ECB Economic Bulletin, Issue 1 / 2021

Update on economic and monetary developments

Summary

The start of vaccination campaigns across the euro area is an important milestone in the resolution of the ongoing health crisis. Nonetheless, the pandemic continues to pose serious risks to public health and to the euro area and global economies. The renewed surge in coronavirus (COVID-19) infections and the restrictive and prolonged containment measures imposed in many euro area countries are disrupting economic activity. Activity in the manufacturing sector continues to hold up well, but services sector activity is being severely curbed, albeit to a lesser degree than during the first wave of the pandemic in early 2020. Output is likely to have contracted in the fourth quarter of 2020 and the intensification of the pandemic poses some downside risks to the short-term economic outlook. Inflation remains very low in the context of weak demand and significant slack in labour and product markets. Overall, the incoming data confirm the Governing Council's previous baseline assessment of a pronounced near-term impact of the pandemic on the economy and a protracted weakness in inflation.

In this environment ample monetary stimulus remains essential to preserve favourable financing conditions over the pandemic period for all sectors of the economy. By helping to reduce uncertainty and bolster confidence, this will encourage consumer spending and business investment, underpinning economic activity and safeguarding medium-term price stability. Meanwhile, uncertainty remains high, including relating to the dynamics of the pandemic and the speed of vaccination campaigns. The Governing Council will continue to monitor developments in the exchange rate with regard to their possible implications for the medium-term inflation outlook. The Governing Council continues to stand ready to adjust all of its instruments, as appropriate, to ensure that inflation moves towards its aim in a sustained manner, in line with its commitment to symmetry.

The global economic recovery continued at the end of 2020, amid increasing headwinds from the resurgence of the pandemic. Economic activity in both the manufacturing and services sectors remains robust, although extended lockdowns in the countries more adversely affected by the pandemic increasingly pose downside risks. The recovery in global trade is ongoing, despite some signs of a loss in momentum towards the end of 2020. Global financial conditions remain highly accommodative, with equity markets being buoyed by COVID-19 vaccine-related developments, expansive fiscal policies and lower uncertainty regarding future trade relations between the European Union and the United Kingdom.

Over the review period (10 December 2020 to 20 January 2021) the forward curve of the euro overnight index average (EONIA) shifted upwards and flattened, which effectively removed most of its prior inversion. In general, risk sentiment improved and

global market-based inflation expectations increased on the back of developments in the United States. Consequently, the euro area risk-free curve does not suggest firm market expectations of an imminent rate cut. At the same time, long-term sovereign bond yields in the euro area increased somewhat, but remained at very subdued levels overall. Risk assets performed well, with equity prices increasing on both sides of the Atlantic. US equities outperformed their euro area counterparts and reached new record highs. In foreign exchange markets, the euro depreciated slightly in trade-weighted terms.

Following the unprecedented fall in euro area output in the first half of 2020, economic growth rebounded strongly in the third quarter of the year. However, incoming economic data, surveys and high-frequency indicators suggest that the resurgence of the pandemic and the associated intensification of containment measures have likely led to a decline in activity in the fourth quarter of 2020 and are also expected to weigh on activity in the first quarter of this year. This profile is broadly in line with the baseline scenario of the December 2020 macroeconomic projections. Whereas services sector activity is being severely curtailed by the intensification of containment measures (albeit to a lesser extent than in the first wave of the pandemic in spring 2020), manufacturing activity is continuing to hold up well. While growth in the fourth quarter will be weak and very possibly negative, the relative resilience of the industrial sector suggests that there could be some upside risks to growth. Growth patterns in the euro area are expected to remain uneven, both across sectors and across countries. Looking ahead, the roll-out of vaccines, which started in late December, allows for greater confidence in the resolution of the health crisis. However, it will take time until widespread immunity is achieved, and further adverse developments related to the pandemic, with challenges for public health and economic prospects, cannot be ruled out. Over the medium term, the economic recovery in the euro area should be supported by favourable financing conditions, an expansionary fiscal stance and a recovery in demand as containment measures are lifted and uncertainty recedes.

Euro area annual HICP inflation remained unchanged for the fourth month in a row, standing at -0.3% in December. Headline inflation is expected to move into positive territory in early 2021 owing to the end of the temporary VAT reduction in Germany, upward base effects in energy price inflation and the impact of recent oil price increases. However, underlying price pressures will remain subdued owing to weak demand, notably in the tourism and travel-related sectors, as well as to low wage pressures and the appreciation of the euro exchange rate. Once the impact of the pandemic fades, a recovery in demand, supported by accommodative monetary and fiscal policies, will put upward pressure on inflation over the medium term. Survey-based measures and market-based indicators of longer-term inflation expectations remain at low levels, although market-based indicators of inflation expectations have increased slightly.

In November 2020, monetary dynamics in the euro area continued to reflect the impact of the coronavirus crisis. Broad money growth increased further, while growth in loans to the private sector remained stable, with moderate lending to non-financial corporations and resilient lending to households. Strong money growth continued to be supported by the ongoing asset purchases by the Eurosystem, which remain the

largest source of money creation. The tightening of credit standards for loans to firms and to households continued in the fourth quarter of 2020 in the context of renewed COVID-19-related restrictions. Favourable lending rates have continued to support euro area economic growth.

Against this background, the Governing Council decided to reconfirm its very accommodative monetary policy stance.

First, the interest rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility will remain unchanged at 0.00%, 0.25% and -0.50% respectively. The Governing Council expects the key ECB interest rates to remain at their present or lower levels until it has seen the inflation outlook robustly converge to a level sufficiently close to, but below, 2% within its projection horizon, and such convergence has been consistently reflected in underlying inflation dynamics.

Second, the Governing Council will continue the purchases under the pandemic emergency purchase programme (PEPP) with a total envelope of €1,850 billion. The Governing Council will conduct net asset purchases under the PEPP until at least the end of March 2022 and, in any case, until it judges that the coronavirus crisis phase is over. The purchases under the PEPP will be conducted to preserve favourable financing conditions over the pandemic period. If favourable financing conditions can be maintained with asset purchase flows that do not exhaust the envelope over the net purchase horizon of the PEPP, the envelope need not be used in full. Equally, the envelope can be recalibrated if required to maintain favourable financing conditions to help counter the negative pandemic shock to the path of inflation.

The Governing Council will continue to reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2023. In any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

Third, net purchases under the asset purchase programme (APP) will continue at a monthly pace of €20 billion. The Governing Council continues to expect monthly net asset purchases under the APP to run for as long as necessary to reinforce the accommodative impact of its policy rates, and to end shortly before it starts raising the key ECB interest rates.

The Governing Council also intends to continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when it starts raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

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

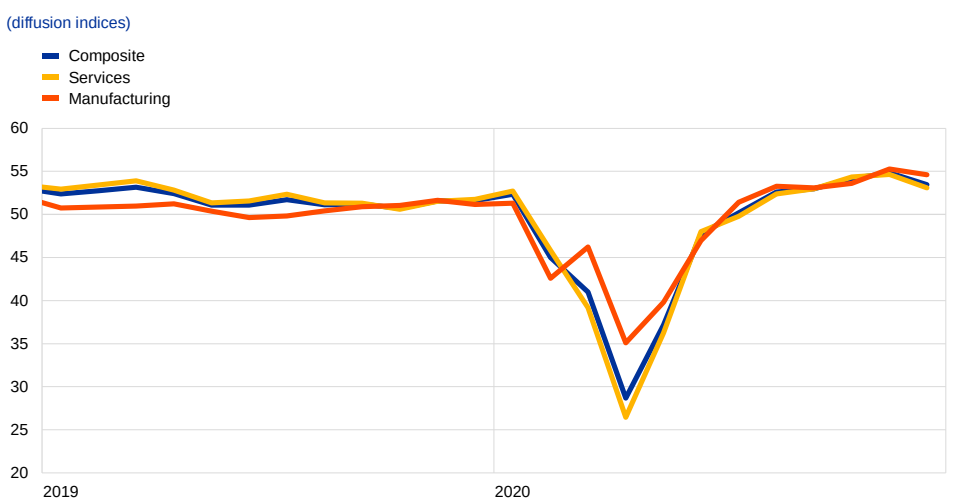
The Governing Council continues to stand ready to adjust all of its instruments, as appropriate, to ensure that inflation moves towards its aim in a sustained manner, in line with its commitment to symmetry.

1 External environment

The recovery in global economic activity continued towards the end of 2020, albeit with rising headwinds from a re-intensification of the pandemic. Daily new cases of coronavirus (COVID-19) infections continued to rise globally. However, the most recent wave of the pandemic and the related containment measures have weighed less strongly on economic activity than the first wave in March and April 2020. This can be seen in the levels of the global manufacturing and services Purchasing Managers' Index (PMI) excluding the euro area, which remained considerably higher at the end of 2020 compared with the sharp declines observed during the first wave (Chart 1). Looking ahead, global growth prospects this year will depend on how the pandemic evolves and the progress made on vaccination.

Chart 1

Global output PMI (excluding the euro area)



Sources: Markit and ECB staff calculations.
Note: The latest observations are for December 2020.

Risks to the global outlook remain skewed to the downside, driven by a re-intensification of the COVID-19 pandemic. The global rise in daily new COVID-19 infections is creating headwinds to the global economic recovery. Countries that are strongly affected by COVID-19 have lost growth momentum. At the same time, there are upside risks relating to the decline in uncertainty regarding the trade relations between the European Union (EU) and the United Kingdom, and the potential for a larger than expected fiscal support package in the United States given the new constellation of its Senate. However, slower than expected progress on vaccination rollout and further intensification of the pandemic could also imply stricter and longer lockdowns that will weigh on global growth prospects.

Global financial conditions remain highly accommodative in both advanced and emerging market economies. Equity markets edged higher, buoyed by COVID-19 vaccine-related developments, combined with supportive central bank action, expansive fiscal policies and lower uncertainty regarding future trade relations between the EU and the United Kingdom. In emerging market economies, equity prices have increased sharply, consistent with strong portfolio inflows into emerging

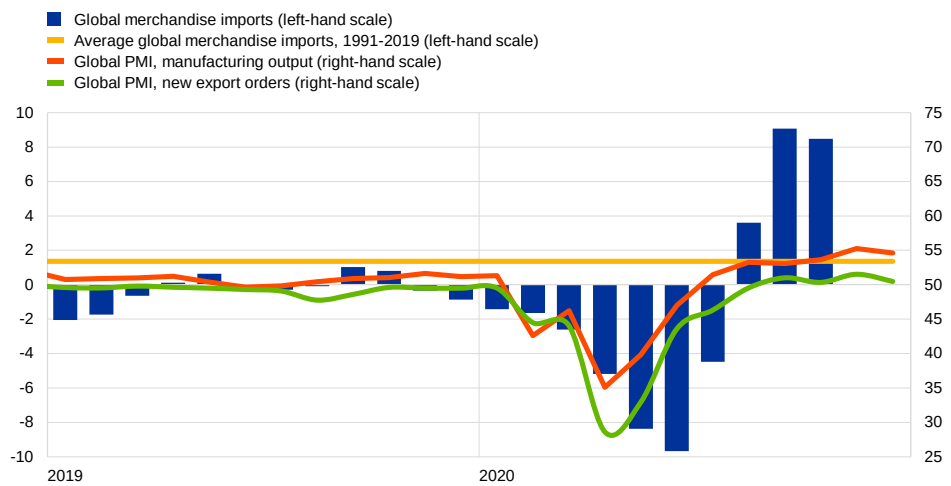
market bond and equity funds, which have now offset the record outflows from those countries' markets at the start of the COVID-19 crisis. Losses incurred by emerging market currencies in March 2020 also continued to be offset, although exchange rates remain substantially lower than pre-pandemic levels.

The recovery in global trade is ongoing, despite some signs of a loss in momentum. In the third quarter of 2020 data on goods trade pointed to a broad-based recovery across different categories. Intermediate goods, in particular, were a major driver of global exports in the third quarter, underlining the resilience of global value chains. At the same time, global PMI new export orders (excluding the euro area) fell in December, signalling some moderation in the momentum of global trade towards the end of 2020 (Chart 2).

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 October 2020 for global merchandise imports and December 2020 for PMIs.

Global inflation was stable in November. Annual consumer price inflation in the countries of the Organisation for Economic Co-operation and Development remained at 1.2% in November, while inflation excluding energy and food remained at 1.6%. Looking ahead, global wage and price inflationary pressures are expected to remain contained amid ample spare capacity in most economies.

Commodity prices have continued to show broad-based increases since the last Governing Council meeting, with oil and non-energy prices increasing by more than 10%. The rebound in prices for most commodities over the past months is driven by a surge in global demand following the recovery from the COVID-19 shock. Demand from China for metals seems to be particularly strong. Copper prices have also been supported by government programmes for renewable infrastructure projects and electric vehicles, which are usually copper-intensive. Food prices have been supported by strong demand as governments stockpile and by supply disruptions as a result of hot and dry weather conditions in South America. In addition to rising

demand, in early January oil prices also benefited from Saudi Arabia's announcement of voluntary oil supply cuts of 1 million barrels per day.

Economic activity in the United States benefited from new fiscal stimulus amid headwinds from a weak labour market. Following a sharp recovery in the third quarter of 2020, economic growth is expected to slow in the fourth quarter. At the same time, a sizeable new fiscal stimulus package was agreed towards the end of last year, which will support consumption at a time when the labour market is still weak. Further stimulus measures are likely to be enacted by the new US administration. Meanwhile, the weakness in the labour market prevails, as suggested by rising permanent job losses through November, while the number of new job postings remains below pre-pandemic levels. The unemployment rate continued to be high at 6.7% in November, supported by a reduction in temporary layoffs. Overall, subdued consumer confidence, combined with rising numbers of daily new COVID-19 infections, pose downside risks to economic activity.

In Japan, the economic recovery stalled towards the end of 2020. While consumption remained relatively robust, growth in industrial production weakened in November, while the services PMI continues to stand below the neutral threshold, signalling ongoing weakness. While a new fiscal package of about 3.5% of GDP will support activity in the short term, a third wave of COVID-19 infections is prompting additional lockdown measures that will weigh on the growth outlook.

In the United Kingdom, notwithstanding support from the recent trade agreement with the EU, the near-term growth momentum remains weak. On 24 December 2020 the EU and the United Kingdom announced that they had reached an agreement on their future relationship, which ensures tariff-free goods trade and zero quotas on goods traded. However, companies face additional administrative burdens and longer border processes owing to customs and regulatory checks. This diminishes the uncertainty surrounding the Brexit negotiations, but the worsening pandemic situation and deteriorating labour market conditions continue to weigh on consumer confidence and demand. Official monthly UK GDP data and surveys signal a decline in growth into negative territory in the fourth quarter of 2020. In addition, pandemic developments escalated in December amid the emergence of a more infectious mutation of the virus. The government implemented a strict nationwide lockdown that will last at least through mid-February and further depress economic activity.

China, by contrast, experienced a continuation of its robust recovery. China's GDP in the fourth quarter increased by 2.6% (quarter on quarter), which brings annual growth for 2020 to 2.3%. This makes China one of the few countries in the world to record positive economic growth in 2020. The GDP figures for the final quarter of 2020 indicate that the recovery momentum has broadened from investment towards consumption. PMI data also signal that the service sector is gaining strength as the pandemic remains broadly under control in China, notwithstanding lockdowns in several municipalities amid new cases.

2 Financial developments

The euro overnight index average (EONIA) and the new benchmark euro short-term rate (€STR) averaged -47 and -56 basis points respectively[1] over the review period (10 December 2020 to 20 January 2021). In the same period, excess liquidity increased by approximately €86 billion to around €3,537 billion, mainly reflecting asset purchases under the pandemic emergency purchase programme (PEPP) and the asset purchase programme (APP), which were partially offset by autonomous factors and voluntary repayments of TLTRO II operations. No TLTRO III operations were conducted during the review period.

At the same time, the EONIA forward curve shifted upwards and flattened, which effectively removed most of its prior inversion. Currently, the forward curve does not suggest firm market expectations of an imminent rate cut.[2] EONIA forward rates remain below zero for horizons up to 2028, reflecting continued market expectations of a prolonged period of negative interest rates.

Long-term sovereign bond yields in the euro area increased somewhat in the reference period but remained at very low levels overall, while long-term yields in other major jurisdictions increased more significantly. The GDP-weighted euro area ten-year sovereign bond yield increased by 5 basis points to -0.19% (see Chart 3), reacting little to the December meeting of the Governing Council, the EU-UK Trade and Cooperation Agreement that was announced on 24 December 2020 and pandemic-related news. Ten-year sovereign bond yields in the United Kingdom and the United States were more volatile, increasing by 10 and 17 basis points respectively. This mainly reflects a global “reflation” trend driven by increasing inflation expectations in the United States since early January.

