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Update on economic, financial and monetary developments

Summary

Economic activity

At the global level, the recovery momentum remains solid amid continued supply constraints. The Purchasing Managers' Index data for June show historically high levels for the second quarter of 2021 as a whole. At the same time, the growth momentum slowed somewhat in June because activity normalised to some extent in several key economies. Trade in goods remains robust despite increasing headwinds from supply bottlenecks. With respect to global inflation developments, price pressures increased further, driven largely by transitory factors such as base effects and pandemic-related supply constraints. Looking ahead, pandemic developments continue to be a source of uncertainty for the global economic recovery and may lead to an increasingly uneven growth path across countries.

The euro area economy rebounded in the second quarter of the year and, as restrictions are eased, is on track for strong growth in the third quarter. More and more people are getting vaccinated, and lockdown restrictions have been eased in most euro area countries. Manufacturing is expected to perform strongly, even though supply bottlenecks are holding back production in the near term. The reopening of large parts of the economy is supporting a vigorous bounce-back in the services sector. But the Delta variant of the coronavirus (COVID-19) could dampen this recovery in services, especially in tourism and hospitality.

As people return to shops and restaurants and resume travelling, consumer spending is rising. Better job prospects, increasing confidence and continued government support are reinforcing spending. The ongoing recovery in domestic and global demand is boosting optimism among businesses, which supports investment. For the first time since the start of the pandemic, the euro area bank lending survey indicates that funding of fixed investment is an important factor driving the demand for loans to firms.

Economic activity is expected to return to its pre-crisis level in the first quarter of next year. But there is still a long way to go before the damage to the economy caused by the pandemic is offset. The number of people in job retention schemes has been declining but remains high. Overall, there are still 3.3 million fewer people employed than before the pandemic, especially among the younger and lower skilled. Significant policy support remains essential. An ambitious and coordinated fiscal policy should continue to complement monetary policy in underpinning confidence and supporting spending. The Next Generation EU programme is also playing a key role, as it should contribute to a stronger and more uniform recovery across the euro area.

Inflation

Euro area inflation was 1.9% in June. Inflation is expected to increase further over the coming months and to decline again next year. The current increase is largely being driven by higher energy prices and by base effects from the sharp fall in oil prices at the start of the pandemic and the impact of the temporary VAT reduction in Germany last year. By early 2022, the impact of these factors should fade out as they fall out of the year-on-year inflation calculation. In the near term, the significant slack in the economy is holding back underlying inflationary pressures. Stronger demand and temporary cost pressures in the supply chain will put some upward pressure on prices. But weak wage growth and the past appreciation of the euro mean that price pressures will likely remain subdued for some time.

There is still some way to go before the fallout from the pandemic on inflation is eliminated. As the economy recovers, supported by the Governing Council's monetary policy measures, inflation is expected to rise over the medium term, although remaining below the ECB's target. While measures of longer-term inflation expectations have increased, they remain some distance from the ECB's 2% target.

Risk assessment

The Governing Council sees the risks to the economic outlook as broadly balanced. Economic activity could outperform the ECB's expectations if consumers spend more than currently expected and draw more rapidly on the savings they have built up during the pandemic. A faster improvement in the pandemic situation could also lead to a stronger expansion than currently envisaged. But growth could underperform expectations if the pandemic intensifies or if supply shortages turn out to be more persistent and hold back production.

Financial and monetary conditions

The recovery of growth and inflation still depends on favourable financing conditions. Market interest rates have declined since the last monetary policy meeting in June. Financing conditions for most firms and households remain at favourable levels.

Money creation in the euro area continued to normalise in May 2021, standing at 8.4% in annual growth terms, reflecting a moderation of monetary and credit flows amid an improving situation regarding the coronavirus pandemic. While the pace of deposit accumulation by households and firms normalised, Eurosystem asset purchases remained the dominant source of money creation. Growth in loans to the private sector returned to pre-pandemic levels, at 2.7% annually, driven by a moderation in lending to firms. Moreover, according to the euro area bank lending survey, credit standards on loans to firms and households were broadly unchanged in the second quarter of 2021, while demand for loans by firms and households increased.

Bank lending rates for firms and households remain historically low. In May 2021 the composite bank lending rate for loans to non-financial corporations decreased to 1.46%, while it was broadly unchanged for loans to households at 1.32%. Firms are still well funded as a result of their borrowing in the first wave of the pandemic, which in part explains why lending to firms has slowed. By contrast, lending to households is holding up. The most recent euro area bank lending survey shows that credit conditions for both firms and households have stabilised. Liquidity remains abundant.

At the same time, the cost for firms of issuing equity is still high. Many firms and households have taken on more debt to weather the pandemic. Any worsening of the economy could therefore threaten their financial health, which could trickle through to the quality of banks' balance sheets. It remains essential to prevent balance sheet strains and tightening financing conditions from reinforcing each other.

Monetary policy statement

Against this background, at its monetary policy meeting in July, the Governing Council focused on two main topics: first, the implications of its strategy review for its forward guidance on the key ECB interest rates; and, second, its assessment of the economy and its pandemic measures.

In the ECB's recent strategy review, the Governing Council agreed a symmetric inflation target of 2% over the medium term. The ECB's policy rates have been close to their lower bound for some time and the medium-term outlook for inflation is still well below the ECB's target. In these conditions, the Governing Council has revised its forward guidance on interest rates. It did so to underline its commitment to maintain a persistently accommodative monetary policy stance to meet its inflation target.

In support of the Governing Council's symmetric 2% inflation target and in line with its monetary policy strategy, the Governing Council expects the key ECB interest rates to remain at their present or lower levels until it sees inflation reaching 2% well ahead of the end of the projection horizon and durably for the rest of the projection horizon, and it judges that realised progress in underlying inflation is sufficiently advanced to be consistent with inflation stabilising at 2% over the medium term. This may also imply a transitory period in which inflation is moderately above target.

The Governing Council viewed the recovery in the euro area economy as being on track but the pandemic continues to cast a shadow, especially as the Delta variant constitutes a growing source of uncertainty. Inflation has picked up, although this increase is expected to be mostly temporary. The outlook for inflation over the medium term remains subdued.

It is necessary to preserve favourable financing conditions for all sectors of the economy over the pandemic period. This is essential for the current rebound to turn into a lasting expansion and to offset the negative impact of the pandemic on inflation. Therefore, having confirmed the Eurosystem's June assessment of financing conditions and the inflation outlook, the Governing Council continues to expect purchases under the pandemic emergency purchase programme (PEPP) over the

current quarter to be conducted at a significantly higher pace than during the first months of the year.

The Governing Council also confirmed its other measures to support the ECB's price stability mandate, namely the level of the key ECB interest rates, the Eurosystem purchases under the asset purchase programme (APP), the Governing Council's reinvestment policies and its longer-term refinancing operations.

The Governing Council stands ready to adjust all of its instruments, as appropriate, to ensure that inflation stabilises at the ECB's 2% target over the medium term.

1 External environment

At the global level, the recovery momentum remains solid amid supply constraints. The Purchasing Managers' Index data for June show historically high levels for the second quarter of 2021 as a whole. At the same time, the growth momentum slowed somewhat in June as activity normalised in several key economies. Trade in goods remains robust despite increasing headwinds from supply bottlenecks. With respect to inflation developments, price pressures increased further, partially as a result of base effects and supply constraints, which are assessed to be transitory. Looking ahead, developments in the coronavirus (COVID-19) pandemic continue to be a source of uncertainty for the global economic recovery and may lead to an increasingly uneven growth path across countries.

The global economic recovery momentum remains solid amid divergent pandemic developments. Global real GDP growth (excluding the euro area) increased by 0.9% quarter on quarter in the first quarter of 2021. The growth momentum is expected to remain solid in the second quarter as advanced and emerging market economies continue to reopen their economies amid divergent pandemic developments. The new Delta variant of the coronavirus is driving a rise in cases in a number of countries. However, in countries with relatively high rates of vaccinations, pressures on health systems have remained limited despite the increase in COVID-19 cases. Overall, pandemic developments remain one of several factors affecting divergent growth perspectives across countries.

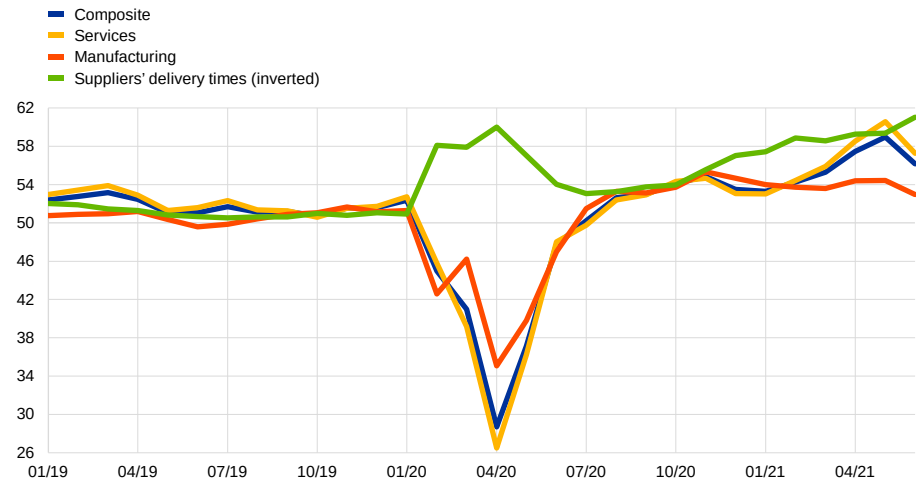
The global recovery is also reflected in strong survey data. The composite output Purchasing Managers' Index (PMI) – excluding the euro area – rose to a 15-year high in the second quarter of 2021. Economic activity remains solid in manufacturing and is gaining strength in the services sector. The survey data softened somewhat towards the end of the second quarter, as the high PMI readings normalised to some extent in a number of countries, including the United States and China.

At the same time, supply constraints are creating headwinds to global economic activity and trade. Suppliers' delivery times – excluding the euro area – extended in June beyond the peak observed during the global shutdown in April of last year (Chart 1). The supply constraints imply disruptions in global value chains, in particular computer chip shortages, which are delaying the production and delivery of autos and a range of electric products.

Chart 1

Global composite output PMI (excluding the euro area)

(diffusion indices)



Sources: Markit and ECB calculations.

Notes: The latest observations are for June 2021. A rise in "Suppliers' delivery times (inverted)" implies longer delivery times of manufactured goods.

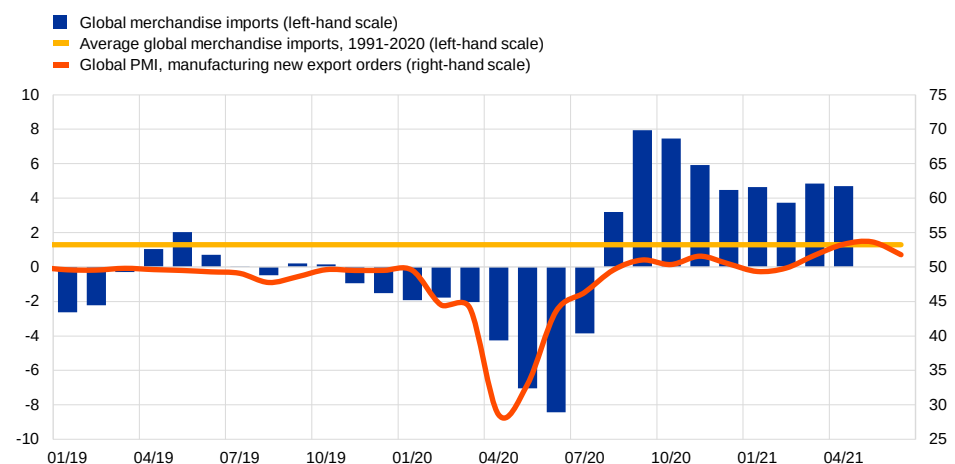
Despite supply chain frictions, world trade remained solid in the first half of 2021.

Global merchandise imports (excluding the euro area) were stable in April, in three-month-on-three-month terms. Meanwhile, the global PMI for manufacturing new export orders (excluding the euro area) stood at an 11-year high in the second quarter of 2021, despite softening somewhat in June (Chart 2). Trade in services remains depressed, however, primarily owing to ongoing weak tourism flows.

Chart 2

Surveys and global trade in goods (excluding the euro area)

(left-hand scale: three-month-on-three-month percentage changes; right-hand scale: diffusion indices)



Sources: Markit, CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations.

Note: The latest observations are for April 2021 for global merchandise imports and June 2021 for the PMIs.

Global inflation rose further in May, driven largely by transitory factors. Annual consumer price inflation in the countries of the Organisation for Economic Co-operation and Development (OECD) increased to 3.8% in May, up from 3.3% in

April. Higher commodity prices, pushed up further by base year effects, contributed significantly to this development, while supply bottlenecks and fiscal stimulus also supported price pressures. Meanwhile, core inflation (excluding food and energy) rose to 2.9% in May, compared with 2.4% in the previous month. However, the current rates of median core inflation in advanced and emerging market economies remain close to the average levels observed since 2000. Part of the increase in global inflation is driven by temporary factors. The significant impact of the energy component is likely to decline in the months ahead as the base effect from last year's slump in oil prices falls out from the annual comparison. As global supply chain frictions diminish, price pressures for the associated products (and their substitutes) are also likely to dissipate.

Oil prices continued to climb on the back of demand and supply factors.

Supported by the rapid global economic recovery, oil prices have increased further since the Governing Council meeting in June, and now hover around their highest level since October 2018. Oil demand has increased substantially following a pick-up in mobility in recent weeks, particularly air travel, amid the swift reopening in some economies. Although OPEC+ recently reached a deal to expand its production, supply is lagging. The consequence has been a tightening of oil markets, spurring higher prices as consumption recovers. In contrast, metal commodity prices have plateaued since the last Governing Council meeting, while global food prices have fallen.

The US economy continues to recover strongly. Survey data showed that manufacturing and service activity remained at very high levels in June. At the same time, supply constraints are creating headwinds to the recovery, with a growing backlog of work and lengthening supplier delivery times. While the labour market continues to improve, skill mismatches in some sectors are leading to labour market tightness in the near term. Nonetheless, overall, the labour market recovery remains incomplete, with 7 million fewer people employed than before the COVID-19 crisis. Consumer price inflation rose strongly in June to 5.4% year on year, reflecting robust demand and supply constraints. However, this increase in inflation is likely to be largely transitory, as it partly reflects the impact of base effects. Idiosyncratic factors related to the reopening of the economy and supply chain frictions also played an important role, as reflected in significant price increases for air fares, hotel accommodation and used cars.

In the United Kingdom, the economy is rebounding, although rising COVID-19 cases increasingly pose downside risks. Monthly GDP growth in May continues to point to a strong recovery in the second quarter. Similarly, business surveys, consumer confidence and mobility trackers signal a strong rise in activity, particularly in the services sector. At the same time, computer chip shortages have disrupted car production, acting as a drag on manufacturing output. The new Delta variant of the coronavirus has driven a sharp increase in the number of daily new cases, but the impact on the health system is limited given the advanced vaccination progress. As a result, the impact on GDP growth is also expected to remain limited. Meanwhile, consumer price inflation rose sharply in May to 2.1%. While the drivers of inflation are mainly related to transitory factors affecting energy and transportation prices, survey

indicators also signal a more broad-based increase in production costs, including wages, and a pass-through to prices charged.

In Japan, the pace of economic activity has slowed in the second quarter, owing in part to supply constraints and pandemic developments. Real GDP growth is expected to remain weak in the second quarter as a renewed rise in COVID-19 cases prompted a tightening of containment measures. Accordingly, service activity continued to be muted. At the same time, industrial production declined in May, affected in part by semiconductor shortages, which were also signalled in the survey data of the June manufacturing PMI. A firmer recovery is expected in the second half of the year, when a significant pick-up in the pace of vaccinations and a more favourable external environment is likely to support growth. Headline inflation edged up in May to -0.1%, supported by higher energy prices, but continues to be dampened by idiosyncratic factors, including marked cuts in mobile phone charges.

The recovery in China is progressing, while producer price pressures remain high. Monthly data point to continuing robust growth during the second quarter of 2021, notwithstanding a dampening in June. Meanwhile, annual producer price inflation stabilised at 8.8% in June, which remains close to the 12-year high of 9.0% recorded in May. As base effects and the impact of raw commodity prices fade, producer prices are expected to normalise. Annual consumer price inflation decreased slightly to 1.1% in June, largely owing to the ongoing normalisation of food price inflation, which outweighed higher fuel prices. Overall, a decline in month-on-month price pressures signals that annual inflation may have peaked in China. The People's Bank of China cut its reserve requirement ratio by 50 basis points in July but stated that its monetary policy direction remains unchanged. Several key lending rates remained unchanged in July.

2 Financial developments

The long end of the euro overnight index average (EONIA) forward curve and long-term sovereign bond yields declined over the review period against the background of the spread of the Delta variant of the coronavirus (COVID-19) and weaker-than-expected global macroeconomic data releases. However, sovereign spreads remained broadly stable, while corporate bond spreads continued to narrow somewhat. Equity prices declined marginally for non-financial corporations and more significantly for the banking sector. Lastly, the euro depreciated slightly in trade-weighted terms.

The EONIA and the new benchmark euro short-term rate (€STR) averaged at -48 and -57 basis points respectively over the review period (10 June to 21 July 2021). Excess liquidity increased by approximately €18 billion to around €4,224 billion, as a result of asset purchases under the pandemic emergency purchase programme and the asset purchase programme, as well as the TLTRO III.8 take-up of €109.83 billion. This excess liquidity growth was substantially constrained by a decline in net other assets of around €234 billion over the review period.

Over the review period, the short end of the EONIA forward curve remained broadly unchanged, while the curve shifted down at longer maturities. The short end of the curve remains broadly flat at the present level of the EONIA. As a result, the forward curve does not currently suggest expectations of an imminent policy rate change in either direction, with the implied lift-off date (EONIA +10 basis points) currently priced in for Q3 2024. EONIA forward rates remain below zero for horizons up to 2027, reflecting continued market expectations for a prolonged period of negative interest rates.¹

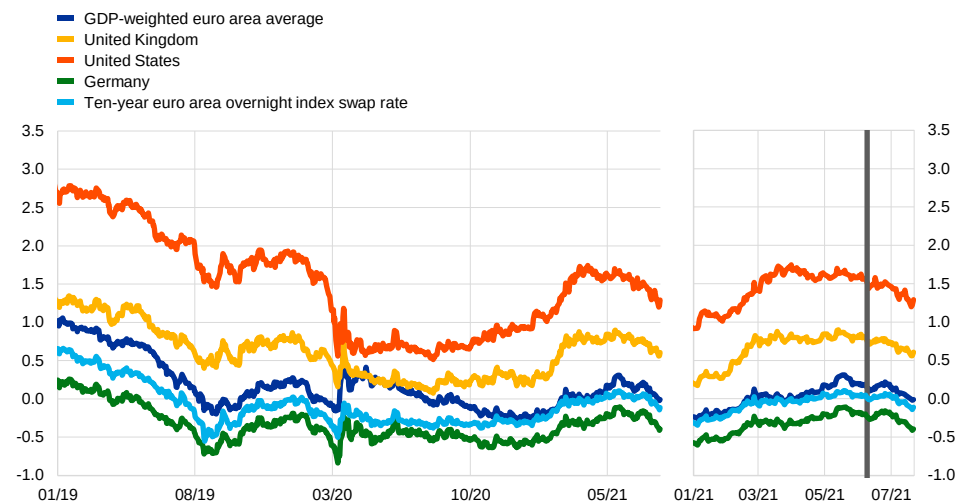
Long-term sovereign bond yields in the euro area decreased, partially reversing the upward trend observed over the past months (Chart 3). The GDP-weighted euro area and German ten-year sovereign bond yields decreased by around 15 basis points to -0.01% and -0.40%, respectively. Despite continuing progress in the COVID-19 vaccine roll-out and the release of overall positive survey indicators, which supported expectations of economic recovery, long-term rates declined against the background of concerning news about the spread of the Delta variant of the coronavirus amid a recent slowdown in the US vaccine roll-out and weaker global macroeconomic data releases relative to prevailing market expectations. This may have led investors to re-assess the risk outlook surrounding the global recovery. Following this re-assessment and the pricing out of an impending tapering of the Federal Reserve's asset purchases, the ten-year US Treasury yield decreased by 15 basis points over the review period to 1.29%. A similar decline took place in the United Kingdom, where the ten-year sovereign bond yield reached 0.61%. Sovereign yields in the euro area did not show notable reactions to the announcement of the results of the ECB's strategy review and the reformulation of the ECB's forward guidance, nor to the recent Next Generation EU issuances, which were smoothly absorbed by sovereign bond markets.

¹ This assessment reflects information from the latest survey results and empirical estimates of "genuine" rate expectations, i.e. forward rates net of term premia.

Chart 3

Ten-year sovereign bond yields

(percentages per annum)



Sources: Refinitiv and ECB calculations.

Notes: This chart is based on daily data. The vertical grey line denotes the start of the review period on 10 June 2021. The zoom window shows developments in sovereign yields since 1 January 2021. The latest observation is for 21 July 2021.

Long-term euro area sovereign bond spreads relative to risk-free rates did not change significantly. Specifically, the ten-year Spanish spread increased by 7 basis points to 46 basis points while the Italian spread remained unchanged at 80 basis points. By contrast, the ten-year German and French spreads declined by 3 and 7 basis points, to -28 and 6 basis points, respectively. In consequence, the GDP-weighted euro area ten-year sovereign spread decreased by 3 basis points to 10 basis points, which is below its pre-pandemic level of February 2020.

Equity prices of non-financial corporations declined marginally, while bank equity prices saw prior gains reverse. Euro area non-financial stocks declined by around half a percentage point and overall continue to stand above their pre-pandemic levels. In the United States, where stock market prices have repeatedly posted record highs since mid-2020, non-financial stock market indices rose by 3.3%. In contrast, after having increased at the beginning of the review period, bank equity prices in the euro area and the United States decreased by 7.1% and 5.1%, respectively, amid a flattening of the yield curve. The larger price declines in this segment of the equity market may reflect the relatively larger exposure of these stocks to changes in risk perceptions, as implied equity market volatility rose somewhat through the review period, as well as sensitivity to weaker economic releases relative to the consensus market expectations.

Both financial and non-financial corporate bond spreads edged down further and stand below pre-pandemic levels. Spreads on investment-grade financial and non-financial bonds (relative to the risk-free rate) decreased by around 5 basis points to stand at 42 and 53 basis points, respectively.

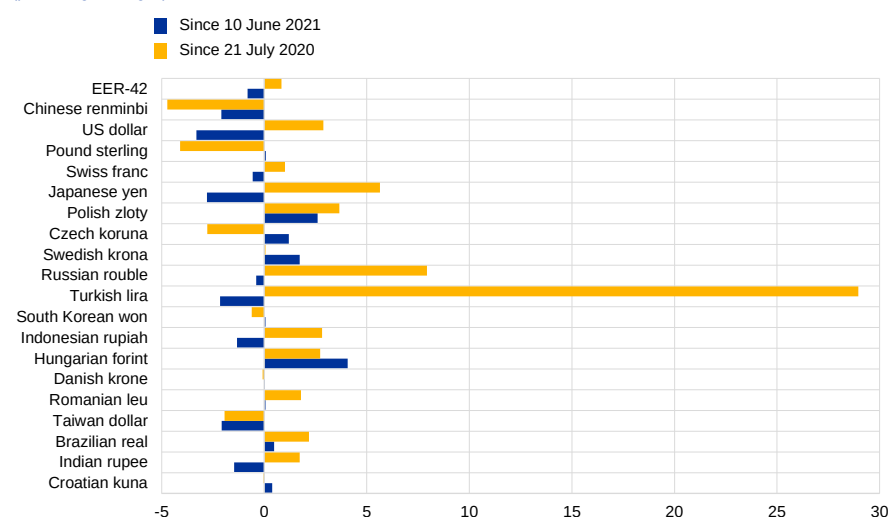
In foreign exchange markets, the euro depreciated in trade-weighted terms (see Chart 4). Over the review period, the nominal effective exchange rate of the euro, as

measured against the currencies of 42 of the euro area's most important trading partners, weakened by 0.8%. The euro depreciated against the US dollar (by 3.3%), mainly reflecting the widening of the short-term interest rate expectations differential between the euro area and the United States, due to the perceived change in the timing of US monetary policy normalisation. The euro also weakened against other major currencies, including the Chinese renminbi (by 2.1%), the Japanese yen (by 2.8%) and the Swiss franc (by 0.6%), as well as against the currencies of some major emerging market economies. Over the same period, the euro continued appreciating against the currencies of several non-euro area European Union Member States, including the Hungarian forint (by 4.1%), the Polish zloty (by 2.6%) and the Czech koruna (by 1.2%).

Chart 4

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 21 July 2021.

3 Economic activity

Real GDP is expected to have rebounded in the second quarter of 2021, having declined by 0.3% in the first quarter.² Falling infection rates and the gradual reopening of the most contact-intensive sectors have boosted business and household confidence. However, supply-side bottlenecks are currently limiting the pace of expansion in the manufacturing sector. While the outlook is brightening, uncertainty remains high, particularly in relation to the fast spread of coronavirus mutations in some EU countries, which may tighten containment measures.

The medium-term outlook for economic activity continues to be strictly linked to the steady progress of vaccination campaigns, improving global demand and expansionary domestic policies. Favourable financing conditions, fiscal stimulus and rising confidence should further support the recovery. Significant policy support remains essential. An ambitious, targeted and coordinated fiscal policy should continue to complement monetary policy in underpinning confidence and supporting spending. The Next Generation EU programme is also playing a key role, as it should contribute to a stronger and more uniform recovery across the euro area.

The risks surrounding the growth outlook are broadly balanced. Downside risks are dominated by concerns about the pandemic and the possibility of more persistent supply shortages. At the same time, upside risks to growth stem mainly from the rebound in private consumption being more vigorous than projected as households draw more rapidly on the savings they have built up during the pandemic.

After a moderate decline in output in the first quarter of 2021, real GDP is estimated to have rebounded in the second quarter. In the first quarter of 2021, total economic activity continued to contract, by 0.3% quarter on quarter, leaving it 5.1% below the pre-pandemic peak seen at the end of 2019 (Chart 5). The expenditure breakdown shows that domestic demand contributed negatively to growth in the first quarter, whereas net trade provided a positive contribution. At the same time, changes in inventories contributed strongly to growth in the first quarter. This largely reflected increased stock building, in part due to prevailing low levels of inventories coupled with expectations of rising demand. The strong swings in activity during the pandemic have differed across countries, sectors and income groups (see [Box 3](#)).

In the second quarter of this year hard data, survey results and high-frequency indicators point, on balance, to a rebound in GDP growth. This reflects the relaxation of containment measures and declining infection rates thanks to strong progress in the ongoing vaccination campaigns. The return to growth in the second quarter is estimated to be mainly driven by the services sector, while the manufacturing sector has been affected by supply-side bottlenecks. Industrial production fell in May by 1.0%, month on month, after a moderate increase in April. The stagnation in production in the first two months of the second quarter was due to

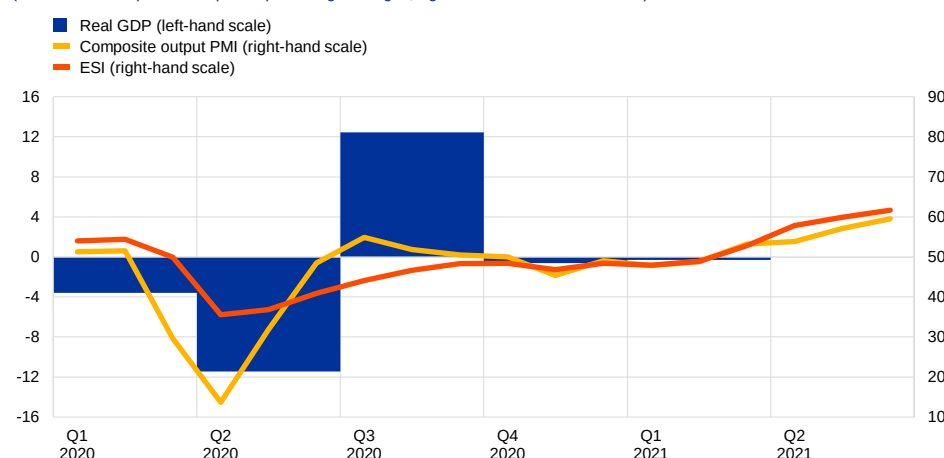
² According to the flash estimate released by Eurostat on 30 July, euro area real GDP increased by 2% quarter on quarter in the second quarter of 2021. This estimate, which was not available at the time of the July Governing Council meeting, broadly confirms the expected rebound in economic activity, exceeding the [Eurosysteem staff projections](#) for the second quarter made in June 2021.

weak capital goods production on the back of supply-side bottlenecks. While production data point to the industrial sector making a relatively muted contribution to output growth in the second quarter, a significant rebound in overall activity is still expected as the services sector is likely to have contributed positively to growth, in line with the easing of containment measures. For instance, the composite output Purchasing Managers' Index (PMI) rose to 56.8 in the second quarter of 2021, up from 49.9 in the first quarter, reflecting increases for both manufacturing (to 62.7) and services (to 54.7). The European Commission's economic sentiment indicator (ESI) also increased strongly from the first to the second quarter, ending up well above the pre-pandemic level seen in February last year. This rise was broad-based across its components, with the largest increase recorded for services. Companies operating in the non-financial sector confirm this narrative about the short-term outlook (see [Box 5](#)).

Chart 5

Euro area real GDP, composite output PMI and ESI

(left-hand scale: quarter-on-quarter percentage changes; right-hand scale: diffusion index)



Sources: Eurostat, European Commission, Markit and ECB calculations.

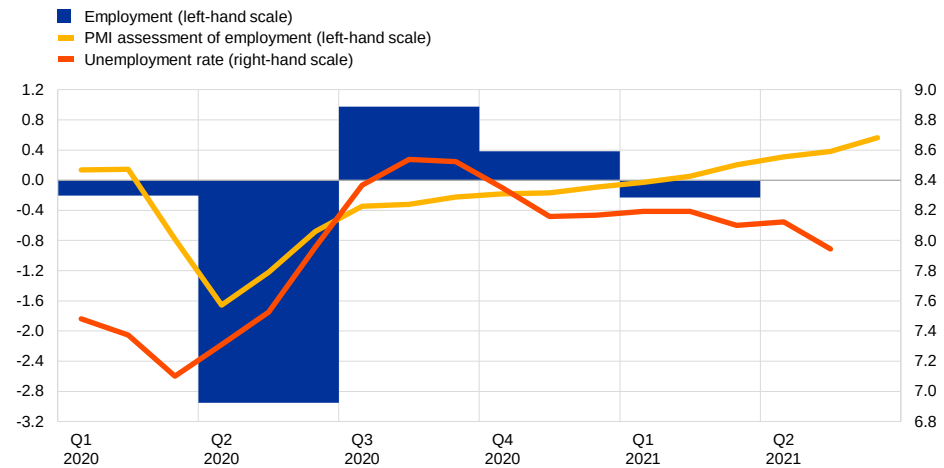
Notes: The two lines indicate monthly developments; the bars show quarterly data. The ESI has been standardised and rescaled to have the same mean and standard deviation as the PMI. The latest observations are for the first quarter of 2021 for real GDP and June 2021 for the PMI and ESI.

The unemployment rate in the euro area declined in May, still supported by job retention schemes. The rate stood at 7.9% in May, 0.2 percentage points lower than in April (Chart 6), but still around 0.6 percentage points higher than before the pandemic in February 2020. The number of workers in job retention schemes is declining but remains elevated, at around 5% of the labour force in May. Employment decreased by 0.2% in the first quarter of 2021, following an increase of 0.4% in the fourth quarter of 2020. In the first quarter of 2021, employment was 2.1% lower than in the fourth quarter of 2019. Total hours worked declined again, by 0.6%, in the first quarter of 2021, following a 1.6% decline in the fourth quarter of 2020. These large declines reflect the impact of the pandemic-related restrictions imposed in these periods. Total hours worked remained 6.8% below the level recorded in the fourth quarter of 2019.

Chart 6

Euro area employment, the PMI employment indicator 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 first quarter of 2021 for employment, June 2021 for the PMI and May 2021 for the unemployment rate.

Short-term labour market indicators have continued to improve. The monthly composite PMI employment indicator, encompassing industry and services, increased to 55.6 in June from 53.8 in May, thus remaining above the threshold level of 50 that indicates an expansion in employment. The PMI employment index has recovered significantly since its all-time low in April 2020 and is currently at its highest level since January 2018.

Consumers have gradually become more optimistic as containment measures have eased and vaccination campaigns have advanced. After a bleak first quarter of 2021, when private consumption fell by 2.2%, quarter on quarter, consumer spending appears to have strengthened in the second quarter. For instance, the volume of euro area retail sales increased in May by 4.6%, month on month, climbing above the pre-pandemic level seen in February last year. At the same time, new passenger car registrations edged up in the second quarter, by 0.3%, but in June were still 20% below their pre-pandemic level. Consumer confidence rose strongly in the second quarter, slightly surpassing its pre-pandemic level. This increase is largely attributable to households' improving expectations about the general economic situation. Looking beyond the short term, as the economy recovers labour income should increasingly contribute to total household income, reducing the economy's dependence on fiscal support. While households' propensity to save peaked during the coronavirus (COVID-19) pandemic, the spike has been mostly involuntary and held in liquid assets. Overall, the underlying drivers of the recent surge in household saving do not suggest much of an additional boost to the expected rebound in private consumption in the coming year (Box 4 provides an in-depth analysis of household savings since the onset of the pandemic).

The outlook for corporate investment is favourable, driven by expectations of a continued recovery in revenues and the digitalisation trend. Non-construction

investment contracted by 0.7%, quarter on quarter, in the first quarter of 2021, largely driven by transport equipment and reflecting supply-chain bottlenecks. Among the largest countries, investment declined in Germany and the Netherlands but showed robust growth in France, Italy and Spain. Industrial production and new orders of capital goods declined in May due to input shortages and lengthening supplier delivery times. At the same time, both the PMI and the European Commission's survey indicators for the capital goods sector improved further in the second quarter. Moreover, firms' revenues appear to be recovering, with lending to non-financial corporations slowing further in May, while firms' bank deposits and debt redemptions increased. Information for listed companies suggests the pandemic continues to have an unequal impact on both sales and capital expenditure across sectors. Cross-sectoral dispersion in corporate earnings expectations has also increased (see [Box 2](#)). Although the leverage ratio (non-equity liabilities to total assets at market value) was broadly unchanged in the first quarter of 2021, the debt-to-GDP ratio increased further and cash buffering continued. Thanks to policy support and insolvencies moratoria, insolvencies have so far remained relatively contained below pre-pandemic levels. But, as shown in the Business at OECD (BIAC) [2021 Economic Policy Survey](#), businesses expect insolvencies to increase in the next two years, particularly in high-contact services sectors. Therefore, as the recovery proceeds care should be exercised when withdrawing policy support to avoid cliff-edge effects ([Article 3](#) provides an overview of government support to the non-financial corporate sector during the COVID-19 crisis).

The recovery in housing investment is expected to continue in the near term, despite significant uncertainty due to supply bottlenecks and pandemic developments. In the first quarter of 2021 euro area housing investment almost returned to its pre-pandemic level (0.3% lower than in the fourth quarter of 2019). However, there was still significant variation across the largest euro area countries, with Germany, Italy and the Netherlands reaching levels of housing investment well above pre-pandemic levels, in contrast to France and Spain. Recent short-term structural and survey indicators point towards continued momentum for euro area housing investment in the second quarter, with the countries that are currently in a relatively stronger position seeing greater momentum. In April and May the euro area index for construction production was, on average, 2.0% above its average level in the first quarter of 2021, reflecting improvements in Germany, Italy and the Netherlands and declines in France and Spain, which were mainly due to tight pandemic-related restrictions in France and demand constraints in both France and Spain. At the same time, the PMI for construction output entered expansionary territory, on average, in the second quarter of 2021, while the European Commission's construction confidence indicator improved further over the same period. Nevertheless, supply bottlenecks – due to the shortage of raw materials amid buoyant demand for new construction projects in the euro area and elsewhere – have exerted upward pressure on construction prices. Together with a resurgence of the pandemic due to new coronavirus variants, persistent supply constraints may hamper the recovery in housing activity in some euro area countries.

The recovery in euro area trade gained pace again at the end of the first quarter. After sustained growth rates in the second half of 2020, the recovery of euro area

exports of goods and services slowed down in the first quarter of 2021 (increasing 0.6% quarter on quarter). Shipping and input-related constraints continued to exert a drag. Positive contributions to the growth of extra-euro area goods export volumes in March came mainly from Asia. From a sectoral perspective, a slowdown is apparent across all categories except capital goods. Long delivery times for final manufacturing products, such as cars, and increasing freight rates, along with a shortage of intermediate inputs (such as chemicals, wood, plastic, metals and semiconductors), put a strain on the growth of euro area goods exports. After the resumption of growth at the end of the first quarter, order-based forward-looking indicators for goods exports signal a slight weakening of momentum during the second quarter. By contrast, the leading indicator for service sector export orders reached its highest level since the start of the pandemic. Tourism forward bookings and cross-border flights point to a recovery in the second quarter to levels above those reached in the same period in 2020. Imports stagnated in the first quarter of 2021 (increasing 0.1% quarter on quarter) and are expected to be sustained by the recovery of domestic demand in the coming quarters.

Looking beyond the short term, the euro area economy is set for a steady recovery that continues to be supported by monetary and fiscal policies. The fast spread of coronavirus mutations is a key source of risk for the reopening of the economy. However, the continued progress of vaccination campaigns and the substantial experience households and firms have gathered on how to respond to targeted lockdowns reduces the likelihood of significantly adverse developments. The recovery is supported by substantial fiscal policy measures – including Next Generation EU funds – and improving foreign demand. In addition, monetary, fiscal and macroprudential policy measures are expected to successfully avert large financial amplification effects and limit the economic scars of the crisis. The results of the latest round of the [Survey of Professional Forecasters](#) (conducted in early July) show that GDP growth forecasts have been revised significantly upwards for 2021, 2022 and, albeit to a lesser extent, 2023, relative to the previous round conducted in early April.

According to Eurostat's release dated 16 July 2021, annual euro area HICP inflation decreased slightly, from 2.0% in May to 1.9% in June. However, inflation is likely to rise again over the coming months, mainly reflecting base effects from the temporary VAT cut in Germany. Underlying price pressures are expected to increase somewhat this year, owing to temporary supply constraints and the recovery in domestic demand. Nevertheless, price pressures are expected to remain subdued overall, partly reflecting low wage pressures, in the context of significant economic slack and the effects of the past appreciation of the euro. At the start of 2022, inflation is expected to decline again as the effect of temporary factors diminishes. When the impact of the pandemic fades, the unwinding of the high levels of slack, supported by accommodative monetary and fiscal policies, should contribute to a gradual increase in underlying inflation over the medium term. Market-based indicators of longer-term inflation compensation remained broadly unchanged, while the latest survey-based indicators rose.

Annual HICP inflation declined slightly in June, after successive increases since the start of the year.

This measure eased from 2.0% in May to 1.9% in June (Chart 7). HICP energy inflation remained high at 12.6%, accounting for about 1.2 percentage points of headline inflation in June.³ HICP inflation excluding energy and food (HICPX) decreased slightly, from 1.0% in May to 0.9% in June. Non-energy industrial goods (NEIG) inflation rose further in May and June, while services inflation declined in June. The share of items for which prices were imputed declined markedly in June, reducing the uncertainty surrounding the signal for underlying price pressures.⁴

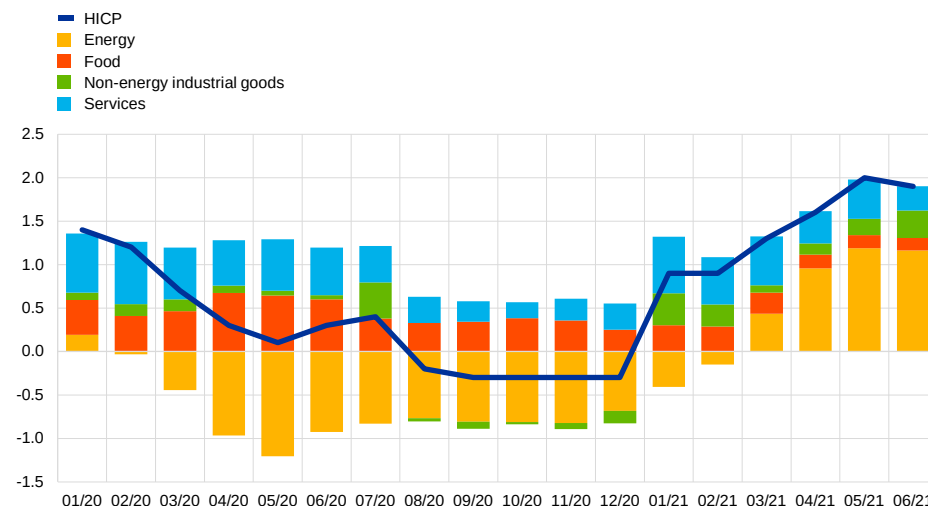
³ For details, see the box entitled "[Recent dynamics in energy inflation: the role of base effects and taxes](#)", *Economic Bulletin*, Issue 3, ECB, 2021.

⁴ The share of price imputations for HICP items stands at 4% in June, compared with 13% in January, and price imputations for HICPX fell to 5% in June, compared with 18% in January.

Chart 7

Headline inflation and its components

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.

Note: The latest observations are for June 2021.

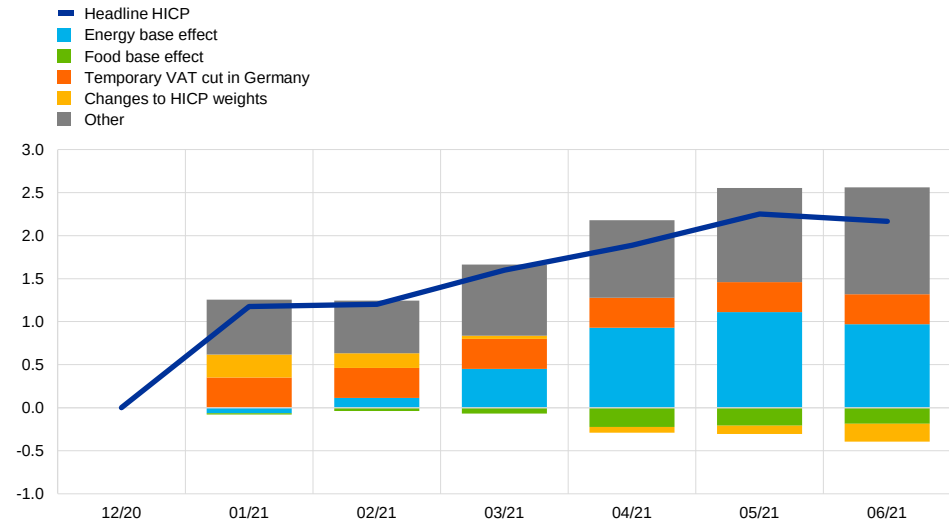
Headline inflation has continued to be influenced by temporary factors on top of those related to base effects in energy inflation.

The change in 2021 HICP weights had an upward effect on inflation in January that faded in February and March and turned negative in April. In June, the weight impact accounted for about -0.2 percentage points of headline inflation (Chart 8). Counterfactual calculations with 2020 weights would have seen both headline inflation and HICPX inflation remain unchanged from May to June. Weight effects are expected to imply some volatility over the coming months. Calendar effects have also had an impact on inflation rates in recent months. For instance, services inflation rose to 1.1% in May before declining to 0.7%, partly on account of the timing of Easter and other public holidays in that period. At the same time, changes in the timing and scope of shop sales periods had a strong upward impact on June NEIG inflation (1.2%, up from 0.7% in May), pushing it firmly above its 0.6% long-term average. About two-thirds of the increase in NEIG inflation from May to June was due to higher prices for footwear and clothing.

Chart 8

Contributions of base effects and other temporary factors to changes in annual HICP inflation since December 2020

(percentage point changes and contributions)



Sources: Eurostat, Deutsche Bundesbank and ECB calculations.

Notes: The contribution made by the temporary VAT cut in Germany is based on estimates provided in the Deutsche Bundesbank's [November 2020 Monthly Report](#). All effects are cumulated starting as of December 2020, taking the same month as benchmark. The latest observations are for June 2021.

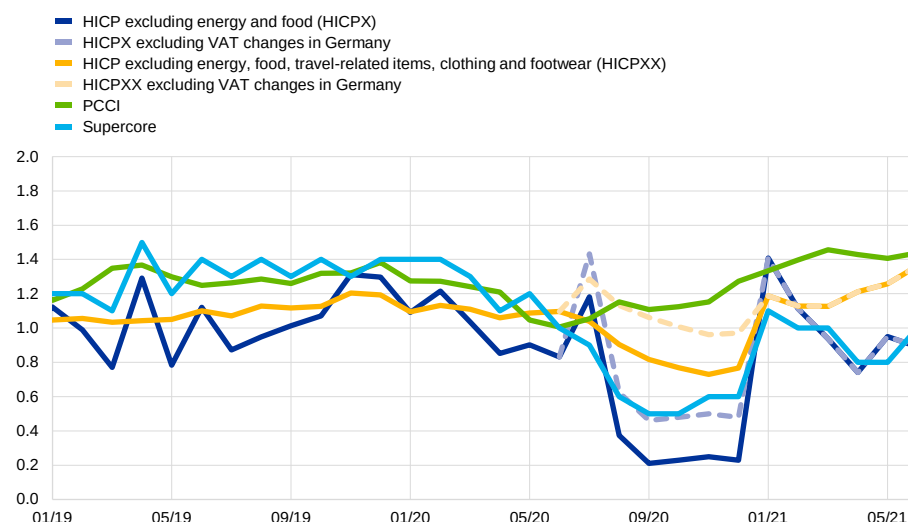
Measures of underlying inflation mostly signalled a slight increase in June.

HICPXX inflation, which also excludes clothing, footwear and travel-related services, continued its upward trend observed since February to stand at 1.4% in June. Looking at other measures of underlying inflation, the Supercore measure increased from 0.8% in May to 1.0% in June, while the Persistent and Common Component of Inflation (PCCI) remained roughly stable at 1.4%.

Chart 9

Measures of underlying inflation

(annual percentage changes)



Sources: Eurostat and ECB calculations.

Note: The latest observations are for June 2021.

NEIG pipeline price pressures have increased further over recent months, albeit more so at earlier stages of the pricing chain.

Producer price inflation for intermediate goods stood at 9.2% in May, 2.3 percentage points higher than in April and 4.8 percentage points higher than in March. Similarly, import price inflation for intermediate goods has continued to increase substantially to stand at 9.8% in May, up from 7.7% in April and 4.7% in March. These input cost pressures stem from surging commodity price inflation, substantial increases in shipping costs and an insufficient supply of some raw materials and intermediate products. The pressures are less visible at later stages of the pricing chain, but domestic producer price inflation for non-food consumer goods saw a further increase from 1.1% in April to 1.3% in May, reaching levels considerably above its long-term average of 0.6%. The impact that domestic producer prices are having on consumer goods inflation is, in part, being contained by the negative annual growth rates of import prices for non-food consumer goods (-0.8% in May, down from -0.7% in April), which have remained subdued owing to the impact of the past appreciation of the euro. While increases in input costs since autumn 2020 might have already contributed somewhat to higher NEIG inflation, additional upward pressures on NEIG inflation from recent input cost developments are still to be expected in the months ahead.⁵ However, the timing and size of a pass-through to NEIG inflation will depend on how persistent the global input cost shocks turn out to be over the coming quarters.

Wage pressures remained low in the euro area. While most wage indicators continue to be affected by the impact of short-time work schemes introduced since the onset of the pandemic, the recent information from wage indicators overall suggests moderate wage growth in the euro area. After 1.0% in the fourth quarter of 2020,

⁵ For a more detailed overview of recent and upcoming developments in pipeline pressures and their impact on HICP non-energy industrial goods, see the box entitled “Recent developments in pipeline pressures for non-energy industrial goods inflation in the euro area” in this issue of the Economic Bulletin.

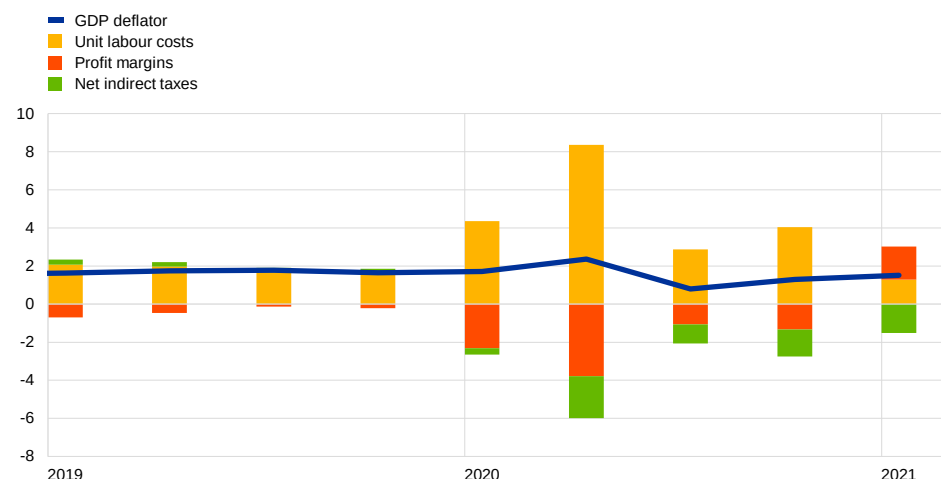
compensation per employee (CPE) growth rose to 1.9% in the first quarter of 2021 – close to its long-run average of 2.0% since 1999. The increase was broad-based across sectors – including manufacturing and services – although some care is needed in interpreting this outcome given the impact on CPE of job retention schemes. In fact, annual growth in compensation per hour decreased to 3.2% in the first quarter of 2021 from 5.2% in the previous quarter, mirroring the increase in hours worked as recourse to short-time work schemes lessened. Growth in negotiated wages, which are less affected by the impact of short-time work schemes, declined from 2.0% in the fourth quarter of 2020 to 1.4% in the first quarter of 2021, which suggests that the underlying trend on wage growth remains subdued. This is also in line with the main findings from the ECB's recent contacts with non-financial companies which reported a moderate wage outlook.⁶

Output price inflation as measured by the GDP deflator increased in the first quarter of 2021. The annual growth rate of the GDP deflator rose to 1.5% in the first quarter of 2021 from 1.3% in the previous quarter. This mainly reflected a shift to positive contributions from profit margins, after negative contributions last year. By contrast, unit labour cost growth weakened as positive labour productivity growth outweighed a strengthening of CPE growth. Since government support measures are in some cases recorded as subsidies, the taxes minus subsidies component (as captured by net indirect taxes in Chart 10) had a dampening impact on the growth rate of the GDP deflator.

Chart 10

Contributions made by components of the GDP deflator

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.

Notes: Profit margins are computed as the difference between the GDP deflator and the sum of unit taxes and unit labour costs. The latest observations are for the first quarter of 2021.

Market-based indicators of inflation compensation stand broadly unchanged, while survey-based indicators for both shorter and longer-term inflation expectations have been revised up. The upward trend in both shorter and

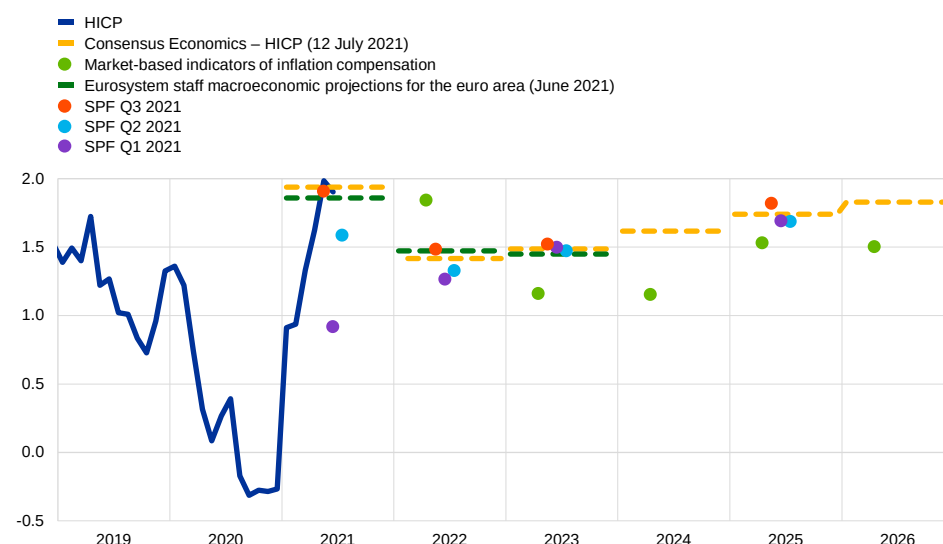
⁶ For the complete overview of the recent contacts with non-financial companies, see the box entitled "Main findings from the ECB's contacts with non-financial companies" in this issue of the Economic Bulletin.

longer-term market-based indicators of inflation compensation which could be observed between late 2020 and May this year has recently stalled. This mirrors developments in the United States, where market-based indicators of inflation compensation trended upwards for several months before moving sideways more recently. The most prominent forward inflation-linked swap rate, the five-year inflation-linked swap rate five years ahead, currently stands at 1.59%, 2 basis points higher than at the start of the review period. As for survey-based indicators, Consensus Economics reported an upward revision of inflation expectations to 1.9% for 2021, 1.4% for 2022 and 1.5% for 2023. The outlook for longer-term expectations was estimated at 1.8% for 2026. This is broadly in keeping with the latest [ECB Survey of Professional Forecasters \(SPF\)](#), which also entailed an upward revision of inflation expectations across horizons.

