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Contents

Update on economic and monetary developments

Summary

Incoming information since the last monetary policy meeting in early June signals a resumption of euro area economic activity, although the level of activity remains well below the levels prevailing before the coronavirus (COVID-19) pandemic and the outlook remains highly uncertain. Headline inflation is being dampened by lower energy prices and price pressures are expected to remain very subdued on account of the sharp decline in real GDP growth and the associated significant increase in economic slack. The ECB's monetary policy measures are gradually making their way through to the euro area economy, providing crucial support to the recovery and helping to offset the pandemic-related downward shift in the projected path of inflation. At the same time, the outlook is surrounded by high uncertainty and subject to downside risks. Against this background, the Governing Council decided to leave the overall monetary policy stance unchanged and to reconfirm the full set of its existing monetary policy measures.

While containment policies have been eased across the world, the global recovery remains uneven, uncertain and incomplete. Survey data suggest that the unprecedented contraction in the global economy in the first half of 2020 has been bottoming out, while cautious consumer behaviour points to sluggish growth momentum ahead. While the recovery is proceeding in China, the outlook remains highly uncertain in the United States, although there have been some positive data surprises. In the United Kingdom and Japan, indicators also point to a bottoming-out of the contraction in some sectors, but activity levels remain very weak. In this context, global inflation remains subdued.

Over the review period, the forward curve of the euro overnight index average (EONIA) shifted slightly downwards and a mild inversion appeared at short maturities, albeit without expectations of an imminent cut in policy rates. Long-term euro area sovereign bond yields also declined on account of lower risk-free rates and sovereign spreads recorded a slight compression. Equities continued to recover from the troughs reached in March and, despite compressing further, corporate bond spreads are still wider than they were in late February. In foreign exchange markets, the euro strengthened slightly in trade-weighted terms.

Incoming data and survey results suggest that economic activity improved significantly in May and June from its trough in April, alongside the ongoing containment of the virus and the associated easing of the lockdown measures. At the same time, economic indicators remain well below the levels recorded before the pandemic, and the recovery is in its early stages and remains uneven across sectors and jurisdictions. After decreasing by 3.6%, quarter on quarter, in the first quarter of 2020, euro area real GDP is expected to have contracted even further overall in the second quarter, broadly

in line with the June 2020 Eurosystem staff macroeconomic projections. Signs of a recovery in consumption have emerged, while there has also been a significant rebound in industrial output. At the same time, subdued labour market conditions and precautionary household saving are weighing on consumer spending. Weak business prospects and high uncertainty are dampening investment, while the weakness in the global economy is hampering foreign demand for euro area goods and services.

According to Eurostat's flash estimate, euro area annual HICP inflation increased from 0.1% in May to 0.3% in June, mainly reflecting less negative energy price inflation. On the basis of current and futures prices for oil and taking into account the temporary reduction in the German VAT rate, headline inflation is expected to decline again in the coming months before rebounding in early 2021. Over the medium term, weaker demand will put downward pressure on inflation, which will be only partially offset by upward pressures related to supply constraints. Market-based indicators of longer-term inflation expectations have remained at subdued levels.

Since March 2020 the coronavirus pandemic has caused monetary dynamics to accelerate sharply, driven by businesses' acute liquidity needs to finance ongoing expenditures and economic agents' strong preference for money holdings on precautionary grounds. In May domestic credit remained the main source of money creation, which was driven in particular by loans to non-financial corporations and the Eurosystem's net purchases of government securities under the asset purchase programmes. The July 2020 euro area bank lending survey shows a continued upward impact of the pandemic on firms' loan demand, largely reflecting emergency liquidity needs. At the same time, credit standards for loans to firms have remained favourable, supported by fiscal and monetary measures. In addition, very favourable lending rates, which point to an ongoing robust transmission of monetary policy measures, are supporting euro area economic growth.

Against this background, ample monetary stimulus remains necessary to support the economic recovery and to safeguard medium-term price stability. Therefore, the Governing Council decided to reconfirm its very accommodative monetary policy stance.

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

The Governing Council will continue its purchases under the pandemic emergency purchase programme (PEPP) with a total envelope of €1,350 billion. These purchases contribute to easing the overall monetary policy stance, thereby helping to offset the pandemic-related downward shift in the projected path of inflation. The purchases will continue to be conducted in a flexible manner over time, across asset classes and among jurisdictions. This allows the Governing Council to effectively stave off risks to the smooth transmission of monetary policy. The Governing Council will conduct net asset purchases under the PEPP until at least the end of June 2021 and, in any case, until it judges that the coronavirus crisis phase is over. The Governing Council will

reinvest the principal payments from maturing securities purchased under the PEPP until at least the end of 2022. In any case, the future roll-off of the PEPP portfolio will be managed to avoid interference with the appropriate monetary policy stance.

Net purchases under the asset purchase programme (APP) will continue at a monthly pace of €20 billion, together with the purchases under the additional €120 billion temporary envelope until the end of the year. The Governing Council continues to expect monthly net asset purchases under the APP to run for as long as necessary to reinforce the accommodative impact of the policy rates, and to end shortly before it starts raising the key ECB interest rates. The Governing Council 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.

The Governing Council will also continue to provide ample liquidity through its refinancing operations. In particular, the latest operation in the third series of targeted longer-term refinancing operations (TLTRO III) has registered a very high take-up of funds, supporting bank lending to firms and households.

The monetary policy measures that the Governing Council has taken since early March are providing crucial support to underpin the recovery of the euro area economy and to safeguard medium-term price stability. In particular, they support liquidity and funding conditions in the economy, help to sustain the flow of credit to households and firms, and contribute to maintaining favourable financing conditions for all sectors and jurisdictions. In addition, the European Commission has recently published some guidelines for government guarantee schemes in order to avoid potential cliff effects during their phasing-out. At the same time, in the current environment of elevated uncertainty and significant economic slack, the Governing Council remains fully committed to doing everything necessary within its mandate to support all citizens of the euro area through this extremely challenging time. This applies first and foremost to its role in ensuring that monetary policy is transmitted to all parts of the economy and to all jurisdictions in the pursuit of its price stability mandate. The Governing Council, therefore, 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.

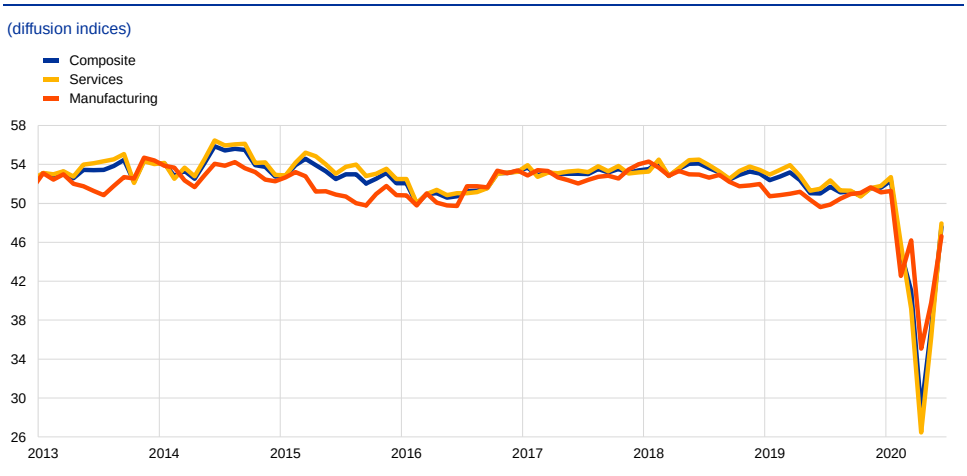
1 External environment

While containment policies have eased across the world, the global recovery remains uneven, uncertain and incomplete. The global outlook remains dominated by the evolution of the coronavirus (COVID-19) pandemic. The number of new cases continues to rise globally, particularly in the United States and Latin America, as well as in several other key emerging market economies (e.g. India and South Africa). At the same time, indicators of effective lockdown measures, which reflect official policies with actual mobility data, suggest a steady and gradual opening up in most economies since end-May. This combination of the easing of containment measures and the increase in new COVID-19 cases in many countries renders the global recovery highly uncertain.

Survey data suggest that the unprecedented contraction in the global economy in the first half of 2020 has been bottoming out. The global composite output Purchasing Managers' Index (PMI) – excluding the euro area – continued to rebound from its April trough in June, reaching 47.6 (see Chart 1). The increase in June was broad-based across all sub-components; the services sector, which had been lagging behind the manufacturing sector in terms of improvement, recovered strongly. These developments were also broad-based across almost all major advanced and emerging economies. However, PMIs for everywhere except China have remained in contractionary territory below 50, thereby pointing to continued weak activity levels globally.

Chart 1

Global composite output PMI (excluding the euro area)



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

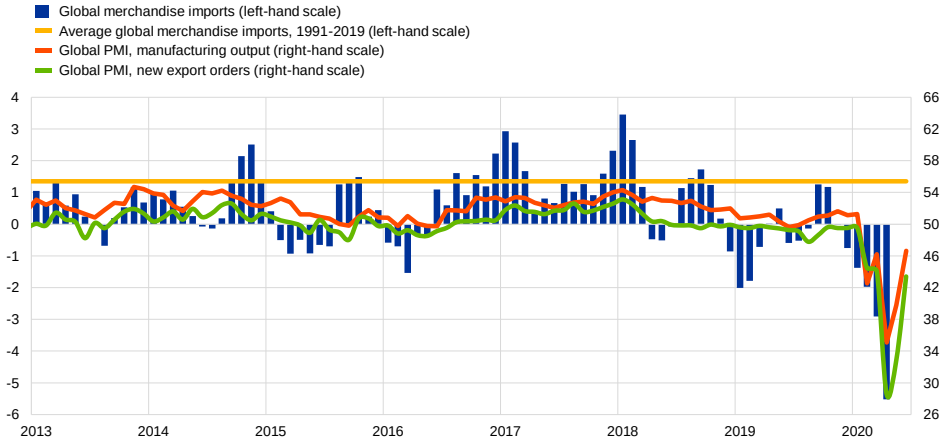
Cautious consumer behaviour points to a sluggish recovery ahead. Consumer confidence in countries where the pandemic was contained early, such as China and South Korea, has been recovering slowly but remains below pre-pandemic levels. High levels of uncertainty may imply a sluggish and fragile recovery in consumption, especially as new cases have risen globally.

World trade remained very weak in April, pointing to an exceptional decline in the second quarter. Global merchandise imports (excluding the euro area) fell sharply in April, following two consecutive quarters of contraction. The decline in world trade coincided with a peak in the severity of containment measures worldwide. While the global PMI for new export orders (excluding the euro area) improved in May and June, it continued to signal weakness in trade (see 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 April 2020 for global merchandise imports and June 2020 for the PMIs.

Global inflation slowed further in May. Annual consumer price inflation in the countries of the Organisation for Economic Co-operation and Development (OECD) declined to 0.7% in May, driven by a faster decline in energy prices, while food price inflation increased slightly. Meanwhile, inflation excluding food and energy remained stable at 1.6%. The slowdown in inflation was broad-based across most advanced economies and major non-OECD emerging market economies. Looking ahead, global inflationary pressures are expected to remain subdued as a result of both the fall in oil prices and weak demand.

Oil prices have increased by more than 10% since the last Governing Council meeting amid a rebound in economic activity and falling supply owing to cuts agreed in early May. Oil prices have been supported by a stronger than expected pick-up in oil demand on the back of the easing of lockdown measures. Oil demand is expected to remain subdued in the second half of 2020 and into 2021, with consumption set to remain below the levels seen in 2019. However, oil demand estimates have been revised upwards recently following the easing of lockdown measures in a number of countries. Besides recovering demand, reductions in supply have also been a factor in the rebalancing of oil markets. In particular, the recovery in prices has been supported by the OPEC+ agreement (i.e. the pact between major oil producers) in early May to lower supply by almost 10 million barrels per day (mbpd), and by significant shut-ins of oil production in the United States. Metal prices have also recovered strongly since mid-April, with an increase of around 2% since the last Governing Council meeting.

US data have recently surprised on the upside, but the level of activity remains weak. With lockdowns being gradually lifted, economic activity has resumed and various economic indicators have turned to the upside. Retail sales and food services rebounded sharply in May as household spending benefited from federal stimulus payments, reinforced by the return to work of some employees. Industrial production also rose in May, albeit less strongly. Labour market data also surprised on the upside. In May and June, the United States added 7.5 million jobs, regaining about one-third of the jobs lost since February. While the June figures showed the largest increase in history, labour market data currently require a cautious interpretation, as they are based on a mid-month survey and do not yet reflect newly reinforced regional lockdown measures. In spite of the further fall in the unemployment rate by 2.2 percentage points, to 11.1%, labour market slack remains at historically high levels. Overall, the latest data seem to confirm the bottoming out of the US economy indicated by other variables, rather than pointing to a substantial improvement in the economic situation. Key US indicators remain well below pre-pandemic levels, and rising numbers of new infections may trigger renewed containment measures or slow the easing of existing ones, thereby increasing the risk that the recovery will be undermined.

In Japan, the pace of economic activity has started normalising as containment measures were progressively lifted in May. Following a contraction of 0.6% in real GDP in the first quarter, the intensification of containment efforts in Japan triggered a considerable retrenchment in industrial production, external trade and private consumption in April and May. The latest Tankan survey confirmed a marked deterioration in business sentiment in manufacturing and services in the second quarter. Moreover, it also signalled a sharp cut in the investment plans of small firms, which continued to take a cautious view regarding the outlook. In its latest meeting, the Bank of Japan announced an increase in the size of its special programme to support corporate financing to JPY 110 trillion (from JPY 75 trillion). This programme includes purchases of commercial paper and corporate bonds, as well as special lending operations. The recent measures coincided with a marked acceleration in lending growth in April and May, likely reflecting an accommodative lending stance by banks and a higher demand for operating funds by Japanese firms. The government has also provided significant stimulus, approving two supplementary budgets for the 2020 fiscal year, amounting to about 10% of GDP.

In the United Kingdom, an unprecedented decline in activity is expected in the second quarter with activity resuming only slowly amid the easing of containment measures. Real GDP increased by 1.8% month-on-month in May but fell by 19.1% on a three-month rolling average basis amid stringent lockdown measures. The composite PMI output index remained below 50 throughout the second quarter, suggesting an ongoing weakness in demand, with further reductions in new orders and new export orders for the fourth month in a row. Prospects for a swift turnaround in the third quarter remain slim. Although the reopening of leisure and travel facilities at the beginning of July is helping to boost activity, business and consumer sentiment remains low compared to pre-lockdown levels. The shape of the recovery will also depend on the roadmap for future policy support. UK monetary policy remains supportive, but fiscal policy support is likely to be less substantial

compared to the first half of the year, notwithstanding the additional fiscal stimulus announced in July.

The recovery in China is proceeding despite weak external demand. Amid the easing of containment measures, high-frequency indicators point to a continued normalisation of activity in June. In terms of hard data, industrial production growth turned positive in April and gained further momentum in May (up 4.4% year-on-year). While retail sales continue to decline on an annual basis, sequential growth momentum has been positive. PMI data paint a similar (albeit uneven) picture, with manufacturing having already returned to expansionary territory in March, while weaker new export orders are restraining the momentum of the upturn. Meanwhile, the Chinese authorities have provided additional fiscal and monetary stimulus to cushion the economic shock. Fiscal policy is aiming to stabilise employment and economic growth by expanding unemployment insurance, investment and tax relief. Fiscal policies are being complemented by monetary policies designed to ensure sufficient liquidity in the banking system, cuts in key policy rates and reserve requirements, and directions for banks to accommodate repayment delays by businesses.

2 Financial developments

The euro overnight index average (EONIA) and the new benchmark euro short-term rate (€STR) averaged -46 and -55 basis points respectively[1] over the review period (4 June 2020 to 15 July 2020). In the same period, excess liquidity increased by approximately €642 billion to around €2,816 billion, mainly reflecting take-up of targeted longer-term refinancing operations (TLTRO III) together with asset purchases under the pandemic emergency purchase programme (PEPP) and the asset purchase programme (APP).

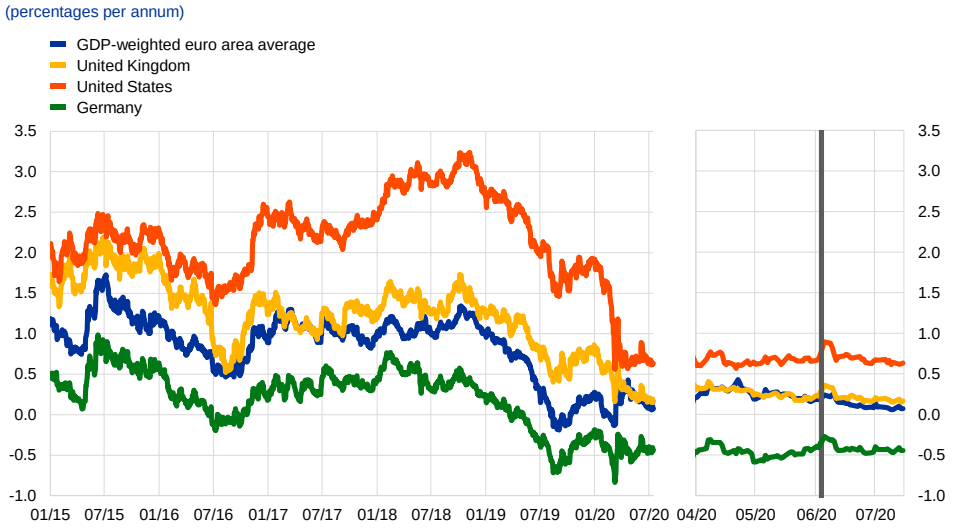
The EONIA forward curve has shifted slightly downwards since early June, although markets do not seem to expect an imminent reduction in the deposit facility rate. The curve shifted downwards by an average of slightly more than 10 basis points across the maturities beyond three years. It became slightly inverted in the near term, with the EONIA rate around the end of 2021 standing around 10 basis points below its current level. Developments in the EONIA forward curve may be related to the PEPP announcement, in a context characterised by a sharp contraction of economic activity and heightened concerns about the implications of a still expanding coronavirus (COVID-19) pandemic at a global level. Overall, EONIA forward rates remain below zero for horizons up to 2027, reflecting continued market expectations of a prolonged period of negative interest rates.

Long-term sovereign yields in the euro area declined amid some bottoming out in the contraction of economic growth. Over the review period, the GDP-weighted euro area ten-year sovereign bond yield decreased by around 15 basis points to 0.07% (see Chart 3). This decline more or less mirrored a drop of 12 basis points in the ten-year overnight index swap (OIS) rate. After a small rise in the first week of the review period, rates started to decline in response to, among other factors, the Governing Council's decision on 4 June to extend the PEPP and the announcement by the Federal Reserve on 10 June that it expected policy rates to remain near zero for a prolonged period of time. A marked rebound in incoming data relative to market expectations did not seem to have a positive impact on interest rates, perhaps because data outturns remained in line with an ongoing contraction in the business cycle, albeit at a slower pace. The complex negotiations that eventually led to the approval of the European Union's Recovery and Resilience Facility may have influenced the developments in sovereign yields in both directions at times over the review period. Elsewhere, ten-year sovereign bond yields in the United States decreased by around 20 basis points over the review period to 0.63%, while UK yields declined by around 15 basis points to 0.17%.

[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.

Chart 3

Ten-year sovereign bond yields



Sources: Refinitiv and ECB calculations.
Notes: Daily data. The vertical grey line denotes the start of the review period on 4 June 2020. The zoom window shows developments in sovereign yields since 1 April 2020. The latest observations are for 15 July 2020.

Movements in the spreads on euro area sovereign bond relative to the risk-free OIS rate have been relatively muted. Spreads initially rose slightly and then started to decline, ending the review period slightly below the levels prevailing in early June overall. The spread on German, Spanish and Portuguese sovereign bonds declined by between 3 and 5 basis points while French and Italian spreads fell very marginally, by just 1 basis point. Overall, the GDP-weighted euro area spread relative to the OIS rate declined by 2 basis points to just below 40 basis points.

Equity price indices rose for both euro area non-financial corporations (NFCs) and banks, thus further offsetting the sharp losses recorded since late February amid heightened COVID-19-related concerns. Over the review period, euro area NFC and bank equity prices rose by 2% and 3.2% respectively. Overall, equity prices in the two sectors remain around 5% and 30% respectively below the levels prevailing on 24 February, when valuations started to be affected by the COVID-19 outbreak outside of China, thus highlighting a marked underperformance of bank equity prices relative to other sectors. While improved earnings expectations have supported equity prices, higher risk premia, primarily associated with market participants' concerns about the still robust expansion of the number of COVID-19 cases worldwide and a possible second wave of the pandemic, have depressed valuations.

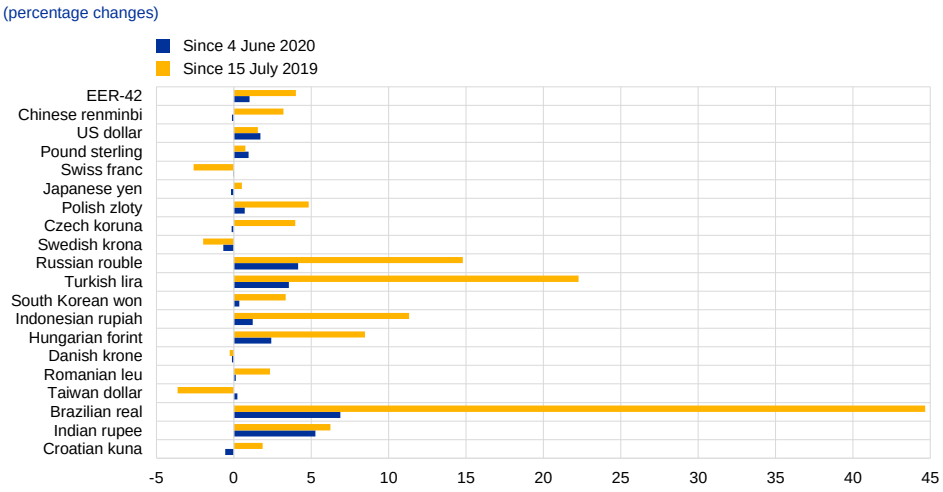
Euro area corporate bond spreads declined over the review period. The spreads on both investment-grade NFC bonds and financial sector bonds relative to the risk-free rate declined slightly over the review period, by almost 10 basis points, to stand at 104 and 120 basis points respectively as of 15 July. Despite a significant compression from the peaks reached in early April, spreads are still at levels that are twice as high as in late February. The heightened risks compared to early 2020 that are embedded in corporate bond spreads, as well as in equity prices, may reflect

market expectations of a significant rise in corporate defaults over the next few quarters.

In foreign exchange markets, the euro broadly strengthened 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, appreciated by 1.0%. This largely reflected a strengthening in particular against the currencies of countries that were more heavily affected by the economic and financial market impact of the COVID-19 pandemic. Specifically, the euro appreciated against a number of emerging market currencies, notably the Brazilian real (by 6.9%), the Russian rouble (by 4.2%) and the Turkish lira (by 3.6%), as well as against both the US dollar (by 1.7%) and the pound sterling (by 1.0%). At the same time, the euro weakened only very slightly against the Japanese yen (by 0.2%) and the Chinese renminbi (by 0.1%) and remained virtually unchanged against the Swiss franc.

Chart 4

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



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 15 July 2020.

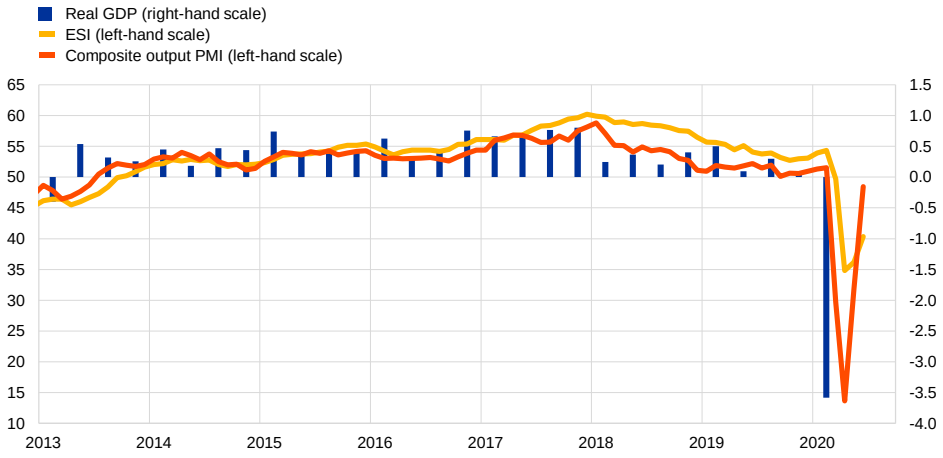
3 Economic activity

After euro area real GDP contracted sharply in the first quarter of 2020, signs of a rebound in economic activity have emerged with the gradual lifting of measures to contain the coronavirus (COVID-19) outbreak. Total economic activity declined by 3.6%,[2] quarter on quarter, in the first quarter of 2020, following growth of 0.1% in the fourth quarter of 2019 (see Chart 5). The breakdown suggests that the fall in GDP in the first quarter of 2020 was driven by both domestic demand (which made a -3.5 percentage point contribution to growth) and net trade (-0.4 percentage points), while changes in inventories provided a small positive contribution to growth (+0.3 percentage points). Economic indicators suggest that the decline in economic activity owing to the COVID-19 pandemic reached a trough in April 2020. Survey information, high-frequency indicators and hard data suggest that a recovery which is broad-based, but slow and uneven across countries, is taking place as the economy gradually reopens. Survey data point to an improvement in activity in both the manufacturing and services sectors in May and June, giving further cause for confidence that the recovery will continue in the third quarter.

Chart 5

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

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



Sources: Eurostat, European Commission, Markit and ECB calculations.
Notes: The Economic Sentiment Indicator (ESI) is standardised and rescaled to have the same mean and standard deviation as the Purchasing Managers' Index (PMI). The latest observations are for the first quarter of 2020 for real GDP and June 2020 for the ESI and the PMI.

The impact of the COVID-19 pandemic on the labour market is more apparent from the fall in hours worked than from the unemployment rate. Employment declined by 0.2% in the first quarter of 2020 relative to the fourth quarter of 2019 (see Chart 6). Total hours worked declined significantly more, decreasing by 3.1%, which led to a fall of 2.9% in average hours worked per person employed. The

[2] Eurostat released its GDP estimate on 9 June 2020. In line with expectations of greater than usual revisions (+/-0.1 percentage points) – as some countries had to adapt their national estimation methods, by using alternative sources or different models, to address the disruption in the availability of source data and ensure the best possible quality – the availability of more complete primary source data has already led to an upward revision in the flash estimate of -0.2 percentage points as compared with the preliminary GDP flash estimate released on 30 April 2020.

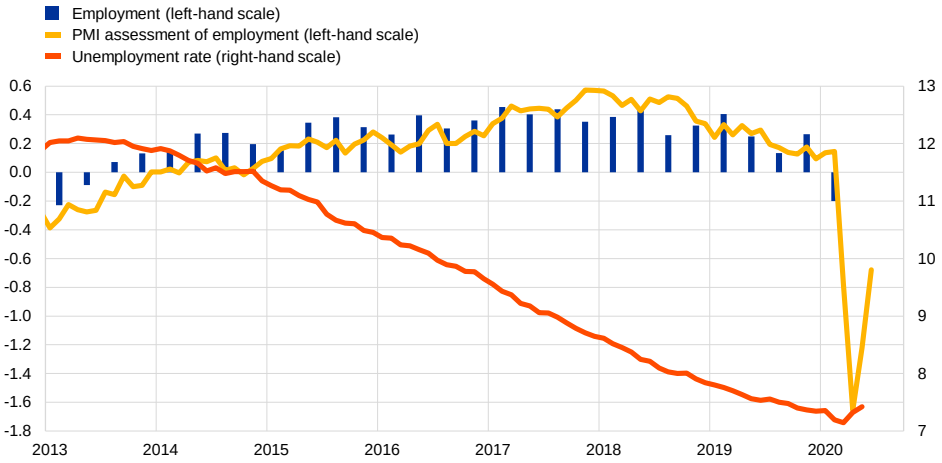
unemployment rate increased to 7.4% in May, but still does not reflect the severity of the impact of the COVID-19 pandemic on the euro area labour market. Employment support measures, such as short-time work and temporary layoffs, are helping to contain dismissals and partly explain the muted reaction of the unemployment rate.[3]

Short-term labour market indicators have partially recovered after unprecedented falls in March and April. The Purchasing Managers' Index (PMI) for employment increased to 43.2 in June, from 37.8 in May and 33.4 in April – when it reached its lowest level on record (see Chart 6). However, the current level of the PMI continues to suggest a sharp contraction in employment. High-frequency indicators provide some evidence that labour demand is bottoming out.[4]

Chart 6

Euro area employment, 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 PMI is expressed as a deviation from 50 divided by 10. The latest observations are for the first quarter of 2020 for employment, June 2020 for the PMI and May 2020 for the unemployment rate.