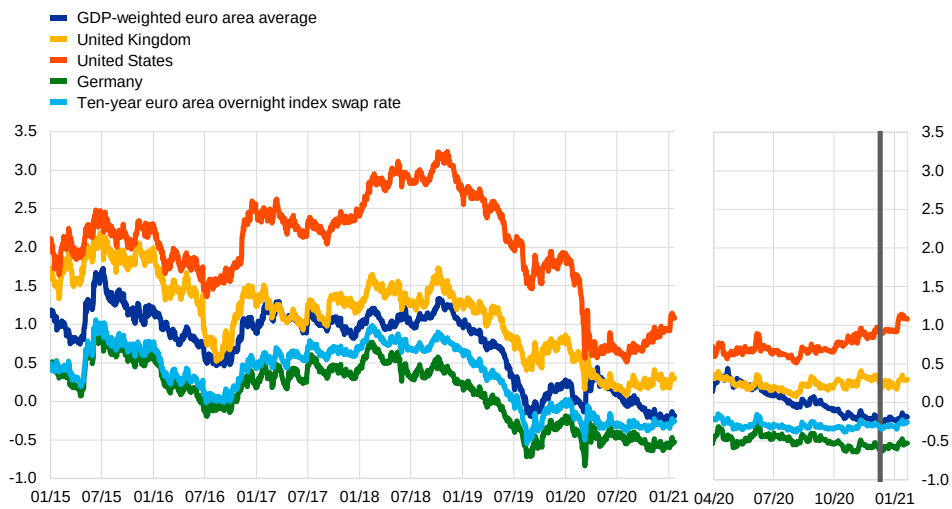
1 The methodology for computing the EONIA changed on 2 October 2019; it is now calculated as the €STR plus a fixed spread of 8.5 basis points. See the box entitled “Goodbye EONIA, welcome €STR!”, *Economic Bulletin*, Issue 7, ECB, 2019.

2 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: Daily data. The vertical grey line denotes the start of the review period on 10 December 2020. The zoom window shows developments in sovereign yields since 1 April 2020. The latest observations are for 20 January 2021.

Euro area sovereign bond spreads relative to risk-free rates remained broadly unchanged. Some countries saw their sovereign bond yields increase in early January, broadly in parallel with risk-free rates. Specifically, ten-year German, French, Italian, Spanish and Portuguese sovereign spreads moved by 0, -3, -1, -2 and -2 basis points respectively to reach -0.27, -0.05, 0.84, 0.33 and 0.29 percentage points. The GDP-weighted euro area ten-year sovereign spread (relative to the corresponding risk-free rate) consequently decreased by 2 basis point to 0.06 percentage points and as such remained below its pre-pandemic level of February 2020.

Equity prices increased on both sides of the Atlantic, with equities in the United States outperforming those in the euro area and reaching new record highs. Equity prices in both the United States and Europe benefited from improved risk sentiment, driven in part by the global reflation trend which has been observed since early January. In the euro area, equity prices of non-financial corporations (NFCs) rose by 4.3% above the levels observed at the beginning of the review period. Bank equity prices also increased, albeit by a less pronounced 1.1%. In the United States, NFC equity prices increased by 5.5% – broadly in line with their euro area peers – while bank equity prices rose significantly, by 10.6%.

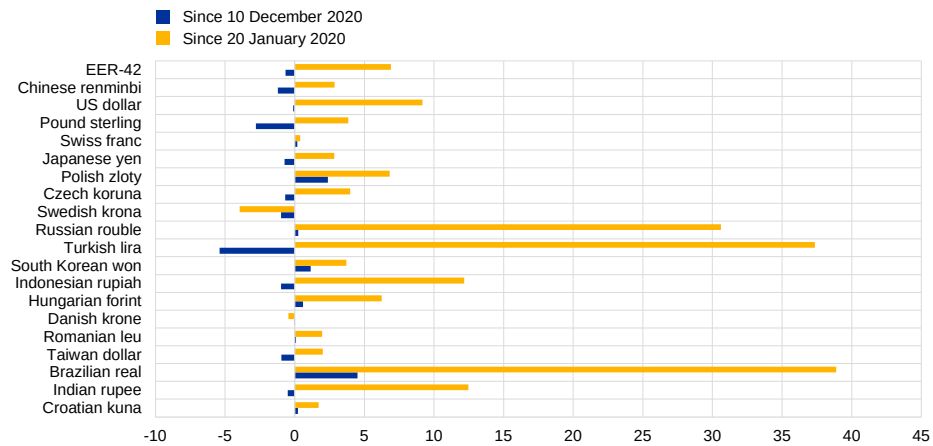
Euro area corporate bond spreads remained broadly stable and stand slightly above their pre-pandemic levels in some sectors. The spreads on both investment-grade NFC bonds and financial sector bonds relative to the risk-free rate remained stable over the review period to stand at 59 and 70 basis points respectively as at 20 January 2021. Overall, there have been only minor movements in corporate bond spreads since the December meeting of the Governing Council, with current conditions appearing highly predicated on ongoing fiscal and monetary policy support.

In foreign exchange markets, the euro depreciated slightly 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, depreciated by 0.7%. Regarding bilateral exchange rate developments, the euro depreciated against the pound sterling (by 2.8%), mainly reflecting the pound's appreciation following the conclusion of the Brexit process with the announcement of the EU-UK Trade and Cooperation Agreement. Amid stabilisation in the global risk sentiment, the euro appreciated slightly against the Swiss franc (by 0.2%), while depreciating moderately against the Japanese yen (by 0.7%) and the US dollar (by 0.1%). The euro weakened against the Turkish lira (by 5.4%) and the Chinese renminbi (by 1.2%) and strengthened against the Brazilian real (by 4.5%).

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 20 January 2021.

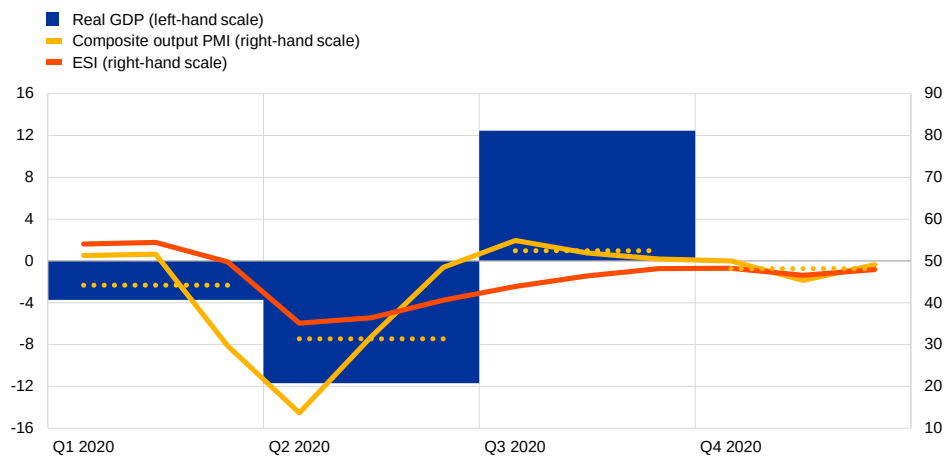
3 Economic activity

Following the sharp and deep fall in euro area output in the first half of 2020, economic growth rebounded strongly in the third quarter, but it could well turn negative again in the fourth quarter. Total economic activity rose by 12.4% quarter on quarter in the third quarter of 2020, following declines of 11.7% and 3.7% in the second and first quarters respectively (Chart 5). A breakdown of growth in the third quarter shows that the recovery in output was broadly based, with increased domestic demand and net trade making positive contributions to growth totalling 11.4 and 2.3 percentage points respectively, while changes to inventories made a negative contribution totalling 1.2 percentage points. Hard data, survey results and high-frequency indicators all point to a renewed decline in GDP in the fourth quarter, which would be broadly in line with expectations, reflecting the intensification of containment measures as a result of the renewed rise in COVID-19 infection rates. Whereas service sector activity is being severely curtailed (albeit to a lesser extent than in the first wave in spring 2020), manufacturing activity is continuing to hold up well. Growth patterns in the euro area are expected to remain uneven across sectors, with the service sector being hardest hit by the pandemic (partly as a result of its sensitivity to social distancing measures). The same is true across countries, with developments in output being dependent on infection rates and efforts to contain the pandemic. Box 3 of this issue of the Economic Bulletin examines the drivers of regional differences in the economic impact of COVID-19 in the four largest euro area economies during the initial phase of the pandemic.

Chart 5

Euro area real GDP, the composite output Purchasing Managers' Index and the Economic Sentiment Indicator

(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 Economic Sentiment Indicator (ESI) has been standardised and rescaled so that it has the same mean and standard deviation as the Purchasing Managers' Index (PMI). Dotted lines show quarterly averages of monthly PMI observations. The latest observations relate to the third quarter of 2020 for real GDP and December 2020 for the ESI and the PMI.

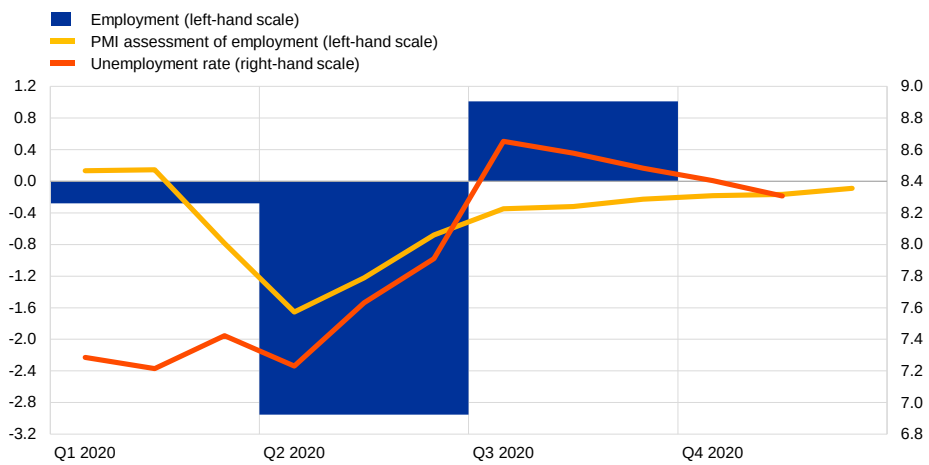
The unemployment rate in the euro area declined further in November 2020, helped by an increase in the number of workers covered by job retention schemes. The unemployment rate stood at 8.3% in November, down from 8.4% in

October and just under 8.7% in July (Chart 6). At the same time, the figure for November was still around 1.1 percentage points higher than the rate seen in February prior to the onset of the COVID-19 pandemic. Job retention schemes continued to cushion developments in the labour market, covering an estimated 5.8% of the labour force in November, up from around 5% in October in response to the latest lockdown measures.[3] Employment increased by 1.0% in the third quarter of 2020, following a decline of 3.0% in the second quarter. However, despite that improvement, employment was still 2.2% lower than it had been in the fourth quarter of 2019. Total hours worked increased by 14.8% in the third quarter, having declined by 13.6% in the second quarter, but remained 4.6% lower than they had been in the fourth quarter of 2019. Information on employment and hours worked in the fourth quarter of 2020 is not yet available.

Chart 6

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

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



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

Short-term labour market indicators have continued to improve somewhat, but are still signalling contractionary developments. The monthly PMI for employment rose marginally to stand at 49.1 in December – its eighth consecutive increase – up from 48.3 in November and 48.2 in October (Chart 6). The PMI for employment has recovered significantly since recording an all-time low in April 2020. However, it continues to point to a contraction in employment and could be read as an early indication of subdued employment prospects in the period ahead.

Having increased by some 14% in the third quarter, consumer spending weakened in the fourth quarter as social distancing measures were strengthened. In November, retail trade shrank by 6.1% month on month, following a 1.4% increase in October. At the same time, consumer confidence rebounded in

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

December. The European Commission's consumer confidence indicator rose to -13.9 in that month, up from -17.6 in November, mainly on account of relative improvements in the forward-looking components of the survey. However, consumer confidence remained low compared with pre-pandemic levels. While labour income has been severely affected by the COVID crisis, fiscal transfers have absorbed most of the impact on euro area households' disposable income. The rebound in consumption in the third quarter of 2020 was reflected in a decline in the household saving rate, which fell to 17.3% in that quarter, down from 24.6% in the second quarter. Looking ahead, the saving rate is likely to remain above its pre-COVID level in the short term on account of both precautionary and involuntary motives, before gradually normalising thereafter.[4]

After the strong growth seen in the third quarter, which was driven by very dynamic growth in machinery and equipment, corporate investment is likely to have increased slightly further in the fourth quarter, but the second wave of the pandemic suggests downside risks to investment in the first quarter of 2021. Industrial production of capital goods increased further in November, with its average value in October and November standing 6.6% higher than the level seen in the third quarter. Capacity utilisation increased to 76%, up from 72% in the third quarter, but was still 5 percentage points lower than it had been prior to the pandemic. Meanwhile, survey indicators for the capital goods sector (such as the European Commission's industrial confidence indicator and the relevant PMI) tended to improve in the fourth quarter relative to the third quarter. In addition, the third quarter brought some relief to corporate balance sheets, with national accounts data indicating that gross operating surpluses rebounded by 12% in that quarter, following a cumulative decline of more than 14% in the first half of 2020. New loans to non-financial corporations contracted slightly in the third quarter, having increased strongly in the first two quarters in the interest of maintaining essential business operations, before remaining broadly stable in October and November. However, the further intensification of the pandemic suggests downside risks to investment in the first quarter of 2021.

Housing investment (proxied by real residential investment) recovered strongly in the third quarter, increasing by 12.3% quarter on quarter, following a cumulative decline of 14.3% in the first half of 2020, and is expected to remain subdued in the short term. That recovery was particularly strong in the large euro area countries that were most affected by lockdowns during the first wave of the pandemic, with Italy, France and Spain seeing substantial increases of 45.0%, 30.6% and 15.7% respectively. In Germany, meanwhile, housing investment declined by 2.0% in the third quarter. Activity tended, overall, to be driven by firms working their way through a large backlog of construction plans, with construction sites reopening and new building projects being launched. However, the short-term outlook for housing investment remains subdued, with the backlog of orders dwindling and new business activity drying up as countries increase restrictions in order to contain the spread of the virus. Indeed, the euro area PMI for construction output remained below the expansionary threshold in the fourth quarter, declining further quarter on quarter in average terms. Meanwhile, construction production increased by just 1.4% month on

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

month in November, pointing to an overall slowdown in quarter-on-quarter terms in the fourth quarter and suggesting that housing investment might be following a similar trend. Looking further ahead, despite some slight improvements in the fourth quarter of 2020, firms' expectations continue to point to weak developments over the short term.

Following the rebound in euro area trade seen in the third quarter, growth in trade has moderated. November data on nominal trade in goods confirm that growth in extra- and intra-euro area trade has moderated since September, but the process of returning to pre-pandemic levels of trade is continuing, with growth rates higher than those seen in the two years to February 2020 (with extra-euro area imports and exports around 4.5% below pre-pandemic levels, and intra-euro area trade around 3.2% lower). Euro area imports and exports have increased in all sub-categories since April 2020, especially exports to the United Kingdom (in part as a consequence of UK stockpiling of goods ahead of Brexit) and exports to China. Consumption goods (especially cars and fuel) have seen a robust expansion, boosted by strong Chinese demand for German goods. Conversely, the weakness of private investment has dampened trade in capital goods and will continue to weigh on activity until uncertainty surrounding the rolling-out of vaccines and the evolution of the pandemic dissipates. While it has been less affected than capital goods, trade in intermediate goods (which remains subdued) tends to shape the overall picture, as it accounts for the bulk of total flows (especially for intra-euro area trade). Leading indicators point to further improvements at the end of the year, including improvements to trade in services (which is still very depressed). Indeed, the PMI for new service export orders suggests that the situation improved slightly in December as the winter holiday season kicked in.

Economic indicators (particularly survey results) suggest that output may well contract in the fourth quarter of 2020, reflecting the strengthening of containment measures. Industrial production (excluding construction) increased by 2.5% month on month in November, meaning that the average level of production in the first two months of the fourth quarter was 3.8% higher than the average for the third quarter. However, if we look at more recent survey data, we can see that the composite output PMI fell to 48.1 in the fourth quarter, down from 52.4 in the third quarter, thus indicating a contraction in output. This decline was explained entirely by developments in the service sector, while the manufacturing sector displayed a small improvement. This is not surprising and reflects services' greater sensitivity to social distancing measures. While growth will be weak – and very possibly negative – in the fourth quarter, the relatively resilient industrial sector points to some upside risks to growth. High-frequency indicators also point to a slowdown in the fourth quarter.