Chart 11

Survey and market-based indicators of inflation expectations

(annual percentage changes)



Sources: Eurostat, Thomson Reuters, Consensus Economics, ECB (SPF) and ECB calculations.

Notes: The market-based indicators of inflation compensation series is based on the one-year spot inflation rate and the one-year forward rate one year ahead, the one-year forward rate two years ahead, the one-year forward rate three years ahead and the one-year forward rate four years ahead. The latest observations relating to market-based indicators of inflation compensation are for 21 July 2021.

Growth in residential property prices has been on an upward trend since 2015 and continued to accelerate in the first quarter of 2021.

According to the ECB's residential property price indicator, prices of houses and flats in the euro area increased by 6.2% on a year-on-year basis – the highest rate since mid-2007 – in the first quarter of 2021, after a 6.0% increase in the last quarter of 2020. House price dynamics continued to remain resilient across countries.⁷

⁷ For a more detailed overview of house price developments, see the box entitled "[Euro area house price developments during the coronavirus pandemic](#)", *Economic Bulletin*, Issue 4, ECB, 2021.

5 Money and credit

In May 2021, money creation in the euro area continued to normalise, reflecting a moderation of monetary and credit flows amid an improving situation regarding the coronavirus (COVID-19) pandemic. While the pace of deposit accumulation by households and firms slowed down, Eurosystem asset purchases remained the dominant source of money creation. Growth in loans to the private sector returned to pre-pandemic levels, driven by a moderation in lending to firms. Moreover, according to the euro area bank lending survey, credit standards on loans to firms and households were broadly unchanged in the second quarter of 2021, while demand for loans by firms and households increased.

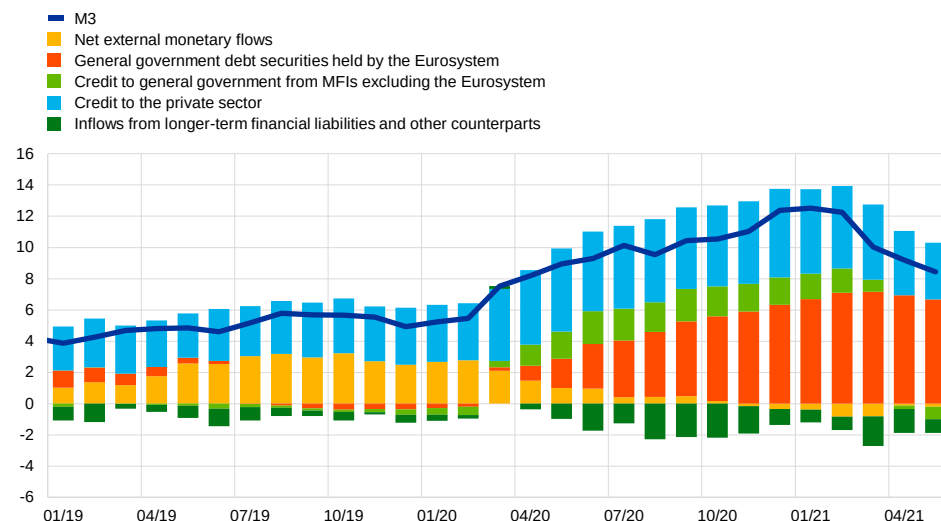
In May 2021, broad money growth moderated further. The annual growth rate of M3 declined from its local peak of 12.5% in January 2021 and stood at 8.4% in May, after 9.2% in April (Chart 12). This development reflects a marked negative base effect linked to the exceptionally high liquidity needs of firms and households at the start of the pandemic in early 2020. Shorter-run dynamics of broad money imply a robust pace of money creation on the back of the support provided by monetary, fiscal and prudential policies. The main driver of M3 growth was the narrow aggregate M1, which includes the most liquid components of M3. Its annual growth rate moderated from its peak of 16.5% in January 2021 and stood at 11.6% in May, after 12.3% in April, driven by a further normalisation in the pace of deposit accumulation by firms and households. The contribution of other short-term deposits to M3 growth turned negative in May in line with an incipient recovery in consumer confidence and an increase in consumer spending. Marketable instruments made a small positive contribution to annual M3 growth in an environment of low interest rates and search-for-yield behaviour displayed by investors.

Money creation continued to be driven by Eurosystem asset purchases. As in previous months, the largest contribution to M3 growth came from the Eurosystem's net purchases of government securities under the asset purchase programme and the pandemic emergency purchase programme (PEPP) (red portion of the bars in Chart 12). Further support for M3 growth came from credit to the private sector (blue portion of the bars in Chart 12). As before the pandemic, the contribution to money creation of bank credit to general government was marginally negative, owing to net sales of government bonds and reduced issuance of government securities (light green portion of the bars in Chart 12). Net external monetary flows had a broadly neutral effect on money creation, reflecting the fact that non-residents on balance sold government securities and euro area residents increased their investments in foreign assets (yellow portion of the bars in Chart 12). Moreover, longer-term financial liabilities and other counterparts continued to dampen broad money growth (dark green portion of the bars in Chart 12), largely owing to developments in other counterparts. Favourable conditions for targeted longer-term refinancing operations (TLTROs) continued to support the substitution of bank funding away from longer-term liabilities, thus making a small contribution to M3 growth.

Chart 12

M3 and its counterparts

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



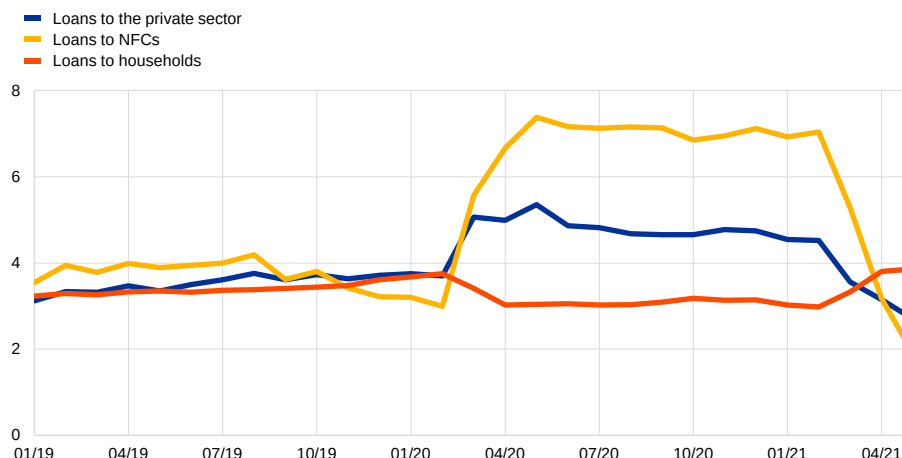
Source: ECB.

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

Loan growth to the private sector moderated further in May 2021. Loan growth to the private sector fell to 2.7% in May, down from 3.2% in April, driven by lending to firms (Chart 13). The annual growth rate of loans to firms decreased to 1.9% in May, after 3.2% in April, having hovered around 7% in the earlier phases of the pandemic. The weakening in loan growth coincided with an improvement in confidence indicators and economic activity, suggesting that a recovery in revenues could be under way, thus adding to the large liquidity buffers of the corporate sector. Lower loan growth to firms also reflected a base effect as the large credit flows to firms during the early stage of the pandemic dropped out from the annual figures. At the same time, the growth rate of loans to households edged up slightly to 3.9% in May and stabilised above pre-pandemic levels. Household borrowing mainly benefited from increases in mortgage lending, while consumer credit growth remained weak, despite a recovery in consumer confidence likely reflecting the accumulation of savings over the pandemic period.

Chart 13**Loans to the private sector**

(annual percentage changes)



Source: ECB.

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

The July 2021 euro area bank lending survey showed broadly unchanged credit standards on loans to firms and households in the second quarter of 2021 (Chart 14).

These developments followed a significant net tightening in the second half of 2020 and a moderate tightening for loans to firms in the first quarter of 2021. They reflect overall improvements in the economic situation of the euro area economy as containment measures are lifted and support continues to be provided by monetary, fiscal and supervisory authorities. In the first half of 2021, banks' non-performing loan ratios had a moderate tightening impact on their credit standards for loans to enterprises, and a broadly neutral impact for loans to households. Banks indicated that COVID-19-related government guarantees were important in supporting terms and conditions for loans to firms. Banks' cost of funds and balance sheet situation mostly had a neutral impact on credit standards, reflecting banks' solid capital ratios and favourable funding costs. The previous significant tightening impact, implied by risk perceptions related to higher credit risks, loosened across loan categories: for firms it became neutral in the second quarter, while it turned into a small net easing impact for housing loans. For the third quarter of 2021, euro area banks expect a slight net tightening of credit standards on loans to firms and broadly unchanged credit standards for loans to households.

According to the survey, demand for loans by firms and households increased in the second quarter of 2021; for the first time since the third quarter of 2019, financing needs for fixed investment had a positive impact on loan demand by firms.

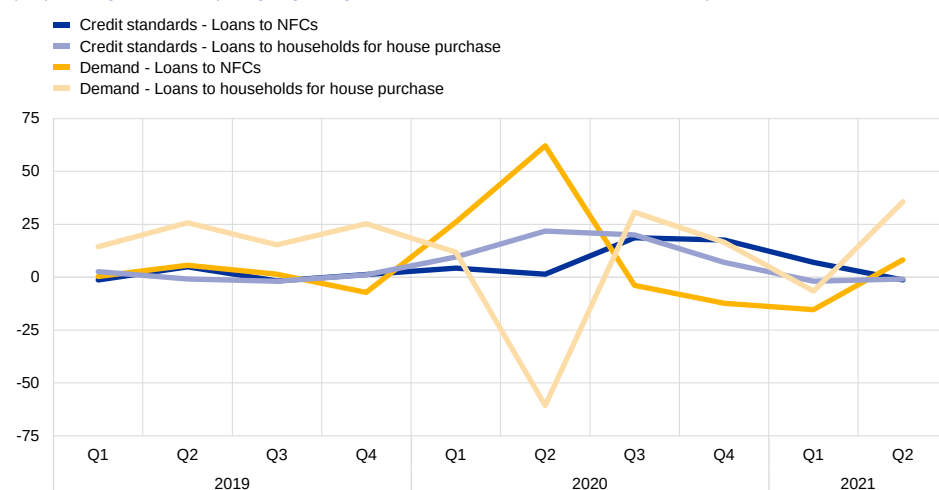
These developments were driven by the low general level of interest rates, an improved economic outlook, and policy measures aimed at increasing the flow of credit to firms and households. By contrast, banks also indicated firms' unchanged financing needs for working capital, in line with firms' ample liquidity buffers and higher revenues. In addition, loan demand by households benefited from improvements in consumer confidence, housing market prospects, and spending on durables. For the

third quarter of 2021, banks expect a further increase in the demand for loans by both firms and households.

Chart 14

Changes in credit standards and net demand for loans (or credit lines) to enterprises and households for house purchase

(net percentages of banks reporting a tightening of credit standards or an increase in loan demand)



Source: ECB (euro area bank lending survey).

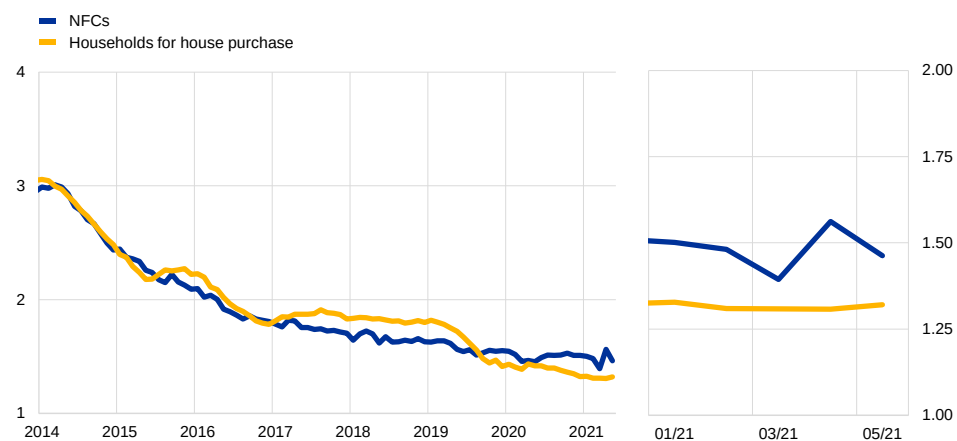
Notes: For the bank lending survey questions on credit standards, "net percentages" are defined as the difference between the sum of the percentages of banks responding "tightened considerably" or "tightened somewhat" and the sum of the percentages of banks responding "eased somewhat" or "eased considerably". For the survey questions on demand for loans, "net percentages" are defined as the difference between the sum of the percentages of banks responding "increased considerably" or "increased somewhat" and the sum of the percentages of banks responding "decreased somewhat" or "decreased considerably". The latest observations are for the second quarter of 2021.

Bank lending rates remained close to their historical lows. In May 2021 the composite bank lending rate for loans to non-financial corporations (NFCs) decreased to 1.46%, after a temporary increase in April, while it was broadly unchanged for loans to households at 1.32% (Chart 15). The decline in lending rates to firms was widespread across euro area countries and marks a return to the levels recorded over the preceding 12 months. Moreover, increases in the spread between bank lending rates on very small loans and those on large loans remained contained, mainly reflecting declines in rates for large loans. Despite the considerable uncertainty regarding the pandemic's longer-term impact on the economy, policy support measures have prevented a broad-based tightening of financing conditions, which would have amplified the adverse economic impact of the pandemic.

Chart 15

Composite bank lending rates for NFCs and households

(percentages per annum)



Source: ECB.

Notes: Composite bank lending rates are calculated by aggregating short and long-term rates using a 24-month moving average of new business volumes. The latest observations are for May 2021.

Boxes

1 The implications of savings accumulated during the pandemic for the global economic outlook

Prepared by Maria Grazia Attinasi, Alina Bobasu and Ana-Simona Manu

The coronavirus (COVID-19) pandemic has led to the accumulation of a large stock of household savings across advanced economies, significantly above what has historically been observed. Owing to their large size, the savings accumulated since early 2020 have the potential to shape the post-pandemic recovery. The central question is whether households will spend heavily once pandemic-related restrictions are lifted and consumer confidence returns, or whether other motives (e.g. precautionary, deleveraging) will keep households from spending their accumulated excess savings. In this box we consider a set of non-euro area economies and conclude that, on the balance of economic arguments, any reduction in the stock of excess savings as a result of higher consumption is likely to be limited in the medium term. However, given the considerable uncertainty surrounding this central scenario, this box also looks at two alternative savings scenarios and assesses their implications for the global economic outlook using the Oxford Global Economic Model.

The accumulation of large savings stems from the distinctive features of the COVID-19 pandemic and the policy responses. In contrast to previous economic recessions, the containment measures adopted in response to COVID-19 saw a significant suppression of consumer spending opportunities, leading to a sizeable contraction in private consumption. This was partially offset by the extraordinary policy measures deployed by governments in the form of either income or employment support, which cushioned the negative impact on personal disposable income (Chart A, panel a). These two factors, together with the high uncertainty regarding future income and the risks of permanent scarring effects, led households to save at unprecedented rates during 2020, resulting in the accumulation of a large stock of excess savings.

In 2020, the stock of household savings accumulated across five large advanced economies¹ in excess of historical values amounted to an average of 6.7 % of GDP and 9.5% of disposable income (Chart A, panel b). Of these countries, the United States held the largest stock at the end of 2020 (USD 1.5 trillion, or 7.2% of US GDP), but other countries also held sizeable amounts of excess savings. The stock of excess savings accumulated between early 2020 and the end of the year is estimated by calculating the cumulative difference between real savings and a counterfactual scenario where the saving ratio is assumed to have remained equal to the pre-pandemic average throughout the year. Similarly, our central scenario assumes that, up to the end of 2023, the stock of excess savings remains close to the

¹ The economies analysed are Australia, Canada, Japan, the United Kingdom and the United States.

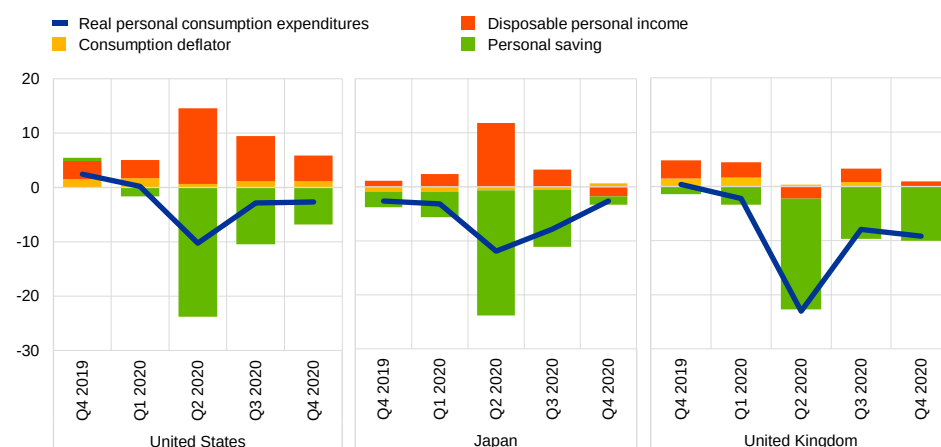
level observed prior to the start of 2021, while the saving ratio is assumed to converge back to the pre-pandemic average.

Chart A

Private final consumption expenditure and excess household savings

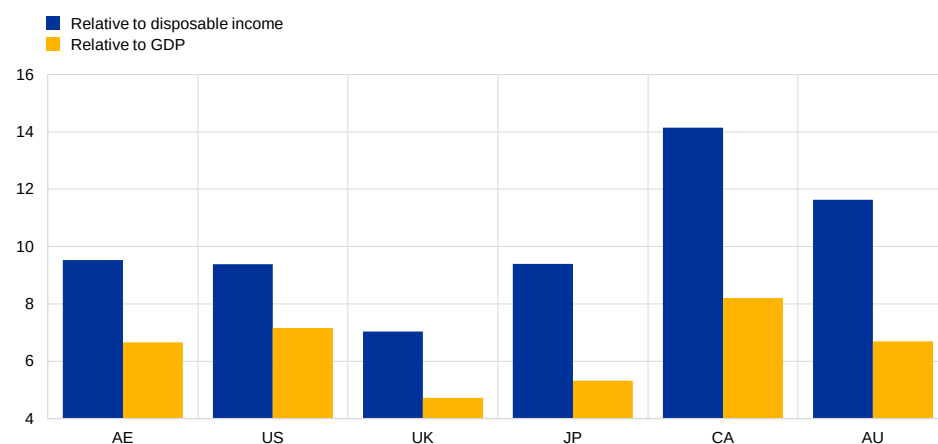
a) Private final consumption expenditure breakdown

(annual percentage change, percentage points)



b) Excess household savings in the fourth quarter of 2020

(percentages)



Sources: National sources and ECB calculations.

Notes: The advanced economies (AE) aggregate is calculated as the weighted average of excess savings across the five countries shown in the chart. "US" refers to the United States, "UK" to the United Kingdom, "JP" to Japan, "CA" to Canada and "AU" to Australia.

Several arguments support the central scenario that households will prefer to hold most of their accumulated excess savings rather than using them to purchase consumption goods. We review these arguments briefly below, before illustrating the macroeconomic implications of two alternative savings scenarios.

First, the savings accumulated during the pandemic have mostly accrued to high-income households, who have a lower marginal propensity to spend out of income or wealth compared with low-income households.² In the United

² See, for example, Fisher, J. D., Johnson, D.S., Smeeding, T. M and Thompson, J. P., "Estimating the marginal propensity to consume using the distributions of income, consumption, and wealth", *Journal of Macroeconomics*, Vol. 65, 2020.

Kingdom, for instance, survey-based data show that high-income households increased their savings during the pandemic, while lower and middle-income households saved less or even dissaved. Similarly, in the United States there is evidence that the distribution of excess savings across income groups is heavily skewed in favour of high-income households and that these savings are held mostly in liquid form, i.e. currency and deposits (Chart B, both panels). A similar situation holds in the euro area, where the accumulation of savings during the pandemic has been concentrated among older and higher-income households (for details, see Box 4 in this issue of the Economic Bulletin). In Japan, available data likewise suggest that savings have accumulated mainly among middle and high-income households. In general, high-income households are likely to have saved more during the pandemic, as they experienced lower income losses than low-income households and tend to allocate a higher share of their consumption basket to the services that were most constrained during the lockdowns. For example, available data indicate that, before the pandemic, UK households in the top income decile devoted close to 40% of their expenditures to services such as transportation, recreation, hotels and restaurants.³

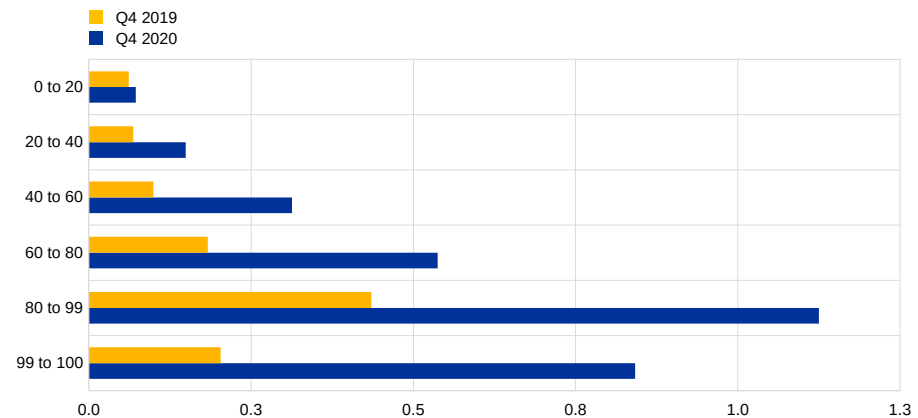
³ See Table 3.2 of “[Family spending workbook 1: detailed expenditure and trends](#)”, Office for National Statistics, 2021.

Chart B

Financial assets and liabilities of households

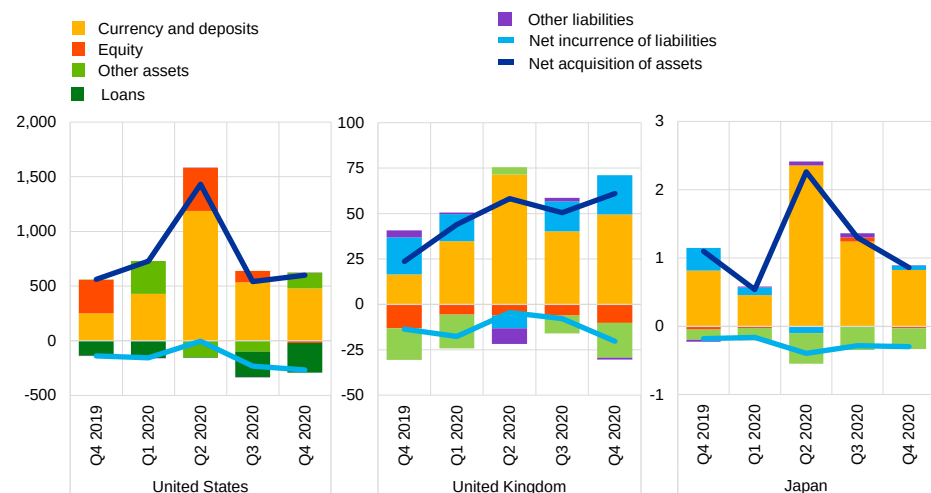
a) US checkable deposits and currency across income quintiles

(USD trillions; percentiles)



b) Financial assets and liabilities of households

(USD billions; GBP billions; JPY trillions)



Sources: US Federal Reserve System (panel a); national sources and ECB calculations (panel b).

Second, households may use part of their accumulated savings to repay debt or to invest in assets. With regard to financial accounts, the accumulation of large savings has been associated with a surge in household bank deposits during the lockdowns. Prior to the end of 2020 only a small proportion of these savings had been used to repay debt or purchase assets such as equities (Chart B, panel b). This liquidity preference could partly reflect high uncertainty among households, in addition to reduced availability of consumption opportunities amid persisting COVID-19-related restrictions. As uncertainty recedes, a larger proportion of savings could be channelled towards investments or debt repayment. In the United States, the Federal Reserve Bank of New York's Survey of Consumer Expectations suggested that most of the funds received by households in the form of stimulus cheques would go towards savings (41%) and debt payments (34%), while only about 25% would be used for

consumption.⁴ In the United Kingdom, the 2020 H2 NMG Survey suggested that only 10% of households whose savings rose planned to spend them, while 70% favoured continuing to hold their savings in bank accounts.⁵ The remainder planned to use their savings to pay off debts, invest or top up their retirement plans.

Third, Ricardian equivalence effects may weigh on households' propensity to consume, all else being equal.⁶ The considerable income support provided to households and other policy measures taken during the pandemic led to a strong dissaving in the public sector and an associated increase in public debt. In the future, Ricardian equivalence effects may arise, to the extent that households expect tax rises aimed at reducing the public debt accrued during the COVID-19 shock and are thus less inclined to consume their accumulated excess savings. In this regard, it is worth noting that both the US Government and the UK Government have announced personal income tax increases, which are expected to weigh on households' propensity to consume.

Fourth, the scope for sizable pent-up demand appears limited. While the easing of mobility restrictions and the progressive reopening of contact-intensive sectors will relieve household demand for consumption of related services (e.g. travel, restaurants and cultural activities), the latter are less prone than consumption goods to massive bouts of pent-up demand.⁷ In particular, while consumers might have an incentive to switch to more expensive services (e.g. holidays and restaurants), there is a limit on the extent to which they can catch up in terms of missed consumption. In addition, as the pandemic-related containment measures severely limited consumption opportunities in the services sector, part of household spending switched towards consumption of goods. Data on real personal consumption expenditures of US households show that spending on durable and non-durable goods bounced back quickly after falling considerably in April 2020; by the end of the second quarter of 2020, overall spending had returned to the levels observed at the end of 2019 and has subsequently continued to grow. Expenditures on services, while recovering at a slower pace, stood at around 5% below pre-pandemic levels by March 2021.

Nonetheless, uncertainty around the relative strength of the factors that could influence how much of the accumulated savings is spent remains high. On the one hand, a gradual but lasting re-opening of economies, as the pandemic is brought under control, would lead households to de-accumulate savings at a faster pace than assumed in our central scenario, reflecting the fact that these savings were forced to a certain extent as the response to the pandemic curtailed consumption opportunities. Being held mostly in liquid assets, savings could be spent very easily. The resumption of contact-intensive activities such as shopping and dining will restore spending opportunities that were previously unavailable, in particular for high-income

⁴ [Survey of Consumer Expectations](#), Federal Reserve Bank of New York, March 2021.

⁵ See ["How has Covid affected household savings?"](#), Bank of England, November 2020.

⁶ The Ricardian equivalence proposition states that in response to a debt-financed increase in government spending, households do not increase their consumption despite having to pay less taxes. Hence, they will save more. This is because households anticipate that an increase in public debt will have to be financed by higher taxes in the future. The Ricardian equivalence proposition hinges on the assumptions that households can borrow and lend freely and that taxes are non-distortionary.

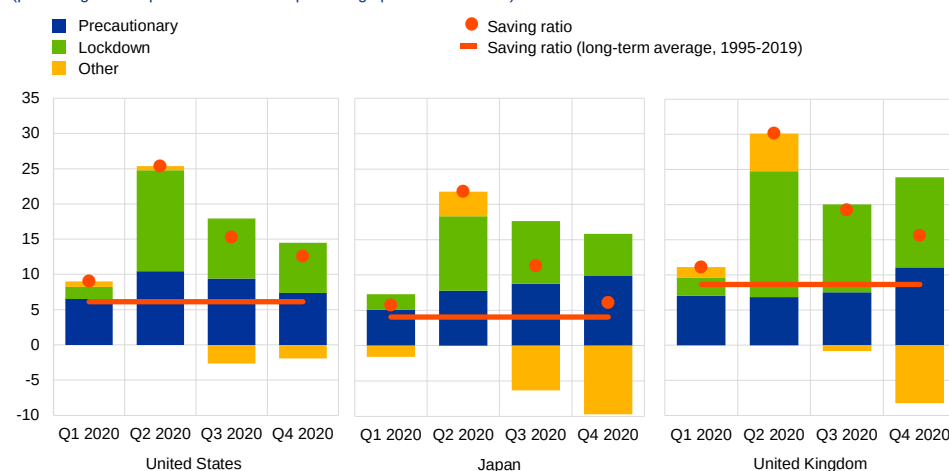
⁷ See Beraja, M. and Wolf, C., ["Demand Composition and the Strength of Recoveries"](#), working paper.

households that devote a larger share of their consumption basket to such activities. Moreover, as the recovery progresses and employment prospects improve, precautionary motives for saving, which played an important role in 2020, may also become less relevant as households regain confidence about their economic and health prospects (Chart C). On the other hand, setbacks in bringing the virus under control, prolonged restrictions, new lockdown measures and weaker labour market prospects could lead households to further accumulate savings, compared with the central scenario, and thus delay the recovery.

Chart C

Breakdown of household savings by motive

(percentages of disposable income and percentage points contribution)



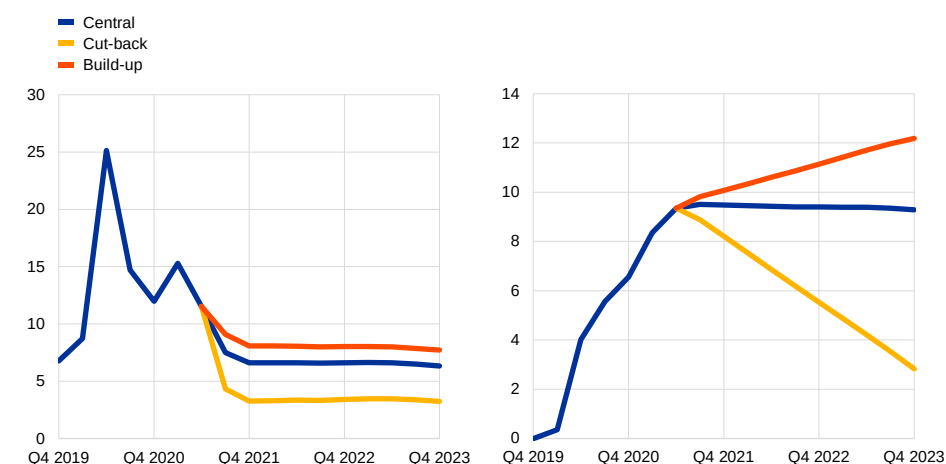
Sources: National sources and ECB calculations.

Notes: The analysis covers the period from the first quarter of 1995 to the fourth quarter of 2020. The ratio of household savings to disposable income in 2020 (red dots) is modelled in an ordinary least squares (OLS) framework and is expressed as a function of its own lag, the unemployment rate, economic confidence and country-specific lockdown measures, as captured by the Goldman Sachs Effective Lockdown Index.

Chart D

Scenario projections for the household saving ratio and stock of excess household savings

(percentages of disposable income (left panel); percentages of GDP (right panel))



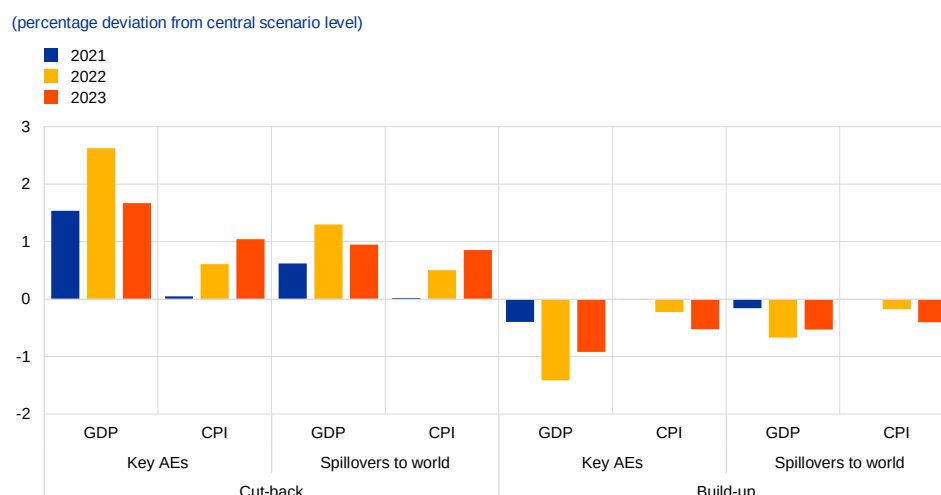
Sources: ECB calculations based on the Oxford Global Economic Model.

Note: Results are aggregated using weighted GDP.

To assess the macroeconomic implications of alternative savings scenarios for the United States, the United Kingdom and Japan, we consider two alternative scenarios⁸ for the stock of excess savings. These are (i) a “cut-back” scenario, which assumes that the stock of excess savings accumulated by the second quarter of 2021 will decrease by 70% over the next two and a half years, and (ii) a “build-up” scenario, which assumes that the saving ratio will return to pre-pandemic levels only in the fourth quarter of 2023, implying that households will increase their current excess savings by a further 30%. As a result, average excess savings in these economies would decline to 2.7% of GDP in the cut-back scenario and increase to 12.6% of GDP in the build-up scenario by the end of 2023 (Chart D). We use the Oxford Global Economic Model to quantify the effects of the two scenarios on the global macroeconomic outlook.⁹

Chart E

Macroeconomic impact of alternative household savings scenarios on GDP and CPI in the “cut-back” and “build-up” scenarios



Sources: ECB calculations based on the Oxford Global Economic Model.

Notes: The impact on GDP and CPI in key advanced economies (AEs) is the GDP-weighted average impact across the United States, the United Kingdom and Japan; spillovers are assessed using the Oxford Global Economic Model, where “world” refers to the global economy, including the United States, the United Kingdom and Japan.

In the cut-back scenario, the faster reduction of savings in the form of higher private consumption supports aggregate demand and a pick-up of inflation. In key advanced economies, real GDP is projected to peak at 2.6% above the central scenario level in 2022 (Chart E). This positive boost would be partly counteracted in 2023 by stronger imports becoming a drag on GDP. The increase in aggregate demand would also support price pressures, which would gradually increase over the projection horizon and translate into higher inflation rates (1% above the central scenario level in 2023). The global impact would be significant, with world real GDP standing at 0.6% above the central scenario level in 2021, 1.3% above in 2022 and around 1% above in 2023. Global inflation would also increase, with consumer prices

⁸ For these scenarios we only focus on the United States, the United Kingdom and Japan.

⁹ The simulations assume no monetary policy reactions in advanced economies and unchanged oil prices.

rising to around 0.9% above the central scenario level in 2023, supported by global demand conditions.

In the build-up scenario, households continue to accumulate savings, resulting in a more subdued pick-up in private consumption, a delayed recovery and limited disinflationary pressures. Continued high savings by households over a longer period would translate into lower aggregate demand and inflation. Domestic GDP would therefore recover more slowly than assumed in the central scenario and world GDP would stand at 0.2% below the central scenario level in 2021, 0.7% below in 2022 and around 0.5% below in 2023 (Chart E). The impact on global inflation would be limited. It is worth noting that despite the downside risks to global output, the build-up of household savings may yield longer-term gains in terms of stronger household balance sheets (e.g. lower leverage) to withstand future adverse shocks.

The analysis presented in this box illustrates the risks to global GDP in different household savings scenarios. The extent to which households across advanced economies will spend excess savings on consumption goods is crucial for the global outlook and is tied to several factors, not least the evolution of the pandemic (including progress in domestic vaccination campaigns), households' employment prospects (especially for those with more modest income levels) and expected fiscal policy stances.

Cross-sectoral dispersion in firms' earnings expectations during the COVID-19 crisis

Prepared by Joost Bats, William Greif and Daniel Kapp

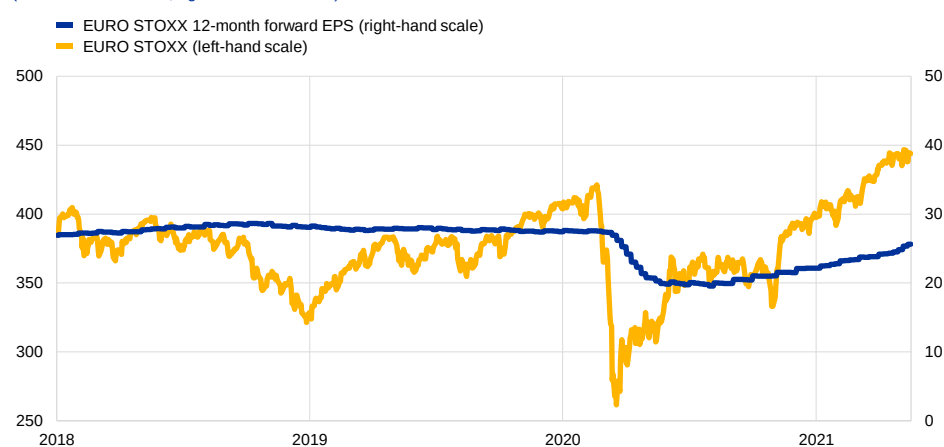
While the recovery in equity prices over the last year has been underpinned by improvements in aggregate short-term earnings expectations (Chart A), developments in the latter have varied greatly across sectors (Chart B).

Compared with the situation before the pandemic, expected earnings remain persistently subdued in sectors such as travel and tourism, while growing rapidly in the technology, utilities and non-bank financial services sectors. As a result, current earnings expectations are in line with what is called a cross-sectoral K-shaped recovery (where the paths of the best and worst-performing sectors resemble the two arms of the letter “K”). Similar dispersion holds true across countries (see also [Box 3 of this issue of the Economic Bulletin](#) and the [May 2021 Financial Stability Review](#)), in line with the idea that some countries are economically more dependent on particular sectors than other countries.

Chart A

Euro area broad stock market performance and earnings expectations

(left-hand scale: index; right-hand scale: EUR)

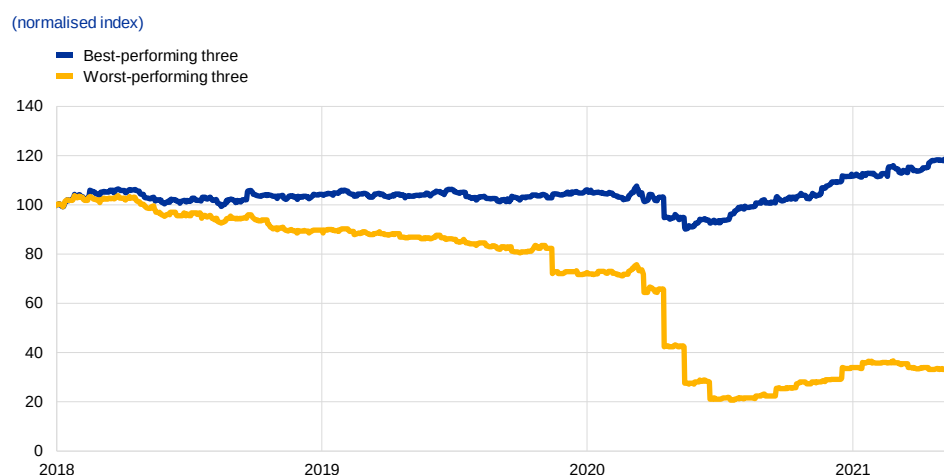


Sources: Refinitiv, IBES and ECB calculations.

Notes: EPS stands for earnings per share. This chart shows the price and the earnings forecast 12 months ahead for the Dow Jones EURO STOXX broad index. The latest observations are for 17 May 2021.

Chart B

Earnings expectations for the best and worst-performing euro area sectors



Sources: Refinitiv, IBES and ECB calculations.

Notes: This chart shows the earnings forecasts 12 months ahead for the three best-performing and the three worst-performing sectors. Data are at daily frequency and normalised to 100 as at 1 January 2018. The three best-performing sectors are the technology, utilities and non-bank financial services sectors. The three worst-performing sectors are travel, banking and grocery stores. The latest observations are for 17 May 2021.

This box measures the heterogeneity of analysts' daily 12-month ahead

earnings per share (EPS) forecasts for listed firms in 20 different sectors. As

there is always a possibility for analysts to revise their estimates when new information becomes available, earnings forecasts are especially useful for gauging the immediate effects of the COVID-19 crisis on cross-sectoral dispersion.¹

To capture the impact of the COVID-19 crisis on cross-sectoral dispersion in

earnings expectations, the Gini coefficient is used. For a variable of interest (here: EPS forecasts) sampled across individuals (here: sectors), the Gini coefficient provides a scaled average of the absolute differences in the variable's outcome across all pairs of individuals.² As such, it is an indicator of relative dispersion ranging from 0 to 1, where an increase in the Gini coefficient reflects an increase in dispersion.

The Gini coefficient has several advantages over simpler measures of

dispersion such as standard deviation. First, it represents the degree of inequality in any statistical distribution. Second, the Gini coefficient judges the dispersion through a relatively easy-to-interpret summary metric: it reaches its maximum value of 1 when earnings expectations are positive for one sector and zero for all others, and it is 0 when all sectors contribute equally to the sum of expected earnings. In addition, in this box we calculate the Gini coefficient using earnings expectations data based on

¹ Several studies analyse cross-sectoral heterogeneity using backward-looking indicators such as reported profitability. See, for example, Akcigit, U. et al., "Rising Corporate Market Power: Emerging Policy Issues", *Staff Discussion Notes*, No 2021/001, IMF, 2021.

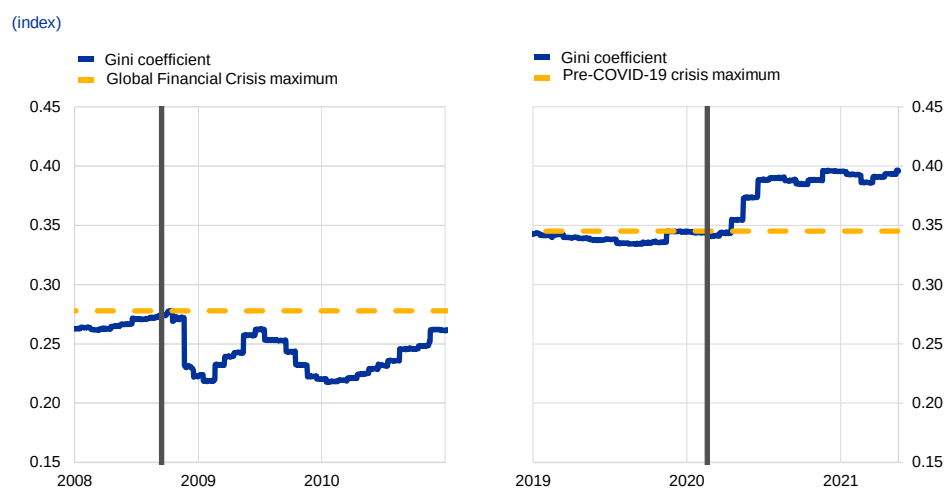
² This is mathematically equivalent to the Gini coefficient's standard formulation based on the Lorenz curve. The Gini coefficient has been used in this way in various different fields of science, including finance. See, for example, Bongaerts, D., Cremers, K.J.M. and Goetzmann, W.N., "Tiebreaker: Certification and Multiple Credit Ratings", *The Journal of Finance*, Vol. 67(1), 2012, pp. 113-152; Jaremski, M., "The (dis)advantages of clearinghouses before the Fed", *Journal of Financial Economics*, Vol. 127(3), 2018, pp. 435-458; and Hautsch, N. and Horvath, A., "How effective are trading pauses?", *Journal of Financial Economics*, Vol. 131(2), 2019, pp. 378-403.

levels instead of growth rates, so as to assess whether changes in cross-sectoral dispersion are structural.³

The data show that, according to this measure, cross-sectoral dispersion in earnings expectations has persistently risen since the onset of the COVID-19 crisis, in contrast to past crises where the impact was more homogeneous across sectors (Chart C). While the Gini coefficient dropped after the collapse of Lehman Brothers during the Global Financial Crisis – reflecting a broad-based downward revision of the earnings outlook across sectors – it has jumped upwards since the start of the COVID-19 crisis. Together, these observations signal a structural shift in expectations during the current pandemic: the market expects some sectors to persistently underperform others over the coming year.

Chart C

Gini coefficient of earnings expectations 12 months ahead for firms in the euro area during (i) the Global Financial Crisis and (ii) the COVID-19 crisis



Sources: Refinitiv, IBES and ECB calculations.

Notes: The blue line shows the Gini coefficient based on earnings expectations 12 months ahead across 20 sectors. The yellow dashed line indicates the high for the relevant period. The vertical lines mark the date of Lehman Brothers' bankruptcy (left-hand panel) and the outbreak of the COVID-19 crisis (right-hand panel). The latest observation is for 17 May 2021.

The increase in social distancing and the associated decline in mobility due to lockdown measures help to explain why the dispersion in earnings expectations has risen during the COVID-19 crisis. The reason is that mobility restrictions affect economic activity differently across sectors. The correlation between the stringency of lockdowns and the cross-sectoral dispersion in earnings expectations is estimated by means of local projections using daily data from early

³ Basing the Gini coefficient on levels also has the advantage of excluding base level effects. This box does not report the Gini coefficient using data on longer-term earnings expectations, as there are no daily data at the sectoral level. Moreover, this box investigates the most immediate effects of the COVID-19 crisis on firms' expected performance, which are generally clearly reflected in revisions to shorter-term earnings expectations.

January 2020 to late April 2021.⁴ As an indicator of lockdown stringency, the Goldman Sachs Effective Lockdown Index (ELI) is used. The ELI accounts for a combination of official government restrictions and actual mobility data.

This empirical analysis shows that cross-sectoral dispersion in 12-month EPS forecasts has risen each time lockdown measures have further restricted mobility (Chart D). Up until December 2020, imposing a lockdown such that the ELI would rise by 50 points (which is half of its maximum range of 0 to 100 and corresponds to the change observed in March 2020) increased the Gini coefficient by 3 percentage points after 20 working days.

At the same time, the implementation of vaccination campaigns has been a game changer: stringent lockdowns have added far less to the dispersion metric since vaccination started in late 2020 (Chart D).⁵ Since mid-December 2020, when vaccination started in the euro area, the effects of restrictive lockdown measures on cross-sectoral dispersion have decreased by more than two-thirds.⁶ This result may reflect the conviction that the latest lockdowns are, to some extent, expected to be the last, raising the likelihood of a gradual reopening of the economy.

⁴ The local projections are based on Jordà, Ò., “[Estimation and Inference of Impulse Responses by Local Projections](#)”, *American Economic Review*, Vol. 95(1), 2005, pp. 161-182. They estimate a series of regressions at each forecast horizon, up to 20 working days in the future. The regressions control for stock market volatility. The regressions also control for broad stock market developments by including the change in the earnings expectations for the broad stock market at each forecast horizon. The impulse responses in the right-hand panel of Chart D are generated by plotting the estimated coefficients (multiplied by 50, so as to reflect a 50 index point increase in lockdown stringency) for the effects of lockdown stringency on cross-sectoral dispersion in earnings expectations.

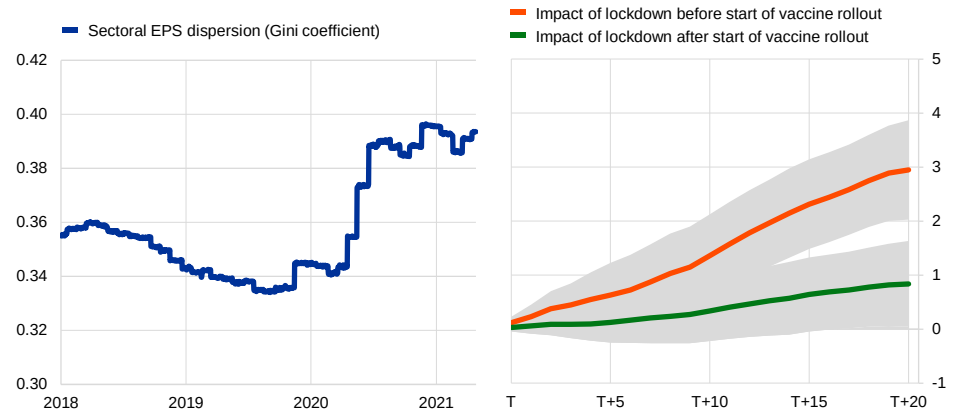
⁵ While the total number of newly imposed lockdowns is relatively small, the ELI is a continuous stringency index with 259 and 84 observations for the periods before and after the start of vaccination respectively. The mean value of the ELI is approximately 50 out of 100 during both periods. Econometrically, the estimated impact of imposing a lockdown is therefore derived from the continuous data series.

⁶ The announcement of the start of the vaccine rollout in early November 2020 may also have had implications for the correlation between the stringency of lockdowns and the cross-sectoral dispersion in earnings expectations. Indeed, a separate robustness check shows that the impact of stringent lockdowns on cross-sectoral dispersion in earnings expectations is broadly similar when looking at the period as of early November 2020 rather than the period as of mid-December 2020.

Chart D

Cross-sectoral dispersion in euro area EPS forecasts and estimated impact of lockdowns before and after the start of the vaccine rollout

(left-hand panel: index; right-hand panel: percentages)



Sources: Refinitiv, IBES, Goldman Sachs and ECB calculations.

Notes: This chart shows the impact of lockdowns (i.e. a 50 point increase in the lockdown stringency index) on the Gini coefficient of sectoral 12-month EPS forecasts over time (up to 20 days after the assumed lockdown takes place). The effects are estimated using local projections. The shaded areas represent 90% confidence intervals using Newey-West standard errors robust to heteroscedasticity and autocorrelation. The latest observation is for 26 April 2021.

The heterogeneous economic impact of the pandemic across euro area countries

Prepared by Philip Muggenthaler, Joachim Schroth and Yiqiao Sun

While the coronavirus (COVID-19) pandemic has been a common shock, its economic impact has been heterogeneous across countries. This box describes how activity and demand have been affected in the euro area countries since the start of the pandemic and highlights some elements which may help to explain the heterogeneous performance across countries. It also points out the risks of persistent divergences and the important role of the Next Generation EU plans in reducing them. Differences across euro area countries include the degree of containment measures in response to the varying intensity of the health crisis, the different sectoral compositions and economic structures, and the quality of institutional settings. As fiscal support has been proportional to the depth of the health crisis, fiscal positions in euro area countries diverged in 2020.

In the first quarter of 2021 euro area real GDP was 4.9% below its pre-pandemic level, having declined by 6.5% in 2020. Across the euro area countries, the comparison with pre-pandemic levels ranges from +13.2% (Ireland) to -9.3% (Spain). Whereas the deepest recession was seen in 2020, the total real GDP level in the first quarter of 2021 was still well below its pre-crisis level in all countries except Estonia (3.4%), Ireland (13.2%), Lithuania (1.1%) and Luxembourg (3.2%) (Chart A).¹ By contrast, Spain, Italy, Malta, Austria and Portugal saw the most significant drop in real GDP, with Portugal and Spain bearing the largest losses (9.1% and 9.3% respectively). As in these countries, the tourism sector is of particular importance for aggregate activity, they were strongly affected by international travel bans.²

While the pandemic-induced recession was mostly consumption-driven, the relative importance of the contributions to growth by demand components varied substantially across countries. In most countries, the largest negative contribution to the recession came from the biggest demand component: the cutback in private consumption. This occurred against the backdrop of significantly reduced spending opportunities for households coupled with uncertainty, which prompted larger precautionary savings (see Chart A).³ Notably in Germany, Belgium and the Netherlands, the decrease in real GDP was entirely accounted for by private consumption, showing the resilience of their external sector on the back of their less vulnerable exports composition. The more volatile GDP components, total investment and net exports growth, while less important in their relative size, further amplified cross-country heterogeneities by fostering GDP growth in some countries but suppressing it in others.