Clear signs of a recovery in consumption have emerged since May. Available indicators point to an increase in spending following the easing of the lockdowns. While retail trade declined by 12%, month on month, in April, it rose by 17.8%, month on month, in May and is expected to have risen further in June. Although still standing about 50% below their average monthly level in 2019, new passenger car registrations surged by 140%, month on month, in May following sharp declines of -45.8% in April and -57.3% in March. Consumer confidence data available up to June also suggest that consumption increased strongly in May and June, compared with April, even though spending remained far below pre-lockdown levels. Consequently, the household saving ratio reached an unprecedented high level of 16.9% in the first quarter of 2020. While precautionary motives are undoubtedly pushing up the saving ratio, forced savings seem to be the main driver of the current spike in household

[3] See the box entitled "A preliminary assessment of the impact of the COVID-19 pandemic on the euro area labour market" in this issue of the Economic Bulletin.

[4] See the box entitled "High-frequency data developments in the euro area labour market" in this issue of the Economic Bulletin.

savings. Unlike during the great financial crisis, the spike in savings is mainly reflected in higher bank deposits, rather than lower credit flows.

Some pent-up demand effects seem likely in the period ahead, although their size remains highly uncertain. About half of the contraction in private consumption reflects expenditure components which can be postponed (e.g. purchases of electronics and cars). This suggests some potential for pent-up demand for these goods as containment measures are lifted. Pent-up demand describes a rapid increase in demand for products following a downturn, which temporarily exceeds the level of demand that prevailed before the downturn. As consumers tend to hold off making purchases during a recession and, in the current situation, they may have been forced to postpone purchases as a result of the lockdowns, they have probably built up a backlog of demand that could be unleashed as signs of a recovery emerge and the containment measures are eased. While recent retail trade data show a strong rebound in a number of product categories, it is too early to determine whether this reflects widespread pent-up demand or rather a shift in consumption baskets (e.g. towards purchases of bicycles and home office equipment) in response to the pandemic. According to the European Commission's consumer survey, available up to June, households continue to expect to spend less on major purchases over the next 12 months compared with the previous 12 months, despite the accumulated savings. This suggests that consumers may remain cautious, in part given the higher risk of unemployment.

The downturn in business investment as a result of the lockdowns and containment measures implemented across euro area countries since March 2020 is expected to have reached a trough in April as signs of a recovery emerge. Production data for April and May exhibited a dramatic fall in manufacturing production and sales. This was driven by a combination of both supply and demand factors related to the COVID-19 pandemic and had a major, adverse impact on business investment. Production of capital goods, an indicator for non-construction investment, fell sharply in March and April, declining by 39%. The decline in the production of transport equipment over the same period was even more severe, with a drop of 69%. Furthermore, according to the industry survey of the European Commission conducted in April, capacity utilisation in the capital goods sector declined in the second quarter by 17 percentage points to stand slightly below 67%, the lowest level in the history of this series. However, recent production and survey data indicate that a recovery from these low levels started in May and intensified in June. Production of capital goods rebounded strongly in May, rising by 25.4%, and the production of transport equipment rebounded with an increase of 84%. Despite this, production levels remain significantly below the levels seen in February. Survey indicators also support the emergence of a recovery. The European Commission's Economic Sentiment Indicator stabilised in May and recorded the strongest increase in the history of the series in June. In addition, manufacturing confidence in the capital goods sector has improved steadily since the trough in April. A similar picture is provided by the PMI manufacturing indicators. Notwithstanding the improvements in these indicators, order book levels in the capital goods sector, in particular for exported capital goods, remained at low levels in June according to surveys by the European Commission. Furthermore, euro area sectoral accounts showed a sharp

decline in the gross operating surplus of non-financial corporations in the first quarter of 2020 and the ECB's composite indicator of systemic stress remains at high levels. Moreover, substantial downside risks to firms' investment plans – stemming from rising debt levels, potential insolvencies and corporate defaults on long-term debt commitments, as well as declining cash flows – remain despite considerable euro area and EU-wide policy efforts to provide liquidity and credit to firms.[5]

Housing investment in the euro area recorded a dramatic deterioration in the first quarter, while positive signs emerged at the end of the second quarter. Euro area housing investment dropped by 5.8%, quarter on quarter, in the first three months of 2020 – the worst growth rate since the start of the series in 1995. This bleak outcome mainly resulted from the widespread shutdown of construction sites, although it was partly alleviated by the large backlog of construction plans (especially in Germany and the Netherlands) and was accompanied by a reduction in transaction volumes with only minor effects on house prices. As containment measures intensified in several countries up to the end of April, an even deeper contraction in euro area housing investment is expected to have occurred in the second quarter. According to the European Commission survey data, construction firms faced historically high limits to production in the second quarter, mainly owing to financial conditions, potentially signalling shortages of liquidity, and to other factors, likely related to the effects of containment measures on activity. Nevertheless, after bottoming out in April, the euro area PMI for construction output showed signs of improvement in May and June amid the relaxation of containment measures, even standing slightly above the expansionary threshold in France and Italy. Survey results on companies' assessments of order books point to moderate prospects for a recovery in the housing sector in the period ahead. Surveys on households' intentions to build or renovate properties show a similar picture. Moreover, the uncertainty caused by the pandemic might have even greater and longer-lasting effects on activity, as it could encourage households and investors to postpone property transactions until an effective medical solution for COVID-19 is found.

After extra and intra-euro area trade fell sharply in the first quarter of 2020, extra-euro area exports and intra-euro area trade collapsed in April with the emergence of new epicentres of the COVID-19 pandemic. The measures adopted to contain the pandemic had a strongly adverse impact on both intra and extra-euro area trade in the first quarter. Extra-euro area exports fell significantly more than extra-euro area imports, resulting in a negative net trade contribution to GDP of -0.4 percentage points. Intra-euro area trade fell sharply in the first quarter driven mainly by intermediate goods, owing to disruptions of supply chains, and by capital goods. As severe lockdowns became effective across the euro area in April, nominal intra-euro area goods trade collapsed further, falling by 21.7% compared with March. Extra-euro area exports continued to be more affected than extra-euro area imports in April. While lower domestic demand in the euro area resulted in a fall in extra-euro area nominal goods imports, which declined by 13% in April compared with the previous month, the collapse in extra-euro area goods exports accelerated in April, as nominal exports of goods plummeted by 24.5% compared with the month before with the spread of the

[5] See the box entitled "Drivers of firms' loan demand in the euro area – what has changed during the COVID-19 pandemic" in this issue of the Economic Bulletin.

pandemic to major trading partners. In April goods export volumes to the United States were down by 32%, to China by 11% and to Brazil by 36% compared with April 2019. Leading indicators signal that the trough in terms of negative trade growth rates is likely to have occurred in April. The PMI for euro area new export orders rebounded from 18.9 in April to 42.5 in June. Manufacturing trade, in particular with regard to the automotive sector, recovered partially with the reopening of factories. While travel and transportation remain the most affected sectors, trade in these sectors is slowly recovering as travel restrictions are lifted, which is also visible in a slight increase in flight capacity starting from mid-June. Despite the partial rebound, the recovery in euro area trade is likely to be uneven and incomplete given the unsynchronised relaxation of containment measures in major trading partners and lasting effects on confidence.

While incoming economic data, particularly survey results, show initial signs of a recovery, they still point to a historic contraction in euro area output in the second quarter of 2020. The COVID-19 outbreak and the associated containment measures have had an adverse impact on activity in manufacturing and particularly in services via increasing supply constraints and rapidly falling demand. As regards recent survey data, the European Commission's Economic Sentiment Indicator and the composite output PMI both posted record lows in April. In May and June there were strong increases in some indicators, but many remain below their long-term levels. Both the Economic Sentiment Indicator and the PMI display a broad-based rebound across both countries and economic sectors. This pick-up in economic activity is also confirmed by high-frequency indicators such as electricity consumption.

Looking beyond the disruption stemming from the coronavirus pandemic, euro area growth is resuming with the gradual lifting of containment measures, supported by favourable financing conditions, the euro area fiscal stance and a resumption in global activity. However, uncertainty remains extremely elevated, making it very difficult to predict the likely extent and duration of the recovery. The results of the latest round of the ECB Survey of Professional Forecasters, conducted in early July, show that private sector GDP growth forecasts have been revised further downwards for 2020 and have been revised upwards for 2021, compared with the previous round conducted in early April.

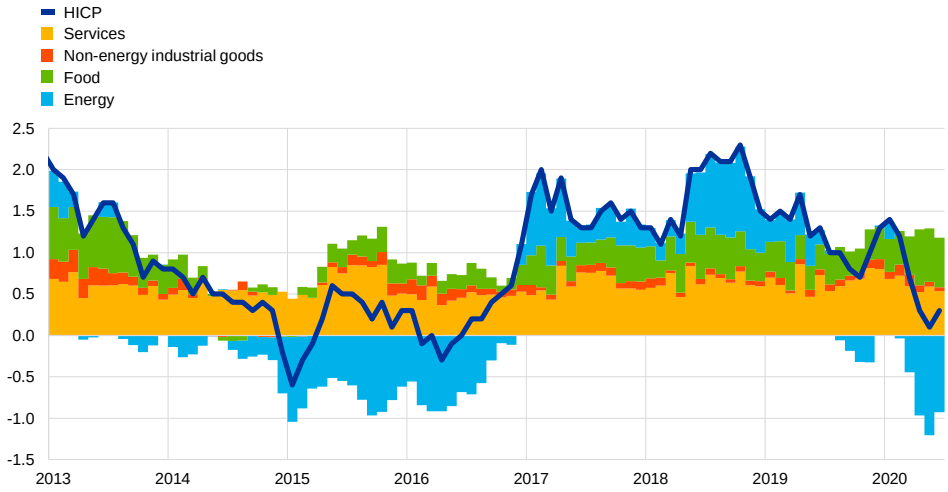
4 Prices and costs

According to Eurostat's flash estimate, HICP inflation rebounded slightly, increasing to 0.3% in June from 0.1% in May 2020. This increase mainly reflects a less negative annual rate of change in energy prices, namely -9.4% in June instead of -11.9% in May. The less negative energy inflation was partly counterbalanced by a further decline in food price inflation to 3.1% in June from 3.4% in May and 3.6% in April.[6] It is important to note that HICP data are still subject to heightened measurement uncertainty due to challenges in price collection. While falling from 22% in May to 11% in June the share of imputed prices is still higher than usual, especially for services.[7]

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 June 2020 (flash estimate). 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 declined. HICP inflation excluding energy and food decreased to 0.8% in June compared to 0.9% in both May and April and 1.2% in February. This recent decline is mainly due to services inflation decreasing from 1.3% in May to 1.2% in June, while inflation for non-energy industrial goods remained unchanged at 0.2% in June. For other measures, data were only available up until May 2020. HICP inflation excluding energy, food, travel-related items and clothing remained unchanged at 1.1% in May compared to April, while the Persistent and Common Component of Inflation (PCCI) indicator decreased from 1.2% to 1.0% and the Supercore indicator[8] declined from 1.3% to 1.2%.

6 For more details on recent food price developments, see Box 7 in this issue of the Economic Bulletin.

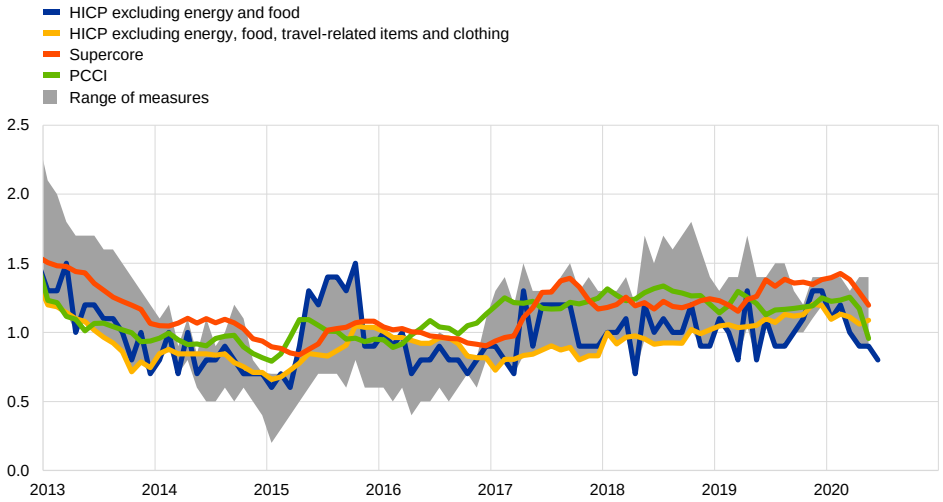
7 See Eurostat's HICP methodology for more information.

8 For further information on these measures of underlying inflation, see Boxes 2 and 3 in the article entitled "Measures of underlying inflation for the euro area", *Economic Bulletin*, Issue 4, ECB, 2018.

Chart 8

Measures of underlying inflation

(annual percentage changes)



Sources: Eurostat and ECB calculations.
Notes: The latest observations are for June 2020 for the HICP excluding energy and food (flash estimate) and for May 2020 for all other measures. The range of measures of underlying inflation consists of the following: HICP excluding energy; HICP excluding energy and unprocessed food; HICP excluding energy and food; HICP excluding energy, food, travel-related items and clothing; the 10% trimmed mean of the HICP; the 30% trimmed mean of the HICP; and the weighted median of the HICP. Growth rates for the HICP excluding energy and food 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).

Pipeline price pressures for HICP non-energy industrial goods were stable at the later stages of the supply chain but experienced a slight decrease at the earlier stages. Domestic producer price inflation for non-food consumer goods remained stable at 0.5% in May and the corresponding rate of inflation for imported non-food consumer goods also remained unchanged at 0.0% in May compared to April. At the earlier stages of the supply chain, inflation for domestic intermediate goods declined to -2.9% in May from -2.6% in April, while import price inflation for intermediate goods increased from -2.2% in April to -2.0% in May.

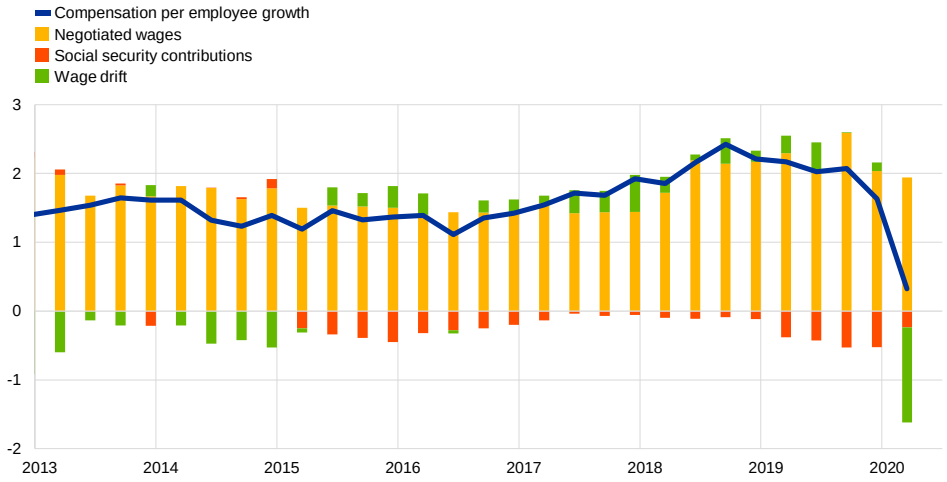
Growth in compensation per employee decreased sharply in the first quarter of 2020, essentially reflecting the fall in hours worked. The annual growth in compensation per employee fell to 0.3% during the first quarter of 2020 compared to 1.6% in the fourth quarter of 2019. The decline was broad-based across sectors and countries. The marked deceleration in euro area compensation per employee growth essentially reflects the significant reduction in hours worked per employee after the onset of the coronavirus (COVID-19) pandemic and the related lockdown and containment measures. The impact of short-time work and temporary lay-off schemes and the containment measures is also visible in the annual growth in compensation per hour, which rose to 3.1% in the first quarter of 2020 from 1.8% in the previous quarter, due to the significant reduction in actual hours worked per employee. These contrary developments reflect the impact of the short-time work and temporary lay-off schemes in buffering labour income. Negotiated wages grew by 2.0% in the first quarter of 2020, with the latest developments in compensation per employee implying

a strong downward impact in the wage drift.[9] Nevertheless, the deceleration in compensation per employee exaggerates the loss in labour income, as a number of countries record government support under transfers rather than compensation for statistical purposes.[10]

Chart 9

Contributions of components of compensation per employee

(annual percentage changes; percentage point contributions)



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

Over the review period (4 June to 15 July 2020), market-based indicators of longer-term inflation expectations have continued to increase slowly towards the levels prevailing as of late February, while survey-based indicators of inflation expectations declined slightly. The five-year forward inflation-linked swap rate five years ahead has continued to recover from the all-time low of 0.72% recorded on 23 March 2020, increasing to 1.12% on 15 July. Overall, its rise over the review period has been modest, amounting to 5 basis points. The option-implied (risk-neutral) probability of deflation occurring over the next five years declined considerably from the peak seen at the end of March 2020 to stand close to the levels prevailing in late February. The decline in the probability of deflation may to some extent also reflect the recent increase in the price of oil. Although an increase has been seen over the review period, especially in the very long term, the forward profile of market-based indicators of inflation expectations continues to indicate a prolonged period of low inflation. Reflecting the impact of the coronavirus (COVID-19) pandemic, mitigation measures and continuing uncertainties, the ECB Survey of Professional Forecasters (SPF) for the third quarter of 2020 shows a further downward revision of expectations for euro area inflation for the third quarter of 2020. Average point forecasts for annual HICP inflation now stand at 0.4% for 2020, 1.0% for 2021 and 1.3% for 2022, which represents a downward revision of 0.2 percentage points for 2021 and 0.1 percentage points for 2022. Although the change in unrounded terms was very slight, average

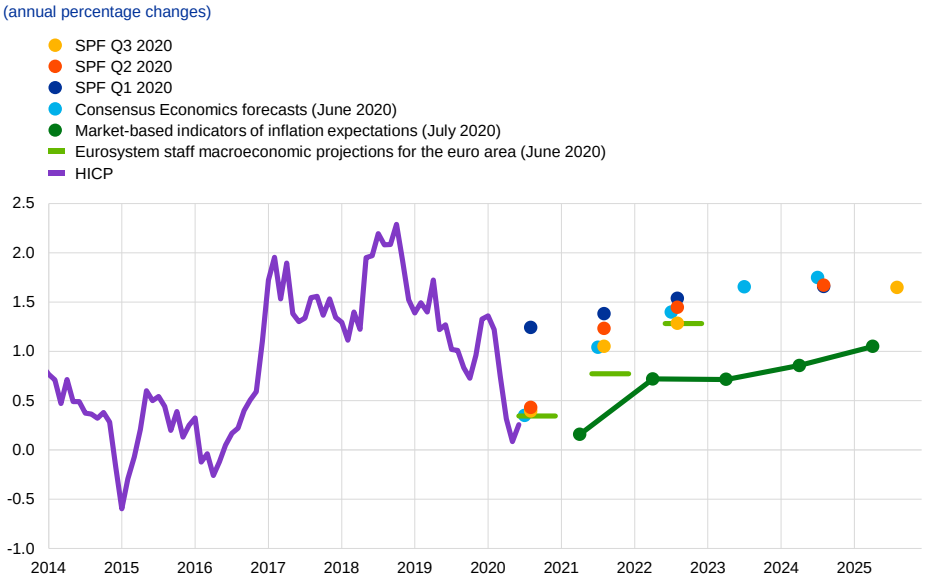
9 For more information on the wage drift, see the box entitled "Recent developments in the wage drift in the euro area", *Economic Bulletin*, Issue 8, ECB, 2018.

10 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.

long-term inflation expectations fell to a new historic low of 1.6%, from 1.7% in the last round.

Chart 10

Market and survey-based indicators of inflation expectations



Sources: ECB Survey of Professional Forecasters (SPF), Eurosystem staff macroeconomic projections for the euro area (June 2020) and Consensus Economics (8 June 2020).
Notes: The SPF for the third quarter of 2020 was conducted between 30 June and 6 July 2020. 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 15 July 2020.

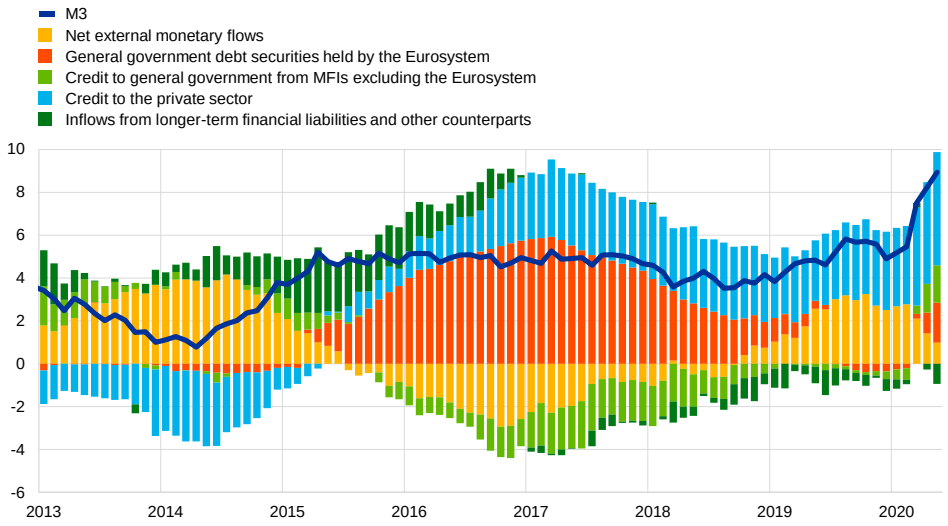
5 Money and credit

Broad money growth increased further in May. The broad monetary aggregate (M3) experienced another large inflow, signalling an ongoing strong build-up of liquidity amid uncertainty related to the pandemic crisis. The annual growth rate of M3 increased to 8.9% in May 2020, after 8.2% in April (see Chart 11). While the slowdown in economic growth dampened M3 growth, substantial support came from the extraordinary liquidity demand of firms and households. 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 from 11.9% in April to 12.5% in May 2020, which was mainly attributable to a further increase in the annual growth rates of overnight deposits. While for firms precautionary motives seem to remain an important driver of increases in their deposit holdings, in the case of households constraints still limiting spending possibilities might also have played a role. Other short-term deposits and marketable instruments made a small, positive contribution to annual M3 growth in May.

Chart 11

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. The latest observation is for May 2020.

In May 2020 domestic credit continued to be the main source of money creation. Credit to the private sector (see the blue portion of the bars in Chart 11) – the main driver of M3 growth from the counterpart perspective since 2018 – increased further, driven mainly by higher loans to non-financial corporations. In addition, the Eurosystem's net purchases of government securities under the ECB's asset purchase programme and the pandemic emergency purchase programme made a larger contribution to M3 growth in May than in previous months (see the red portion of

the bars in Chart 11).[11] Further support to M3 growth came from an increase in credit to general government from monetary financial institutions (MFIs) excluding the Eurosystem (see the light green portion of the bars in Chart 11). The contribution from annual net external monetary flows moderated somewhat (see the yellow portion of the bars in Chart 11), largely reflecting outflows in March and April and muted flows in May. Longer-term financial liabilities and other counterparts had a small, dampening impact on broad money growth.

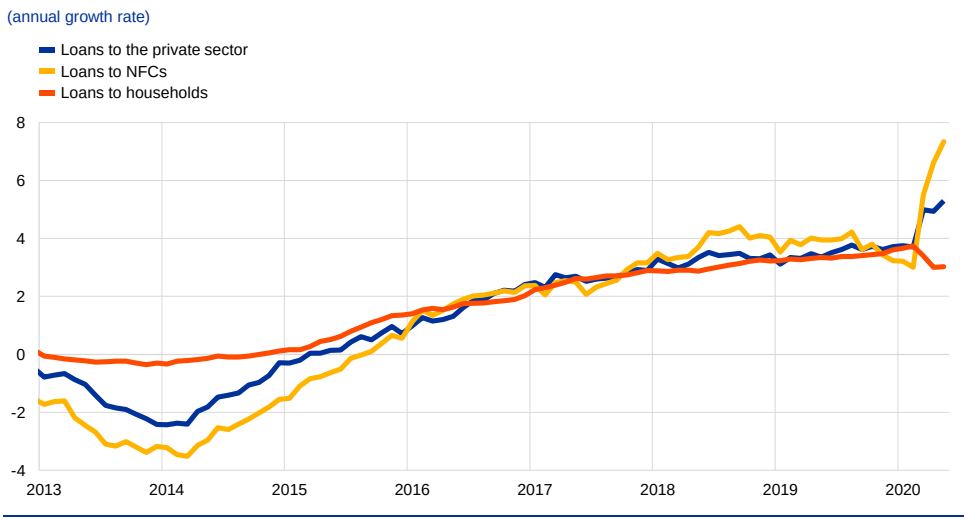
The dynamics of loans to firms strengthened further in May.[12] The annual growth rate of bank loans to the private sector increased to 5.3% in May 2020, after 4.9% in April (see Chart 12). This development was due to a further increase in the annual growth rate of loans to non-financial corporations (NFCs), from 6.6% in April 2020 to 7.3% in May. The growth in bank lending to firms was driven by firms' operational financing needs, in an environment of compressed cash flows. Firms' reliance on medium-term and long-term loans continued to increase at the expense of short-term loans, as evidence of a more protracted recovery became stronger. For the third quarter of 2020, banks' expectations as reported in the euro area bank lending survey, which normally lead actual loan growth, point to further increases in the demand for loans to firms, albeit at a slower pace. At the same time, the annual growth rate for loans to households stabilised at 3.0% in May 2020, following two consecutive months of decline, down from 3.4% in March. The diverging developments between firms and households in May are evidenced by the results of the bank lending survey for the demand and supply of loans. The ECB's policy measures, in particular the very favourable terms for targeted longer-term refinancing operations (TLTRO III), should encourage banks to extend loans to all private sector entities.

11 For further analysis of the effectiveness of the ECB's measures, see the box entitled "The impact of the ECB's monetary policy measures taken in response to the COVID-19 crisis" in this issue of the Economic Bulletin.

12 For further information on how the pandemic is affecting bank lending conditions and firms' financing needs from a sectoral perspective, see the box entitled "Drivers of firms' loan demand in the euro area – what has changed during the COVID-19 pandemic?" in this issue of the Economic Bulletin.

Chart 12

Loans to the private sector



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

The July 2020 euro area bank lending survey **shows a further strong upward impact of the coronavirus (COVID-19) pandemic on firms' loan demand, largely reflecting emergency liquidity needs.** In the second quarter of 2020, firms' demand for loans or their drawing of credit lines reached the highest net balance since the start of the survey in 2003. The higher demand from borrowers for inventories and working capital more than offset the negative contribution of demand for fixed investment. At the same time, credit standards for loans or credit lines to firms remained favourable.[13] While credit standards were supported by government loan guarantees in most countries and monetary policy measures, banks continued to indicate risk perceptions (related to the deterioration in the general economic outlook and the firm-specific situation) as the main factor contributing to the tightening of credit standards. Banks also reported lower risk tolerance than in the previous survey round. For the third quarter of 2020, banks expect credit standards for firms to tighten considerably, which is reported to be related to the expected ending of the state guarantee schemes in some large euro area countries. Turning to households, net demand for housing loans and for consumer credit decreased considerably in the second quarter, on account of weaker consumer confidence, declining housing market prospects and low spending possibilities during the strict lockdown period. Credit standards on household loans tightened significantly in the second quarter of 2020. This development was attributable to a deterioration of households' income and employment prospects owing to the COVID-19 pandemic. Banks expect the net tightening of credit standards to continue and, with an easing of lockdown restrictions, household loan demand to rebound in the third quarter of 2020.

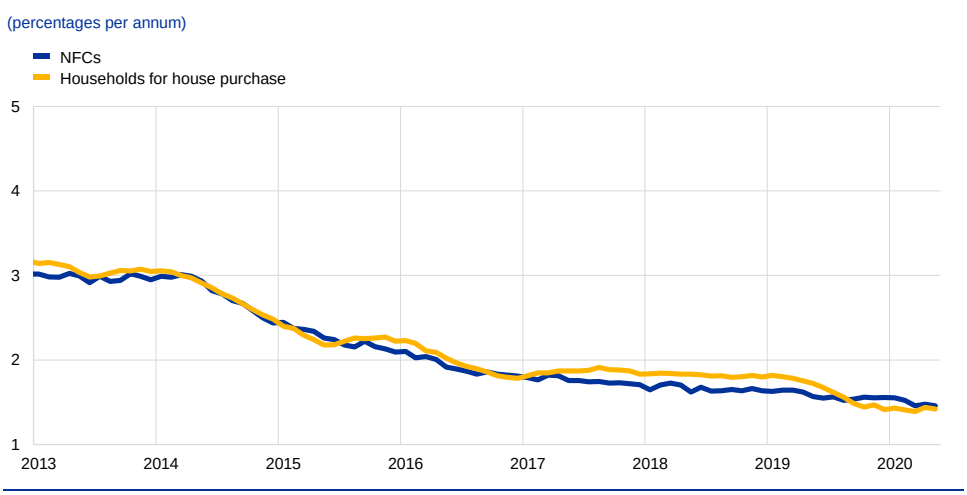
Very favourable lending rates continued to support euro area economic growth. Lending rates stabilised at their historical lows, broadly in line with developments in

[13] In the second quarter of 2020, the net percentage of banks reporting a tightening of credit standards (i.e. banks' internal guidelines or loan approval criteria) for loans or credit lines to firms was 1%, whereas the net tightening was 20% for loans to households for house purchase and 25% for consumer credit and other lending to households.

