1.6	22.5	3.8
2020 Q1	46.5	46.1	13.0	13.0	15.1	0.5	47.7	43.8	10.0	5.4	1.6	22.8	3.8
Q2	46.8	46.3	13.0	12.9	15.4	0.5	50.5	46.6	10.4	5.7	1.6	24.1	4.0
Q3	46.8	46.3	13.0	12.9	15.5	0.5	51.8	47.7	10.6	5.8	1.6	24.8	4.2

Sources: ECB for annual data; Eurostat for quarterly data.

6.3 Government debt-to-GDP ratio

(as a percentage of GDP; outstanding amounts at end of period)

	Total	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors	MFIs	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren-cies
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2016	90.1	3.3	15.7	71.0	47.5	30.8	42.6	9.4	80.7	17.9	29.9	42.3	87.9	2.2
2017	87.7	3.2	14.6	70.0	48.2	32.1	39.5	8.6	79.0	16.5	29.0	42.3	85.8	1.9
2018	85.8	3.1	13.8	68.8	48.0	32.4	37.8	8.1	77.7	16.1	28.4	41.3	84.2	1.6
2019	84.0	3.0	13.1	67.9	45.4	30.6	38.6	7.7	76.3	15.7	27.9	40.4	82.6	1.4
2019 Q4	84.0	3.0	13.1	67.9	.	.	.	.	.	.	.	.	.	.
2020 Q1	86.2	3.1	13.4	69.8	.	.	.	.	.	.	.	.	.	.
Q2	95.0	3.2	14.3	77.5	.	.	.	.	.	.	.	.	.	.
Q3	97.3	3.2	14.1	80.1	.	.	.	.	.	.	.	.	.	.

Sources: ECB for annual data; Eurostat for quarterly data.

6 Fiscal developments

6.4 Annual change in the government debt-to-GDP ratio and underlying factors [1)]

(as a percentage of GDP; flows during one-year period)

	Change in debt-to-GDP ratio [2)]	Primary deficit (+)/ surplus (-)	Deficit-debt adjustment								Interest-growth differential	Memo item: Borrowing requirement
			Total	Transactions in main financial assets					Revaluation effects and other changes in volume	Other		
				Total	Currency and deposits	Loans	Debt securities	Equity and investment fund shares				
	1	2	3	4	5	6	7	8	9	10	11	12
2016	-0.8	-0.6	0.2	0.3	0.3	-0.1	0.0	0.1	0.0	-0.1	-0.4	1.6
2017	-2.4	-1.0	-0.1	0.4	0.5	0.0	-0.2	0.1	-0.1	-0.4	-1.3	0.9
2018	-1.9	-1.4	0.4	0.5	0.4	-0.1	0.0	0.2	0.0	-0.1	-1.0	0.8
2019	-1.7	-1.0	0.1	0.3	0.0	0.0	0.1	0.2	-0.2	0.0	-0.9	0.9
2019 Q4	-1.7	-1.0	0.1	0.3	0.0	0.0	0.1	0.2	-0.2	0.0	-0.9	0.9
2020 Q1	-0.1	-0.5	0.4	0.7	0.5	0.0	0.0	0.1	-0.2	0.0	0.0	1.8
Q2	8.9	2.2	3.4	3.0	2.8	0.2	-0.1	0.2	-0.3	0.6	3.3	7.4
Q3	11.5	3.4	3.2	3.3	2.9	0.3	-0.1	0.2	-0.3	0.2	4.9	8.5

Sources: ECB for annual data; Eurostat for quarterly data.

1) Intergovernmental lending in the context of the financial crisis is consolidated except in quarterly data on the deficit-debt adjustment.

2) Calculated as the difference between the government debt-to-GDP ratios at the end of the reference period and a year earlier.

6.5 Government debt securities [1)]

(debt service as a percentage of GDP; flows during debt service period; average nominal yields in percentages per annum)

	Debt service due within 1 year [2)]					Average residual maturity in years [3)]	Average nominal yields [4)]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate		Issuance	Redemption
											Maturities of up to 1 year		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2018	12.6	11.1	3.7	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
2019	12.2	10.8	3.6	1.4	0.4	7.5	2.2	1.3	-0.1	2.5	2.1	0.3	1.1
2020	14.3	13.0	4.0	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.3	0.0	0.8
2019 Q4	12.2	10.8	3.6	1.4	0.4	7.5	2.2	1.3	-0.1	2.5	2.1	0.3	1.1
2020 Q1	12.3	10.9	4.1	1.4	0.4	7.5	2.1	1.2	-0.2	2.4	2.0	0.1	1.0
Q2	14.7	13.3	4.7	1.4	0.4	7.5	2.0	1.1	-0.2	2.3	2.0	0.1	0.9
Q3	15.2	13.8	4.4	1.4	0.3	7.5	1.9	1.1	-0.2	2.3	2.2	0.1	0.8
2020 Aug.	14.8	13.4	5.1	1.4	0.3	7.4	1.9	1.1	-0.2	2.3	2.2	0.1	0.9
Sep.	15.2	13.8	4.4	1.4	0.3	7.5	1.9	1.1	-0.2	2.3	2.2	0.1	0.8
Oct.	15.0	13.6	3.9	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.2	0.0	0.8
Nov.	14.6	13.3	3.7	1.4	0.3	7.7	1.9	1.1	-0.2	2.2	2.1	0.0	0.8
Dec.	14.3	13.0	4.0	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.3	0.0	0.8
2021 Jan.	14.5	13.2	4.7	1.4	0.3	7.7	1.8	1.1	-0.2	2.2	2.3	0.0	0.7

Source: ECB.