¹ The strong growth in Ireland mainly reflects the performance of the sectors dominated by foreign-owned multinational enterprises.

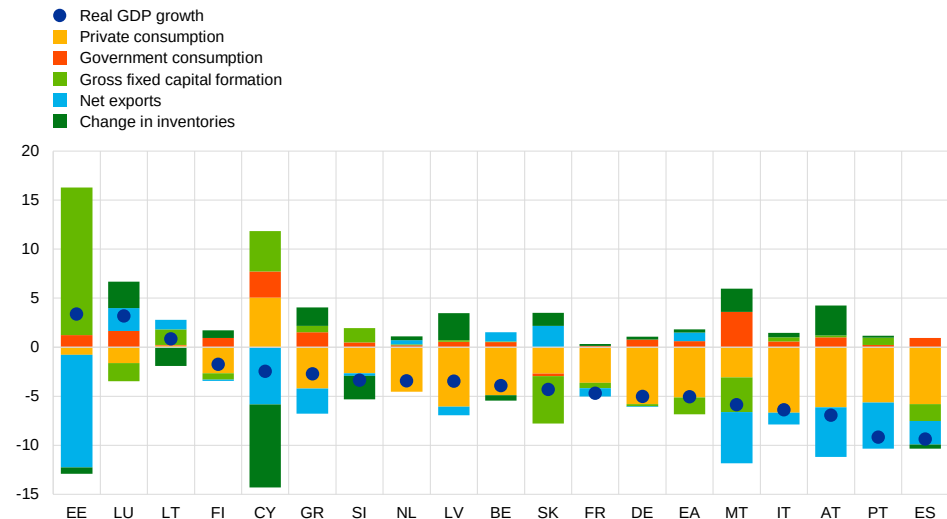
² For details on the impact of travel restrictions, see ["Impact of the COVID-19 lockdown on trade in travel services"](#), *Economic Bulletin*, Issue 4, ECB, 2020.

³ For details on the estimate of forced (involuntary savings) vs. precautionary savings, ["COVID-19 and the increase in household savings: precautionary or forced?"](#), *Economic Bulletin*, Issue 6, ECB, 2020.

Chart A

Decomposition of the change in real GDP from the fourth quarter of 2019 to the first quarter of 2021 by demand components

(percentage, percentage points contributions)



Sources: Eurostat and authors' calculations.

Notes: Ireland is not shown as its real GDP growth and domestic demand components were strongly distorted by activities of multi-national enterprises. The exceptionally large contributions from total investment growth and net exports to growth with opposing signs in Estonia was attributable to a sizeable operation by an international automobile firm which invested in new software in Estonia. The operation was simultaneously recorded as equipment investment and imports, with no impact on GDP.

The stringency of the containment measures needed to fight the health crisis varied substantially across countries and time. The design of the containment measures, as well as their evolution over time as summarised in the Oxford stringency index (OSI), depended primarily on the country-specific pandemic developments. Chart B, panel a shows the evolution of the euro area average OSI and the range spanned by euro area countries since the outbreak of the pandemic in the first quarter of 2020. By 12 March 2020 all euro area countries had put in place a set of containment measures, with Italy reacting first and Estonia last. Throughout the pandemic period, a large gap persisted between the country with the tightest restrictions and the country with the loosest, contributing to the increase in cross-country heterogeneities in economic developments.⁴

The impact of lockdown measures was heterogeneous across countries and time, largely depending on the sectoral composition. Finland, Estonia, Lithuania and Latvia had the least stringent measures for the extended pandemic period, whereas Italy, Spain and Portugal implemented relatively stringent measures. While the stringency level was generalised across the different sectors during the first lockdown at the start of the first wave in March 2020, it became more targeted towards specific sectors and varied more substantially across countries during the second wave starting in October 2020. More targeted containment measures lent more importance to the sectoral composition of the economy. The share of high-contact services may play a role in explaining the heterogenous economic impact of certain

⁴ In the euro area, the cross-country variation of the OSI spanned a range of 40 on average (with a maximum of 93 reached in April 2020) from the least to the most stringent country score, with a standard deviation of around 10 over the entire period.

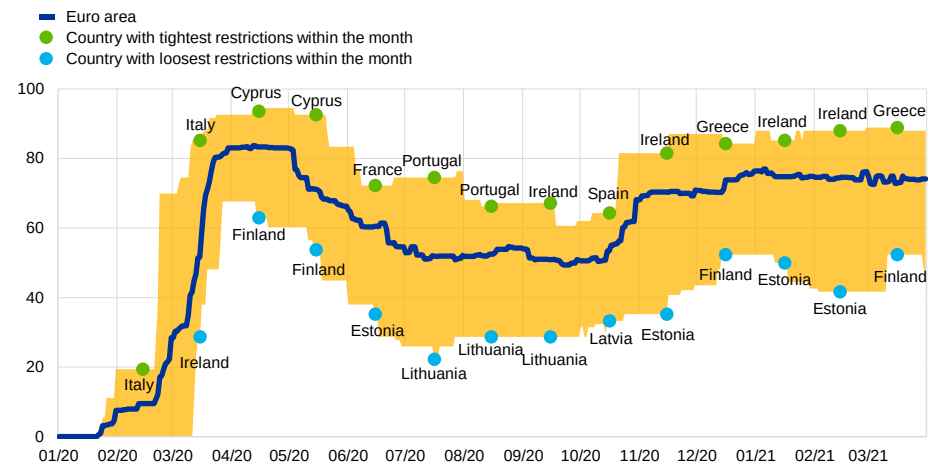
lockdown measures (Chart B, panel b).⁵ The sectoral composition is only one of several structural drivers of potential output growth (such as quality of institutions, labour and product market regulation, and trade linkages). These factors, which helped to explain cross-country differences in growth potential and the different recovery pace from common shocks over the last few decades, may also be relevant to this pandemic.⁶

Chart B

Containment measures and economic structures in cross-country comparison

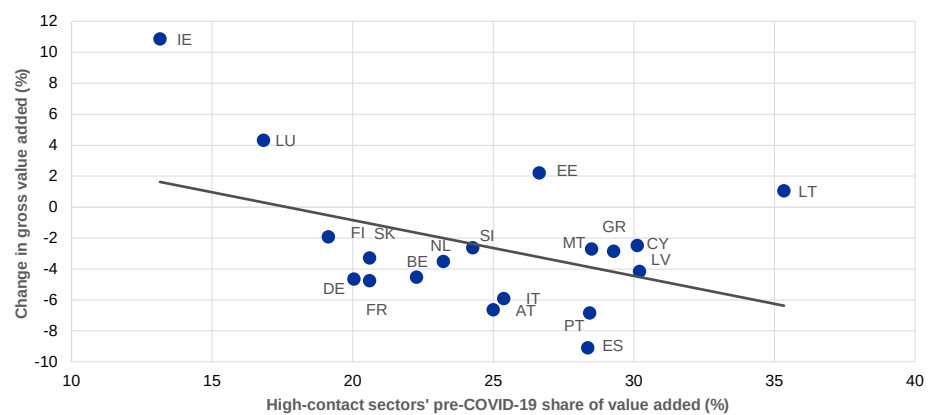
a) Evolution of Oxford stringency index across euro area

(index)



b) Share of high-contact services sector and change in value added during the COVID-19 crisis period

(percentage, percentage changes)



Sources: Oxford Government Response Tracker, Eurostat and ECB staff calculation.

Notes: In panel a, the Oxford COVID-19 Stringency Index is a composite measure based on nine response indicators including school closures, workplace closures and travel bans, rescaled to a value from 0 to 100 (100 = strictest). For the euro area, the index corresponds to the GDP-weighted average of the Stringency Index for all euro area countries. The latest observation is for 31 March 2021. In panel b, change in gross value added refers to cumulative change from the fourth quarter of 2019 to the first quarter of 2021. High-contact sectors include retail trade, transport, accommodation, food service activities, arts, entertainment, recreation and other activities. The high-contact sectors' pre-COVID-19 share of value added has been computed as the 2019 quarterly average of the percentage shares in total value added.

⁵ See for a detailed analysis “The impact of containment measures across sectors and countries during the COVID-19 pandemic”, *Economic Bulletin*, Issue 2, ECB, 2021.

⁶ See Sondermann, D., “Towards more resilient economies: the role of well-functioning economic structures”, *Working Paper Series*, ECB, No 1984, November 2016.

The impact of the crisis was cushioned by substantial fiscal support provided by all euro area governments; though similar in terms of composition, the support was rather different in size.⁷ By providing quick and critical support in the first phase of the pandemic, national governments addressed and mitigated the immediate health and economic consequences of the crisis.⁸ The emergency packages in 2020 were broadly similar across countries in terms of their measures, with the largest shares assigned to job retention schemes, liquidity support to firms⁹ such as state guarantees¹⁰, tax deferrals and subsidies, as well as measures to address the medical emergency. However, the overall size of the fiscal support differed considerably across countries. In Greece and Malta the fiscal impulse in 2020 – as measured by the change in budget balance net of interest payments, which reflects the automatic response of the government budget balance to the cycle (automatic stabilisers) and discretionary fiscal measures – amounted to more than 10% of pre-crisis GDP, while in Estonia, Latvia and Finland, which have been relatively less affected by the health crisis, it was around 4%.

Overall, the fiscal impulse has tended to be proportional to the GDP losses.

Across euro area countries, the change in the budget balance net of interest payments has tended to be larger where GDP declined more strongly (Chart C, panel a). At the same time, several euro area countries in which the fiscal impulse in 2020, and thus the effect on budget deficits, had been larger, also entered the pandemic with higher debt levels (Chart C, panel b). This further increased the level of heterogeneity in fiscal positions in 2020 when compared with the pre-crisis period.

⁷ This box refers mostly to fiscal support with an impact on the budget balance. However, some of the support measures, such as government guarantees and other contingent liabilities, did not have an immediate impact on public finances but provided important support to facilitate companies' access to external financing and preserve pre-crisis structures of the economy.

⁸ For an overview, see [“The initial fiscal policy responses of euro area countries to the COVID-19 crisis”](#), *Economic Bulletin*, Issue 1, ECB, 2021.

⁹ See [“The impact of fiscal support measures on the liquidity needs of firms during the pandemic”](#), *Economic Bulletin*, Issue 4, ECB, 2021.

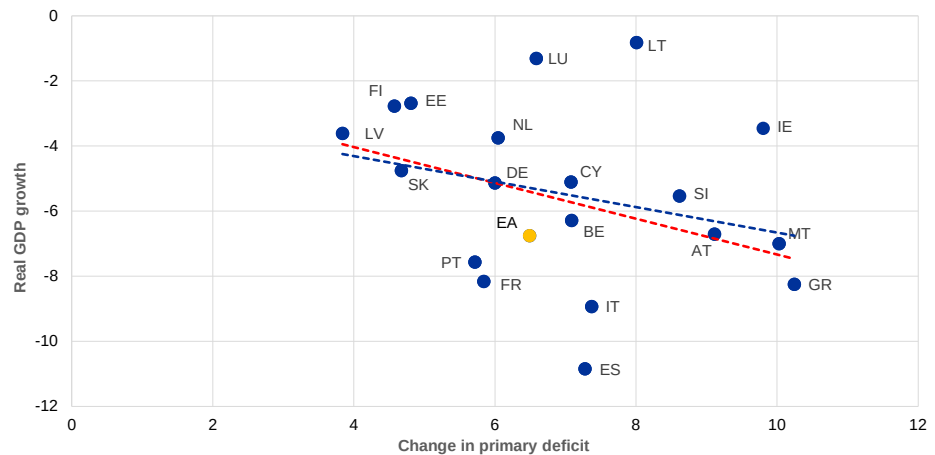
¹⁰ See [“The role of government for the non-financial corporate sector during the COVID-19 crisis”](#), *Economic Bulletin*, Issue 5, ECB, 2021.

Chart C

Fiscal impulse against drop in real GDP growth in 2020 (panel a) and debt-to-GDP level in 2019 (panel b)*

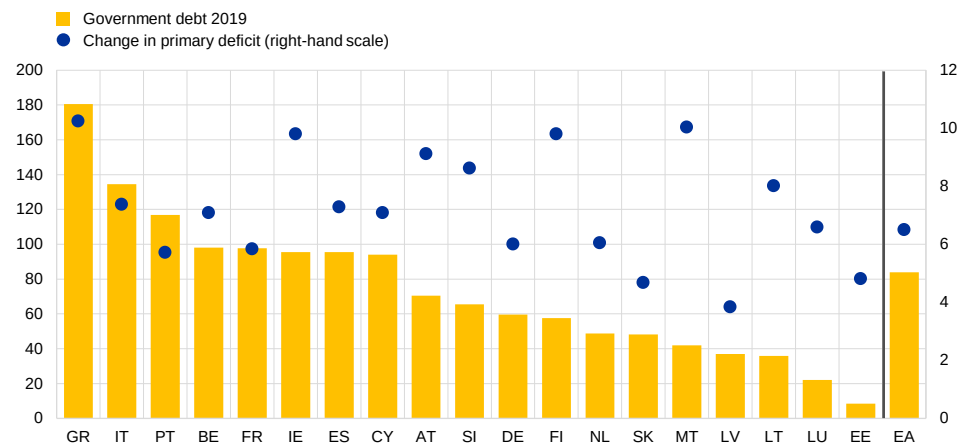
a) Fiscal impulse against drop in real GDP growth in 2020

(real GDP in percentage changes; change in primary deficit as a percentage of 2019 GDP)



b) Debt-to-GDP level in 2019

(debt level as a percentage of GDP; change in primary deficit as a percentage of 2019 GDP)



Sources: Eurostat, ESCB June 2021 Broad Macroeconomic Projection Exercise, Central Statistics Office and ECB calculations.

Notes: The fiscal impulse is measured as the change in the primary deficit in 2020 as a percentage of 2019 GDP.

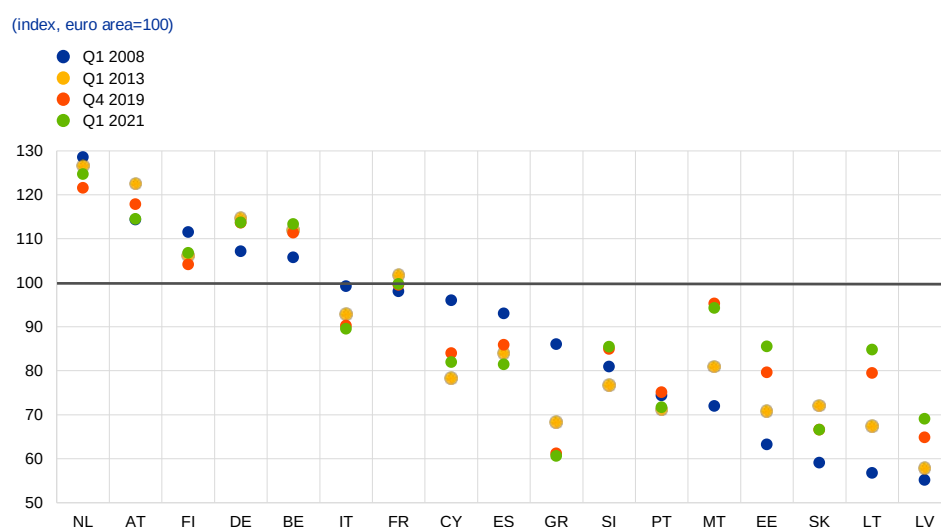
For Ireland, modified gross national income (GNI) at constant market prices is used instead of real GDP and government debt and change in primary deficit is expressed as a percentage of 2019 GNI*. The red line shows the trendline excluding Ireland. For Germany, the primary deficit figure for 2020 has been updated after the EDP notifications, which also affects the euro area aggregate for 2020.

The COVID-19 crisis has at least temporarily disrupted the cross-country convergence process in living standards seen since the global financial and euro area sovereign debt crisis. Chart D shows the position of countries relative to the euro area average in GDP per capita in purchasing power parities (PPP), a popular measure for comparing living standards. The global financial and euro area sovereign debt crisis resulted in sizeable cross-country divergences, building up between the first quarter of 2008 and the first quarter of 2013, followed by a convergence process. The COVID-19 shock has triggered renewed, yet overall smaller, divergences, hitting some countries below the euro area average in terms of per capita income more severely than those above. Germany, the Netherlands and all other countries above the euro area average, with the exception of Austria, have seen their living standards

deteriorate by less than, or the same as, that average, whereas those of countries below it, i.e. Greece, Italy, Spain and Portugal, have drifted away. By contrast, with the exception of Cyprus and Malta, countries which joined the euro area between 2007 and 2015¹¹, have continued their catching-up process towards the euro area average despite the COVID-19 pandemic.

Chart D

GDP per capita in purchasing power standards compared to euro area average at different points in time



Sources: European Commission, Eurostat, the World Bank, ECB staff calculations

Notes: Periods correspond to the peaks and troughs of euro area GDP per capita in the global financial and sovereign debt crisis and COVID-19 pandemic, respectively. Ireland and Luxembourg appear as outliers and are not shown in the chart. Countries are sorted by their index value in the first quarter of 2008.

While the extraordinary policy reaction has contained the economic impact of the pandemic, risks of scarring effects in the countries most affected remain high. Given the importance of structural factors in explaining the increased heterogeneity, the initial impact of the pandemic shock may lead to longer-lasting growth divergences in the future. These could be explained by, for example, cross-country differences in the pace of re-allocation between sectors and in fiscal space.

The Next Generation EU is expected to help reduce the rise in economic divergence in the euro area. It is aimed at improving the structural underpinnings of the economies and promoting a more inclusive recovery. This is supported by, among other things, the distribution of the recovery and resilience funds favouring countries with the largest economic losses from the pandemic.¹²

¹¹ Estonia, Cyprus, Malta, Latvia, Lithuania, Slovenia and Slovakia.

¹² European Commission's proposal for a regulation establishing a Recovery and Resilience Facility (RRF) and European Council conclusions of 21 July 2020.

COVID-19 and the increase in household savings: an update

Prepared by Maarten Dossche, Georgi Krustev and Stylianos Zlatanov

This box analyses the increase in euro area household savings since the start of the coronavirus (COVID-19) crisis. It provides an update of an earlier analysis of the drivers of the recent surge in savings and what they imply for the adjustment of savings and the recovery in private consumption as the pandemic is brought under control.¹ Since the pandemic has mainly affected euro area economic activity through restrictions imposed on several types of consumption, the nature of the recovery in this demand component will largely determine how fast overall economic activity recovers.

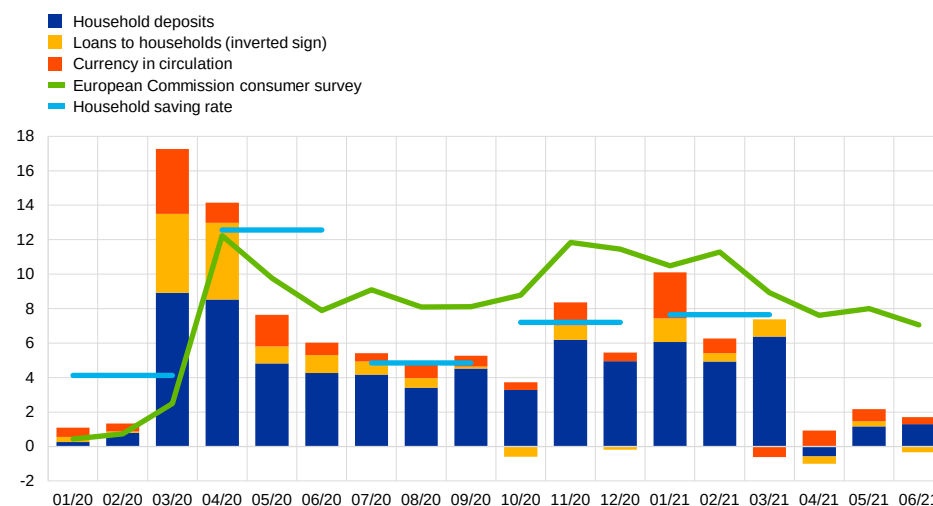
The propensity of euro area households to save has reached extraordinary levels since early 2020. The household saving rate, as derived from the euro area sectoral accounts (see Chart A), increased sharply in the first half of 2020. Since then it has fluctuated around a much higher level than before the pandemic, largely mirroring the pandemic-induced decline in consumption. The sectoral accounts are released with a lag of about three months; therefore, more timely indicators, such as monthly information on household bank deposits and loans, have been important as they have provided early information for assessing savings dynamics. These indicators show that a substantial part of the additional household savings was accumulated in the form of bank deposits and lower household borrowing. Information from the European Commission's consumer survey about households' intentions with regard to savings in the next 12 months has also proven useful for gauging ongoing developments. While these indicators give advance information on the size of fluctuations, a thorough understanding of the underlying drivers depends on more detailed information provided in the sectoral and national accounts.

¹ See the box entitled "COVID-19 and the increase in household savings: precautionary or forced?", *Economic Bulletin*, Issue 6, ECB, 2020.

Chart A

Indicators of household savings

(change with respect to December 2019/Q4 2019, percentage points of disposable income and percentage points)



Sources: European Commission's DG-ECFIN, Eurostat, ECB and authors' calculations.

Notes: Household deposits and loans refer to net flows. Loans to households are reported with an inverted sign. The contribution of currency flows is considered an upper bound, as a breakdown by holding sector is not available on a monthly basis. The latest observation is for the first quarter of 2021 for the household saving rate and for June 2021 for all other series. The data are seasonally adjusted.

The higher savings largely reflect lower consumption, as fiscal transfers have stabilised household sector income. Chart B (panel a) illustrates how the surge in household savings mainly reflects lower consumption. Aggregate household income has been largely insulated from the contraction in economic activity as a result of large fiscal transfers. This is very different from developments during the two previous euro area recessions, when real disposable income declined significantly despite a much smaller drop in compensation of employees. At the same time, euro area real disposable income has not increased during the current crisis, unlike in some other advanced economies where fiscal transfers have given an additional boost to household disposable income (for details, see Box 1 in this issue of the Economic Bulletin). This is due to the more targeted nature of income support in the euro area (e.g. short-time work schemes), which has been largely conditional on households experiencing an effective drop in hours worked and thus in their labour income.²

² See the box entitled "Short-time work schemes and their effects on wages and disposable income", *Economic Bulletin*, Issue 4, ECB, 2020.

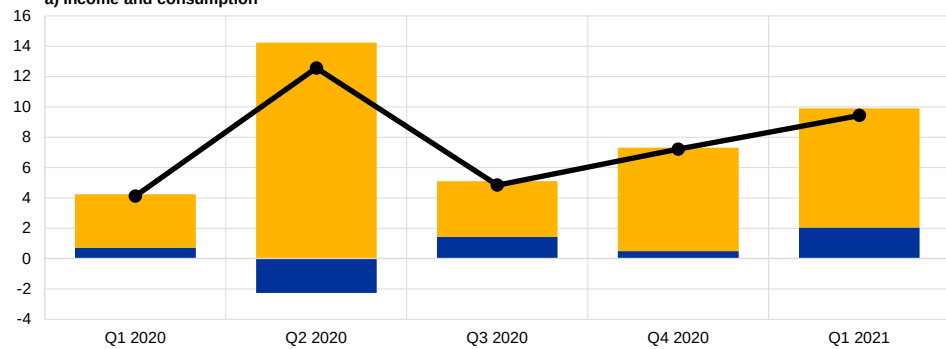
Chart B

Household saving rate: three decompositions

(panels a and b: change with respect to Q4 2019, panel c: change with respect to corresponding quarter in 2019; percentage points of disposable income and percentage point contributions)

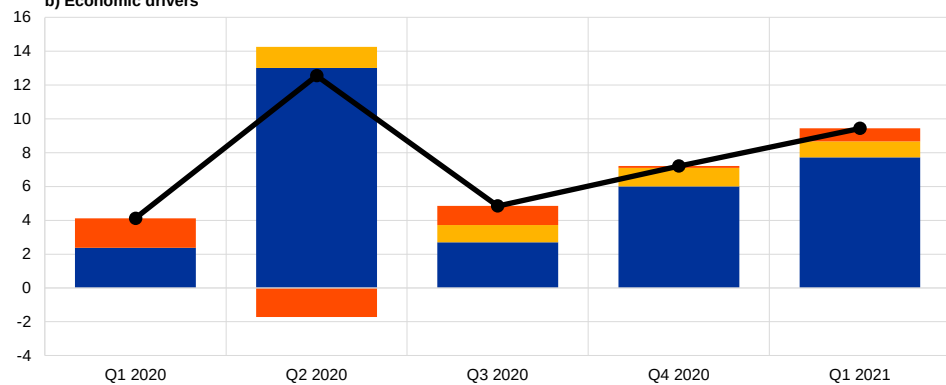
- Income
- Consumption (inverted sign)
- Household savings

a) Income and consumption



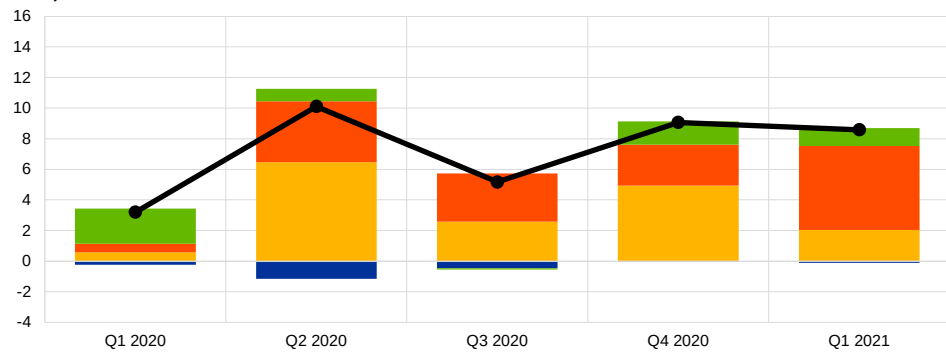
- Residual (forced savings)
- Precautionary savings
- Effects of other control variables
- Household savings

b) Economic drivers



- Non-financial investment
- Liquid financial assets
- Illiquid financial assets
- Financial liabilities (inverted sign)
- Household savings

c) Allocation



Sources: Eurostat and authors' calculations.

Notes: Panels a and b both use seasonally adjusted data and show the change in the saving rate with respect to the fourth quarter of 2019; panel c uses non-seasonally adjusted data and shows the change in the saving rate with respect to the corresponding quarter of 2019. The saving rate in panel c differs somewhat from the saving rate in panels a and b owing to statistical discrepancies between the non-financial and financial accounts, as well as a different reference quarter owing to the use of non-seasonally adjusted data.

The increase in household savings has been largely involuntary. The decomposition shown in Chart B (panel b) suggests that most of the additional savings were involuntary. Owing to the government-imposed restrictions and the fear of infection, many types of consumption were effectively not available (e.g. restaurant visits, concerts and travel), leading to involuntary or “forced” savings. Precautionary savings have also played a significant, albeit more limited, role. Short-time work schemes not only provided immediate compensation for the loss of labour income, but also helped to preserve existing jobs. The nature of these fiscal transfers also seems to have contributed to containing the risk of future loss of income and hence the need for precautionary savings, although this effect is hard to quantify.³

A large part of the increase in savings has been held in liquid assets. Chart B (panel c) shows that about half of the increase in household savings has been placed in liquid financial assets (i.e. cash and bank deposits). For this reason, recent developments in the saving rate are captured quite well by changes in household deposit flows (see Chart A). At the same time, it should also be noted that a great deal of the additional savings has been invested in less liquid forms, such as equity and investment funds, or has been used to reduce household borrowing. Nevertheless, with a large part of the additional savings being held in liquid form, owing to the involuntary contraction in consumption and broadly stable (aggregate) household income, this raises the question of the extent to which the unwinding of the accumulated excess savings (i.e. the amount of savings that exceeds the pre-pandemic level) can provide an additional boost (by funding pent-up demand) to the recovery in private consumption.⁴ This question is addressed below.

The decline in consumption mainly reflects a drop in consumption of consumer services. The initial decline in consumption during the first wave of the pandemic and the renewed declines during subsequent waves were dominated by lower expenditure on services to a larger extent than in previous recessions (see Chart C). This reflected the distinctive nature of the pandemic, including the imposition of social distancing measures. When lockdowns were temporarily relaxed in the third quarter of 2020, spending on durable goods bounced back to pre-pandemic levels, but the recovery in services remained subdued. The services-led nature of the slump in consumption during the pandemic implies less scope for pent-up demand effects after the health

³ See Bayer, C., Born, B., Luetticke, R. and Mueller, G. (2020), “The Coronavirus Stimulus Package: How large is the transfer multiplier?”, *CEPR Discussion Paper*, No 14600.

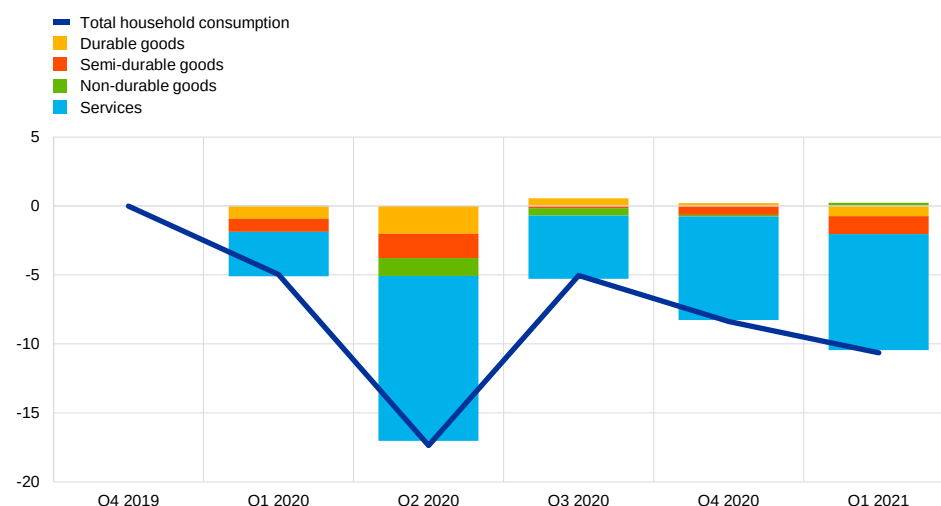
⁴ Excess savings can be quantified as the amount by which household savings during the pandemic exceeded a counterfactual path without the COVID-19 pandemic. Using the saving rate path from the Eurosystem staff macroeconomic projections for the euro area, December 2019, as a counterfactual path, the accumulated amount of excess savings can be estimated at €540 billion in the first quarter of 2021, or 7.4% of annual disposable income in 2019 (see the box entitled “Household saving ratio dynamics and implications for the euro area economic outlook” in the Eurosystem staff macroeconomic projections for the euro area, June 2021). Bilbie et al. (2021) use the pre-pandemic level of the saving rate as a counterfactual (see Bilbie, F., Eggertsson, G. and Primiceri, G. (2021), “US ‘excess savings’ are not excessive”, *VoxEU*, 1 March). Different plausible assumptions about the counterfactual evolution of household savings in the absence of the pandemic lead to relatively small differences in the estimated amount of excess savings.

crisis is resolved.⁵ While the recovery remains heavily dependent on a rebound in services, which are less prone to pent-up demand effects, this could be counterbalanced to some extent by substitution in favour of durable goods consumption.⁶

Chart C

Developments in euro area private consumption

(change with respect to Q4 2019, percentage points)



Sources: Eurostat and authors' calculations.

Notes: The latest observation is for the first quarter of 2021. All data are deflated and seasonally adjusted.

The accumulation of savings during the pandemic has been concentrated among older and higher-income households. Chart D suggests that savings increased mostly among older and higher-income households, which is in line with the findings of several studies.⁷ First, both groups of households were generally less exposed to losses in labour income, as they are either inactive or work in sectors less exposed to the effects of social distancing.⁸ Second, their consumption basket contains more services that have seen a drop in consumption owing to social

⁵ See Beraja, M. and Wolf, C. (2021), "Demand Composition and the Strength of Recoveries", Massachusetts Institute of Technology, *mimeo*. While the concept of pent-up demand is often used in the context of durable goods, such effects could also be present in expenditure on services. For instance, there might be "memorable" services related to tourism and travel which could trigger the materialisation of strong latent demand – see Hai, R., Krueger, D. and Postlewaite, A. (2020), "On the welfare cost of consumption fluctuations in the presence of memorable goods", *Quantitative Economics*, Econometric Society, 11(4), 1177-1214.

⁶ The rebound in durable goods consumption in the third quarter of 2020 might have reflected in part temporary factors. For instance, the expenditure on durables might have been supported by one-off purchases of home appliances to adapt to teleworking in a "home office" environment. Moreover, the temporary VAT cut in Germany in the second half of 2020 is likely to have brought durable goods purchases forward, as evidenced by the renewed weakness in durable goods consumption following the expiration of the VAT cut in the first half of 2021 – see Clemens, M. and Röger, W. (2021), "Temporary VAT reduction during the lockdown", *DIW Discussion Paper*, No 1944.

⁷ See Bounie, D., Camara, Y., Fize, E., Galbraith, J., Landais, C., Lavest, C., Pazem, T. and Savatier, B. (2020), "Consumption Dynamics in the COVID Crisis: Real Time Insights from French Data", London School of Economics, *mimeo*; Hacıoglu, S., Känzig, D. and Surico, P. (2021), "The distributional impact of the pandemic", *CEPR Discussion Paper*, No 15101; Friz, R. and Morice, F. (2021), "Will consumers save the EU recovery? – Insights from the Commission's consumer survey", *SUERF Policy Note*, No 237, May.

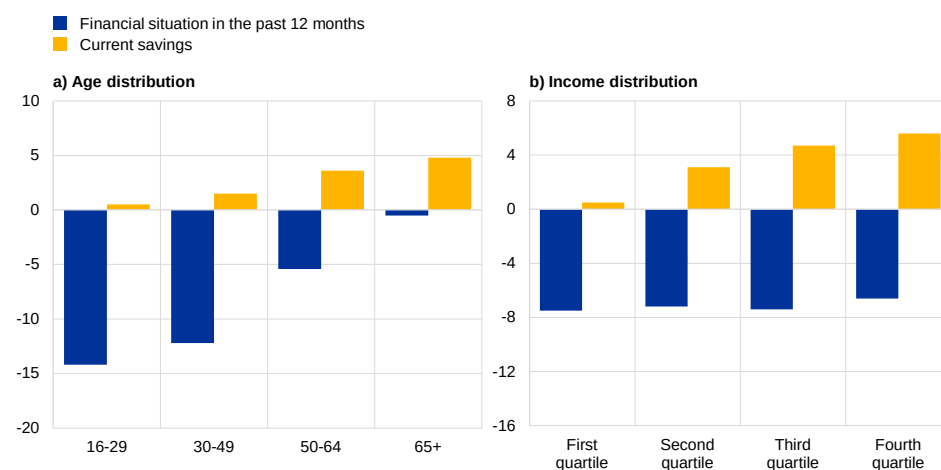
⁸ Developments in the financial situation of households across the income distribution were similar, given that income support was mainly targeted at lower-income households who have been more exposed to sectors that needed to reduce activity.

distancing measures.⁹ As older and higher-income households are generally less liquidity constrained (or have lower marginal propensities to consume), the extent to which these additional savings will be turned into consumption can be expected to be relatively low. In addition, under Ricardian equivalence they may also be more concerned about future tax increases to offset the recent rise in government debt.

Chart D

Household financial situations and savings across the age and income distributions

(change in percentage balance – December 2019–April 2021)



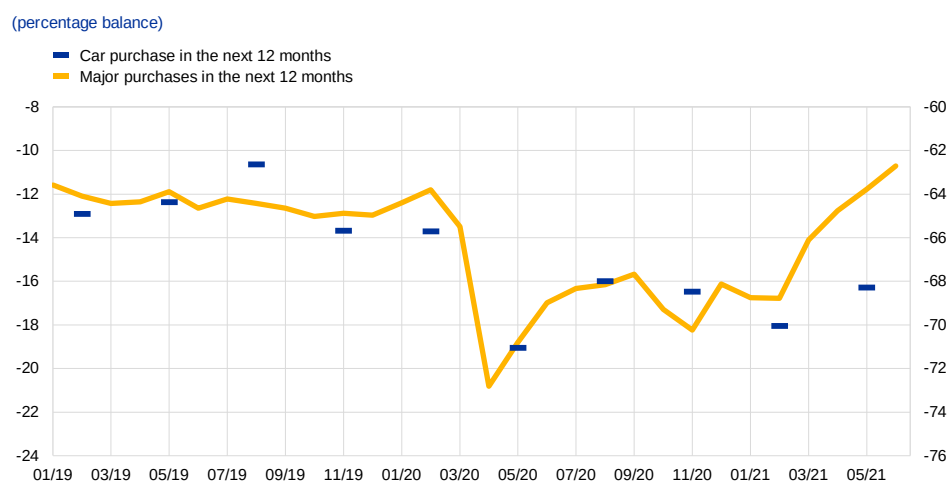
Sources: European Commission's DG-ECFIN and authors' calculations.

Notes: The revision in households' financial situation and their ability to save is proxied by the change in net balances between December 2019 and April 2021. The latest observation is for April 2021, so as to cover the period of increased savings (cf. Chart A). All data are seasonally adjusted.

Survey indicators suggest no immediate surge will occur in private

consumption. The European Commission's consumer survey (see Chart E) suggests that in the next 12 months households expect their spending on major purchases (e.g. furniture, electrical/electronic devices, etc.) to be comparable to the amounts they spent at the beginning of 2020. Households also indicated that their intentions to purchase a car in the next 12 months remain below pre-COVID levels. While some expenditure categories may be benefiting from exceptionally high demand, survey indicators do not signal that in the coming year widespread pent-up demand financed by excess savings accumulated during the pandemic will give a strong boost to private consumption.

⁹ See the box entitled "COVID-19 and income inequality in the euro area", in the article entitled "Monetary policy and inequality", *Economic Bulletin*, Issue 2, ECB, 2021.

Chart E**Household spending expectations**

Source: European Commission's DG-ECFIN.

Notes: The latest observation is for June 2021 for major purchases and the second quarter of 2021 for car purchases. All data are seasonally adjusted.

The COVID-19 shock has led to a surge in household savings, but its drivers do not suggest a large additional boost to the expected rebound in consumption.

The COVID-19 pandemic has generated an economic shock that has affected private consumption and household savings in a complex way. While several factors suggest that the accumulated excess savings could be reabsorbed easily for consumption purposes, other factors suggest that this may not be so straightforward. Overall, the likelihood of an immediate reabsorption of accumulated excess savings for future consumption purposes remains limited.¹⁰

¹⁰ For a discussion of how the adjustment in the saving rate and in accumulated excess savings shapes the outlook for the euro area economy, see Box 2 in the Eurosystem staff macroeconomic projections for the euro area, June 2021.

5 Main findings from the ECB's recent contacts with non-financial companies

Prepared by Catherine Elding, Friderike Kuik and Richard Morris

This box summarises the results of contacts between ECB staff and representatives of 63 leading non-financial companies operating in the euro area. The exchanges took place between 28 June and 7 July 2021.¹

Contacts reported strong growth overall, with activity mainly influenced by supply constraints and the easing of measures to contain the coronavirus (COVID-19) pandemic. The relaxation of measures gave rise to a stepwise and partial recovery in the affected service sectors, which also benefited their suppliers. Meanwhile, demand in the industrial sector continued to increase or remained elevated, but production lagged somewhat owing to persistent supply constraints.

As containment measures eased, services activity was the main driver of growth in the second quarter, although the recovery was still patchy. Contacts in or exposed to the travel and hospitality industries described a stepwise recovery in business during the second quarter, albeit still at very low levels. High street retailers reported strong growth in sales as outlets reopened, but generally still saw business somewhat below pre-pandemic levels.² This was especially the case for higher-quality or luxury goods, sales of which typically benefited from international tourism. The gradual reopening of hospitality and entertainment was supporting growth in services such as media and advertising and employment services. Meanwhile, contacts in services that had been largely unaffected or had benefited from the pandemic (such as telecoms, consulting and information services) generally reported strong or steady growth in their activity.

Contacts in the industrial sector reported still buoyant demand, while production was constrained by shortages of materials and components. The most acute shortage continued to be that of semiconductors. This had already significantly affected motor vehicle production but was also increasingly being felt across other parts of industry. Many contacts continued to mention shortages of a range of materials and components as well as delays in receiving inputs owing to transport bottlenecks, especially in container shipping. While these broader shortages mainly affected costs, production was also constrained to some extent. This, in turn, made it difficult to assess the strength of final demand, as customers brought purchases forward in anticipation of higher prices or over-ordered to guarantee supply. Meanwhile, delivery times were in some cases so long that customers were reluctant to place orders. However, there was little sign of any generalised softening of demand.

¹ For further information on the nature and purpose of these contacts, see the article entitled "[The ECB's dialogue with non-financial companies](#)", *Economic Bulletin*, Issue 1, ECB, 2021.

² The reopening of outlets led to reported surges in spending, but footfall then tended to settle well below pre-pandemic levels. Therefore, even though customers entering establishments were more likely to spend than before the pandemic, overall sales in shops were still below where they were in 2019.

Looking ahead, contacts anticipated continued strong growth over the summer months. Full order books would sustain activity in the industrial sector through the summer. Contacts in the services sector also anticipated continued growth, as it was assumed that pandemic-related restrictions would ease further. There was, however, still considerable uncertainty about the outlook, especially for autumn and winter, as this would depend on the future evolution of the pandemic and, in particular, of the Delta and other possible COVID-19 variants.

Contacts' responses suggested an uptick in employment developments and prospects compared with previous survey rounds. Contacts in employment placement services described strong growth in recruitment activity, with the technology and logistics sectors being among the strongest recruiters. Recruitment for hospitality and leisure was recovering but remained at low levels. After a long period in which changing jobs had been difficult, there was substantial demand for career moves, and several contacts referred to a "war for talent". The increased use of flexible working arrangements widened the pool of available candidates for some jobs, but penalised companies who needed staff to work on-site. As hotels and shops reopened, recruitment was sometimes difficult, as many former employees had moved to sectors less affected by the pandemic.

Contacts in the industrial sector reported significant increases in selling prices, while price developments in the services sector were more subdued.

Commodity prices and transport costs, which had risen very strongly over the past few quarters, were increasingly feeding through to industrial prices. Contacts described a very favourable environment for passing higher costs on to customers, who were focused on securing supplies rather than negotiating prices. Some upstream contacts reported increasing margins, while pass-through tended to be less complete further down the value chain. Looking ahead, most contacts in the industrial sector expected relevant commodity prices to plateau or gradually fall but the pass-through to selling prices to continue for some quarters, and most expected some pass-through to final consumer prices. Contacts in the services sector considered the outlook for selling prices to be more stable.

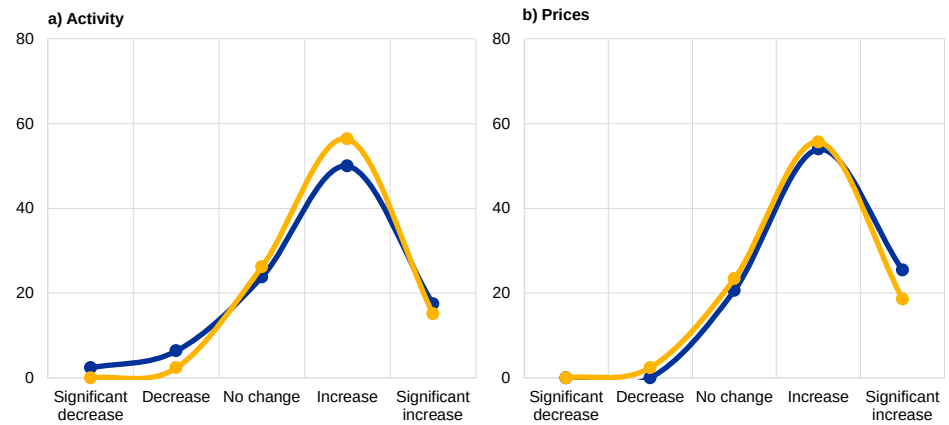
While industrial input prices were sharply higher, the situation would eventually ease, and the wage outlook remained moderate. Most contacts said that capacity investments would gradually rebalance supply and demand in the industrial sector, so even though unusual cost pressures may persist for a few quarters, they would ultimately be transitory. More persistent longer-term cost pressures would instead come from the regulatory and investment costs required for decarbonisation. Some contacts anticipated a pick-up of wage inflation in the next rounds of wage negotiations given the currently higher consumer prices and recovering business profits in their sectors. However, this pick-up was generally expected to be moderate.

Chart A

Summary of views on developments in and the outlook for activity and prices

(percentage of respondents)

- Previous quarter
- Current quarter



Source: ECB.

Notes: The scores for the previous quarter reflect the ECB staff assessment of what contacts said about developments in activity (sales, production and orders) and prices in the second quarter of 2021. The scores for the current quarter reflect the assessment of what contacts said about the outlook for activity and prices in the third quarter of 2021.

The role of sectoral developments for wage growth in the euro area since the start of the pandemic

Prepared by Gerrit Koester and Eduardo Gonçalves

The economic consequences of and policy responses to the pandemic pose challenges for interpreting wage developments. Aggregate wage growth is mostly assessed in terms of compensation per employee or compensation per hour worked.¹ The coronavirus (COVID-19) pandemic has led to a substantial divergence between compensation per employee and compensation per hour. The high number of workers on job retention schemes played a decisive role in these developments, especially via the implications for hours worked per person. Such schemes tend to have a downward effect on compensation per employee, as employees usually retain their employment status but, in most countries, face pay cuts when enrolling in these schemes. Moreover, the benefits of such schemes are not included in statistical measures of compensation where they are directly paid to employees.² At the same time, such schemes have an upward effect on compensation per hour, as hours worked tend to be reduced far more strongly than pay.

Year-on-year growth in compensation per employee (CPE) dipped sharply at the start of the pandemic but was back at pre-crisis rates in the first quarter of 2021. This strong V-shaped pattern obviously mirrors the pattern of economic activity, but it is unusual in the sense that it has been driven mainly by adjustments in compensation and less by changes in employment (Chart A). By comparison, while the number of employees declined at a rate comparable to that during the great financial crisis, the total compensation of employees was clearly adjusting much more than back then. This can be explained by the more decisive role that job retention schemes played this time round. The schemes helped to preserve the employment status of employees but also came with some reduction in compensation as, in most countries, not all of the lost hours were reimbursed through the schemes and payments from these were mostly recorded as transfers rather than compensation.³ As the economy recovered, hours worked normalised and the recourse to job retention schemes receded – leading to an adjustment in compensation. In the first quarter of 2021 zero annual growth of compensation and a still negative year-on-year growth rate in the number of employees brought CPE growth to 1.9% – close to its long-term average (since 1999) of 2.0%.

¹ See the box entitled “[Assessing wage dynamics during the COVID-19 pandemic: can data on negotiated wages help?](#)”, *Economic Bulletin*, Issue 8, ECB, 2020.

² See also the box entitled “[Short-time work schemes and their effects on wages and disposable income](#)”, *Economic Bulletin*, Issue 4, ECB, 2020.

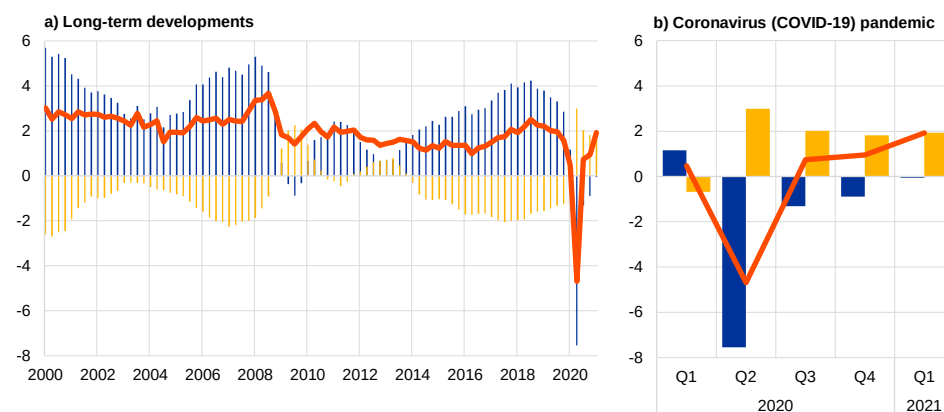
³ See the box entitled “Developments in compensation per hour and per employee since the start of the COVID-19 pandemic” in the article entitled “[The impact of the COVID-19 pandemic on the euro area labour market](#)”, *Economic Bulletin*, Issue 8, ECB, 2020.

Chart A

Decomposition of growth in compensation per employee in the euro area

(annual percentage changes)

■ Compensation of employees
■ Employees (inverted)
■ Compensation per employee



Sources: Eurostat and ECB staff calculations.

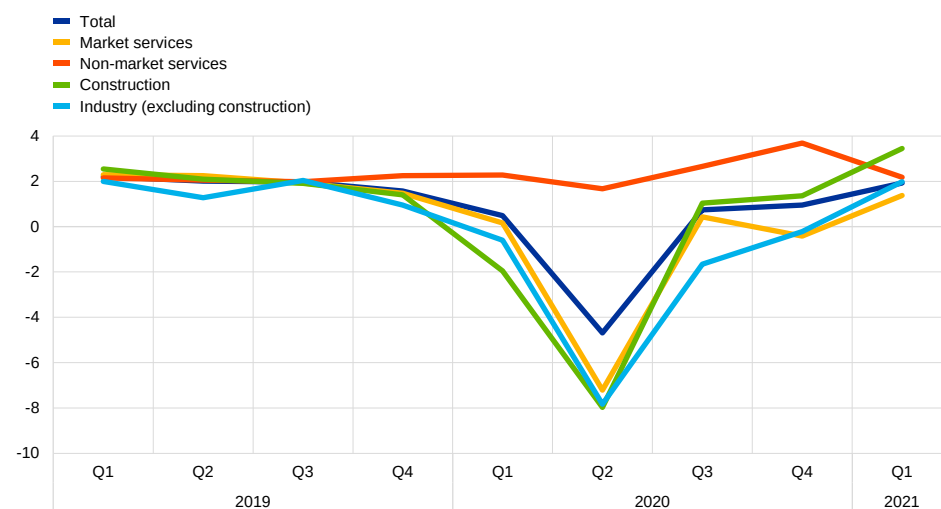
Notes: The latest observations are for the first quarter of 2021. For both panels, the series for employees is inverted, meaning that positive numbers reflect a reduction of the number of employees in year-on-year terms while negative numbers reflect an increase.

The movements in aggregate CPE growth conceal some notable sectoral differences (Chart B).

With the onset of the crisis, wage growth slumped in the second quarter of 2020 to a similar extent in market services, industry (excluding construction) and construction. The third quarter saw a general recovery in wage growth which continued into early 2021 for industry and construction, while wage growth in market services experienced a second, albeit smaller, hit in the fourth quarter of 2020 as the pandemic necessitated a renewed period of lockdown that mainly affected service sector jobs. Within the services sector, non-market services stood out throughout the pandemic in the sense that wage growth remained close to its pre-crisis level until summer 2020 and even increased substantially in the second half of 2020 (reaching 3.7% in the fourth quarter) before falling back to 2.2% in the first quarter of 2021. Special bonuses in particular for employees in the health sector linked to their high workload, which were granted in many euro area countries, played an important role in the strong wage growth in non-market services in the second half of 2020. Overall, the dispersion of CPE growth has remained higher than during pre-pandemic times – underlining the importance of taking sectoral developments into account when analysing aggregate wage growth.

Chart B**Growth in compensation per employee in the euro area by main sector**

(annual percentage changes)



Sources: Eurostat and ECB staff calculations.