(longer-term) market reference rates. In May 2020 the composite bank lending rates for loans to NFCs and households remained broadly unchanged at 1.46% and 1.42% respectively (see Chart 13). While the severe economic impact of the pandemic on firms' revenues, households' employment prospects and overall borrower creditworthiness puts upward pressure on bank lending rates, the vigorous policy stimulus put in place in response to the pandemic-related crisis, in particular the ECB's monetary policy measures and government loan guarantees, exerts a dampening effect on lending rates for loans to firms and households.

Chart 13

Composite bank lending rates for NFCs and households



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 May 2020.

Boxes

1 US dollar funding tensions and central bank swap lines during the COVID-19 crisis

Prepared by Gianluca Persi

US dollar funding conditions started to become tense around the end of February 2020 when supply-demand imbalances led to rising funding premia amid volatile financial markets. This box focuses on these tensions in the foreign exchange (FX) swap market, where market participants lend funds in two currencies (e.g. the euro and the US dollar) to each other with the commitment to swap these funds back at a later date and at a pre-agreed exchange rate. The box provides evidence on the positive impact of the swap lines between central banks on the functioning of the EUR/USD FX swap market. These central bank swap lines enable the Eurosystem to provide US dollars to euro area banks.[14] The enhancement of these swap lines and the subsequent supply of US dollars via more frequent liquidity-providing operations not only helped banks to satisfy their immediate US dollar funding needs but also supported market activity, as banks participating in the US dollar operations became more willing to intermediate and passed funds borrowed from the Eurosystem on to other market participants. This was key to reducing tensions on US dollar funding conditions and restoring orderly market functioning in the EUR/USD FX swap market. The analysis is based on market transaction data gathered through the ECB Money Market and Statistical Reporting (MMSR)[15].

In the context of high market volatility and risk aversion due to the coronavirus (COVID-19) pandemic, the EUR/USD FX swap basis spread – an important indicator of US dollar funding costs for European banks – rose significantly. The FX swap basis spread is the difference between the average implied interest rate on borrowing US dollars in the EUR/USD FX swap market and the US dollar risk-free rate, which is represented by the US dollar overnight index swap (OIS) rate. Under normal market conditions, the FX swap basis spread is small[16] and only reflects temporary market frictions, such as those related to balance sheet reporting dates. However, from the end of February, European banks increased the premium that they

14 Swap lines between central banks allow a central bank (the ECB in this case) to receive foreign currency liquidity (US dollars) from the issuing central bank (the Federal Reserve System), which keeps the recipient currency (the euro) as collateral until maturity. In turn, the recipient central bank lends the foreign currency liquidity that it receives to domestic banks against eligible collateral. In line with the ECB's press release published on 17 June 2014, US dollar tender operations offered by the Eurosystem follow a fixed rate and full allotment procedure, i.e. the ECB satisfies all bids received from counterparties against eligible collateral. In 2011 the ECB, together with the Bank of England, the Bank of Canada, the Bank of Japan, the Federal Reserve, and the Swiss National Bank, established a network of swap lines enabling the participating central banks to obtain currency from each other. For more details, see the ECB's website and the Federal Reserve's website.

15 The MMSR dataset consists of transaction-by-transaction data of the 50 largest euro area banks, based on the value of balance sheet assets, including their FX swap activity. For more details, see the ECB's website.

16 For instance, FX swap basis spreads in maturities of less than three months were on average smaller than 0.2% in January and February 2020.

were willing to pay in order to secure US dollar funding in the EUR/USD FX swap market, which resulted in a wider FX swap basis spread. This reflected a large increase in the demand for US dollars as market participants hoarded cash in anticipation of potential liquidity outflows to the real economy. European banks and corporates that generally have significant business exposure to the US dollar were also affected. On 28 February the overnight FX swap basis spread reached 25 basis points, doubling in only three days. At the same time, the FX swap basis spread in the three-month maturity widened to 49 basis points on 3 March, which was 30 basis points above the average level recorded in February 2020 (see Chart A).

Despite the announcement of enhanced central bank swap lines on 15 March, the premium to borrow US dollars in the EUR/USD FX swap market initially continued to rise, especially in the short-term tenors. Given the deteriorating US dollar funding conditions worldwide, on 15 March the Federal Reserve System, the ECB, the Bank of Japan, the Bank of England, the Swiss National Bank and the Bank of Canada announced coordinated action to enhance the provision of US dollar liquidity through the standing swap line arrangements. [17] The ECB announced that the Eurosystem would offer 84-day operations from 18 March onwards, in addition to the existing 7-day operations. Moreover, the pricing of both operations was lowered by 25 basis points to a level equal to the US dollar OIS rate plus 25 basis points. The announcement itself brought little relief to US dollar funding premia in the EUR/USD FX swap market, particularly in short maturities. Accordingly, short-term US dollar borrowing rates started to grow exponentially and the overnight FX swap basis spread peaked at 644 basis points on 17 March, on the eve of the first US dollar operations under the enhanced swap line conditions.

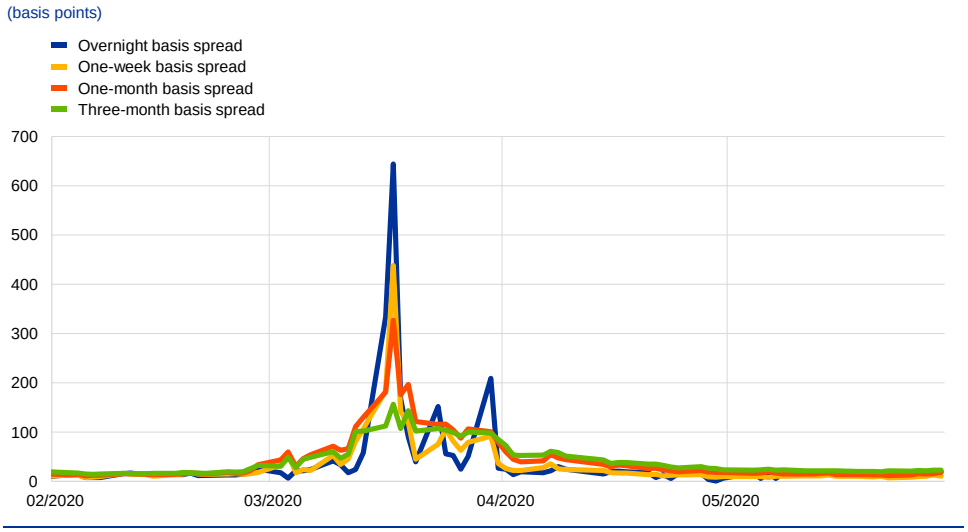
The allotment of the Eurosystem's first US dollar operations under more favourable pricing conditions as of 18 March produced significant relief for short-term US dollar funding conditions in the EUR/USD FX swap market, while longer maturities were affected less. On 18 March, when the 84-day US dollar operation was offered for the first time since the spring of 2014, the ECB allotted USD 76 billion to 44 bidders in the 84-day operation and USD 36 billion to 22 bidders in the 7-day operation. The total allotment of USD 112 billion on 18 March was the highest in a single day since 2008. Both operations were substantially cheaper than comparable market prices and, according to market feedback, the significant take-up and large number of participating banks helped to remove the possible stigma attached to banks' participation in these operations. After the results of the US dollar operations were announced, MMSR reporting agents reported significantly lower US dollar funding premia for short-term transactions, with the overnight FX swap basis spread falling by 476 basis points to 168 basis points. In contrast, the three-month FX swap basis spread temporarily tightened, but to a lesser extent, from 157 basis points to 107 basis points, before rising again to 144 basis points on 19 March. Owing to the highly uncertain market outlook related to potential abrupt US dollar outflows, banks initially hoarded US dollar liquidity obtained via the Eurosystem's US dollar facility. Only a portion of this liquidity was passed through to the market. This was mostly in shorter tenors, which limited the relief on longer-term US dollar funding premia.

[17] For more details, see the ECB's press release published on 15 March 2020.

It was only when 7-day US dollar operations were offered on a daily basis as of 23 March[18] that conditions started to improve sustainably across all tenors, as uncertainty about US dollar availability abated. Market participants considered the provision of daily operations to be useful as the daily frequency reduced the uncertainty around the availability of US dollars to accommodate daily funding needs. In addition to the introduction of daily 7-day US dollar operations, the Eurosystem continued to provide weekly operations with a longer maturity of 84 days, which ensured that US dollar funds were available to euro area banks over a longer horizon. These two measures combined supported the gradual pass-through of liquidity obtained in US dollar operations to the market and proved effective in lowering US dollar funding premia.[19]

Chart A

Spread between the US dollar borrowing rate in the EUR/USD FX swap market and the US dollar risk-free rate



Sources: ECB, MMSR, Bloomberg.
Notes: The effective federal funds rate is used as a US dollar risk-free rate for the overnight maturity and US dollar OIS rates are used for the other tenors. The US dollar borrowing rate is the rate paid by MMSR reporting agents to receive US dollars in the EUR/USD FX swap market at different maturities. The overnight US dollar borrowing rate in the EUR/USD FX swap market is based on tomorrow/next day transactions.

US dollar funding costs in the EUR/USD FX swap market remained, however, at elevated levels in the run-up to the March quarter-end. As banks need to report certain regulatory ratios at the quarter-end, they are typically reluctant to expand their balance sheets for intermediation activity that covers the quarter-end. The March quarter-end is also the fiscal year-end for banks in jurisdictions such as Japan, where tax is determined by the size of the balance sheet, therefore the relief from the US dollar operations was reduced around the quarter-end period. As a result, funding conditions in EUR/USD FX swap markets continued to be volatile in the run-up to the

[18] On 20 March 2020 the Federal Reserve, the ECB, the Bank of Japan, the Bank of England, the Swiss National Bank and the Bank of Canada announced an increase in the frequency of the 7-day maturity operations from weekly to daily. These daily operations commenced on 23 March 2020 and were intended to further enhance the provision of liquidity via the standing US dollar liquidity swap line arrangements. For more details, see the ECB's press release published on 20 March 2020.

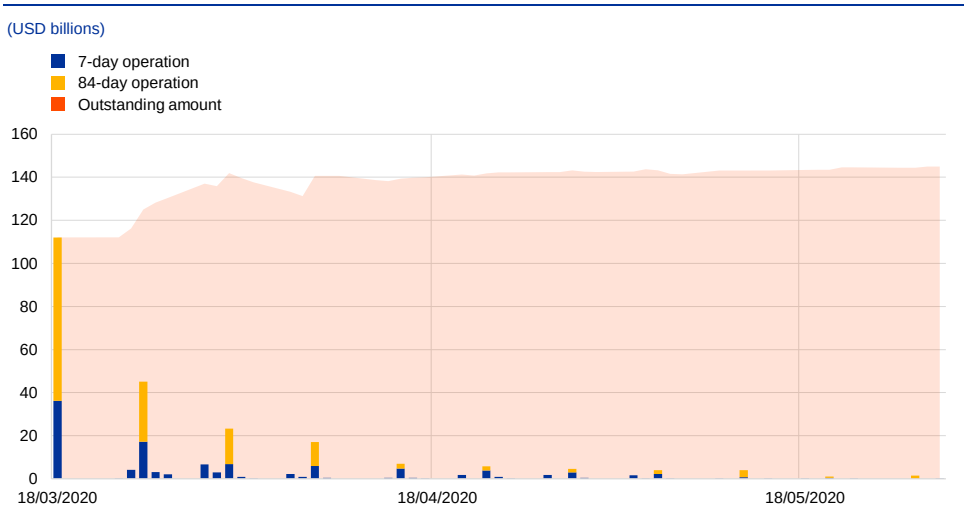
[19] The effect of the provision of daily operations and of long-term US dollar tenders on US dollar funding conditions for euro area banks was also examined in the ECB's Monthly Bulletin published in August 2014.

quarter-end, in both short and long maturities. The FX swap basis spread in the overnight maturity remained higher than before the COVID-19 crisis and spiked at the March 2020 quarter-end. It reached 209 basis points on 30 March, which was 88 basis points higher than the level recorded at the March 2019 quarter-end. Meanwhile, the three-month FX swap basis spread averaged 95 basis points in the last week of March, about five times as large as the average basis spread recorded in February 2020.

After the quarter-end, the premium for borrowing US dollars in the EUR/USD FX swap market fell further, US dollar funding conditions started to normalise and the Eurosystem's US dollar operations gradually lost their appeal, leading to a drop in participation in these operations. FX swap basis spreads gradually normalised throughout April, amid improving market sentiment and abating concerns over the availability of US dollar liquidity. Short-term US dollar funding premia (between one-day and one-week tenors) declined rapidly after the quarter-end and returned to almost pre-pandemic levels by mid-April. Longer-term FX swap basis spreads took longer to normalise but also stabilised at around pre-crisis levels by the end of April. In line with these developments and what was observed in other jurisdictions, the Eurosystem's US dollar operations started to lose their economic appeal in April. The use of the Eurosystem's US dollar facility therefore fell considerably over time. In the second half of May, the ECB allotted less than USD 3 billion overall, which was USD 173 billion less than during the second half of March (see Chart B). On 21 April the ECB saw no bids for the first time since the start of the enhanced US dollar operations. Operations with no allotment subsequently became more common, reflecting the normalisation of US dollar funding conditions in the EUR/USD FX swap market.

Chart B

Daily allotment and outstanding amounts in the Eurosystem's US dollar operations



Source: ECB.

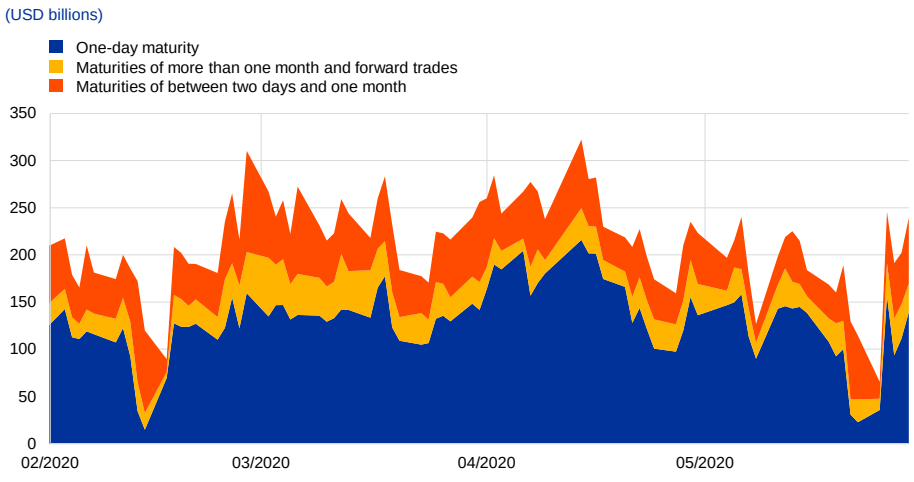
Market turnover in the EUR/USD FX swap market remained solid throughout the crisis, with market participants initially increasing activity in longer tenors in anticipation of a tightening in US dollar funding conditions. MMSR transaction

data show a significant increase in turnover for maturities of more than one month in the weeks preceding the peak of the crisis. This suggests that, as US dollar funding conditions started to deteriorate, market participants attempted to secure US dollar funding at prevalent prices in anticipation of further market tightening. Volumes with maturities of more than one month, including forward transactions, remained elevated until 19 March,[20] which was the settlement date for the first enhanced US dollar operation. Driven by higher longer-term trading volumes, total daily market turnover between 25 February and 19 March increased by more than one-third on average, compared with the rest of February 2020, to around USD 250 billion (see Chart C).

Central bank US dollar operations supported the functioning of the EUR/USD FX swap market as the US dollar funding borrowed from the Eurosystem found its way to the market. However, a general shift towards shorter maturities was observed. Overall, activity in the EUR/USD FX swap market remained elevated following the launch of the enhanced US dollar provision by the central banks and increased further after the March quarter-end. This indicates that funds borrowed by banks in the Eurosystem's operations were passed on to other market participants, helping to satisfy additional crisis-related demand for US dollars. The increase in activity in the EUR/USD FX swap market in April was primarily observed in short-term maturities, reflecting the high levels of risk aversion and market participants' preference to lend surpluses in the market primarily in short tenors. In particular, the volume of one-day transactions increased by more than 50% after the March quarter-end, from a daily average of USD 118 billion in the first quarter of 2020 to a daily average of USD 184 billion in the period between 1 and 20 April. Finally, volumes and maturity composition returned to pre-crisis levels at the end of April.

Chart C

EUR/USD FX swap daily transaction volume by maturity



Sources: ECB, MMSR.
Notes: The daily transaction volume takes into account both lending and borrowing trades reported by MMSR reporting agents in the EUR/USD FX swap market segment.

[20] Between 25 February and 19 March, MMSR reporting agents reported an average daily turnover of USD 45 billion in maturities of more than one month, including forward transactions. This was 50% larger than the average daily trading volume recorded in January and February 2020.

Banks participating in the Eurosystem's US dollar operations passed the funds on to other market participants, thereby providing relief to US dollar funding conditions in the EUR/USD FX swap market, especially in short maturities. In particular, MMSR transaction data show that a large group of euro area banks participating in the Eurosystem's US dollar operations increased their daily US dollar short-term lending volumes significantly. In particular, these lending volumes grew on average by USD 34 billion between 1 and 20 April, amid declining US dollar funding premia. As they are among the largest banks in Europe, MMSR reporting agents usually trade with a large number of counterparties, which means that the US dollar funds are likely to have been distributed widely.[21]

The supply of US dollars via Eurosystem operations allowed large European banks to restore their US dollar intermediation role, which had been disrupted by the crisis in March. MMSR reporting agents are important intermediators in the US dollar market and provide US dollar liquidity to various other market counterparties. Taken together, MMSR reporting agents are usually net lenders of US dollars in the EUR/USD FX swap market. This means that they have a surplus of US dollars which, in normal times, is invested in the EUR/USD FX swap market. However, some reporting agents saw their net lending position – measured by the difference between the volumes of US dollars lent and borrowed by them in the EUR/USD FX swap market – deteriorate as the crisis intensified, and the total net US dollar surplus dropped from USD 153 billion to USD 82 billion (see Chart D). Moreover, the MMSR reporting agents that took part in the Eurosystem's US dollar operations accounted for around three-quarters of total take-up in these operations.[22] Overall, these reporting agents saw a very large decline in their net lending position and even became net borrowers of US dollars in the EUR/USD FX swap market in the run-up to the enhanced US dollar provision, while the net lending position of the other reporting agents decreased only marginally. After these reporting agents took part in the Eurosystem's US dollar operations, the total net lending position in the EUR/USD FX swap market started to normalise and reached USD 161 billion on 21 May, which was USD 79 billion more than during the peak of the crisis on 17 March. This suggests that the US dollar operations were effective in providing relief to the market and in offsetting the effect of the shocks registered during the first half of March, as market functioning gradually recovered and banks became more willing to intermediate. The swap lines between central banks therefore helped to mitigate the effects of the strains in the US dollar funding market. This supported the supply of credit from banks to households and businesses, both domestically and abroad.

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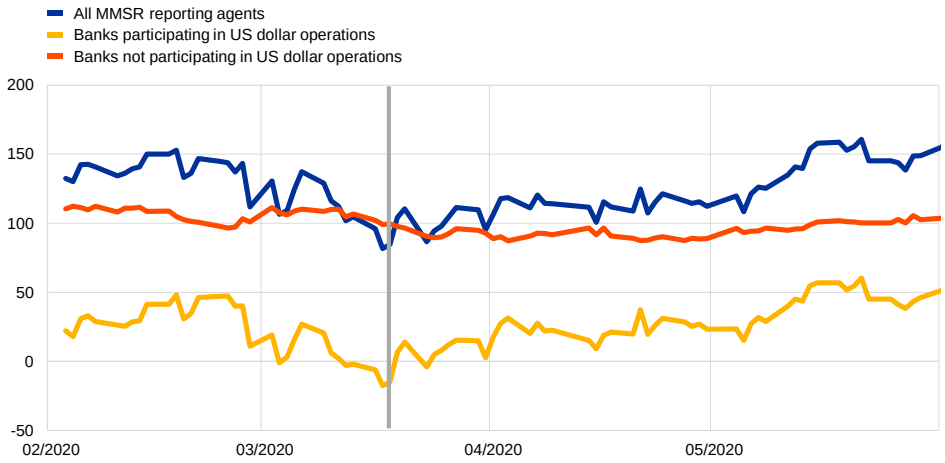
21 Between 1 September 2019 and 17 March 2020, MMSR reporting agents provided US dollar funding to, on average, 578 different counterparties per day in the EUR/USD FX swap market. Between 18 March (when the enhanced swap lines were launched) and 30 April, the average daily number of counterparties borrowing US dollars from MMSR reporting agents grew to 648, representing an increase of roughly 12%.

22 The analysis was conducted on results of the Eurosystem's US dollar operations that were carried out between 18 March and 7 April 2020. The group of MMSR reporting agents considered to be "participating" banks are those that took part in the Eurosystem's US dollar operations during the same period. Reporting agents with no or negligible participation were included in the "not participating" group.

Chart D

Net US dollar lending position of MMSR reporting agents in the EUR/USD FX swap market

(USD billions)



Sources: ECB, MMSR.
Notes: Net position of lending US dollars against euro. The figures are expressed in US dollar equivalent by multiplying the net euro lending position by the EUR/USD spot exchange rate of the day. A negative value indicates a net US dollar borrowing position. The grey line represents the start of the enhanced US dollar operations on 18 March. The participating banks are those MMSR reporting agents that took part in the US dollar operations between 18 March and 7 April 2020.

2 The great trade collapse of 2020 and the amplification role of global value chains

Prepared by Simone Cigna and Lucia Quaglietti

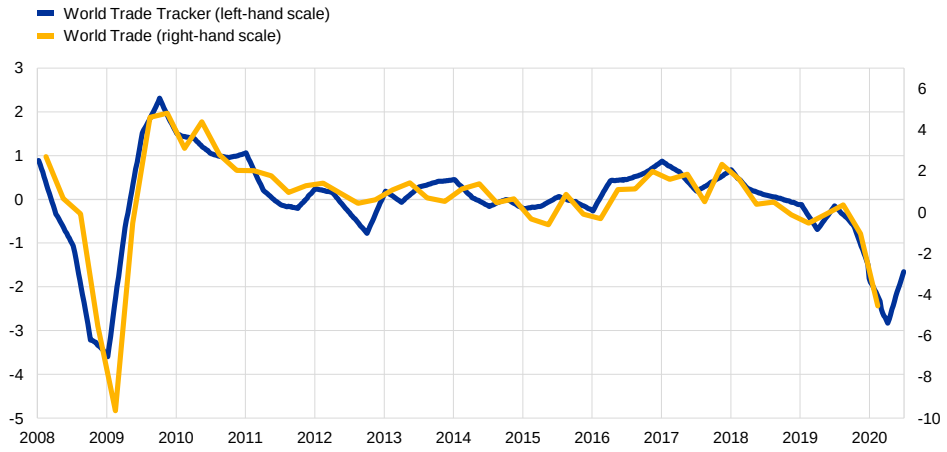
This box assesses the economic effects of the coronavirus (COVID-19) pandemic as transmitted through global value chains (GVCs). The world economy is facing an unprecedented shock and, as the impact of the pandemic unfolds, world trade will be particularly hard hit. This box analyses the role of GVCs in the pandemic with a view to quantifying the ensuing effects on world trade. Our findings indicate that GVCs could significantly amplify the decline in world trade.

World trade has been falling sharply on the back of the COVID-19 pandemic, with value chains hit globally. National accounts data for key economies point to a sharp fall in both exports and imports in the first quarter of 2020. A new weekly trade tracker based on trade indicators available on a timely basis suggests a larger contraction in the second quarter of 2020 (see Chart A), although some signs of a recovery have emerged recently. In the June 2020 Eurosystem staff macroeconomic projections, world real imports (excluding the euro area) are expected to decline at an unprecedented pace of around 13% in 2020 before returning to positive rates of growth of 8.0% and 4.3% in 2021 and 2022 respectively. The decline also stems from disruptions in GVCs, among other factors. COVID-19 has struck value chains in Asia, Europe and the Americas, raising the risk of a domino effect with feedback loops that could amplify the collapse in global trade. The sharp fall in Chinese exports of intermediate goods across most destinations in the first quarter of 2020 (see Chart B) suggests that GVCs have already been hit widely as a result of the lockdown in China.

Chart A

Weekly trade tracker

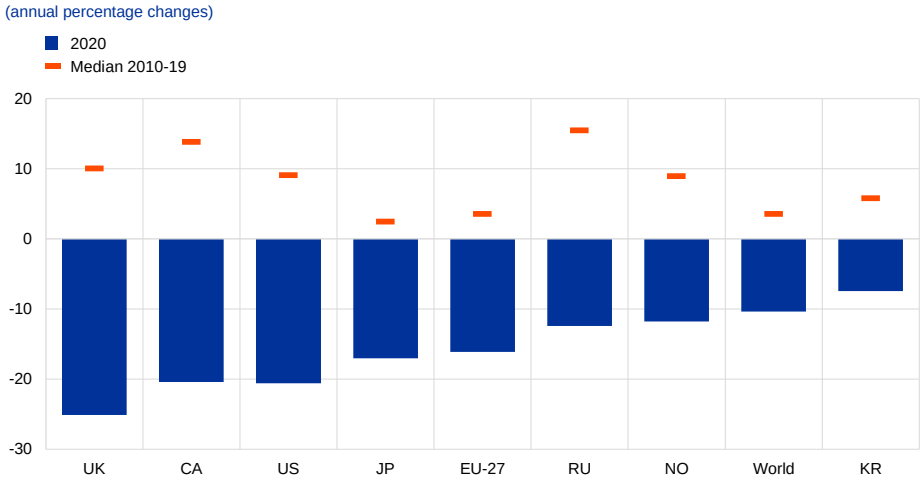
(left-hand scale: standard deviations from mean; right-hand scale: quarterly percentage changes)



Sources: Haver and ECB calculations.
Notes: The tracker is based on a regression of world imports (excluding the euro area) on a principal component of a small panel of weekly indicators of trade (including lags), some monthly indicators, a constant and lags of the dependent variable. The indicators featuring in the weekly principal component were chosen on the basis of their correlation with world trade, availability and timeliness.

Chart B

Chinese exports of intermediate goods



Sources: Trade data monitor and ECB staff calculations.
Notes: Data are nominal. The chart includes data from January to March 2020. Countries shown are the United Kingdom (UK), Canada (CA), the United States (US), Japan (JP), the 27 European Union Member States (EU-27), Russia (RU), Norway (NO) and South Korea (KR).

Supply chain linkages play an important role in the transmission of shocks across countries. Although the expansion of GVCs has stalled since the 2008 global financial crisis, trade in intermediate goods remains important, accounting for more than 40% of world trade. This has significant implications for the relationship between demand, trade, and production. Traditional models assume that a country's imports depend on its domestic demand. However, in a world characterised by complex international supply chains, changes in demand in third countries are also an important determinant. On average, more than 20% of world imports serve as inputs in domestic production processes and are embedded into goods which are subsequently re-exported. The complex network of supply linkages is also an important factor in the transmission of shocks across countries. Demand shocks in a particular country may be passed upstream through the global production network to input suppliers, with the initial shock being magnified by the "bullwhip effect",[23] while supply disruptions can, in turn, be transmitted downstream.