Looking ahead, the roll-out of vaccines, which started in late December, allows for greater confidence in the resolution of the health crisis. However, it will take time for widespread immunity to be achieved, and further adverse developments relating to the pandemic cannot be ruled out. While uncertainty surrounding COVID-19 is likely to dampen the recovery in the labour market and weigh on consumption and investment, the economic recovery in the euro area should be supported by favourable financing conditions, an expansionary fiscal stance and a recovery in

demand as containment measures are lifted and uncertainty recedes. The results of the latest round of the Survey of Professional Forecasters (which was conducted in early January) show that private sector GDP growth forecasts have been revised downwards for 2021 and upwards for 2022 relative to the previous round (which was conducted in early October). Forecasters foresee a 2.5% decline in GDP in the final quarter of 2020, followed by flat growth in the first quarter of 2021. This is somewhat more pessimistic than the short-term outlook entailed by the December 2020 Eurosystem staff macroeconomic projections, which foresaw a 2.2% decline in the fourth quarter, followed by a 0.6% increase in the first quarter of 2021.That revision is consistent with increased pessimism regarding the short-term outlook on account of the intensification of containment measures, together with some rising hope regarding medium-term prospects on the back of expectations of a safe and successful start to the vaccination process.

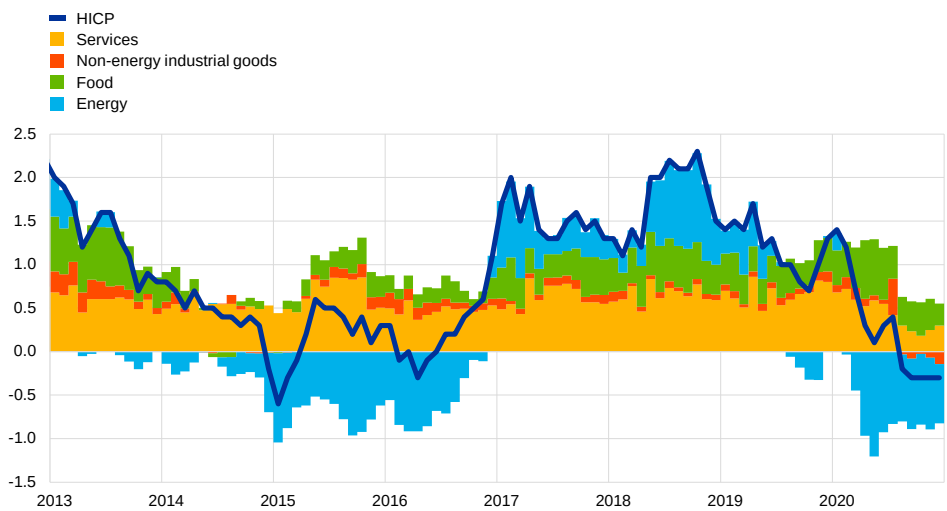
Prices and costs

Headline inflation remained unchanged for the fourth consecutive month in December 2020 at -0.3%. The unchanged inflation rate of -0.3% in December masks movements in the main components: while energy and services inflation increased, food inflation and non-energy industrial goods (NEIG) inflation decreased (Chart 7). Despite the recent increase, energy inflation remained deep in negative territory at -6.9%, representing a still substantial drag on HICP inflation. Most HICP sub-indices in December were considered reliable by Eurostat, although the share of price imputations has risen again owing to new containment and lockdown measures.

Chart 7

Contributions of components of euro area headline HICP inflation

(annual percentage changes; percentage point contributions)



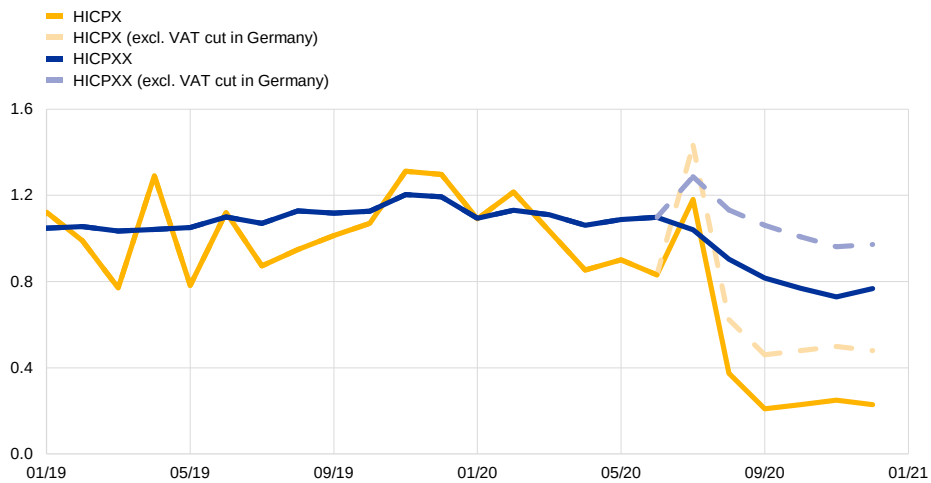
Sources: Eurostat and ECB calculations.
Notes: The latest observations are for December 2020. Growth rates for 2015 are distorted upwards owing to a methodological change (see the box entitled "A new method for the package holiday price index in Germany and its impact on HICP inflation rates", *Economic Bulletin*, Issue 2, ECB, 2019).

Measures of underlying inflation remained broadly unchanged at low levels. HICP inflation excluding energy and food (HICPX) remained unchanged for the fourth consecutive month at a historical low of 0.2% in December. The unchanged inflation rate conceals a decline in NEIG inflation to -0.5% in December from -0.3% in November and a slight increase in services inflation to 0.7% from 0.6% over the same period. The decline in NEIG inflation was mainly due to the clothing and footwear component, while the increase in services inflation was largely due to a modest reversal of the substantial declines in travel-related services inflation (see Box 6). Other measures of underlying inflation remained broadly stable at low levels in December. The low levels also continued to reflect the temporary reduction in German VAT rates during the second half of 2020 (Chart 8).

Chart 8

Measures of underlying inflation

(annual percentage changes)



Sources: Eurostat and ECB calculations based on estimates in "Impact of the temporary reduction in VAT on consumer prices", *Monthly Report*, Deutsche Bundesbank, November 2020.
Notes: The latest observations are for December 2020. HICPXX stands for HICP excluding energy, food, travel-related items and clothing and footwear.

Pipeline price pressures for NEIG inflation increased in the early stages of the supply chain, albeit from generally low levels. Domestic producer price inflation for non-food consumer goods was 0.7% in November, unchanged from the previous month and continuing to hover slightly above its long-term average, while import price inflation for non-food consumer goods remained negative, partly owing to past euro appreciation, albeit increasing marginally to -1.1% in November from -1.2% in October. At the earlier input stages, inflation for intermediate goods increased substantially in November: domestic producer price inflation increased to -0.6%, from -1.3% in the previous month, while import price inflation increased to -1.6% from -2.4% over the same period. This may in part reflect some easing in downward pressures from the euro effective exchange rate and oil prices and a further strengthening in upward pressures from prices for other commodities.

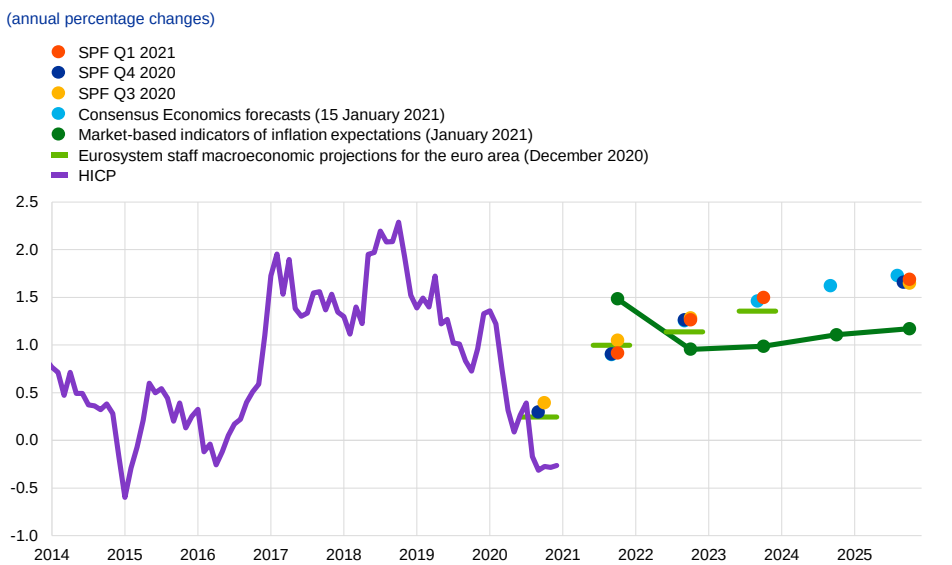
Output price inflation as measured by the GDP deflator declined in the third quarter of 2020. The annual growth rate of the GDP deflator declined to 1.1% in the third quarter of 2020 from 2.4% in the previous quarter. This mainly reflected the impact of a sharp decline in unit labour cost growth as less negative labour productivity growth, which was boosted by a strong pick-up in GDP growth, outweighed a strengthening of compensation per employee growth.[5] A lower recourse to short-time work schemes in view of the rebound in economic activity not only supported compensation per employee growth but, via lower subsidies, also implied an easing of the negative contribution from net indirect taxes to the GDP deflator. At the same time, reflecting the pick-up in economic activity, profit margins increased compared to the previous quarter, although their contribution was still negative.

[5] For more information, see the box entitled "Short-time work schemes and their effects on wages and disposable income", *Economic Bulletin*, Issue 4, ECB, 2020.

Market-based indicators of medium to longer-term inflation expectations in the euro area increased, but still remained at very subdued levels, while survey-based indicators of inflation expectations were broadly stable at low levels (Chart 9). Movements in inflation markets remained limited, with an uptick taking place in mid-January. Since the Governing Council meeting on 10 December, the most prominent indicator of longer-term market-based inflation expectations, the five-year forward inflation-linked swap (ILS) rate five years ahead, has risen by 6 basis points to 1.32%, slightly above its pre-pandemic level (1.25%). Nevertheless, current levels of longer-term forward ILS rates continue to be very subdued and do not suggest a return of inflation to the ECB's aim in the foreseeable future. Survey-based indicators of longer-term inflation expectations were unchanged or increased slightly, but remained at low levels. According to the ECB Survey of Professional Forecasters (SPF) for the first quarter of 2021, conducted in early January 2021, longer-term inflation expectations were unchanged at 1.7%. Longer-term inflation expectations as measured by Consensus Economics in January were also 1.7%, up slightly from 1.6% in the previous round in October.

Chart 9

Market and survey-based indicators of inflation expectations



Sources: ECB Survey of Professional Forecasters (SPF), Eurosystem staff macroeconomic projections for the euro area (December 2020) and Consensus Economics (15 January 2021).
Notes: The SPF for the first quarter of 2021 was conducted between 7 and 11 January 2021. The market-implied curve 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 for market-based indicators of inflation expectations are for 19 January 2021.

5 Money and credit

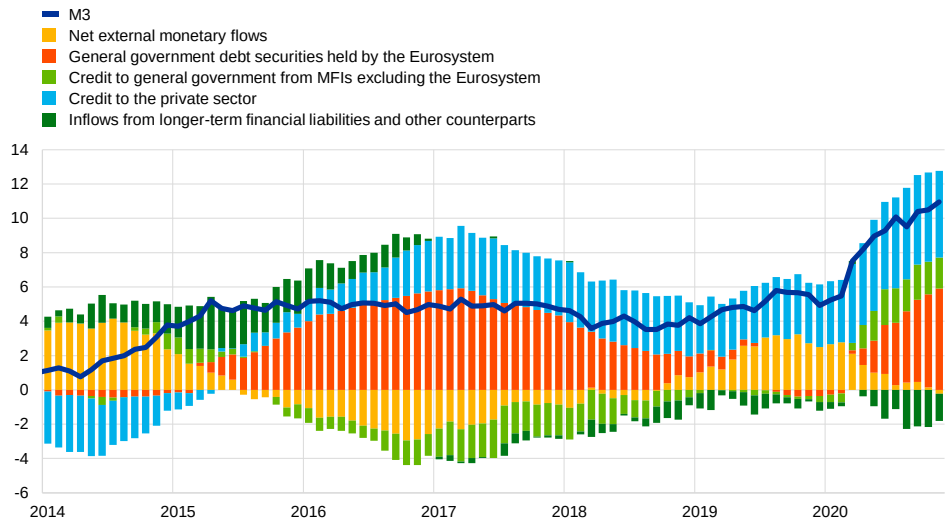
Broad money growth increased further in November 2020. The annual growth rate of M3 rose to 11.0% in November, after 10.5% in October (Chart 10). While the coronavirus (COVID-19) crisis has triggered an exceptional preference for liquidity, the strong growth in broad money is, to a large extent, reflecting the sizeable support measures taken by the ECB and supervisory authorities, as well as by national governments, to ensure that sufficient liquidity is provided to the economy to address the economic consequences and uncertainties stemming from the crisis. In November, a further contributing factor was higher net spending by governments from the deposit buffers accumulated in previous months, as these deposits are not part of M3. The use of these buffers reflected the tightening of COVID-related restrictions and the reactivation of fiscal support measures in a month with broadly zero net borrowing by governments. The increase in M3 was mainly driven by the narrow aggregate M1, which includes the most liquid components of M3. The annual growth rate of M1 increased to 14.5% in November, after 13.8% in October. This development was mainly attributable to the strong annual growth in overnight deposits held by firms and households, for which an important driver was a strong preference for liquidity. Other short-term deposits and marketable instruments continued to make a small contribution to annual M3 growth, mirroring the low level of interest rates and the search-for-yield behaviour of investors.

Domestic credit has remained the main source of money creation. The Eurosystem's net purchases of government securities under the ECB's asset purchase programme (APP) and the pandemic emergency purchase programme (PEPP) made the largest contribution to M3 growth in November 2020 (red portion of the bars in Chart 10). Credit to the private sector lost some momentum but continued to provide the second largest contribution to M3 growth (blue portion of the bars in Chart 10). Further support to M3 growth came from credit to general government from monetary financial institutions (MFIs) excluding the Eurosystem (light green portion of the bars in Chart 10), but the respective flows have moderated recently. As in previous months, the contribution from annual net external monetary flows remained negligible in November (yellow portion of the bars in Chart 10), while longer-term financial liabilities and other counterparts dampened broad money growth. This was due to developments in other counterparts (repurchase agreements, in particular), while favourable conditions on targeted longer-term refinancing operations (TLTROs) continued to support banks' funding substitution, resulting in net redemptions in long-term bank bonds.

Chart 10

M3 and its counterparts

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



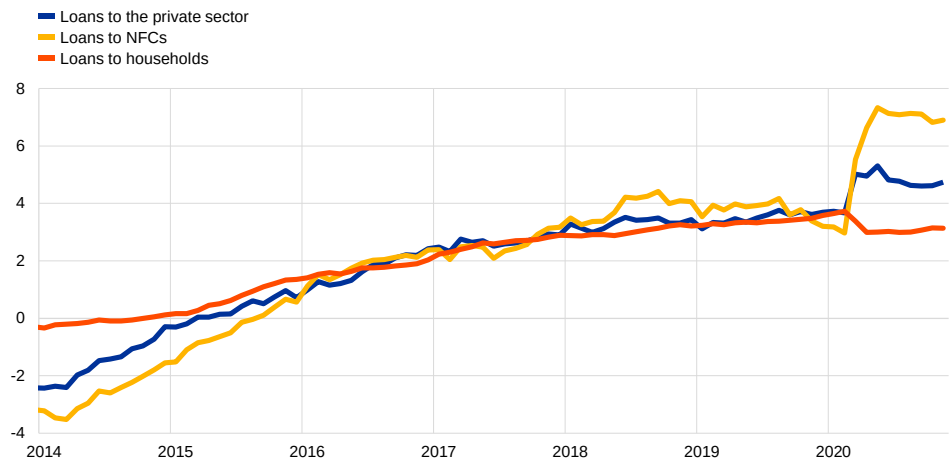
Source: ECB.
Notes: Credit to the private sector includes monetary financial institution (MFI) loans to the private sector and MFI holdings of securities issued by the euro area private non-MFI sector. As such, it also covers the Eurosystem's purchases of non-MFI debt securities under the corporate sector purchase programme and the PEPP. The latest observation is for November 2020.

Growth in loans to the private sector remained stable in November 2020. The annual growth rate of bank loans to the private sector stood at 4.7% in November, broadly unchanged since June (Chart 11). The pattern of broadly stable lending to households and moderating lending to firms since the end of the summer has continued. This shift is being driven by the specific nature of the COVID-19 crisis, which led to a collapse in corporate cash flows and compelled firms to step up significantly their reliance on external financing during the first phase of the crisis. In November loans to non-financial corporations (NFCs) were broadly unchanged at 6.9%, while monthly lending flows to NFCs continued to moderate. The moderation in borrowing by firms from banks since the summer has coincided with lower recourse to government guarantees, which may signal that firms' emergency liquidity needs are diminishing. Annual growth in loans to households remained almost unchanged at 3.1% in November, after 3.2% in October. Mortgage lending continued to drive household borrowing, while growth in consumer credit weakened in November, in line with a tightening of COVID-related restrictions.