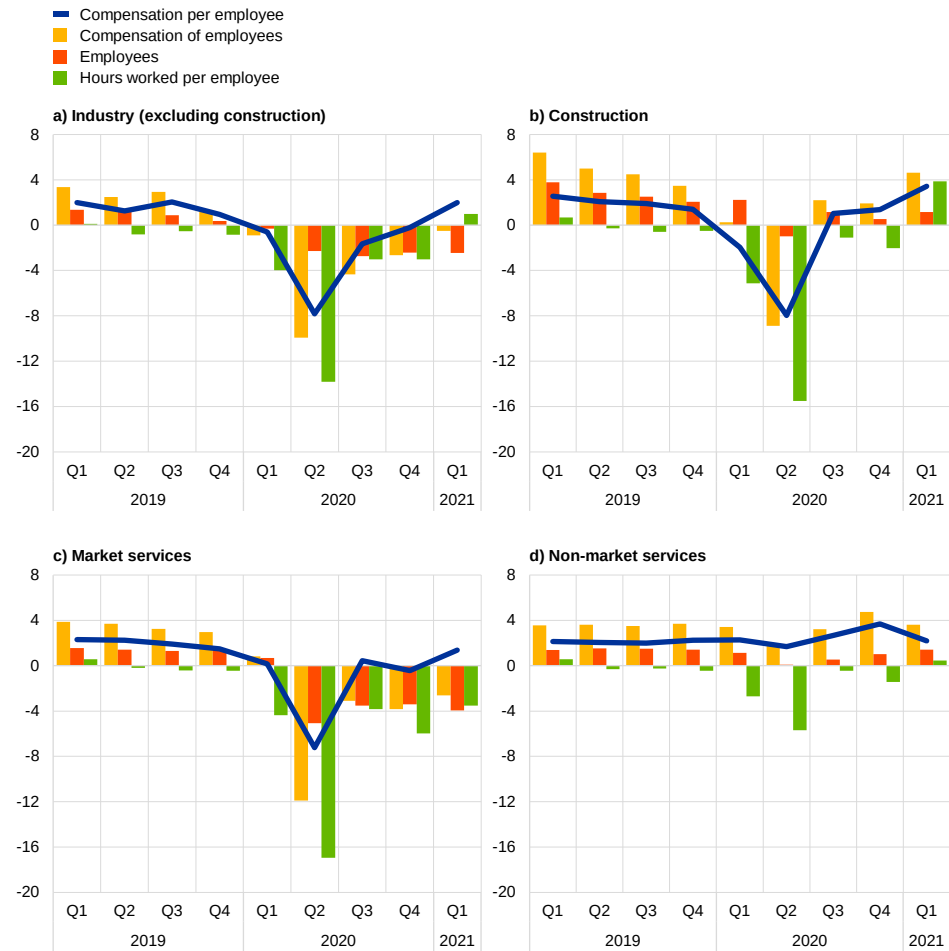
Notes: The latest observations are for the first quarter of 2021. "Non-market services" includes public administration, defence, education, health and social work activities.

The differences in sectoral developments in CPE growth reflect the differences in the extent to which sectors were affected by the pandemic and the measures taken to contain it, in particular the recourse to job retention schemes. Contrary to previous crises, the pandemic hit the market services sector hardest, as a large part of its activity was especially affected by restrictions to physical mobility and lockdown measures. Harmonised data concerning the reliance on job retention schemes in the different sectors are not available for the whole euro area, but the relative adjustments in employment and hours worked per employee can provide some crude indication (see Chart C). In the second quarter of 2020 all sectors saw a large relative adjustment in hours worked per employee compared with employment. In construction, employment contracted only slightly, and the situation normalised again quite quickly from the third quarter of 2020 onwards. The industrial sector experienced a more substantial reduction in employment, which persisted until the first quarter of 2021, while hours worked per person normalised more quickly. The implied reduced recourse to job retention schemes was then visible in the continued recovery of compensation of employees. The market services sector was hit hardest with the largest losses in employment which, like those in industry, persisted until the first quarter of 2021. However, in contrast to the other sectors, hours worked per employee dipped again relative to employment in the fourth quarter of the year, implying a further decrease in compensation of employees in line with a renewed recourse to job retention schemes. There were no employment losses in non-market services during the crisis, and the reduction in hours worked per employee in the second quarter of 2020 was accompanied by only small losses in compensation of employees. This sector was characterised by considerable resilience in compensation of employees and wage growth relative to the other sectors.

Chart C

Sectoral developments in compensation per employee growth in the euro area

(annual percentage changes)



Sources: Eurostat and ECB staff calculations.

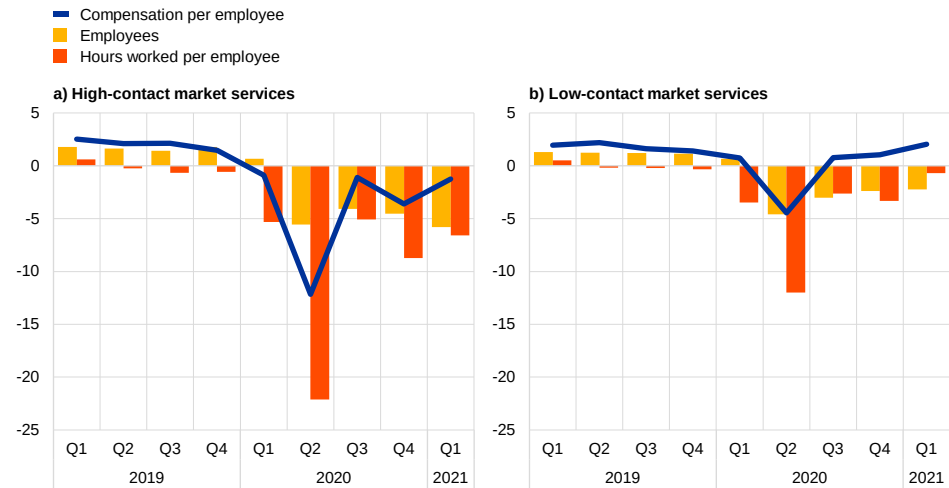
Notes: The latest observations are for the first quarter of 2021. "Non-market services" includes public administration, defence, education, health and social work activities.

The asymmetric impact of the pandemic is even more visible when distinguishing within the market services sector between high and low-contact services. As the restrictions introduced to contain the spread of the pandemic were aimed at reducing especially interpersonal contacts, high-contact services (including wholesale and retail trade, transport, accommodation and food service activities) suffered more than low-contact services (such as information and communication, finance and insurance, and real estate, among others). While CPE growth was hit substantially in both sub-sectors during 2020, the effects were far more pronounced for high-contact services owing to a much higher reduction in hours worked per employee given the stronger role of job retention schemes. CPE growth in low-contact services has been positive again since the third quarter of 2020, standing at 2.0% in the first quarter of 2021, up from 0.8% and 1.0% in the third and fourth quarters of 2020 respectively. However, CPE growth continued to be negative for high-contact services, as a result of pandemic restrictions affecting especially this sub-sector (Chart D).

Chart D

Wage developments in high and low-contact market services in the euro area

(annual percentage changes)



Sources: Eurostat and authors' calculations.

Notes: "High-contact market services" comprises wholesale and retail trade, transport, accommodation and food services. "Low-contact market services" corresponds to market services excluding high-contact market services. The latest observations are for the first quarter of 2021.

The effects of the pandemic on growth in compensation per employee are expected to continue shaping wage developments in 2021 and across all sectors.

The massive decrease in CPE growth in the second quarter of 2020 can be expected to lead to strong base effects in CPE growth in the second quarter of 2021. Such upward base effects can be expected to be strongest in the sectors hit most severely during the pandemic – namely high-contact services – but will also play an important role in other sectors. As labour markets are projected to gradually recover over the coming years and the impact of job retention schemes wanes, developments in compensation per employee should normalise in the main sectors of the economy. Going forward, a key question is whether sectoral wage negotiations will aim to make up for temporary losses in compensation during the pandemic at least partly and in some sectors, which could add to wage growth over the next years.

Recent developments in pipeline pressures for non-energy industrial goods inflation in the euro area

Prepared by Gerrit Koester, Ieva Rubene, Eduardo Gonçalves and Jakob Nordeman

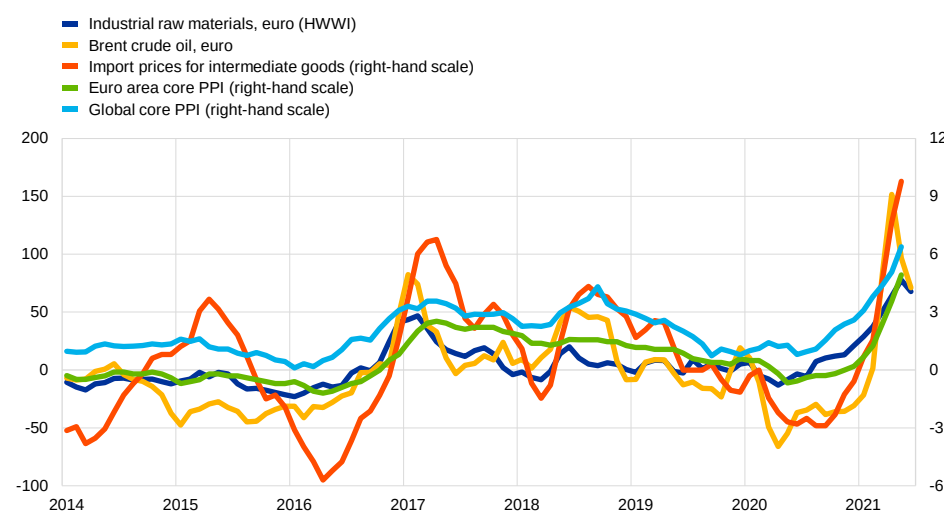
Pronounced rises in input costs on a global level have led to marked increases in import and producer prices for intermediate goods in the euro area (Chart A).

Surging commodity price inflation, substantial increases in shipping costs and insufficient supply of some raw materials and intermediate products have led to input cost pressures for the euro area.¹ Such input cost shocks create “pipeline” price pressures at the early stages of the production and distribution chain. Recent developments in input costs have pushed up core producer prices (essentially producer prices in the manufacturing sector), in which intermediate goods have a large weight, with the latter reflecting price increases observed for, especially, basic metals, chemicals and chemical products. How much of these pressures ultimately feeds through to later stages and goods prices at the consumer level depends on many factors, including their duration and firms’ scope and willingness to absorb them by reducing profit margins. In the consumption basket underlying the Harmonised Index of Consumer Prices (HICP) in the euro area, these consumer goods prices are reflected in the category “non-energy industrial goods” (NEIG).

Chart A

Pipeline pressures at earlier stages of the pricing chain

(annual percentage changes)



Sources: Eurostat, Bloomberg, Hamburg Institute of International Economics (HWWI) and ECB staff calculations.

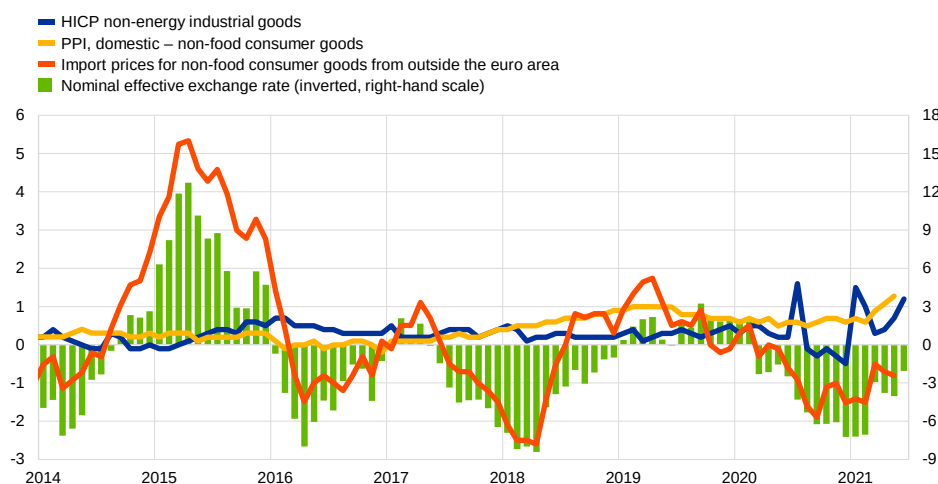
Notes: Core PPI is the producer price index (PPI) for domestic sales excluding the energy and construction sectors. The latest observations are for June 2021 for HWWI industrial raw materials and Brent crude oil (in euro), and May 2021 for the rest.

¹ See also the boxes entitled “What is driving the recent surge in shipping costs?”, *Economic Bulletin*, Issue 3, ECB, 2021 and “The semiconductor shortage and its implication for euro area trade, production and prices”, *Economic Bulletin*, Issue 4, ECB, 2021.

Price pressures have so far been smaller at later stages of the pricing chain than at the earlier stages (Chart B). Domestic producer price inflation for non-food consumer goods – a key measure of pipeline pressures for HICP NEIG inflation – stood at 1.0% in April 2021, up from 0.9% in March and 0.6% in February. While these rates of change and their development appear subdued relative to those for intermediate goods, the latest outcome was well above its long-term average of 0.6% and at a level seen during the late-cycle phase in 2019. At the same time, the annual rate of change in import prices for non-food consumer goods (imports of final goods account for around 12% of the HICP NEIG basket)² remained negative in May, at -0.9%. The magnitude and movement of this rate is closely linked to developments in the euro exchange rate and continues to be affected by the appreciation of the euro compared with its level a year ago.

Chart B
Later stage pipeline pressures

(annual percentage changes)



Sources: Eurostat and ECB staff calculations.

Notes: The nominal effective exchange rate is shown on an inverted scale – negative numbers hence reflect an appreciation. The latest observations are for June 2021 for NEIG inflation (flash estimate) and for the nominal effective exchange rate, and May 2021 for the rest. The developments in NEIG inflation in the second half of 2020 were strongly affected by the temporary cut in VAT rates in Germany (from July to December) and, in addition, in July and August by the changes in summer sale periods in a number of euro area countries.

Looking ahead, upward pressures from recent input cost developments may still affect NEIG inflation, as the pass-through to consumer prices usually takes more than one year. As production takes time, there are often substantial lags in the speed at which cost pressures affect different stages of the pricing chain. Additional factors that can prolong the pass-through to prices include long-term pricing contracts, a high proportion of fixed prices and (especially larger) firms seeking to stabilise their input costs through hedging. Correlation analysis indicates that it takes around one year for changes in intermediate goods prices to pass through to NEIG inflation.³ A simple reduced-form regression analysis, which also takes demand considerations into account, finds a somewhat longer time lag: around half a year for changes in

² See the box entitled “[Monitoring the exchange rate pass-through to inflation](#)”, *Economic Bulletin*, Issue 4, ECB, 2018.

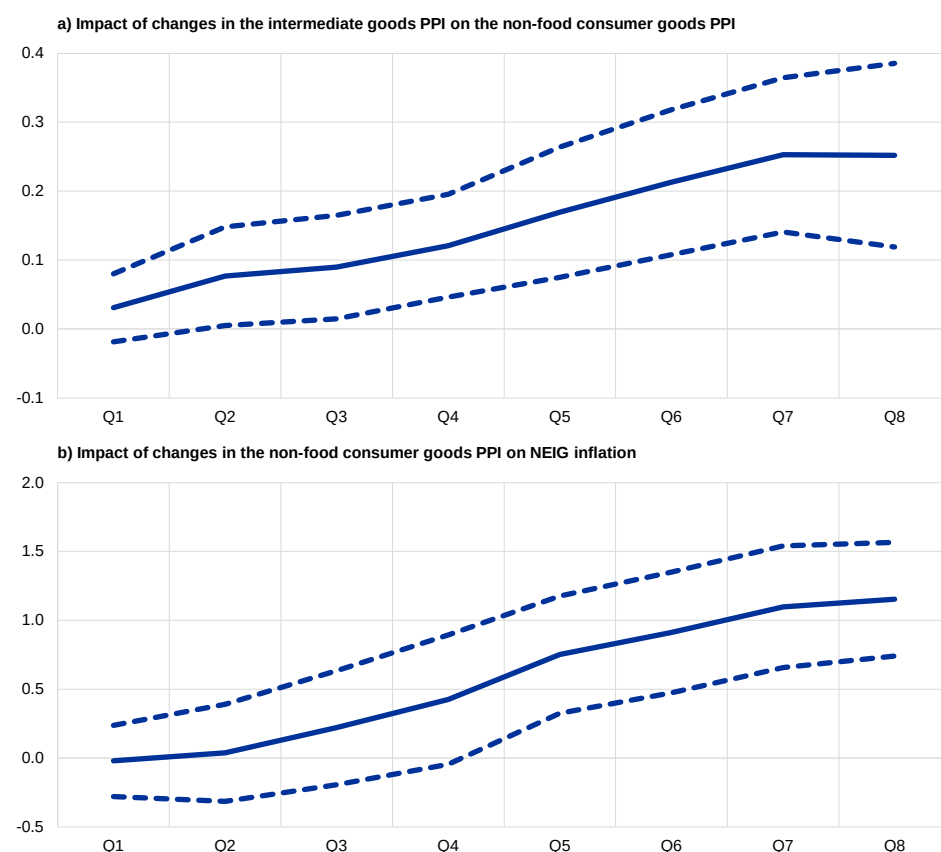
³ See also the box entitled “[What can recent developments in producer prices tell us about pipeline pressures?](#)”, *Economic Bulletin*, Issue 3, ECB, 2017.

intermediate goods prices to pass through to producer prices for non-food consumer goods (with a relatively low pass-through of around one-quarter) followed by at least another year and a half for the complete pass-through (close to one) of these pressures to NEIG inflation (Chart C).⁴

Chart C

Time profile for the impact of changes in producer price indices

(cumulated percentage impact after a 1% change in the shock variable with 95% confidence bands)



Sources: ECB calculations based on Eurostat data.

Notes: The dotted lines indicate 95% confidence bands. The horizontal axis shows quarters after the impact. The reduced form equation is estimated using the local projections method following Jordà, Ò., "Estimation and Inference of Impulse Responses by Local Projections", *American Economic Review*, Vol. 95, No 1, 2005, pp. 161-182. This method allows a time profile to be obtained for the impact of the variable of interest. The panel a regression equation includes the intermediate goods PPI (an autoregressive term), the consumer goods PPI and total manufacturing industrial production excluding energy and construction; the panel b regression equation includes NEIG (an autoregressive term), the non-food consumer goods PPI and the output gap. The estimation sample is 1999 to the fourth quarter of 2019, with all variables seasonally adjusted and lagged by one period. The output gap is in levels; all other variables are in log differences.

However, the pass-through is not automatic and is also likely to vary over time.

At each stage pricing decisions depend upon a range of other factors (including capacity utilisation, the stock of inventories, profit absorption and the competitive environment). It could well be, therefore, that a visible cost-push shock emerging at the early stage is absorbed along the various subsequent production and retail stages and no longer appears at the stage of final consumer prices. Using the time profile of

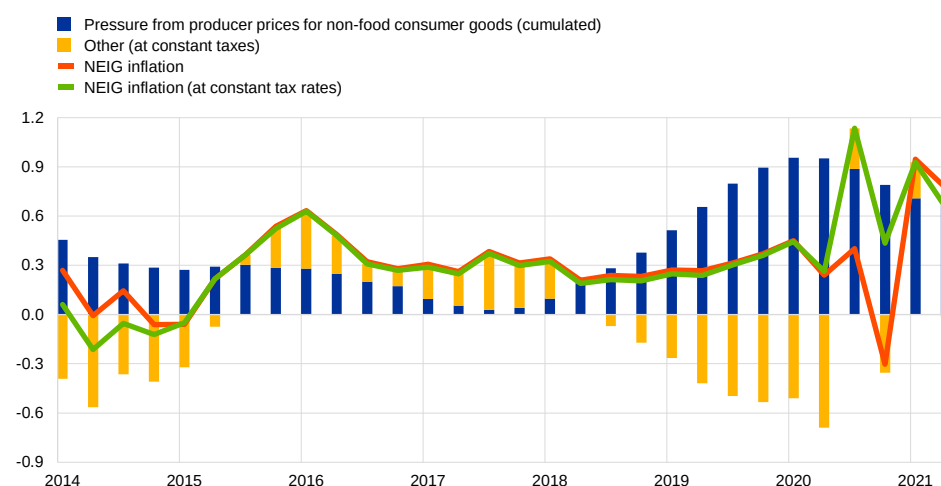
⁴ The general pattern of a relatively quick pass-through to producer prices for non-food consumer goods and a longer lag for the pass-through to final consumer prices (of around one year in total) is also supported by earlier ECB studies. See for example Landau, B. and Skudelny, F., "Pass-through of external shocks along the pricing chain – a panel estimation approach for the euro area", *Working Paper Series*, No 1104, ECB, Frankfurt am Main, November 2009.

the impact shown in Chart C, the cumulative upward pressures on NEIG resulting from producer price developments for non-food consumer goods over the last few years appear essentially to reflect the producer price developments up to 2019; thereafter, they have been partially offset by other factors (Chart D). The impact of the upward movements in producer price inflation in recent months is then yet to come. However, assessing this pass-through may be complicated by the recent strong volatility in NEIG inflation due to changes in sale periods in the summer of 2020 and first quarter of 2021. More generally, the unique situation related to the coronavirus (COVID-19) pandemic could imply some deviation from normal pass-through patterns, and does not exclude the possibility of a stronger than usual pass-through from rising input costs to consumer prices if, for instance, firms' margins are squeezed and consumers may have some pent-up demand and unexpected savings to finance it.⁵

Chart D

Cumulated pressure from producer price developments on NEIG

(annual percentage changes; percentage point contributions; quarterly data)



Sources: Eurostat and ECB calculations.

Notes: Effects based on the profile shown in Chart C, calculated using NEIG inflation at constant tax rates (to net out the changes resulting from e.g. the temporary VAT reduction in Germany in the second half of 2020). "Other" is calculated as the difference between NEIG inflation at constant tax rates and the contribution from the cumulated impact of changes in the non-food consumer goods PPI. The latest observations are for the second quarter of 2021, which for the non-food consumer goods PPI and NEIG inflation at constant tax rates reflects the average of April and May, and for NEIG inflation also includes the flash estimate for June.

Overall, even somewhat stronger developments in NEIG inflation would not lead to a substantial strengthening of underlying inflation developments in the euro area. NEIG inflation has tended to be relatively subdued in the euro area, averaging 0.6% from 1999 to 2019, compared with average HICP inflation excluding energy and food of 1.4% over the same period.⁶ While the pandemic has temporarily reduced the consumption of services relative to goods somewhat, underlying inflation dynamics continue to be predominantly driven by services inflation (with a weight of around two-thirds in the HICP excluding energy and food), for which wages, and not intermediate products or raw materials, represent the lion's share of input costs.

⁵ See also the box entitled "[COVID-19 and the increase in household savings: precautionary or forced?](#)", *Economic Bulletin*, Issue 6, ECB, 2020.

⁶ See also the box entitled "[What is behind the change in the gap between services price inflation and goods price inflation?](#)", *Economic Bulletin*, Issue 5, ECB, 2019.

The structural impact of the shift from defined benefits to defined contributions

Prepared by Linda Fache Rousová, Angelica Ghiselli, Maddalena Ghio and Benjamin Mosk

Retirement provision in euro area countries typically consists of three pillars: government sponsored pay-as-you-go plans (pillar 1), occupational (funded) pension schemes (pillar 2) and private pensions/life insurance (pillar 3). The latter two receive contributions from either employers or employees, providing an important supplement to pillar 1 in some euro area countries, notably the Netherlands, where occupational pension fund assets exceed 200% of GDP.

With over €10 trillion of total assets, the portfolio allocation of insurance corporations and occupational pension funds (ICPFs) can have a significant impact on financial markets. This box focuses on occupational pension funds and life insurers, as these play an important role in providing long term capital to the economy and contribute to the development of capital markets as a whole.¹ Of the two, the life insurance sector is larger, accounting for around 70% of assets under management.²

The secular decline in interest rates since the late 1980s could leave a lasting footprint on the structure of the financial system through ICPFs' move towards defined contribution (DC) products. In DC pension fund schemes and unit-linked life insurance products, returns are not guaranteed and the investment risk is borne by the policyholders. By contrast, the traditional type of ICPF products – defined benefit (DB) pension fund schemes and guaranteed life insurance products – promise fixed future pay-outs to policyholders.³ The present value of future pay-outs is calculated on the basis of discount rates, which are typically derived from market rates. Lower rates lead to higher present values, while increases in the present value of liabilities are usually only partially offset by increases in asset values. The decline in rates over the past decades poses challenges to ICPFs and may have contributed to their shift towards DC products (Chart A, panel a).⁴ This shift is likely to continue, notably as Dutch pension funds – the largest in the euro area – are expected to fully move to a

¹ See Scharfstein, D. S., “[Presidential Address: Pension Policy and the Financial System](#)”, *Journal of Finance*, Volume 73, Issue 4, 2018.

² According to the ECB's insurance corporations' and pension funds' balance sheet data, as of Q4 2020, the total assets held by euro area ICPFs amounted to €12.2 trillion, but this includes €1.3 trillion of assets held by non-life insurers and €0.7 trillion held by reinsurers, which are outside the scope of this box.

³ For simplicity, this box sometimes uses the terms DB and DC products to refer to non-unit-linked and unit-linked/index-linked life insurance products respectively. Similarly, no distinction is made between unit- and index-linked products and they are sometimes referred to as unit-linked products only.

⁴ The impact of declining interest rates on the ICPF sector is discussed in a number of sources including Holsboer, J., “[The Impact of Low Interest Rates on Insurers](#)”, *The Geneva Papers on Risk and Insurance - Issues and Practice*, Volume 25, 2000, pp. 38-58; Berdin, E., Kok, C., Mikkonen, K., Pancaro, C. and Vendrell Simon, J. M., “[Euro area insurers and the low interest rate environment](#)”, Special Feature B, *Financial Stability Review*, ECB, November 2015; European Systemic Risk Board, “[Lower for longer - macroprudential policy issues arising from the low interest rate environment](#)”, June 2021.

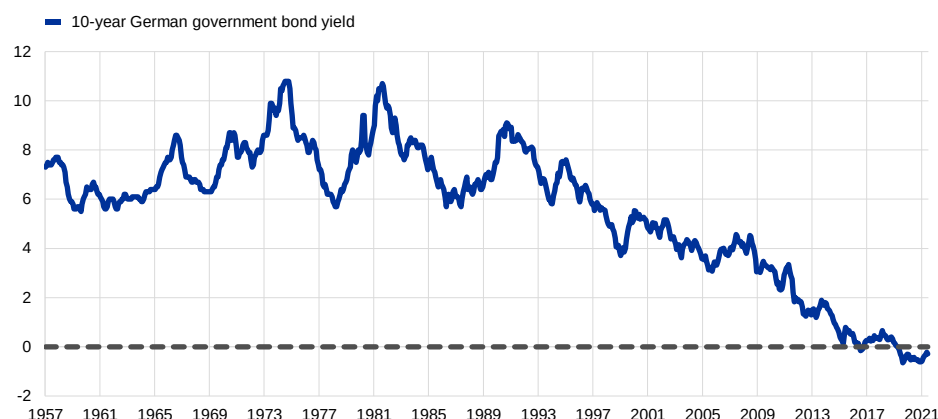
DC scheme by 2027 (striped area, Chart A, panel b).⁵ This box discusses the potential impact of such a transition on yield curves and the structure of the financial system.⁶

Chart A

Decline in interest rates since the mid-1980s; ICPF shift from DB to DC products

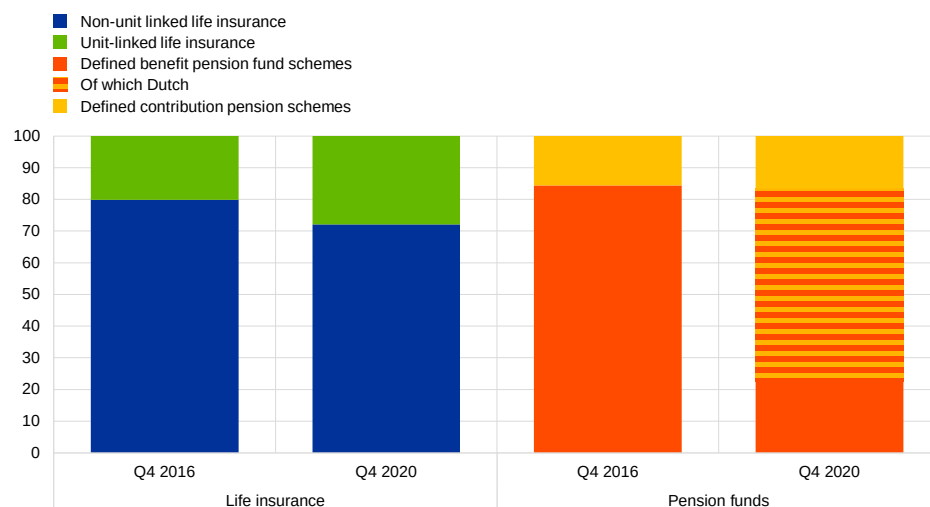
a) Interest rates

(percentages)



b) Size of DB and DC liabilities

(percentages)



Source: OECD (2021), Main Economic Indicators - complete database; European Insurance and Occupational Pensions Authority, pension fund balance sheet data, ECB calculations.

Notes: The striped part refers to Dutch DB schemes, which are expected to fully move to DC schemes by 2027. Hybrid pension products are included under DC products.

ICPFs with DB products on their balance sheets are exposed to interest rate risk owing to the negative duration gap. In DB products, ICPF receive periodic payments (premia/contributions) from households and invest them in assets (e.g.

⁵ See [Parliamentary Paper 32043 No 457 on the Future of the Pension System](#) (in Dutch), 5 June 2019. More structure was given to the plan in 2020. See [Parliamentary Letter on the Implementation of the Pension Agreement](#) (in Dutch), 6 July 2020.

⁶ The potential impact is considered based on all other things being equal, i.e. regardless of other developments such as the phasing out of transitional measures under Solvency II or possible changes to regulatory curves. Some of these developments may provide further incentives to shift towards DC products at an accelerated pace.

bonds), while policyholders are promised pre-defined pay-outs (benefits) at a later point in time. The present value of both ICPF assets and liabilities increases when interest rates (discount rates) fall. This sensitivity to interest rates, also called duration, tends to be greater on the liability side than on the asset side, resulting in a negative “duration gap”. Therefore, the financial position of ICPFs with a negative duration gap weakens when interest rates fall along the maturity spectrum.

If ICPFs want to reduce their negative duration gap, they can increase the duration of their assets.⁷ This can be done through purchases of long-duration bonds or by entering into interest rate swaps (swap overlay) whereby they receive a fixed rate and pay a floating rate.⁸ As a result, ICPFs are major players in the market for both long-duration government bonds and receive-fixed interest rate swaps. Specifically, at the longer end of the maturity spectrum, ICPFs’ holdings account for up to two-thirds of all euro area holdings of government bonds and almost half of the receive-fixed interest rate swaps, the majority of which are held by Dutch pension funds (Chart B).

⁷ ICPFs’ portfolio allocation decisions take into account many factors, including interest rate risk. To boost investment income, ICPFs tend to increase their allocations to riskier assets, including equities.

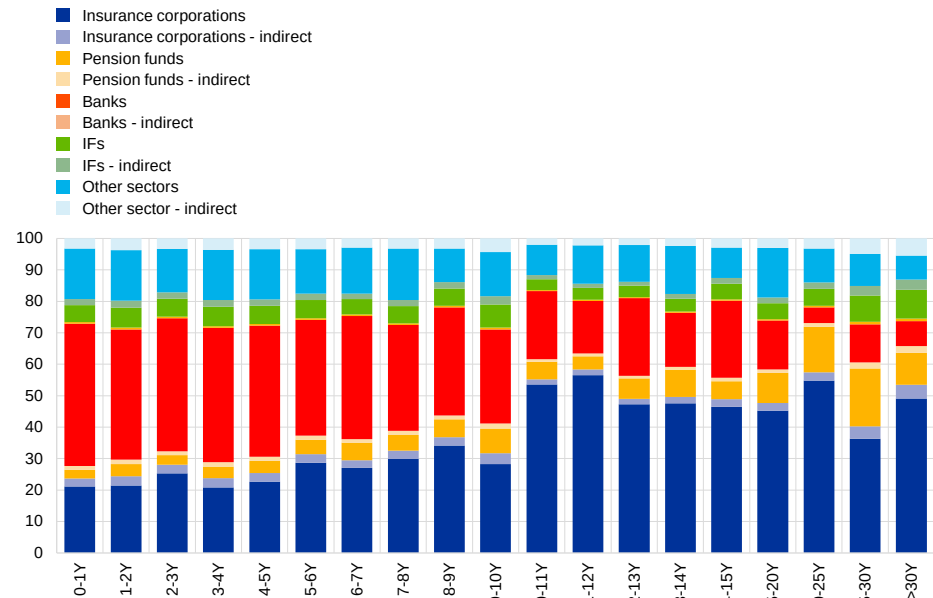
⁸ The use of interest rate swaps does not require an upfront investment and is particularly attractive for underfunded schemes. See Klingler, S. and Sundaresan, S., “[An Explanation of Negative Swap Spreads: Demand for Duration from Underfunded Pension Plans](#)”, *BIS Working Papers*, No 705, 2018.

Chart B

ICPFs in long maturity segments of bond and interest rate swap markets

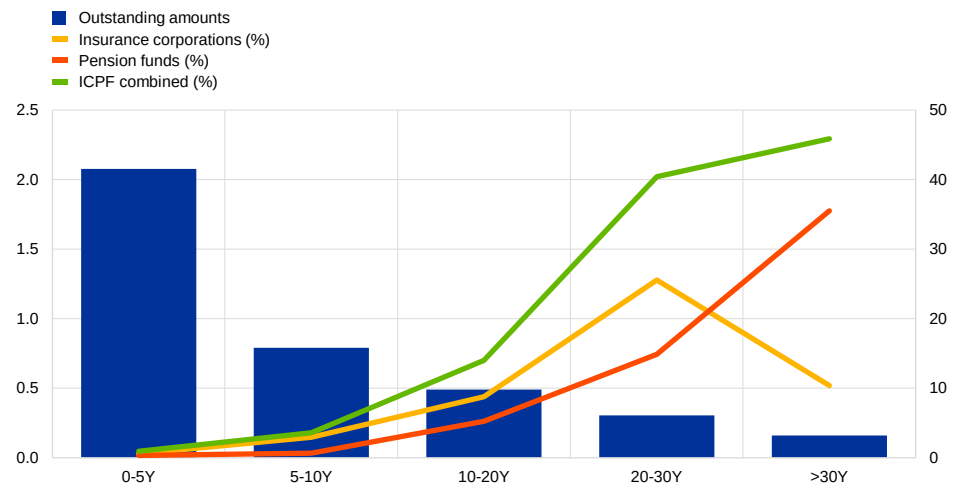
a) Euro area government bond holdings: breakdown by sector and maturity buckets

(percentages; Q4 2020)



b) Euro area interest rate swap market shares by maturity buckets

(EUR trillions; percentages; Q4 2020)



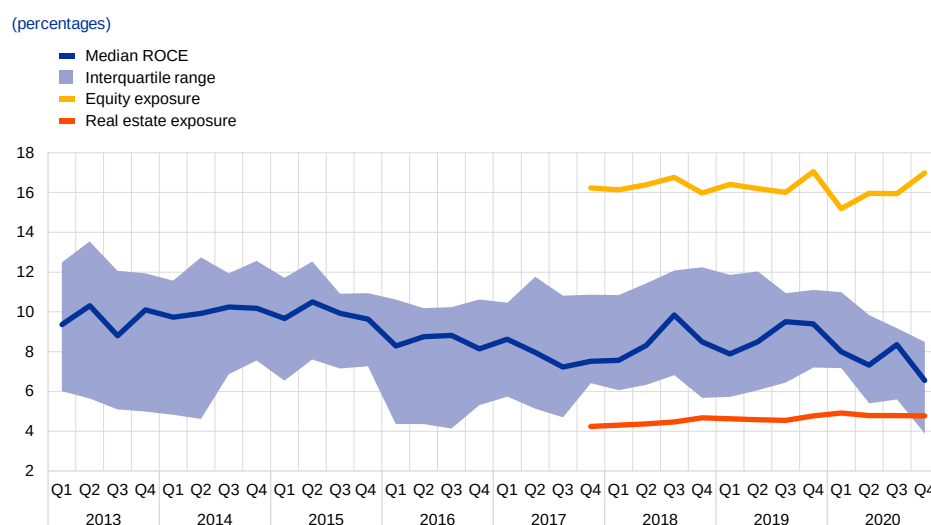
Source: EMIR data, Securities Holdings Statistics, ECB calculations.

Notes: Panel a): Foreign and Eurosystem holdings are not included. Indirect holdings are estimated as the holdings of euro area investment fund (IF) shares, through which investment is channelled into euro area government bonds. The portfolio allocation of government bonds is based on an overall portfolio allocation of the euro area investment fund sector, owing to the unavailability of granular data for individual euro area sectors. Panel b): The reference date is 18 December 2020. Data reflect the notional outstanding for receive-fixed interest rate swaps. Exposures are netted for each institution for each maturity bucket. Central counterparties are excluded.

ICPFs can also accept a certain amount of interest rate risk, as closing the duration gap could come at the expense of profitability. ICs have increased their investments in riskier asset classes such as equities, real estate and alternative assets,⁹ which can boost their investment income. Insurers' median return on common equity has only declined mildly in recent years, despite ICs' challenges in the current environment, and continues to hover around 8% (Chart C). More recently, the positive sentiment on stock markets that started to resurface in November 2020 boosted insurance stock prices.¹⁰

Chart C

Insurers' return on common equity and exposures to riskier asset classes



Source: Bloomberg L.P., European Insurance and Occupational Pensions Authority, ECB calculations.

Notes: The return on common equity (ROCE) is based on a sample of up to 25 large euro area insurers offering life and non-life products. Equity and real estate exposures consider the whole euro area insurance sector. Exposures are in percentage of total assets and are available only from Q4 2017 due to data availability limitation from the EIOPA exposure data.

Alternatively, ICPFs can reduce the negative duration gap by changing their liability structure. In particular, they can increase the share of products with lower or no guaranteed returns – such as in the case of DC pension schemes and unit-linked insurance products. Insurance corporations offered more of these products and there has been a gradual trend in this direction (Chart A, panel b), whereby the stock of liabilities adjusts more slowly than new premiums written (which is a flow variable).¹¹ Occupational pension funds can also adapt, but less flexibly, since the nature of a pension system is often anchored in law.¹²

The largest occupational pension fund system in the euro area – the Dutch pension fund system – is expected to transition to a DC scheme. The Dutch

⁹ Fache Rousová, L. and Giuzio, M., “Insurers’ investment in alternative assets”, Box 9, *Financial Stability Review*, ECB, May 2019.

¹⁰ Chapter 4, *Financial Stability Review*, ECB, May 2021.

¹¹ See Bank for International Settlements, “Fixed income strategies of insurance companies and pension funds”, *CGFS Papers*, No 44, July 2011. See also European Insurance and Occupational Pensions Authority (EIOPA), “Impact of Ultra Low Yields on the Insurance Sector, Including First Effects of Covid-19 Crisis”, 17 July 2020.

¹² In addition to a move from DB to DC products, pension funds can also be mandated or instructed by regulatory bodies to increase their premia/contributions, suspend inflation indexation or cut benefits.

pension fund sector currently operates under a DB scheme and is by far the largest in the euro area, with over €1.7 trillion of assets under management. In 2019, a landmark agreement for a new system was reached. The plan stipulates that the system will no longer be based on defined benefits. The new system is expected to enter into force by 2023, with a transition period ending in 2027. With the transition of Dutch pension funds, the share of DC pension fund schemes in the euro area is expected to increase from around 17% to 77% (Chart A, panel b).

The DB to DC transition can alter the demand for certain asset classes as the two schemes have different risk and investment profiles. Most importantly, certain regulatory constraints are more binding for DB schemes, and this affects the portfolio allocation.¹³ DB schemes face a lower bound on their expected returns through statutory minimum funding ratios, and face interest rate risk exposure through their liabilities. This offers them more incentive to reduce negative duration gaps.¹⁴ Therefore, fixed income portfolios linked to DB products tend to have longer maturities (Chart D, panel a). In addition, portfolios tied to DB products are underweight equities, while the opposite is true of portfolios related to DC products (Chart D, panel b). Portfolios linked to DC products also show a strikingly large allocation to investment fund shares.

¹³ In addition, compared to individual households, ICPFs benefit from efficiencies due to the pooling of risks across and within generations, but this risk pooling is possibly less efficient for DC products. See also Bodie, Z., Marcus, A.J. and Merton, R.C., “[Defined Benefit versus Defined Contribution Pension Plans: What are the Real Trade-offs?](#)”, in Bodie, Z., Shoven, J.B. and Wise, D.A., eds., “Pensions in the U.S. Economy”, *University of Chicago Press*, 1988.

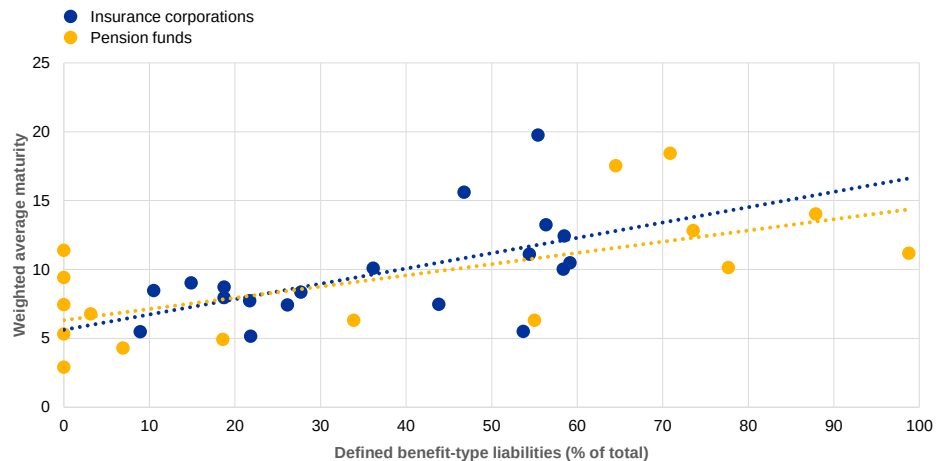
¹⁴ Incentives of this kind are particularly present for DB schemes and insurers operating under market-based regimes, where the valuation of assets and liabilities is linked to market rates.

Chart D

DB-type products are overweight long-term debt securities; DC-type products are heavily invested in equity and investment fund shares

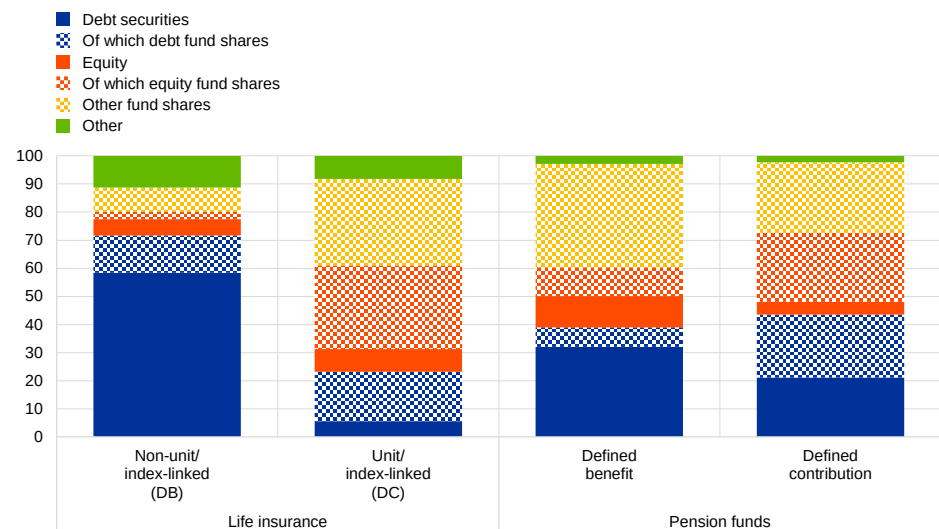
a) Maturity of ICPFs' government bond portfolios and share of DB products – country level

(percentages; years; Q4 2020)



b) ICPFs' portfolio mix by type of product: DB versus DC products

(percentages; Q4 2020)



Source: EIOPA data, Securities Holdings Statistics, insurance company and pension fund balance sheet data, ECB calculations.

Notes: Panel a): Defined benefit type liabilities for insurance corporations include only non-unit-linked life insurance as a percentage of the total liabilities. Panel b): Asset class exposures are calculated using the look-through approach. Specifically, debt securities include government bonds and corporate bonds. Other fund shares include all shares that are not debt or equity fund shares.

In particular, a shift towards DC products could structurally lower the demand for long-duration bonds and swaps. According to the preferred-habitat model,¹⁵ the preference of market participants for certain maturity segments has an impact on the shape of the yield curve. Empirical evidence provides support for ICPFs' preferred-habitat demand for long-duration bonds. First, spreads between 30-year

¹⁵ For a term structure implementation of the preferred-habitat model, see Culbertson, J.M., "The Term Structure of Interest Rates," *The Quarterly Journal of Economics*, 1957, Volume 71, Issue 4, pp. 485-517; Modigliani, F. and Sutch, R., "Innovations in Interest Rate Policy" *The American Economic Review*, Volume 56, No 1/2, 1966, pp. 178-197; Vayanos, D. and Vila, J-L., "A Preferred-Habitat Model of the Term Structure of Interest Rates", *Econometrica*, Volume 89, Issue 1, 2021, pp. 77-112.

and 10-year government bond yields were found to be negatively related to the ratio of ICPFs' assets to GDP.¹⁶ Second, the impact of past changes to ICPF regulatory regimes further points to this preferred-habitat demand. The incentive to adopt duration-matching strategies is stronger when they are valued under market-based reference rates.¹⁷ Shifts towards market-based reference rates tended to be associated with the flattening and inversions of yield curves, as was the case with the UK pension fund reform of 2004.¹⁸ Conversely, temporary decoupling between market rates and reference rates led to sell-offs in the underlying market. This empirical evidence suggests that a shift towards DC products could lead to yield curve steepening.

The dynamics of yield curves can also be affected. An ICPF's negative duration gap typically widens when interest rates decline owing to the negative convexity of the balance sheet. Negative convexity arises mostly due to a size effect: the amount of interest-bearing assets tends to be a fraction of the total liabilities. Moreover, the (longer) duration of the liabilities reacts more to a decline in rates than the (shorter) duration of the assets. To counter the widening of the duration gap, ICPFs can further increase their exposure to long-duration bonds and swaps when interest rates decline. This "hedging demand" can effectively amplify shocks to rates.¹⁹ In a world of DC products, this amplification mechanism could become weaker.

A shift towards DC products could also boost equity financing and support further growth of the investment fund sector. The larger equity allocation for unit-linked products suggests that a shift towards DC products could increase the demand for equities. Such a shift would be in line with the capital markets union 2020 action plan, which aims to encourage institutional investors to invest more in equity financing. Furthermore, a continued shift towards unit-linked products could bolster the importance of the investment fund sector and increase the interconnectedness between non-bank financial institutions.

The structural change is also shifting investment risk from ICPFs to households. Under DC schemes, the build-up of retirement savings depends more directly on the performance of markets and ultimately on the performance of the economy. Therefore, households' retirement savings can become more uncertain, and retirement income could be more unequally distributed.²⁰

¹⁶ See Greenwood, R and Vissing-Jorgensen, A., "[The Impact of Pensions and Insurance on Global Yield Curves](#)", *Harvard Business School*, Working Paper 18-109, 2018.

¹⁷ Under fully market-based reference rates, an ICPF could theoretically eliminate its interest rate risk by duplicating the maturity structure of its liabilities by investing in the market instruments that form the constituents of the reference curve.

¹⁸ See Greenwood, R. and Vayanos, D., "[Price Pressure in the Government Bond Market](#)", *The American Economic Review*, Volume 100, No 2, 2010.

¹⁹ Evidence from the German insurance sector is found to be consistent with such an amplification mechanism. See Domanski, D., Hyun Song Shin and Sushko, V., "[The Hunt for Duration: Not Waving but Drowning?](#)", *IMF Economic Review*, Volume 65, 2017, pp. 113-153.

²⁰ Piirits, M. and Võrk, A., "[The effects on intra-generational inequality of introducing a funded pension scheme: A microsimulation analysis for Estonia](#)", *International Social Security Review*, Volume 72, Issue 1, 2019, pp. 33-57.

Articles

1 An overview of the ECB's monetary policy strategy

1 Introduction

The new monetary policy strategy of the European Central Bank (ECB) was published on 8 July 2021. While the mandate is conferred upon the ECB by the Treaties, the ECB has to devise its monetary policy strategy. This strategy sets out how to achieve the primary objective of maintaining price stability in the euro area, referring to an appropriate set of monetary policy instruments, indicators and intermediate targets, as well as how to take into account other considerations without prejudice to price stability. A monetary policy strategy serves two main purposes: first, it provides policymakers with a coherent analytical framework that maps actual or expected economic developments into policy decisions; second, it serves as a vehicle for communicating with the public. The ECB's monetary policy strategy was last reviewed in 2003 and the changes that have since occurred to the economic and financial backdrop as well as to the predominant policy challenges warranted an update. This overview details the rationale and thinking behind the strategy and its main elements.

2 The economic backdrop and the past inflation narrative

The ECB's original monetary policy strategy, which was adopted in 1998 and reviewed in 2003, consisted of three main elements. First, it was based on a *double-key formulation of the price stability objective*, comprising a quantitative definition of price stability as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) of below two per cent, and, within that definition, the aim of maintaining inflation rates for the euro area “below, but close to, two per cent”; second, it had a *medium-term orientation* in view of the time lags in the effects of monetary policy on inflation; and third, the risks to price stability were analysed on the basis of *two pillars* – the economic analysis and the monetary analysis – with the information being cross-checked to form a unified overall judgement.

Since the ECB's previous monetary policy strategy review in 2003, the world has seen major changes that present central banks, including the ECB, with numerous new challenges. Of direct relevance for the conduct of monetary policy is the fact that structural developments have lowered the equilibrium real rate of interest – the interest rate consistent with inflation at its target and where the economy is operating at its potential – in the euro area (and globally).¹ There is broad consensus

¹ The equilibrium real interest rate is partly the result of policy choices. For example, the impact of demographics on the equilibrium real interest rate depends on policies such as the statutory retirement age and measures to boost the labour force participation rate.

that a decline in productivity growth, demographic factors and persistently higher demand for safe and liquid assets in the wake of the global financial crisis have contributed to lowering the real equilibrium interest rate, although estimates remain subject to uncertainty. Combined with persistently low rates of inflation, the fall in the equilibrium real interest rate has increased the incidence and duration of episodes in which nominal policy interest rates are close to the effective lower bound, with the current episode lasting longer than ten years. This situation provides a very different starting point compared with 2003, when the equilibrium real rate of interest was estimated to have been significantly higher than today.

The decline in the equilibrium real interest rate has reduced the space available for monetary easing by conventional interest rate policy in the face of disinflationary shocks. This reinforces the value of maintaining an inflation buffer over the medium term, so that the equilibrium nominal interest rate is sufficiently far above the effective lower bound to permit the active use of interest rate policy in response to adverse developments. In proximity to the effective lower bound, interest rate policy is unlikely to be sufficient to preserve price stability if disinflationary shocks occur, requiring the deployment of additional policy instruments (see also Section 3 for a detailed discussion of the implications).

In addition to the decline in the equilibrium real interest rate, the world has changed in other ways that have influenced the euro area economy and the environment in which monetary policy operates. The euro area has been hit by *several major shocks*, such as the global financial and sovereign debt crises, and more recently the coronavirus (COVID-19) pandemic, which have caused economic downturns and put downward pressure on inflation, thus necessitating substantial policy responses. *Globalisation and digitalisation* influence the structure of goods, services and labour markets and have a direct effect on prices that – when interacting with other factors, including constraints on monetary policy – may affect inflation beyond the short term. *Evolving financial structures*, such as the rise in financial intermediation via the non-bank sector, have altered the transmission of monetary policy. The *institutional architecture* of the euro area has also undergone substantial reform since 2003 but remains incomplete. *Climate change* – the greatest challenge facing humankind this century – and related mitigation policies alter the structure and dynamics of the economy and the financial system, thereby affecting price stability. The *communications* landscape has also changed, with today's landscape characterised by a declining reach of traditional (print) media; more fragmented, polarised and activist audiences; the rising importance of direct channels of communication such as social media; and increasing public demand for scrutiny and transparency.

A robust new strategy hinges on a thorough understanding of why inflation has been persistently low – and below the ECB's inflation aim – since 2013. The evidence indicates that a combination of interconnected factors is required to explain persistently low inflation. During the first decade of Economic and Monetary Union (EMU), shocks to inflation were predominantly upside shocks. Over the last decade, there has been a shift towards disinflationary shocks during and after the global financial crisis. *Cyclical drivers*, notably the disinflationary impact of the 2009 and

2012 twin recessions, have interacted with ongoing *structural trends* (such as globalisation, digitalisation and demographic factors) in a context in which the effective lower bound means that disinflationary shocks cannot easily be offset by interest rate policy. The persistence of low inflation has also contributed to lower *inflation expectations*, which may have become less well anchored to the ECB's inflation aim.

The deployment of unconventional monetary policy measures, especially since 2014, has made a significant contribution to countering disinflationary pressures, dispelling deflation concerns and averting a more pronounced downward drift in inflation expectations. As part of the strategy review, an extensive assessment has been conducted of the ECB's set of unconventional monetary instruments, which found that each of the instruments (including negative interest rates, forward guidance, asset purchases and longer-term refinancing operations) has been effective in raising output, employment and inflation, and that the different instruments have reinforced each other. The Governing Council assesses that these measures have been proportionate, taking into account potential side effects, for example on the financial sector and inequality. The proximity of interest rates to the effective lower bound and uncertainty about the effectiveness and side effects of other instruments have restricted the scale and speed of the monetary policy response to disinflationary shocks, contributing to the persistence of inflation rates below the inflation aim. Possible ambiguity about the level of the inflation aim under the ECB's *double-key formulation of the objective* and a perception of the objective as being asymmetric may have further contributed to the persistence of low inflation by insufficiently anchoring inflation expectations at levels below, but close to, two per cent. Finally, *fiscal policies*, on the back of debt sustainability concerns, were a drag on growth and inflation in the wake of the financial crisis.