The propagation and amplification effect of demand shocks associated with the pandemic can be gauged through global input-output tables. To assess the role of GVCs in the pandemic, two quantitative assessments were carried out. A first, static, exercise offers a first-order approximation of how demand shocks associated with the outbreak can propagate through a GVC, magnifying the impact on trade and production abroad. Input-output data from the Organisation for Economic Co-operation and Development (OECD) for 20 major advanced and emerging economies were employed to trace sectoral output losses triggered by the pandemic through the global production structure and quantitatively assess the propagation of

[23] The "bullwhip effect" relates to a situation in which a shock triggers disruption to demand for parts and components which increases the further upstream a firm is located in the supply chain. Firms are induced to adjust their inventories along the supply chain to meet new expected levels of demand. For empirical evidence of this effect, see for example Alessandria, G., Kaboski, J.P., and Midrigan, V., "US Trade and Inventory Dynamics", *American Economic Review*, Vol. 101, No 3, May 2011.

demand shocks through GVCs.[24] Spillovers were quantified separately for imports and exports through two channels: (a) "direct" effects that materialise as a result of traditional trade, i.e. bilateral trade linkages; and (b) "indirect" effects that stem from demand fluctuations in third countries and concern intermediate goods crossing at least two borders.[25]

GVC linkages could significantly amplify the decline in global trade. Chart C presents estimates of amplification effects generated through supply chain linkages as percentages of the fall in trade occurring through the direct channel. For the United States, for instance, GVC linkages could magnify the decline in imports and exports by 8% and 20% respectively. For China, Japan and the United Kingdom, spillovers could be larger, especially for imports. For the world economy in the short term, GVCs could amplify the decline in imports and exports occurring through direct linkages (i.e. traditional trade) by around 25%. As major supply chain hubs, South Korea, Germany and China account for 20% of the total estimated decline in world exports arising from indirect linkages. However, as the global economy recovers in the coming quarters, GVC linkages could boost world trade. In the June 2020 Eurosystem staff macroeconomic projections, global trade is expected to rebound faster than global activity.

GVC spillovers are also likely to affect activity, with the actual impact depending on the relative positions of individual countries in GVCs. For example, in countries which are positioned downstream in the value chain, like Mexico, imports could fall more than exports (see Chart C), thereby providing a small net boost to activity. This reflects the fact that Mexico's production is particularly dependent on imported inputs, which are then re-exported as finished products. In contrast, in countries positioned upstream in GVCs like the United Kingdom, there is likely to be a negative impact on activity as exports decline more than imports.

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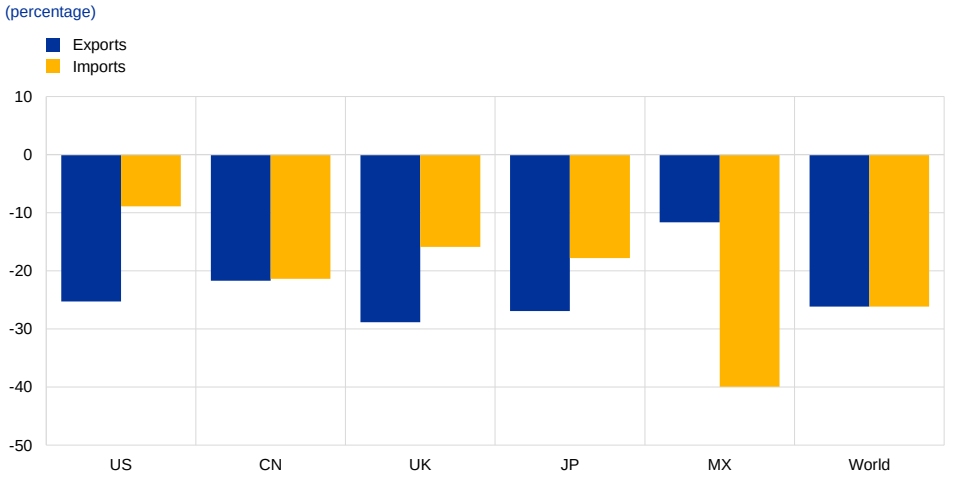
24 We traced sectoral losses (estimated by ECB staff) for a number of advanced and emerging economies, which could occur on the back of the pandemic, through the global production structure. To do so, we relied on the OECD world input-output data. As sectors differ in terms of the degree of their integration into cross-border production chains, the overall response of world trade depends on the sectoral composition of losses across countries. We computed partial elasticities which, for each country and sector, translate domestic and foreign demand shocks associated with the pandemic into proportional changes in output and imports and exports of final and intermediate goods to and from all countries and sectors. Equipped with these elasticities, we then computed losses associated with the pandemic for imports and exports separately. The analysis focused on the amplification of demand shocks associated with the pandemic. In cases where domestic and foreign sectors experience lockdowns at the same time, there is less scope for amplification of supply disruptions by GVCs. For further information on the methodology, see Bems, R., Johnson, R., and Yi, K.-M., "Demand Spillovers and the Collapse of Trade in the Global Recession", *IMF Economic Review*, Issue 58, No 2, 2010.

25 This is in line with the definition of GVCs by Borin, A., and Mancini, M., "Follow the Value Added: Tracking Bilateral Relations in Global Value Chains", November 2017.

Chart C

Shortfalls generated on the back of GVC spillovers



Sources: OECD and ECB staff calculations.
Notes: The chart shows the additional shortfalls that could be generated for each country as a result of GVC-related spillovers. GVC spillovers are expressed as a percentage of losses estimated to occur through traditional trade (i.e. imports and exports of: (1) final goods, and (2) intermediate goods used in production for domestic absorption). The chart refers to the short-term effects of GVC spillovers. Countries shown are the United States (US), China (CN), the United Kingdom (UK), Japan (JP) and Mexico (MX).

A second quantitative exercise indicates that GVCs had become impaired already in the first quarter of 2020. Specifically, the analysis focused on whether exports of countries upstream in the Chinese value chain were hit on the back of COVID-19-related lockdowns and demand shocks in February 2020 in China. Our estimates are based on a monthly panel model covering 37 countries and 22 industries. For each industry and country, changes in total exports of intermediate goods are regressed on a variable obtained by multiplying a dummy variable, which is given a value of 1 in February 2020 (i.e. a proxy for the COVID-19 shock in China), and a measure of upstreamness to China computed for each individual industry-country pair.[26] The analysis suggests that countries upstream to China in the value chain have been hit the hardest, with exports falling by some 3.8% incrementally at each stage, as one moves up the supply chain. The limited period of time available over which to observe the postulated effect requires a cautious interpretation of the results. However, they confirm the presence of amplification caused by GVCs. In addition, a breakdown of the results by region suggests that the decline in Chinese demand has so far been borne mostly by its trading partners in the Asian value chain.

The COVID-19 outbreak has exposed the interdependence of countries in terms of the supply of inputs and final goods. The analysis in this box suggests that GVC spillovers could magnify the decline in world trade, adding some 25% to the effects which could occur on the back of bilateral linkages. Econometric analysis corroborates this, suggesting that China's upstream suppliers, particularly those in the Asian value

[26] Our index of upstreamness is obtained by measuring the number of intermediate production stages for each industry-country export prior to absorption in China. In particular, the index is constructed by assigning a value of 1 to the share of output of a given country/industry directly sold to final consumers in China, a value of 2 to the share of output sold to consumers in China after being used as an intermediate good by one other industry, and so on. The index is calculated using nominal data provided by the input-output tables from the 2015 edition of the OECD Trade in Value Added database. The results are therefore likely to be sensitive to price effects. See Ferrari, A., "Global Value Chains and the Business Cycle", February 2019.

chain, might have been hit hardest by the unfolding of the pandemic in China. The disruption related to COVID-19 may leave a longer-term legacy for global supply chains, leading to a review of production processes and substantial reshoring.

3 The impact of the ECB's monetary policy measures taken in response to the COVID-19 crisis

Prepared by John Hutchinson and Simon Mee

Since March 2020 the severity of the economic and financial implications stemming from the coronavirus (COVID-19) crisis has become increasingly apparent. The ECB has responded with a decisive policy package that is designed to be targeted and proportionate to the unprecedented scale of the crisis as well as temporary, as the emergency and its aftermath are expected to be reabsorbed over time. These measures have supported liquidity and funding conditions in the euro area economy, averted the most adverse feedback loops between the real economy and financial markets, and shored up confidence. They are also expected to significantly contribute to ensuring that inflation in the euro area moves towards levels that are below, but close, to 2% in a sustained manner.

The impact of policy measures on financial conditions

This box examines the impact of the ECB's response to the crisis, concentrating on asset purchases and the targeted longer-term refinancing operations (TLTRO III). The ECB's monetary policy response has focused on addressing three key issues: (i) market stabilisation, which is a precondition for avoiding fragmentation and safeguarding the monetary policy transmission mechanism across the euro area; (ii) providing ample central bank liquidity to support credit provision to the real economy; and (iii) ensuring that the overall stance is sufficiently accommodative.[27]

As the severity of the pandemic crisis emerged, investors rebalanced their portfolios, thereby causing liquidity in several securities markets to dry up and increasing the demand for safe assets. The sharp decline in stock and bond market indices, combined with the increase in market-based financing costs for firms, contributed to a marked tightening of financial conditions between mid-February and mid-March 2020. In this environment, there was a very tangible risk of adverse liquidity spirals and an overshooting of asset price corrections in many markets, which would endanger financial stability and impede the transmission of monetary policy.

In a monetary union, increased risk perception can lead to flight-to-safety dynamics in the form of reallocations across sovereign bond markets. As sovereign yields are often the benchmark in pricing assets and setting lending rates,

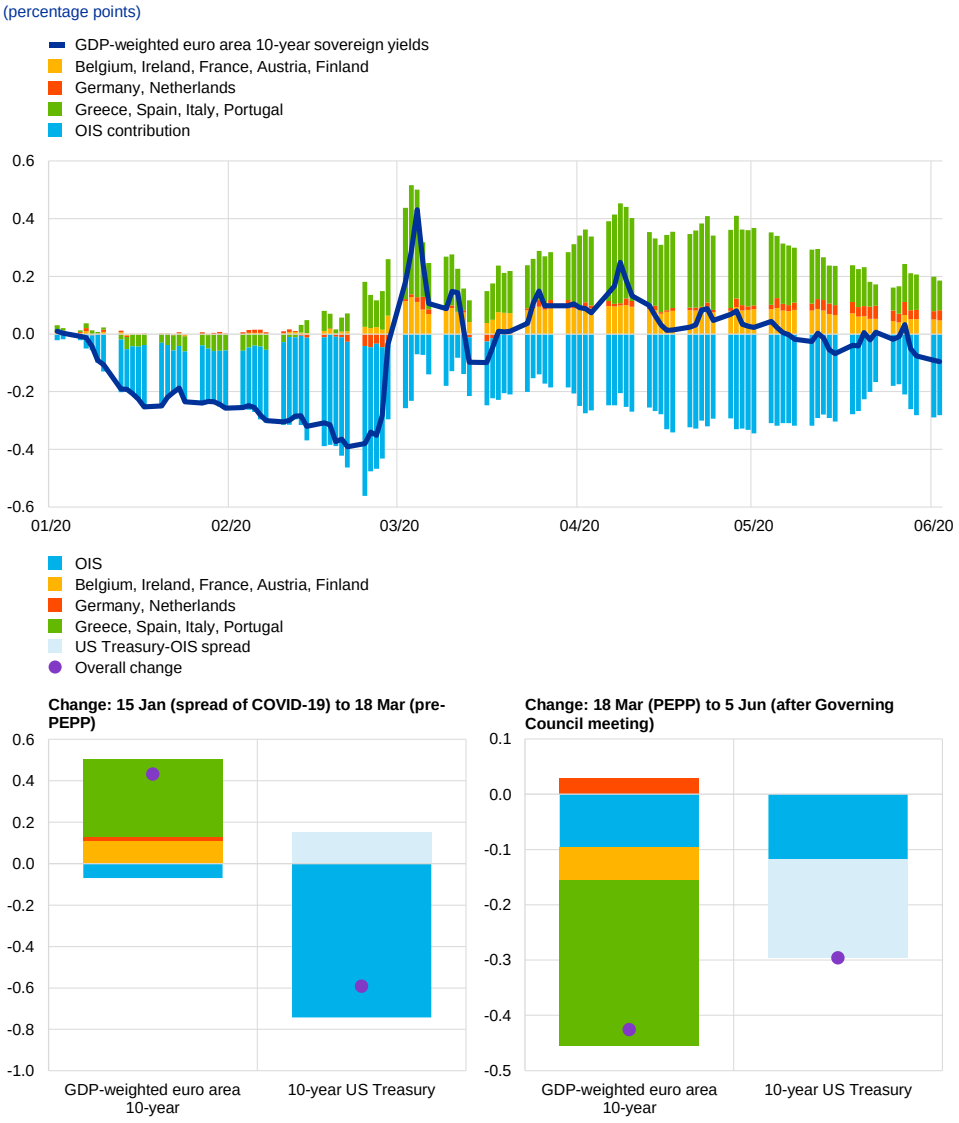
[27] For further analysis, see Lane, P.R.: (i) "Pandemic central banking: the monetary stance, market stabilisation and liquidity", speech at the Institute for Monetary and Financial Stability Policy Webinar, 19 May 2020; (ii) "The ECB's monetary policy response to the pandemic: liquidity, stabilisation and supporting the recovery", speech at the Financial Center Breakfast Webinar, organised by Frankfurt Main Finance, 24 June 2020; (iii) "Expanding the pandemic emergency purchase programme", *The ECB Blog,* European Central Bank, 5 June 2020; and (iv) "The monetary response to the pandemic emergency", *The ECB Blog*, European Central Bank, 1 May 2020. See also Schnabel, I.: (i) "The ECB's monetary policy during the coronavirus crisis – necessary, suitable and proportionate", speech at the Petersberger Sommerdialog, 27 June 2020; and (ii) "The ECB's policy in the COVID-19 crisis – a medium-term perspective", speech at the online seminar hosted by the Florence School of Banking & Finance, 10 June 2020.

non-fundamental volatility in sovereign spreads impairs the transmission of monetary policy across the euro area.

The announcement of the pandemic emergency purchase programme (PEPP) in March, with its inherent flexibility, has acted as a powerful market-stabilising force. Policy measures aimed at releasing the balance sheet constraints of the private sector are particularly effective in periods of heightened market stress. In this vein, the announcement of the PEPP halted the tightening in financial conditions which had prevailed. The crucial transmission of changes in the overnight index swap (OIS) rates to the euro area GDP-weighted sovereign yield curve, which up to March 2020 had been closely linked and then became increasingly impeded by the COVID-19 crisis, was restored (see Chart A). In fact, following the PEPP announcement, the decline in fragmentation and the associated fall in the GDP-weighted sovereign yield were significant.

Chart A

Drivers of euro area and US sovereign yields



Source: ECB calculations.
Note: "10-year US Treasury" stands for "10-year US Treasury yield".

At the same time, the provision of ample central bank liquidity to help support the credit flow to the real economy has also been central to the ECB's monetary policy response to the COVID-19 crisis. This is particularly relevant in the euro area, where banks play a key role in financial intermediation. The provision of central bank liquidity comes in the form of targeted and non-targeted programmes. With respect to the former, the recalibration of TLTRO III in April 2020 included a considerably more favourable interest rate on TLTRO III operations during the period from June 2020 to June 2021. This followed the March 2020 decision to increase the

maximum amount that counterparties are entitled to borrow in TLTRO III operations.[28] In line with this, banks indicated in the April 2020 euro area bank lending survey that TLTRO III is having a net easing impact on the terms and conditions offered to borrowers, and a positive net impact on their lending volumes, particularly their expected lending volumes over the next six months. The changes to the terms of TLTRO III were followed by a large expansion in the central bank funding of banks. In the June 2020 operation of TLTRO III, banks bid for a total of €1,308 billion in TLTRO funds, which is the largest amount allotted to date under any single lending operation. In relation to non-targeted programmes, the ECB announced, in March 2020, additional longer-term refinancing operations (LTROs) to provide immediate liquidity support to the euro area financial system and, in April 2020, a series of non-targeted pandemic emergency longer-term refinancing operations (PELTROs). The PELTROs serve as a backstop by helping to ensure sufficient liquidity and smooth money market conditions in response to the crisis.[29]

Once market stabilisation and maintaining credit provision to the real economy were attained, and the ramifications of the pandemic crisis on the baseline macroeconomic outlook became clearer, the PEPP recalibration in June 2020 was able to further ease the general monetary policy stance. In line with the PEPP's dual role of rekindling the initial stages of the transmission of monetary policy and easing the general monetary policy stance, and in response to the pandemic-related downward revision to inflation over the projection horizon, the recalibration of the PEPP in June 2020 has further eased the general monetary policy stance to make it commensurate to the outlook for medium-term inflation. By extracting the duration risk held by investors through its purchases, the ECB reinforces the impact of its negative interest rate policy and forward guidance on rates by pushing down the medium and long end of the yield curve.[30]

Taken together, the PEPP decisions from March and June 2020 as well as the scaling-up of the asset purchase programme (APP) decided in March 2020 are estimated to have reduced the euro area GDP-weighted ten-year sovereign yield by almost 45 basis points.[31] However, such estimates are likely to be on the conservative side as they are based on estimates of the elasticities of sovereign yields to purchases derived from the public sector purchase programme (PSPP). Evidence from event studies, which examine the financial market reaction to the PEPP announcements, suggests a higher PEPP elasticity compared with the PSPP

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28 In particular, the interest rate on TLTRO III operations during the period from June 2020 to June 2021 is 50 basis points below the average interest rate on the Eurosystem's main refinancing operations prevailing over the same period. For counterparties whose eligible net lending reaches the lending performance threshold, the interest rate over the period from June 2020 to June 2021 can be as low as 50 basis points below the average deposit facility rate prevailing over the same period. The borrowing allowance is 50% of the stock of eligible loans.

29 The PELTROs consist of seven refinancing operations commencing on 20 May 2020 and maturing in a staggered sequence between July and September 2021. They are carried out as fixed rate tender procedures with full allotment, with an interest rate that is 25 basis points below the average rate on the main refinancing operations prevailing over the life of each PELTRO.

30 For a more extensive discussion of duration risk, see Lane, P.R., "The yield curve and monetary policy", speech at the Public Lecture for the Centre for Finance and the Department of Economics, University College London, 25 November 2019.

31 The assessment considers the €750 billion overall envelope of the PEPP announced in March, the increase of the envelope by €600 billion announced in June, and the additional €120 billion temporary envelope under the APP until the end of 2020 announced in March.

elasticity, thereby indicating some possible underestimation of the yield impact. The higher elasticity might reflect the flexibility embedded in the PEPP's design, which makes it an effective tool in an environment of market stress as it can temporarily allocate purchases to those market segments where such purchases are most needed.[32] Therefore, in the absence of the PEPP, sovereign yields could have escalated to even higher levels.

The macroeconomic impact

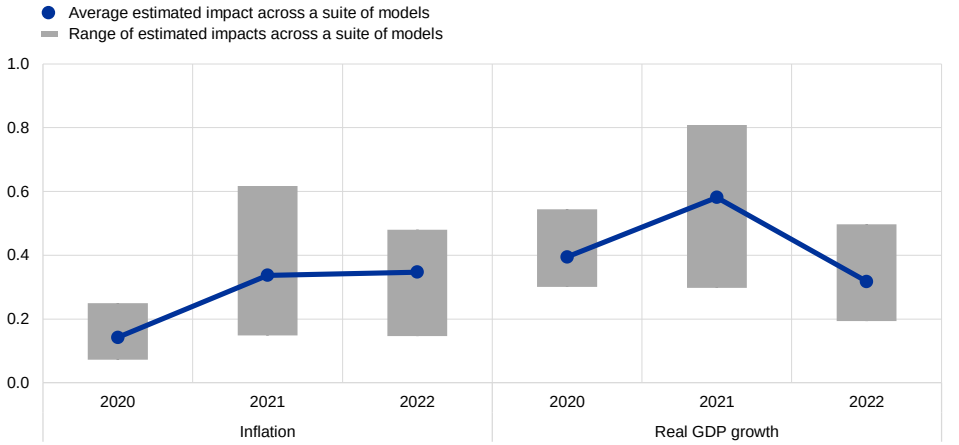
By counteracting the tightening of financial conditions that confronted the euro area economy in the face of the COVID-19 crisis, the ECB's policy measures have been providing crucial support to the real economy and, ultimately, to price stability. This support operates across two broad dimensions: (i) underpinning the medium-term growth and inflation outlook, and (ii) removing tail risks around the baseline scenario.

In terms of underpinning the medium-term growth and inflation outlook, ECB staff estimate that, taken together, the PEPP, the scaling-up of the APP and the recent TLTRO III recalibration will add around 1.3 percentage points cumulatively to euro area real GDP growth over the projection horizon, and contribute around 0.8 percentage points cumulatively to the annual inflation rate over the same time horizon (see Chart B). At the same time, while monetary policy typically acts with a transmission lag, the positive impact on consumer and business confidence created by acting swiftly and decisively during a crisis should not be overlooked and can accelerate and support the transmission of monetary policy to growth and inflation.

[32] That asset purchases have a larger impact during market distress is consistent with the theoretical insights proposed in Vayanos, D. and Vila, J., "A preferred-habitat model of the term structure of interest rates", *NBER Working Paper,* No 15487, 2009. At the same time, higher market distress can lead to market segmentation and impede portfolio rebalancing, as is found to be the case with the LSAP1 in the United States (see: Krishnamurthy, A. and Vissing-Jorgensen, A., "The Effects of Quantitative Easing on Long-term Interest Rates*", Brookings Papers on Economic Activity*, 2011, pp. 215-265; Krishnamurthy, A. and Vissing-Jorgensen, A., "The Ins and Outs of LSAPs", *mimeo*, Federal Reserve Bank of Kansas City, 2013; and D'Amico, S. and King, T.B., "Flow and Stock Effects of Large-Scale Treasury Purchases: Evidence on the Importance of Local Supply", *Journal of Financial Economics*, Vol. 108, No 2, 2013, pp. 425-448). In Altavilla, C., Carboni, G. and Motto, R., "Asset purchase programmes and financial markets: lessons from the euro area", *ECB Working Paper,* No 1864, 2015, the authors assess the ECB's APP, which took place during a period of lower market distress, and find that local supply channels play a more limited role when compared with duration and credit risk channels.

Chart B

Estimated impact of the ECB's decisions since March 2020 (PEPP, scaling-up of the APP and TLTRO recalibrations) on the central tendency of inflation and economic activity



Source: ECB calculations.
Note: The estimated impact across a suite of models refers to the average across a set of models used by the Eurosystem for policy simulations, a BVAR model (see Rostagno, M., Altavilla, C., Carboni, G., Lemke, W., Motto, R., Saint-Guilhem, A. and Yiangou, J., "A tale of two decades: the ECB's monetary policy at 20", *Working Paper Series*, No 2346, ECB, Frankfurt am Main, December 2019), the NAWM-II model and the ECB-BASE model.

These estimates do not fully capture the benefits gained from avoiding feedback loops between the real economy and financial markets that may emerge in an economic crisis such as that caused by COVID-19, in which the main contribution of monetary policy is to remove tail risks around the baseline macroeconomic outlook. Econometric evidence points to the existence of large non-linearities in the macroeconomic reaction to shocks to financial conditions. In other words, the impact of a given change in financial conditions depends on the state of the economy. This means that under acute financial market stress, the presence of financial frictions and balance sheet constraints implies severe non-linearities that may translate into much larger contractionary effects brought on by a tightening of financial conditions. Given the severity of the shock associated with the COVID-19 crisis, a tightening of financial conditions in the current environment would be expected to have an impact several times larger than the one captured by the average elasticities employed in Chart B to quantify the impact of the policy. Therefore, monetary policy measures aimed at counteracting such deterioration in financial conditions would deliver a stronger contribution to price stability than is captured by standard elasticities derived from the more normal conditions underpinning the above quantification.

Overall, the ECB's measures have been an effective and efficient response to the COVID-19 crisis, and they are proportionate under current conditions in the pursuit of the ECB's price stability mandate. The effectiveness of the ECB's measures is clearly evident in the improving financing conditions for the overall economy, and the deployment of a combination of asset purchases and TLTROs reflects the fact that they are efficient tools under the current circumstances. Additionally, they are proportionate to the severe risks to the ECB's mandate, with the net impact of the COVID-19 crisis on the medium-term inflation outlook expected to be

disinflationary to a considerable degree. While the ECB continually monitors the side effects of its policies, the case for monetary easing through the PEPP has been overwhelming given that the ECB's price stability objective would have been subject to further downside risks in the absence of such measures.

4 Euro area equity markets and shifting expectations for an economic recovery

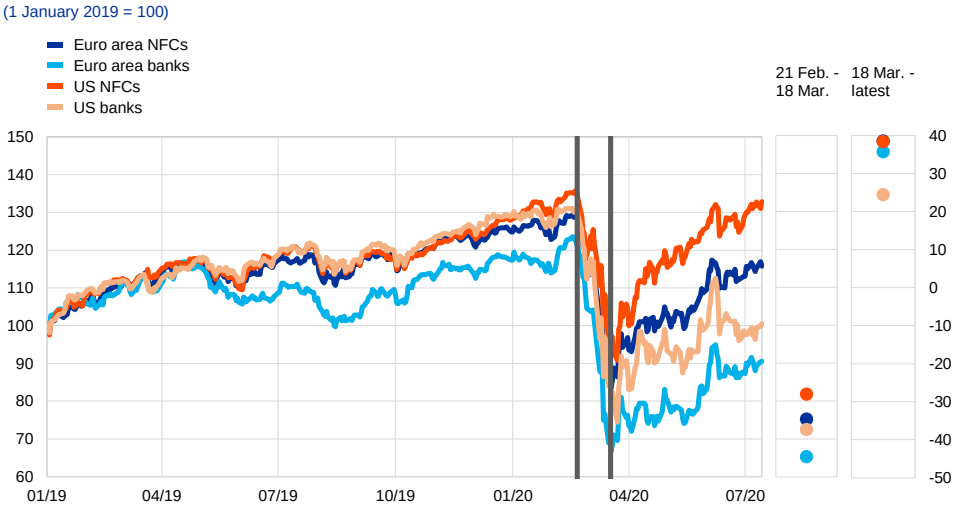
Prepared by Miguel Ampudia, Daniel Kapp, Kristian Kristiansen and Cornelius Nicolay

Recent developments in equity prices and earnings growth expectations

As a result of the expected economic fallout from the global spread of the coronavirus (COVID-19) and the considerable associated uncertainty, euro area equity prices fell by more than 30% from February to mid-March 2020 (see Chart A). At the same time, liquidity conditions worsened significantly, as reflected in a pronounced widening of bid-ask spreads – a development which was not confined to equity markets.

Chart A

Euro area and US equity prices



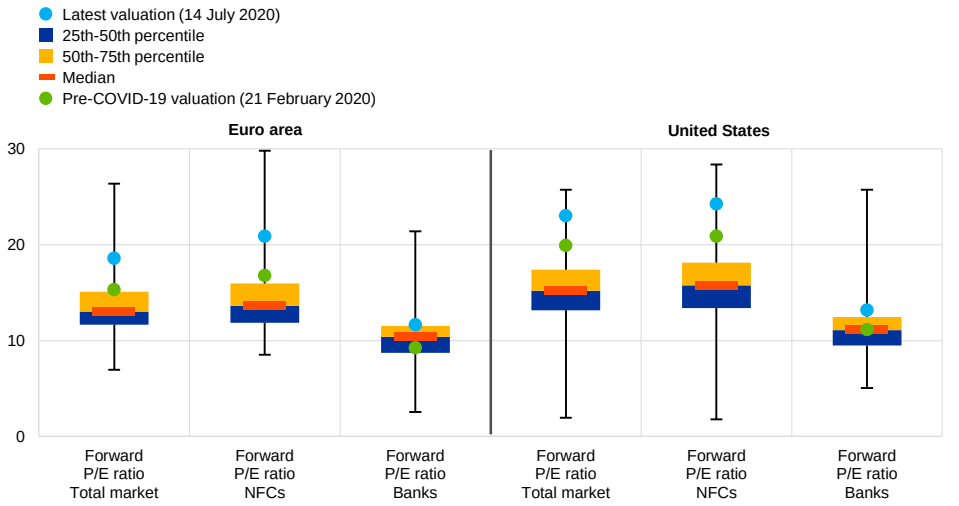
Sources: Refinitiv and ECB calculations.
Notes: The euro area index refers to the broad Dow Jones Euro Stoxx and the US index refers to the S&P 500. The vertical lines denote (from left to right) the Friday before the onset of coronavirus-related financial market turmoil (21 February 2020) and the PEPP announcement (18 March 2020). The latest observation is for 14 July 2020.

With the announcement of the pandemic emergency purchase programme (PEPP), euro area equity prices started to recover (see Chart A) and market functioning has moved closer to normal levels, with bid-ask spreads decreasing sharply. Equity prices, especially those of US non-financial corporations (NFCs), also improved considerably, buoyed by the measures taken by central banks and governments in many countries. The recovery in equity prices looks even stronger when judged against the historical distribution of forward-looking valuation metrics (see Chart B). Owing to adjustments in near-term earnings expectations and a near normalisation in equity risk premia, forward price-earnings ratios (P/E ratios) for NFCs have now moved above pre-COVID-19 levels. While this is also the case for euro area banks, their valuations remain more subdued. However, in the light of the recent rapid

adjustments in earnings expectations, the information value of price-earnings measures should be taken with caution.