1) At face value and not consolidated within the general government sector.

2) Excludes future payments on debt securities not yet outstanding and early redemptions.

3) Residual maturity at the end of the period.

4) Outstanding amounts at the end of the period; transactions as 12-month average.

6 Fiscal developments

6.6 Fiscal developments in euro area countries

(as a percentage of GDP; flows during one-year period and outstanding amounts at end of period)

	Belgium	Germany	Estonia	Ireland	Greece	Spain	France	Italy	Cyprus
	1	2	3	4	5	6	7	8	9
	Government deficit (-)/surplus (+)								
2016	-2.4	1.2	-0.4	-0.7	0.5	-4.3	-3.6	-2.4	0.3
2017	-0.7	1.4	-0.7	-0.3	0.7	-3.0	-3.0	-2.4	1.9
2018	-0.8	1.8	-0.5	0.1	1.0	-2.5	-2.3	-2.2	-3.5
2019	-1.9	1.5	0.1	0.5	1.5	-2.9	-3.0	-1.6	1.5
2019 Q4	-1.9	1.5	0.1	0.5	1.5	-2.9	-3.0	-1.6	1.5
2020 Q1	-2.6	1.1	-0.9	0.1	1.1	-3.4	-3.7	-2.3	2.1
Q2	-6.0	-1.4	-2.9	-1.9	-1.8	-6.9	-5.9	-4.8	-2.2
Q3	-7.0	-2.9	-3.5	-3.6	-4.6	-8.1	-6.1	-6.7	-4.4
	Government debt								
2016	105.0	69.3	9.9	74.1	180.8	99.2	98.0	134.8	103.1
2017	102.0	65.1	9.1	67.0	179.2	98.6	98.3	134.1	93.5
2018	99.8	61.8	8.2	63.0	186.2	97.4	98.1	134.4	99.2
2019	98.1	59.6	8.4	57.4	180.5	95.5	98.1	134.7	94.0
2019 Q4	98.1	59.6	8.4	57.4	180.5	95.5	98.1	134.7	94.0
2020 Q1	103.4	61.0	8.9	58.9	180.7	99.0	101.3	137.6	96.2
Q2	114.1	67.4	18.5	62.7	191.4	110.2	114.0	149.3	113.3
Q3	113.2	70.0	18.5	62.0	199.9	114.1	116.5	154.2	119.5

	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
	Government deficit (-)/surplus (+)									
2016	0.2	0.2	1.9	0.9	0.0	-1.5	-1.9	-1.9	-2.6	-1.7
2017	-0.8	0.5	1.3	3.2	1.3	-0.8	-3.0	-0.1	-0.9	-0.7
2018	-0.8	0.6	3.1	2.0	1.4	0.2	-0.3	0.7	-1.0	-0.9
2019	-0.6	0.3	2.4	0.5	1.7	0.7	0.1	0.5	-1.4	-1.0
2019 Q4	-0.6	0.3	2.4	0.5	1.7	0.7	0.1	0.5	-1.4	-1.0
2020 Q1	-0.7	-0.2	1.3	-1.5	1.5	0.4	-0.1	-0.8	-1.9	-1.2
Q2	-1.8	-2.4	-2.2	-5.1	-1.6	-3.4	-1.9	-4.8	-3.5	-3.3
Q3	-3.4	-4.3	-3.6	-8.0	-3.1	-5.5	-4.0	-5.4	-4.7	-4.5
	Government debt									
2016	40.4	39.7	20.1	54.5	61.9	82.8	131.5	78.5	52.4	63.2
2017	39.0	39.1	22.3	48.8	56.9	78.5	126.1	74.1	51.7	61.3
2018	37.1	33.7	21.0	45.2	52.4	74.0	121.5	70.3	49.9	59.6
2019	36.9	35.9	22.0	42.6	48.7	70.5	117.2	65.6	48.5	59.3
2019 Q4	36.9	35.9	22.0	42.4	48.7	70.5	117.2	65.6	48.5	59.3
2020 Q1	37.1	33.0	22.2	43.9	49.5	73.1	119.5	69.0	49.7	64.3
Q2	42.9	41.4	23.9	51.0	55.2	82.5	126.0	78.3	60.3	68.6
Q3	44.6	45.9	26.1	53.7	55.2	79.1	130.8	78.5	60.8	66.9

Source: Eurostat.

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For specific terminology please refer to the ECB glossary (available in English only).

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