3 The new ECB monetary policy strategy

3.1 The price stability objective

The strategy review takes the ECB's mandate as given. The Governing Council is bound by the ECB's primary mandate of price stability as enshrined in Article 127(1) of the Treaty on the Functioning of the European Union. Since the Treaty does not provide a precise definition of what is meant by maintaining price stability, it is the ECB's monetary policy strategy that defines how the Governing Council implements this mandate, including the choice of the price index, and how price stability is quantified. Such quantification provides a yardstick for the ECB's accountability and helps to achieve price stability by anchoring inflation expectations.

Measurement of the price index

The headline HICP remains the appropriate index for quantifying the price stability objective for the euro area and will be retained as the price index used

to measure euro area inflation for monetary policy purposes. The assessment of the suitability of the HICP is based on four criteria: *timeliness*; *reliability* (e.g. infrequent revisions); *comparability* (over time and across countries); and *credibility*.² Since 2003 the quality of the HICP as an inflation measure for the euro area has been significantly improved by Eurostat and the national statistical offices of the EU Member States. These improvements include the introduction of annual updates of expenditure weights, better representation of seasonal items and the provision of flash estimates for all Member States. While the price stability objective is quantified in terms of headline inflation, which is the broadest measure of the household consumption basket, the Governing Council will continue to monitor a wide set of price indicators, including measures of underlying inflation that exclude certain volatile components. Such measures have proven useful as signals of how inflation is likely to evolve over the medium-term horizon.

To further enhance the representativeness of the HICP and its cross-country comparability, the Governing Council has decided to recommend a roadmap to include owner-occupied housing (OOH) in the HICP. The Governing Council very much welcomes the European Statistical System's related work. Although costs related to shelter account for a large part of household expenditure, the HICP currently only partially includes the housing service costs of homeowners associated with owning, maintaining and living in their own home. In addition to practical measurement issues, it is also challenging to fully align these costs with the conceptual basis of the HICP.³ The ECB considers the net acquisition approach to be the preferred method for including OOH, based on the transaction prices that households pay for the acquisition of homes. Since the OOH price index measured with the net acquisition approach currently includes an element of investment, the ECB supports further research projects on optimal measurement methods. These should also aim at better isolating the consumption component from the investment component, with the former being the relevant one for monetary policy.

The roadmap foresees four main stages for moving to an HICP including OOH costs as the main index for monetary policy purposes. The first stage envisages the construction of an analytical index for internal purposes, which includes OOH with approximated weights. In parallel, the necessary legal work will be started and Eurostat intends to carry out further work on the statistical compilation of OOH weights, with a view to publishing in a second stage – likely in 2023 – an experimental quarterly HICP including OOH costs. In a third stage, likely to be completed by 2026, an official quarterly index will become available. In the fourth stage the aim would be to include OOH costs in the HICP at a monthly frequency and in a timely manner, which could pave the way for moving to an HICP including OOH costs as the main index for monetary policy purposes. At this point in time it is too early to provide a precise timetable for the fourth stage.

² These criteria were also applied in the 2003 strategy review, see Issing, O. (ed.), *Background Studies for the ECB's Evaluation of its Monetary Policy Strategy*, ECB, 2003, p.12 ff.

³ The HICP only captures changes in the prices of goods and services which, when purchased, generate monetary transactions for consumption purposes. OOH generates monetary transactions only when dwellings are built and sold. Moreover, it is difficult to precisely identify whether a dwelling is purchased for consumption or investment purposes.

During the transition period the main reference index for monetary policy will remain the current HICP. This transition period will last until the OOH index has reached the timeliness and quality standards necessary for full integration into the monthly HICP index. Nevertheless, during the transition period the quarterly standalone OOH index will play an important supplementary role in assessing the impact of housing costs on inflation and will thus inform the Governing Council's monetary policy assessments.

A quantitative inflation target

Maintaining the ECB's primary objective of price stability can best be achieved by aiming for a specific quantitative target. While price stability can be viewed as a state in which changes in the general level of prices need not be factored into consumption and investment decisions, this general criterion requires a numerical definition to guide the conduct of monetary policy. At this juncture the Governing Council considers that price stability is best maintained by aiming for a two per cent inflation target over the medium term. The formulation of the price stability objective in terms of a specific quantitative target replaces the previous double-key formulation (which featured a definition of price stability in terms of inflation within a range from zero to two per cent and, within this definition, an inflation aim of below, but close to, two per cent). The new target is simple, clear and easy to communicate, and is thus expected to contribute to a more solid anchoring of longer-term inflation expectations.

Target level of two per cent

An inflation target of two per cent underlines the ECB's commitment to providing an adequate safety margin to guard against the risk of deflation and protect the effectiveness of monetary policy in responding to disinflationary shocks. This risk is more acute in the face of an *increased prevalence and duration of lower bound episodes* compared with the conditions prevailing in 2003, primarily owing to the fall in the equilibrium real interest rate. The level of the equilibrium real interest rate and the level of the inflation target jointly determine the available policy space in terms of nominal interest rates. All else being equal, a decline in the equilibrium real interest rate reduces the available policy space.

An inflation target of two per cent balances a range of considerations.

Simulation analysis shows that an inflation target of two per cent has good properties in terms of stabilising the average level of inflation over the long run at the target, keeping the variance of inflation contained and limiting the frequency of hitting the lower bound. At the same time, a two per cent target seeks to mitigate the welfare costs of higher inflation, which increase non-linearly with the level of the target. This explains the choice of a target level that is only slightly higher – at two per cent – than the inflation aim set in 2003. Moreover, this choice also reflects the fact that the ECB has adapted its monetary policy toolkit over time to partially overcome the constraints posed by the lower bound via the deployment of new monetary policy tools that have proven effective in lifting inflation (see Section 3.2).

Three additional factors, which were present already in 2003 and which have remained broadly unchanged since then, call for a sufficient inflation buffer.

First, an inflation buffer allows for a *smoother adjustment of macroeconomic imbalances across euro area countries*, avoiding inflation in individual countries persistently falling into negative territory. Second, by taking account of *downward nominal wage rigidities*, an inflation buffer reduces the risk of macroeconomic downturns being predominantly reflected in an excessive rise in unemployment. Third, such a buffer allows for the presence of *measurement bias* in the HICP, with a positive measurement bias implying that the “true” rate of inflation is lower than the measured level.

Symmetry of the inflation target

The new strategy implements the price stability objective in terms of an unambiguous and symmetric target. The previous double-key formulation of the price stability objective was successful in anchoring inflation expectations at levels consistent with the Governing Council’s definition of price stability at the time of the introduction of the euro, when the ECB had to establish its credibility in a context where the main concern related to inflation being too high. Later on, however, this double-key formulation may have led to possible ambiguity about the level of the inflation aim and a perception of the aim being asymmetric, which – in proximity to the effective lower bound – may have contributed to the low-inflation environment.

Symmetry in the inflation target means that the Governing Council considers negative and positive deviations of inflation from the target to be equally undesirable. The symmetric two per cent inflation target provides a clear anchor for longer-term inflation expectations, which is essential for maintaining price stability. Temporary and moderate fluctuations of actual inflation both above and below the medium-term target of two per cent are unavoidable; however, large, sustained deviations can destabilise longer-term inflation expectations. This holds for inflation that is too high as well as inflation that is too low. Accordingly, it is important for monetary policy to respond forcefully to large, sustained deviations of inflation from the target in either direction. The effective lower bound and the low equilibrium real interest rate – if persistent – mean that the risk of prolonged phases of below-target inflation outcomes is especially pronounced (the implications of this for the ECB’s policy response are discussed in Section 3.2). Anchoring the commitment to symmetry explicitly in the new strategic framework removes any remaining perception of ambiguity in the Governing Council’s aspirations. In particular, two per cent should not be interpreted as a ceiling.

The medium-term orientation

The new strategy confirms the medium-term orientation of monetary policy, which has served the Governing Council well in responding flexibly to economic shocks. The medium-term orientation is important to account for *uncertainties* in the inflation process and the transmission mechanism, so as to

recognise the imperfect control of inflation by monetary policy in the short run, owing to *variable transmission lags* to the economy and inflation. As different types of shock may move inflation and real economic activity in the same direction (as in the case of demand shocks) or create a temporary trade-off (as in the case of supply shocks), the medium-term orientation also provides the *policy flexibility* to assess the origin of shocks and look through temporary shocks that may dissipate of their own accord, thus *avoiding unnecessary volatility* in activity and employment.

A medium-term orientation allows the Governing Council to cater in its monetary policy decisions for other considerations relevant to the pursuit of price stability (see also Section 3.3). For example, the medium-term orientation provides flexibility to take account of *employment* in response to economic shocks, giving rise to a temporary trade-off between short-term employment and inflation stabilisation without endangering medium-term price stability. It also allows the ECB to take account of *financial stability*, where appropriate, in view of the interdependence of price stability and financial stability. The use of such flexibility could also be the result of a careful proportionality assessment of the appropriate policy measures (as explained below).

Proportionality assessment as an integral part of monetary policy decisions

Each monetary policy decision by the Governing Council is based on an assessment of the monetary policy stance and the choice and design of instruments. The ECB's assessment of its *monetary policy stance* determines whether monetary policy is contributing to economic, financial and monetary developments in a way that maintains price stability over the medium term. The appropriate monetary policy stance is delivered via *the choice, design and calibration of instruments*, both individually and in combination.

In making monetary policy decisions, the Governing Council systematically assesses the proportionality of its measures. This assessment includes an analysis of the *benefits* and the possible *side effects* of monetary policy measures, their *interaction* and their *balance over time*. The assessment of the benefits applies to the transmission to financing conditions as well as to the intended effect on inflation, while the assessment of possible side effects relates to the unintended effects on the real economy and on the financial system. The proportionality assessment takes into account the uncertainty about the effectiveness and side effects of policy instruments, as well as the risks of a de-anchoring of longer-term inflation expectations from the two per cent target. The proportionality assessment is particularly important in the light of the use of monetary policy instruments other than the standard policy rates. The result of this assessment may affect both the intensity with which these measures are employed and their design, which can be calibrated to limit side effects (for example via the exclusion of household mortgages in the targeted longer-term refinancing operations) or to counteract undesirable side effects (such as through the introduction of a two-tier system for remunerating excess liquidity holdings).

3.2 Monetary policy implications of the effective lower bound

New monetary policy instruments in the ECB's toolkit

Since the equilibrium real interest rate will likely remain at low levels, it is prudent for monetary policy to factor in the effective lower bound constraint on nominal interest rates. Since the time of the 2003 review, the equilibrium real interest rate in the euro area has fallen significantly. Current market expectations suggest that the rate will remain low over the next decade. The ECB, like other major central banks, has had to find new ways beyond conventional interest rate policy to adjust the policy stance in order to counter the deflationary bias induced by the effective lower bound. Episodes characterised by policy rates in proximity to the effective lower bound can arise either from a low equilibrium real interest rate or from large and persistent disinflationary shocks that have driven down interest rates, or from a combination of the two factors. An additional complication specific to the euro area has been the fragmentation experienced following the sovereign debt crisis, which impaired the monetary policy transmission mechanism and – if left unaddressed – would have exacerbated downside risks to price stability.

The monetary policy instruments deployed by the ECB since the financial crisis have proven effective in countering disinflationary pressures and will remain an integral part of the ECB's toolkit in situations close to the effective lower bound. The primary monetary policy instrument is the set of ECB policy rates. Together with the extension of interest rate space into negative territory, the use of additional instruments such as forward guidance, asset purchases and longer-term refinancing operations will – as it has in the past – depend on the specific context and be calibrated with a view to reaching the ECB's inflation target in the medium term. Since the effective lower bound on interest rates is likely to continue to be an occasionally binding constraint in the future, these additional instruments will continue to play a role. They add to the policy space, although not unboundedly. At the same time, the Governing Council recognises the need to limit possible side effects of the new policy instruments and therefore remains committed to continuing to perform careful proportionality assessments and to adapting the design of measures related to these instruments with a view to minimising side effects, without compromising price stability.

Taking account of the asymmetry induced by the effective lower bound

The effective lower bound on nominal interest rates constrains the ability of conventional interest rate policy to offset disinflationary shocks. While central banks can, at least in principle, raise nominal interest rates without limits, there is only limited space to lower rates into negative territory, owing to the lower bound on cash and the possible existence of a state-contingent reversal rate at which interest rate cuts lose effectiveness. This limited ability to lower rates, if left unaddressed, will result

in persistent downward deviations of inflation from the target, in particular when the economy is repeatedly hit by disinflationary shocks. This could lead inflation expectations to settle below the central bank's target rate, and this risk is especially high if the inflation target is perceived to be a ceiling. Forward guidance, longer-term refinancing operations, negative interest rates and asset purchases have helped to partially overcome the constraints induced by the lower bound and will continue to be used as appropriate. The Governing Council will continue to respond flexibly to new challenges as they arise and consider new policy instruments, if proportionate and as needed, in the pursuit of its inflation target.

The commitment to a symmetric inflation target requires especially forceful or persistent monetary policy action when the economy is close to the effective lower bound, to avoid negative deviations from the inflation target becoming entrenched. An especially forceful or persistent response to negative deviations is warranted by the need to support the anchoring of longer-term inflation expectations at two per cent, which helps to maintain price stability over the medium term. This implies that faced with large adverse shocks the ECB's policy response will, as appropriate and based on a careful proportionality analysis, include an especially forceful use of its monetary policy instruments. In addition, closer to the effective lower bound, it may also call for a more persistent use of these instruments. This may also imply a transitory period in which inflation is moderately above target.

The stabilising role of fiscal and other policies

Fiscal and other policies are important for macroeconomic stabilisation, especially in the proximity of the effective lower bound. Countercyclical fiscal policy requires determined action during large recessions, but it also crucially requires the rebuilding of buffers once the economy is firmly back on track, so as to ensure debt sustainability. By stabilising the economy in large recessions, while ensuring debt sustainability, fiscal policy also makes its best contribution to price stability. By contributing to macroeconomic stabilisation, countercyclical fiscal policy amplifies the effectiveness of monetary policy. While in normal times the stabilisation role of fiscal policy can be largely confined to the operation of automatic stabilisers, countercyclical discretionary fiscal policy is important in times of crisis and especially in proximity to the lower bound. First, the experience gained in the 2008-09 global financial crisis, the 2011-12 euro area crisis and the 2020-21 global pandemic suggests that effective macroeconomic stabilisation requires fiscal policy and monetary policy to complement each other in times of crisis. Second, there is ample empirical evidence suggesting that an expansionary fiscal policy is particularly effective when interest rates are near the lower bound. Moreover, fiscal and structural policies can support productivity and labour supply growth, helping to reverse the trend in the equilibrium real interest rate and thereby create monetary policy space. Finally, completing EMU, including banking union and capital markets union, is essential to strengthen the euro area's shock absorption capacity.

3.3 Other considerations relevant to the pursuit of price stability

Without prejudice to price stability, in its monetary policy decisions the Governing Council caters for other considerations relevant to the conduct of monetary policy. Taking such considerations into account will often be necessary to maintain price stability over the medium term. At the same time, monetary policy measures have an impact on the economy and on economic policies. The Treaty specifically requires the Eurosystem to support the general economic policies in the European Union with a view to contributing to the achievement of the Union's objectives as laid down in Article 3 of the Treaty on European Union. These objectives include balanced economic growth, a highly competitive social market economy aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment – without prejudice to the objective of price stability. The Eurosystem shall also contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system. Finally, the Eurosystem shall act in accordance with the principle of an open market economy with free competition, favouring an efficient allocation of resources.

When taking these considerations into account, the Governing Council bases its assessment in particular on the relevance of these considerations for the ECB's primary objective and the ECB's ability to support the general economic policies in the Union, with a view to making a contribution to the attainment of the Union's objectives. For example, when adjusting its monetary policy instruments, the Governing Council will – provided that two configurations of the instrument set are equally conducive and not prejudicial to price stability – choose the configuration that best supports the general economic policies of the Union related to growth, employment and social inclusion, and that protects financial stability and helps to mitigate the impact of climate change, with a view to contributing to the objectives of the Union.

The complementarity of price stability with balanced economic growth and full employment

To a large extent, balanced economic growth, full employment and price stability are mutually consistent objectives. If longer-term inflation expectations are anchored, inflation will be at the target level if economic activity and employment are equal to their potential levels. The medium-term orientation of the ECB's monetary policy strategy takes account of situations in which inflation on the one side and economic activity and employment on the other side temporarily move in different directions owing to supply-side disturbances. For example, in the presence of an adverse supply shock, the Governing Council may decide to lengthen the horizon over which inflation returns to the target level in order to avoid pronounced falls in economic activity and employment, which, if persistent, could themselves jeopardise medium-term price stability. One practical difficulty is the unobservability of potential output and equilibrium employment, against which to assess current activity and employment. On this basis, in 2003 the ECB did not commit to any particular estimate

of potential output or of the natural rate of unemployment; likewise, in the current review the Governing Council deemed it important to look at a variety of estimates and to account for uncertainty, heterogeneity and ongoing structural changes shaping the outlook for economic activity and employment in the euro area and its member countries. The Governing Council will also continue to assess the two-way interaction between income and wealth distributions and monetary policy.

Taking account of financial stability considerations

Financial stability is a precondition for price stability and vice versa. Under stressed financial market conditions, monetary policy measures aimed at maintaining price stability typically help to restore financial stability by addressing impairments to the monetary policy transmission mechanism and averting negative macro-financial feedback effects and debt-deflation phenomena. In relation to the build-up of financial stability risks, macroprudential and microprudential policies are the first line of defence. In many instances, macroprudential policies and monetary policy are complementary. For instance, macroprudential policies that avoid a build-up of imbalances reduce the likelihood of future financial crises with negative effects on price stability. Monetary policy may also affect financial stability risks. In one direction, accommodative monetary policy can reduce credit risk by boosting activity levels and inflation dynamics; in the other direction, accommodative monetary policy may encourage the build-up of leverage or raise the sensitivity of asset prices. Symmetric arguments apply during phases of monetary policy tightening.

In view of the price stability risks generated by financial crises, there is a clear conceptual case for the ECB to take financial stability considerations into account in its monetary policy deliberations. This reflects existing limitations of macroprudential policy in the different phases of the financial cycle, the interactions between macroprudential policy and monetary policy, and possible side effects of monetary policy on financial stability. At the same time, it is important to avoid the misperception that monetary policy is responsible for guaranteeing financial stability. The Governing Council does not conduct systematic policies of either “leaning against the wind” (whereby monetary policy is systematically tightened when systemic risk builds up) or of “cleaning” (whereby monetary policy is systematically loosened when systemic risk materialises). Rather, it follows a flexible approach in taking account of financial stability considerations. Any monetary policy reaction to financial stability concerns will depend on prevailing circumstances and will be guided by the implications for medium-term price stability. To this end, the preparation of monetary policy deliberations will be enhanced with additional information on financial stability considerations, in the context of overhauling the ECB’s analytical framework (see Section 4).

Taking account of the impact of climate change

The Governing Council is committed – within the ECB’s mandate – to ensuring that the Eurosystem fully takes into account the implications of climate change

and the carbon transition for monetary policy and central banking. Addressing climate change and the carbon transition is a major global challenge and a policy priority for the European Union. While governments have the primary responsibility and tools for addressing climate change, the ECB's mandate requires the ECB to assess the impact of climate change and to further incorporate climate considerations into its policy framework, since physical and transition risks related to climate change have implications for both price and financial stability, and affect the value and the risk profile of the assets held on the Eurosystem's balance sheet. For any action, it always has to be analysed to what extent it conditions the Governing Council's ability to maintain price stability.

The Governing Council has committed to an ambitious climate-related action plan to further include climate change considerations in its monetary policy framework (see the [press release](#)). The action plan outlines the key areas of ongoing and planned actions by the ECB to more systematically reflect climate change considerations in its monetary policy operations. First, the ECB will significantly enhance its analytical and macroeconomic modelling capacities and develop statistical indicators to foster the understanding of the macroeconomic impact of climate change and carbon transition policies. Second, the Governing Council will adapt the design of its monetary policy operational framework in relation to disclosures, risk assessment, corporate sector asset purchases and the collateral framework.

4 The ECB's integrated analytical framework

The pervasive structural changes that the global and euro area economies and financial systems have undergone since 2003 have entailed continuous updating of the ECB's analytical tools and framework. The structural changes outlined in Section 2 have had consequences for the growth potential of the euro area economy, the equilibrium real interest rate, the inflation process and the transmission of monetary policy. This has required the ECB to integrate these trends into its regular assessment and the policy preparation process. In view of these changes, the economic and monetary analyses have evolved in several ways that should be reflected formally within the ECB's analytical framework. Changes to the economic analysis reflect the availability of new data and information sources, as well as modelling and computational developments, the important role of the Eurosystem and ECB staff macroeconomic projections in forming a view on the medium-term outlook for economic activity and inflation, and also the more systematic analysis of (changes to) structural trends. The monetary analysis has shifted from its main role of detecting risks to price stability over medium to longer-term horizons towards a stronger emphasis on providing information for assessing monetary policy transmission. This shift in focus reflects a weakening of the empirical link between monetary aggregates and inflation, impairments in monetary policy transmission during the global financial crisis and the broadening of the ECB's monetary policy toolkit.

Given these changes, the ECB's monetary policy deliberations will be based on a revised integrated analytical framework that brings together two analyses: the

economic analysis and the monetary and financial analysis. The integrated framework takes account of the inherent links between the underlying structures, shocks and adjustment processes covered by the respective analyses. Both analyses provide valuable information and thus together they contribute to a comprehensive and robust assessment of the outlook for and the risks to price stability over different time horizons. The new framework will replace the previous two-pillar framework and discontinue the cross-checking of the information derived from the monetary analysis with the information from the economic analysis. To underpin the integrated analysis, further investment in developing the analytical tools will be required to model and understand the macro-financial linkages and the interactions between monetary policy measures, their transmission to the economy and their effects on the stability of the financial system.

The economic analysis focuses on real and nominal economic developments. It is built around the analysis of *developments in the short term* in economic growth, employment and inflation, the assessment of the *drivers of shocks* that hit the euro area economy, the *Eurosystem and ECB staff projections* of key macroeconomic variables over a medium-term horizon, and a broad-ranging *evaluation of the risks* to economic growth and price stability. Due emphasis will be given to the regular *analysis of structural trends* and their implications for inflation, potential output and the equilibrium real rate of interest; the role and importance of *heterogeneities* and of *non-linearities*; and the use of newly available granular data, including *surveys of expectations*, such as the newly established Consumer Expectations Survey.

The monetary and financial analysis has significantly shifted in focus since the 2003 review in response to the challenges that arose during and after the global financial crisis. The monetary and financial analysis assigns an important role to examining monetary and financial indicators, with a focus on the operation of the *monetary policy transmission mechanism*, in particular via the credit, bank lending, risk-taking and asset pricing channels. Such assessments facilitate the identification of possible changes in transmission (for example related to structural factors such as the rise in non-bank financial intermediation) or impairments in transmission, for example owing to fragmentation or market stress. The monetary and financial analysis also provides for a more systematic evaluation of the *longer-term build-up of financial vulnerabilities and imbalances* and their possible implications for the tail risks to output and inflation. Moreover, it assesses the extent to which *macroprudential measures mitigate possible financial stability risks* that are relevant from a monetary policy perspective. The monetary and financial analysis thus recognises that financial stability is a precondition for price stability.

The integrated analytical framework will continue to consider the information from monetary and credit aggregates. Such aggregates, together with other variables that are used to assess the functioning of the monetary and financial transmission, will continue to be fully included in the new framework, reflecting their ongoing relevance for the assessment of the build-up of vulnerabilities in and risks to price stability. Moreover, an in-depth assessment of the interaction between monetary policy and financial stability will be conducted as part of the monetary and financial analysis at regular intervals and considered at the monetary policy meetings of the

Governing Council, drawing on the Financial Stability Review and other relevant material.

5 The communication of the ECB's monetary policy decisions

The importance of monetary policy communication has increased significantly over time. Monetary policy communication has become a monetary policy tool in itself, with forward guidance being a prominent example. The better monetary policy is understood, not only by experts but also by the general public, the more effective it will be. Communication also plays a key role in ensuring that the ECB as an independent central bank fulfils its duty of accountability towards the public and retains credibility and legitimacy. Consistent, clear and effective communication with different audiences is therefore essential, and the Governing Council is committed to explaining its monetary policy strategy and decisions as clearly as possible to all audiences.

The Governing Council thoroughly reviewed the sequential communication of its monetary policy decisions, with a view to enhancing the information provided and its accessibility for various audiences. Communication of monetary policy decisions will continue to build on four products that have proven their value: the press release, the introductory statement, which will be renamed the “monetary policy statement”, the Economic Bulletin and the monetary policy account. The monetary policy statement will be streamlined and its clarity improved. Its structure will be adapted, with a focus on an integrated narrative, in line with the new analytical framework outlined in Section 4. The statement will no longer refer to the notion of cross-checking between pillars, but will set out a narrative motivating the policy decision that draws on information from the economic, monetary and financial analysis. The monetary policy accounts, which were introduced in 2015, will continue to provide information on the full range of arguments considered during the Governing Council's monetary policy deliberations. The Economic Bulletin will continue to provide an overview of the economic situation and analysis of topical issues of relevance to monetary policy. It will be enhanced with more analysis of monetary and financial issues and will provide a regular update on the ECB's proportionality assessments, while further efforts will be made to make it more readable and engaging. These products will be complemented by a layered and more visual version of policy communication geared towards the wider public.

The ECB's strategy review has benefited enormously from the input received via the Eurosystem's “listening” activities. During the review period the Eurosystem held numerous events with the academic community, civil society organisations and the public at large, and it also held exchanges with national parliaments and the European Parliament.⁴ In addition, the ECB received approximately 4,000 responses to a set of questions via its “ECB Listens Portal”. All this input fed into the Governing Council deliberations in the context of the strategy review. Some of the main messages highlighted include the negative effect of inflation

⁴ See the [summary report on the ECB Listens event](#) and the [overview of events held by national central banks](#).

on people's daily lives; the significant effect of the cost of housing on people's perceived levels of inflation, with many respondents arguing for the inflation measure to better account for housing costs; concerns about the side effects of the ECB's policies; calls on the ECB to promote economic growth and employment and to help protect the environment, without overstepping its mandate; and the view that central banks need to explain their role better and use understandable language and relatable examples to engage with the wider public. The Governing Council intends to make outreach events a structural feature of the Eurosystem's interaction with the public. Such future events will have both a "listening" and an "explaining" dimension, to enable the public to understand the ECB's monetary policy strategy and its implications.

6 A regular review cycle

In a rapidly changing world, the ECB's monetary policy strategy will likely need to be reviewed and adapted more regularly. While such changes are difficult to predict, some areas where developments are foreseeable in the coming years that could alter the economic and financial landscape in which monetary policy operates include possible advances in terms of a digital currency; improvements in the EMU architecture; the ongoing structural changes in the euro area financial system, including the increasing role of non-banks; further major economic or financial shocks to the euro area and/or global economies; and additional structural changes that affect the inflation process, the equilibrium real interest rate or the growth potential. Against this background, the Governing Council intends to assess periodically the appropriateness of its monetary policy strategy, with the next assessment expected in 2025.

2 Using machine learning and big data to analyse the business cycle

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1 Introduction

Policymakers take decisions in real time based on incomplete information about current economic conditions. Central banks and economic analysts largely rely on official statistics together with soft data and surveys, to assess the state of the economy. Although a wide range of high-quality conventional data is available, the datasets are released with lags ranging from a few days or weeks to several months after the reference period. For these reasons, central banks have been looking at ways to exploit timelier data and employ more sophisticated methods to enhance accuracy when forecasting metrics that are relevant for policymaking.

Over recent years, policy institutions have started to explore new sources of data and alternative statistical methods for the real-time assessment of economic activity. Since the financial crisis, they have stepped up their efforts to systematically use micro and survey data to better gauge changes in aggregate consumption, investment and the labour market. In parallel, technological advances have allowed users to start examining unconventional sources such as text data and images from newspaper articles, social media and the internet together with numerical data from payments. Also now available are alternative statistical methods such as regression trees, neural networks and support-vector machines that may help the potential insights that can be gained from these data sources to be fully exploited.

The coronavirus (COVID-19) pandemic has accelerated this trend. The crisis associated with the pandemic has shown that “big data” can provide timely signals on the state of the economy and help to track economic activity alongside more traditional data. Big data are commonly characterised as having three Vs: high volume, high velocity and high variety.¹ High volume refers to the massive amounts of data generated as a result of the proliferation of devices, services and human interaction. High velocity refers to the fast speed at which the data are created and processed. High variety relates to the wide range and complexity of data types and sources.² Big data are appealing because they are available at high frequency; however, they are often relatively unstructured and are, by definition, large in size. This in turn poses various challenges for traditional econometric models. Some of these can be addressed by machine learning (ML) algorithms, which also have the advantage of potentially capturing complex non-linear relationships. Even though there is no single definition of machine learning, the basic idea behind it is that computers (machines)

¹ Although more Vs have been added to the list over recent years, these are not so widely accepted as they are difficult to quantify (e.g. “veracity”, or truthfulness of the data, and “value”, meaning that big data might create social or economic value).

² See Hammer, C., Kostroch, D.C. and Quirós-Romero, G., “[Big Data: Potential, Challenges and Statistical Implications](#)”, *Staff Discussion Notes*, Vol. 2017, Issue 006, International Monetary Fund, 2017.

can learn from past data, identify general patterns – often characterised by non-linear relationships – and make predictions using algorithms capturing those patterns. Machine learning is therefore a subset of artificial intelligence, and most of its methods are largely based on concepts from statistics and statistical learning theory.³

This article reviews how policy institutions – international organisations and central banks – use big data and/or machine learning methods to analyse the business cycle. Specifically, these new data sources and tools are used to improve nowcasting and short-term forecasting of real GDP. They are also employed to gain useful insights for assessing cyclical developments and building narratives. A number of illustrative examples are provided.

The article is organised as follows. Section 2 reviews the main sources of big data that central banks and other policy institutions have been exploring for business cycle analysis over recent years. It provides an overview of existing literature and also includes two examples of how big data have been used to monitor economic activity and labour market developments during the pandemic. Section 3 discusses the main advantages of ML methods in dealing with big data and analysing the business cycle. This section includes two examples using newspaper articles to build measures of economic sentiment and economic policy uncertainty. Section 4 presents the main conclusions and discusses opportunities and challenges faced by central banks when using machine learning and big data.

2 How do big data help to gauge the current state of the economy?

Policy institutions have recently started to incorporate structured and unstructured big data in their economic analysis. Big data can be structured – such as those collected in large financial datasets that can be matched to firm-level financial statements – or unstructured. Unstructured data range from large and near-real-time data gleaned from the internet (e.g. internet search volumes, data from social networks such as Twitter and Facebook, newspaper articles) to large-volume data obtained from non-official sources (e.g. trading platforms and payment systems or GPS-based technologies).

Structured data, such as those from financial and payment transactions, can provide critical real-time information for assessing aggregate consumption and economic activity. As the use of credit and debit cards to purchase goods and services has increased, the underlying financial transaction data have provided useful information to track consumption and economic activity. At the same time, payments data are available promptly and subject to few revisions since they are financial records. Central banks had already started to regard these data as a valuable source of information before the pandemic emerged. Analysis based on data for the Netherlands, Norway, Portugal and Spain, among others, finds that retail payment systems data (i.e. credit and debit card payments at the point of sale and ATM

³ Artificial intelligence can be defined as the computer science that focuses on the development of machines that mimic human cognitive functions such as learning or problem solving.

withdrawals) helped retail sales, private consumption (especially of non-durables) and even real GDP to be forecast in the previous expansionary phase.⁴ For Italy, some gains in forecast accuracy have been reported when information from highly aggregated but large value payments (i.e. TARGET2) has been included in GDP nowcasting models.⁵

Turning to unstructured big data, the use of text data from newspapers to understand and forecast the business cycle has increased significantly in the recent years. In business cycle analysis, text data from newspapers and social media have been used to construct proxy measures for unobservable variables such as “sentiment” or “uncertainty” which are likely to be associated with macroeconomic fluctuations. These proxies can be obtained at relatively low cost (in contrast to expensive survey-based measures) and on a timely basis (e.g. daily) by means of automated natural language processing methods. For instance, news-based sentiment indicators can serve as early warning indicators of financial crises.⁶ Newspaper-based sentiment and economic policy uncertainty indexes for Italy and Spain have proved helpful in monitoring economic activity in real time and nowcasting GDP.⁷ Similarly, in Belgium daily average economic media news sentiment is found to be useful for nowcasting survey-based consumer confidence.⁸ At the ECB, newspaper-based daily sentiment indicators have been estimated for the four largest euro area countries and the euro area as a whole. These indicators demonstrate a high correlation with survey-based sentiment indicators and real GDP; they are also found to be useful for nowcasting GDP, particularly at the beginning of the quarter when other more traditional indicators (e.g. surveys) referring to the current quarter have not been released yet (see Box 3 in Section 3). In addition, economic policy uncertainty indexes have been estimated for the same set of countries. The ML methods employed also allow uncertainty to be decomposed into sub-components that point towards the main sources (see Box 4 in Section 3).

Similarly, the use of internet searches has also started to feature in short-term forecasting models. Several Eurosystem studies show that internet searches can provide information about future consumption decisions. Recent examples include analysis linking Google search data to euro area car sales, the use of Google search

⁴ For the Netherlands, see Verbaan, R., Bolt, W. and van der Cruysen, C., “[Using debit card payments data for nowcasting Dutch household consumption](#)”, *DNB Working Papers*, No 571, De Nederlandsche Bank, 2017. For Spain, see Conesa, C., Gambacorta, L., Gorjon, S. and Lombardi, M.J., “[The use of payment systems data as early indicators of economic activity](#)”, *Applied Economics Letters*, Vol. 22, Issue 8, 2015, pp. 646-650. For Portugal, see Esteves, P., “[Are ATM/POS data relevant when nowcasting private consumption?](#)”, *Working Paper*, No 25/2009, Banco de Portugal, 2009. For Norway, see Aastveit, K.A., Fastbø, T.M., Granziera, E., Paulsen, K.S. and Torstensen, K.N., “[Nowcasting Norwegian household consumption with debit card transaction data](#)”, *Working Paper*, No 17/2020, Norges Bank, 2020.

⁵ For Italy, see Aprigliano, V., Ardizzi, G. and Monteforte, L., “[Using Payment System Data to Forecast Economic Activity](#)”, *International Journal of Central Banking*, Vol. 15, No 4, October 2019, pp. 55-80.

⁶ See Huang, C., Simpson, S., Ulybina, D. and Roitman, A., “[News-based Sentiment Indicators](#)”, *IMF Working Paper*, Vol. 2019, Issue 273, International Monetary Fund, 2019.

⁷ For Italy, see Aprigliano, V., Emiliozzi, S., Guaitoli, G., Luciani, A., Marcucci, J. and Monteforte, L., “[The power of text-based indicators in forecasting the Italian economic activity](#)”, *Working Papers*, No 1321, Banca d'Italia, 2021. For Spain, see Aguilar, P., Ghirelli, C., Pacce, M. and Urtasun, A., “[Can news help measure economic sentiment? An application in COVID-19 times](#)”, *Economics Letters*, Vol. 199, 2021, and Ghirelli, C., Pérez, J.J. and Urtasun, A., “[A new economic policy uncertainty index for Spain](#)”, *Economics Letters*, Vol. 182, 2019, pp. 64-67.

⁸ See Algaba, A., Borms, S., Boudt, K. and Verbeken, B., “[Daily news sentiment and monthly surveys: A mixed-frequency dynamic factor model for nowcasting consumer confidence](#)”, *Working Paper Research*, No 396, Nationale Bank van België/Banque Nationale de Belgique, 2021.

data to enhance German GDP nowcasting model and the analysis exploiting synthetic indicators based on Google searches for forecasting private consumption in Spain. For the euro area as a whole, Google data provide useful information for GDP nowcasting when macroeconomic information is lacking (i.e. in the first four weeks of the quarter), but as soon as official data relating to the current quarter become available, their relative nowcasting power diminishes.⁹

Internet-based data can also help when assessing the tightness of the labour and housing markets. Analysis for the US labour market shows that including Google-based job-search indicators improves the accuracy of unemployment forecasts, particularly over the medium-term horizon (i.e. three to 12 months ahead).¹⁰ In the euro area, a measure of labour market tightness based on the number of clicks on job postings has recently been built for the Irish economy.¹¹ For the housing market, analysis for Italy found that metrics based on web-scraped data from an online portal for real estate services can be a leading indicator of housing prices.¹² During the pandemic, Google searches on topics related to job retention schemes and layoffs provided early insight into the strong impact of the pandemic and related policy measures. Moreover, online data on job posting and hiring in the euro area have complemented official statistics (see Box 1).

Box 1

Monitoring labour market developments during the pandemic

Prepared by Vasco Botelho and Agostino Consolo

This box shows how high-frequency data on hiring was helpful for monitoring labour market developments in the euro area during the pandemic. The COVID-19 crisis had a large downward impact on the number of hires in the euro area labour market. Lockdowns and other containment measures suppressed labour demand and discouraged the search efforts of some workers who lost their jobs and transitioned into inactivity.¹³ Moreover, both the heightened macroeconomic uncertainty during the COVID-19 crisis and the widespread use of job retention schemes further reduced the incentives for firms to hire, albeit for different reasons. The heightened uncertainty

⁹ For nowcasting of euro area car sales, see Nyman-Andersen, P. and Pantelidis, E., “[Google econometrics: nowcasting euro area car sales and big data quality requirements](#)”, *Statistics Paper Series*, No 30, ECB, 2018. For nowcasting of Spanish private consumption, see Gil, M., Pérez, J.J., Sanchez Fuentes, A.J. and Urtasun, A., “[Nowcasting Private Consumption: Traditional Indicators, Uncertainty Measures, Credit Cards and Some Internet Data](#)”, *Working Paper*, No 1842, Banco de España, 2018. For nowcasting of German GDP, see Götz, T.B. and Knetsch, T.A., “[Google data in bridge equation models for GDP](#)”, *International Journal of Forecasting*, Vol. 35, Issue 1, January-March 2019, pp. 45-66. For nowcasting of euro area GDP, see Ferrara L. and Simoni, A., “[When are Google data useful to nowcast GDP? An approach via pre-selection and shrinkage](#)”, *Working Paper*, No 717, Banque de France, 2019.

¹⁰ D’Amuri, F. and Marcucci, J., “[The predictive power of Google searches in forecasting US unemployment](#)”, *International Journal of Forecasting*, Vol. 33, Issue 4, October-December 2017, pp. 801-816.

¹¹ Furthermore, they showed that online job posting data can provide granular information about skills most demanded by employers and jobs and salaries most searched by workers. See Adrian, P. and Lydon, R., “[Clicks and jobs: measuring labour market tightness using online data](#)”, *Economic Letters*, Vol. 2019, No 6, Central Bank of Ireland, 2019.

¹² Loberto, M., Luciani, A. and Pangallo, M., “[The potential of big housing data: an application to the Italian real-estate market](#)”, *Working Papers*, No 1171, Banca d’Italia, 2018.

¹³ For a comprehensive assessment of the impact of the pandemic on the euro area labour market, see the article entitled “[The impact of the COVID-19 pandemic on the euro area labour market](#)”, *Economic Bulletin*, Issue 8, ECB, 2020.

encouraged firms to lower their operating costs and delay any plans to expand their workforce. By contrast, job retention schemes protected employment and supported jobs, thus incentivising labour hoarding and allowing firms to avoid high re-hiring costs when economic expansion resumes.¹⁴

The LinkedIn hiring rate complements the information that can be retrieved from the official statistical data, providing a timely, high-frequency indicator on gross hires in the euro area during the pandemic.¹⁵ Hires in the euro area can only be observed imperfectly in the official statistical data, by analysing transitions between employment and non-employment. Two main caveats arise when using official data to assess hire behaviour in the euro area. First, official data are not very timely, generally only becoming available around two quarters later. Second, these data only allow quantification of net flows into (or out of) employment and do not provide any information on job-to-job transitions.¹⁶ The LinkedIn hiring rate provides a more timely, high-frequency signal that can provide information on the number of hires in the euro area. It comprises high-frequency data on gross hires, identifying both movements from non-employment into employment and job-to-job transitions.

The standardised LinkedIn hiring rate is first calculated for each of the four largest euro area countries (France, Germany, Italy and Spain – the EA-4) by filtering out seasonal patterns and country-specific artificial trends related to the market performance of LinkedIn. The EA-4 country information is aggregated as a weighted average of the country-specific standardised hiring rates using employment as weights. The EA-4 hiring rate declined significantly at the start of the pandemic before recovering during the second half of 2020 (Chart A, panel (a)). After standing at around 6% above average during the first two months of 2020, it fell suddenly to 63% below average in April 2020 following the onset of the COVID-19 crisis and slowly rebounded to surpass its average level in November 2020. It then returned to below average in January 2021, when more stringent lockdowns were imposed, and recovered again thereafter. Interestingly, the decline in the number of hires paralleled the increase in job retention schemes during the pandemic. In April 2021 the standardised hiring rate stood at 14% above average in the EA-4 aggregate.

¹⁴ Labour hoarding can be defined as the part of labour input which is not fully utilised by a company during its production process at any given point in time. Labour hoarding can potentially help firms avoid re-hiring and training costs when economic conditions improve following a recession.

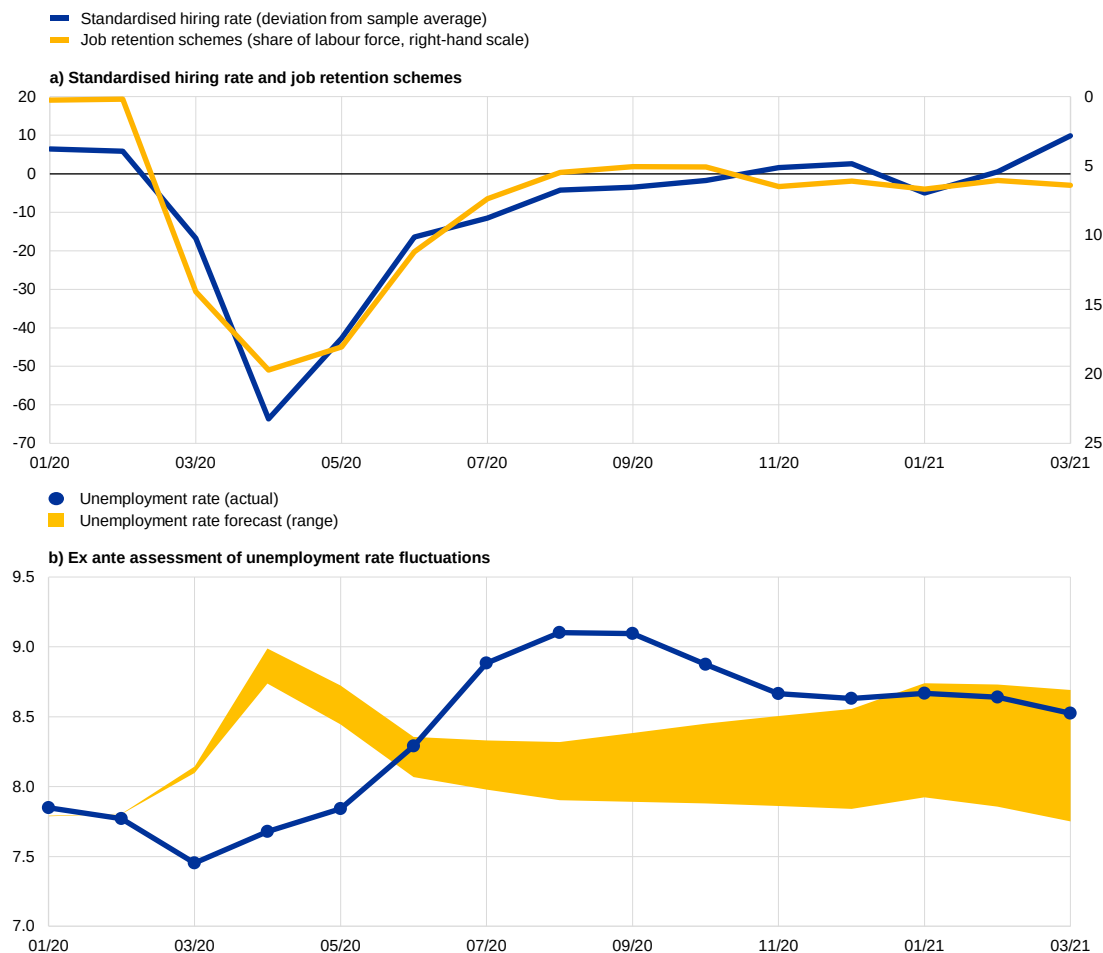
¹⁵ For an initial assessment of the impact of the pandemic on the euro area labour market using high-frequency data and the LinkedIn hiring rate, see the box entitled “[High-frequency data developments in the euro area labour market](#)”, *Economic Bulletin*, Issue 5, ECB, 2020.

¹⁶ Transitions from employment into employment gather information on both job-to-job transitions and workers that have not moved jobs during the same period (the vast majority). Job-to-job transitions are, however, important for adjustment in the labour market, as they contribute positively to nominal wage growth. See Karahan, F., Michaels, R., Pugsley, B., Şahin, A. and Schuh, R., “[Do Job-to-Job Transitions Drive Wage Fluctuations over the Business Cycle?](#)”, *American Economic Review*, Vol. 107, No 5, pp. 353-357, 2017, who find this result for the United States, and Berson, C., De Philippis, M. and Viviano, E., “[Job-to-job flows and wage dynamics in France and Italy](#)”, *Occasional Papers*, No 563, Bank of Italy, Economic Research and International Relations Area, 2020, who find a similar result for France and Italy, albeit to a lesser extent.

Chart A

Monitoring the EA-4 labour market using high-frequency data

(percentages)



Sources: Eurostat, LinkedIn, German Institute for Employment Research (IAB), ifo Institute, French Ministry of Labour, Employment and Economic Inclusion, Italian National Institute for Social Security, Spanish Ministry of Inclusion, Social Security and Migrations, and ECB staff calculations.

Notes: The hiring rate is calculated as the percentage of LinkedIn members who started a job in a given month and added a new employer to their profile in that month, divided by the total number of LinkedIn members in that country. To adjust for artificial trends related to the market performance of the platform and for seasonal patterns and spikes due to specific calendar dates, for each country we have filtered out the effects of a series of monthly dummy variables and a linear, yearly trend on the hiring rate. This allows us to express the estimated standardised hiring rate as percentage deviations from the sample average. The forecast of the monthly unemployment rate follows the box entitled “High-frequency data developments in the euro area labour market” in Issue 5/2020 of the ECB’s Economic Bulletin, starting in January 2020, implying that the range of plausible forecasts for the unemployment rate in 2020-21 is conditional on the unemployment rate in December 2019.

The high-frequency information provided by the hiring rate can also be used to assess fluctuations in the unemployment rate during the pandemic. Following the box entitled “High-frequency data developments in the euro area labour market” in Issue 5/2020 of the ECB’s Economic Bulletin, we conduct a forecasting exercise linking the high-frequency information of the LinkedIn hiring rate to the job finding rate and using the implied path of the aggregate job finding rate as a proxy for the point-in-time, steady-state unemployment rate. This is then used to forecast the fluctuations in the

unemployment rate during the pandemic.¹⁷ We thus compare the observed fluctuations in the unemployment rate from March 2020 onwards with those implied by the high-frequency information within the standardised hiring rate for the EA-4 aggregate.

The forecast for the unemployment rate using the high-frequency hiring rate provides an early signal of the increase in the unemployment rate for the EA-4 aggregate. Chart A (panel (b)) compares the actual unemployment rate with the ex ante conditional forecast of the unemployment rate using the high-frequency hiring rate and based on the unemployment rate in December 2019. The early signal peak in the unemployment rate forecast in April 2020 at 8.8% is comparable in magnitude with the later August 2020 peak in the actual unemployment rate at 9.1%. More recently, in March 2021 the actual unemployment rate of the EA-4 aggregate was 8.5%, within the plausible range of between 7.8% and 8.7% forecast using the high-frequency hiring rate. The early peak for the forecast unemployment rate was driven by the contraction in the high-frequency hiring rate, which reflected the hiring freezes that followed the widespread use of job retention schemes and allowed separations to remain broadly constant over the initial period of the pandemic. By contrast, most of the recent variation in the unemployment rate (including its stabilisation) has stemmed from an increase in the separation rate.

The experience gained with structured and unstructured data prior to the pandemic made it easier to deploy models quickly to facilitate the real-time assessment of the economic situation during the pandemic. In particular, these data have been used to assess the degree of slack in the labour market and to measure the decline in economic activity, seen from both the supply and the demand side. During this period of sudden economic disruption, high-frequency alternative data such as electricity consumption, card payments, job postings, air quality and mobility statistics have been crucial for gaining a timely picture of the economic impact of the pandemic and the associated containment measures, weeks before hard and survey data were released. Payment data have been key to understanding the developments in private consumption, one of the demand components most severely affected by the crisis.¹⁸ Consumption of key inputs such as electricity, gas and fuel was used as a proxy for production in some sectors. A timely understanding of developments in the services sector, with a special focus on small businesses in certain service activities such as tourism which have borne the brunt of the crisis, was also very important. High-frequency information available for these sectors related mostly to sales (e.g. sales in tax returns, card payments), online bookings and Google

¹⁷ In a similar way, several profiles are drawn up for the unemployment rate forecast on the basis of the estimated long-term coefficients for the job finding rate and the assumptions underpinning the separation rates. We consider two scenarios for the separation rate: (i) no change with respect to the fourth quarter of 2019, and (ii) a monthly increase in the separation rate comparable to half of that observed during the average month during the global financial crisis. This is an important caveat to this exercise. Separation rates have also been affected by the significant policy support that has benefited both firms and workers alike, including the widespread use of job retention schemes. As such, the impact that a reduction in policy support may have on the separation rate and the unemployment rate as economic activity resumes warrants further analysis.

¹⁸ Carvalho et al., for instance, use credit card spending data to track the impact of the pandemic on consumption in Spain. They find a strong response in consumption due to lockdowns and their easing at national and regional levels, particularly in the goods basket of low-income households. Carvalho, V.M., Hansen, S., Ortiz, Á., García, J.R., Rodrigo, T., Rodríguez Mora, S. and Ruiz, J., "[Tracking the COVID-19 Crisis with High-Resolution Transaction Data](#)", *CEPR Discussion Papers*, No 14642, Centre for Economic Policy Research, 2020.

searches. Other indicators such as freight movements, numbers of flights and air quality were informative as rough proxies for economic activity.

One effective way of summarising information from a set of high-frequency indicators is to use economic activity trackers. Box 2 provides an example of a weekly economic activity tracker for the euro area devised by the ECB. Similarly, the European Commission's Joint Research Centre and Directorate-General for Economic and Financial Affairs have been tracking the COVID-19 crisis by combining traditional macroeconomic indicators with a high number of non-conventional, real-time and extremely heterogeneous indicators for the four largest economies in the euro area.¹⁹ They have developed a toolbox with a suite of diverse models, including linear and non-linear models and several ML methods, to exploit the large number of indicators in the dataset for nowcasting GDP. The GDP forecasts are produced by first estimating the whole set (thousands) of models and then applying automatic model selection to average out the forecasts and produce the final forecast.

Box 2

A weekly economic activity tracker for the euro area

Prepared by Gabriel Pérez-Quirós and Lorena Saiz

Since the onset of the pandemic, several central banks and international institutions have developed experimental daily or weekly economic activity trackers by combining several high-frequency indicators.²⁰ The Federal Reserve Bank of New York, for example, produces the Weekly Economic Index (WEI) that combines seven weekly indicators for the US economy.²¹ Based on a similar methodology, the Deutsche Bundesbank publishes the weekly activity index (WAI) for the German economy, which combines nine weekly indicators but also includes monthly industrial production and quarterly GDP.²² Also, the OECD has developed a weekly activity tracker for several countries based on Google Trends data.²³

Although these indicators are appealing, their development presents three key technical issues. First, the short time span available for high-frequency data makes them less reliable for establishing econometric relations which prove stable over time, compared to long time series of monthly economic indicators.²⁴ Second, high-frequency indicators are extremely noisy, exhibit complex seasonal patterns and, in some cases, may be subject to frequent data revisions. In the special

¹⁹ In particular, this includes Google searches, views of Wikipedia pages, air quality indicators (where pollution acts as an indicator of activity), aviation micro data, news-based indicators on subjects such as the economy, unemployment and inflation, news-based sentiment, electricity prices and consumption corrected for weather conditions, indicators from Airbnb data, indicators of mobility based on mobile phone data, Google mobility indicators and HGV toll data.