Chart 11

Loans to the private sector

(annual growth rate)



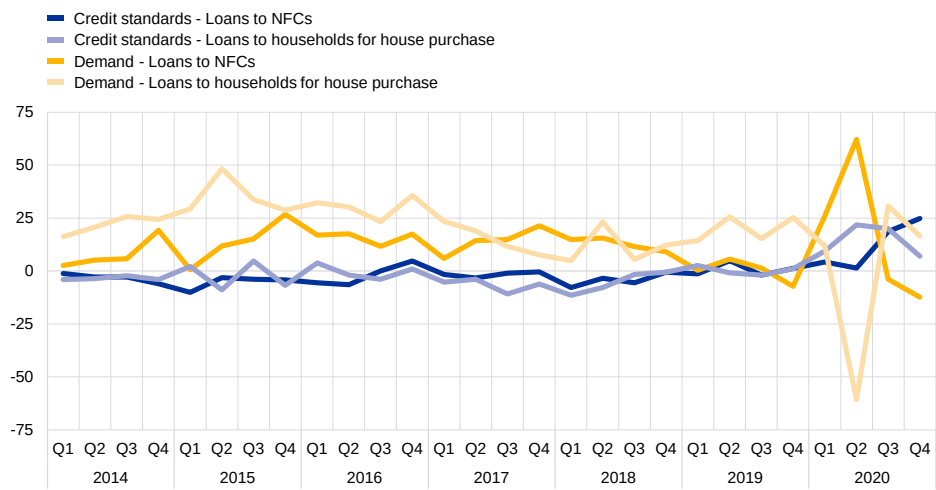
Source: ECB.
Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observation is for November 2020.

The January 2021 euro area bank lending survey **shows that the tightening of credit standards for loans to firms and to households continued in the fourth quarter of 2020 in the context of renewed COVID-related restrictions (Chart 12).** Credit standards on loans to firms tightened in the fourth quarter of 2020, mainly driven by heightened risk perceptions (related to the deterioration in the general economic outlook and the firm-specific situation). For the first quarter of 2021, banks expect a further net tightening of credit standards for firms. Credit standards for housing loans and for consumer credit continued to tighten in the fourth quarter of 2020 but at a slower pace than in the previous quarters of 2020. Firms' demand for loans or drawing of credit lines declined in the fourth quarter of 2020, after a continued net increase in demand for inventories and working capital in previous quarters, which reflected firms building up precautionary liquidity buffers. By contrast, net demand for housing loans increased in the fourth quarter, supported by the low general level of interest rates and, to a lesser extent, improving housing market prospects, while net demand for consumer credit declined. Banks expect a further moderate net tightening of credit standards for households and a slight decline in housing loan demand in the first quarter of 2021. Banks also indicated that COVID-related government guarantees were important in supporting banks' credit standards and terms and conditions for loans to firms – both SMEs and large enterprises – in 2020. Euro area banks' access to retail and wholesale funding generally improved in the fourth quarter of 2020. Euro area banks also indicated that their access to debt securities funding and securitisation continued to improve in the fourth quarter of 2020. At the same time, they highlighted a continued strengthening of their capital position against the backdrop of regulatory and supervisory actions in the second half of 2020 and a net tightening of their credit standards for loans to enterprises and for consumer credit on account of non-performing loan ratios.

Chart 12

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

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



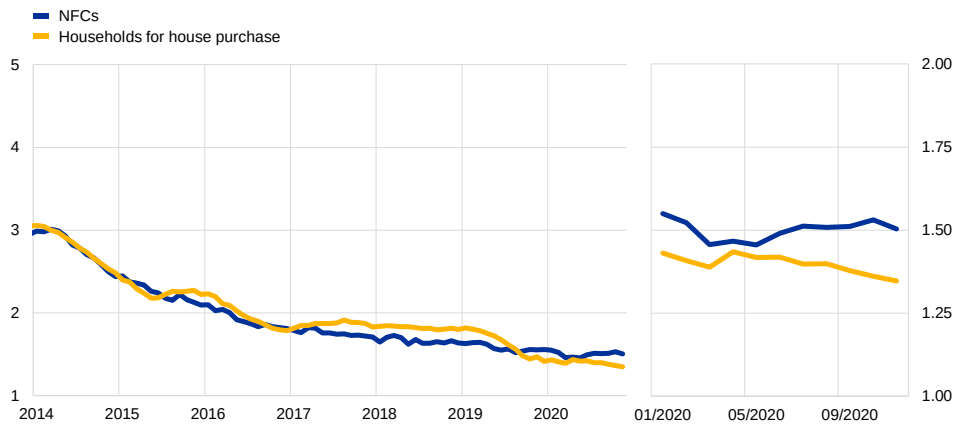
Source: ECB (euro area bank lending survey).
Notes: For the bank lending survey questions on credit standards, "net percentages" are defined as the difference between the sum of the percentages of banks responding "tightened considerably" or "tightened somewhat" and the sum of the percentages of banks 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 observation is for the fourth quarter of 2020.

Favourable lending rates have continued to support euro area economic growth. Lending rates have stabilised at their historical lows, reflecting the continued impact of the measures taken by the ECB, supervisors and governments to support credit supply conditions. In November 2020 the composite bank lending rates for loans to NFCs and households remained broadly unchanged at 1.50% and 1.35% respectively (Chart 13). This development was widespread across euro area countries. Moreover, the spread between bank lending rates on very small loans and those on large loans stabilised at levels below those observed before the start of the pandemic. At the same time, the severe economic impact of the resultant crisis on firms' revenues, households' employment prospects and overall borrower creditworthiness, as reflected in the bank lending survey, may put upward pressure on bank lending rates. Therefore, policy support – notably the expansion of the PEPP and the recalibration of TLTRO III adopted in December 2020 – will help to limit upward pressures on bank lending rates in a difficult and uncertain economic environment.

Chart 13

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 observation is for November 2020.

Boxes

1 Pandemic-induced constraints and inflation in advanced economies

Prepared by Alina Bobasu, Luigi Crucil, Alistair Dieppe and Marcel Tirpák

The coronavirus (COVID-19) pandemic had a severe and extraordinary impact on the global economy during the first half of 2020. Economic activity across advanced economies was severely affected, and consumer price inflation declined on the back of these developments. The pandemic weighed on not only headline inflation but also underlying inflation measures, such as consumer price inflation excluding food and energy, which declined during the initial lockdowns and gradually rebounded thereafter. This pattern was shaped by the confluence of two key forces triggered by the crisis: weak demand and constrained supply. This box uses granular data on consumer spending and prices, together with a structural analysis using Bayesian Vector Autoregression (BVAR) models, to study their relative impact on inflation in key advanced economies outside the euro area.[6]

Understanding the relative impact of demand and supply shocks in the pandemic is crucial for gauging the inflation outlook. As the crisis propagated through many channels in the economy, the existing literature has not yet reached a consensus on the relative contribution of demand and supply shocks.[7] Lockdowns and public health measures reduce economic activity by making it impossible for firms and households to produce and spend as they usually would. This results in varied disruption to production networks across countries and sectors.

Survey data show sectoral output and prices declining precipitously in the second quarter amid strict containment measures. Lockdowns and mobility restrictions were tightened further as the pandemic spread, stoking uncertainty among firms and consumers. This negative shock to the labour supply meant that firms were unable to meet existing demand. Activity in contact-intensive services sectors, such as tourism and recreation, fell particularly sharply, as did demand for transport services (Chart A, panel (a)). Healthcare services was the only sector where output remained broadly unchanged, while foodstuffs and pharmaceutical and biotechnology products

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6 For analysis of the euro area and euro area countries, see "The role of demand and supply factors in HICP inflation during the COVID-19 pandemic – a disaggregated perspective", *Monthly Bulletin*, Issue 1, ECB, 2021.

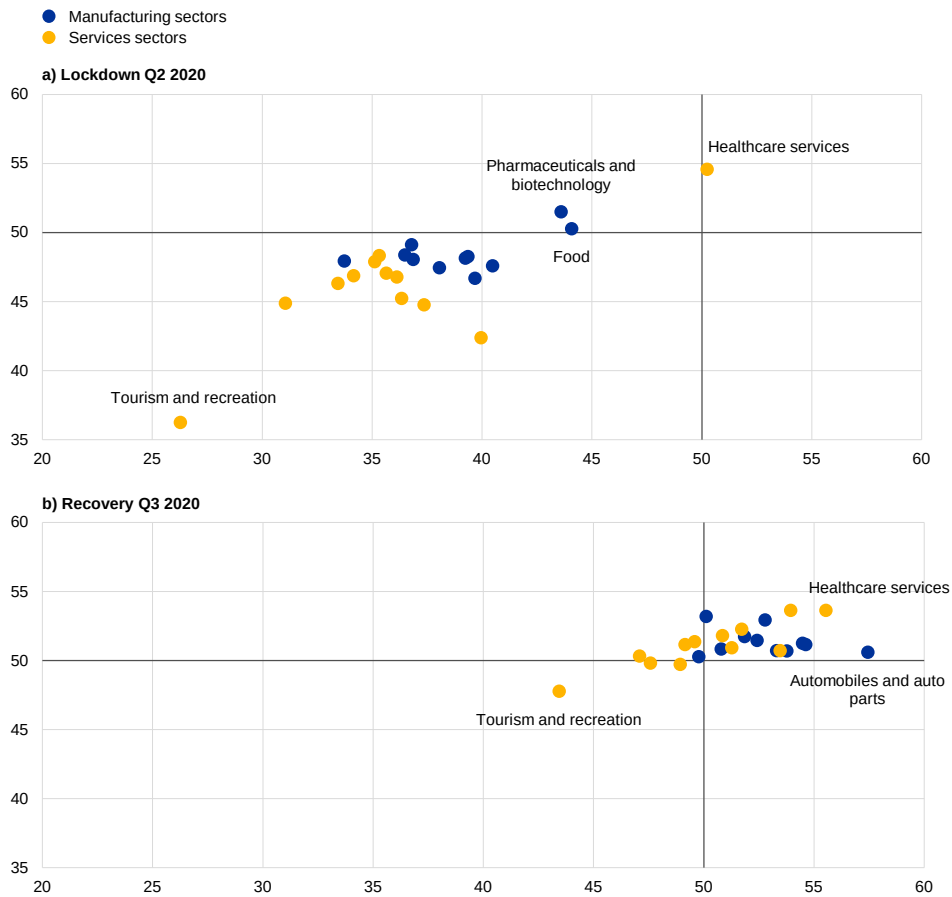
7 Some papers find that aggregate demand shocks dominated in the first quarter of 2020, whereas aggregate supply shocks prevailed in the second quarter of 2020 (see Bekaert, G., Engstrom E. and Ermolov A., "Aggregate Demand and Aggregate Supply Effects of COVID-19: A Real-time Analysis", Finance and Economics Discussion Series, No 2020-049, Board of Governors of the Federal Reserve System, 2020). By contrast, other analysis (see Baqaee, D. and Farhi, E., "Supply and Demand in Disaggregated Keynesian Economies with an Application to the Covid-19 crisis", CEPR Discussion Papers, No 14743, Centre for Economic Policy Research, 2020) used a sectoral model to demonstrate that both stagflationary sectoral supply shocks and deflationary demand shocks are needed to explain the large fall in output and moderate inflation response observed in the United States during the initial lockdown.

saw rising prices despite falling output. In the third quarter, when less stringent containment measures were in place, output and prices recovered across most sectors of the economy, with the notable exception of tourism and recreation, where the impact of the pandemic persisted (Chart A, panel (b)).

Chart A

Global sectoral output and prices: a survey data perspective

(x-axis: output; y-axis: output price; PMI, diffusion indices, quarterly averages)



Source: IHS Markit (via Haver Analytics).
Notes: PMI surveys for global sectoral output and output prices. Values above (below) 50 indicate an increase (decline) in global sectoral output and output prices. The charts report 11 manufacturing sectors and 12 services sectors.

Demand-sensitive components of the consumption basket largely account for declining core inflation during the initial lockdowns. Following Shapiro,[8] we study the sensitivity of consumer basket components to disruptions caused by the pandemic.[9] For the United States, more than 60% of personal consumption expenditures show some degree of sensitivity, while the equivalent share in the United Kingdom is around 40%. For both countries, the demand-sensitive components account for a large proportion of the initial decline in consumer price inflation during the first lockdowns, as well as for its gradual increase observed during the third quarter

[8] See Shapiro A.H., "A Simple Framework to Monitor Inflation", *Working Papers*, 2020-29, Federal Reserve Bank of San Francisco, 2020.

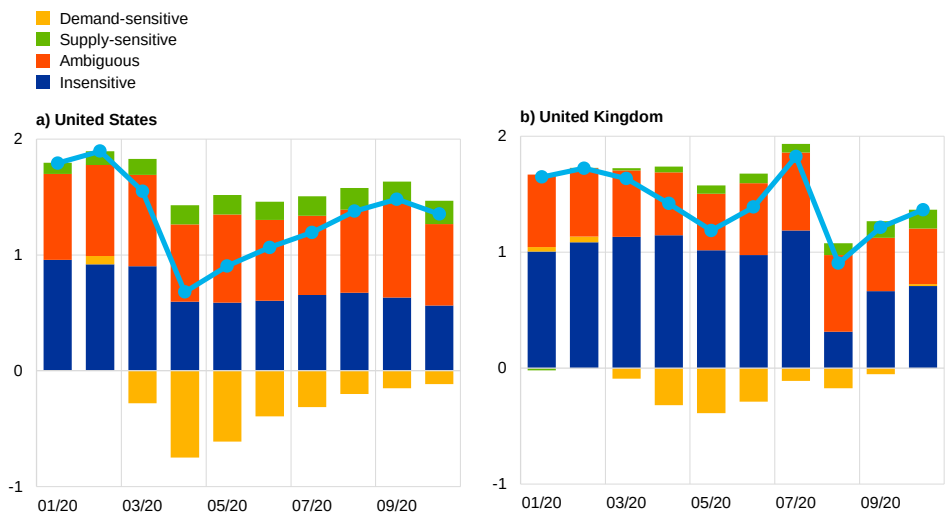
[9] The methodology is based on a system of seemingly unrelated regressions, which aims at assessing the role of demand and supply factors in explaining sectoral inflation developments during the pandemic.

(see Chart B). Looking ahead, the inflation outlook remains subject to large uncertainty. For instance, disagreement among consumers surveyed by the Federal Reserve Bank of New York on the expected level of inflation one year ahead in the United States, measured by the interquartile range of their responses, has widened significantly since the onset of the pandemic. Meanwhile, inflation expectations appear to remain skewed towards higher inflation following an initial drop.

Chart B

Core inflation decomposition

(percentage points)



Source: ECB calculations based on Shapiro.
Notes: The framework relies on a two-equation, seemingly unrelated univariate regression of prices and quantities. $\pi_{i,t} = \beta_i^{\pi} 1_{teCOVID} + \alpha_i^{\pi} + \varepsilon_{i,t}^{\pi}$ and $\Delta x_{i,t} = \beta_i^{x} 1_{teCOVID} + \alpha_i^{x} + \varepsilon_{i,t}^{\pi}$. , where $1_{teCOVID} = 1_{te2020M4}$ for the United States and $1_{te2020Q2}$ for the United Kingdom. These equations are estimated for the period from January 2010 to October 2020 in case of the United States and from the first quarter of 2010 to the third quarter of 2020 for the United Kingdom. In the charts we report results for the period from January to October 2020, which is relevant for the pandemic crisis. COVID-19-sensitive components include those categories where either prices or quantities moved in a statistically significant manner at the onset of the pandemic, while COVID-19-insensitive components include all other core inflation categories. Among the sensitive components, demand-sensitive components are those for which prices and quantities changed in the same direction during the initial lockdown period; supply-sensitive components are those for which prices and quantities moved in opposite directions; ambiguous components are defined as sensitive categories with a statistically significant change in either prices or quantity, but not both.

Results from a structural model confirm that demand effects dominate during the crisis, though supply effects remain notable. We estimate a structural BVAR model for the United States, United Kingdom and Japan and find that during the second quarter of 2020, demand shocks contributed around twice as much to the decline in output as supply shocks (Chart C, panel (a)).[10] The recovery in the third quarter of 2020 was driven by both demand and supply factors in broadly similar proportions. Turning to nominal developments, the impact of weak demand on inflation dominated in the second quarter of 2020, as it was only partly outweighed by supply constraints. During the initial recovery, demand strengthened and pushed up inflation, which was also supported by some unwinding of the supply constraints (Chart C, panel (b)). The model provides a relatively accurate forecast for consumer inflation for the second and third quarters of 2020, if conditioned on the actual path for

[10] The Structural Vector Autoregressive model comprises oil prices, GDP, inflation and shadow interest rates. A standard set of sign restrictions identification is used: a demand shock moves prices and output in the same direction, while a supply shock moves them in opposing directions. The oil supply shock increases inflation and decreases GDP, but does not react to domestic interest shocks. A tightening of monetary policy lowers both GDP and prices.