Chart B

Accounting-based equity valuation metrics



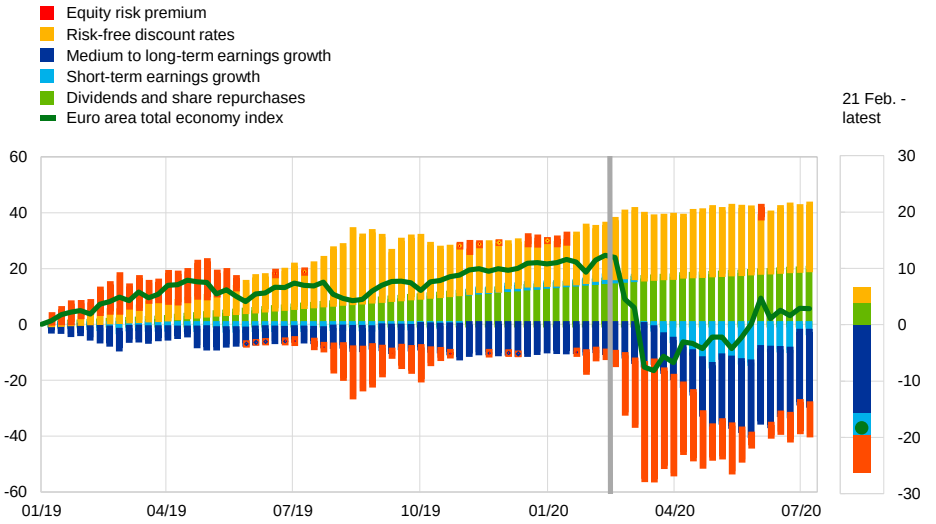
Sources: Refinitiv and ECB calculations.
Notes: The forward-looking P/E ratio for the euro area has been recorded monthly since 1987. The latest observation is for 14 July 2020.

The main reason for the rebound in equity prices is a recovery in risk sentiment which, based on a decomposition using a dividend discount model, seems to have more than compensated for the declines in earnings expectations (see Chart C). Between early February and mid-March 2020 the euro area equity risk premium (ERP) increased from 8% to 12%, before decreasing to below 9% after the PEPP announcement. Although there is some uncertainty surrounding the estimation of the ERP, according to a dividend discount model, the fluctuations in the ERP explain both the lion's share of the initial decline in equity prices and most of the subsequent recovery. At the same time, analysts' earnings expectations have been adjusted downwards. In the wake of the lockdown measures implemented across euro area countries, shorter-term earnings growth expectations turned negative for the first time since 2009, but they appear to have troughed recently as the economic recovery is expected to gradually take hold. By contrast, until mid-April 2020 analysts' longer-term earnings expectations remained surprisingly resilient, in line with prospects of a strong and rapid recovery in earnings (see Chart D). More recently, they have been adjusted downwards by more than 3 percentage points to below 8% per annum. Despite this drop, longer-term earnings expectations remain higher than at the low point of the global financial crisis.

Chart C

Dividend discount model decomposition of euro area equity prices and Euro Stoxx earnings growth expectations

(left-hand scale: percentages, cumulative change re-based to zero in January 2019; right-hand scale: percentages, cumulative change since 21 February 2020)

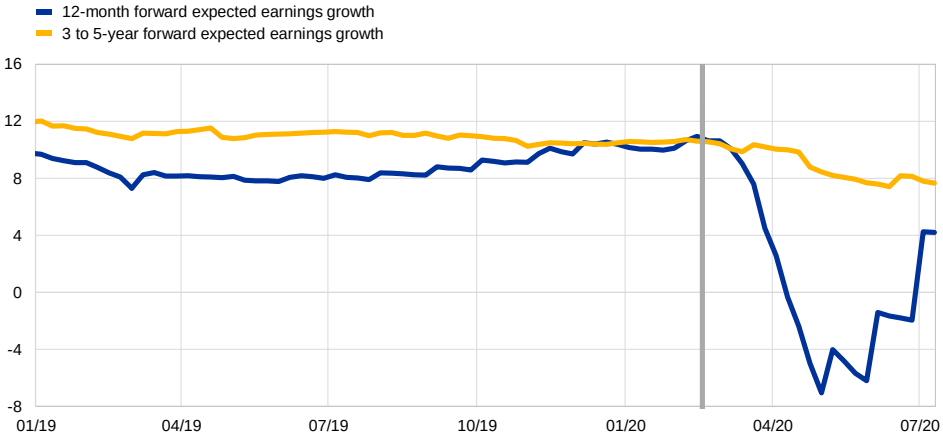


Sources: Refinitiv, IBES, Consensus Economics and ECB calculations.
Notes: The decomposition is based on a dividend discount model. The model includes share buybacks, discounts future cash-flows with interest rates of appropriate maturity and includes five expected dividend growth horizons. For more details, see the article entitled "Measuring and interpreting the cost of equity in the euro area", *Economic Bulletin*, Issue 4, ECB, 2018. The vertical line denotes the Friday before the onset of coronavirus-related financial market turmoil (21 February 2020). The latest observation is for 10 July 2020.

Chart D

Euro Stoxx earnings growth expectations

(percentages per annum)



Sources: Refinitiv, IBES and ECB calculations.
Notes: Total market-expected earnings growth is over horizons of 12 months and three to five years. The vertical line denotes the Friday before the onset of coronavirus-related financial market turmoil (21 February 2020).The latest observation is for 10 July 2020.

Equity prices and short versus longer-term revisions to the macro outlook

In the light of the ongoing gradual downward adjustment of longer-term earnings prospects, the recovery in short-term earnings prospects has been an important counterbalance. Equity prices reflect the discounted value of all future dividend streams, where the weight of dividends in the near term depends on the investor's discount factor (including the required ERP). Therefore, the (initial) resilience of longer-term earnings prospects (more than one year ahead) and the recent recovery in short-term earnings prospects (i.e. over the next year) could explain some of the relative robustness of and recent recovery in equity prices. Results of a regression analysis which makes use of past Consensus Economics forecast vintages to assess the impact of past changes in GDP growth expectations on equity prices at different horizons suggest that investors tend to attach equal weight to short-term forecasts and longer-term expectations when evaluating the market implications of macroeconomic developments. Overall, the risk of significant further declines in equity prices still remains, especially if long-term GDP growth expectations are adjusted down further or the recent upward revisions to the near-term outlook decline again (as a result of a potential second wave of the coronavirus and consequent policy responses, for example).

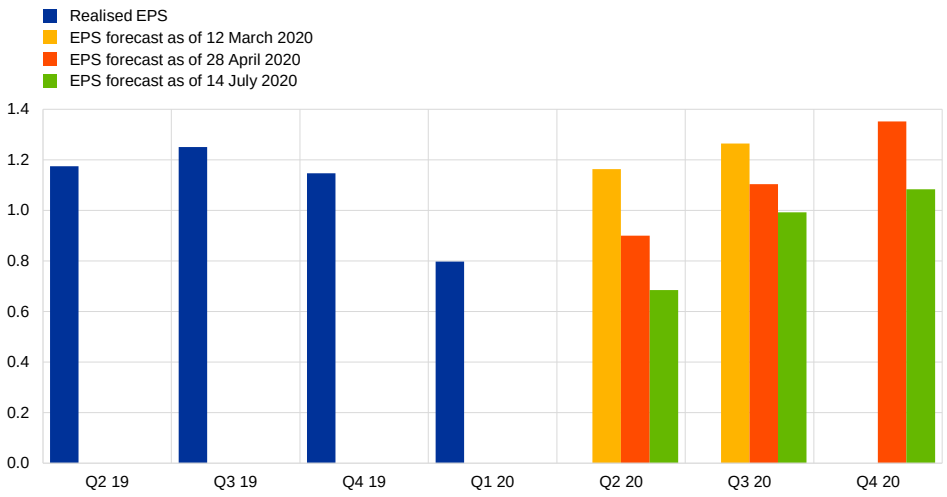
Signals about the shape of the recovery derived from earnings per share forecasts, dividends and options

In addition to analysts' longer-term earnings growth expectations, earnings per share (EPS) forecasts also continue to be revised down at longer horizons (see Chart E). In mid-March 2020 the pattern of surveyed quarterly earnings forecasts continued to largely signal a V-shaped recovery, despite weak realised earnings in the first quarter of 2020. Analysts foresaw a rapid recovery from the second quarter onwards as economies were expected to gradually emerge from lockdown. Since then, notwithstanding the announcement of the PEPP, the general level of medium-term earnings expectations has continued to be revised downwards, even though euro area stock prices recovered over the same period.

Chart E

Euro Stoxx EPS forecast

(EUR per share)



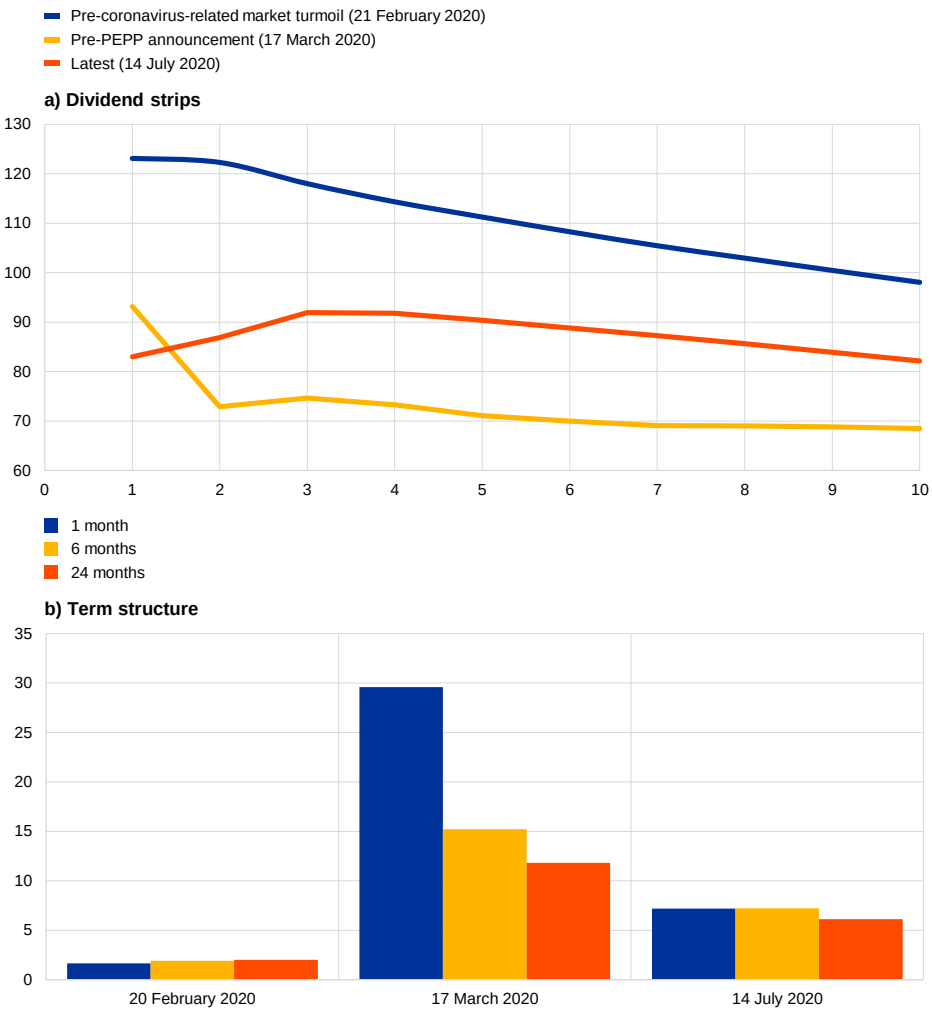
Sources: Refinitiv, IBES and ECB calculations.
Notes: Market capitalisation weighted aggregate of individual firms' EPS and EPS forecasts (weekly data). 12 March 2020 is the date of the March 2020 Governing Council meeting. The latest observation is for 14 July 2020.

The assessment of the future outlook appears even less sanguine when judged on the basis of futures pricing rather than surveys (see panel (a) of Chart F). The term structure of claims on future dividend payments, known as dividend strips, shows that markets expect dividends to lie far below pre-COVID-19 levels in the near future. Although dividend futures prices with maturities of more than two years are slightly higher than before the PEPP announcement, they remain well below the prices observed prior to the global spread of COVID-19.

Chart F

Euro Stoxx 50 dividend strips and term structure of the euro area equity risk premium calculated from options prices

(panel (a): EUR; panel (b): percent)



Sources: Refinitiv, IBES and ECB calculations.
Notes: Panel (b) shows the term structure of the ERP estimated following I. Martin, "What is the Expected Return on the Market?", *The Quarterly Journal of Economics*, Vol. 132, No 1, 2017, pp. 367-433. The latest observation is for 14 July 2020.

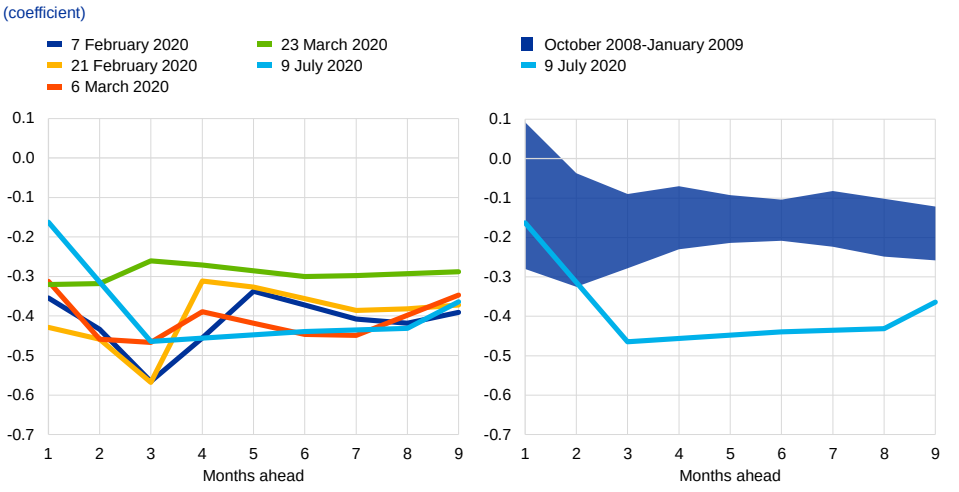
In addition, risks of renewed price corrections in the near future continue to be seen as likely, as indicated by the term structure of the equity risk premium (see panel (b) of Chart F). Estimating the ERP from options prices at horizons between 1 and 24 months shows that the term structure of the ERP is likely to be upward sloping during normal times, as was (marginally) the case in February 2020, for instance, and downward sloping in times of financial stress, caused by the risk of large potential losses in the near future. In line with this conjecture, and immediately before the announcement of the PEPP, the ERP at the one-month horizon surged to around 30%. Despite a significant decline since then, the ERP still remains well above the levels seen in February at all horizons and the term structure slope continues to be inverted.

Other option-based measures of uncertainty also continue to stand at heightened levels and left tail risk remains very elevated (see Chart G). The

risk-neutral distribution of expected returns by investors can be extracted from options prices.[33] Since options contracts with different maturities are traded at any point in time, it is possible to derive a term structure of the investors' risk-neutral distribution of expected returns. Between February and late March 2020 there was a substantial reduction of left tail risk ("bad risk") relative to right tail risk ("good risk"), as implied by the reduction in the skewness coefficient of the Euro Stoxx 50 risk-neutral density derived from options prices (see left-hand panel of Chart G).[34] Already in early February, before the outbreak of the COVID-19 pandemic in Europe, options markets signalled a large imbalance of left tail risk two to three months ahead, with a reduction afterwards. Following the equity market correction, the implied left tail risk and right tail risk became more balanced for the months ahead. This was the result of investors starting to attach more weight to the possibility of a further price recovery (i.e. increasing the odds of good risk versus bad risk) and was in line with a decline in the ERP since the height of the pandemic. However, owing to the recent cascade of negative economic news and fears of a new virus wave, the risk-neutral distribution remained highly skewed to the left when compared with historical episodes (see right-hand panel of Chart G). Moreover, uncertainty as indicated by the variance of the distributions is still elevated.

Chart G

Pearson skewness coefficient of the Euro Stoxx 50 risk-neutral density



Sources: Bloomberg and ECB calculations.
Notes: The dates in the left-hand panel have been chosen to give an overview of the pandemic period. The blue shaded area in the right-hand panel denotes the range of the Pearson skewness coefficient over the period from October 2008 to January 2009. The latest observation is for 9 July 2020.

33 It is important to keep in mind that risk-neutral measures embed investor's risk attitudes. Changes in the risk-neutral distribution can be the result of changes in the expected quantity of risk or changes in the investors' risk aversion (price of risk). For more details, see the box entitled "Coronavirus (COVID-19): market fear as implied by options prices", *Economic Bulletin*, Issue 4, ECB, 2020.

34 The Pearson skewness coefficient of the Euro Stoxx 50 risk-neutral density derived from options prices compares the extent of left tail risk ("bad risk") relative to right tail risk ("good risk"). This index is below zero if left tail risks outweigh right tail risks.

5 A preliminary assessment of the impact of the COVID-19 pandemic on the euro area labour market

Prepared by Vasco Botelho, Agostino Consolo and António Dias da Silva

This box analyses labour market developments in the euro area since the onset of the coronavirus (COVID-19) pandemic. The containment measures implemented from mid-March resulted in a sharp fall in euro area real GDP in the first quarter of 2020.[35] Business and consumer survey data indicate that the fall deepened in April and May. However, employment and unemployment do not appear to have been significantly affected. In this regard, the reaction of the euro area labour market to the COVID-19 pandemic appears in sharp contrast with that observed in the United States, where unemployment increased rapidly. This box examines the discrepancy between business and consumer survey indicators and the main headline labour market indicators for the euro area. In addition, we discuss the possible effects of lockdown measures on unemployment statistics in view of the internationally agreed definition of unemployment, and elaborate on the adjustment of hours worked and on the widespread use of short-time work schemes and temporary lay-offs, which are the key policies that have supported the euro area labour market since the start of the COVID-19 pandemic.

Monthly surveys on employment perceptions and expectations point to a strong deterioration in the euro area labour market. The PMI indicator of employment perceptions declined from levels of 51.4 in February 2020 to an historic low of 33.4 in April, rebounding to 43.1 in June as a consequence of the loosening in the containment measures during this period (see Chart A). The decline was particularly acute in the services sector, with the accommodation, food and beverage services and the warehousing and transportation sector being most affected. As for the manufacturing sector, the decline was also broad-based across sectors, and most prominent for motor vehicles, fabricated metal products, and machinery and equipment sectors. Overall, such large declines in these surveys point to a strong contraction in employment in the second quarter of 2020.[36]

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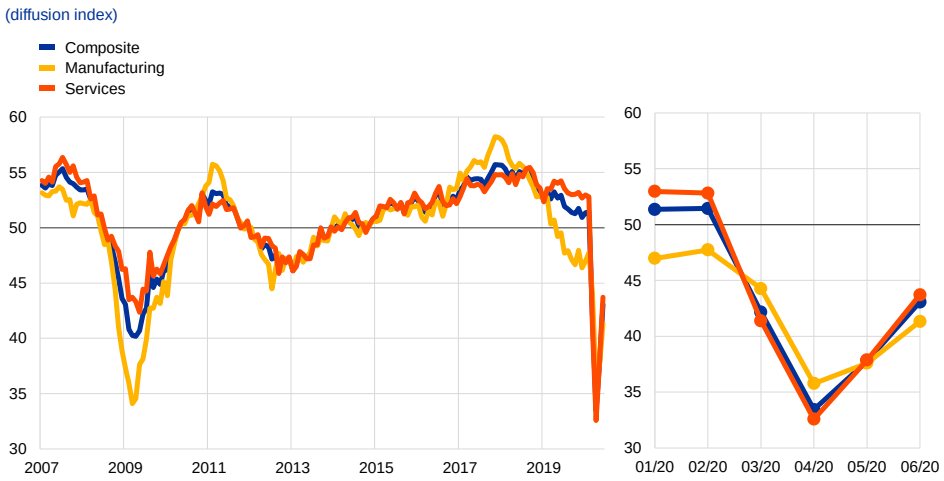
35 See the box entitled "Alternative scenarios for the impact of the COVID-19 pandemic on economic activity in the euro area", *Economic Bulletin*, Issue 3, ECB, Frankfurt am Main, 2020.

36 A similar message is given by high-frequency indicators of developments in the euro area labour market, such as the *Indeed* job postings indicator and the *LinkedIn* hiring rate indicator. These high- frequency indicators reveal a large decline in labour demand and the number of job hires in the euro area since the start of the containment measures and lockdowns. For further details, refer to the box entitled "High-frequency data developments in the euro area labour market" in this issue of the Economic Bulletin. Beyond these high-frequency indicators, the survey data indicator on labour as a factor limiting production from the European Commission Business and Consumer Survey shows a sharp contraction in labour demand for all of the main sectors, with the services sector recording the steepest fall.

Chart A

PMI Employment



Source: Markit.
Notes: A level below 50 indicates a contraction in employment. The latest observation is for June 2020.

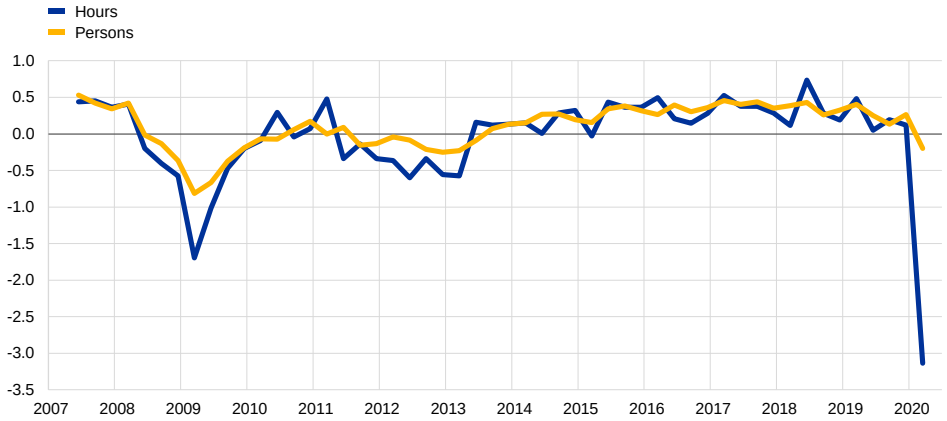
There was a historic decline in the number of hours worked in the first quarter of 2020, which helped put into context the muted response of employment.

Although containment measures in the majority of euro area countries only started in mid-March, total hours worked, as recorded in the national accounts, dropped quarter on quarter by 3.1% in the first quarter of 2020, in line with the observed 3.6% decline in real GDP in the same quarter. The decline in hours worked was almost twice as large as that recorded in the first quarter of 2009. The decline in hours worked in the first quarter of 2020 was mostly driven by an adjustment in the intensive margin of labour, i.e. the average number of hours worked per person employed. In the first quarter of 2020, average hours worked decreased quarter on quarter by 2.9%, while the decline in employment remained relatively muted in the changing economic environment at 0.2% (see Chart B). The relative contributions of average hours worked (around 90%) and employment (around 10%) to the decline in total hours worked contrast with those observed in the first quarter of 2009, where both margins accounted for roughly half of the decline of total hours worked.

Chart B

Employment growth

(quarter-on-quarter percentage changes)



Sources: Eurostat and ECB staff calculations.
Note: The latest observation is for the first quarter of 2020.

The moderate increase in the unemployment rate up to the end of May is in sharp contrast with indicators of economic activity. The increase in the unemployment rate until the end of May was lower than what could have been expected based on its historical relationship with GDP (see Chart C). In the United States, between January 2020 and May 2020, the number of non-farm payroll employees decreased by 19.5 million and the unemployment rate increased by 9.8 percentage points.[37] By contrast, the muted responses of employment and unemployment during the COVID-19 crisis in the euro area compared with the labour market dynamics observed for the United States have been a noticeable feature of the euro area labour market.[38] The reclassification of some people from unemployment into inactivity could be affecting the unemployment statistics. According to the International Labour Organization's definition of unemployment, persons losing their jobs or being previously unemployed should be classified as being outside the labour force if they are not actively searching for a job or are not available to take up employment at short notice. This feature would lead to a muted response in terms of the rise in unemployment resulting from the COVID-19 containment measures.[39] Another key difference is that, in the United States, temporarily laid off workers are considered unemployed, whereas in the euro area the persons affected by short-time work schemes or temporary lay-offs remain, in most cases, on the firms' payroll and are thus not considered unemployed.

37 The number of non-farm payroll employees in the United States stood at 152.4 million workers in February 2020 and at 132.9 million workers in May 2020. There was a slight rebound in employment between April and May, with the number of non-farm payroll employees increasing by 2.5 million workers, up from 130.4 million workers in April 2020. The unemployment rate in the United States followed a similar path to that of employment, standing at levels of 3.5% in February 2020, edging up to 14.7% in April 2020 and observing a slight rebound to 13.3% in May 2020.

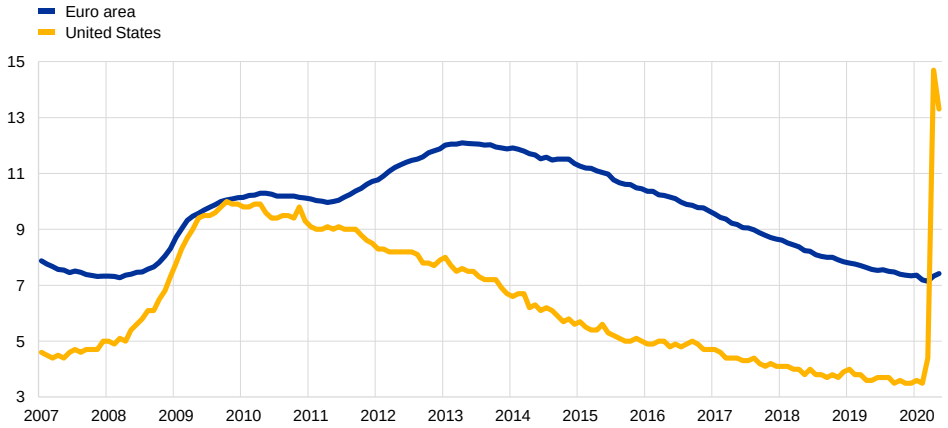
38 For an analysis of the US labour market, see, for example, Petrosky-Nadeau, N. and Valletta, R. G., "Unemployment Paths in a Pandemic Economy", *IZA DP*, No 13294, 2020.

39 The reclassification of some people from unemployment to inactivity could exert downward pressure on the unemployment rate. In this regard, monthly data on the number of inactive people could help assess how transition into activity may be affecting the observed unemployment rate. Measurement issues may also be at play in the United States, as noted by the Bureau of Labor Statistics, see U.S. Bureau of Labor Statistics "Frequently asked questions: The impact of the coronavirus (COVID-19) pandemic on The Employment Situation for May 2020", 5 June 2020.

Chart C

Unemployment rate in the euro area and in the United States

(percentages of the labour force)



Sources: Eurostat and U.S. Bureau of Labor Statistics.
Note: The latest observation is for May 2020.

The widespread use of short-time work schemes in the euro area is one of the key factors behind the overall muted immediate response of the labour market to the COVID-19 crisis. The national governments of euro area countries have implemented extensive labour market policies designed to support workers' incomes and to protect firms' jobs during the COVID-19 pandemic. In particular, short-time work schemes and temporary lay-offs have been put in place across the euro area countries, successfully containing dismissals, supporting incomes and helping firms to effectively reduce their payroll costs.[40] Given the sudden contraction in firms' sales during the COVID-19 crisis, these schemes have played an important role in helping firms' to reduce their liquidity needs, while allowing them to resume activity more swiftly after the lockdown by keeping the worker-job relationship intact during the lockdown. The number of workers in short-time work schemes is unprecedented across euro area countries.[41] Preliminary estimates of the number of workers affected based on firms' applications to join these schemes show that a substantial share of employees have been affected. These could amount to a maximum of 10.6 million employees in Germany (26% of the total number of employees in the country), 12 million employees in France (47% of employees), 8.1 million in Italy (42% of employees), 3.9 million in Spain (23% of employees) and 1.7 million in the Netherlands (21% of employees).[42] Indeed, if one takes into account the number of workers in short-time work schemes and on temporary lay-offs, the unemployment rate in the euro area would have reached much higher levels than those currently

40 For further details on how short-time work schemes are affecting households' income, see "Short-time work schemes and their effects on wages and disposable income", *Economic Bulletin*, Issue 4, ECB, Frankfurt am Main, 2020.