²⁰ Several papers were presented at the ECB Workshop “[Tracking the economy with high-frequency data](#)”, 16 October 2020.

²¹ See Lewis, D.J., Mertens, K., Stock, J.H. and Trivedi, M., “[Measuring Real Activity Using a Weekly Economic Index](#)”, *Federal Reserve Bank of New York Staff Report*, No 920, 2020.

²² See Eraslan, S. and Götz, T., “[An unconventional weekly activity index for Germany](#)”, *Technical Paper*, No 02/2020, Deutsche Bundesbank, 2020.

²³ See Woloszko, N., “[Tracking activity in real time with Google Trends](#)”, *OECD Economics Department Working Papers*, No 1634, OECD, 2020.

²⁴ Readers might be interested in the following recommended surveys of the literature: Banbura, M., Giannone, D. and Reichlin, L., “[Nowcasting](#)”, in Clements, M.P. and Hendry D.F. (eds), *Oxford Handbook of Economic Forecasting*, Oxford University Press, 2011, pp. 63-90; Camacho, M., Pérez-Quirós, G. and Poncela, P., “[Short-term Forecasting for Empirical Economists: A Survey of the Recently Proposed Algorithms](#)”, *Foundations and Trends in Econometrics*, Vol. 6, No 2, 2013, pp. 101-161.

circumstances associated with the COVID-19 crisis, these indicators were very informative (i.e. the signal-to-noise ratio was high), but in normal times it is still open to question whether these will only add noise to the already reliable signal obtained from the standard monthly indicators.²⁵ Third, the procedure to select indicators has not been standardised. Up to now, most work has used high-frequency indicators that are readily available for each economy. The lack of harmonised selection procedures reduces the scope to “learn from the cross-section” and accentuates the representativeness problem mentioned above.

The weekly economic activity tracker for the euro area proposed in this box addresses these issues by combining reliable monthly indicators that have a long history of good predictive performance with timely high-frequency (non-standard) indicators. The indicators have been selected according to several criteria: (i) availability of a long enough history (at least three years), (ii) not too noisy, and (iii) the weight of the indicator in the aggregate that combines all of them (a principal component in the case of the indicator discussed here) is statistically significant and economically meaningful.²⁶

The design of the tracker is based on principal component analysis (PCA) with unbalanced data, as described by Stock and Watson.²⁷ First, a tracker using only weekly series is computed by PCA to fill the missing observations at the beginning and, if necessary, the end of the sample. The weekly series are transformed into month-on-month growth rates.²⁸ If necessary, seasonal adjustment methods are used to eliminate any seasonal effects. Second, the monthly variables are transformed into weekly frequency by imputing the same monthly level for all weeks of the month. Then, the month-on-month growth rates are computed for every week. With all this information, the PCA is run again including all the indicators which were originally available at weekly and monthly frequency. The first principal component is the tracker, which represents the evolution of monthly activity on a weekly frequency (Chart A, panel (a)).²⁹ Visualising the tracker in levels and monthly frequency gives an idea of the magnitude of the output loss associated with the pandemic compared with pre-pandemic levels. Most importantly, the evolution of the tracker in levels over 2020 mirrors the evolution of GDP very well (Chart A, panel (b)). Overall, the relatively good performance of the tracker, which strikes a good balance between timely and reliable indicators, makes it a useful tool for tracking economic activity in real time.

²⁵ Delle Chiaie, S. and Pérez-Quirós, G., “High frequency indicators. why? when? and how? A users’ guide”, mimeo, 2021.

²⁶ The weekly frequency indicators are electricity consumption, German HGV toll mileage index, Google searches (restaurants, jobs, travel, hotels) and financial indicators (CISS, EURO STOXX, VSTOXX). The monthly frequency indicators are airport cargo and employment for the four largest euro area countries, euro area industrial production, industrial orders, car registrations, retail sales (volume), intra and extra euro area exports of goods (value), PMI composite output and economic sentiment indicator.

²⁷ Stock, J.H. and Watson, M.W., “Macroeconomic Forecasting Using Diffusion Indexes”, *Journal of Business and Economic Statistics*, Vol. 20, Issue 2, 2002, pp. 147-162.

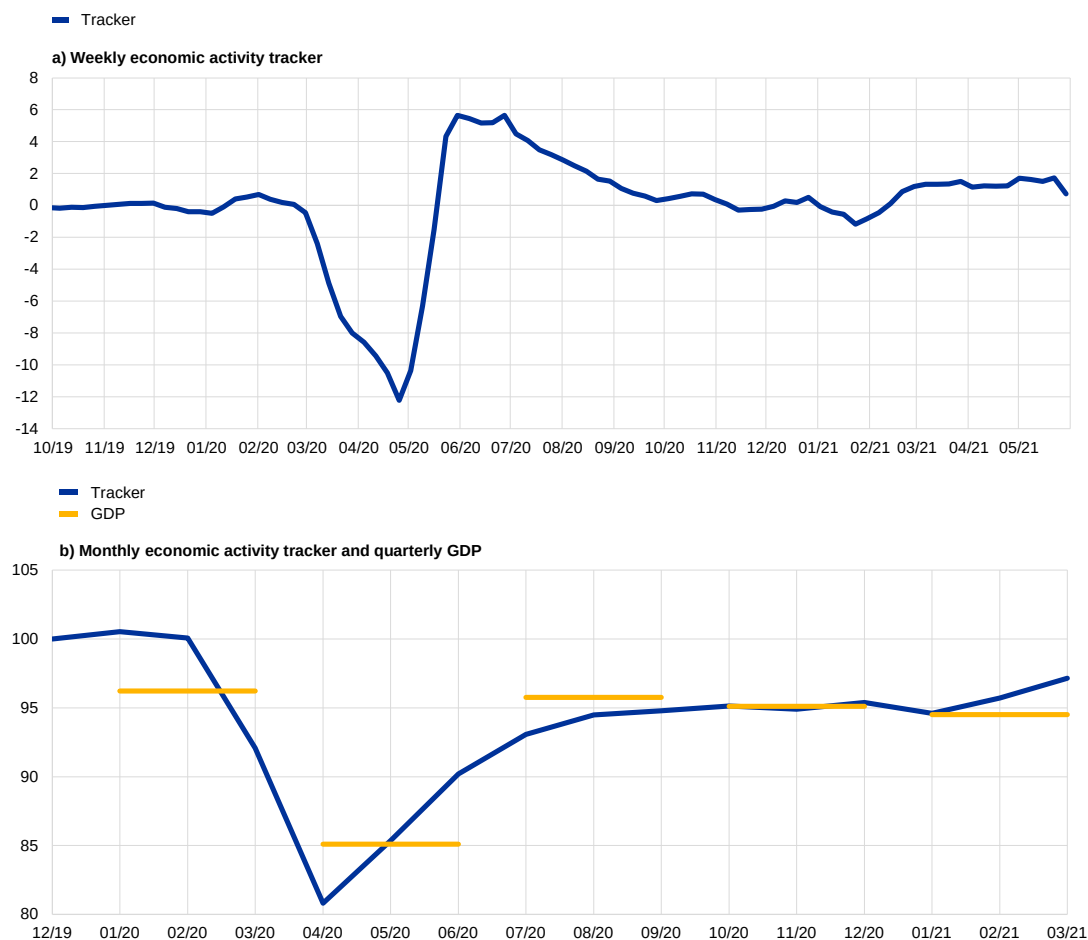
²⁸ Since some months have five weeks and others four, the convention used is that the monthly growth rate for the fifth week of the month is always compared with the last week of the previous month.

²⁹ By design, the tracker does not have units since PCA requires data standardisation. Therefore, the tracker needs to be re-scaled to make it compatible with the mean and variance of real GDP growth. The scaling factor can be determined using the relation between monthly activity and quarterly activity explained in Mariano and Murasawa. See Mariano, R.S. and Murasawa, Y., “A new coincident index of business cycles based on monthly and quarterly series”, *Journal of Applied Econometrics*, Vol. 18, Issue 4, 2003, pp. 427-443.

Chart A

Euro area economic activity tracker

(panel (a): month-on-month percentages; panel (b): levels, 100=December 2019 or Q4 2019)



Sources: ECB staff calculations and Eurostat.

Note: The latest observations are for the week of 29 May 2021 for the trackers and Q1 2021 for GDP.

3 What makes machine learning algorithms useful tools for analysing big data?

While big data can help improve the forecasts of GDP and other macroeconomic aggregates, their full potential can be exploited by employing ML algorithms. Section 2 shows that in many cases, the improvement in forecasting performance relates to specific situations, such as when traditional monthly indicators for the reference quarter are not yet available. This section focuses on the modelling framework, arguing that ML methods help to reap the benefits of using big data. The main goal of ML techniques is to find patterns in data or to predict a target variable. Although ML algorithms estimate and validate predictive models in a subset of data (training sample), the ultimate aim is to obtain the best forecasting performance using a different subset of data (test sample). The distinction between machine learning and traditional methods is not clear-cut since some traditional methods (e.g. linear regression, principal components) are also quite popular in the ML literature. However,

the literature on machine learning has developed a host of new and sophisticated models that promise to strongly enrich the toolbox of applied economists. Moreover, it also seems fair to say that, so far, machine learning has been mostly focused on prediction, while more traditional econometric and statistical analysis is also interested in uncovering the causal relationships between economic variables.³⁰ This is changing fast, as more and more researchers in the ML field address the issue of inference and causality, although this frontier research is not yet widely applied in the policy context.³¹ The aim of this section is to discuss how machine learning can usefully complement traditional econometric methods, in particular to leverage the opportunities for analysing the business cycle offered by big data. It also reviews several contributions to forecasting/nowcasting GDP (see Box 3) and provides examples of how ML algorithms can provide interesting insights for policy, such as pointing towards the sources of economic policy uncertainty (see Box 4).

The size of the newly available databases in itself often constitutes an obstacle to the use of traditional econometrics. Techniques have been adopted to reduce the dimensionality of the data, including traditional methods such as factor models and principal component analysis, but more often going into newer versions of machine learning. While a description of specific methods is beyond the scope of this article, it is important to note that ML methods have several desirable features for summarising the data, allowing precise reduction of high-dimensional data into a number of manageable indicators.

The first key advantage of ML methods is their ability to extract and select the relevant information from large volumes of, unstructured data. When dealing with big data, the presence of a large amount of mostly irrelevant information engenders the problem of data selection. This issue is magnified by the presence of large, unstructured datasets.³² In some simple cases, the forecaster can pick variables manually; this is normally possible when forecasting very specific quantities. The seminal work of Choi and Varian with Google Trends, for instance, focuses on car sales, unemployment claims, travel destination planning and consumer confidence.³³ Where macroeconomic aggregates are involved, the choosing of relevant variables quickly becomes intractable. ML methods offer very useful tools for selecting the most informative variables and exploiting their information potential. Several techniques derived from the model-averaging literature have also proved popular and successful in improving forecasting accuracy. In these methods, a large number of econometric models are first estimated, their forecasting performance is then evaluated, and the final forecast is obtained by averaging the forecasts of the best models, thus retaining those models and explanatory variables that provide useful information. Similarly,

³⁰ A good overview of ML concepts and applications in the context of central banking and policy analysis can be found in Chakraborty, C. and Joseph, A., "[Machine learning at central banks](#)", *Staff Working Paper*, No 674, Bank of England, 2017.

³¹ See, for example, Farrell, M.H., Liang, T. and Misra, S., "[Deep Neural Networks for Estimation and Inference](#)", *Econometrica*, Vol. 89, No 1, 2021, or Semenova, V., Goldman, M., Chemozhukov, V. and Taddy, M., "[Estimation and Inference on Heterogeneous Treatment Effects in High-Dimensional Dynamic Panels](#)", [arXiv.org](#), 2021.

³² See Giannone, D., Lenza, M. and Primiceri, G., "Economic Predictions with Big Data: The Illusion of Sparsity", *Econometrica*, forthcoming.

³³ Choi, H. and Varian, H., "[Predicting the Present with Google Trends](#)", *Economic Record*, Vol. 88, Issue s1, The Economic Society of Australia, June 2012, pp. 2-9.

what are known as ensemble methods such as random forests and bagging combine different “views” of the data given by competing models, adding flexibility and robustness to the predictions.

The second key advantage of ML methods is their ability to capture quite general forms of non-linearities. This is a general advantage of ML methods, regardless of the volume of data concerned; however, the issue is that, by their very nature, big data may be particularly prone to non-linearities. For instance, the data stemming from social networks present a good way to understand these inherent non-linearities. In this case, a specific topic can generate cascade or snowball effects within the network which cannot be channelled in linear regression models. Other examples include Google Trends and Google search categories, which are compiled using ML algorithms that determine the category to which an internet search belongs.³⁴ Text data are also obtained by applying highly non-linear ML algorithms to news items, for example. More generally, non-linearities and interactions between variables are common in macroeconomics owing to the presence of financial frictions and uncertainty. Several works have found that ML methods can be useful for macroeconomic forecasting, since they better capture non-linearities (e.g. Coulombe et al.). These methods can, for instance, capture the non-linear relationship between financial conditions and economic activity, among others, and hence more accurately predict activity and recessions in particular (see Box 3). Also, ML methods can outperform standard methods (e.g. credit scoring models, logistic regression) when predicting consumer and corporate defaults, since they capture non-linear relationships between the incidence of default and the characteristics of the individuals.³⁵

The COVID-19 pandemic is an important source of non-linearities. During the pandemic, many macroeconomic variables have recorded extreme values that are far from the range of past values. Econometric methods such as linear time series analysis seek to find average patterns in past data. If current data are very different, linearly extrapolating from past patterns may lead to biased results. Central banks, the European Commission and other institutions have adapted their nowcasting frameworks to capture non-standard data and non-linearities.³⁶

³⁴ These data are only available as “semi-processed” time series; in particular, they are first detrended according to some criteria known by Google, then resized so that they always have values between 0 and 100.

³⁵ See Coulombe, P.G., Leroux, M., Stefanovic, D. and Surprenant, S., “How is Machine Learning Useful for Macroeconomic Forecasting?”, [arXiv.org](https://arxiv.org/abs/2007.00000), 2020. For recession probabilities, see Vrontos, S.D., Galakis, J. and Vrontos, I.D., “Modelling and predicting U.S. recessions using machine learning techniques”, *International Journal of Forecasting*, Vol. 37, Issue 2, 2021, pp. 647-671. For random forest to capture non-linearity between financial conditions and economic activity, see Kiley, M.T., “Financial Conditions and Economic Activity: Insights from Machine Learning”, Finance and Economics Discussion Series, 2020-095, Board of Governors of the Federal Reserve System, 2020. For predictions of consumer defaults, see Albanesi, S. and Vamossy, D.F., “Predicting Consumer Default: A Deep Learning Approach”, NBER Working Paper Series, No w26165, National Bureau of Economic Research, 2019. For corporate defaults, see Pike, T., Sapriza, H. and Zimmermann, T., “Bottom-up leading macroeconomic indicators: An application to non-financial corporate defaults using machine learning”, Finance and Economics Discussion Series, 2019-070, Board of Governors of the Federal Reserve System, 2019.

³⁶ See, for instance, Huber, F., Koop, G., Onorante, L., Pfarrhofer, M. and Schreiner, J., “Nowcasting in a pandemic using non-parametric mixed frequency VARs”, *Journal of Econometrics*, in press, 2020.

Finally, ML techniques are the main tool used to capture a wide set of phenomena that would otherwise remain unquantified. The most prominent example in recent years is the dramatic surge of text data analysis. Today, broad corpuses of text are analysed and converted into numbers that forecasters can use. For instance, a wide range of timely, yet noisy confidence indicators based on text currently complement the traditional surveys, which are available with considerable lags and where agents do not necessarily “vote with their behaviour”, as well as market-based indicators, where expectations and other factors such as risk aversion compound in the data. A first generation of work built on word counts has been followed by more sophisticated approaches.³⁷ Second-generation techniques based on unsupervised learning are also used in public institutions, and in particular in central banks, to assess the effect of their communication. Finally, following Baker et al., concepts such as economic policy uncertainty which were previously difficult to quantify are now currently assessed on the basis of their economic consequences and used in forecasting.³⁸ See Box 3 and Box 4 for examples.

Box 3

Nowcasting euro area real GDP growth with newspaper-based sentiment

Prepared by Julian Ashwin, Eleni Kalamara and Lorena Saiz

This box presents economic sentiment indicators for the euro area derived from newspaper articles in the four largest euro area countries in their main national languages.^{39,40} Available at daily frequency, these indicators contain timely economic signals which are comparable to those from well-known sentiment indicators such as the Purchasing Managers’ Index (PMI). Furthermore, they can materially improve nowcasts of real GDP growth in the euro area.

In the literature, two approaches are typically followed for building sentiment metrics from textual data. The most popular is to use simple word counts based on predetermined sets of words, known as dictionaries or lexicons. However, most of the dictionaries have been developed for the English language. For the euro area, the multilingual environment makes it necessary to either develop new dictionaries for other languages or translate texts into English. Alternatively, more computationally demanding model-based methods such as semantic clustering or topic modelling can extract topics which can be approximated to sentiment and its drivers. In this box, the sentiment metrics are based on counts of words in the news articles translated into English, relying on several well-known English

³⁷ Le, Q. and Mikolov, T., “[Distributed Representations of Sentences and Documents](#)”, *Proceedings of the 31st International Conference on Machine Learning*, Vol. 32, 2014, pp. 1188-1196.

³⁸ See Baker, S.R., Bloom, N. and Davis, S.J., “[Measuring Economic Policy Uncertainty](#)”, *Quarterly Journal of Economics*, Vol. 131, Issue 4, 2016, pp. 1593-1636.

³⁹ This box summarises the main findings of the paper by Ashwin, Kalamara and Saiz. Ashwin, J., Kalamara, E. and Saiz, L., “Nowcasting Euro Area GDP with News Sentiment: A Tale of Two Crises”, manuscript, 2021.

⁴⁰ The articles come from 15 major print newspapers in France, Germany, Italy and Spain. They have been extracted from Dow Jones Factiva DNA database for the period from 1 January 1998 to 31 December 2020.

language dictionaries.⁴¹ For the sake of space, only the sentiment metrics based on the financial stability-based dictionary and the general-purpose dictionary VADER are reported.⁴²

Regardless of the dictionary used, and despite some noisiness, the newspaper-based sentiment metrics are highly correlated with the PMI composite index in the period from 2000 to 2019 (Chart A, panel (a)). This confirms that these measures are actually capturing sentiment. However, the choice of dictionary matters when it comes to detecting turning points. The first sentiment metric captures the Great Recession very well, unsurprisingly given the financial nature of this crisis. But this metric fails to encapsulate the COVID-19 crisis (Chart A, panel (b)), although its evolution is consistent with the behaviour of the financial markets and the financing conditions which have remained favourable in the context of very strong policy response. By contrast, the general-purpose dictionary is more consistent and robust across time. Therefore, it appears that the nature of economic shocks may play a significant role in identifying the most appropriate text dictionary to be used.

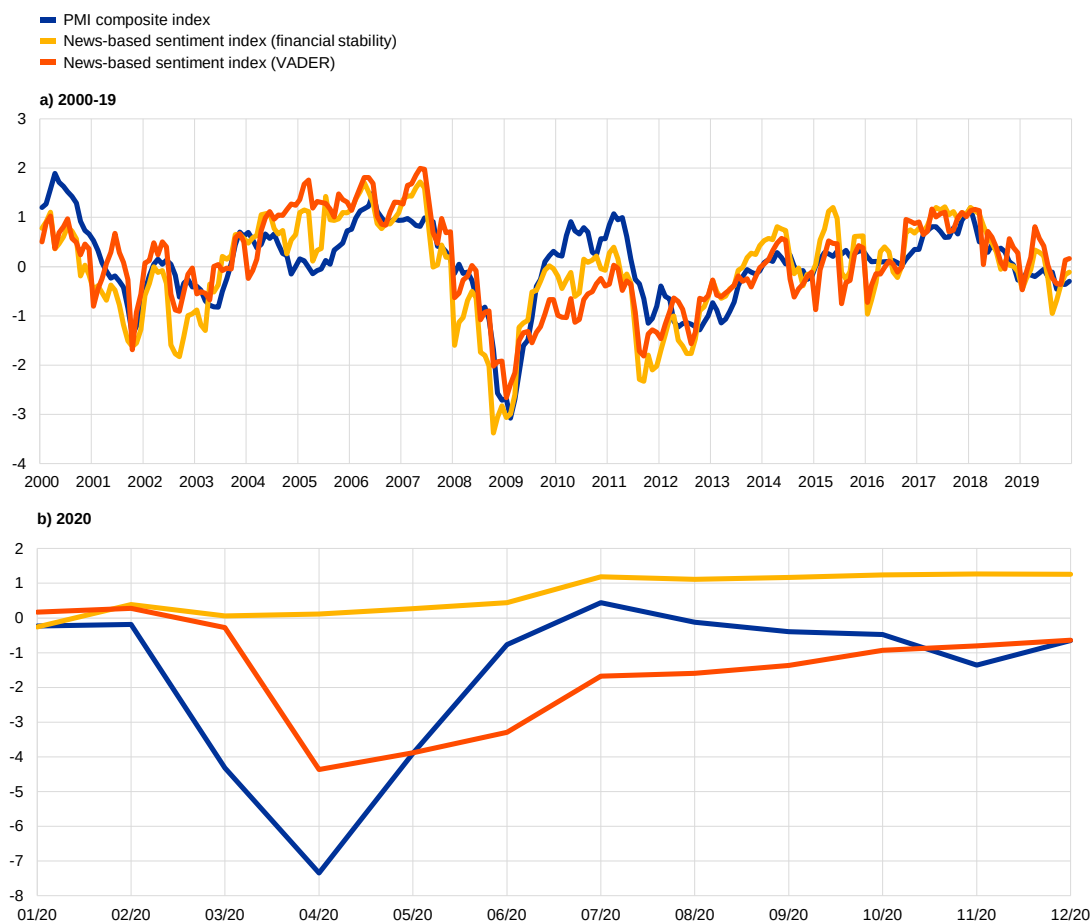
⁴¹ The news articles are translated into English using Google Translate API. Robustness checks have been performed comparing this method with using dictionaries in the national languages or even translating the dictionaries into English. Overall, translating the articles into English provides the most robust and reliable results.

⁴² The financial stability dictionary is taken from Correa, R., Garud, K., Londono-Yarce, J.-M. and Mislang, N., "[Constructing a Dictionary for Financial Stability](#)", *IFDP Notes*, Board of Governors of the Federal Reserve System, June 2017. The VADER (Valence Aware Dictionary and sEntiment Reasoner) dictionary is taken from Hutto, C.J. and Gilbert, E., "[VADER: A Parsimonious Rule-based Model for Sentiment Analysis of Social Media Text](#)", *Eighth International AAAI Conference on Weblogs and Social Media (8th ICWSM 2014)*, Ann Arbor, MI, June 2014.

Chart A

PMI and newspaper-based sentiment indexes for the euro area

(standardised units)



Sources: ECB staff calculations, Factiva, IHS Markit and Eurostat.

Notes: The news-based sentiment indicator is based on newspaper articles from the four largest euro area countries. The metric used is the sum of positive and negative words using either a financial stability dictionary (Correa et al.) or VADER, a more general-purpose dictionary. The PMI composite index and the news-based sentiment indicators are standardised using historical mean and variance.

Various studies have found that text analysis can significantly improve forecasts of key macroeconomic variables.⁴³ Some forecast accuracy gains (not shown) are found for real-time GDP nowcasts derived using the PMI composite index and the text-based sentiment indicators as key predictors. They are typically concentrated in the nowcasts produced in the first half of the quarter (i.e. first six weeks), when most other indicators used to nowcast GDP are not yet available. This result is in line with other works in the literature. However, an important point is that the type of model matters to fully reap the true benefits of the timeliness of text-based information. Standard linear methods (e.g. ordinary least squares linear regression) work well in calm times when there are no big shifts in the economic outlook. When extreme economic shocks occur, however, ML models can capture non-linearities and filter out the noise (Chart B). Ridge regressions captured the financial

⁴³ See, for example, Thorsrud, L.A., "Words are the New Numbers: A Newsy Coincident Index of the Business Cycle", *Journal of Business & Economic Statistics*, Vol. 38, Issue 2, 2020, pp. 393-409; Larsen, V.H. and Thorsrud, L.A., "The value of news for economic developments", *Journal of Econometrics*, Vol. 210, Issue 1, 2019, pp. 203-218; Kalamara, E., Turrell, A., Redl, C., Kapetanios, G. and Kapadia, S., "Making text count: economic forecasting using newspaper text", *Staff Working Paper*, No 865, Bank of England, May 2020; Shapiro, A.H., Sudhof, M. and Wilson, D.J., "Measuring news sentiment", *Journal of Econometrics*, in press, 2020.

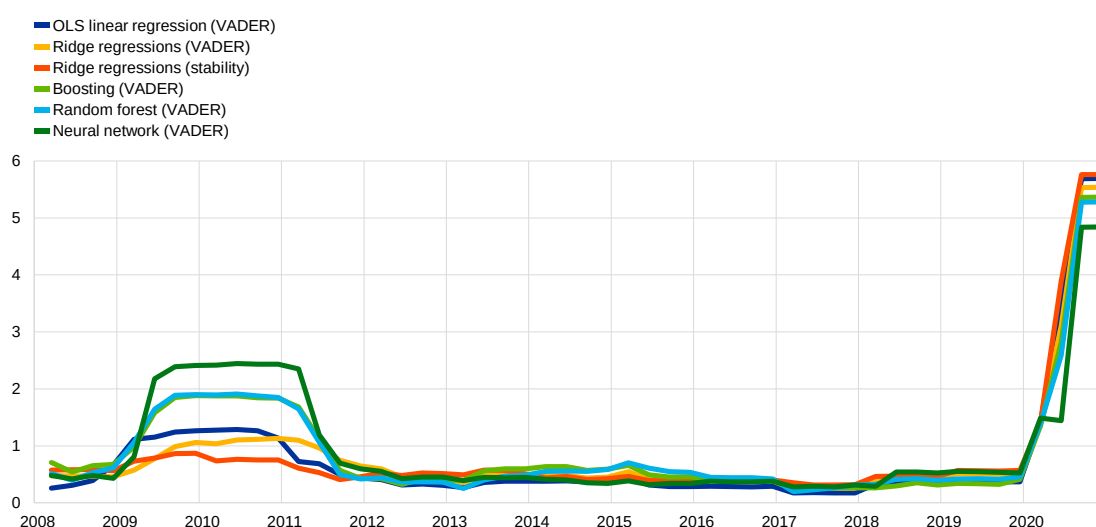
crisis better, as shown by the fact that they have the lowest Root Mean Squared Forecast Error (RMSFE), particularly when including the sentiment metric based on the financial stability dictionary. However, the best-performing models during the pandemic have been the neural networks, which were the worst-performing models during the financial crisis. This could be explained by the fact that before the financial crisis, there were no other similar crises in the training sample from which the model could learn. Indeed, one of the criticisms of the more complex ML models is that they need large amounts of data to learn (i.e. they are “data hungry”).

Chart B

Forecast accuracy

RMSFE

(percentage points)



Source: ECB staff calculations.

Notes: The chart reports the RMSFE over a rolling window of eight quarters. The forecasts are updated at the end of the first month of the reference quarter. The reference variable is the vintage of real GDP growth as of 24 March 2021.

Box 4

Sources of economic policy uncertainty in the euro area and their impact on demand components

Prepared by Andrés Azqueta-Gavaldón, Dominik Hirschbühl, Luca Onorante and Lorena Saiz

This box describes how big data and machine learning (ML) analysis can be applied to the measurement of uncertainty using textual data. Similarly to “economic sentiment”, uncertainty is not directly observable and can only be measured using proxies. Recent developments in the literature have shown that textual data can provide good proxies for this latent variable. For instance, the seminal work by Baker, Bloom and Davies proposed building an economic policy uncertainty (EPU) index using a pre-specified set of keywords in newspaper articles.⁴⁴ Recent research by the ECB has built an EPU index across the four largest euro area countries by applying ML algorithms to

⁴⁴ See Baker, S.R., Bloom, N. and Davis, S.J., “[Measuring Economic Policy Uncertainty](#)”, *The Quarterly Journal of Economics*, Vol. 131, Issue 4, 2016, pp. 1593-1636.

newspaper articles.⁴⁵ The main advantage of this approach is that it can be easily applied to different languages without relying on keywords, given that the underlying algorithm classifies text into topics without prior information. This feature makes it less prone to selection bias. Moreover, this approach retrieves topics underpinning aggregate economic policy uncertainty (e.g. fiscal, monetary or trade policy uncertainty) in newspaper articles. This can be particularly useful for building narratives and economic analysis.⁴⁶ ML methods applied to a sample of newspaper articles from France, Germany, Italy and Spain over the sample period from 2000 to 2019 consistently revealed the following topics or sources of economic policy uncertainty: monetary policy; fiscal policy; political, geopolitical and trade policy; European regulation; domestic regulation; and energy policy.

Economic policy uncertainty stems from different sources which affect consumers' and firms' decisions differently. For instance, increases in uncertainty regarding future tariffs can have an impact on a firm's determination to build a new production plant or to start exporting to a new market. This is because the role of future conditions is particularly relevant for costly, irreversible decisions. By contrast, uncertainty about the future monetary policy stance can be important for both firms' and consumers' spending decisions, since it will influence their expectations about future economic developments and financing conditions.

A simple structural vector autoregression (SVAR) analysis confirms that increases in (ML-based) EPU have a significant negative impact on private consumption and business investment proxied by investment in machinery and equipment in the euro area. The impact on investment is greater than on consumption, suggesting that uncertainty may have more of an impact on the supply side.⁴⁷ As regards sources of economic policy uncertainty, the focus is only on energy, trade and monetary policy uncertainty for the sake of space. As expected, monetary policy uncertainty shocks have a clear negative impact on both investment and consumption. By contrast, the impact of increases in trade policy uncertainty is insignificant in both cases. Moreover, increases in energy policy uncertainty depress consumption to a greater extent than other sources, while their effect on investment, albeit weaker, is more persistent over time. While these are aggregate results, EPU is likely to play a more relevant role for firm-level capital investment than at aggregate level.⁴⁸

⁴⁵ More specifically, a continuous bag-of-words model is used to identify the words most closely related to "economy" and "uncertainty" in the context of each language. Then, a Latent Dirichlet Allocation (LDA) algorithm is applied to classify news articles into topics. See Azqueta-Gavaldón, A., Hirschbühl, D., Onorante, L. and Saiz, L., "[Economic policy uncertainty in the euro area: an unsupervised machine learning approach](#)", *Working Paper Series*, No 2359, ECB, January 2020.

⁴⁶ See the box entitled "[Sources of economic policy uncertainty in the euro area: a machine learning approach](#)", *Economic Bulletin*, Issue 5, ECB, 2019.

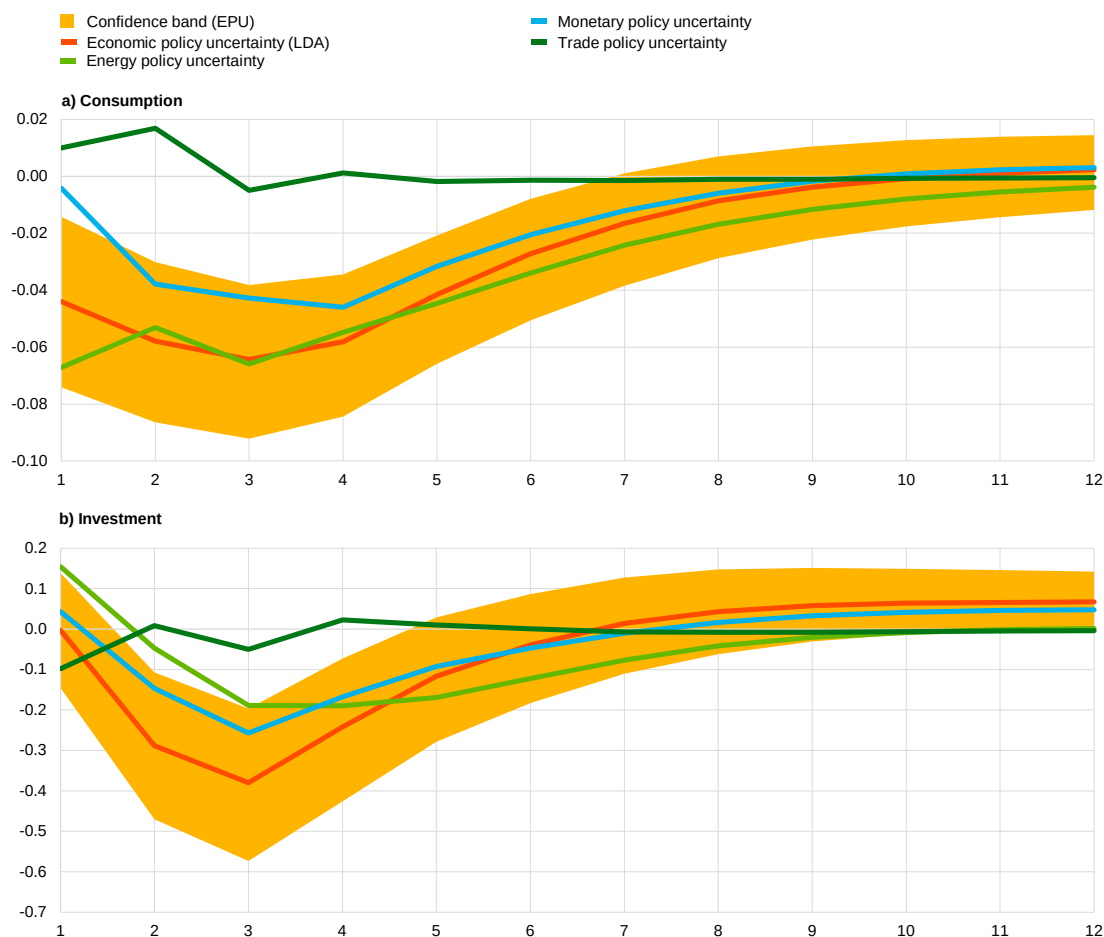
⁴⁷ See Born, B. and Pfeifer, J., "[Policy risk and the business cycle](#)", *Journal of Monetary Economics*, Vol. 68, 2014, pp. 68-85, and Fernández-Villaverde, J., Guerrón-Quintana, P., Kuester, K. and Rubio-Ramírez, J., "[Fiscal Volatility Shocks and Economic Activity](#)", *American Economic Review*, Vol. 105, No 11, 2015, pp. 3352-3384.

⁴⁸ For instance, Gulen and Ion find evidence that the relation between policy uncertainty and capital investment is not uniform in the cross-section, being significantly stronger for firms with a higher degree of investment irreversibility and for firms that are more dependent on government spending. Husted, Rogers and Sun document evidence that monetary policy uncertainty significantly delays firm-level investment in the United States. See Gulen, H. and Ion, M., "[Policy Uncertainty and Corporate Investment](#)", *Review of Financial Studies*, Vol. 29, Issue 3, 2016, pp. 523-564, and Husted, L., Rogers, J. and Sun, B., "[Monetary policy uncertainty](#)", *Journal of Monetary Economics*, Vol. 115, 2020, pp. 20-36.

Chart A

Impulse responses of consumption (panel (a)) and investment (panel (b)) to economic policy uncertainty shocks

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



Sources: Azqueta-Gavaldón et al. and Eurostat.

Notes: The impulse responses illustrate the response of consumption and investment to a positive one standard deviation shock in each of the measures of economic policy uncertainty. They are estimated with Bayesian structural vector autoregressions (SVAR), and the shocks are identified using a Cholesky decomposition with the variables in the following order: exports of goods and services, measure of economic policy uncertainty, private consumption, machinery and equipment investment, shadow short rate and EURO STOXX. All the variables are in quarterly growth rates, except for the shadow short rate, which is in levels. The estimation period is from 2000 to 2019. The measures of uncertainty are standardised so that the size of the shock is comparable. The confidence band corresponds to the 68% credibility band of the SVAR with the economic policy uncertainty index.

4 Conclusions, challenges and opportunities

This article has described how big data and ML methods can complement standard analysis of the business cycle. A case in point is the coronavirus pandemic, which represents an extraordinary shock. This crisis has propelled the dissemination and refinement of ML techniques and big data at an unprecedented speed. In particular, it has shown that alternative sources of data can provide more timely signals on the state of the economy and help to track economic activity. Furthermore, it is an important showcase for non-linearities in the economy, which has required existing models to be adapted or new approaches to be developed. In this respect, ML methods can deal with non-linearities more easily than traditional

methods. Besides new opportunities, these new data sources and methods also pose some challenges.

Big data allow a wider range of timely indicators to be used for forecasting (e.g. text-based or internet-based indicators), although in some cases this can entail replicability and accountability issues. Text-based sentiment indicators are particularly useful, for instance, given that they can be produced automatically at higher frequency and at lower cost than survey-based indicators. While the construction of conventional economic data, such as industrial production, follows harmonised procedures to ensure high quality, continuity and comparability over time and countries, alternative data are neither collected primarily for economic analysis, nor sourced and validated by independent statistical offices. Therefore, their application in decision-making processes exposes central banks to various risks, given that the replicability of results and accountability could be impaired. Since alternative data are collected for other purposes (e.g. credit card transactions) or come as the by-product of another service (e.g. news articles from the digitisation of newspapers), the data are often very noisy and require careful treatment. Moreover, the existence of significant data accessibility issues and limitations to data sharing could impair the replicability of the results in some cases. All these risks require careful consideration when investing scarce resources in software development and legal issues, as well as customising IT infrastructure.⁴⁹

Although useful as complements, at the moment these tools cannot be considered as substitutes for standard data and methods due to issues of interpretability and statistical inference. ML methods can help overcome the shortcomings of big data and exploit their full potential. When combined with big data, ML methods are capable of outperforming traditional statistical methods and providing an accurate picture of economic developments. Despite the good forecasting performance, the complexity of the methods often makes it difficult to interpret revisions to the forecasts and most importantly to communicate them. However, rapid advances are being made on enhancing the interpretability of ML techniques (most recently based on Shapley values).⁵⁰ In addition, ML techniques are not originally designed to identify causal relationships, which is of critical importance to policymakers. Enhancing the ability of ML methods to capture causality is currently the biggest challenge; this has the potential to make ML techniques promising complements and viable alternatives to established methods.⁵¹

⁴⁹ Doerr et al. note that a key challenge for central banks is to set up the necessary IT infrastructure. For most applications concerning business cycle analysis, the required computational power is rather low. Doerr, S., Gambacorta, L. and Serena, J.M., "[Big data and machine learning in central banking](#)", *BIS Working Papers*, No 930, Bank for International Settlements, 2021.

⁵⁰ Joseph proposed a new framework based on Shapley regressions that generalises statistical inference for non-linear or non-parametric models such as artificial neural networks, support vector machines and random forests. See Joseph, A., "[Parametric inference with universal function approximators](#)", *Staff Working Paper*, No 784, Bank of England, 2019, revised 22 July 2020.

⁵¹ See Farrell, M.H., Liang, T. and Misra, S., "[Deep Neural Networks for Estimation and Inference](#)", *Econometrica*, Vol. 89, Issue 1, January 2021, pp. 181-213.

3 The role of government for the non-financial corporate sector during the COVID-19 crisis

Prepared by Celestino Girón and Marta Rodríguez-Vives

1 Introduction

The pandemic and the containment adopted entailed economic disruptions worldwide, which induced substantial government interventions to support firms. In anticipation of the negative consequences of the restrictions imposed around the world, governments quickly deployed a set of diverse tools to mitigate the impact of the crisis on the corporate sector.

In the euro area, the bulk of government interventions in 2020 and the first half of 2021 focused on mitigating liquidity and solvency risks and supporting employment in the non-financial corporation (NFC) sector. Around two-thirds of fiscal packages have provided firms and employees with direct support, on top of state guarantees for loans. The exact magnitude of the support is difficult to estimate, since the initial measures were extended and new ones have been implemented as the COVID-19 crisis has evolved, varying across countries and fiscal instruments.¹ For the euro area aggregate, as shown in Table 1, the support to NFCs, including furlough measures, amounted to around 2.6% of GDP in 2020 out of a fiscal package of 4.1% of GDP.² In 2021 the support to NFCs has continued in the presence of containment measures that have weighed on the euro area economies, especially in the first half of the year, and it is expected to reach a size broadly similar to that in 2020. In addition, the envelope of state guarantees for loans amounted to around 19% of GDP in 2020 and is expected to remain at a similar level in 2021.

Table 1

Fiscal support in the euro area during the COVID-19 crisis (as % of GDP)

	2020	2021	2022
Total fiscal package	4.1	4.4	1.5
of which support to NFCs	2.6	2.5	0.7
State guarantee envelope	19.1	19.2	n.a.

Source: June 2021 Eurosystem staff Broad Macroeconomic Projection Exercise (BMPE) projections.

Notes: The total fiscal package is calculated as discretionary changes in government expenditure and revenues, as well as short-time work schemes and temporary tax deferrals and tax credits, but does not include capital injections and automatic fiscal stabilisers (see Section 2 for details). Support to NFCs refers here to direct transfers and subsidies to firms and short-time working schemes.

Government action in the euro area has mitigated the output contraction and employment and income losses, while adding liquidity buffers in the NFC

¹ See “[The initial fiscal policy responses of euro area countries to the COVID-19 crisis](#)”, *Economic Bulletin*, Issue 1, ECB, 2021.

² The employment measures can be a result of discretionary policies or of automatic mechanisms from welfare systems already in place. However, our calculations include only *ad hoc* discretionary measures implemented in the context of the COVID-19 crisis, mainly in the form of subsidies and transfers to firms, including short-time working schemes.

sector. Overall, a much stronger contraction in economic activity has been avoided. Economic growth in the euro area in 2020, while firmly in negative territory, was less affected than expected, registering -6.8% instead of the -7.8% projected by the European Commission in its Autumn 2020 Forecast. The effects of the NFC support measures on household income, for instance through job retention programmes, have also contributed to mitigating the impact of the crisis on output. Policy action coupled with strong precautionary saving behaviour and borrowing has also contributed to minimising liquidity risks and has resulted in an aggregate increase in liquidity buffers.³ Moreover, the strong government response in support of the NFC sector has also contributed to preventing stress in the banking sector during the COVID-19 crisis.

This article reviews the government interventions in the NFC sector in the euro area from a balance sheet perspective, mainly by focusing on the evidence available for 2020. It is structured as follows. Section 2 reviews the wide array of fiscal policy measures at the disposal of governments for supporting the NFC sector. Section 3 discusses the impact of the government measures taken on the NFC sector balance sheets during 2020. Section 4 describes some possible consequences for government sector balance sheets. Section 5 concludes.

2 Government interventions in the non-financial corporate sector: key concepts, definitions and measures

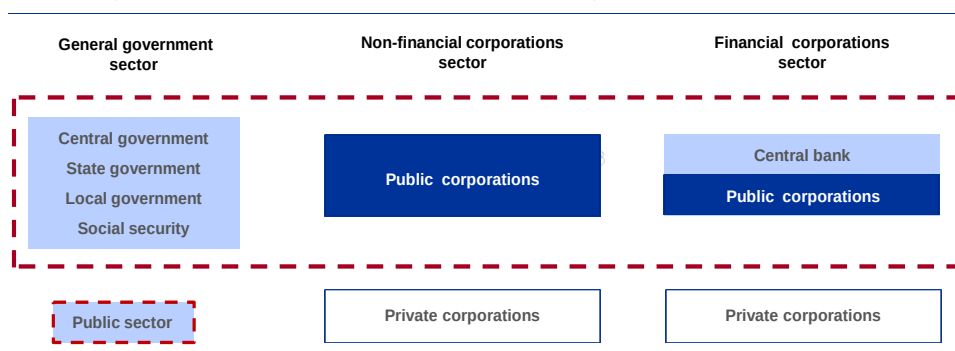
Well-targeted and timely government support for the corporate sector is an important part of the toolkit that governments can deploy during a crisis. In the specific case of a pandemic, government support to firms is more understandable in view of the production and service disruptions caused by the governmental restrictions imposed for public health reasons. The following analysis mainly focuses on the NFC sector, which includes all private and public enterprises that produce goods and/or provide non-financial services (see Figure 1 for the distinction between this and the financial corporations sector).⁴

³ According to ECB calculations, around 20-25% of firms in Spain, Germany and France were at risk of becoming illiquid in 2020 under a no-policy-change scenario, while the European Commission estimated around 35% of firms across the EU-27 would be under liquidity stress in an intermediate scenario (see "The impact of COVID-19 on potential output in the euro area", *Economic Bulletin*, Issue 7, ECB, 2020).

⁴ Public corporations are independent legal entities that are market producers and are subject to control by government units, which are often referred to as state-owned enterprises (SOEs). In practice, these typically include utilities and transportation companies or public-private partnerships for the implementation of large investment projects. Public corporations that are financial in nature (S.12 in national accounts) include the central bank and all public corporations that are engaged in financial intermediation and auxiliary financial activities, as well as insurance corporations and pension funds. This category typically includes nationalised banks and/or development banks, where the government has control with ownership of more than 50% of the shares. A wider definition of "public sector" entails a consolidated view of the balance sheet of the general government sector together with the financial and non-financial public corporations.

Figure 1

General government, non-financial and financial corporation sectors



Source: Authors, based on the IMF's Government Finance Statistics Manual and the ESA2010 Manual.

Note: Public corporations are entities where the government has control with ownership of more than 50% of the shares, which can be consolidated with the balance sheet of the general government sector.

The main arguments in support of temporary public interventions are related to the mitigation of corporate vulnerabilities in times of distress, which can contribute to ensuring macroeconomic and financial stability (e.g. by protecting employment and household income).⁵ This is particularly important in the case of large companies with systemic relevance, but also in the case of small and medium-sized enterprises (SMEs) given their importance in many European countries. Generally speaking, the arguments against government interventions in the corporate sector could instead be related, among other things, to the possible distortion of competition and efficiency in the provision of goods and services, as well as the burden on public finances and risks to fiscal sustainability.⁶ However, these arguments are less relevant in the context of a pandemic with generalised market disruptions caused by restrictions implemented for public health reasons. Moreover, these risks are mitigated thanks to the State aid rules framework in place at the EU level and to the role of the competition authorities. Overall, the success of government interventions depends on several factors, including the speed of the GDP rebound, the cost of financing (i.e. government bond yields), the exit strategy from the support, and the recovery rate – which is also dependent on the type of fiscal instrument used and the quality of the collateral.

Government interventions in the corporate sector can be direct or indirect. On the expenditure side, the most common instrument is subsidies or transfers directly provided to the NFC sector. On the revenue side, there is a wide array of tax reductions and social security measures. The alternative is to facilitate firm financing through government guarantees, direct loans, transfers or equity injections. The policy choice between outright transfers to firms versus equity injections is not always straightforward. Transfers may be preferred for smaller firms as in this case it would be too difficult to handle equity holdings. Targeted fiscal support or equity injections for highly indebted firms may instead be preferable to providing additional loans and

⁵ Furthermore, other fiscal stimuli to the economy can also be regarded as a complementary policy tool at the disposal of governments to foster the recovery of demand/activity and therefore corporate income. On the expenditure side, this is typically the case with investment. On the revenue side, this is typically done through indirect tax cuts. However, the analysis of all fiscal stimuli to the economy falls outside the scope of this article.

⁶ See Lojusch Hartwig, D., Rodríguez-Vives, M. and Slavik, M., "The size and composition of government debt in the euro area", *Occasional Paper Series*, No 132, European Central Bank, October 2011.

guarantees, as it reduces bankruptcy risk and allows, in the case of equity injections, for government influence on corporate decisions.⁷ Equity or equity-linked interventions also have a favourable effect on firms' investment incentives by preventing a possible debt overhang. In order to channel the available resources in an efficient and sustainable way it is important to distinguish viable from non-viable firms, the latter being confronted with negative earnings over the long term and thus being dependent on government assistance for survival.

The initial response in support of the NFC sector during the pandemic has typically been broad-based and aimed at preserving the pre-existing productive structure. Although countries have applied national measures to different degrees and with different timings, the initial fiscal response has been based on containing the impact of the crisis on the economy as a prerequisite for a fast recovery after the pandemic. The interventions in the NFC sector have aimed to minimise crisis-related insolvencies and the exit of viable firms from the market, as well as job losses. In this way, the response has also indirectly protected the financial corporation sector (e.g. banks) and the sovereign-bank-corporate nexus.⁸ Later on, attention was also devoted to creating the necessary conditions for a sustained recovery and to promote structural change, namely for the transition to the green economy and digitalisation. The Next Generation EU (NGEU) programme already approved in July 2020 with a cumulated amount up to €750 billion, with the Recovery and Resilience Facility (RRF) at its heart, is expected to play an important role. The main objective of the RRF is to support public and private investment coupled with structural reforms in the Member States during the period 2021-26.⁹ This represents a unique opportunity to strengthen potential growth, job creation and economic and social resilience in the Member States.

Table 2 summarises the different government interventions introduced at the start of the broad lockdowns in March/April 2020 to support NFCs directly or indirectly, with subsequent extensions during the rest of 2020 and 2021. Some tools have a short-term impact and fall under the remit of national discretionary fiscal policies (e.g. tax deferrals, one-off grants or subsidies, labour income support), while others are more financial in nature and with a medium to long-term horizon, as in the case of the provision of contingent liabilities and recapitalisations. Likewise, debt moratoria and restructurings are financial tools available in some euro area countries. We have also introduced a set of measures aimed at providing stimulus to the economy and hence indirectly impacting NFCs, such as cuts in direct and indirect taxes and growth in government investment (Table 2).

⁷ See Mojon, B., Rees, D. and Schmieder, C., "[How much stress could Covid put on corporate credit? Evidence using sectoral data](#)", *BIS Quarterly Review*, March 2021, pp.55-70.

⁸ See Financial Stability Review, ECB, [November 2020](#) and [May 2021](#). However, risks related to the sovereign-corporate-bank nexus continue to be relevant and might affect the recovery in the euro area.

⁹ The implementation of [the RRF funds](#) is expected to be up to €672.5 billion (of which up to €312.5 billion in grants and up to €360 billion in loans in 2018 constant prices). At this stage it is still too early to assess the actual degree of absorption of these funds and how much corporates will benefit from them.

Table 2

A taxonomy of government interventions in the NFC sector implemented in the euro area during the COVID-19 crisis, and their impact on government accounts

Direct discretionary fiscal measures	Objective	Impact on government deficit (deficit increase, unless otherwise stated)	Impact on government debt (debt increase)
Short-time work schemes	Employment support and relief to corporations	Expenditure (subsidies and social benefits)	Yes
Direct grants/subsidies	Liquidity support	Expenditure (subsidies)	Yes
Capital injections, including capital transfers to corporations	Liquidity support	Expenditure (capital transfers)	Yes
Tax and social security deferrals	Liquidity support	No deficit increase, only cash-accrual adjustments	No, it needs to be financed only in the short-term
Government investment	Economic support	Expenditure (gross capital formation)	Yes
Indirect tax cuts	Economic support	Revenue	Yes
Direct tax and social security contribution cuts	Economic support	Revenue	Yes
Transfers to households	Economic support	Expenditure (social benefits)	Yes

Financial measures	Objective	Impact on deficit	Impact on debt
Loans	Liquidity support	Revenues from interest (deficit decrease) Possible interest expenditure if the operation needs financing (difference between the interest charged by the government and the cost of additional debt)	Deficit-debt adjustment, change in net financial assets including equity injections Possible impact on debt if government needs to finance the operation (no cash buffers available)
Capital injections, including equity acquisitions in corporations	Solvency support Interventions for systemic and strategic firms, restrictions on dividends/executive pay, exit strategy	Revenues from interest (deficit decrease) Possible interest expenditure if the operation needs financing	Deficit-debt adjustment, change in net financial assets, of which equity injections Possible impact on debt if government needs to finance the operation
State guarantees	Guarantees provided to all sectors of the economy	Expenditure (capital transfers) if guarantee is called upon (deficit increase) Revenues from fees on guarantee (deficit decrease)	Contingent liability in case of call upon
Debt moratoria	Liquidity support		
Debt restructuring	Solvency support		

Source: Authors.

Overall, the response to the COVID-19 crisis in support of the NFC sector has seen the use of a wider range of policy tools compared with previous crises.