GDP and oil prices. This in turn supports the above findings, which suggest that inflation dynamics during the crisis were shaped by a combination of shocks, with those originating from the demand side dominating.

The pace of recovery in supply and demand are key determinants of inflation moving forward. While pent-up demand may support the recovery and push up inflation, supply constraints could unwind quickly, which would create disinflationary pressures.[11] Nonetheless, supply disruptions could still be significant, especially if a renewed rise in infections and waning policy support trigger a series of bankruptcies. The economic ramifications of the pandemic could persist for the labour supply, especially in those sectors where human capital formation is contact-intensive. This could lower incomes and employment, thus undermining the recovery in demand. Furthermore, human capital and labour supply could be eroded in the long term by the re-introduction of strict containment measures weighing on educational attainment and keeping unemployment elevated.

More granular analysis is needed to assess the consequences of the pandemic for the drivers of inflation. Recent international evidence also raises the possibility that supply shocks could affect different sectors of the economy asymmetrically and morph into larger negative demand effects with disinflationary pressures.[12] These findings argue against approaches that use aggregate data and may erroneously classify such sectoral supply shocks as aggregate demand shocks. Therefore, a more granular sectoral analysis could provide additional insights.[13]

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11 See Baqaee and Farhi, op. cit. The authors find that sectors classified as demand-constrained in April (e.g. air and water transport, oil and gas extraction) recovered by an average of 1.8%, whereas those classified as supply-constrained (e.g. food services and accommodation) recovered by 7.5% after the economy started to improve in May. Other analysis (see Coibion, O., Gorodnichenko Y. and Weber M., "The Cost of the Covid-19 Crisis: Lockdowns, Macroeconomic Expectations, and Consumer Spending", *NBER Working Paper,* No 27141, National Bureau of Economic Research, 2020), using survey data for the United States, finds that changes in the spending patterns of survey respondents indicate a persistent drop in future aggregate demand, reflecting low expected income and heightened uncertainty.

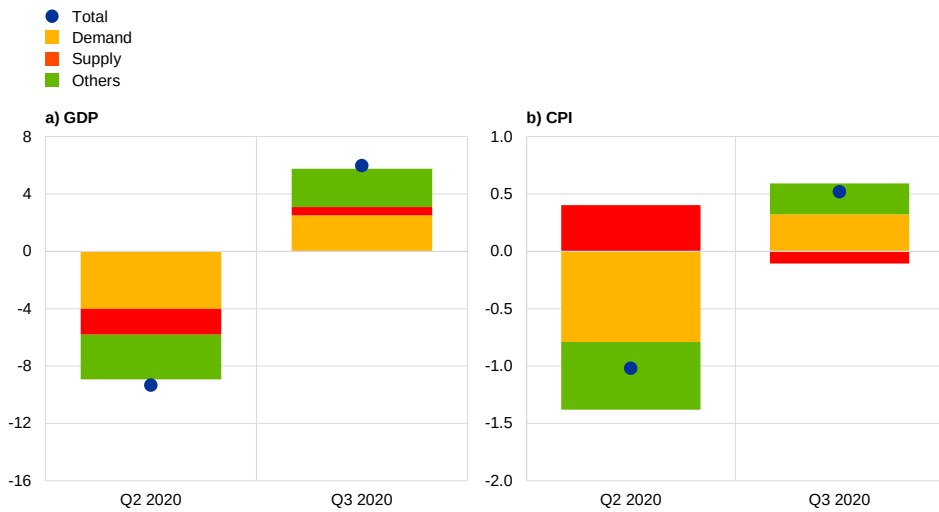
12 See Guerrieri V., Lorenzoni G., Straub L. and Werning I., "Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages?", *NBER Working Paper*, No 26918, National Bureau of Economic Research, 2020. The authors propose a concept in which supply shocks can trigger a response in demand that leads to a larger contraction of output than the supply shock itself. Other analysis (see Cesa-Bianchi, A. and Ferrero A., "The Transmission of Keynesian Supply Shocks", *Working Paper*, Bank of England, 2020) provide empirical support for this concept. The same argument of supply-induced disruption is supported by other analysis (see Fornaro, L. and Wolf, M., "Covid-19 Coronavirus and Macroeconomic Policy: Some Analytical Notes", *manuscript*, VoxEU, 2020). They argue that negative supply shocks generate persistent or permanent drops in GDP, thus depressing aggregate demand, which might even fall more than supply.

13 Other challenges include the inflation measurement issues which relate to the rapidly changing consumption patterns and price collection difficulties brought on by the lockdown measures. Although the measurement issues had an impact on published statistics in the first few months of the pandemic, ECB staff analysis indicates that they have decreased significantly in recent months, see the box entitled "Consumption patterns and inflation measurement issues during the COVID-19 pandemic", *Economic Bulletin*, Issue 7, ECB, 2020.

Chart C

Historical decomposition of gross domestic product (GDP) and consumer price inflation (CPI)

(quarterly percentage changes, percentage points)



Source: ECB calculations.
Notes: GDP and inflation are shown in deviation from trend/steady state and are based on an aggregation with GDP weights of country-specific results for the United States, the United Kingdom and Japan. “Others” refers to monetary policy and oil shocks. The ECB’s BEAR toolbox Version 4.2 was used.

2 Rotation towards normality – the impact of COVID-19 vaccine-related news on global financial markets

Prepared by Johannes Gräb, Moritz Kellers and Helena Le Mezo

The outbreak of the coronavirus (COVID-19) pandemic led to a synchronised sell-off of global risky assets, followed by an uneven recovery across sectors and countries. The stock market recovery was characterised by investors rebalancing away from countries and sectors hit by the pandemic, including airlines, tourism and energy, towards those perceived to benefit from the crisis, most notably IT and communications services, as well as pharmaceutical firms. Across countries, the pre-pandemic sector composition of the stock market explains the bulk of the differences in equity market performances in 2020 (Chart A, upper panel).

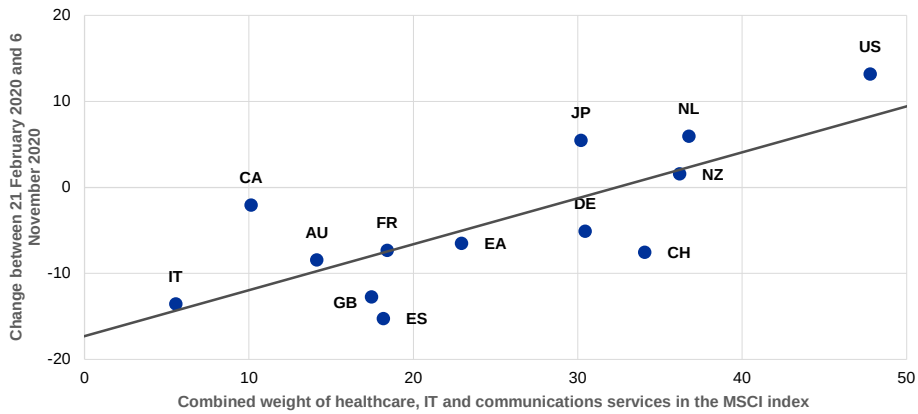
The announcements in mid-November on the successful development of several vaccines seem to have partly reversed this "COVID trade" investment strategy. News of the effectiveness and imminent arrival of multiple vaccines led to a rotation out of equity market sectors with high momentum until then. Countries with equity markets that were lagging the recovery, in part because they have a smaller share in the sectors that gained from the pandemic, benefited more from the news on the development of an effective vaccine (Chart A, lower panel).

Chart A

Countries and sectors hit harder by the pandemic benefited more from vaccine-related announcements

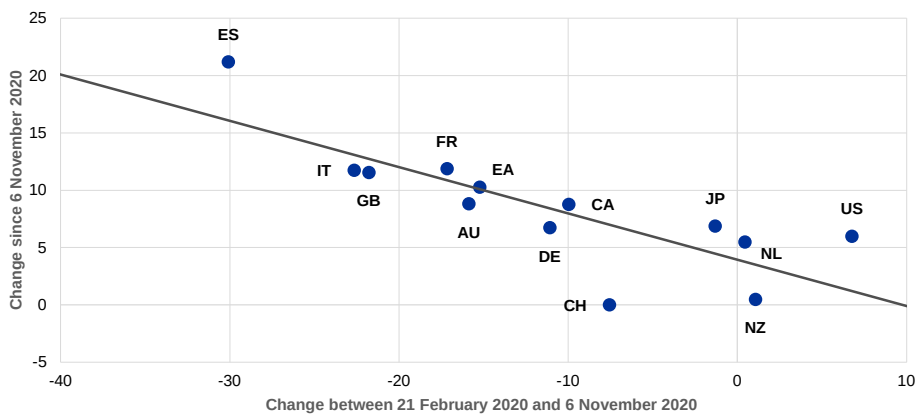
Advanced economies' equity market performance pre-vaccine news

(percentages)



Post vaccine news

(percentages)



Sources: Bloomberg and ECB staff calculations.
Notes: The date 21 February corresponds to the COVID-19 shock. The date 6 November corresponds to the day before the announcement of a first successful vaccine by Pfizer/BioNTech. Sector shares are as of December 2019. The latest observation is for 7 December 2020.

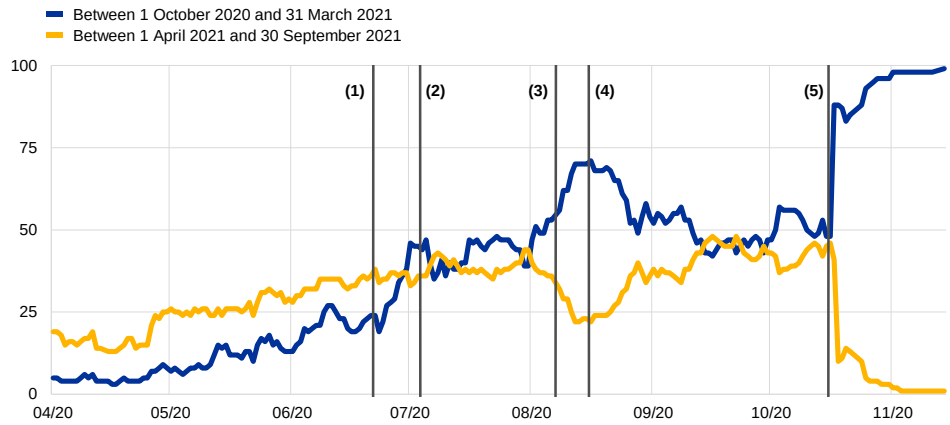
The vaccine announcements in November 2020 were not the first vaccine-related news to materially affect the probability of near-term vaccine delivery. According to Good Judgement, which surveys "superforecasters", the likelihood that a vaccine would be delivered by the end of the first quarter of 2021 increased markedly during summer 2020 (Chart B). Hopes for an early delivery of a vaccine experienced a setback in September, which created some volatility in the probability indicator.

Chart B

Previous vaccine-related news also affected the probability of near-term vaccine delivery

Probability of vaccine delivery by the first and third quarters of 2021

(percentages)



Source: Good Judgement.
Notes: (1) Vaccine approval in Russia, (2) Pfizer/BioNTech late-stage tests, (3) US Food and Drug Administration fast-track announcement, (4) AstraZeneca trial put on hold, (5) Pfizer/BioNTech announce vaccine. The latest observation is for 7 December 2020.

This box assesses how confidence in the probability of vaccine delivery has affected a broad range of financial assets. Local projections are used to estimate the impact of vaccine-related news between April and mid-November 2020 on different market segments, sectors and countries. The shock variable is defined as the first difference in the probability of vaccine delivery by the first quarter of 2021 on major vaccine event days. The events are identified on a narrative basis.[14] Control variables include past macro news, monetary policy and market stress.

The econometric results suggest that the stock market sectors hit hardest by the pandemic benefited the most from positive vaccine news. This holds when looking at US and euro area airline and energy sectors, as well as in assessing the impact on so-called low momentum indices, such as the Dow Jones Low Momentum Index which includes the 200 US companies ranked as having the lowest returns over the past year (Chart C). In quantitative terms, the results suggest that a 10 percentage point increase in the probability of early vaccine delivery boosted euro area airline shares by 5%.

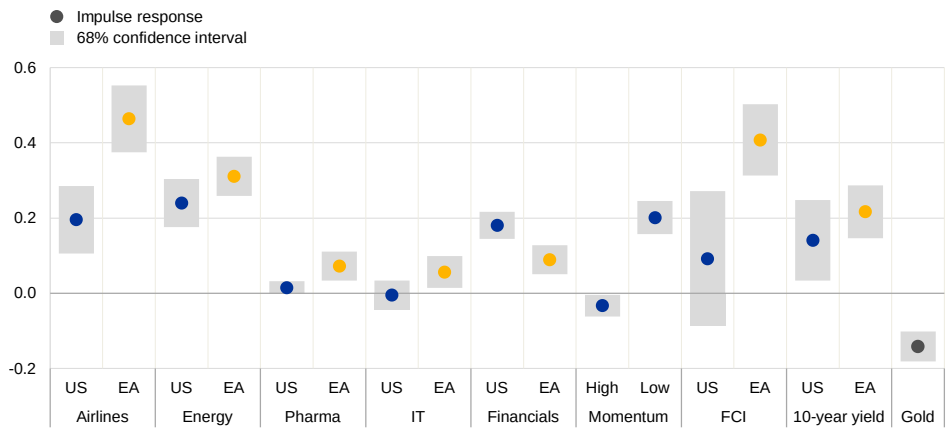
[14] All events that capture progress/setbacks in vaccine development or major changes in relevant institutional frameworks are selected.

Chart C

Low momentum sectors outperformed

Cumulative responses over three working days to a 1 percentage point increase in the probability of vaccine shipment by the first quarter of 2021 in the United States and euro area

(percentages/basis points)



Sources: Bloomberg, Good Judgement and ECB staff calculations.
Note: Change in 10-year yields in basis points. The euro area (EA) bond yield corresponds to the 10-year Bund. An increase in the Financial Condition Index (in index points) represents an easing, while a decline represents a tightening. All other variables are expressed as percentages. The latest observation is for 7 December 2020.

By contrast, equity market sectors that have benefited from the pandemic have tended to underperform in response to increases in the probability of near-term vaccine delivery. The impact of vaccine news on sectors that led the recovery out of the market trough has been largely insignificant. This holds when looking at individual sectors, IT and pharmaceutical, or when looking at high momentum stock market indices. The fact that these sectors' equity prices have not declined also suggests that optimistic vaccine-related news has had a positive effect on aggregate.

The euro area seems to have benefited disproportionately from positive vaccine news. Across most sectors, including the energy, airline, pharmaceutical and technology sectors, euro area equity prices are estimated to have increased more in response to positive vaccine events compared with their US peers. This may reflect the fact that economies in which risky asset markets were hit harder by the pandemic are expected to benefit more from a vaccine.

Despite an increase in risk-free yields, financial conditions have tended to ease. Longer-term risk-free yields increased in response to positive vaccine news, suggesting that it provided a boost to global risk sentiment. However, financial conditions have eased overall, as the increase in yields has not offset the easing impulses from equity markets and other risky assets. Consistent with the stronger impact on euro area equity market sectors compared with US peers, euro area financial conditions are estimated to have eased more.

Overall, positive news regarding the arrival, effectiveness and number of vaccines has boosted risky assets and eased financial conditions, suggesting that investors have become more willing to look through the near-term challenges of the pandemic. At the same time, the results also suggest that any

setback in the development or shipment of the vaccine may have economically significant implications for global financial markets.

3 The economic impact of the pandemic – drivers of regional differences

Prepared by Philipp Meinen and Roberta Serafini

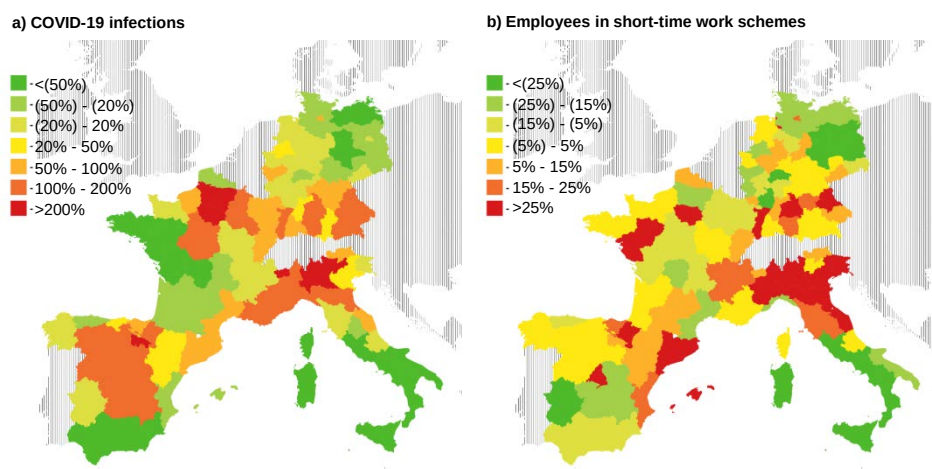
This box examines the drivers of intra-country regional differences in the economic impact of the coronavirus (COVID-19), as observed in the four largest euro area economies during the initial phase of the pandemic. More specifically, it discusses the role played by sectoral structure and trade linkages in explaining the difference in terms of how COVID-19 affects the regions within these countries economically.