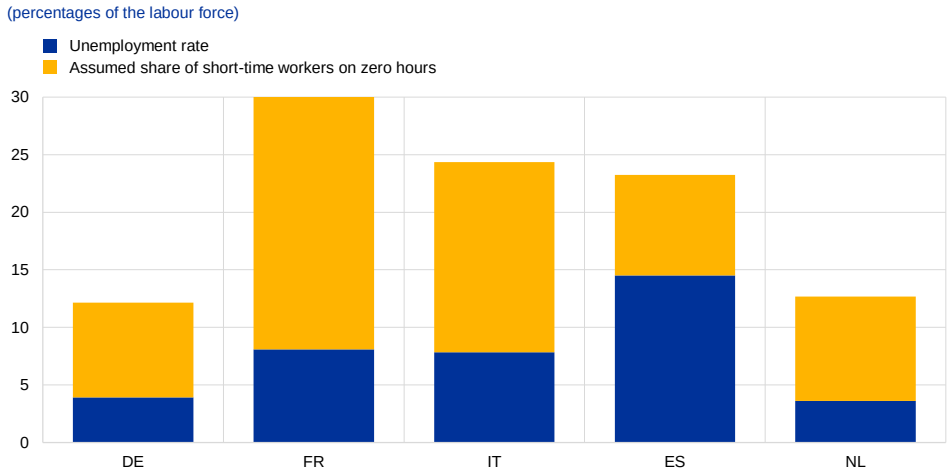
41 In May 2020 the Council of the European Union adopted a European instrument for temporary support to mitigate unemployment risks in an emergency (SURE).

42 These figures are an upper bound to the number of workers effectively affected by short-time work schemes, as they are based on the number of initial applications by firms. These initial applications to join short-time work schemes are then subject to effective take-up rates during the time that lockdown measures were in place, which ultimately depend on the firms' actual needs and on the acceptance of these applications by the relevant authorities. Moreover, the high number of applications was reported for the period when lockdowns were still in place and can be expected to be substantially lower over time as containment measures loosen.

observed. Chart D provides an illustrative example by adding to the unemployment rate half of the workers in short-time work schemes, assuming that they worked zero hours during May.

Chart D

Unemployment rate and short-time workers in May 2020 for the five largest countries in the euro area



Sources: ECB staff estimates based on information from the IAB (for Germany), DARES (for France), the INPS (for Italy), Dow Jones Factiva (for Spain) and the UWV (for the Netherlands).
Notes: Based on data collected up to 8 July 2020. For illustrative purposes, the unemployment rate is augmented with the number of workers affected by short-time work schemes and working on zero hours, which is assumed to be half of the workers in short-time work schemes (based on the number of firms' applications). For comparable calculations, see the box entitled "Short-time work schemes and their effects on wages and disposable income", *Economic Bulletin*, Issue 4, ECB, Frankfurt am Main, 2020.

The success of the widespread use of short-time work schemes in supporting the euro area labour market will depend critically on the dynamics and duration of the crisis. Labour market policies, in particular short-time work schemes and temporary lay-offs, are supporting employment and mitigating the increase in the unemployment rate in the euro area. These measures can support a faster recovery of the labour market, as they allow firms and workers to resume activity without the costly and lengthy process of search and matching that would have to occur once the employment relationship was lost. This is even more important, as the crisis is more likely to affect low-skilled workers, which usually have higher unemployment rates. Nonetheless, it is to be expected that not all workers in short-time work schemes and on temporary lay-offs will be able to return to their previous jobs.[43] As a consequence, a further increase in unemployment in the euro area is expected in the short term.

[43] The COVID-19 pandemic is a purely exogenous shock and could lead to lower reallocation needs than an economic crisis such as the great financial crisis. For different views on the reallocation needs of the economy following the COVID-19 pandemic in the United States, see Barrero, J. M., Bloom, N. and Steven, J., "COVID-19 Is Also a Reallocation Shock", NBER *Working Paper*, No 27137, 2020 and Kudlyak, M. and Wolcott, E., "Pandemic Layoffs", May 2020.

6 High-frequency data developments in the euro area labour market

Prepared by Nicola Benatti, Vasco Botelho, Agostino Consolo, António Dias da Silva and Malgorzata Osiewicz[44]

This box provides an overview of the impact of the coronavirus (COVID-19) pandemic on euro area labour markets by examining high-frequency indicators. The first part of the box analyses information from *Indeed's* daily job postings and *LinkedIn's* daily hiring rates for the five largest euro area countries. The number of job postings from *Indeed* can be used as a proxy for changes in labour demand. The *LinkedIn* hiring rate provides information both at the aggregate and sectoral levels about the number of job hires in the euro area. The second part of the box illustrates how the *LinkedIn* hiring rate can be used to perform a nowcasting of the job finding rate and make an assessment of the unemployment rate, thereby providing more timely information about labour market developments than that derived from more traditional statistical sources. That said, the information contained in these high-frequency indicators should be viewed with caution and used to complement official statistics, given that the available samples are mostly concentrated in white-collar jobs and in certain sectors.

The hiring rate has declined significantly since the onset of the COVID-19 crisis, with it bottoming out in May 2020 (see Chart A). At the start of the lockdowns, the year-on-year increases in the hiring rate stood at 8.9% in Germany (22 March), 13.4% in France (17 March), 13.4% in Italy (21 February), 5.4% in Spain (14 March), and at 4.0% in the Netherlands (15 March). The bottoming-out of the hiring rate in May 2020 may reflect the fact that some of these hires transpire based on past vacancies or through referrals, which can help reduce firms' uncertainty during the hiring process. The decline in both of the high-frequency indicators reveals the severity of the impact of the COVID-19 pandemic on the euro area labour market, amidst the implementation of short-time work schemes.[45]

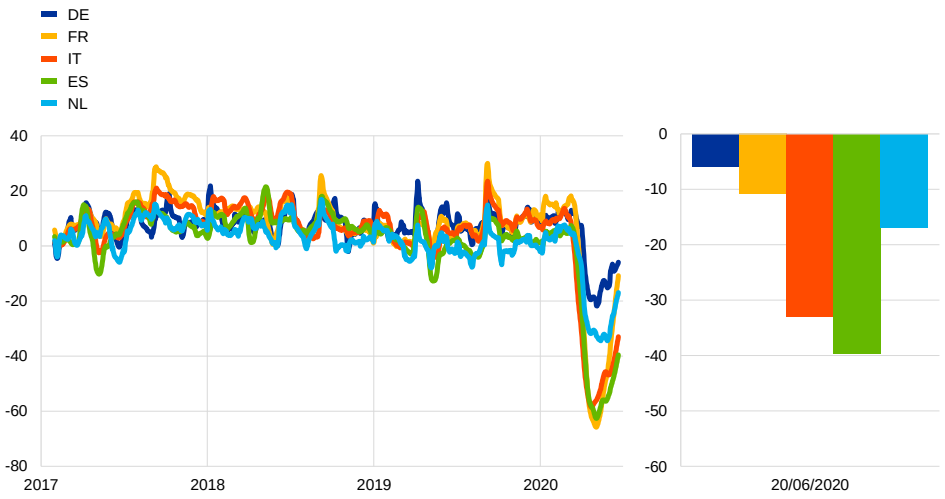
[44] The authors would like to acknowledge the contributions from Mariano Mamertino, Séin Ó Muineacháin and Mirek Pospisil in providing the aggregate and sectoral high-frequency *LinkedIn* data used in this box, which are based on a joint research project. We would also like to thank Colm Bates (European Central Bank), together with Tara Sinclair and Adhi Rajaprabhakaran (*Indeed),* for providing the data on job postings.

[45] See the box entitled "A preliminary assessment of the impact of the COVID-19 pandemic on the euro area labour market" in this issue of the Economic Bulletin.

Chart A

High-frequency indicator of hiring rates for the euro area labour market

(*LinkedIn* hiring rate; year-on-year growth rates, percentages)



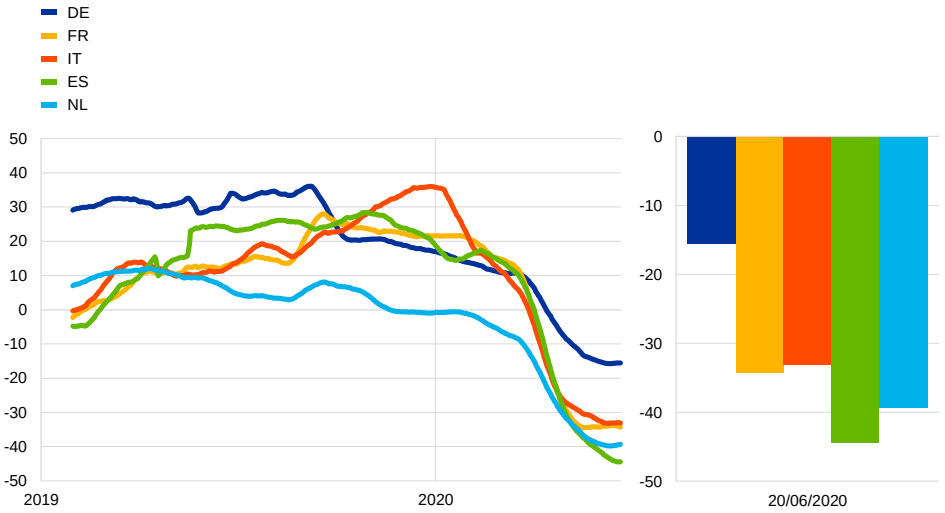
Sources: *LinkedIn* and ECB staff calculations.
Notes: The latest observation is for 20 June 2020. Daily hiring rates are calculated as the percentage of *LinkedIn* members who started a job on a given day of the month and added a new employer to their profile in that month, divided by the total number of *LinkedIn* members in that country. To adjust for seasonal patterns and spikes due to specific calendar dates, the *LinkedIn* hiring rate indicator is transformed using a 30-day moving average and is presented in terms of its year-on-year growth rate.

Data on job postings have declined significantly since the COVID-19 crisis (see Chart B) and continue to signal weak labour demand conditions. At the start of the lockdowns, the year-on-year increases in the job postings indicator stood at 9.8% in Germany (22 March), 11.9% in France (17 March), 14.2% in Italy (21 February), 11.0% in Spain (14 March), and at -8.2% in the Netherlands (15 March). On 20 June, however, the decline in the yearly growth rate of the job postings remained in deep negative territory and stood at -15.6% in Germany, -34.3% in France, -33.1% in Italy, -44.4% in Spain, and at -39.3% in the Netherlands. While job hires have now bottomed out, job postings remain subdued, as this relationship is not perfectly aligned, since some job matches are made through referrals without any vacancies being posted or there can be a time lapse in the search and matching process. The *Indeed* job postings indicator reflects developments in labour demand and may be regarded as an indicator of vacancies, while the *LinkedIn* hiring rate indicator is more closely related to the job-to-job transitions and to the job finding rate.

Chart B

High-frequency indicator of job postings for the euro area labour market

(*Indeed* job postings; year-on-year growth rates, percentages)



Sources: *Indeed* and ECB staff calculations.
Notes: The latest observation is for 20 June 2020. To adjust for seasonal patterns and spikes due to specific calendar dates, the *Indeed* job postings indicator is transformed using a 30-day moving average and is presented in terms of its year-on-year growth rate.

Sectoral data on hiring rates reveal a broadly based decline across all sectors of the five largest euro area countries (see Chart C). We use sectoral information at a monthly frequency to decompose the decline in the *LinkedIn* hiring rate and to identify the sectors that may have been most affected during the COVID-19 crisis.[46] In particular, we analysed 12 sectors: the consumer goods, corporate services, education, entertainment, finance, healthcare, manufacturing, media and communications, recreation and travel, retail, and software and IT services sectors, with the remaining sectors of the economy being bundled into a residual sector. The aforementioned sectors encompass over 70% of the total number of job changes recorded in *LinkedIn* for the five largest euro area countries. In June 2020, the majority of the sectors of the five largest euro area countries denoted yearly declines in their hiring rates, with the largest sectoral contributions to the decline being observed in the aggregate hiring rate stemming from the manufacturing, corporate services, software and IT services, and recreation and travel sectors.[47]

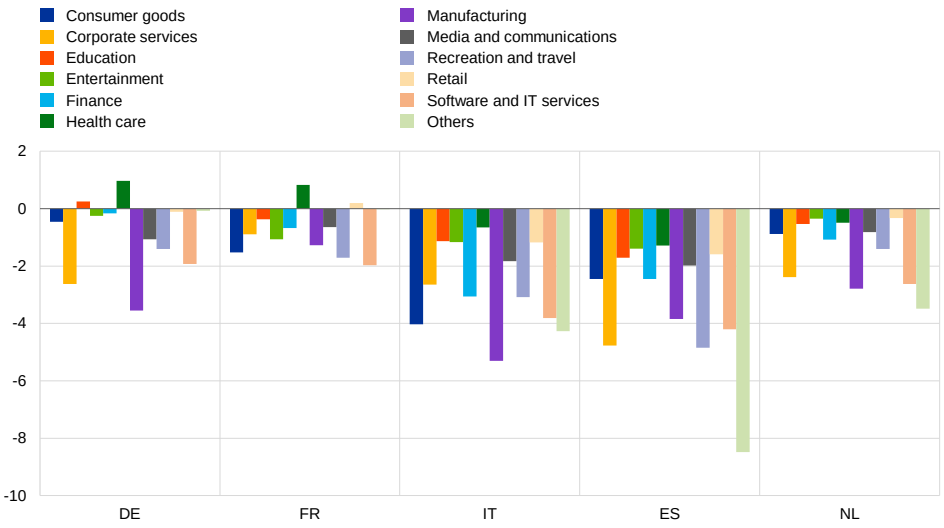
[46] This box is based on the industry mapping that is also used by the World Bank. The industry mapping between *LinkedIn* industries and the International Standard Industrial Classification (ISIC) can be found here, while the US Workforce report can be found here.

[47] The exceptions to the broad sectoral decline in the hiring rates recorded in June 2020 are the healthcare sector in both Germany and France, the education sector in Germany and the retail sector in France.

Chart C

Sectoral decomposition of the yearly decline in the hiring rate in June 2020

(contributions to the year-on-year growth rate of the hiring rate; percentages)



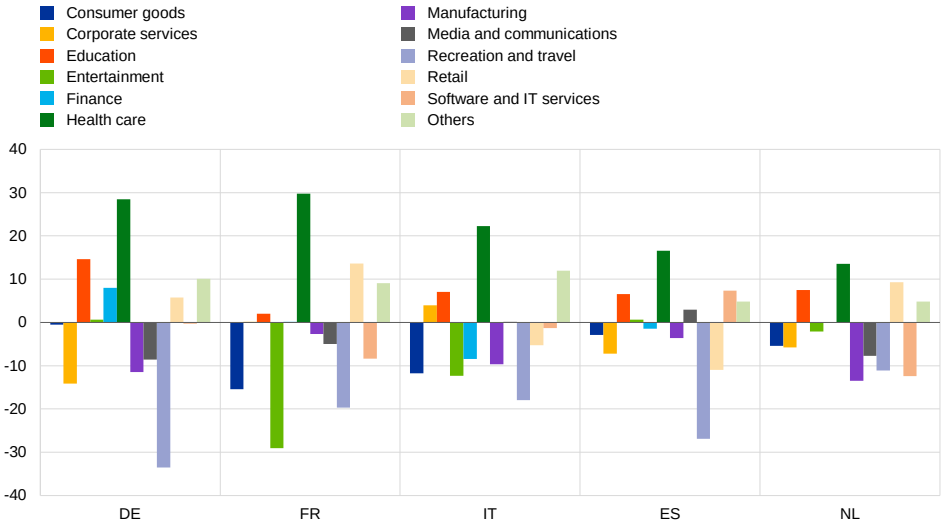
Sources: *LinkedIn* and ECB staff calculations.
Notes: The latest observation is for June 2020. The hiring rate at the industry level is available at a monthly frequency. The industry-specific monthly hiring rates are calculated as the percentage of *LinkedIn* members who started a job in a given industry and in a given month and added a new employer to their profile in that month, divided by the total number of *LinkedIn* members in that country. To adjust for seasonal patterns and spikes due to specific calendar dates, the industry hiring rate indicator is presented in terms of its year-on-year growth rate.

The intensity of the COVID-19 shock is asymmetric across sectors (see Chart D). While the decline in the hiring rate was broad-based across sectors, some sectors are more affected by the COVID-19 shock than others. Two polar cases of this asymmetry of the shock across sectors are the recreation and travel and the healthcare sectors. On the one hand, the recreation and travel sector has been particularly affected by the crisis and by the lockdowns, with the hiring rate in the sector decreasing year on year in June 2020 by 44.0% in Germany, 28.8% in France, 77.9% in Italy, 50.1% in Spain, and by 28.3% in the Netherlands. On the other hand, the healthcare sector seems to be relatively more insulated from the COVID-19 shock in terms of the yearly increase in the relative number of job changes in the sector, driven partially by the increasing demand for healthcare services to contain the pandemic. The hiring rate in this sector increased year on year in June 2020 by 18.0% in Germany and by 20.7% in France, and decreased year on year in June 2020 by 9.9% in Italy, 22.5% in Spain, and by 3.6% in the Netherlands. In general, the consumer goods, manufacturing, and recreation and travel sectors are more affected by the COVID-19 crisis than the rest of the economy, while other sectors such as healthcare, finance, and software and IT services remain more insulated from the COVID-19 shock.

Chart D

Sectoral asymmetry in the yearly decline in the hiring rate in June 2020

(difference between the year-on-year growth rate of the hiring rate for each sector and the year-on-year growth rate of the hiring rate for the total economy in June 2020; percentage points)



Sources: *LinkedIn* and ECB staff calculations.
Notes: The latest observation is for June 2020.The hiring rate at the industry level is available at a monthly frequency. The industry-specific monthly hiring rates are calculated as the percentage of *LinkedIn* members who started a job in a given industry and in a given month and added a new employer to their profile in that month, divided by the total number of *LinkedIn* members in that country. To adjust for seasonal patterns and spikes due to specific calendar dates, the industry hiring rate indicator is presented in terms of its year-on-year growth rate. Sectors with negative values observe larger declines in their hiring rates than the remaining sectors, while sectors with positive values observe smaller declines in the hiring rate than the remaining sectors.

The hiring rate can proxy quite well for the aggregate job finding rate in the sample and can be used to nowcast the job finding rate during the crisis. The *LinkedIn* hiring rate encompasses both job-to-job transitions and transitions from unemployment into employment and can be thought of as a proxy for the aggregate job finding rate.[48] To measure the empirical elasticity between the hiring rate and the job finding rate, a panel co-integration model is estimated across the five largest euro area countries from 2016 to 2019 in the spirit of Stock and Watson (1993) and Pesaran and Smith (1995). Depending on the underlying estimation assumptions, the long-run elasticity is estimated between 0.39 and 0.63, being always statistically significant.[49] With the *LinkedIn* hiring rate available until June 2020, these elasticities can thus be used to construct the implied path of the aggregate job finding rate in 2020 during the COVID-19 crisis (see Chart E, panel a).

A nowcasting of the unemployment rate during the COVID-19 crisis may be computed using the implied path of the aggregate job finding rate. Using estimates of the inflow, s_t, and outflow rates, f_t, from unemployment, it is possible to

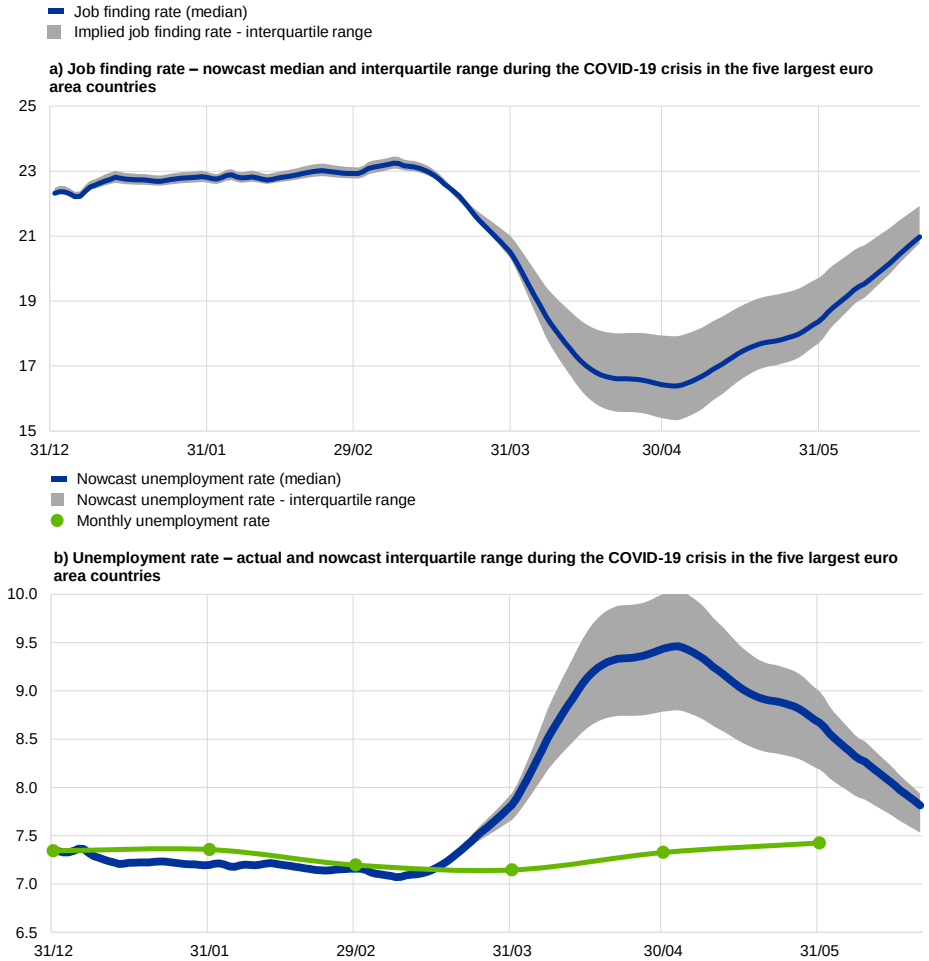
[48] In the remaining part of the analysis, we use the hiring rate instead of job postings, because the former is closer to the concept of the job finding rate. For further details about the job finding rate and its historical relationship with labour market concepts such as the Beveridge curve and labour market tightness, refer to the article entitled "The euro area labour market through the lens of the Beveridge curve", *Economic Bulletin*, Issue 4, ECB, Frankfurt am Main, 2019. The job finding rate is estimated using the methodology in Shimer (2007) and Elsby et al. (2013) and using LFS data up to December 2019.

[49] As a robustness exercise, we also estimate the elasticity between the hiring rate and the job finding rate across the individual countries. These country-specific elasticities are somewhat more heterogeneous across countries, being around 0.12 and 0.17 for Germany, 0.37 and 0.51 for France, 0.26 and 0.52 for Italy, 0.73 and 0.85 for Spain, and between 0.71 and 0.80 for the Netherlands.

derive a proxy of the point-in-time steady-state unemployment rate, $u_t^*(f_{t_t}, s_t)$.[50] A nowcasting of the unemployment rate can be derived in two steps. First, a nowcasting of the job finding rate, $\hat{f}_t$, is based on the estimated relationship with the *LinkedIn* hiring rate. In the second step, a nowcast of the changes in the unemployment rate can be derived using the changes in $u_t^*(\hat{f}_t, s_t)$. To increase the robustness of the exercise, several profiles of $u_t^*(f, s)$ are derived depending on the estimated long-term coefficients for $\hat{f}$ and on the assumptions of the job separation rates.

Chart E

Euro area-5: implied job finding rate and unemployment rate



Sources: Eurostat, *LinkedIn* and ECB staff calculations.
Notes: The latest observation is for 20 June 2020. Daily hiring rates are calculated as the percentage of *LinkedIn* members who started a job on a given day of the month and added a new employer to their profile in that month, divided by the total number of *LinkedIn* members in that country. The monthly unemployment rate is in line with the ILO definition. The nowcast of the unemployment rate is derived using a simple updating recursive rule across several possible profiles for the natural rate of unemployment, depending on the estimated long-term coefficients, on the relationship between the job finding rate and the hiring rate and on the set of assumptions for the job separation rates.

The unemployment rate is expected to peak during the second quarter of 2020 and to be around 2.3 percentage points higher than in February (see Chart E, panel b). The nowcast of the unemployment rate based on the implied path of the job

[50] Similar to Shimer (2005), our simplified job flow approach does not explicitly account for flows in and out of the labour force. For a full description of this labour market model, see Pissarides (2000) or Box 3 in the article entitled "The euro area labour market through the lens of the Beveridge curve", *Economic Bulletin*, Issue 4, ECB, Frankfurt am Main, 2019.

finding rate in the five largest euro area countries is foreseen to peak around the beginning of May 2020 at 9.5%, driven by the large decline in job hires during the COVID-19 crisis. The gradual normalisation of the hiring rate suggests higher outflows from unemployment in May and June 2020, but with the unemployment rate still remaining higher than at its pre-pandemic levels. The dynamics of the nowcast unemployment rate also rest on the assumption that the job separation rate increased only moderately during the COVID-19 crisis.[51] Euro area governments have implemented a set of labour market policies that are halting the number of permanent lay-offs following the COVID-19 shock. Short-time work schemes may be able to minimise the possible inefficiencies arising from a sudden and temporary adverse shock by limiting the job reallocation effects in the economy.[52] However, if recalls from temporary unemployment do not occur in full, a jump in the job separation rate may lead to a further deterioration in labour market conditions and to a higher unemployment rate than that nowcast in Chart E. Finally, when comparing the nowcast unemployment rate with the actual unemployment rate, it should also be highlighted that the current relatively low unemployment figures stem partially from the fact that COVID-19 and related lockdown measures meant that people did not actively search for work (e.g. due to limited job opportunities) or were not available for work at short notice (e.g. due to childcare obligations or care of the elderly). They are, hence, classified as being outside of the labour force and do not count as unemployed according to the ILO definition of unemployment.[53]

Overall, the methodology and the high-frequency data used in this box allow for a timely assessment of the euro area labour market. The use of job flows in and out of unemployment can help to enhance our understanding of the labour market adjustment during the current COVID-19 crisis. Previous analyses based on job flows were restricted by the lack of available timely data. This box provides an initial and preliminary analysis of how to combine timely experimental data sources with official statistics. Furthermore, these data provide timely signals of current labour market conditions, with the *LinkedIn* hiring rates showing a rebound in firms' hires and with the *Indeed job* postings continuing to point towards a weakness in labour demand. In the current unprecedented circumstances, these high-frequency data provide valuable insights into the path towards economic recovery, shedding light on the asymmetric performance across sectors of the economy by allowing for a deeper understanding of the co-movements in hiring patterns across major sectors of economic activity.

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51 The main focus of this box is job creation, while job separation rates are assumed to follow a path similar to that of the global financial crisis. Three scenarios are used for the job separation rate in this box: (i) no change with respect to the fourth quarter of 2019; (ii) an increase in the job separation rate comparable to that observed during the average quarter in the global financial crisis; and (iii) half of the increase in the job separation rate observed during the average quarter during the global financial crisis.

52 Overall, labour market policies are also aimed at halting lay-offs and supporting self-employment. With regard to the effects of short-time work schemes and temporary lay-offs on labour income and on disposable income, refer to the box entitled "Short-time work schemes and their effects on wages and disposable income*", Economic Bulletin,* Issue 4, ECB, Frankfurt am Main, 2020.

53 For further details, see Eurostat's methodological note on "Data collection for the EU-Labour Force Survey in the context of the COVID-19 crisis".

7 Recent developments in euro area food prices

Prepared by Ieva Rubene

Food prices can be an important driver of euro area headline HICP inflation, as food accounts for almost 20% of the HICP consumption basket and food price inflation is highly volatile. In the second quarter of 2020 the contribution of food to HICP inflation was around two-thirds of a percentage point, making it larger than the contribution of services or non-energy industrial goods. As food items are also a prominent example of frequently purchased out-of-pocket goods, their price movements are generally thought to have an important bearing on consumers' perception of inflation. Against this background, this box reviews recent developments in euro area food prices in an environment that has been affected by the coronavirus (COVID-19) pandemic.

The April 2020 surge in euro area food prices was strong even in the light of food prices having been volatile in the past. The month-on-month increase in total food prices reached an exceptional 1.1% in April, a rate almost never observed since 1999 (excluding the few temporary large hikes due to changes in indirect taxes).[54] The only other increase of a similar magnitude was in January 2002, when the euro cash changeover took place. As food prices are highly seasonal, especially for unprocessed food, changes in a given month should be compared with the same month in other years. Comparing the month-on-month change in April 2020 with the previous three years reveals that the April 2020 change was exceptional, especially for unprocessed food (see Chart A).[55] The more detailed product breakdown shows that, within the unprocessed food component, this exceptional increase was observed mainly in prices for vegetables, and to a slightly lesser extent also in prices for fresh fruit and fish. Although the increase was less pronounced for overall processed food prices, it was clearly higher for certain items such as bread, pasta and other flour products, as well as meat.[56] Month-on-month price changes in May and possibly also June signal some unwinding of the food price increases observed in April for vegetables, fresh fish, and bread, pasta and other flour products. Price increases for processed meat eased, while prices for fresh fruit continued to increase fairly quickly. The preliminary data for June signal a further easing in food price pressures, although a detailed breakdown is not yet available. As a result, annual inflation for unprocessed food decreased to 5.9% in June from the peak of 7.6% in April. The inflation rate for processed food excluding tobacco was 1.8% in May (unchanged from April), whereas

54 In some countries the HICP for food in April was also less reliably compiled than usual as a large share of missing prices had to be inferred. For instance, in the French HICP for food in April, price changes were imputed (i.e. replaced), for example by referring to scanner data, for small shops**, outdoor** markets and shops whose prices were not available online. More generally, to impute prices that could not be collected, online prices were used if available and product replacement was more frequent than usual.