First, there have been more tools at the national level, such as extending deadlines for tax filing, the deferral of tax payments, the provision of faster tax refunds, and more generous loss offset provisions or tax exemptions, including from social security contributions. Second, general and sizeable schemes for protecting workers' wages have been deployed – in some cases through subsidies to NFCs – which go beyond the existing automatic mechanisms. Around two-thirds of firms in the euro area used

at least one of the government policy support measures introduced during the pandemic.¹⁰

The substantial national fiscal response has been enabled by applying the flexibility provided for in the legal framework. At the European level, this includes (i) the activation of the general escape clause under the Stability and Growth Pact and (ii) the relaxation of State aid rules, which has allowed countries to support the corporate sector with measures additional to the fiscal measures already envisaged under these rules.¹¹ At the national level, other legal measures have been implemented, such as the temporary suspension of the obligation to file for insolvency and debt moratoria.¹² These government interventions have in turn been supported by an accommodative monetary policy, whereby fiscal and monetary temporary measures have complemented each other during the pandemic.

Finally, the European Union has also substantially supported corporates in response to the COVID-19 crisis. First, the SURE loan facility (Support to mitigate Unemployment Risks in an Emergency) has made available €100 billion in emergency funding for national short-time work schemes since October 2020. Out of this envelope, Member States had used €94.3 billion by the cut-off date for this article. Second, the European Investment Bank's European Guarantee Fund provides €25 billion of guarantees backing €200 billion of additional financing for firms, with a focus on SMEs, including through national promotional banks. Third, the Recovery and Resilience Facility (RRF) which entered into force on 19 February 2021 is also expected to provide support to corporates, albeit more indirectly. The expected fiscal stimulus of the RRF-financed spending is at least 0.5% of GDP per annum at the euro area level (June 2021 Eurosystem BMPE projections).¹³

3 The impact of government interventions on non-financial corporation balance sheets during the COVID-19 crisis

The crisis has had a swift effect on balance sheets in the NFC sector. The ratio of debt to gross value added rose strongly in the euro area, reflecting both the drop in economic activity and a sharp increase in the preference for liquid assets given rising uncertainty. While this balance sheet development has much in common with other episodes during the last 20 years, the role of government support measures on this occasion has some distinctive features.

¹⁰ According to an ECB survey, around 55% of large euro area firms and 48% of euro area SMEs used government support to ease their wage bills. About 28% of large firms and 25% of SMEs benefited from tax cuts and tax moratoria, and about 24% of large firms and 32% of SMEs used other government support schemes. Econometric analysis indicates that more vulnerable firms and firms recording a decline in bank loans were more likely to receive such fiscal backing. (see "[The impact of fiscal support measures on firms' liquidity needs during the pandemic](#)", *Economic Bulletin*, Issue 4, ECB, 2021).

¹¹ On 23 March 2020 the EU Council approved the activation of the general escape clause in the Stability and Growth Pact. This allows Member States to temporarily undertake budgetary measures in response to the COVID-19 crisis while still remaining within the rules-based framework of the Stability and Growth Pact. See [here](#).

¹² Deutsche Bundesbank Financial Stability Review, 2020.

¹³ This figure can be compared with the 0.5% of GDP fiscal stimulus projected by the European Commission's 2021 Spring Forecasts.

We use a sectoral accounts decomposition of changes in corporate debt, defined as consolidated loans and debt securities, by uses and resources counterparts (Chart 1) as the main analytical tool in this section. Debt dynamics are explained as the result of combined leverage forces stemming from:

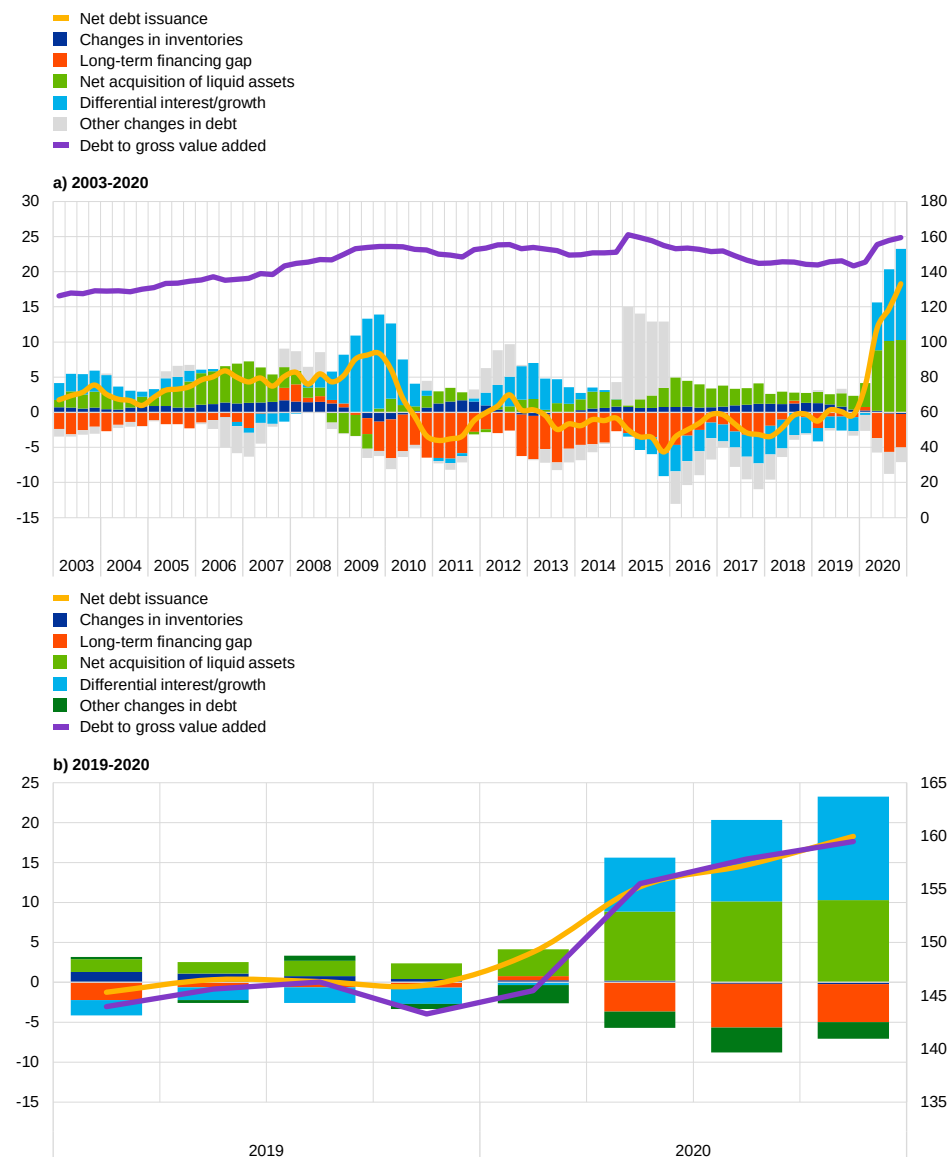
- the need to cover the shortage of own funds (equity and retained earnings) to finance investments in non-liquid assets, here called “long-term financing gap”; the gap is positive when the investment in non-liquid assets exceeds own funds raised and widens owing to, for instance, increases in gross investment or decreases in retained earnings, this widening leading, all other things being equal, to increased debt requirements;¹⁴
- the accumulation of liquid assets, which, everything else being constant (including alternative sources of financing, such as equity), leads to increased debt requirements;
- the net accumulation of inventories driven by the business cycle, also posing leverage pressures, as in the case for liquid asset accumulation;
- the “differential interest/growth”, corresponding to a measure of the excess of the interest burden over value added growth; this differential captures the changes in the debt-to-value-added ratio due to mechanical elements not directly linked to current corporate decisions on indebtedness: the interest payments depend on debt accumulated in the past and the growth in value added affects the ratio via a denominator effect.

¹⁴ In detail, transactions in the “long-term financing gap” item are calculated as: (i) capital formation, plus (ii) net acquisitions of financial assets other than currency, deposits, debt securities and financial derivatives (i.e. less liquid assets; the component mainly covers acquisitions of equity and net trade credits receivable), minus (iii) retained earnings (measured as corporate savings) plus interest paid (which are accounted for in the “differential interest/growth” item), minus (iv) equity raised.

Chart 1

Contributions to changes in non-financial corporation debt in the euro area

(four-quarter sums, % of corporate value added)



Source: ECB and Eurostat.

Note: The time series shown in bars are rolling four-quarter accumulated flows of sector accounts non-financial corporations' uses and resources, excluding debt issuance and including changes in assets and liabilities not due to transactions, expressed as a percentage of the gross value over the four quarters. Flows are grouped in analytical categories as explained in the main text and footnote 18. The statistical discrepancy between financial and non-financial flows is included in "long-term financing gap". A notional negative flow is included in the time series "differential interests/ growth" corresponding to the result of applying the growth rate in gross value added during the four quarters to the stock of debt liabilities at the beginning of the four quarters; this makes the bars add up to the total change in the debt-to-gross value ratio during the four quarters.

The line shows the sum of bars corresponding to transactions, which is arithmetically equal to the net issuance of debt as a percentage of gross value added over the four quarters.

Chart 1 shows the changes in the corporate debt to gross value-added ratio attributable to the four dynamics above, which sum up to total net debt issuance represented by the yellow line (gross issuance minus redemptions). The chart also shows the changes in debt attributable to other factors (i.e. revaluations and reclassifications and other statistical treatments) and the level of the ratio itself (on the right-hand scale).

The COVID-19 crisis has resulted in an unfavourable interest-growth differential (blue bars in Chart 1), which – though likely to be temporary – has been a major driver of the leverage increase. This development was due to the collapse in economic activity, while supportive monetary policy has kept interest rate spreads contained. This contrasts with the evidence over 2008-09, when the increase in the interest rate-growth differential occurred due to a combination of negative growth and high spreads, and with the recession in 2012-13, with developments dominated by high spreads amid the sovereign debt crisis.

Liquid assets (light green bars in Chart 1) are playing a distinctively different role in the current crisis compared with the start of the global financial crisis (GFC). Liquid assets were this time the main factor behind the increase in the debt to value added ratio in 2020 following record-high borrowing in the first half of the year and subdued capital investment triggered by the COVID-19 shock.¹⁵ This also translated into a contained development of net corporate debt. Similarly, as in previous crises, inventory cuts (dark blue bars) related to low activity are contributing negatively to corporate debt accumulation.

The COVID-19 crisis has also brought about a change in the long-term financing gap (red bars). This gap had been a sustained and robust deleveraging force after the GFC, reflecting subdued investment and preferential recourse to equity and internal financing. This force was showing signs of exhaustion in 2018 and 2019 on the back of increasing capital formation.¹⁶ The COVID-19 crisis abruptly broke this trend, and the gap has again started to provide a significant contribution to deleveraging, similar to the one that materialised after the GFC from 2008 to 2013.

The government interventions can be seen in the increase in the contribution of subsidies and capital injections to overall resources in 2020. In Chart 2, the resources from government support are broken down into two categories, “subsidies”, which include current transfers and salary support measures,¹⁷ and “capital injections”, including both capital transfers and equity acquisitions by government.¹⁸ The relative weight of subsidies and capital injections has been high since end-2017, mainly due to a general decline in private own funds financing (particularly due to a lower raising of equity compared with previous periods, also reflecting a preference for bond issuance). The year 2020 saw an acceleration in this trend, with subsidies and

¹⁵ While during 2008-09 the NFC sector reacted to the shortage of short-term financing by exhausting the liquid assets accumulated in previous years, this time the different nature of the shock has led to an unprecedented accumulation of liquidity, exacerbating a positive trend that already existed since 2014.

¹⁶ In the period between 2010 and 2015 the gap values were usually in a range between -3% and -7%, in sharp contrast with the period prior to the financial crisis, with values typically above -2% and even in positive territory (i.e. with own funds financing being insufficient to cover long-term investment) from end-2007 to mid-2009. Chart 2 shows the gap developments as of 2016, when this dynamic post-crisis phase was starting to fade away.

¹⁷ In some euro area countries not all salary support measures are reflected in sector accounts as affecting the NFC sector, but instead as directly supporting households' income. It could then be argued that the analysis here underestimates actual support to NFC resources.

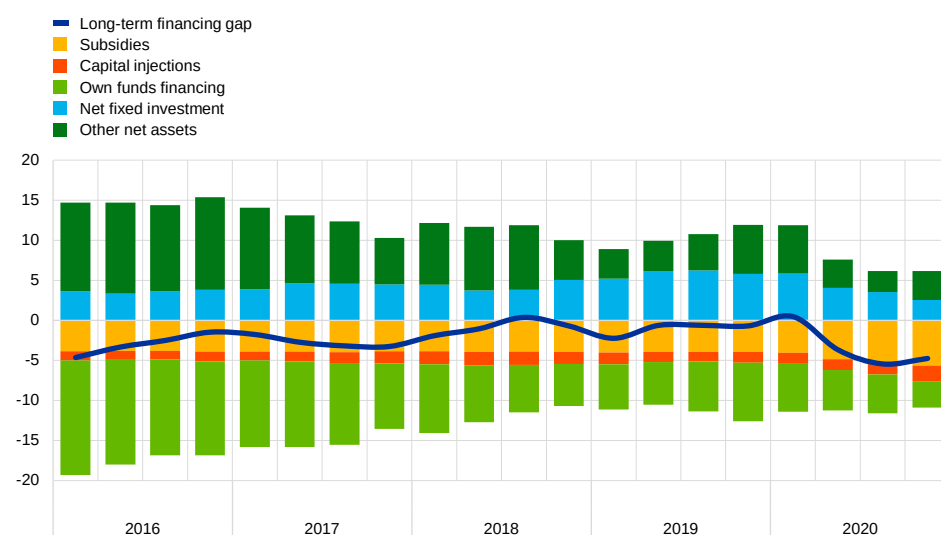
¹⁸ The remaining financing gap components comprise “private own funds financing” (equity issuance and retained earnings adjusted for government support measures and interest payments), real investment adjusted for the depreciation of the capital stock (net fixed investment) and other investments, in particular in long-term financial assets (“other net assets”). The decomposition in Chart 2 corresponds to the items described in footnote 14, except that retained earnings and equity raised are further split into contributions from government support actions and other subcomponents, which are jointly called “private own funds financing”.

capital injections on the rise, while private own funds financing continued to be subdued. The latter mainly reflected a decline in operating surpluses before subsidies (down by 1.4 percentage points on value added from end-2019, four-quarter sums).

Chart 2

Financing gap of the NFC sector in the euro area

(four-quarter sums; % of corporate value added)



Source: ECB and Eurostat

Note: Rolling four-quarter sector accounts resources are shown below the line (i.e. constituting negative contributions to the financing gap and therefore to debt needs) and uses above the line (positive contributions to the gap and debt needs), expressed as a percentage over the gross value added in the four quarters. Uses and resources are grouped in analytical categories as explained in the text and footnote 14. The statistical discrepancy between uses and resources is included in "other net assets".

Overall, the resources provided by governments in the last quarter of 2020 represented 70% of the total own funds raised by the NFC sector, compared with an average share of less than 40% prior to 2020. The substantial increase in subsidies and capital injections and the sharp decline by end-2020 in capital formation and long-term financial investment caused subsidies and capital injections to exceed capital formation and long-term financial investment during 2020 for the first time ever.

4 Government interventions and risks to public balance sheets

Government interventions in the NFC sector result in explicit and implicit costs on the government's balance sheet.

First, the discretionary fiscal packages designed to tackle the COVID-19 crisis throughout 2020, which were then extended during 2021, mainly consist of direct fiscal measures with an immediate and substantial effect on the budget balance. Second, the governments have lost a share of tax revenues owing to the restrictions imposed on the economy.¹⁹ Third, the crisis has also impacted on government debt through financial public support in the form of equity injections and loans. Fourth, additional contingent liabilities, mainly state guaranteed loans, may have an impact on public debt in the future depending on the

¹⁹ While tax deferrals are often reported by Member States as part of the total costs of fiscal packages, these typically do not affect the budget balance.

risks related to the actual take-up. Moreover, there is the risk that private non-financial corporations may be forced to fall under public remit.

The COVID-19 crisis is strongly affecting public finances, which is reflected in growing deficits and debt-to-GDP ratios in the short term. The euro area budget deficit increased from 0.6% of GDP in 2019 to 7.2% of GDP in 2020, i.e. by around €700 billion. The main driver, apart from the decline in economic growth, was the implementation of discretionary measures on the expenditure side, whereas total revenue only slightly decreased vis-à-vis 2019.

The euro area debt-to-GDP ratio rose from 83.9% of GDP in 2019 to 98.0% of GDP in 2020.²⁰ Euro area governments increased their stock of debt by €1,100 billion in 2020 vis-à-vis 2019. However, the government debt ratio is projected to peak in 2021, at around 100% of GDP, and to decline slightly thereafter, mainly on account of favourable interest-growth differentials and improving deficits. The large surge in the stock of debt in 2020 not only originates from the large deficits incurred, but also reflects the loans and equity injections provided to corporations and other financial asset acquisitions, which do not appear in the deficit figures but in the deficit-debt adjustment, which reached €400 billion in the euro area (2.4% of GDP). The net acquisition of financial assets was historically high in 2020 due to: (i) significant accumulated amounts of currency and deposits (2.0% of GDP), reflecting that countries borrowed funds by issuing debt in anticipation of liquidity needs; (ii) loans granted and equity injections (0.5% of GDP), reflecting policy measures aimed at providing public financing to corporations; and (iii) “other accounts receivable” (-0.1% of GDP, reflecting tax accruals and deferral schemes). The strong bond issuance during 2020 consisted mostly of long-term debt (i.e. above one year maturity), which represented 61% of the euro area total borrowing requirement, whereas short-term debt accounted for 33%.

The provision of contingent liabilities has supporting effects for the whole economy. In order to prevent liquidity shortages from turning into solvency risks, particularly in SMEs, many governments have taken on new contingent liabilities since March-April 2020, mainly in the form of direct state guaranteed loans, which are not reflected in the official debt statistics. The different legal frameworks at country level render a comparison of the public guarantees granted to firms difficult, with some guarantee schemes being new, and others already having been in place before the onset of the crisis. The current size of the off-balance-sheet position was around €2,000 billion (19% of GDP) on average in 2020, compared with 9% of GDP at the end of 2019. However, the extent of possible losses for sovereigns, while considerable, appears so far to be contained overall, as the take-up of guarantees amounted to no more than around 4% of GDP by end-2020 at the aggregate level, albeit with considerable cross-country differences.²¹ While a harmonised quantification of the

²⁰ See [euroindicators 22 April 2021](#).

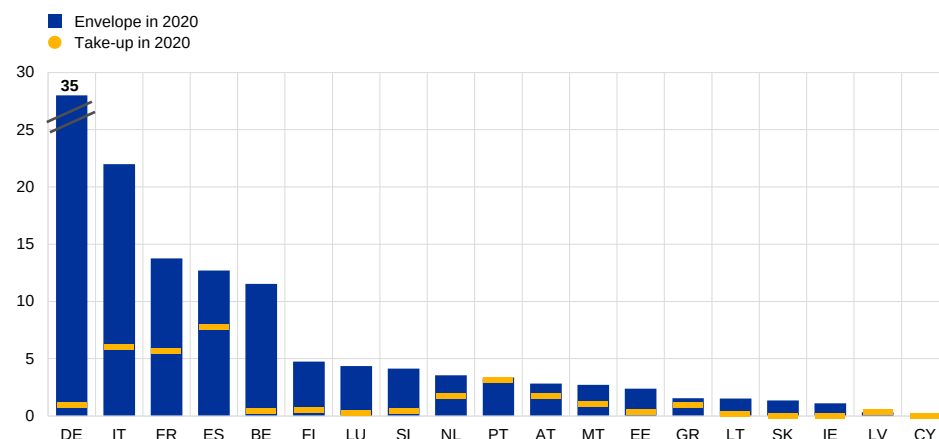
²¹ This figure reflects the maximum amount of public funds involved in the entire envelope of available guarantees (and not the total amounts mobilised, including leveraged private funding).

state guarantees supporting the NFC sector across countries and over time is complex, Chart 3 provides an estimation for the euro area countries in 2020.²²

Chart 3

State guarantee envelopes and guarantee take-up in 2020 across euro area countries

(state guarantee envelopes (incl. take-up), in percentage of GDP)



Source: Estimates provided by the Working Group on Public Finance in the context of the June 2021 Eurosystem staff BMPE and the ESRB report "Financial stability implications of support measures to protect the real economy from the COVID-19 pandemic", February 2021.

The performance of public corporations also poses an additional upside risk to government debt, even in the absence of explicit government guarantees. If

losses materialise, public corporations add additional risks to government balance sheets.²³ Data from Eurostat show that the stock liabilities from the public NFC sector were limited before the pandemic²⁴. However, this situation could change over time, as happened during the GFC. Experience suggests that the most successful privatisations and divestments need to be well prepared, implying that possible pressures to re-privatise hurriedly may need to be resisted. The OECD guidelines suggest the transactions' impact on the specific firm, market and the wider economy should be carefully considered, which might lead to government stakes remaining in government portfolios for some time.²⁵

²² Note that this does not distinguish between the recipients of the support, i.e. whether it is addressed to large companies, SMEs or entrepreneurs, nor between the different risk profiles in each category.

²³ The public sector concept (see Figure 1) can be a useful additional tool to monitor government balance sheet risks in this context (see *IMF Fiscal Monitor*, October 2018).

²⁴ "Products Eurostat News", 29 January 2021, following Council Directive 2011/85 (known as the "Six-Pack"). However, the financial public sector has been relatively sizeable since the GFC owing to public equity injections and asset management companies. Some of these companies (called special purpose vehicles, or SPVs) are recorded under the remit of the public sector (European Commission, 2015).

²⁵ The OECD Guidelines on Corporate Governance of SOEs indicate, among other things, that a clear rationale for reprivatisation should be communicated to the public to avoid the appearance of improper motives. Sound competition should be in place prior to embarking on the transaction. The role of privatisation advisors and their independence is crucial. An appropriate company valuation and sales price is an important condition for success and is commonly based on the principle of fair market value. Should a government sell at below market value the reasons should be clearly identified, justified and transparent at the outset to ensure the integrity of the process.

5 Conclusion

The support provided by euro area governments to NFCs during the COVID-19 crisis, coupled with some use of the flexibility available within the European and national legal framework, has so far prevented major disruptions, such as a wave of filed insolvencies. Euro area countries introduced a variety of support measures during 2020, which, among other things, have contributed to an unprecedented increase in liquid assets held on corporate balance sheets as private investment has been inhibited by the economic uncertainty. Public resources have contributed to sustainable corporate debt developments, allowing NFCs to increase their liquidity buffers to cushion future shocks. However, there are significant differences across firms and countries. Moreover, the take-up of loan guarantees has been relatively low, which, although partially reflecting a certain tightening of credit conditions, also suggests that demand in most countries has been low. However, the low uptake of loan guarantees might change in the near future. In addition to state guaranteed loans, governments can provide equity injections and direct loans. Depending on the depth and duration of the COVID-19 crisis, risks from further capital injections may materialise. Overall, there are potential risks stemming from a tightening sovereign-bank-corporate nexus.

The forms and magnitude of government support to the corporate sector will further evolve in 2021 and beyond, depending on the evolution of the pandemic and containment measures and the pace of the economic recovery. Following the substantial fiscal support provided during 2020-21 at national level, the EU will become an increasingly important contributor to investment and the economic recovery. The funds under the Recovery and Resilience Facility are also aimed at facilitating the digital and green transition of the European economies. According to the June 2021 Eurosystem BMPE projections, the euro area is projected to recover strongly, with growth of 4.6% in 2021 and 4.7% in 2022. As the recovery gains momentum, it will be important to shift from broad-based support to increasingly targeted support to sectors and firms to relieve government exposures, as well as to reduce corporate dependence on official support. At the same time, it will be desirable to avoid possible spillovers stemming from specific sectoral imbalances which may be affecting banks (through loans, NPLs) and which reinforce possible negative sovereign-financial loops.²⁶

²⁶ [Financial Stability Review](#), ECB, May 2021.

Statistics

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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)
	1	2	3	4	5	6	Total	excluding food and energy	9	10	11	12	13
2018	3.7	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	0.0	6.0	1.4	2.1	2.2	1.8	1.8	0.5	2.9	1.2
2020	-3.3	-3.3	-9.8	-4.7	2.3	-6.4	1.4	1.8	1.2	0.9	0.0	2.5	0.3
2020 Q2	-6.6	-9.0	-19.5	-8.1	11.6	-11.4	0.9	1.6	0.4	0.6	0.1	2.7	0.2
Q3	7.8	7.5	16.9	5.3	3.0	12.4	1.3	1.7	1.2	0.6	0.2	2.3	0.0
Q4	1.9	1.1	1.3	2.8	2.6	-0.6	1.2	1.6	1.2	0.5	-0.8	0.1	-0.3
2021 Q1	0.8	1.6	-1.6	-1.0	0.6	-0.3	1.9	1.8	1.9	0.6	-0.4	0.0	1.1
2021 Jan.	-	-	-	-	-	-	1.6	1.8	1.4	0.7	-0.6	-0.3	0.9
Feb.	-	-	-	-	-	-	1.7	1.7	1.7	0.4	-0.4	-0.2	0.9
Mar.	-	-	-	-	-	-	2.4	1.8	2.6	0.7	-0.2	0.4	1.3
Apr.	-	-	-	-	-	-	3.3	2.4	4.2	1.5	-0.4	0.9	1.6
May	-	-	-	-	-	-	3.8	2.9	5.0	2.1	-0.1	1.3	2.0
June	-	-	-	-	-	-	.	.	5.4	2.5	0.2	.	1.9

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.

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	Advanced economies	Emerging market economies
	Global ²⁾	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders			
	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	4.3	3.2	5.5
2019	51.7	52.5	50.2	50.5	51.8	51.3	50.3	52.2	48.8	-0.4	-0.3	-0.5
2020	47.5	48.8	46.5	42.4	51.4	44.0	48.5	46.3	45.3	-4.4	-4.6	-4.2
2020 Q3	51.9	53.1	57.5	45.6	54.7	52.4	52.6	51.7	49.0	7.9	8.6	7.3
Q4	54.2	56.8	50.5	48.2	56.3	48.1	54.6	54.0	50.8	4.5	4.9	4.1
2021 Q1	54.3	59.3	49.1	48.4	52.3	49.9	53.8	54.5	50.3	4.9	2.0	8.0
Q2	57.5	65.3	61.9	49.6	53.0	56.8	53.9	58.8	52.9	.	.	.
2021 Jan.	53.3	58.7	41.2	47.1	52.2	47.8	54.0	53.0	49.3	4.6	4.2	5.1
Feb.	54.3	59.5	49.6	48.2	51.7	48.8	53.7	54.4	49.8	3.7	2.1	5.5
Mar.	55.3	59.7	56.4	49.9	53.1	53.2	53.6	55.9	51.7	4.9	2.0	8.0
Apr.	57.5	63.5	60.7	51.0	54.7	53.8	54.4	58.5	53.3	4.7	2.0	7.6
May	59.0	68.7	62.9	48.8	53.8	57.1	54.4	60.6	53.6	.	.	.
June	56.2	63.7	62.2	48.9	50.6	59.5	53.0	57.3	51.8	.	.	.

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 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
Mar.	-0.56	-0.48	-0.55	-0.54	-0.52	-0.49	0.19	-0.08
Apr.	-0.57	-0.48	-0.56	-0.54	-0.52	-0.48	0.19	-0.07
May	-0.56	-0.48	-0.56	-0.54	-0.51	-0.48	0.15	-0.09
June	-0.56	-0.48	-0.55	-0.54	-0.51	-0.48	0.13	-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 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
Mar.	-0.64	-0.69	-0.72	-0.62	-0.28	0.41	1.68	0.82	-0.75	-0.73	-0.32	0.37
Apr.	-0.63	-0.68	-0.70	-0.57	-0.18	0.50	1.57	0.80	-0.73	-0.70	-0.21	0.53
May	-0.63	-0.68	-0.69	-0.54	-0.15	0.53	1.54	0.75	-0.72	-0.67	-0.16	0.57
June	-0.65	-0.69	-0.70	-0.56	-0.20	0.49	1.40	0.68	-0.72	-0.68	-0.22	0.45

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										Standard & Poor's 500	Nikkei 225
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care		
	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 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
Mar.	422.4	3,813.3	911.1	271.6	168.4	97.0	159.1	774.6	770.1	367.2	264.5	838.1	3,910.5	29,315.3
Apr.	440.1	3,987.3	952.7	286.0	177.2	93.2	161.5	807.2	835.4	387.5	267.3	874.0	4,141.2	29,426.8
May	443.8	4,003.6	959.5	290.0	183.0	94.8	167.8	808.7	811.7	384.1	278.3	870.2	4,169.6	28,517.1
June	455.3	4,105.8	958.5	305.3	188.6	97.4	168.5	831.8	850.4	375.9	287.2	883.4	4,238.5	28,943.2

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						
	Over-night	Redeem-able 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 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	5.08	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	15.82	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.	0.01	0.35	0.22	0.68	5.00	15.81	4.84	5.32	5.87	1.91	1.35	1.49	1.29	1.35	1.60	1.33	
Feb.	0.01	0.35	0.23	0.66	5.01	15.74	5.05	5.25	5.86	1.98	1.30	1.48	1.27	1.32	1.58	1.31	
Mar.	0.01	0.35	0.20	0.61	4.98	15.77	4.88	5.12	5.72	1.94	1.32	1.43	1.24	1.32	1.58	1.31	
Apr.	0.01	0.35	0.21	0.62	4.89	15.75	5.16	5.17	5.78	1.98	1.32	1.49	1.27	1.31	1.59	1.31	
May ^(a)	0.01	0.34	0.19	0.58	4.89	15.76	5.16	5.31	5.93	2.04	1.32	1.43	1.26	1.31	1.61	1.32	

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
	Over- night	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 June	0.00	-0.12	0.32	1.94	1.86	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	1.95	1.86	1.87	1.60	1.30	1.51	1.24	1.17	1.38	1.51
Aug.	0.00	-0.20	0.39	1.83	1.84	1.90	1.94	1.56	1.39	1.49	1.29	1.31	1.20	1.51
Sep.	0.00	-0.20	0.26	1.88	1.91	2.10	1.94	1.54	1.43	1.49	1.22	1.31	1.31	1.51
Oct.	0.00	-0.21	0.26	1.82	1.91	2.20	1.96	1.55	1.46	1.50	1.22	1.42	1.40	1.53
Nov.	-0.01	-0.20	0.42	1.83	1.97	2.00	1.98	1.57	1.41	1.47	1.22	1.29	1.30	1.51
Dec.	-0.01	-0.18	0.25	1.83	2.01	1.94	1.94	1.61	1.42	1.44	1.34	1.23	1.27	1.51
2021 Jan.	-0.01	-0.14	0.39	1.84	2.14	2.00	1.92	1.61	1.44	1.41	1.17	1.18	1.29	1.50
Feb.	-0.01	-0.21	0.25	1.84	1.96	2.00	1.95	1.58	1.44	1.43	1.15	1.22	1.23	1.48
Mar.	-0.01	-0.11	0.22	1.82	1.91	1.97	2.02	1.56	1.45	1.40	1.09	0.71	1.23	1.39
Apr.	-0.01	-0.18	0.25	1.80	2.04	1.96	1.98	1.57	1.44	1.40	1.31	1.33	1.38	1.56
May ^(p)	-0.01	-0.23	0.19	1.80	1.87	1.95	2.04	1.57	1.45	1.42	1.16	1.17	1.27	1.46

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	1,215	503	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	1,527	454	144	.	97	714	118	455	177	70	.	45	114	49
2020 Dec.	1,527	454	144	.	97	714	118	336	164	60	.	30	51	31
2021 Jan.	1,584	495	141	.	99	718	131	493	246	46	.	37	121	43
Feb.	1,544	475	143	.	102	702	121	371	164	44	.	32	103	27
Mar.	1,583	486	148	.	94	726	130	458	218	50	.	30	118	43
Apr.	1,558	474	144	.	98	706	136	413	180	40	.	39	107	47
May	1,531	462	147	.	99	692	130	409	187	47	.	37	105	33
Long-term														
2018	15,745	3,687	3,162	.	1,247	7,022	627	228	64	68	.	15	75	6
2019	16,312	3,816	3,398	.	1,321	7,151	626	247	69	74	.	20	78	7
2020	17,243	3,892	3,169	.	1,451	8,006	725	295	68	70	.	27	114	16
2020 Dec.	17,243	3,892	3,169	.	1,451	8,006	725	204	40	104	.	17	36	7
2021 Jan.	17,314	3,897	3,130	.	1,459	8,093	736	315	90	52	.	21	133	19
Feb.	17,511	3,904	3,188	.	1,459	8,209	751	325	57	84	.	20	144	19
Mar.	17,709	3,967	3,231	.	1,475	8,274	763	371	107	94	.	27	125	17
Apr.	17,713	3,952	3,223	.	1,470	8,308	760	316	64	77	.	17	146	12
May	17,832	3,946	3,240	.	1,484	8,393	769	276	46	73	.	23	121	12

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
Outstanding amount											
2018	16,959.9	4,189.8	3,332.3	.	1,318.5	7,445.8	673.5	7,024.3	465.0	1,099.2	5,460.1
2019	17,595.0	4,366.8	3,578.6	.	1,405.9	7,557.2	686.5	8,587.9	538.4	1,410.6	6,639.0
2020	18,770.2	4,345.9	3,313.3	.	1,547.5	8,720.3	843.2	8,448.7	469.3	1,321.5	6,658.0
2020 Dec.	18,770.2	4,345.9	3,313.3	.	1,547.5	8,720.3	843.2	8,448.7	469.3	1,321.5	6,658.0
2021 Jan.	18,898.6	4,392.0	3,271.3	.	1,557.6	8,810.9	866.8	8,331.8	446.6	1,317.4	6,567.8
Feb.	19,055.1	4,379.5	3,331.6	.	1,560.4	8,911.4	872.2	8,649.0	520.6	1,407.6	6,720.8
Mar.	19,291.7	4,453.1	3,378.7	.	1,568.5	8,999.1	892.4	9,237.8	542.9	1,467.6	7,227.3
Apr.	19,270.9	4,426.0	3,367.1	.	1,568.2	9,013.8	895.7	9,457.6	554.3	1,467.6	7,435.6
May	19,362.4	4,407.6	3,387.0	.	1,583.8	9,085.1	898.9	9,655.7	575.7	1,508.9	7,571.1
Growth rate											
2018	1.9	1.7	3.0	.	3.2	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	.	12.4	10.9	24.3	1.1	0.0	3.1	0.8
2020 Dec.	7.4	1.2	2.6	.	12.4	10.9	24.3	1.1	0.0	3.1	0.8
2021 Jan.	7.4	0.3	2.8	.	11.6	11.3	25.5	1.3	-0.1	4.5	0.7
Feb.	7.7	-0.3	4.0	.	10.8	11.8	25.1	1.5	-0.1	4.7	0.9
Mar.	8.5	2.2	4.1	.	11.9	11.9	24.5	1.7	1.4	5.0	1.1
Apr.	7.0	0.9	4.5	.	8.2	10.2	19.5	2.0	1.4	5.3	1.5
May	5.6	0.2	5.0	.	5.7	8.1	12.3	2.3	1.4	6.1	1.6

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	99.9	95.5	94.1	90.6	80.9	89.2	117.3	94.9
2019	98.1	93.1	92.9	88.8	79.1	86.6	115.4	92.3
2020	99.6	93.4	94.1	89.2	78.9	87.5	119.4	93.8
2020 Q3	101.1	94.7	95.3	90.0	79.0	87.9	121.7	95.4
Q4	101.2	94.7	95.4	90.2	75.9	87.8	122.3	95.5
2021 Q1	100.7	94.6	95.2	89.8	75.1	87.5	121.7	95.3
Q2	100.5	94.0	94.5	.	.	.	121.9	94.9
2021 Jan.	101.3	95.3	95.7	-	-	-	122.4	96.1
Feb.	100.6	94.5	95.3	-	-	-	121.5	95.2
Mar.	100.3	94.1	94.8	-	-	-	121.2	94.8
Apr.	100.6	94.1	94.9	-	-	-	121.9	95.1
May	100.8	94.2	94.6	-	-	-	122.3	95.1
June	100.2	93.8	93.9	-	-	-	121.5	94.6
<i>Percentage change versus previous month</i>								
2021 June	-0.6	-0.4	-0.8	-	-	-	-0.6	-0.5
<i>Percentage change versus previous year</i>								
2021 June	0.5	0.0	-0.2	-	-	-	2.1	0.8

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 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
2021 Q1	7.808	7.572	26.070	7.437	361.206	127.806	4.546	0.874	4.8793	10.120	1.091	1.205
Q2	7.784	7.528	25.638	7.436	354.553	131.930	4.529	0.862	4.9240	10.141	1.098	1.206
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
Mar.	7.747	7.578	26.178	7.436	365.612	129.380	4.599	0.859	4.8884	10.169	1.106	1.190
Apr.	7.805	7.568	25.924	7.437	360.583	130.489	4.561	0.865	4.9231	10.162	1.103	1.198
May	7.811	7.523	25.558	7.436	353.647	132.569	4.528	0.863	4.9250	10.147	1.097	1.215
June	7.739	7.498	25.454	7.436	349.937	132.631	4.501	0.859	4.9238	10.117	1.094	1.205
<i>Percentage change versus previous month</i>												
2021 June	-0.9	-0.3	-0.4	0.0	-1.0	0.0	-0.6	-0.4	0.0	-0.3	-0.3	-0.8
<i>Percentage change versus previous year</i>												
2021 June	-2.9	-0.9	-4.6	-0.2	0.6	9.5	1.2	-4.5	1.7	-3.5	2.1	7.0

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)												
2020 Q2	28,147.8	28,214.2	-66.5	11,309.8	9,464.6	9,868.7	11,969.9	-66.0	6,130.3	6,779.7	905.0	15,309.0
Q3	28,066.2	28,063.8	2.5	11,116.0	9,314.9	10,009.8	12,055.5	-91.9	6,122.8	6,693.4	909.6	15,148.3
Q4	28,335.8	28,453.7	-118.0	10,976.2	9,408.4	10,700.4	12,347.1	-75.2	5,854.6	6,698.3	879.8	14,809.7
2021 Q1	29,619.9	29,737.7	-117.8	11,320.4	9,605.4	11,436.4	13,070.4	-115.2	6,128.8	7,061.9	849.5	15,416.3
Outstanding amounts as a percentage of GDP												
2021 Q1	260.5	261.6	-1.0	99.6	84.5	100.6	115.0	-1.0	53.9	62.1	7.5	135.6
Transactions												
2020 Q2	135.7	111.9	23.8	69.3	177.9	377.2	202.6	40.8	-354.8	-268.6	3.2	-
Q3	184.7	86.7	98.0	24.7	-2.3	96.2	78.8	-31.8	92.3	10.3	3.4	-
Q4	31.2	-94.7	125.8	-97.9	13.5	355.0	-239.9	-19.6	-208.4	131.8	2.1	-
2021 Q1	513.5	428.7	84.8	70.6	7.7	259.7	165.4	7.2	179.1	255.5	-3.0	-
2020 Dec.	-199.1	-249.1	50.0	-113.3	-9.6	176.3	-124.1	-30.6	-233.2	-115.4	1.7	-
2021 Jan.	328.5	283.3	45.2	61.6	19.5	95.9	92.0	13.7	158.2	171.8	-0.9	-
Feb.	119.8	101.0	18.8	21.5	4.9	84.2	-2.7	-1.0	16.7	98.8	-1.6	-
Mar.	65.2	44.4	20.8	-12.5	-16.7	79.6	76.2	-5.6	4.2	-15.1	-0.5	-
Apr.	208.9	208.2	0.7	38.5	13.8	62.2	46.0	4.6	102.7	148.4	0.7	-
May	110.2	76.2	33.9	41.2	38.9	63.4	-7.1	-2.4	6.6	44.4	1.4	-
12-month cumulated transactions												
2021 May	943.7	569.9	373.8	27.5	53.1	949.6	186.6	-22.3	-15.6	330.1	4.5	-
12-month cumulated transactions as a percentage of GDP												
2021 May	8.3	5.0	3.3	0.2	0.5	8.4	1.6	-0.2	-0.1	2.9	0.0	-

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	11,589.5	11,120.5	6,224.9	2,369.1	2,431.1	1,176.6	747.0	500.9	95.5	469.0	5,577.7	5,108.7
2019	11,952.4	11,540.2	6,379.4	2,455.9	2,653.2	1,257.0	771.0	618.5	51.7	412.2	5,761.7	5,349.6
2020	11,359.2	10,933.6	5,904.9	2,573.3	2,487.7	1,215.6	680.8	584.1	-32.2	425.6	5,177.0	4,751.4
2020 Q2	2,611.6	2,530.2	1,346.7	633.9	546.9	274.3	143.3	127.6	2.6	81.5	1,114.1	1,032.6
Q3	2,907.9	2,767.8	1,528.7	649.1	619.6	310.0	179.3	128.5	-29.7	140.1	1,302.7	1,162.6
Q4	2,912.7	2,773.7	1,488.8	660.5	635.6	316.5	183.0	134.3	-11.1	139.0	1,364.3	1,225.3
2021 Q1	2,927.6	2,790.3	1,472.7	663.4	644.1	324.1	184.8	133.4	10.1	137.3	1,395.7	1,258.4
as a percentage of GDP												
2020	100.0	96.3	52.0	22.7	21.9	10.7	6.0	5.1	-0.3	3.7	-	-
Chain-linked volumes (prices for the previous year)												
quarter-on-quarter percentage changes												
2020 Q2	-11.4	-12.0	-12.6	-2.6	-19.3	-12.0	-17.4	-32.9	-	-	-18.5	-20.0
Q3	12.4	10.2	14.1	5.3	13.0	13.2	24.8	-0.5	-	-	16.6	11.6
Q4	-0.6	-0.4	-2.9	0.5	2.6	1.6	1.9	6.0	-	-	3.9	4.9
2021 Q1	-0.3	-0.6	-2.2	-0.2	0.1	1.1	1.3	-3.6	-	-	0.6	0.1
annual percentage changes												
2018	1.9	1.8	1.5	1.1	3.1	3.7	3.9	0.6	-	-	3.6	3.7
2019	1.4	2.2	1.3	1.7	6.7	3.5	2.0	21.2	-	-	2.4	4.4
2020	-6.4	-6.3	-7.9	1.4	-7.4	-4.9	-12.5	-6.3	-	-	-9.0	-8.9
2020 Q2	-14.4	-14.0	-16.1	-1.6	-20.2	-13.9	-26.7	-24.4	-	-	-21.1	-20.7
Q3	-4.0	-4.1	-4.6	3.0	-4.4	-3.3	-8.4	-1.2	-	-	-8.6	-9.3
Q4	-4.6	-6.6	-7.4	3.1	-10.7	-1.0	-5.3	-31.5	-	-	-4.8	-9.0
2021 Q1	-1.3	-4.0	-5.3	2.9	-6.3	2.4	6.4	-31.8	-	-	-0.6	-6.2
contributions to quarter-on-quarter percentage changes in GDP; percentage points												
2020 Q2	-11.4	-11.8	-6.7	-0.6	-4.5	-1.3	-1.0	-2.2	-0.1	0.3	-	-
Q3	12.4	9.9	7.4	1.3	2.8	1.4	1.4	0.0	-1.5	2.5	-	-
Q4	-0.6	-0.4	-1.5	0.1	0.6	0.2	0.1	0.3	0.5	-0.2	-	-
2021 Q1	-0.3	-0.6	-1.1	0.0	0.0	0.1	0.1	-0.2	0.6	0.3	-	-
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	1.4	2.2	0.7	0.4	1.4	0.4	0.1	0.9	-0.3	-0.8	-	-
2020	-6.4	-6.0	-4.2	0.3	-1.6	-0.5	-0.8	-0.3	-0.5	-0.4	-	-
2020 Q2	-14.4	-13.6	-8.6	-0.3	-4.6	-1.5	-1.7	-1.4	-0.1	-0.8	-	-
Q3	-4.0	-4.0	-2.4	0.6	-0.9	-0.4	-0.5	-0.1	-1.2	0.0	-	-
Q4	-4.6	-6.4	-4.0	0.6	-2.5	-0.1	-0.3	-2.1	-0.6	1.8	-	-
2021 Q1	-1.3	-3.8	-2.8	0.6	-1.4	0.3	0.4	-2.1	-0.2	2.5	-	-

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	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
Current prices (EUR billions)												
2018	10,385.3	174.5	2,055.6	528.1	1,961.0	501.8	474.8	1,166.3	1,208.6	1,957.8	356.8	1,204.2
2019	10,710.7	177.1	2,074.8	569.2	2,036.3	533.3	475.9	1,202.3	1,252.8	2,022.0	366.9	1,241.7
2020	10,229.4	175.2	1,939.7	559.5	1,794.5	547.0	463.6	1,210.0	1,168.2	2,052.5	319.2	1,129.8
2020 Q2	2,353.5	45.0	429.5	125.5	382.7	129.9	113.2	294.3	265.4	496.5	71.7	258.2
Q3	2,616.0	43.6	498.3	143.7	472.8	140.6	115.7	304.4	294.6	519.6	82.8	291.9
Q4	2,622.1	43.2	512.6	147.9	456.5	140.1	115.4	306.1	301.1	522.5	76.5	290.6
2021 Q1	2,641.3	43.5	527.6	147.3	451.2	142.0	117.6	308.0	303.3	524.6	76.2	286.3
as a percentage of value added												
2020	100.0	1.7	19.0	5.5	17.5	5.3	4.5	11.8	11.4	20.1	3.1	-
Chain-linked volumes (prices for the previous year)												
quarter-on-quarter percentage changes												
2020 Q2	-11.7	0.4	-14.7	-12.6	-21.3	-4.1	-2.6	-2.6	-14.1	-6.3	-23.6	-9.3
Q3	12.2	0.5	16.3	13.8	23.0	7.4	2.8	2.9	11.2	9.1	22.7	14.2
Q4	-0.5	0.0	3.1	2.0	-3.8	-0.8	-0.5	-0.1	1.4	-1.3	-11.4	-1.5
2021 Q1	0.0	-0.9	1.0	-1.1	-1.5	1.6	1.4	-0.1	0.5	0.1	-0.9	-3.5
annual percentage changes												
2018	1.9	-0.2	1.8	2.4	1.6	6.7	1.0	1.3	3.9	0.9	1.1	1.7
2019	1.3	0.6	-0.7	2.9	2.1	5.3	0.7	1.7	1.8	1.0	1.5	1.5
2020	-6.3	-0.1	-7.0	-5.5	-13.4	1.2	-1.8	-1.0	-8.0	-2.5	-17.3	-7.1
2020 Q2	-14.4	0.1	-18.4	-15.1	-26.2	-3.7	-3.8	-2.8	-16.5	-7.9	-28.6	-14.7
Q3	-4.1	0.6	-5.0	-3.8	-9.3	3.2	-1.4	-0.4	-7.3	0.4	-12.2	-3.2
Q4	-4.6	-0.4	-1.5	-1.6	-12.6	1.2	-1.4	-1.0	-6.0	-1.2	-22.3	-4.7
2021 Q1	-1.3	0.0	3.3	0.4	-8.2	3.7	1.1	0.1	-2.7	0.9	-17.6	-1.4
contributions to quarter-on-quarter percentage changes in value added; percentage points												
2020 Q2	-11.7	0.0	-2.8	-0.7	-3.9	-0.2	-0.1	-0.3	-1.7	-1.2	-0.8	-
Q3	12.2	0.0	3.0	0.7	3.8	0.4	0.1	0.4	1.3	1.8	0.6	-
Q4	-0.5	0.0	0.6	0.1	-0.7	0.0	0.0	0.0	0.2	-0.3	-0.4	-
2021 Q1	0.0	0.0	0.2	-0.1	-0.3	0.1	0.1	0.0	0.1	0.0	0.0	-
contributions to annual percentage changes in value added; percentage points												
2018	1.9	0.0	0.4	0.1	0.3	0.3	0.0	0.2	0.4	0.2	0.0	-
2019	1.3	0.0	-0.1	0.2	0.4	0.3	0.0	0.2	0.2	0.2	0.1	-
2020	-6.3	0.0	-1.3	-0.3	-2.5	0.1	-0.1	-0.1	-0.9	-0.5	-0.6	-
2020 Q2	-14.4	0.0	-3.6	-0.8	-5.0	-0.2	-0.2	-0.3	-1.9	-1.5	-1.0	-
Q3	-4.1	0.0	-1.0	-0.2	-1.8	0.2	-0.1	0.0	-0.9	0.1	-0.4	-
Q4	-4.6	0.0	-0.3	-0.1	-2.4	0.1	-0.1	-0.1	-0.7	-0.2	-0.8	-
2021 Q1	-1.3	0.0	0.6	0.0	-1.5	0.2	0.0	0.0	-0.3	0.2	-0.6	-

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									
		Employ- ees	Self- employed	Agricul- ture, forestry and fishing	Manufac- turing, energy and utilities	Con- struc- tion	Trade, transport, accom- modation and food services	Infor- mation and com- munica- tion	Finance and insur- ance	Real estate	Professional, business and support services	Public adminis- tration, edu- cation, 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	86.0	14.0	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	-0.5	1.5	2.8	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	1.4	1.3	1.5	0.6
2020	-1.6	-1.6	-1.9	-3.0	-1.9	0.5	-3.6	1.3	-0.7	0.0	-2.5	0.7	-3.5
2020 Q2	-2.9	-3.0	-2.5	-3.6	-2.2	-0.8	-5.7	0.5	-1.1	-1.3	-4.7	0.2	-5.9
Q3	-2.1	-2.0	-2.2	-2.7	-2.7	0.9	-4.2	0.9	-0.8	0.4	-3.5	0.6	-3.7
Q4	-1.8	-1.8	-1.8	-2.3	-2.3	0.7	-4.6	1.3	-0.7	1.0	-2.2	0.9	-3.9
2021 Q1	-1.9	-1.9	-1.7	-0.4	-2.2	1.3	-5.5	2.1	-0.5	0.4	-1.7	1.2	-5.1
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	7.0	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	3.4	1.5	4.0	-1.0	2.7	3.2	1.4	0.4
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	-10.4	-3.4	-7.5	-5.9	-13.5	-1.8	-3.2	-6.4	-7.7	-2.0	-13.3
2020 Q2	-17.0	-15.9	-22.1	-6.6	-16.4	-18.0	-27.3	-6.2	-6.6	-16.8	-17.1	-6.5	-28.0
Q3	-4.8	-4.6	-5.4	-1.7	-5.8	-0.9	-8.8	-2.1	-2.4	-3.2	-6.6	-0.2	-6.3
Q4	-6.2	-5.8	-8.1	-2.3	-5.5	-2.4	-13.3	-0.6	-2.1	-2.6	-5.3	-0.7	-12.5
2021 Q1	-3.1	-3.0	-3.4	1.4	-1.4	4.7	-11.4	1.8	0.7	1.9	-2.0	1.8	-9.7
Hours worked per person employed													
annual percentage changes													
2018	0.1	0.3	-0.1	0.6	-0.1	0.6	0.0	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	0.0	-0.2	-0.2	-0.1
2020	-6.2	-5.6	-8.6	-0.4	-5.7	-6.4	-10.3	-3.0	-2.5	-6.4	-5.4	-2.7	-10.2
2020 Q2	-14.5	-13.3	-20.1	-3.1	-14.5	-17.3	-22.9	-6.7	-5.6	-15.8	-13.1	-6.7	-23.5
Q3	-2.8	-2.6	-3.2	1.0	-3.2	-1.8	-4.8	-3.0	-1.6	-3.5	-3.2	-0.8	-2.7
Q4	-4.5	-4.0	-6.4	0.0	-3.2	-3.1	-9.0	-1.9	-1.5	-3.5	-3.2	-1.6	-8.9
2021 Q1	-1.2	-1.1	-1.8	1.8	0.8	3.3	-6.2	-0.3	1.2	1.6	-0.4	0.5	-4.8

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 2020			100.0			80.6		19.4		51.4		48.6		
2018	163.438	3.9	13.380	8.2	3.8	10.913	7.3	2.467	17.2	6.879	7.9	6.501	8.6	2.1
2019	164.209	3.6	12.406	7.6	3.3	10.102	6.7	2.304	16.0	6.352	7.2	6.054	7.9	2.2
2020	162.523	3.6	12.743	7.8	3.0	10.266	6.9	2.477	17.7	6.553	7.6	6.189	8.2	1.7
2020 Q2	159.963	3.6	11.895	7.4	2.5	9.499	6.5	2.396	17.8	6.253	7.3	5.643	7.6	1.6
Q3	163.000	3.7	13.832	8.5	3.1	11.127	7.5	2.706	19.2	7.096	8.2	6.737	8.9	1.7
Q4	163.169	3.6	13.144	8.1	3.2	10.665	7.1	2.479	17.9	6.756	7.8	6.388	8.4	1.9
2021 Q1	162.171	3.7	13.643	8.4	3.2	10.985	7.4	2.658	18.7	6.932	8.0	6.711	8.9	2.1
2020 Dec.	-	-	13.230	8.2	-	10.718	7.2	2.512	18.1	6.787	7.8	6.443	8.5	-
2021 Jan.	-	-	13.241	8.2	-	10.659	7.2	2.581	18.6	6.831	7.9	6.410	8.5	-
Feb.	-	-	13.253	8.2	-	10.683	7.2	2.570	18.5	6.815	7.9	6.438	8.6	-
Mar.	-	-	13.100	8.1	-	10.533	7.1	2.566	18.4	6.650	7.7	6.450	8.6	-
Apr.	-	-	13.098	8.1	-	10.557	7.2	2.541	18.4	6.690	7.8	6.408	8.5	-
May	-	-	12.792	7.9	-	10.389	7.1	2.403	17.5	6.575	7.6	6.217	8.3	-

Sources: Eurostat and ECB calculations.