During the first phase of the pandemic, the economic impact of the crisis was evident in severe labour market disruptions, affecting local labour markets to varying degrees. The number of employees in short-time work schemes, one of the main policy tools used to contain lay-offs, spiked dramatically in France, Germany, Italy and Spain during the first wave of the COVID-19 pandemic.[15] These spikes were characterised by significant regional variations, displaying a pattern that did not fully mirror the intra-country geographical distribution of the disease (Chart A), highlighting the need to identify the other factors at play.

Chart A

Within-country variation in employees in short-time work schemes and COVID-19 infections

(Deviation from country-specific median)



Sources: National sources and ECB staff calculations.
Notes: Figures refer to (cumulated) numbers of March and April in 2020. Regional COVID-19 infections and employees in STW are normalised by regional population. Regions are defined according to the 2-digit level of the NUTS classification. STW refer to *Cassa Integrazione Guadagni* (Italy), *Expediente de Regulacion Temporal de Empleo* (Spain), *Activite' Partielle* (France) and *Kurzarbeit* (Germany).

The first possible driver of the heterogeneous labour market impact of COVID-19 is the interaction between country-wide containment measures and

[15] For more details about short-time work schemes, see the box entitled "A preliminary assessment of the impact of the COVID-19 pandemic on the euro area labour market", *Economic Bulletin*, Issue 5, ECB, 2020.

the sectoral structures of different regions. In particular, sectors are exposed to government restrictions to varying degrees, depending, for instance, on the extent to which social distancing can be ensured at work and/or work-related activities can be performed remotely. Since sectoral activities are unevenly distributed across the regions within an individual country, the degree to which these regions are exposed to the COVID-19 shock differs accordingly. In order to investigate this point empirically, we generate a measure of regions' sectoral exposure by first combining sector-level data about employees' susceptibility to the virus whilst at work[16] and the capacity to perform tasks remotely[17], before using regional sector employment shares from Eurostat to aggregate the data at the regional level. Furthermore, we calculate an indicator of stringency of country-wide containment measures by combining data on workplace closures, limits on the size of private gatherings, shelter in place orders and restrictions on internal movement.[18]

In addition to the direct impact related to its sectoral structure, a region's trade relations with other regions heavily exposed to the COVID-19 shock could also be a further cause of economic burden. Indeed, regional supply chains can represent a powerful indirect channel for the propagation of the crisis, both through international trade and interconnections between regions within a country. More specifically, a region's activity may be affected by a shortfall in the supply of intermediate goods sourced from other regions heavily affected by the virus and/or by a drop in demand for its exports. In order to investigate this point empirically, we generate measures of regional trade-related exposure based on inter-regional input-output tables, which make it possible to consider both intra-country and international trade flows for each region.[19]

The results of empirical analysis support the hypotheses referred to above, showing that the different economic impact of COVID-19 across regions cannot be explained solely by the spread of infections, while both a region's sectoral structure and its trade linkages are relevant determinants. We employ a regression framework to investigate the role of regions' sectoral structures and trade linkages in explaining intra-country variation in the number of people in short-time work within the four largest euro area economies (Table A). First, the results in columns 1 and 2 illustrate that the variable controlling for the regional number of COVID-19 cases becomes insignificant once regional GDP per capita is accounted

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16 Based on "Documento tecnico sulla possibile rimodulazione delle misure di contenimento del contagio da SARS-CoV-2 nei luoghi di lavoro e strategie di prevenzione", *INAIL*, 2020.

17 Based on Dingel, J. and Neiman, B., "How many jobs can be done at home?", *CEPR Discussion Papers*, No DP14584, April 2020.

18 Based on Hale, T., Angrist, N., Cameron-Blake, E., Hallas, L., Kira, B., Majumdar, S., Petherick, A., Phillips, T., Tatlow, H. and Webster, S., "Oxford COVID-19 Government Response Tracker", Blavatnik School of Government, 2020.

19 We measure export-related exposure by combining data about each region's share of output sold to other regions, the sectoral exposure of the other regions and the stringency of containment measures in the countries where the partner regions are located. Intermediate goods import-related exposure is calculated based on data about the share of intermediate goods sourced from other regions in the region's total output and the exposure of these other regions to the virus owing to their sectoral structure and the prevailing containment measures. Note that we distinguish between intra-country regional trade and international trade. The inter-regional input-output tables are obtained from Thissen, M., Ivanova, O., Mandras, G. and Husby, T., "European NUTS 2 regions: construction of interregional trade-linked Supply and Use tables with consistent transport flows", *JRC Working Papers on Territorial Modelling and Analysis*, No 01/2019, European Commission, 2019.

for, indicating that, during the first wave of the pandemic, regions with a high incidence of COVID-19 cases had relatively high average income (e.g. regions in northern Italy, southern Germany and the Paris and Madrid areas). Second, the results show that a region's sectoral structure is an important determinant of the economic consequences of COVID-19: a region with a sectoral exposure measure of one standard deviation higher has, on average, 30% more employees in short-time work schemes (column 3). Furthermore, this effect increases with the stringency of national containment measures (column 4). Finally, the results suggest that trade linkages can be an additional indirect channel through which coronavirus-related disruptions affect regional economic activity (column 5).[20]

Table A

Drivers of intra-country regional heterogeneity in the number of employees in short-time work

(Coefficient estimates and standard errors (in parenthesis); dependent variable: regional number of employees in short-time work schemes)

Explanatory variables	1	2	3	4	5
Sectoral exposure			0.294***	0.270***	0.260***
			(0.048)	(0.044)	(0.049)
Sectoral exposure × stringency of country-wide containment measures				0.138***	0.118***
				(0.038)	(0.036)
Export-related exposure: intra-country					0.094**
					(0.046)
Export-related exposure: international					-0.062
					(0.045)
Intermediate goods import-related exposure: intra-country					-0.012
					(0.046)
Intermediate goods import-related exposure: international					0.104***
					(0.028)
Log(number of COVID-19 cases)	0.147**	0.018	0.039*	0.031	0.027
	(0.064)	(0.039)	(0.022)	(0.019)	(0.022)
Log(population)	0.902***	0.869***	0.874***	0.868***	0.859***
	(0.059)	(0.036)	(0.022)	(0.02)	(0.051)
Log(GDP per capita)		0.193***	0.148***	0.157***	0.152***
		(0.029)	(0.024)	(0.021)	(0.024)
Observations	100	100	100	100	100
Pseudo R-squared	0.938	0.957	0.977	0.98	0.984
Country FE	Yes	Yes	Yes	Yes	Yes

Sources: National sources; INAIL, op. cit.; Dingel and Neiman, op. cit.; Eurostat, Labour Force Survey; Hale et al., op. cit.; Thissen et al., op. cit..
Notes: The table presents Poisson regressions. The dependent variable is the cumulative number of people in short-time work schemes in each of the NUTS 2 regions in France, Germany, Italy and Spain by the end of April 2020. All variables vary across regions and are standardised to have a mean of zero and a standard deviation of one. Robust standard errors in parentheses: *** p < 0.01, ** p < 0.05, * p < 0.1. McFadden's pseudo R-squared is calculated as 1-ll(model)/ll(null) where ll refers to the log likelihood.

[20] On the one hand, this relates to shortfalls in demand for a region's exports, an effect which is present for intra-country exports only (see the variable "Export-related exposure: intra-country"). On the other hand, when considering the role of supply linkages, international trade becomes relevant (see the variable "Intermediate goods import-related exposure: international"). Further analysis suggests that the latter effect is driven wholly by international trade within EU borders, highlighting vulnerabilities which may arise from disruptions to highly integrated EU supply chains.

4 Model-based risk analysis during the pandemic: introducing ECB-BASIR

Prepared by Elena Angelini, Matthieu Darracq Pariès and Srečko Zimic

The interplay between epidemiological fundamentals of the coronavirus (COVID-19) pandemic, containment policies and the macroeconomy can be assessed by combining a macroeconomic model with an epidemiological model. ECB-BASIR[21] is an extension of the ECB-BASE[22] model which addresses specific features of the COVID-19 crisis by combining a standard pandemic susceptible-infected-recovered (SIR) model with a semi-structural large-scale macroeconomic model. An SIR model – a compartmental model introduced by Kermack and McKendrick[23] – divides the population into groups and, using differential equations, predicts how a disease will spread on the basis of the number of susceptible, infected, recovered or deceased individuals. We extend that model by incorporating two additional categories: (i) quarantined individuals, and (ii) people who have been vaccinated (who are assumed to be immune to the virus). We postulate that economic behaviour will affect the transmission of the disease (with declines in consumption and work activity reducing the probability of people getting infected, for example), establishing a channel from the macroeconomic model to the epidemiological model through the sensitivity of transmission to economic interaction between people. The channel running in the opposite direction, from the epidemiological model to macroeconomic behaviour, is established by assuming that different groups of agents modelled in the epidemiological component have differing ability to work, consume and invest. For example, agents that are constrained by lockdowns can only consume part of what unconstrained agents consume, with those differences between the consumption of constrained and unconstrained agents being estimated on the basis of data for the first and second quarters of 2020. Those effects then propagate through the macroeconomic linkages in the model.

In this environment, interaction between the severity of infection rates and the lockdowns that are imposed to curb the pandemic becomes the main driver of macroeconomic dynamics. The infection rate in the model is based on several factors, one of which is the containment measures that are implemented (including lockdowns). Lockdowns[24] are based on a decision-making rule for containment measures which assumes that policymakers seek to ensure that infection rates do not result in hospital admissions[25] exceeding hospital capacity, while minimising economic costs.

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21 See Angelini, E., Damjanović, M., Darracq Pariès, M. and Zimic, S., "ECB-BASIR: a primer on the macroeconomic implications of the Covid-19 pandemic", *Working Paper Series*, No 2431, ECB, June 2020.

22 See Angelini, E., Bokan, N., Christoffel, K., Ciccarelli, M. and Zimic, S., "Introducing ECB-BASE: The blueprint of the new ECB semi-structural model for the euro area", *Working Paper Series*, No 2315, ECB, September 2019.

23 See Kermack, W.O. and McKendrick, A.G., "A Contribution to the Mathematical Theory of Epidemics", *Proceedings of the Royal Society*, Series A, Vol. 115, No 772, August 1927, pp. 700-721.

24 The severity of lockdowns is estimated using information from Google's COVID-19 Community Mobility Reports.

25 In the model, admissions exceed hospital capacity if they surpass 88% of the admissions seen in the first wave in spring 2020.

The unique nature of the COVID-19 shock makes it difficult to use standard econometric analysis to characterise uncertainty, requiring the use of dedicated scenario analysis.[26] ECB-BASIR is designed to serve that very purpose. In the analysis below, for example, it is used to consider a favourable scenario in which a medical solution to the pandemic (i.e. a vaccine) is implemented more quickly than expected. In that scenario (which is established as a deviation from a baseline scenario approximate to the baseline in the Eurosystem's December 2020 staff macroeconomic projections), a medical solution is assumed to be effective as of 1 January 2021, rather than the second quarter of the year, thus being closer to the mild scenario in the December 2020 staff macroeconomic projections. In the model, that earlier implementation of a vaccine leads to lower levels of uncertainty for economic agents[27] and the weakening of lockdown restrictions on spending behaviour and productive capacity.

As Chart A shows, the relaxation of containment measures as a result of early implementation of a vaccine produces an inverted V-shaped boost to economic activity. The macroeconomic impact of this scenario peaks at 3.5% of GDP in the second quarter of 2021, while the overall impact on inflation is fairly limited (peaking at just under 0.25 percentage points in 2022). The economic stimulus declines quickly in the third quarter of 2021, and the expansionary effects then recede further in 2022 and 2023 (albeit remaining fairly persistent). On the nominal side, the inflation response gradually declines over the simulation horizon, but inflation remains 0.1 percentage points higher than in the baseline scenario at the end of 2023. Overall, the inflationary impact appears to be fairly limited when compared with the magnitude of the rebound in economic activity. This is a key feature of the macroeconomic dynamics stemming from COVID-related containment measures, which inflict V-shaped adjustment patterns on the real economy and act on both the demand and supply sides of goods and labour markets.[28]

[26] Indeed, since June 2020 the Eurosystem's staff macroeconomic projections for the euro area have featured alternative scenarios alongside the baseline projection.

[27] In the ECB-BASIR model, the effect of pandemic-related uncertainty is estimated via local projection methods for the period from the second quarter of 2020 to the fourth quarter of 2022. It is assumed that those effects disappear one quarter before the vaccine starts to be implemented efficiently.

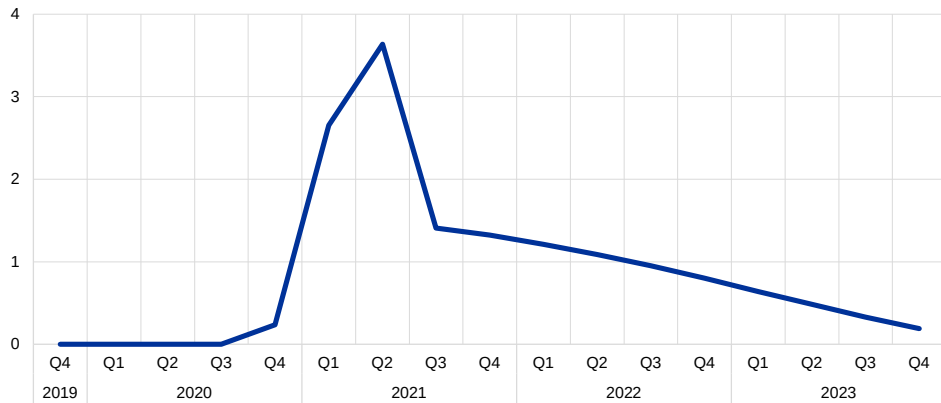
[28] As a sensitivity analysis, the same scenario can be run using anticipation channels. If households and firms fully anticipate the earlier medical solution, the macroeconomic outcomes are frontloaded (notably on the nominal side), but are also short-lived, with inflation actually returning to the baseline scenario by end-2023.

Chart A

Macroeconomic and financial implications of early implementation of a vaccine

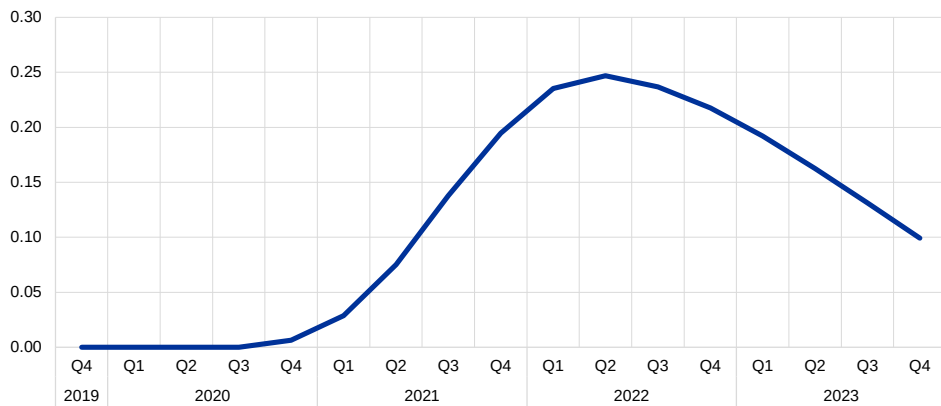
a) Euro area GDP

(levels; deviation from baseline scenario in percentages)



b) Annual HICP inflation

(levels; deviation from baseline scenario in percentage points)



Source: ECB calculations.

In addition to scenario analysis looking at a discrete event, ECB-BASIR can also indicate the distribution of risk, spanning all relevant sources of uncertainty. In particular, the model can be used to assess a combination of economic and pandemic-related risk factors. Chart B, for example, shows a composite measure of risk density combining (i) the standard historical uncertainty captured in the residuals of the model, (ii) uncertainty about the timing and efficiency of the vaccine's implementation[29] and (iii) uncertainty about the fundamentals of the pandemic (estimated epidemiological parameters).