55 The changeover to a more granular HICP classification (ECOICOP-5) in January 2019 affected the split between processed and unprocessed food as of January 2017. As a result, the relative share of processed food in total food increased from around 60% to 75%, making it inappropriate to compare monthly changes with the years prior to 2017. For more information, see the box entitled "New features in the Harmonised Index of Consumer Prices: analytical groups, scanner data and web-scraping", *Economic Bulletin*, Issue 2, ECB, 2019.

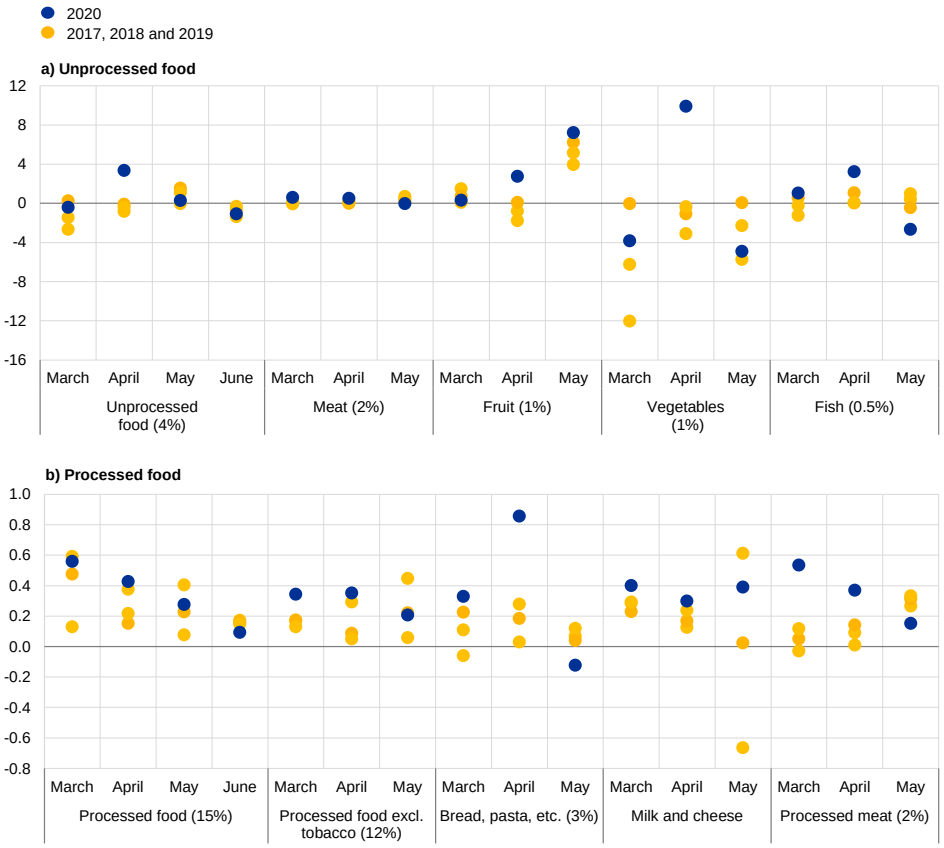
56 Price increases for meat products (both processed and unprocessed) since the middle of 2019 have been somewhat higher than over the preceding few years, partly due to strong demand from China, whose own supply of pork has decreased due to African swine fever. As a result, the EU, which is the world's largest exporter of pork products, saw these exports increase.

the preliminary data for June for total processed food show a slight decline, to 2.3%, from 2.4% in May (a more detailed breakdown is not yet available).

Chart A

Monthly price developments in euro area consumer food prices during the COVID-19 lockdown

(month-on-month percentage changes; non-seasonally adjusted data)



Sources: Eurostat and ECB calculations.
Notes: Historical month-on-month increases are shown only as of 2017 due to the break in the series resulting from the ECOICOP-5 changeover. The weights of the headline HICP items are shown in parentheses. At the time this box was finalised, a detailed breakdown of price changes for unprocessed and processed food items was not available for June.

Strong month-on-month changes in food prices can have many different causes. Usually, these changes are due to the seasonal nature of supply (in particular for unprocessed food) and the sensitivity of food prices (both processed and unprocessed) to local and global hygiene (animal disease) or weather-related shocks. Changes in indirect taxes can also sometimes have noticeable effects. However, the April 2020 surge was extraordinary and likely reflected upward pressures related to the specific circumstances of the COVID-19 pandemic. These circumstances include the fact that, during the lockdown period, households prepared more meals at home and thus diverted some demand for food away from restaurants and catering services and towards home consumption. Stockpiling in anticipation of lockdown restrictions may have been another reason why household demand for food was stronger than usual, although this argument applies only for processed food products that can be stored. Stronger-than-usual demand and the impact of stockpiling is evident in the surge in retail sales volumes for food in March, when the annual rate of change for the

euro area jumped to a historical high of 9.1%, preceding the April price surge. In April, the annual growth rate in retail sales volumes slowed to 2.0%, before increasing again to 4.9% in May.

Developments in April 2020 most likely reflected strong increases in demand combined with supply-side effects related to the lockdown and containment measures. For instance, the surge in prices, especially for vegetables, likely reflected supply difficulties due to harvesting and transportation delays. Such delays may have increased the relative supply of (often more expensive) local products. More generally, producers and retailers faced cost increases due to mandatory hygiene measures and the repackaging of bulk volumes usually sold to businesses into smaller volumes for households. Repackaging takes time and thus may also have exacerbated the temporary supply shortage. It is also possible that consumers expressed a stronger preference for packaged fresh food (likely more expensive than unpackaged products) due to the fear of contracting the virus through direct contact with a product.[57] In addition, and especially for processed food products, in a number of cases the price increases recorded in the HICP may have also reflected the cancellation of promotional activities rather than outright price increases.

The potential supply-side impacts can be assessed by looking at the cost and input structures of food production. Food production in the euro area is characterised by strong supply linkages within the sector. According to the euro area input-output table, the main input for the manufacturing output of the food sector is domestic processed and unprocessed food products (approximately 40% of all inputs). For example, food is needed to feed animals and flour is needed to make bread. Food products imported from outside the euro area only make up a small share of the food sector's total production costs (around 5%).[58] At the same time, around 10% of the processed food products, beverages and tobacco products consumed by households are imported directly from countries outside the euro area, and the corresponding share for fresh food (including fish products) is higher, at around 20%.[59] Overall, this suggests that the disruption of supply chains within the euro area, including distribution networks, that has been observed during the COVID-19 pandemic may have had important implications for the food supply and, therefore, prices.

Supply chains within the euro area are very important. Those involving the other EU countries and countries outside the EU, while generally less important, may still be important for specific products. Detailed sectoral data for euro area imports do not provide the breakdown of food imports used for domestic production and food imports delivered directly to shops for household consumption. Nevertheless, data on total food imports can provide some information on which food products are potentially more sensitive to supply chain disruptions. Eurostat trade data

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57 While the general rule when compiling the HICP is to maintain fixed outlet and product types, the collection difficulties due to COVID-19 lockdowns implied a less stable structure of outlets and products, as a result of imputations that were necessary when some prices could not be collected.

58 These estimates are based on the euro area input-output table for 2018 provided by Eurostat.

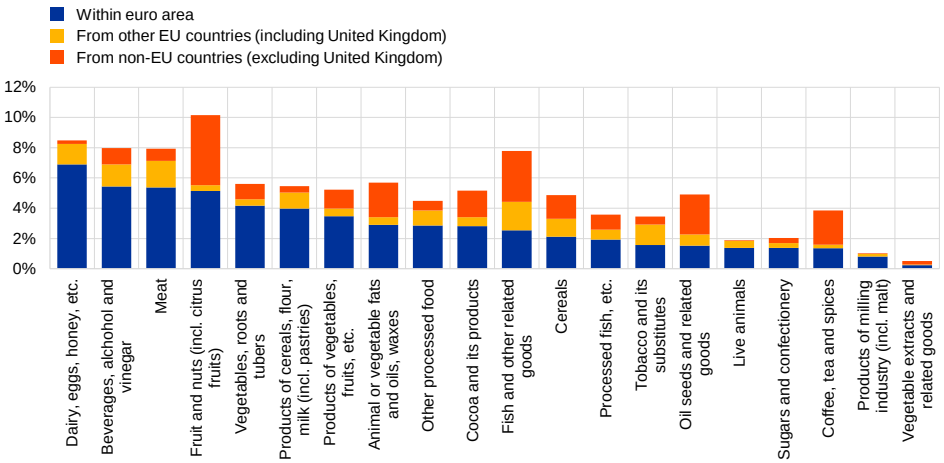
59 Based on input-output tables, "fresh food and fish imports" comprises agriculture and hunting products and related services, as well as fish, other fishing products, aquaculture products and support services for fishing. This product classification is not fully consistent with the HICP unprocessed food item.

for 2019 show that around 40% of food imports from outside the euro area were from the other EU countries (including the United Kingdom). However, there is also substantial trade in food products within the euro area. For many product groups, such as dairy, beverages, meat and vegetables, imports from euro area countries significantly exceed imports from both the rest of the EU and from countries outside the EU (see Chart B). The particularly strong price increases for vegetables in April could thus reflect the bottlenecks in production and shipping from the south to the north of Europe. In May price increases for vegetables somewhat normalised, suggesting that the bottlenecks in southern Europe may have eased. This easing should also have softened price pressures for fresh fruit, but these prices continued to increase at a somewhat higher pace in May 2020 than in the same month in previous years. Given the sizeable imports of fresh fruit, not only from the euro area but also from countries outside the EU, these higher price increases in May could partly reflect the disruption to global supply chains in countries outside the EU as a result of the COVID-19 pandemic.

Chart B

Composition and direction of euro area food imports in 2019

(percentages of total euro area imports of food products)



Sources: Eurostat and ECB calculations.

Overall, the food price increases in April were unusually strong and reflected an unprecedented combination of demand and supply influences. However, the HICP for food in May and June signalled signs of normalisation in price changes as lockdowns eased and activity resumed. There may still be some upside price pressures in the near term due to potential shortages of seasonal workers or increased hygiene costs for businesses. In the medium term, however, if the increase in unemployment is long-lasting there could be some downside pressures, especially for processed food, due to constrained household incomes.

8 Drivers of firms' loan demand in the euro area – what has changed during the COVID-19 pandemic?

Prepared by Matteo Falagiarda, Petra Köhler-Ulbrich and Eduardo Maqui

The coronavirus (COVID-19) pandemic is having multiple impacts on firms' business plans and financing needs. In view of the importance of bank borrowing for euro area firms,[60] the euro area bank lending survey (BLS) is a rich and unique source of soft information not only on bank lending conditions, but also on the financing needs of firms.[61] When combined with hard economic and financial data, information from the BLS helps to explain developments in firms' business plans and financing needs, as well as the driving factors behind them.[62] This box starts by discussing the long-term relationship between survey indicators from the BLS and actual developments in business investment. It goes on to examine the recent surge in firms' demand for loans, the driving factors and the link with firms' use of financing, in particular fixed investment, in the context of the COVID-19 pandemic. Finally, the box provides further details on this issue from a sectoral perspective.

BLS data on firms' demand for long-term loans and financing needs for fixed investment offer valuable and timely information on actual developments in firms' fixed investment, given the strong correlation that exists between these variables. Empirical evidence shows that qualitative indications from banks on firms' loan demand generally correlate well with actual developments in economic variables (see Chart A). In particular, there is a close relationship between the maturity of the loan,[63] the drivers of loan demand and the purpose for which the loan is intended to be used. For example, demand for short-term loans according to the BLS and the associated financing needs for working capital correlate well with actual developments in inventories. By the same token, long-term loan demand and the associated financing needs for fixed investment co-move closely with actual developments in gross fixed capital formation.[64] More precisely, a 1 net percentage point increase in firms' financing needs for fixed investment is typically associated with an increase of about 0.3 percentage points in the annual growth rate of fixed investment. A more formal assessment highlights the informative value of the BLS indicator in nowcasting

60 For more details, see the article entitled "Assessing bank lending to corporates in the euro area since 2014", *Economic Bulletin*, Issue 1, ECB, 2020.

61 See the ECB's website for reports on the euro area bank lending survey. For more details on the BLS, see Köhler-Ulbrich, Petra, Hempell, Hannah S. and Scopel, Silvia, "The euro area bank lending survey", *Occasional Paper Series*, No 179, ECB, September 2016, and the article entitled "What does the bank lending survey tell us about credit conditions for euro area firms?", *Economic Bulletin*, Issue 8, ECB, 2019.

62 Alternative survey indicators directly related to firms' investment needs provide detailed complementary information but tend not to be available in a similarly timely fashion. See the box entitled "Business outlook surveys as indicators of euro area real business investment", *Economic Bulletin*, Issue 1, ECB, 2020.

63 Only two different maturities are used in the BLS, namely "short-term" and "long-term". Short-term loans are loans with an original maturity of up to one year, while long-term loans are loans that have an original maturity of more than one year.

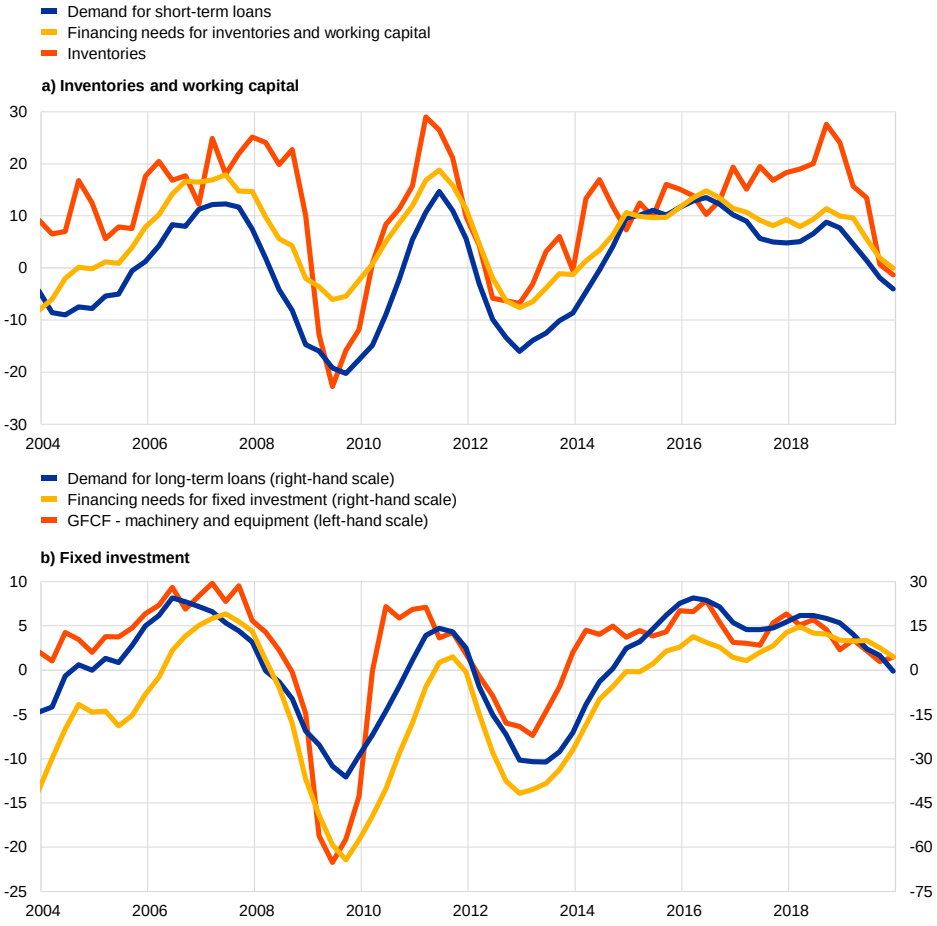
64 Given the close contemporaneous relationship between fixed investment and banks' indications on firms' loan demand, both indicators have good leading properties (of about three quarters) with respect to loan growth. For more details on the cyclical properties of bank loans, see Darracq Pariès, Matthieu, Drahonsky, Anna-Camilla, Falagiarda, Matteo and Musso, Alberto, "Macroeconomic analysis of bank lending for monetary policy purposes", *Occasional Paper Series*, forthcoming, ECB.

fixed investment. In particular, a model that also takes into account the BLS loan demand indicator in order to predict outturns in fixed investment leads to a significant improvement in accuracy compared with a naïve model that only contains past values of fixed investment.[65]

Chart A

Long-term relationship between firms' financing needs and demand for loans

(panel (a): four-quarter moving average of net percentages of banks reporting an increase, EUR billions; panel (b): four-quarter moving average of net percentages of banks reporting an increase, annual percentage changes)



Sources: ECB (BLS) and Eurostat.
Notes: "Inventories" refers to changes in inventories and acquisition less disposals of valuables (Eurostat). "GFCF" stands for gross fixed capital formation (Eurostat). Demand for short-term loans and long-term loans, financing needs for inventories and working capital and financing needs for fixed investment are net percentages of banks indicating an increase or a positive impact on firms' loan demand, based on the BLS. The latest observation is for the fourth quarter of 2019, i.e. before the start of the COVID-19 pandemic.

During the COVID-19 pandemic, this close connection between loan maturity and loan purpose has remained valid for the short-term maturity spectrum. The unprecedented nature of the pandemic led to a marked increase in the growth of loans to firms between March and May 2020 (see Chart 12 in this issue of the Economic Bulletin). Firms' loan demand was fuelled by a decline in their capacity to finance their costs via cash flows, owing to a sharp fall in revenues during the pandemic. This situation resulted in acute liquidity needs to finance working capital (see Chart B,

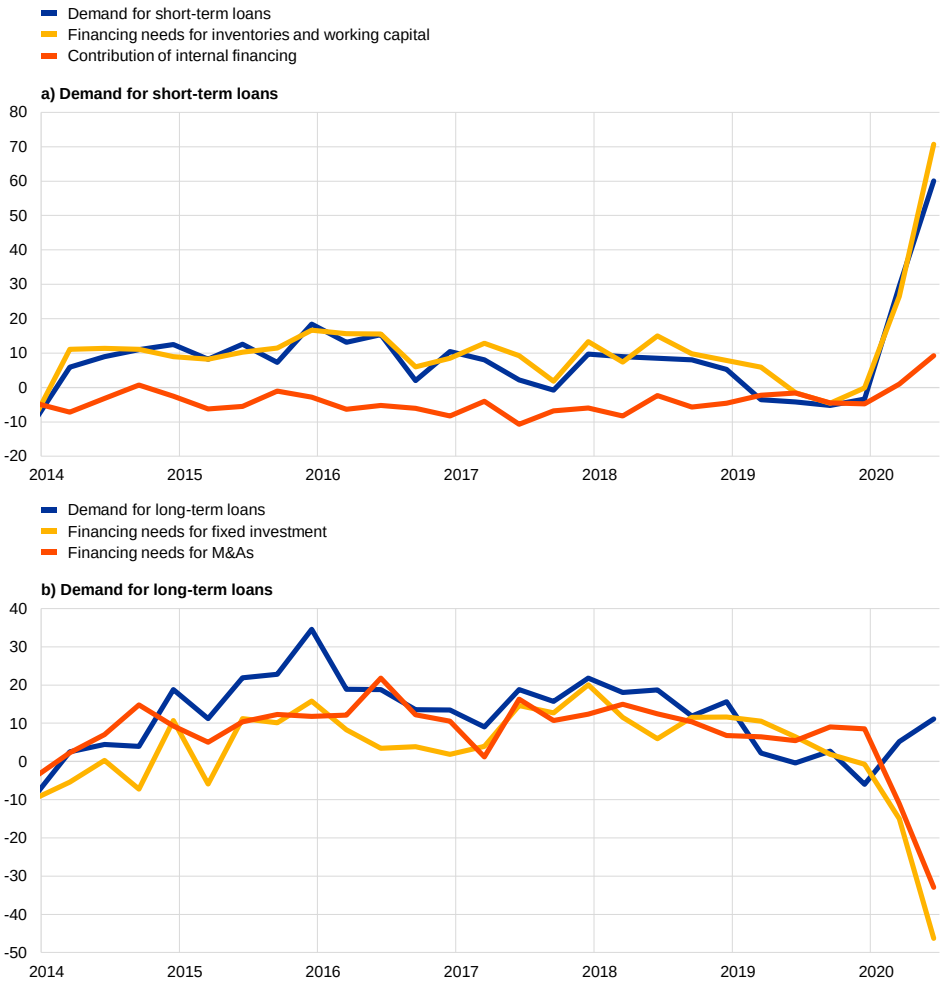
[65] The improved accuracy in nowcasting fixed investment is confirmed by a root mean square error gain of 19.85%. Standard analysis of variance (ANOVA) tests indicate that the superior in-sample predictive ability of the model augmented with the BLS indicator is highly statistically significant.

panel (a)).[66] Moreover, in an environment of high uncertainty, firms demanded loans with a view to building up precautionary liquidity buffers. Such acute liquidity needs were mainly associated with demand for short-term loans.

Chart B

Recent developments in firms' financing needs and demand for loans

(net percentages of banks reporting an increase in loan demand, and contributing factors)



Source: ECB (BLS).
Notes: "M&As" stands for "mergers and acquisitions". The latest observation is for the second quarter of 2020.

By contrast, firms' demand for longer-term loans has decoupled from developments in fixed investment, reflecting the sizeable monetary and fiscal policy support measures put in place in response to the COVID-19 crisis. During the pandemic, the close relationship between loan maturity and loan purpose has been interrupted at the long-end of the maturity spectrum. While demand for longer-term loans expanded in the first half of the year, firms' financing needs for fixed investment declined sharply (see Chart B, panel (b)). This substantial drop in financing needs for fixed investment was accompanied in the first quarter of 2020 by a steep fall in business investment, which is expected to intensify in the second quarter of the

[66] See "The euro area bank lending survey – Second quarter of 2020".

year.[67] This reflects either a reduction or a postponement of capital expenditure by firms, driven by the need to compensate revenue losses in a context of elevated uncertainty. At the same time, the rise in firms' demand for longer-term loans has been bolstered by continued favourable credit standards for loans to firms[68] and historically low bank lending rates (see also Chart 13 in this issue of the Economic Bulletin), reflecting the sizeable monetary and fiscal policy support measures in place, in particular state guarantees on bank lending, which typically back longer-term loans. The perceived longer duration of the pandemic and the ensuing high degree of uncertainty have also contributed to the increase in firms' demand for long-term borrowing.

A comparison across firm sizes shows that the shift in the drivers of loan demand was more pronounced for small and medium-sized enterprises (SMEs), which have benefited substantially from policy support measures for bank lending during the pandemic. Loan demand increased more strongly for SMEs than for large firms in the second quarter of 2020, reflecting their greater dependence on banks for financing and emergency liquidity needs (see Chart C, panel (a)). At the same time, their high demand for loans has been met by banks at very low lending rates. In particular, at the euro area level, the difference between interest rates charged on very small loans (a proxy for loans to SMEs) and those charged on large loans has narrowed in recent months (see Chart C, panel (b)). This suggests that SMEs have benefited substantially from recent monetary policy measures supporting banks, such as the TLTRO III operations[69], as well as from state loan guarantees, which are typically targeted to this specific group of firms.

67 The usefulness of banks' qualitative indications on firms' financing needs for fixed investment for nowcasting fixed investment developments therefore remains valid.

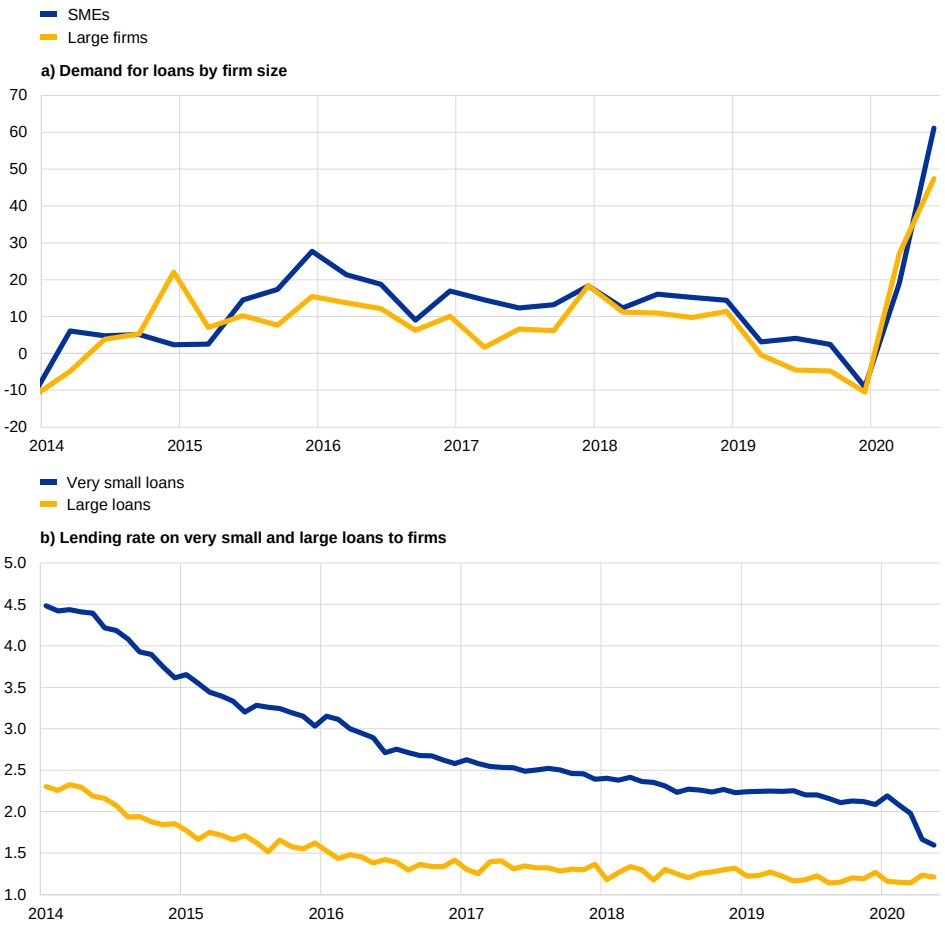
68 See "The euro area bank lending survey – Second quarter of 2020".

69 For further analysis of the effectiveness of the ECB's measures, see the box entitled "The impact of the ECB's monetary policy measures taken in response to the COVID-19 crisis" in this issue of the Economic Bulletin.

Chart C

Recent developments in demand for loans and lending rates by size

(panel (a): net percentages of banks reporting an increase in loan demand; panel (b): percentages per annum)



Sources: ECB (BLS) and ECB (monetary financial institution (MFI) interest rate statistics).
Notes: In panel (a), which is based on the BLS, the latest observation is for the second quarter of 2020. In panel (b), "very small loans" refers to loans of up to €0.25 million. "Large loans" refers to loans of over €1 million. The latest observation is for May 2020.

A comparison of financing needs across sectors shows that in the sectors most affected by the crisis, the demand for bank loans increased considerably, while value added dropped. The COVID-19 pandemic caused a larger loss of value added in trade, transport, accommodation and food service activities during the first quarter of 2020 than in manufacturing, construction and other sectors (see Chart D, panel (a)). In the second quarter of 2020, strict lockdowns, a lack of demand, interruptions to supply chains and high uncertainty are expected to have also reduced production significantly across large segments of the manufacturing sector, as reflected in a significant drop in business confidence in this sector (see Chart D, panel (b)).[70] In addition, further indicators, such as capacity utilisation and production in the capital goods sector, point to a strong decline in euro area investment in the second quarter of 2020.[71] Given the significance of the manufacturing sector in overall business investment, the decline in gross value added in this sector is likely to have been an

[70] For more details on expected sectoral losses, see the box entitled "Alternative scenarios for the impact of the COVID-19 pandemic on economic activity in the euro area", *Economic Bulletin*, Issue 3, ECB, 2020.

[71] See "Eurosystem staff macroeconomic projections for the euro area", June 2020.