1) Where annual and quarterly Labour Force Survey data have not yet been published, they are estimated as simple averages of the monthly data. There is a break in series from the first quarter of 2021 due to the implementation of the Integrated European Social Statistics Regulation. 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 the first quarter of 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						Construction production	ECB indicator on industrial new orders	Retail sales				New passenger car registrations
	Total (excluding construction)		Main Industrial Groupings						Total	Food, beverages, tobacco	Non-food	Fuel	
			Manufacturing	Intermediate goods	Capital goods	Consumer goods							
	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	0.8	1.1	0.6	1.2	1.5	-1.4	1.7	2.7	1.6	1.4	2.0	0.7	0.9
2019	-1.3	-1.3	-2.4	-1.8	1.4	-2.0	2.1	-4.3	2.4	0.9	3.7	0.8	1.8
2020	-8.6	-9.1	-7.4	-13.2	-4.7	-5.3	-5.7	-10.7	-0.9	3.6	-2.4	-14.4	-25.0
2020 Q3	-6.8	-7.2	-5.7	-11.8	-2.0	-4.0	-2.3	-7.7	2.5	2.5	3.6	-4.9	-6.9
Q4	-1.6	-1.6	1.4	-3.2	-2.7	-1.7	-1.1	-1.7	1.5	4.5	1.2	-13.8	-9.2
2021 Q1	3.4	3.5	4.9	5.1	-0.3	0.8	2.9	6.8	2.4	2.6	3.1	-5.3	3.4
Q2	.	.	.	.	.	.	.	.	.	.	.	.	53.8
2021 Jan.	0.4	0.1	1.6	1.7	-3.0	0.6	-2.5	-1.7	-4.8	6.2	-10.8	-17.0	-18.8
Feb.	-1.8	-2.0	-0.6	-2.8	-3.2	-1.8	-5.2	1.4	-1.2	2.6	-3.2	-11.9	-20.8
Mar.	11.7	12.5	13.9	17.4	5.0	3.8	20.0	23.5	13.7	-0.5	27.9	18.1	88.2
Apr.	39.4	42.6	38.6	64.6	24.5	13.5	45.2	68.8	23.3	3.7	42.4	61.9	262.5
May	20.5	22.1	24.1	27.6	12.7	7.1	13.6	48.7	9.0	0.1	14.8	28.4	49.5
June	.	.	.	.	.	.	.	.	.	.	.	.	5.4
month-on-month percentage changes (s.a.)													
2021 Jan.	1.1	1.0	0.2	1.1	0.6	0.5	0.7	2.0	-5.0	1.0	-9.8	-0.9	-22.5
Feb.	-1.3	-1.3	-0.9	-2.4	0.1	-1.7	-1.7	1.5	4.3	-0.5	8.8	4.5	-1.1
Mar.	0.5	0.6	0.9	-0.3	2.1	1.7	4.0	3.3	4.0	1.9	6.0	-1.1	0.2
Apr.	0.6	0.6	0.9	1.0	2.2	2.0	-0.4	2.9	-3.9	-1.7	-6.1	-1.3	-0.4
May	-1.0	-0.8	-0.2	-1.6	-1.9	-1.9	0.9	-0.8	4.6	-0.2	8.8	8.1	1.7
June	.	.	.	.	.	.	.	.	.	.	.	.	-0.6

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 confid- ence indicator	Service industries		Purchasing Managers' Index (PMI) for manu- facturing	Manu- facturing 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 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	85.7	54.6	56.7	45.0	48.1
2021 Q1	95.3	-2.4	80.0	-13.7	-5.9	-16.6	-14.8	85.8	58.4	58.5	46.9	49.9
Q2	114.3	11.7	.	-5.5	4.3	0.7	10.5	.	63.1	62.7	54.7	56.8
2021 Jan.	91.5	-6.1	77.5	-15.5	-7.7	-18.5	-17.7	85.2	54.8	54.6	45.4	47.8
Feb.	93.4	-3.2	-	-14.8	-7.5	-19.1	-17.0	-	57.9	57.6	45.7	48.8
Mar.	100.9	2.1	-	-10.8	-2.3	-12.2	-9.6	-	62.5	63.3	49.6	53.2
Apr.	110.5	10.9	82.5	-8.1	3.0	-3.0	2.2	86.4	62.9	63.2	50.5	53.8
May	114.5	11.5	-	-5.1	4.9	0.5	11.3	-	63.1	62.2	55.2	57.1
June	117.9	12.7	-	-3.3	5.1	4.5	17.9	-	63.4	62.6	58.3	59.5

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
2018	12.5	93.4	1.8	2.1	6.1	2.7	4.7	35.5	5.9	76.9	2.0	7.2	1.5
2019	13.0	93.7	1.9	2.6	5.1	6.1	3.8	35.0	5.5	76.3	2.1	4.1	1.8
2020	19.6	96.2	-0.2	4.1	-4.9	5.0	4.7	30.8	3.7	83.9	3.2	-14.8	2.0
2020 Q2	16.7	94.8	-3.3	3.3	-15.1	4.1	4.3	31.5	4.1	82.0	2.3	-27.7	1.7
Q3	17.9	95.5	1.1	3.6	-3.4	3.6	4.2	31.0	3.6	82.9	2.8	-14.9	1.9
Q4	19.6	96.2	0.7	4.1	0.2	5.0	4.7	30.8	3.7	83.9	3.2	-15.0	2.0
2021 Q1	20.8	96.3	0.3	4.8	6.5	7.5	4.6	31.9	4.8	84.8	3.9	-3.2	2.2

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
	Credit	Debit	Balance	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2020 Q2	871.7	845.2	26.5	466.8	412.0	193.5	182.4	183.9	179.6	27.5	71.2	11.2	15.8
Q3	953.0	884.9	68.0	548.3	455.8	194.0	187.0	181.8	179.1	28.9	63.0	11.5	10.4
Q4	1,011.9	924.6	87.4	581.3	479.0	220.1	193.4	181.1	173.7	29.5	78.5	23.6	24.5
2021 Q1	1,051.4	948.8	102.5	603.7	497.3	224.1	201.9	193.8	174.4	29.8	75.2	15.2	11.7
2020 Dec.	338.5	303.0	35.5	195.6	160.1	73.4	63.8	59.8	54.1	9.6	24.9	14.8	13.3
2021 Jan.	353.8	307.5	46.3	200.8	157.7	75.5	65.9	67.8	58.8	9.7	25.1	4.2	3.6
Feb.	351.1	316.8	34.4	200.9	164.1	74.5	66.9	65.7	58.9	10.1	26.9	3.7	3.7
Mar.	346.4	324.6	21.8	202.0	175.5	74.2	69.1	60.3	56.7	10.0	23.2	7.3	4.4
Apr.	349.2	327.1	22.1	204.5	179.3	75.2	66.1	58.8	58.2	10.7	23.5	4.6	3.5
May	345.9	334.2	11.7	208.7	184.1	73.5	67.2	54.9	60.0	8.8	22.9	5.1	3.1
12-month cumulated transactions													
2021 May	4,018.2	3,707.8	310.4	2,315.6	1,940.5	853.5	777.2	731.9	704.9	117.3	285.3	63.5	58.5
12-month cumulated transactions as a percentage of GDP													
2021 May	35.4	32.6	2.7	20.4	17.1	7.5	6.8	6.4	6.2	1.0	2.5	0.6	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.)					
	Exports	Imports	Total			Memo item:	Total				Memo items:		
			Intermediate goods	Capital goods	Consumption goods	Manu- facturing	Intermediate goods	Capital goods	Consumption goods	Manu- facturing	Oil		
												3	4
	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 Q2	-23.6	-21.6	446.5	217.5	87.7	133.1	369.3	419.8	217.8	77.6	118.8	318.3	26.0
Q3	-8.7	-11.4	531.5	248.4	108.3	165.2	448.0	469.2	242.6	84.7	133.8	359.3	34.1
Q4	-2.8	-5.9	568.3	265.3	114.0	178.0	478.2	492.5	261.6	86.6	135.0	379.1	35.3
2021 Q1	0.6	0.3	582.0	279.5	114.7	174.8	470.8	512.5	284.4	91.0	130.0	372.4	45.8
2020 Dec.	2.6	-1.0	192.2	90.0	39.0	59.2	160.5	165.5	88.2	29.6	44.6	128.5	13.0
2021 Jan.	-8.9	-14.2	191.7	92.3	37.5	57.8	155.6	163.6	89.6	29.2	41.8	119.1	14.0
Feb.	-2.3	-2.8	192.6	92.1	39.0	57.4	161.6	169.1	93.4	30.0	42.8	126.4	15.6
Mar.	12.5	19.4	197.7	95.2	38.2	59.6	153.7	179.8	101.4	31.8	45.3	126.9	16.2
Apr.	46.7	37.7	198.0	94.6	39.5	60.3	164.5	184.6	105.5	30.6	45.9	133.3	16.8
May	31.9	35.1	195.1	.	.	.	158.4	185.8	.	.	.	132.8	.
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2020 Q2	-23.6	-16.3	81.5	86.3	76.2	79.0	79.1	91.6	89.1	94.9	96.9	90.7	81.5
Q3	-7.1	-6.9	98.5	100.1	95.5	99.6	97.9	101.8	97.0	105.9	110.4	104.1	81.1
Q4	-1.5	-1.0	104.3	105.9	99.5	106.3	103.4	105.5	102.6	107.5	110.9	109.0	84.6
2021 Q1	0.8	0.2	104.5	108.1	100.5	101.9	100.4	104.8	103.2	111.9	105.6	105.3	83.4
2020 Nov.	0.3	1.1	104.7	107.5	97.4	107.1	104.2	106.8	103.9	109.8	112.5	110.8	83.9
Dec.	3.9	3.5	104.9	106.7	101.3	105.3	103.2	104.9	101.8	108.8	109.5	109.8	86.7
2021 Jan.	-7.9	-11.0	103.6	107.1	98.3	102.2	99.5	102.2	100.6	106.9	103.1	101.7	84.4
Feb.	-1.9	-3.4	104.2	107.3	103.3	100.6	103.8	103.8	101.5	111.1	104.4	107.2	85.1
Mar.	11.5	15.6	105.6	109.9	99.8	102.9	97.8	108.5	107.6	117.6	109.4	106.9	80.6
Apr.	41.6	24.9	104.6	107.0	103.5	103.3	103.5	109.7	110.0	112.2	109.3	110.7	83.3

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 excluding food and energy									Total HICP excluding administered prices	Administered prices	
	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 Q3	105.1	0.0	0.6	-0.7	0.7	0.0	-0.2	-1.9	0.3	0.9	-0.1	-0.1	0.4
Q4	105.0	-0.3	0.2	-0.9	0.5	0.1	0.1	0.6	-0.5	0.5	0.3	-0.4	0.5
2021 Q1	105.8	1.1	1.2	0.8	1.3	1.3	0.6	-0.4	1.5	6.5	0.6	1.0	1.4
Q2	107.4	1.8	0.9	2.5	0.9	0.5	0.3	1.4	-0.5	3.7	0.2	1.8	2.4
2021 Jan.	105.3	0.9	1.4	0.5	1.4	1.1	0.4	0.3	2.0	3.8	0.3	0.8	1.3
Feb.	105.5	0.9	1.1	0.7	1.2	0.0	0.2	0.2	-0.5	0.9	0.0	0.8	1.5
Mar.	106.5	1.3	0.9	1.3	1.3	0.2	0.0	0.1	-0.5	2.6	0.1	1.3	1.4
Apr.	107.1	1.6	0.7	2.1	0.9	0.1	0.1	1.4	-0.1	0.7	0.0	1.5	2.2
May	107.4	2.0	1.0	2.6	1.1	0.2	0.1	-0.1	0.0	0.8	0.2	1.9	2.4
June	107.7	1.9	0.9	2.8	0.7	0.2	0.2	-0.3	0.1	1.3	0.1	1.8	2.5

	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 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	
2021 Q1	1.3	1.2	1.7	0.5	0.9	-0.6	1.3	1.2	1.1	-0.4	1.4	1.5	
Q2	0.6	0.8	-0.2	3.6	0.8	12.0	1.4	1.3	0.8	-0.1	0.5	1.6	
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.	1.3	1.3	1.5	0.3	1.0	-1.7	1.3	1.2	0.8	-0.3	1.2	1.5	
Mar.	1.1	1.0	1.6	1.4	0.3	4.3	1.3	1.2	1.5	-0.7	1.3	1.4	
Apr.	0.6	0.9	-0.3	3.0	0.4	10.4	1.4	1.3	0.5	0.1	0.6	1.4	
May	0.5	0.7	0.0	3.8	0.7	13.1	1.4	1.3	1.2	-0.1	0.8	1.6	
June	0.5	0.8	-0.3	4.1	1.2	12.6	1.4	1.3	0.7	-0.1	0.1	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/ecbu201603.en.pdf>).

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	2.5	4.9	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	4.5
2020	102.0	-2.6	-1.7	-0.1	-1.6	0.9	1.0	1.1	0.6	-9.7	1.2	5.3	1.7
2020 Q2	100.2	-4.5	-3.0	-0.5	-2.7	1.0	1.1	1.5	0.6	-15.5	0.8	5.1	2.8
Q3	101.4	-2.7	-2.0	-0.3	-1.8	0.8	0.5	0.3	0.6	-9.3	0.9	5.2	1.1
Q4	102.6	-1.7	-1.7	0.0	-0.6	0.8	0.0	-0.5	0.7	-6.7	1.5	6.0	-0.9
2021 Q1	105.9	2.1	1.3	1.4	2.6	1.0	0.0	-0.7	0.7	3.8	2.8	6.2	.
2020 Dec.	103.3	-1.1	-1.3	0.2	-0.1	0.8	-0.3	-1.0	0.6	-4.8	-	-	-
2021 Jan.	105.1	0.4	-0.6	0.7	1.1	0.9	-0.4	-1.0	0.7	-0.7	-	-	-
Feb.	105.6	1.5	1.0	1.2	2.5	1.0	-0.2	-0.9	0.6	2.3	-	-	-
Mar.	106.9	4.4	3.5	2.4	4.4	1.2	0.5	-0.1	0.9	10.3	-	-	-
Apr.	107.9	7.6	5.8	3.6	6.9	1.4	1.0	0.8	1.1	20.6	-	-	-
May	109.3	9.6	7.1	4.9	9.2	1.8	2.0	2.0	1.3	25.1	-	-	-

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	1.8	1.5	1.8	2.0	1.5	2.2	60.4	-0.9	-6.4	4.3	-0.6	-6.2	5.7
2019	105.3	1.8	1.5	1.1	1.9	2.3	0.9	0.3	57.2	2.0	4.4	-0.1	3.0	8.3	-2.3
2020	106.9	1.6	1.1	0.6	3.3	1.2	-1.3	-2.6	37.0	1.5	3.4	-0.3	-0.9	-0.2	-1.8
2020 Q3	106.4	0.9	0.7	0.1	2.1	1.0	-1.9	-2.8	36.5	1.9	1.5	2.4	-0.7	-2.2	1.0
Q4	107.3	1.3	0.9	0.1	2.9	0.4	-1.4	-2.5	37.4	4.1	0.1	7.9	-0.5	-6.0	6.2
2021 Q1	108.2	1.7	1.7	1.1	2.4	1.1	1.0	0.8	50.4	18.3	9.1	27.3	14.0	5.2	24.6
Q2	.	.	.	.	.	.	.	.	57.0	38.6	20.8	56.4	36.0	20.8	54.4
2021 Jan.	-	-	-	-	-	-	-	-	44.8	10.5	3.7	17.0	5.8	-1.9	14.8
Feb.	-	-	-	-	-	-	-	-	51.2	16.7	7.8	25.5	12.7	4.0	22.9
Mar.	-	-	-	-	-	-	-	-	54.8	28.3	16.2	40.4	24.4	13.9	36.9
Apr.	-	-	-	-	-	-	-	-	54.1	35.4	17.5	54.0	33.8	19.4	51.4
May	-	-	-	-	-	-	-	-	56.0	41.3	21.0	61.9	37.3	19.4	59.5
June	-	-	-	-	-	-	-	-	60.7	39.1	24.1	53.4	36.7	23.5	52.1

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 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
2021 Q1	10.7	5.0	-1.8	-3.8	8.1	74.0	54.0	56.5	48.6
Q2	30.1	18.2	8.5	15.6	20.4	85.9	60.1	68.2	53.1
2021 Jan.	4.8	2.8	-3.1	-6.0	5.3	68.3	53.2	52.2	47.3
Feb.	9.8	3.9	-3.2	-5.6	7.2	73.9	53.2	56.5	48.1
Mar.	17.5	8.2	1.0	0.3	11.8	79.7	55.6	60.9	50.5
Apr.	24.2	14.1	5.2	8.4	17.2	82.2	57.6	64.3	50.9
May	29.9	17.5	9.4	16.7	19.2	87.1	59.6	69.1	52.6
June	36.0	23.1	10.9	21.9	24.7	88.5	63.2	71.1	55.6

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	104.3	2.4	2.3	2.7	2.5	2.1	2.0
2019	106.8	2.4	2.6	1.9	2.3	2.7	2.2
2020	110.1	3.1	3.6	1.4	2.8	3.7	1.8
2020 Q2	115.7	4.2	4.9	1.9	4.3	4.0	1.7
Q3	105.1	1.7	2.2	0.0	1.5	2.2	1.7
Q4	116.4	2.8	3.4	0.7	2.3	4.0	1.9
2021 Q1	104.7	1.6	2.2	-0.9	1.3	1.9	1.4

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									
	1	2	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
	3	4	5	6	7	8	9	10	11	12		
Unit labour costs												
2018	103.4	1.9	0.8	1.6	2.3	2.1	0.0	0.3	3.6	1.6	2.5	2.1
2019	105.2	1.8	0.8	3.2	0.8	1.0	0.5	0.6	1.9	1.3	2.8	1.6
2020	109.9	4.5	-2.6	2.9	4.6	6.2	0.7	0.6	1.0	5.5	6.0	13.9
2020 Q2	113.4	8.1	-4.3	10.6	7.7	11.8	2.7	1.7	-3.9	8.0	10.6	18.7
Q3	108.3	2.7	-2.8	0.8	6.1	4.2	-1.7	-0.1	3.1	5.2	2.9	10.7
Q4	109.8	3.8	-1.7	-1.1	3.9	5.0	1.6	1.4	3.2	5.4	5.9	23.2
2021 Q1	110.2	1.3	1.4	-3.3	4.4	1.5	0.0	0.4	2.5	3.0	2.4	16.9
Compensation per employee												
2018	105.3	2.2	1.0	1.9	2.0	2.1	2.7	2.4	3.0	2.6	2.1	3.1
2019	107.3	2.0	3.3	1.6	1.7	1.8	2.2	1.8	2.1	1.8	2.2	2.5
2020	106.6	-0.6	0.5	-2.4	-1.6	-4.6	0.4	-0.5	0.2	-0.5	2.6	-2.5
2020 Q2	102.0	-4.7	-0.4	-7.7	-7.8	-12.5	-1.8	-1.0	-5.2	-5.5	1.7	-9.9
Q3	108.5	0.7	0.7	-1.6	1.2	-1.3	0.3	-0.6	2.4	1.0	2.6	0.9
Q4	108.9	0.9	0.2	-0.2	1.6	-3.8	1.4	0.6	1.3	1.1	3.7	-0.5
2021 Q1	109.2	1.9	1.8	2.1	3.5	-1.3	1.8	1.9	2.3	2.1	2.1	1.4
Labour productivity per person employed												
2018	101.8	0.3	0.2	0.3	-0.3	0.1	2.7	2.1	-0.6	1.0	-0.4	1.0
2019	102.0	0.2	2.6	-1.5	0.9	0.8	1.7	1.1	0.2	0.5	-0.5	0.9
2020	97.0	-4.9	3.2	-5.2	-6.0	-10.2	-0.2	-1.1	-0.8	-5.7	-3.2	-14.4
2020 Q2	89.9	-11.9	4.1	-16.5	-14.4	-21.7	-4.4	-2.7	-1.3	-12.4	-8.0	-24.1
Q3	100.1	-2.0	3.6	-2.3	-4.6	-5.3	2.1	-0.6	-0.7	-4.0	-0.2	-8.9
Q4	99.1	-2.8	2.0	0.9	-2.2	-8.3	-0.1	-0.7	-1.9	-4.0	-2.1	-19.2
2021 Q1	99.1	0.6	0.4	5.6	-0.9	-2.8	1.8	1.6	-0.1	-0.9	-0.3	-13.3
Compensation per hour worked												
2018	105.0	1.9	0.6	2.0	1.0	1.9	2.4	2.3	2.1	2.0	2.0	2.7
2019	107.2	2.2	3.6	2.2	1.9	2.0	2.1	1.4	2.5	2.0	2.4	2.8
2020	112.8	5.2	2.6	3.1	4.0	5.8	3.1	1.7	5.4	4.6	5.0	6.6
2020 Q2	117.3	9.8	4.1	7.1	9.1	12.4	4.6	4.2	6.8	7.4	7.9	12.3
Q3	111.3	3.4	0.6	1.5	2.3	4.0	3.4	0.6	5.3	4.4	3.1	3.2
Q4	113.5	5.1	1.9	2.9	3.7	5.4	2.7	1.8	5.5	4.2	5.2	6.9
2021 Q1	114.3	3.1	0.2	1.1	-0.3	5.7	2.2	0.9	2.8	3.0	1.7	4.0
Hourly labour productivity												
2018	102.0	0.2	-0.3	0.4	-0.9	0.1	2.5	1.9	-1.3	0.7	-0.5	0.7
2019	102.5	0.5	3.2	-1.0	1.1	1.2	1.5	0.9	0.2	0.7	-0.4	1.0
2020	103.9	1.4	3.5	0.7	0.4	0.2	2.9	1.5	5.9	-0.3	-0.5	-4.6
2020 Q2	105.6	3.1	7.3	-2.3	3.5	1.6	2.5	3.2	17.1	0.7	-1.5	-0.8
Q3	103.6	0.8	2.5	0.9	-2.9	-0.5	5.2	1.0	2.9	-0.7	0.6	-6.1
Q4	104.5	1.8	2.0	4.3	0.8	0.7	1.7	0.7	1.6	-0.7	-0.5	-11.2
2021 Q1	105.0	1.9	-1.3	4.9	-4.1	3.6	2.0	0.4	-1.8	-0.5	-0.6	-8.7

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	8,898.3	10,257.5	1,039.9	2,447.3	3,487.3	13,744.7	100.6	647.0	32.5	780.2	14,524.9
2020 Q2	1,302.8	8,425.2	9,728.0	1,075.3	2,400.8	3,476.1	13,204.1	95.2	579.7	20.1	695.1	13,899.2
Q3	1,330.6	8,617.0	9,947.6	1,076.9	2,423.3	3,500.3	13,447.9	100.3	610.3	7.1	717.7	14,165.5
Q4	1,359.2	8,898.3	10,257.5	1,039.9	2,447.3	3,487.3	13,744.7	100.6	647.0	32.5	780.2	14,524.9
2021 Q1	1,391.8	9,144.7	10,536.5	985.2	2,483.7	3,468.9	14,005.4	109.8	612.4	16.8	738.9	14,744.3
2020 Dec.	1,359.2	8,898.3	10,257.5	1,039.9	2,447.3	3,487.3	13,744.7	100.6	647.0	32.5	780.2	14,524.9
2021 Jan.	1,380.4	8,995.2	10,375.6	1,004.0	2,456.9	3,460.8	13,836.4	111.3	630.0	29.1	770.5	14,606.9
Feb.	1,390.5	9,068.1	10,458.7	984.3	2,472.4	3,456.7	13,915.3	108.8	608.8	34.2	751.8	14,667.1
Mar.	1,391.8	9,144.7	10,536.5	985.2	2,483.7	3,468.9	14,005.4	109.8	612.4	16.8	738.9	14,744.3
Apr.	1,402.4	9,180.2	10,582.6	965.5	2,486.2	3,451.7	14,034.3	109.3	607.2	24.2	740.7	14,775.0
May ^(p)	1,411.7	9,236.8	10,648.5	964.4	2,486.1	3,450.5	14,099.0	107.2	608.5	32.3	748.0	14,847.0
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	1.8	664.9	4.1	-2.1	-56.6	-54.6	610.3
2020	137.6	1,255.7	1,393.3	-27.2	85.7	58.5	1,451.8	19.2	124.0	13.0	156.3	1,608.1
2020 Q2	37.5	343.0	380.5	2.1	32.6	34.8	415.3	-14.1	43.7	-28.8	0.8	416.0
Q3	27.7	269.0	296.8	5.6	22.9	28.5	325.3	5.9	29.9	-11.7	24.2	349.5
Q4	28.6	295.9	324.5	-34.9	24.0	-10.9	313.6	-3.5	41.3	26.7	64.6	378.2
2021 Q1	32.6	233.8	266.4	-58.3	37.9	-20.5	245.9	8.0	-34.6	-14.2	-40.8	205.1
2020 Dec.	8.0	122.4	130.4	12.1	1.0	13.1	143.5	-0.3	39.6	13.3	52.6	196.1
2021 Jan.	21.2	93.9	115.1	-36.8	11.2	-25.6	89.5	10.4	-17.0	-3.0	-9.6	79.9
Feb.	10.2	72.2	82.4	-19.8	15.5	-4.3	78.1	-2.7	-21.2	5.6	-18.3	59.7
Mar.	1.2	67.7	68.9	-1.7	11.1	9.5	78.4	0.3	3.6	-16.8	-12.9	65.5
Apr.	10.6	44.6	55.2	-17.3	2.6	-14.7	40.6	0.3	-5.1	7.4	2.5	43.1
May ^(p)	9.3	58.9	68.2	-0.4	-0.1	-0.5	67.7	-1.9	1.3	8.5	7.9	75.6
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	70.9	24.9	12.4
2020 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	-66.7	12.7	10.4
Q4	11.3	16.3	15.6	-2.5	3.6	1.7	11.7	24.2	23.5	70.9	24.9	12.4
2021 Q1	10.0	14.2	13.6	-8.0	5.0	0.9	10.2	-3.6	14.9	-60.7	7.0	10.0
2020 Dec.	11.3	16.3	15.6	-2.5	3.6	1.7	11.7	24.2	23.5	70.9	24.9	12.4
2021 Jan.	12.2	17.1	16.5	-5.4	4.0	1.1	12.2	40.1	16.3	3.4	18.4	12.5
Feb.	12.4	17.1	16.4	-7.2	4.6	1.0	12.2	24.6	11.7	30.3	14.0	12.3
Mar.	10.0	14.2	13.6	-8.0	5.0	0.9	10.2	-3.6	14.9	-60.7	7.0	10.0
Apr.	9.8	12.7	12.3	-9.2	4.6	0.3	9.1	13.5	11.4	-15.9	10.5	9.2
May ^(p)	9.1	12.0	11.6	-11.4	4.1	-0.7	8.3	8.7	9.8	60.4	11.3	8.4

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	2,334.0	1,901.2	277.3	147.9	7.6	6,645.3	4,035.6	517.8	2,090.6	1.3	996.1	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	2,985.2	2,528.6	310.3	143.1	3.3	7,647.6	4,954.6	437.5	2,254.7	0.8	1,106.7	237.8	508.9
2020 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	2,985.2	2,528.6	310.3	143.1	3.3	7,647.6	4,954.6	437.5	2,254.7	0.8	1,106.7	237.8	508.9
2021 Q1	3,070.9	2,618.1	301.1	143.8	7.8	7,825.2	5,109.3	422.2	2,292.9	0.8	1,126.2	209.1	492.0
2020 Dec.	2,985.2	2,528.6	310.3	143.1	3.3	7,647.6	4,954.6	437.5	2,254.7	0.8	1,106.7	237.8	508.9
2021 Jan.	3,007.8	2,557.2	301.8	142.2	6.6	7,707.2	5,009.0	431.1	2,266.2	0.8	1,114.7	229.5	508.2
Feb.	3,028.1	2,587.0	292.3	143.2	5.7	7,761.3	5,052.0	426.5	2,281.8	1.0	1,119.9	226.9	497.4
Mar.	3,070.9	2,618.1	301.1	143.8	7.8	7,825.2	5,109.3	422.2	2,292.9	0.8	1,126.2	209.1	492.0
Apr.	3,051.0	2,605.7	294.9	143.0	7.4	7,843.8	5,129.3	417.6	2,295.9	0.9	1,127.6	225.2	493.5
May ^(p)	3,059.0	2,615.2	295.4	141.7	6.8	7,874.1	5,165.1	411.8	2,296.4	0.8	1,143.5	229.4	488.7
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	394.5	360.2	-26.2	61.0	-0.5	26.9	11.0	29.7
2020	513.9	468.0	55.8	-6.9	-3.0	611.6	561.1	-53.8	104.4	-0.1	144.6	22.1	41.1
2020 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	32.1	51.8	-12.5	-3.7	-3.5	158.4	139.2	-8.5	27.9	-0.2	53.9	-2.0	39.2
2021 Q1	80.7	84.8	-9.2	0.7	4.4	176.2	152.4	-16.0	39.7	0.0	10.7	-29.3	-16.8
2020 Dec.	21.8	28.8	-1.5	-3.3	-2.2	53.6	51.7	-3.2	5.5	-0.3	35.4	-0.8	25.2
2021 Jan.	22.0	27.3	-7.6	-1.0	3.3	60.3	53.5	-6.5	13.3	0.1	5.7	-8.6	-0.7
Feb.	20.1	29.6	-9.5	1.0	-1.0	53.5	42.7	-4.7	15.4	0.2	4.8	-2.6	-10.6
Mar.	38.5	27.9	8.0	0.6	2.1	62.3	56.2	-4.7	11.0	-0.2	0.2	-18.1	-5.5
Apr.	-15.3	-8.8	-5.4	-0.7	-0.3	20.2	21.1	-4.2	3.1	0.1	7.2	16.5	1.7
May ^(p)	9.1	10.4	0.8	-1.4	-0.6	30.7	36.2	-5.8	0.5	-0.2	17.3	4.3	-4.9
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 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
2021 Q1	18.0	19.7	15.1	-2.7	9.4	9.2	12.7	-10.4	6.0	39.5	4.0	-6.4	4.2
2020 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.	21.8	24.1	18.8	-5.3	65.1	9.2	13.3	-11.3	5.3	-6.3	15.6	5.3	8.4
Feb.	21.2	23.8	15.7	-4.4	9.1	9.5	13.4	-11.4	5.9	15.4	14.6	4.9	4.6
Mar.	18.0	19.7	15.1	-2.7	9.4	9.2	12.7	-10.4	6.0	39.5	4.0	-6.4	4.2
Apr.	12.8	14.8	4.7	-2.7	26.2	8.3	11.5	-10.4	5.4	4.0	8.7	-0.7	5.9
May ^(p)	8.9	11.6	-5.7	-3.9	47.4	7.9	11.3	-11.2	4.9	-13.7	11.4	-0.8	6.0

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	4,404.9	5,741.9	849.8	126.4	1,519.9	773.6
2019	4,660.7	986.8	3,662.2	13,865.5	11,452.4	11,839.6	4,475.8	5,931.1	893.5	152.0	1,562.5	850.6
2020	5,925.4	996.1	4,917.3	14,343.4	11,927.3	12,301.2	4,723.6	6,119.9	916.1	167.7	1,549.9	866.2
2020 Q2	5,279.2	1,005.9	4,261.6	14,245.0	11,781.8	12,163.6	4,718.5	5,995.4	912.6	155.2	1,646.7	816.6
Q3	5,737.2	1,003.1	4,722.3	14,200.5	11,868.4	12,226.5	4,731.8	6,066.0	912.6	157.9	1,517.9	814.2
Q4	5,925.4	996.1	4,917.3	14,343.4	11,927.3	12,301.2	4,723.6	6,119.9	916.1	167.7	1,549.9	866.2
2021 Q1	6,092.3	993.8	5,096.8	14,463.8	12,061.8	12,421.9	4,784.0	6,173.5	949.1	155.2	1,521.2	880.8
2020 Dec.	5,925.4	996.1	4,917.3	14,343.4	11,927.3	12,301.2	4,723.6	6,119.9	916.1	167.7	1,549.9	866.2
2021 Jan.	5,950.3	989.0	4,959.7	14,358.4	11,945.9	12,311.0	4,721.1	6,136.3	939.9	148.6	1,548.4	864.1
Feb.	5,986.6	993.7	4,991.3	14,392.1	11,971.2	12,334.9	4,729.5	6,153.5	941.6	146.5	1,549.4	871.5
Mar.	6,092.3	993.8	5,096.8	14,463.8	12,061.8	12,421.9	4,784.0	6,173.5	949.1	155.2	1,521.2	880.8
Apr.	6,098.5	1,002.6	5,093.5	14,416.4	12,037.1	12,392.9	4,751.0	6,191.2	944.4	150.4	1,505.5	873.8
May ^(p)	6,133.2	1,004.3	5,127.1	14,455.1	12,063.7	12,414.4	4,746.0	6,212.9	947.7	157.1	1,505.8	885.6
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	1,050.4	13.3	1,037.0	735.8	540.2	561.2	288.9	209.2	26.3	15.8	167.2	28.4
2020 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	262.5	-2.8	265.2	150.8	105.1	86.8	29.0	72.1	1.1	2.9	40.7	5.0
Q4	177.0	-1.9	178.7	157.3	84.1	120.5	3.6	60.8	10.1	9.7	30.0	43.3
2021 Q1	162.2	-1.7	174.4	153.2	134.2	116.1	60.7	56.6	29.5	-12.6	10.9	8.1
2020 Dec.	79.3	-5.8	85.3	73.1	16.9	43.1	-6.2	19.0	-6.9	11.0	11.5	44.7
2021 Jan.	34.3	-7.4	52.1	17.3	19.5	11.7	-1.8	17.2	23.3	-19.2	-0.9	-1.3
Feb.	60.9	5.1	55.8	33.1	27.8	27.8	9.8	18.9	1.1	-2.0	0.2	5.2
Mar.	67.1	0.6	66.5	102.7	86.9	76.6	52.6	20.6	5.2	8.6	11.6	4.2
Apr.	25.2	8.6	15.9	-23.9	-4.0	-12.1	-24.4	27.4	-2.2	-4.7	-12.6	-7.3
May ^(p)	37.1	1.7	35.3	41.4	30.8	22.4	-2.9	22.6	4.4	6.7	0.0	10.7
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	22.3	1.3	27.9	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.2	3.4
2020 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	19.0	0.1	24.2	4.9	4.7	4.7	6.5	3.5	2.7	8.2	9.0	0.1
Q4	22.3	1.3	27.9	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.2	3.4
2021 Q1	21.9	-0.8	28.1	4.6	3.6	3.6	4.7	3.8	-1.3	-3.5	10.5	8.4
2020 Dec.	22.3	1.3	27.9	5.4	4.7	4.7	6.5	3.5	2.9	10.4	11.2	3.4
2021 Jan.	23.0	0.0	29.5	5.1	4.4	4.5	6.2	3.3	3.7	-2.6	11.7	3.1
Feb.	24.0	0.5	30.6	5.0	4.4	4.5	6.3	3.3	3.6	-2.5	10.4	3.8
Mar.	21.9	-0.8	28.1	4.6	3.6	3.6	4.7	3.8	-1.3	-3.5	10.5	8.4
Apr.	18.0	-0.5	22.9	4.0	3.3	3.2	2.6	4.3	0.8	-3.5	7.0	9.0
May ^(p)	15.4	-0.2	19.4	3.5	2.8	2.7	1.5	4.3	0.5	1.8	5.6	9.6

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	Adjusted loans ⁴⁾	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total	Adjusted loans ⁴⁾	Loans for consumption	Loans for house purchase	Other loans
	1					6				
	2	3	4	5	6	7	8	9	10	
Outstanding amounts										
2018	4,404.9	4,489.0	991.4	844.2	2,569.4	5,741.9	6,024.9	682.6	4,356.4	702.9
2019	4,475.8	4,577.9	967.4	878.0	2,630.4	5,931.1	6,224.0	720.1	4,524.6	686.4
2020	4,723.6	4,841.3	898.9	1,012.0	2,812.7	6,119.9	6,390.1	700.2	4,725.1	694.6
2020 Q2	4,718.5	4,829.9	957.8	993.4	2,767.3	5,995.4	6,276.5	701.0	4,603.9	690.6
Q3	4,731.8	4,845.5	930.0	1,014.7	2,787.2	6,066.0	6,334.0	702.4	4,667.6	696.0
Q4	4,723.6	4,841.3	898.9	1,012.0	2,812.7	6,119.9	6,390.1	700.2	4,725.1	694.6
2021 Q1	4,784.0	4,902.0	895.7	1,017.7	2,870.5	6,173.5	6,435.8	694.8	4,785.0	693.7
2020 Dec.	4,723.6	4,841.3	898.9	1,012.0	2,812.7	6,119.9	6,390.1	700.2	4,725.1	694.6
2021 Jan.	4,721.1	4,837.0	888.9	1,006.0	2,826.3	6,136.3	6,403.5	697.2	4,745.6	693.6
Feb.	4,729.5	4,846.3	890.4	1,005.0	2,834.1	6,153.5	6,421.5	698.1	4,761.7	693.7
Mar.	4,784.0	4,902.0	895.7	1,017.7	2,870.5	6,173.5	6,435.8	694.8	4,785.0	693.7
Apr.	4,751.0	4,870.0	870.5	996.4	2,884.1	6,191.2	6,451.4	690.0	4,808.7	692.6
May ^(p)	4,746.0	4,859.8	871.9	972.7	2,901.5	6,212.9	6,471.2	691.1	4,829.7	692.1
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	41.0	168.6	-9.2
2020	288.9	325.3	-53.9	138.9	203.9	209.2	195.0	-11.8	210.9	10.2
2020 Q2	120.7	131.0	-39.1	80.4	79.4	35.8	29.1	-12.2	39.2	8.8
Q3	29.0	33.9	-22.5	15.9	35.6	72.1	59.7	5.8	65.0	1.3
Q4	3.6	22.5	-25.4	-1.4	30.4	60.8	68.0	-1.7	61.6	0.9
2021 Q1	60.7	60.1	-3.3	6.0	58.0	56.6	51.0	-3.7	60.5	-0.1
2020 Dec.	-6.2	12.9	-9.5	6.7	-3.4	19.0	23.9	-0.4	19.6	-0.2
2021 Jan.	-1.8	-3.0	-10.1	-5.8	14.1	17.2	14.4	-2.3	20.5	-1.0
Feb.	9.8	12.0	2.1	-0.6	8.3	18.9	19.9	1.6	16.7	0.6
Mar.	52.6	51.1	4.7	12.4	35.5	20.6	16.7	-2.9	23.2	0.3
Apr.	-24.4	-27.4	-21.8	-19.4	16.7	27.4	25.3	-0.7	27.9	0.2
May ^(p)	-2.9	-11.5	2.0	-23.1	18.2	22.6	21.0	1.5	21.2	-0.1
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	-1.6	4.7	1.5
2020 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	-1.6	4.7	1.5
2021 Q1	4.7	5.3	-9.1	11.0	7.6	3.8	3.3	-1.7	5.0	1.6
2020 Dec.	6.5	7.1	-5.6	15.9	7.8	3.5	3.1	-1.6	4.7	1.5
2021 Jan.	6.2	6.9	-6.0	14.9	7.7	3.3	3.0	-2.5	4.5	1.3
Feb.	6.3	7.0	-5.0	14.2	7.8	3.3	3.0	-2.8	4.5	1.3
Mar.	4.7	5.3	-9.1	11.0	7.6	3.8	3.3	-1.7	5.0	1.6
Apr.	2.6	3.2	-9.9	3.6	6.8	4.3	3.8	0.3	5.4	1.4
May ^(p)	1.5	1.9	-7.6	-2.6	6.1	4.3	3.9	0.6	5.4	0.7

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		
	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	2,906.1	1,455.5	452.3	178.9	187.2
2020	748.8	6,967.3	1,916.7	42.1	1,994.9	3,013.7	1,432.7	539.5	130.1	139.2
2020 Q2	673.3	7,042.9	1,934.5	44.1	2,080.4	2,983.8	1,562.4	528.7	159.2	174.3
Q3	806.2	7,039.6	1,934.3	43.0	2,059.7	3,002.6	1,574.1	499.6	139.9	147.3
Q4	748.8	6,967.3	1,916.7	42.1	1,994.9	3,013.7	1,432.7	539.5	130.1	139.2
2021 Q1	699.4	6,894.1	1,898.3	41.2	1,984.7	2,969.9	1,398.0	383.8	127.3	130.3
2020 Dec.	748.8	6,967.3	1,916.7	42.1	1,994.9	3,013.7	1,432.7	539.5	130.1	139.2
2021 Jan.	678.8	6,925.6	1,912.4	42.0	1,970.4	3,000.8	1,472.5	430.0	147.4	146.7
Feb.	684.7	6,880.4	1,905.2	41.4	1,971.9	2,961.9	1,433.5	420.1	145.4	145.7
Mar.	699.4	6,894.1	1,898.3	41.2	1,984.7	2,969.9	1,398.0	383.8	127.3	130.3
Apr.	727.1	6,839.6	1,869.4	41.2	1,968.4	2,960.6	1,448.4	378.4	132.9	131.3
May ^(p)	690.4	6,834.6	1,868.1	40.7	1,943.5	2,982.3	1,469.1	314.6	133.5	130.9
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	107.7	-5.3	-3.3	27.3	89.0	309.4	19.4	-2.7	-2.5
2020	321.6	-32.8	-14.6	-8.0	-99.3	89.2	-45.1	155.8	-48.8	-48.0
2020 Q2	264.0	-0.3	-0.7	-3.1	-13.9	17.5	-28.9	58.0	-24.5	-22.2
Q3	69.2	10.8	-3.2	-1.1	6.0	9.0	27.4	-11.2	-19.3	-27.1
Q4	-57.2	2.1	-4.0	-0.9	-43.9	50.9	-111.2	100.0	-9.8	-8.1
2021 Q1	-49.4	-23.4	-14.8	-0.9	-33.5	25.8	4.1	-187.1	-2.8	-8.8
2020 Dec.	-4.7	14.6	-17.4	-0.4	-5.8	38.3	-57.8	111.4	-18.1	-7.9
2021 Jan.	-70.1	-38.3	-5.8	-0.1	-30.6	-1.7	37.5	-117.5	17.3	7.5
Feb.	5.9	4.3	-7.3	-0.5	-1.8	13.9	-3.2	-20.9	-2.0	-1.0
Mar.	14.8	10.5	-1.7	-0.3	-1.1	13.6	-30.2	-48.8	-18.1	-15.4
Apr.	27.6	-19.2	-21.2	0.0	-2.9	4.9	48.4	1.8	5.6	1.0
May ^(p)	-36.7	-27.8	-0.7	-0.3	-21.4	-5.4	-8.1	-59.4	0.6	-0.4
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 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
2021 Q1	56.5	-0.2	-1.2	-12.7	-4.1	3.5	-	-	-30.7	-33.7
2020 Dec.	88.5	-0.5	-0.8	-15.9	-4.6	3.0	-	-	-27.3	-25.7
2021 Jan.	65.1	-0.9	-0.9	-14.0	-6.1	3.0	-	-	-13.9	-19.5
Feb.	52.8	-0.9	-1.1	-13.9	-6.0	3.2	-	-	-18.3	-23.8
Mar.	56.5	-0.2	-1.2	-12.7	-4.1	3.5	-	-	-30.7	-33.7
Apr.	27.9	-0.2	-2.0	-10.9	-4.2	4.0	-	-	-29.2	-35.4
May ^(p)	5.4	-0.8	-2.3	-9.6	-5.0	3.2	-	-	-32.1	-38.1

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
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
2020	-7.2	-6.0	-0.3	-0.1	-0.9	-5.7
2020 Q1	-1.2	.	.	.	.	0.4
Q2	-3.9	.	.	.	.	-2.3
Q3	-5.3	.	.	.	.	-3.7
Q4	-7.2	.	.	.	.	-5.7

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	Compensation of employees			Intermediate consumption	Interest	Social benefits			
	1	2	3	4	5	6	7	8	9	10	11	12	13
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	45.9	12.9	13.1	15.0	0.5	47.0	43.3	9.9	5.3	1.6	22.5	3.8
2020	46.8	46.4	13.0	12.8	15.7	0.5	54.1	49.5	10.7	5.9	1.5	25.7	4.6
2020 Q1	46.6	46.1	13.1	13.0	15.1	0.5	47.7	44.0	10.0	5.4	1.6	22.9	3.8
Q2	46.8	46.4	13.1	13.0	15.4	0.4	50.7	46.8	10.4	5.7	1.6	24.3	3.9
Q3	46.8	46.4	13.1	12.9	15.6	0.4	52.1	48.0	10.6	5.8	1.6	25.0	4.2
Q4	46.9	46.4	13.0	12.9	15.7	0.5	54.1	49.5	10.7	5.9	1.5	25.7	4.6

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	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 currencies	
	MFIs													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2017	87.7	3.2	14.6	70.0	48.2	32.1	39.5	8.6	79.1	16.5	29.0	42.3	85.8	1.9
2018	85.7	3.1	13.8	68.8	48.0	32.4	37.8	8.1	77.7	16.0	28.4	41.3	84.2	1.5
2019	83.9	3.0	13.1	67.8	45.4	30.6	38.5	7.7	76.3	15.7	27.8	40.4	82.5	1.4
2020	98.0	3.2	14.3	80.5	54.9	39.4	43.1	11.6	86.4	19.7	31.7	46.6	95.9	2.1
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	.	.	.	.	.	.	.	.	.	.
Q4	98.1	3.2	14.3	80.5	.	.	.	.	.	.	.	.	.	.

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
2017	-2.4	-1.0	-0.1	0.4	0.5	0.0	-0.2	0.1	-0.1	-0.4	-1.3	1.0
2018	-2.0	-1.4	0.4	0.5	0.4	-0.1	0.0	0.2	0.1	-0.1	-1.0	0.8
2019	-1.8	-1.0	0.1	0.3	0.0	0.0	0.0	0.2	-0.2	0.0	-0.9	0.9
2020	14.1	5.7	2.3	2.4	2.0	0.4	-0.1	0.1	0.0	-0.1	6.1	9.5
2020 Q1	-0.1	-0.4	0.4	0.6	0.5	0.0	0.0	0.1	-0.2	-0.1	0.0	1.7
Q2	8.9	2.3	3.2	3.0	2.8	0.2	-0.1	0.2	-0.2	0.4	3.3	7.3
Q3	11.5	3.7	3.0	3.2	2.9	0.3	-0.1	0.1	-0.3	0.1	4.8	8.5
Q4	14.1	5.7	2.3	2.4	2.0	0.4	-0.1	0.1	0.0	-0.1	6.1	9.6

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	15.0	13.7	4.2	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.3	0.0	0.8
2020 Q1	12.9	11.5	4.3	1.4	0.4	7.5	2.1	1.2	-0.2	2.4	2.0	0.1	1.0
Q2	15.4	14.0	5.0	1.4	0.4	7.5	2.0	1.1	-0.2	2.3	2.0	0.1	0.9
Q3	15.9	14.5	4.7	1.4	0.3	7.5	1.9	1.1	-0.2	2.3	2.2	0.1	0.8
Q4	15.0	13.7	4.2	1.4	0.3	7.6	1.9	1.1	-0.2	2.2	2.3	0.0	0.8
2021 Jan.	15.3	14.0	5.0	1.4	0.3	7.7	1.8	1.1	-0.2	2.2	2.3	0.0	0.7
Feb.	15.4	14.0	5.2	1.4	0.4	7.8	1.8	1.1	-0.2	2.2	2.3	0.0	0.6
Mar.	15.7	14.3	5.5	1.4	0.4	7.8	1.8	1.1	-0.2	2.1	2.1	0.0	0.5
Apr.	15.9	14.5	5.1	1.4	0.4	7.9	1.7	1.0	-0.3	2.1	2.1	-0.1	0.6
May	15.8	14.4	4.8	1.4	0.3	7.9	1.7	0.5	-0.3	2.1	2.1	-0.1	0.6
June	15.5	14.1	5.2	1.4	0.3	7.9	1.7	0.5	-0.3	2.0	2.1	-0.1	0.5

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 (+)									
2017	-0.7	1.4	-0.7	-0.3	0.6	-3.0	-3.0	-2.4	1.9
2018	-0.8	1.8	-0.6	0.1	0.9	-2.5	-2.3	-2.2	-3.5
2019	-1.9	1.5	0.1	0.5	1.1	-2.9	-3.1	-1.6	1.5
2020	-9.4	-4.2	-4.9	-5.0	-9.7	-11.0	-9.2	-9.5	-5.7
2020 Q1	-2.9	1.1	-0.9	0.0	0.6	-3.4	-3.8	-2.4	2.1
Q2	-6.1	-1.4	-3.1	-1.9	-2.7	-6.9	-6.3	-5.4	-2.4
Q3	-7.3	-3.0	-3.6	-3.5	-5.7	-8.2	-7.1	-7.4	-4.3
Q4	-9.4	-4.2	-4.9	-5.0	-9.7	-11.0	-9.3	-9.5	-5.7
Government debt									
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	98.0	134.4	99.2
2019	98.1	59.7	8.4	57.4	180.5	95.5	97.6	134.6	94.0
2020	114.1	69.8	18.2	59.5	205.6	120.0	115.7	155.8	118.2
2020 Q1	103.4	60.9	8.9	59.0	180.7	99.1	101.3	137.8	96.2
Q2	114.0	67.3	18.5	62.8	191.3	110.2	113.9	149.5	113.0
Q3	113.1	70.0	18.5	62.3	199.8	114.0	116.4	154.5	119.2
Q4	114.1	69.8	18.2	59.5	205.6	120.0	116.3	155.8	118.2

	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
Government deficit (-)/surplus (+)										
2017	-0.8	0.5	1.3	3.2	1.3	-0.8	-3.0	-0.1	-1.0	-0.7
2018	-0.8	0.6	3.0	1.9	1.4	0.2	-0.3	0.7	-1.0	-0.9
2019	-0.6	0.5	2.4	0.4	1.8	0.6	0.1	0.4	-1.3	-0.9
2020	-4.5	-7.4	-4.1	-10.1	-4.3	-8.9	-5.7	-8.4	-6.2	-5.4
2020 Q1	-0.7	-0.4	1.1	-2.0	1.5	0.5	-0.2	-1.0	-1.9	-1.1
Q2	-1.6	-2.4	-2.1	-5.1	-1.2	-2.8	-1.9	-4.7	-3.4	-3.2
Q3	-3.4	-4.1	-2.7	-7.0	-2.5	-4.7	-4.2	-5.8	-4.5	-4.2
Q4	-4.5	-7.4	-4.1	-10.1	-4.3	-8.9	-5.7	-8.4	-6.2	-5.4
Government debt										
2017	39.0	39.1	22.3	48.5	56.9	78.5	126.1	74.1	51.5	61.2
2018	37.1	33.7	21.0	44.8	52.4	74.0	121.5	70.3	49.6	59.7
2019	37.0	35.9	22.0	42.0	48.7	70.5	116.8	65.6	48.2	59.5
2020	43.5	47.3	24.9	54.3	54.5	83.9	133.6	80.8	60.6	69.2
2020 Q1	37.1	33.0	22.2	43.3	49.5	73.2	119.2	68.9	49.5	64.4
Q2	43.0	41.4	23.9	50.1	55.2	82.4	125.7	78.2	60.1	68.7
Q3	44.7	45.9	26.0	52.6	55.2	78.9	130.5	78.4	60.5	67.0
Q4	43.5	47.3	24.9	54.3	54.5	83.9	133.6	80.8	60.6	69.2

Source: Eurostat.

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