The percentage of the population that will be vaccinated and the potential for a third wave are key pandemic-related risk factors. In the bottom right panel of Chart B, we can see that differences in the timing and efficiency of implementation result in differences in the percentage of the population that is vaccinated. In the short term, a

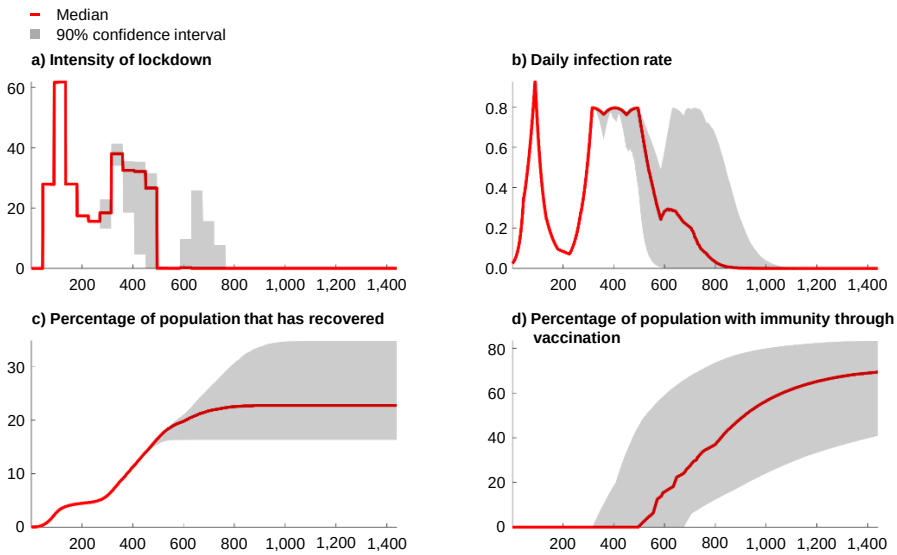
[29] Within the confines of the theoretical model, uncertainty around the deployment of the vaccination strategy is captured by the start date for the vaccination process, assuming that vaccinated people have immediate immunity. In practice, it may take some time for vaccines to be rolled out, so the percentage of the population that is immune in the median model-based scenario is roughly consistent with a vaccination campaign starting in the first quarter of 2021.

successful vaccination programme allows policymakers to ease lockdowns, as can be seen in the top left panel of Chart B. In the medium term, however, that increases the likelihood of a third wave, resulting in greater medium-term risks in respect of the potential severity of containment measures.

Chart B

Uncertainty surrounding pandemic-related developments

(y-axis: percentages; x-axis: number of days after 31 December 2019)



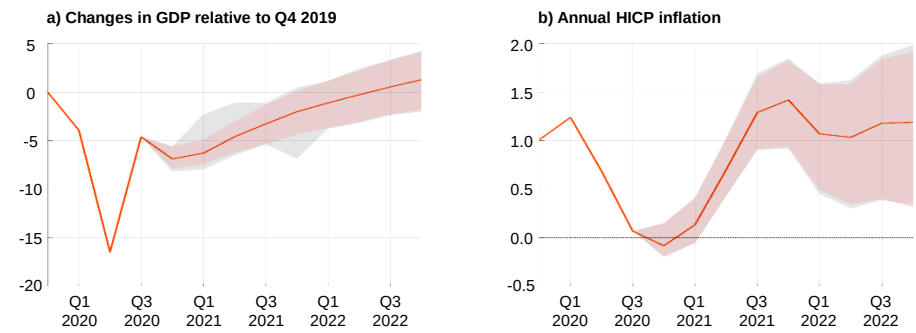
Source: ECB calculations.
Note: The daily infection rate indicates the percentage of the population that has the virus on a given day.

Turning to the distribution of risk, the pandemic-related risk factors which are considered above are such that uncertainty surrounding the short-term outlook for growth is significantly higher than standard economic risk factors would suggest. For the purposes of this analysis, we have assumed that the median pandemic-related developments in Chart B are consistent with the baseline scenario in the December 2020 staff macroeconomic projections. Chart C presents the resulting risk distributions around the projection baseline, drawing on either (i) a combination of pandemic-related and economic risk factors or (ii) economic risk factors alone. Given the uncertainty surrounding the severity of containment measures, efficient and timely vaccination has the potential to increase GDP by almost 5% in the first half of 2021 and raise inflation at end-2021 by around 0.5 percentage points. At the same time, however, the recovery may be hampered considerably if the pandemic worsens and a third wave is seen. At longer horizons, the dominant factor is the standard model-based uncertainty resulting from historical residuals, rather than pandemic-related developments.

Chart C

Uncertainty surrounding macroeconomic developments

(percentages)



Source: ECB calculations.
Notes: Red shading denotes economic risk factors alone; grey shading denotes economic and pandemic-related risk factors combined. All shading indicates 90% confidence intervals.

5 Housing costs and homeownership in the euro area

Prepared by Moreno Roma

Housing costs represent a significant share of the household budget. Housing costs typically include the utility costs (water, electricity, gas and heating), maintenance, and rental or mortgage interest payments, altogether accounting for around one-fifth[30] of household income expenditure in 2019. Changes in these costs are closely linked with housing market developments, such as rental and house prices, as well as mortgage payments. Furthermore, housing costs are dependent on structural features, which will be the focus of this box, such as the homeownership rate or certain household characteristics. This is due to the fact that tenants and less affluent households, for example, tend to spend a large share of their income on housing. Against this background, this box examines certain data that help to frame the housing cost burden in the euro area and across types of household.

Housing cost burden and overcrowding tend to be distributed unevenly across households. A common indicator of household stretch is the housing cost overburden rate, which is the percentage of the population living in a household where the total housing costs amount to more than 40% of the disposable income.[31] In the euro area, around 10% of households were overburdened in 2019 (Chart A). This aggregate figure masks considerable heterogeneity across households, with 24% of those tenants renting at market price being overburdened, compared with less than 5% in the case of outright owners (mortgage-free owners). Based on the same metric, more than 12% of all households in cities exceeded this threshold in 2019 compared with less than 7% in rural areas. Moreover, and unsurprisingly, around one-third of all households in the lower quintile of the income distribution was overburdened in 2019. In addition, the housing cost overburden rate was high for both single and foreign households (over 20%). Households facing a higher cost overburden rate – tenants, households with lower incomes, those living in cities and foreigners – were apparently also those more likely to be living in overcrowded dwellings (Chart B). Finally, the overburden rate varies considerably across euro area countries and, in general, it appears to be lower in countries where the homeownership rate is higher (Chart C). These developments highlight the importance of household choices and characteristics when it comes to the housing cost burden.

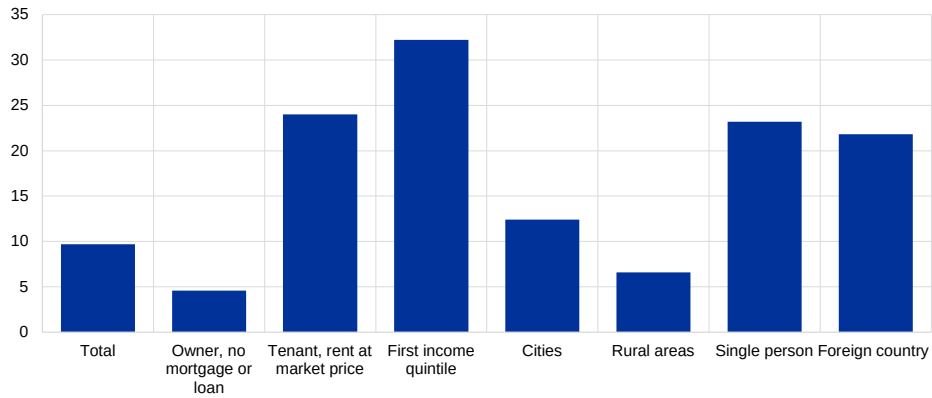
30 This includes imputed rents.

31 Housing costs and disposable income are both net of housing allowances. They are obtained from microdata based on household responses included in the surveys by EU statistics on income and living conditions (EU-SILC). For further details, see Eurostat.

Chart A

Housing cost overburden rate in the euro area in 2019

(percentages)



Source: EU-SILC.
Notes: Distribution of population with housing costs of over 40% of disposable income. For “foreign country”, data refer to the population aged 18 or over.

Chart B

Housing overcrowding rate in the euro area in 2019

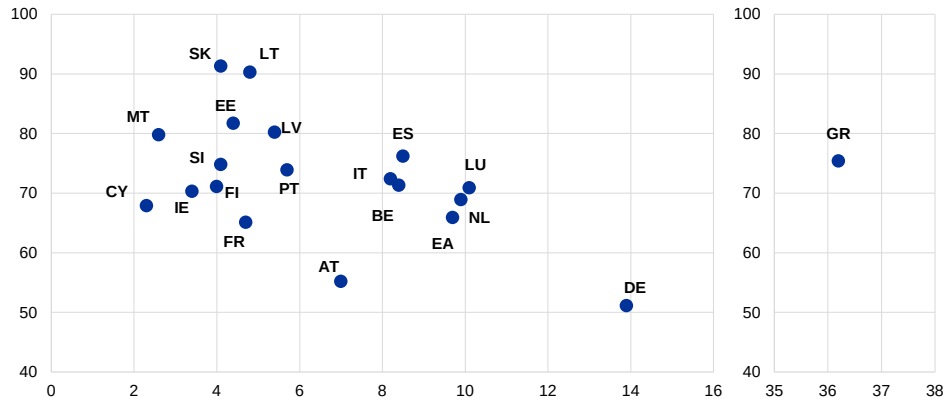
(percentages)

Source: EU-SILC.
Notes: The overcrowding rate is defined as the percentage of the population living in an overcrowded household that does not have at its disposable a minimum number of rooms equal to: (i) one room for the household; (ii) one room per couple in the household; (iii) one room for each single person aged 18 or over; (iv) one room per pair of single people of the same gender between 12 and 17 years of age; (v) one room for each single person between 12 and 17 years of age and not included in the previous category; and (vi) one room per pair of children under 12 years of age. For “foreign country”, data refer to the population aged 18 or over.

Chart C

Housing overburden rate and homeownership rate across euro area countries

(x-axis: housing overburden rate; y-axis: homeownership rate; percentages)



Source: EU-SILC.
Note: The latest observations are for 2019, except for Ireland, France, Italy and Slovakia for which they refer to 2018.

The relationship between homeownership and housing cost burden depends on household characteristics. Roughly two-thirds of euro area households were homeowners in 2019. Outright homeownership stood close to 39%, while 27% of households had a mortgage or loan (Chart D). As for tenants, the vast majority rented at market price and less than one-third rented at a reduced price. Tenure status varied across households, with differing characteristics. Starting with income, households with an income above 60% of the median (equivalised) income were predominantly homeowners and those with an income below this threshold were mainly tenants (Chart E). Furthermore, the percentage of single households in rented accommodation was higher than for those that owned their property, while in the case of larger households the opposite was true (Chart F).

Higher homeownership rates are not necessarily good or bad. A higher share of homeownership can be associated with both positive and negative economic outcomes. Homeowners are generally less burdened than tenants by housing costs, particularly in cases where they are mortgage-free or have a high income. Furthermore, higher homeownership rates can also be correlated with a greater sense of community in certain neighbourhoods or with better educational outcomes for the offspring. In addition, homeownership, and the associated housing wealth, is distributed more evenly across households compared with financial wealth, such as equity and bonds. These are generally held by a proportionally smaller share of the population at the top of the wealth distribution bracket, thus a high homeownership rate could possibly imply beneficial effects in terms of inequality.[32] However, higher homeownership rates may also be associated with reduced geographical mobility, which can prevent efficient labour market outcomes, hampering the relocation of workers to more productive regions.[33] A larger share of homeowners may also be

[32] For a discussion, see Causa, O., N. Woloszko and D. Leite, "Housing wealth accumulation and wealth distribution: Evidence and stylised facts", *OECD Economics Department Working Papers*, No 1588, OECD, Paris, December 2019.

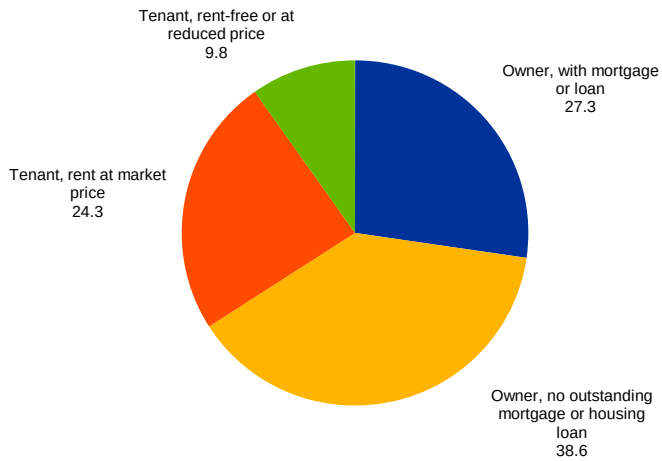
[33] See, for example, Barceló, C., "Housing tenure and labour mobility: a comparison across European countries", *Working Papers*, No 0603, Banco de España, February 2006.

associated with a less developed rental market.[34] Furthermore, a tax system that disproportionately favours homeownership, through interest rate deductibility and other forms of related tax incentives, can be distortive.

Chart D

Euro area tenure status in 2019

(percentages)

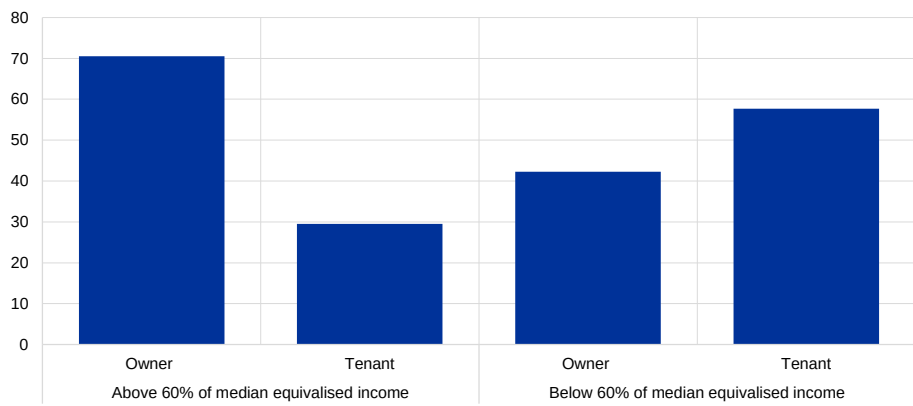


Source: EU-SILC.

Chart E

Euro area tenure status by income characteristic in 2019

(percentages)



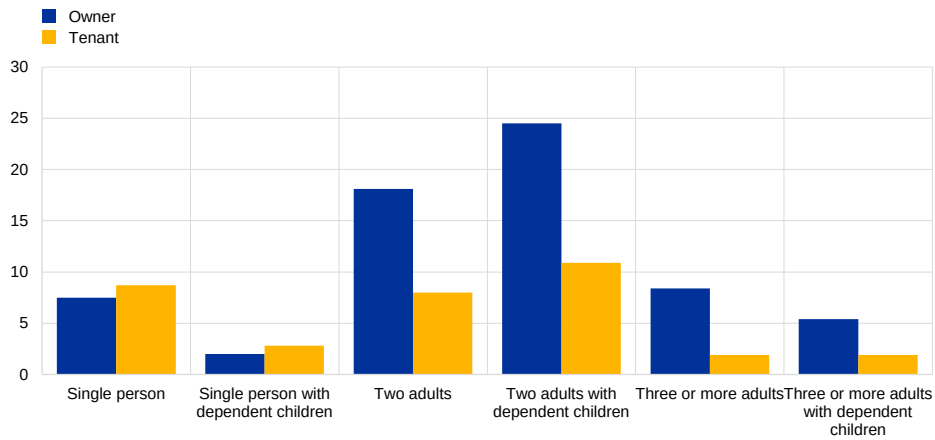
Source: EU-SILC.

[34] For a discussion, see Halket, J., and Pignatti Morano di Custoza, M., "Homeownership and the scarcity of rentals", *Journal of Monetary Economics*, Vol. 76, November 2015, pp. 107-123.

Chart F

Euro area tenure status by type of household in 2019

(percentages)



Source: EU-SILC.

The unfolding coronavirus (COVID-19) crisis may exacerbate the heterogeneity of the housing cost burden across households. Looking ahead, the negative effects of the COVID-19 crisis are likely to be particularly severe for the most disadvantaged households and to exacerbate existing differences, including those related to the housing cost burden.[35] This is, for instance, due to the fact that housing costs tend to be resilient in relation to income levels, thus posing a challenge whenever income is negatively affected, as in the case of the current pandemic. That said, the broader and medium-term impact of the COVID-19 crisis on the housing market in terms of the structural changes and household choices is something that can only be observed over time.

35 See "COVID-19: Protecting people and societies", OECD, 2020.

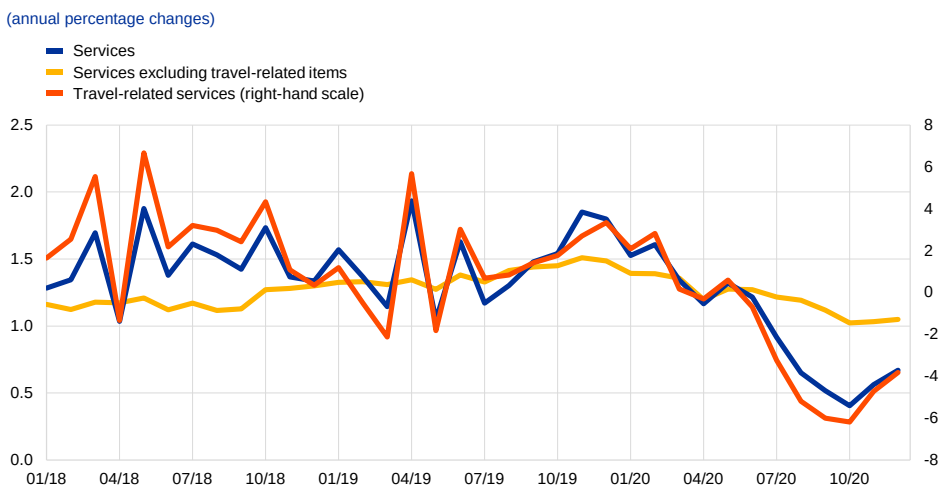
6 Prices for travel during the COVID-19 pandemic: is there commonality across countries and items?

Prepared by Eliza Lis and Jakob Nordeman

Inflation for travel-related items has plummeted in the euro area during the coronavirus (COVID-19) pandemic. Services inflation in general has deteriorated recently reaching a trough in October 2020. The main driver behind the decline has been the strong drop in inflation for travel-related services (here referring to package holidays, accommodation services, and passenger transport by air), despite its relatively moderate weight in HICP services (Chart A).[36] This likely reflects the nature of the containment and lockdown measures taken across the euro area.[37] Given that the impact of lockdown measures on inflation has been particularly visible in those countries that are heavily exposed to tourism[38], this box analyses the potential commonalities in travel-related items affected by COVID-19 lockdowns pulling down services inflation across the euro area countries.

Chart A

Developments in services inflation and services inflation excluding travel-related items



Sources: Eurostat and ECB calculations.
Notes: Travel-related items include (i) package holidays, (ii) accommodation services, and (iii) passenger transport by air.

The decline in travel-related services inflation in the euro area is broad-based across its included items (i.e. package holidays, accommodation and passenger transport by air).[39] The drop in inflation rates for passenger transport by

[36] Package holiday prices are recorded in the country where the trip starts, although the largest part of the underlying service may be provided in the travel destination. The price of the package holiday is still likely to reflect price developments for accommodation, restaurants and other similar services in the travel destination.

[37] It should be kept in mind that the lockdowns have led to large changes in consumer spending patterns that have not been reflected so far in official inflation statistics. For a detailed discussion of pandemic-induced changes in household consumption and their implications for inflation see the box entitled "Consumption patterns and inflation measurement issues during the COVID-19 pandemic", Economic Bulletin, Issue 7, ECB, 2020.

[38] See the box entitled "Developments in the tourism sector during the COVID-19 pandemic", Economic Bulletin, Issue 8, ECB, 2020.

[39] In 2020 the travel-related services amounted to approximately 10% of the weight in euro area services HICP.

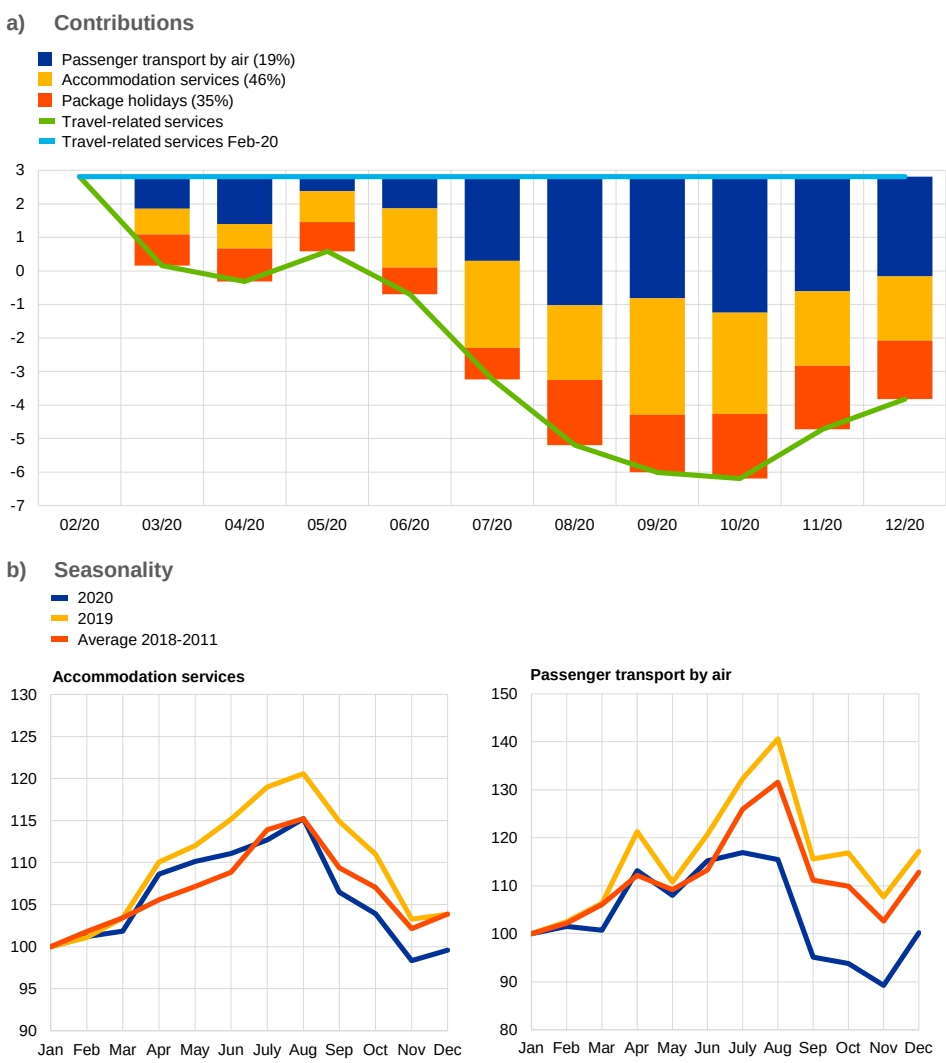
air contributed most to the overall decline (about 45%) followed by accommodation services, while package holidays contributed the least to the decline (Chart B, panel a).[40] Usually, travel-related service items show high seasonality, reaching a price-level peak during the summer months. In 2020, the price levels for accommodation services and passenger transport by air (vis-à-vis January) have, since the summer, been below their relative average levels of previous years, and substantially lower than the price levels observed in 2019 (Chart B, panel b). Furthermore, the strong seasonal upward impact on price levels for passenger transport by air, which usually occurs in the summer months, was more muted in summer 2020. Taken together, this implies that the price level for accommodation services and passenger transport by air has been lower since the pandemic started.

[40] From February 2020 inflation for passenger transport dropped by about 20 percentage points, reaching a trough in October 2020. In the same period, inflation for accommodation services fell by about 7.5 percentage points, reaching a trough in September 2020. Similarly, inflation for package holidays dropped by about 5.5 percentage points, reaching a trough in August 2020.

Chart B

Drivers of travel-related services inflation

(panel a: annual percentage changes, percentage point contributions with respect to February 2020; panel b: index January=100)



Sources: Eurostat and ECB calculations.
Notes: The weights for package holidays, accommodation services, and passenger transport by air in travel-related services shown in brackets in panel a. The bars in panel a refer to cumulative contributions to the change in HICP travel-related services inflation since February 2020, and the horizontal line refers to HICP travel-related services at that date.

The international component of travel-related services has been the main driver of the historical contraction in inflation for travel-related services overall (Chart C). This is amplified for both package holidays and passenger transport by air because the weight of the international component[41] amounts to around 85% for the euro area.[42] In comparison, domestic tourism remained relative resilient in many euro

[41] Prices for international flights includes flights between euro area countries and flights to countries outside the euro area. Domestic flights cover only flights within a euro area country.

[42] For accommodation services, a more granular breakdown would include (i) hotels, motels, inns and similar accommodation services, (ii) holiday centres, camping sites, youth hostels and similar accommodation services, as well as (iii) accommodation services of other establishments. Such a breakdown does not distinguish between domestic and other guests.

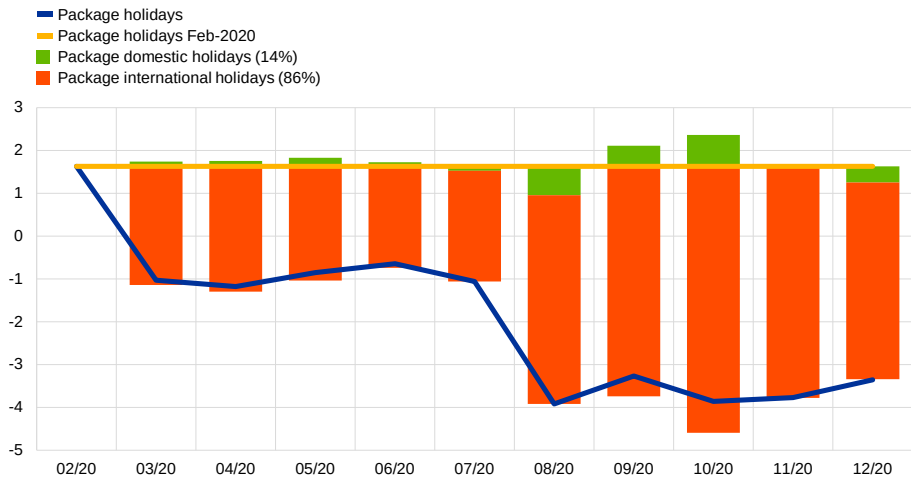
area countries and the decline in the annual rates of change for prices of domestic holidays and flights was milder.[43]

Chart C

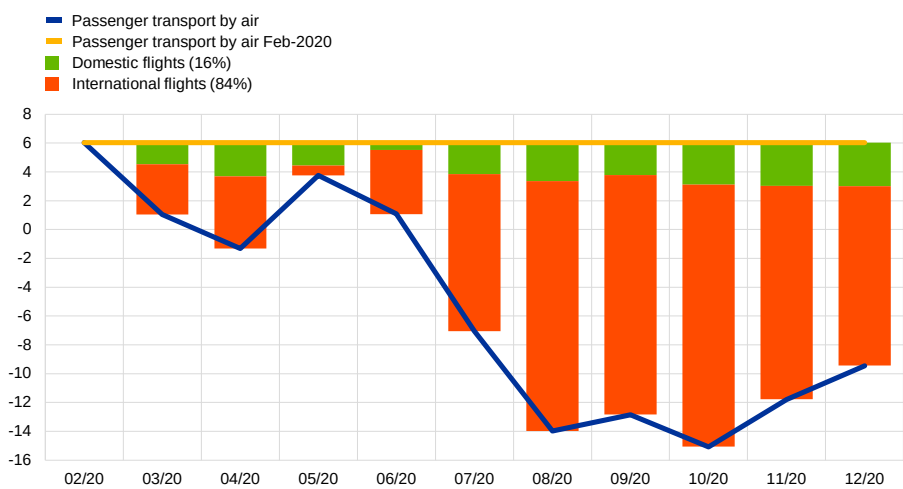
Inflation of domestic and international components of package holidays and passenger transport by air

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

a) Package holidays



b) Passenger transport by air



Sources: Eurostat and ECB calculations.
Notes: The weights of the domestic and international components of both package holidays and passenger transport by air are shown in brackets.

During the initial lockdowns in the second quarter of 2020, the pass through to prices in travel-related services lagged.[44] There are various reasons for the initial persistence in travel-related inflation. First, social distancing and direct restrictions on mobility (and/or indirectly via quarantine requirements) implied that even if firms had

[43] The decline in inflation for domestic flights amounted to about 10 percentage points between February and July 2020, whereas it was about 20 percentage points for international flights. Inflation rates of domestic package holidays observed a dip in July and August 2020, but they stayed relatively resilient before and thereafter.

[44] See the article entitled "The role of demand and supply factors in HICP inflation during the COVID-19 pandemic – a disaggregated perspective", in this issue of the Economic Bulletin.

reduced prices, demand was likely to remain low or absent. Second, firms may have preferred to delay price changes until restrictions were lifted to avoid additional menu costs. Third, published price indices in the second quarter of 2020 were based on elevated degrees of price imputation and thus may not have captured the underlying negative economic impact during that period.[45] Instead, inflation rates generally reflected developments in past data from 2019. Once these effects faded, weak demand came more clearly to the fore in the third quarter of 2020.[46]

The recent upward movement in inflation rates for travel-related services may be affected by a renewed increase in imputation rates. Many euro area countries recently re-imposed strict lockdown measures, which caused imputation shares to rise. In the fourth quarter of 2020 the imputed prices were concentrated in the services sector with an imputation share of around 20% for the euro area. During that quarter the indices for package holidays and accommodation services in the euro area were flagged as unreliable.[47] Similar to the lockdown during the second quarter in 2020, imputed prices and postponement of price reviews by firms might not reflect the actual price pressures.

All euro area countries have experienced a decline in travel-related services inflation compared to their pre-pandemic levels (Chart D). However, there is some country heterogeneity related to both the magnitude of the decrease and the main contributing items. By and large, countries which are usually net exporters of travel services also showed the largest drop in travel-related services inflation compared to February 2020.[48] The most common contributing item to the sharp decline in travel-related services inflation across countries is prices for passenger transport by air. While inflation for accommodation services also contributed heavily in many southern European countries, package holidays have been a major source of the decline in Germany[49] and the Netherlands.[50]

45 For services in general the imputation share reached above 40% in April 2020 for the euro area as whole. In some euro area countries imputation shares were higher and for some travel-related services they even reached 100%.

46 Notwithstanding a decline in imputation rates in the third quarter of 2020, some countries had imputed rates for travel-related services items. For example, when looking at the large euro area countries, passenger transport prices were imputed in Germany throughout the third quarter of 2020 and in Italy in July and August 2020.

47 Passenger transport by air has been flagged as unreliable in some EU Member States but not at the euro area level.

48 See the box entitled "Developments in the tourism sector during the COVID-19 pandemic", *Economic Bulletin*, Issue 8, ECB, 2020.

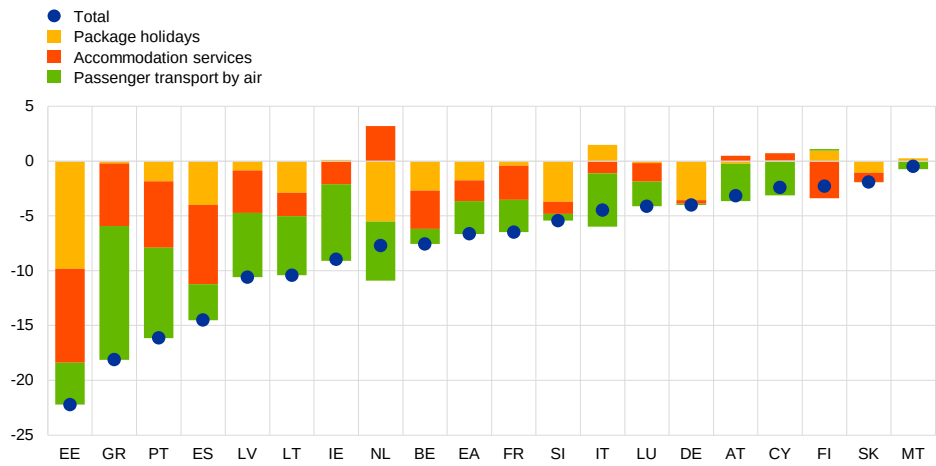
49 In Germany some of the impact is also due to the German VAT rate cut in July 2020.

50 Methodologically, the item *package holidays* has a prominent weight, mainly in Germany, Spain and the Netherlands, when considering the five largest euro area countries.

Chart D

Developments in travel-related services inflation across euro area countries

(changes with respect to February 2020, percentage point contributions)



Sources: Eurostat and ECB calculations.

Looking ahead, uncertainty around the outlook for inflation in travel-related services has increased. While lockdown measures have been gradually re-imposed, vaccination campaigns have started across the euro area. If lockdowns become tighter, imputation shares are likely to increase for travel-related items. Firms might hold back on price changes as demand is rather inelastic to price changes in the current circumstances. These factors may hamper the interpretation of actual price pressures. Once lockdown restrictions are lifted again, the normal interplay of price adjustments by firms will be resumed but their size and nature will depend on the prevailing demand and supply conditions. By and large, the outlook for travel-related services inflation remains uncertain as both upside and downside risks may materialise depending on the progression of the COVID-19 pandemic.