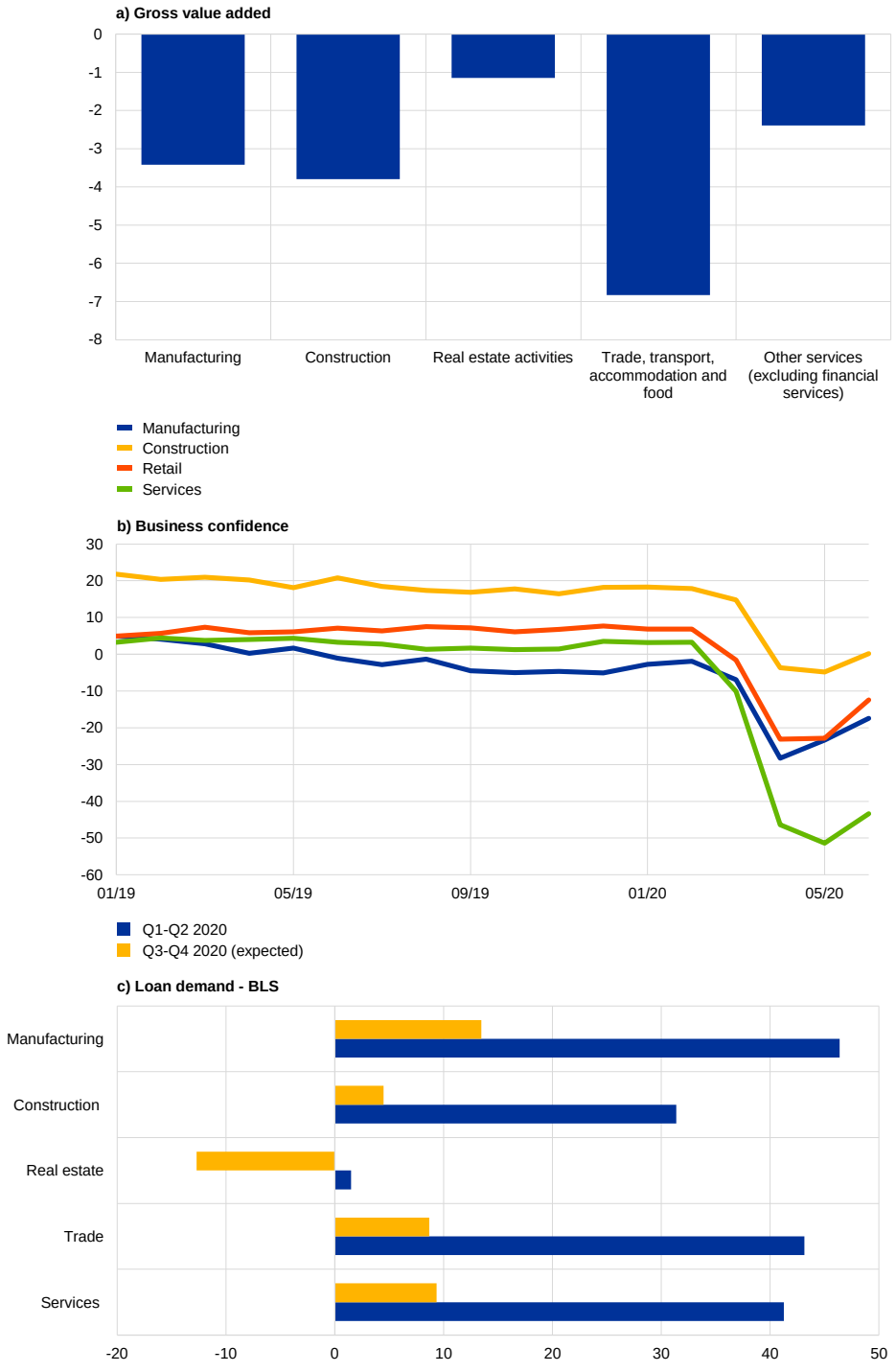
important factor in the fall in business investment during the pandemic. Developments in sectoral activity are broadly in line with the latest evidence from the BLS, according to which, in the first half of the year, loan demand increased considerably in the manufacturing sector,[72] services sector (excluding financial services and real estate) and wholesale and retail trade sector (see Chart D, panel (c)). These data point to acute liquidity needs in these sectors. By contrast, loan demand increased less in the construction sector, and more particularly in the real estate sector, where firms have so far been less affected by the crisis. This can be attributed to the lower labour intensity and fixed costs of real estate activities, which resulted in smaller liquidity needs during the lockdown period.

[72] In the case of manufacturing, loan demand was also driven by regulatory investment needs in the automotive sector.

Chart D

Gross value added, business confidence and demand for loans across sectors

(panel (a): percentage changes Q1 2020 versus Q4 2019; panel (b): percentage balances, deviation from long-term average; panel (c): net percentages of banks reporting an increase in loan demand)



Sources: ECB (BLS), Eurostat and European Commission.
Notes: In panel (b), "long-term average" refers to the period from 1999 onwards. Panel (c) shows net percentages of banks reporting an increase in loan demand in the July 2020 euro area bank lending survey (BLS). "Construction" refers to construction excluding real estate construction; "Real estate" refers to real estate construction and real estate activities; "Trade" refers to wholesale and retail trade; "Services" refers to services excluding financial services and real estate activities.

Given the significant risks weighing on firms' bank financing, the continuation of monetary and fiscal policy support measures is crucial in ensuring a quick and robust recovery in business investment and economic activity. By preserving favourable bank lending conditions, the sizeable monetary and fiscal policy support measures in place have so far acted as a backstop against the risk of an adverse feedback loop between the real and financial sectors. In fact, the latest available survey data for June point to an improvement in production expectations and business confidence since the trough for the manufacturing sector in April, suggesting that some degree of recovery in investment activity is possible in the second half of 2020. However, the expected end of state guarantee schemes for loans to firms in some euro area countries in the coming months may lead to renewed fears about the creditworthiness of borrowers. In this context, the continuation of a supportive policy environment in the near future will be crucial in preserving favourable financing conditions and facilitating the flow of credit to the corporate sector. This would also improve the confidence that firms need in order to engage in long-term investment projects, on which a sustained recovery in economic activity depends.

Articles

1 Consumption of durable goods in the euro area

Prepared by André Casalis and Georgi Krustev

1 Introduction

Trends in households' purchases of durable goods have important implications for the business cycle, which motivates the need to examine them closely from a monetary policy perspective. First, because of their marked pro-cyclicality, durables can help in tracking – and possibly anticipating – the state of the business cycle in the euro area, thus complementing the signal from other pro-cyclical demand components, such as investment.[73] Second, expenditure on durables can help us better understand cross-country heterogeneity in terms of consumption and saving habits, as well as its drivers. Third, since purchases of durables can be financed using credit, the behaviour of durable goods provides important insights into the state of financing conditions in the economy.

Expenditure on durable goods is a key component of consumption dynamics, despite accounting for a modest share in aggregate household spending. In the two years preceding the coronavirus (COVID-19) pandemic that has affected the European and global economies, annual growth in euro area consumption moderated from the solid rates of expansion observed in 2015-17, partly owing to a decline in spending on durable goods (see Chart 1). Specifically, having provided strong support to the earlier phases of the latest expansion, durables accounted for almost one-third of the overall loss in growth momentum in consumption in 2018-19, despite amounting to less than 10% of its total share.[74]

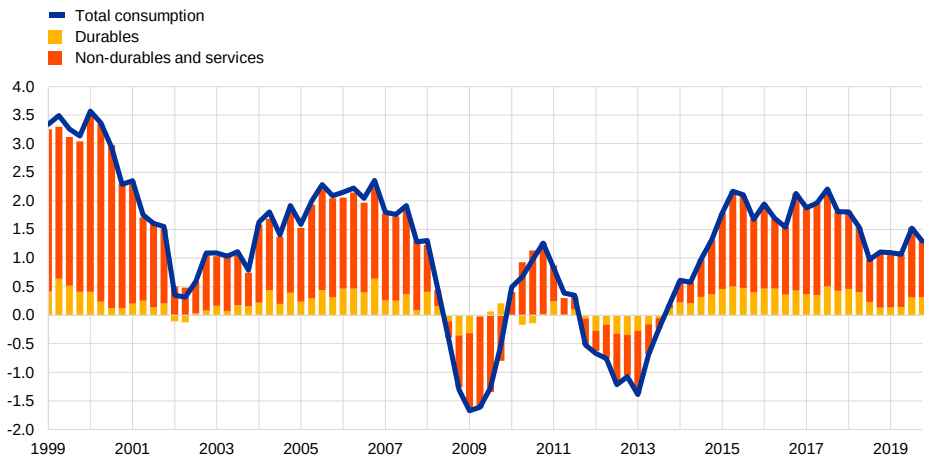
73. Durable goods consumption, alongside residential investment, is generally considered a strong leading indicator of business cycles. See Mian, A. and Sufi, A., "Household Leverage and the Recession of 2007–09", *IMF Economic Review,* Vol. 58, No 1, 2010, pp. 74-117.

74 Average annual consumption growth in the euro area slowed from 1.9% in 2015-17 to 1.3% in 2018-19. The reduction of the contribution of durables expenditure to total consumption growth amounted to 0.2 percentage points between the two periods, or roughly one-third of the overall slowdown.

Chart 1

Developments in private consumption in the euro area

(annual percentage changes and contributions in real terms)



Sources: Eurostat and ECB calculations.
Notes: Non-durables and services also includes semi-durables. The latest observations are for the fourth quarter of 2019.

Consumer durables have specific characteristics that set them apart from other consumption expenditure items. First, a durable good provides utility over multiple periods and (like capital) is subject to depreciation. This allows consumers to postpone purchases in times of economic hardship, while still benefiting from the flow of services from the accumulated stock, and to adjust to the desired level of durables once the economy has recovered.[75] Secondly, the purchase of durables can often be financed using credit and the durables are sometimes eligible for use as collateral, which can make them more exposed to credit conditions and lending rates than non-durables.[76] Finally, changes in the stock of durables may be subject to adjustment costs. This could lead to sluggish and protracted cycles in durable goods expenditure, since the presence of such costs determines "inaction zones" where a consumer finds it optimal not to adjust small differences between the actual and the desired stock of durables.[77] Box 1 provides further details on the statistical features of durable goods consumption data in the euro area.

Box 1

Durable goods consumption data in the euro area: definition, scope and availability

Prepared by Stanimira Kosekova

Consumer durables are defined in the European System of Accounts (ESA 2010) as durable goods used by households for final consumption repeatedly over a period of more than one year. In the

75 Part of the adjustment is necessary owing to depreciation.

76 Studies using US data find that the reaction of durable goods expenditure to monetary shocks is larger than that of non-durables, despite always being of the same sign; this phenomenon is commonly referred to as co-movement. See, for instance, Monacelli, T., "New Keynesian models, durable goods, and collateral constraints", *Journal of Monetary Economics*, Vol. 56, No 2, 2009, pp. 242-254 and Cantelmo, A. and Melina, G., "Monetary policy and the relative price of durable goods", *Journal of Economic Dynamics and Control*, Vol. 86, Issue C, 2018, pp. 1-48.

77 See Caballero, R.J., "Durable Goods: An Explanation for Their Slow Adjustment", *Journal of Political Economy,* Vol. 101, No 2, 1993, pp. 351-384.

national accounts they are part of households' final consumption expenditure.[78] The classification of individual consumption according to purpose (COICOP) is used to allocate consumer goods and services into product subgroups, which for analytical purposes are further aggregated into four main groups showing consumption breakdown by durability – durable goods, semi-durable goods, non-durable goods and services. The difference between non-durable goods and durable goods is based on whether they can be used only once or repeatedly during a period of over one year. Semi-durable goods differ from durable goods in that their expected service life, although over one year, is often considerably shorter and their purchase price lower. Clothing and shoes are examples of semi-durable goods. Services account for more than half of households' final consumption expenditure. It should be noted, however, that the acquisition of housing and land is not recorded as a consumer durable in the national accounts but as investment, and is therefore not included in the data presented in this box. Instead, the housing services consumed (and produced) by households living in dwellings owned by them (i.e. "owner-occupied housing") are reflected in household consumption by way of imputed rents. These imputed rents for owner-occupiers contribute significantly to the high share of rents (31.7%) in the consumer expenditure item under services in the national accounts.

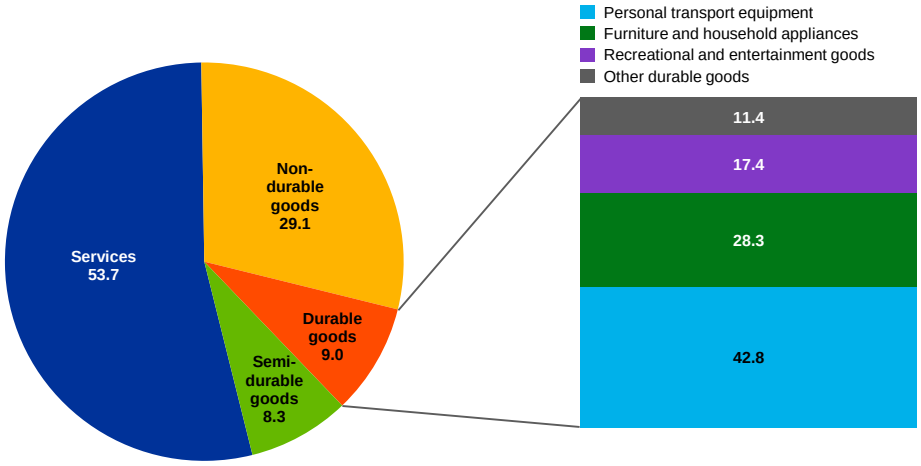
Consumer durable goods include furniture and household appliances (including kitchen equipment), personal transport equipment (i.e. vehicles), recreational and entertainment goods (including computers and communications equipment), other goods such as jewellery, clocks and watches, and therapeutic medical appliances and equipment. Households' expenditure on consumer durables accounts for about 9% of households' final consumption (based on the "domestic concept", see below) in the euro area. The major consumer durable items in terms of their relative consumption share within this group are personal transport equipment (about 42.8%), followed by furniture and household appliances (28.3%) and recreational and entertainment goods (17.4%) (see Chart A).

[78] Consumer durables held by households as final consumers include typical asset-type goods, for example those in the ESA 2010-defined asset groups of "*transport equipment"* (AN.1131) and "*other machinery and equipment"* (AN.1139), which are acquired by households for final consumption. In such cases they are not accounted for as assets, which is otherwise the case for the non-household sector.

Chart A

Euro area households' final consumption by consumer goods and services and by groups of consumer durables, in 2018

(percentage of households' final consumption; percentage of households' final consumption of durable goods)



Sources: Eurostat and ECB calculations.
Note: Data for consumer durables in Greece refer to 2017.

For presenting household consumption data in the national accounts, the statistical concept of residency is relevant. While households' total final consumption entering the expenditure side of GDP reflects the "national concept" (i.e. the expenditure of the residents of a country, whether domestically or abroad), the split of durable and non-durable consumption reflects the so-called "domestic concept" of households' final consumption (i.e. all consumption expenditure in the domestic territory, irrespective of the residency of the consumer). The concept behind the latter approach is the same as that used in the field of consumer price statistics, which, in addition, uses the same consumer expenditure breakdown as the COICOP classification. Combining the two sources also enables the derivation of durable goods expenditure in deflated (volume) terms.

Eurostat's reporting requirement of national accounts data by durability is different for quarterly and annual data. Quarterly consumer goods data are broken down into durables and others, while the annual statistics provide the durability breakdown of the four above-mentioned main groups. Some euro area countries report the annual breakdown by durability also at a quarterly frequency. Durable goods consumption data are available from 1995 onwards for most euro area countries.[79]

Against this background, this article takes a longer-term perspective to explore stylised facts about expenditure on durables in the euro area and its relevance for business cycle fluctuations. Section 2 describes the characteristics and behaviour of durable goods consumption over the business cycle. Section 3 covers the relevance of financing conditions, including a specific focus on car purchases. Section 4 deals with long-run trends in relative prices and shares of durable goods in consumption. The analysis is complemented by insights from an empirical (structural VAR) model in Section 5, which decomposes consumption growth into structural

[79] Quarterly data for Malta start only in the first quarter of 2000 owing to national derogations. Data for Finland and France are available from before 1995.

shock contributions, distinguishing aggregate demand and supply shocks from durable-specific ones, while taking into account monetary conditions.

2 Behaviour and characteristics of durable goods consumption

2.1 Cyclical behaviour of durables

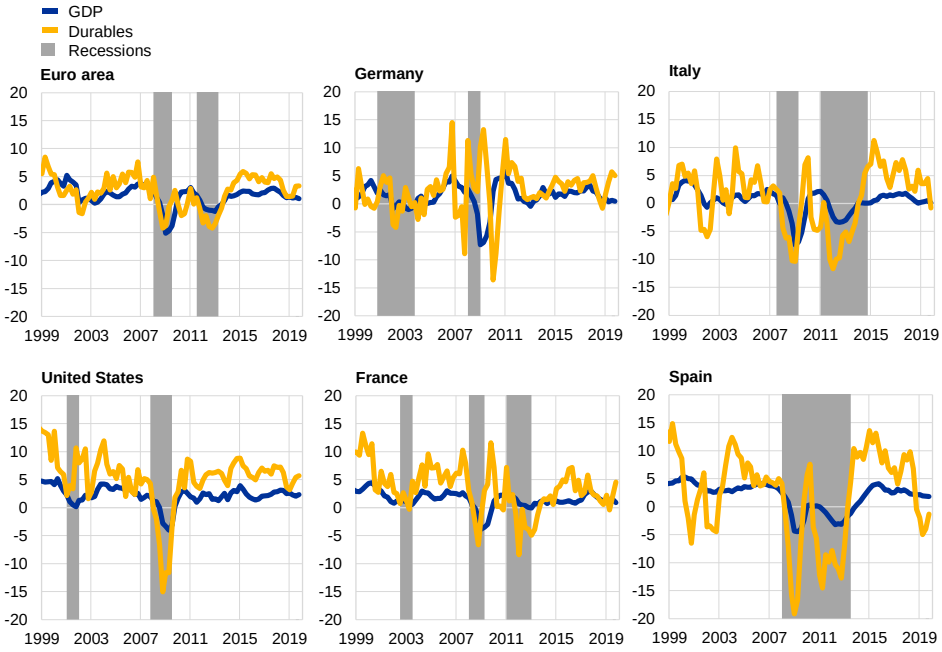
Expenditure on durables tends to be volatile and pro-cyclical, reflecting the specific characteristics of this type of good. As shown in Chart 2, the dynamics of year-on-year durable goods consumption exhibit ample fluctuations, with growth typically exceeding GDP (and non-durable goods consumption) in times of economic expansion and contracting more strongly during recessions. The pro-cyclicality of expenditure on durable goods was particularly pronounced in Italy and Spain during the European sovereign debt crisis. The counter-cyclical behaviour in Germany during the crisis period was affected by the cars component, which benefited from subsidies in the form of vehicle scrappage schemes that were larger than in the other euro area countries and proved to be rather effective.[80] Moreover, the household sector in Germany was more resilient than in other large euro area countries.

[80] See Grigolon, L., Leheyda, N. and Verboven, F., "Scrapping subsidies during the financial crisis — Evidence from Europe", *International Journal of Industrial Organization,* Vol. 44, 2016, pp. 41-59. In contrast to the full sample in Table 1, the correlation of durables to GDP in Germany is positive, rather than negative, for a sub-sample up to the fourth quarter of 2007, which excludes the financial crisis and the counter-cyclical behaviour of the cars component induced by the vehicle scrappage schemes.

Chart 2

Cyclicality of durable goods consumption

(annual percentage changes in real terms)



Sources: Eurostat, US Bureau of Economic Analysis, CEPR, NBER, ECRI and ECB calculations.
Notes: Recession dating is based on the NBER (for the United States), the CEPR (for the euro area) and ECRI (for Germany, France, Italy and Spain). The latest observations are for the fourth quarter of 2019.

Given their volatility and pro-cyclicality, durable goods expenditure historically accounts for a relatively large share of the variance in GDP despite its modest size, in particular relative to non-durable goods consumption. Table 1 shows the share of consumption and its components in terms of GDP, and the corresponding share of GDP variance explained. Total private consumption accounts for two-thirds of GDP in the United States and slightly more than one-half in the euro area. However, its overall contribution to the variance of GDP is typically smaller given the smooth behaviour of services, the largest component within non-durable consumption items. By contrast, in France, Italy and Spain, as well as in the United States, durables contribute to a larger share of the variance in GDP growth relative to their size. From that perspective, expenditure on durables bears some resemblance to the characteristics of investment, which, despite its smaller size in aggregate demand, accounts for a disproportionately large share of output fluctuations.

Table 1

Cyclical properties of consumption and its components

(percentage shares and percentage of variance explained)

	United States		Euro area		Germany		France		Italy		Spain	
	%Y	%σ2	%Y	%σ2	%Y	%σ2	%Y	%σ2	%Y	%σ2	%Y	%σ2
Consumption	67.2	54.9	55.3	33.0	52.2	10.0	53.1	34.5	60.6	43.5	60.5	67.0
Durables	*7.9*	*13.2*	*5.3*	*4.8*	*6.1*	*-0.8*	*4.8*	*5.3*	*5.3*	*7.8*	*4.8*	*9.1*
Non-durables	*59.3*	*38.7*	*50.0*	*27.6*	*46.1*	*11.1*	*48.3*	*27.2*	*55.3*	*34.4*	*55.8*	*56.7*
Investment	21.1	50.5	21.3	40.4	20.6	33.9	21.8	47.5	19.5	39.2	23.1	56.7

Sources: Eurostat, US Bureau of Economic Analysis and ECB calculations.
Notes: Share of GDP (%Y) and percentage of GDP variance explained (%σ2) by consumption and its components in the period from the first quarter of 1997 to the fourth quarter of 2019. Share of GDP is expressed in nominal terms, while share of explained variance is expressed in real terms. Non-durables also include semi-durables and services. For better comparability between the United States and the euro area (and euro area countries), investment refers to gross fixed capital formation (net of inventories) and comprises both private and public investment.

2.2 Turning point analysis

Turning point analyses focus on identifying time periods in which an economy switches from one regime to another, for instance from a phase of expansion to a phase of contraction, and vice versa. In this section, results for the euro area are shown based on two different approaches for defining a recession. One approach is based on the official business cycle dating methodology used by the Euro Area Business Cycle Dating Committee of the Centre for Economic Policy Research (CEPR).[81] The other is a modified version for quarterly data by Harding and Pagan (2002) of the original Bry and Boschan (1971) dating algorithm (hereafter MBBQ algorithm).[82] This algorithm is a multi-step, automated method to identify turning points on the basis of assumptions about the relative size of peaks and troughs and the minimum duration of the different phases of the business cycle.

Recessions in the euro area, based on CEPR official dating, tend to coincide with downturns in both GDP and most expenditure components, including durable goods consumption. Chart 3 shows CEPR recessions in the euro area (grey vertical bars delineated by black borders) alongside downturns in GDP and expenditure components identified on the basis of the MBBQ algorithm (coloured bars). The fact that recession periods tend to coincide with clusters of identified downturns for most GDP expenditure components is in line with the notion that a recession is a generalised phenomenon spread across the whole economy. At the same time, the decline in durable goods expenditure around downturns in the broader economy signals that purchases of durables are highly synchronised with developments in activity and thus carry important information about the phase of the business cycle.

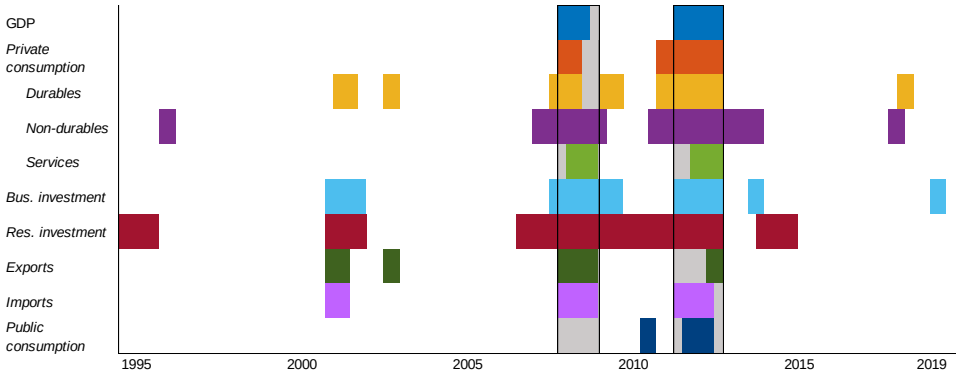
81 The CEPR approach defines a recession as “a significant decline in the level of economic activity, spread across the economy of the euro area, usually visible in two or more consecutive quarters of negative growth in GDP, employment and other measures of aggregate economic activity for the euro area as a whole”.

82 See Harding, D. and Pagan, A., “Dissecting the cycle: a methodological investigation”, *Journal of Monetary Economics*, Vol. 49, No 2, 2002, pp. 365-381 and Bry, G. and Boschan, C., “Programmed Selection of Cyclical Turning Points” in Bry, G. and Boschan, C. (eds.), *Cyclical Analysis of Time Series: Selected Procedures and Computer Programs*, NBER, 1971, pp. 7-63.

Chart 3

Turning points for GDP expenditure components in the euro area

(recessions shown in grey bars based on CEPR dating; turning points identified by the MBBQ algorithm)



Sources: Eurostat, CEPR and ECB calculations.
Notes: Grey areas denote recessions identified by the CEPR. Coloured areas denote turning points for GDP and expenditure components identified by the Modified Bry-Boschan Quarterly (MBBQ) algorithm. The disaggregated series for euro area consumption components are built as a bottom-up aggregation of country-level data for EA19 in the case of durables, and for a subset of 12 countries (Germany, Estonia, Ireland, Spain, France, Italy, Cyprus, Latvia, Luxembourg, Malta, the Netherlands and Finland) for non-durables and services from the first quarter of 1995 to the present, with the exception of Italy, the Netherlands and Austria (all available from the first quarter of 1996), and Malta from the first quarter of 2000. Abbreviations on the vertical scale refer to business (Bus.) and residential (Res.) investment. Non-durable consumption includes also semi-durable goods and business investment includes public investment. The latest observations are for the fourth quarter of 2019.

Aside from downturns coinciding with official recessions, turning points in durables have also occurred historically outside recessions but during periods typically characterised by economic weakness. One such occurrence, for instance, was in the early 2000s, when economic activity in the euro area experienced a significant loss of momentum.[83] In tracking such episodes of "soft patches" in the economy, durable goods expenditure bears some resemblance to the behaviour of investment – another component of demand that tends to be both highly volatile and strongly pro-cyclical.[84] At the same time, the existence of "false" recessionary signals coming from the most volatile components of GDP cautions against over-relying on any single indicator, since it may embody sector-specific, rather than economy-wide, weakness.

Another interesting observation is that the identified downturns in durable consumption have tended to anticipate the official start of the two recessions in the euro area dated by the CEPR. While the limited recession episodes in the euro area invite caution against drawing strong conclusions, this leading feature in durable goods expenditure is also evident in the longer sample for the United States, which stretches over six decades, thereby capturing a larger number of recessions (see Chart 4). As with the euro area, the evidence from the United States also seems to suggest that the signal provided by durables regarding the change of phase in the business cycle tends to be less noisy than the one based on investment components. At the same time, it appears more consistent in signalling shifts between economic regimes than other consumption items such as services, which often do not exhibit turning points during official recessions.

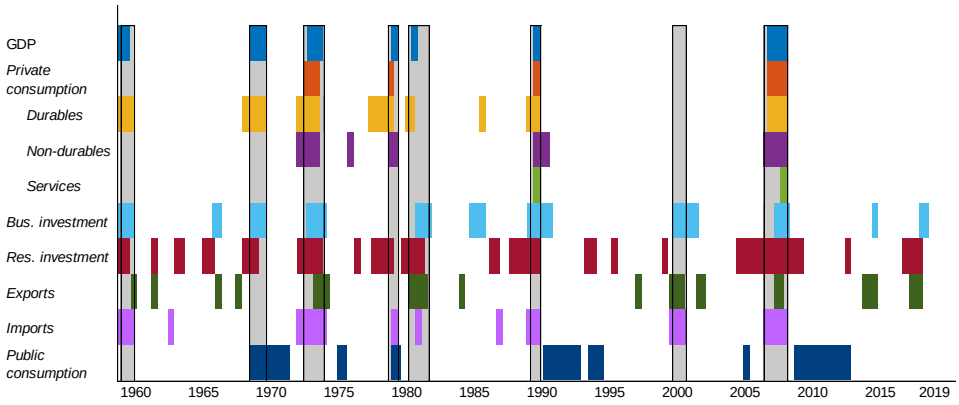
83 Note that the first two quarters of 2003 have been characterised by the CEPR as a "prolonged pause in the growth of economic activity, rather than a full-fledged recession" in the euro area.

84 On the distinction between recessions and soft patches in the euro area economy, see Duma, M. Forsells, M. and Kennedy, N., "Definitions and characteristics of soft patches in the euro area", *Economic Bulletin*, Issue 4, ECB, 2019.

Chart 4

Turning points for GDP expenditure components in the United States

(recessions shown in grey bars based on NBER dating; turning points identified by the MBBQ algorithm)



Sources: US Bureau of Economic Analysis, NBER and ECB calculations.
Notes: Grey areas denote recessions identified by the NBER. Coloured areas denote turning points for GDP and expenditure components identified by the Modified Bry-Boschan Quarterly (MBBQ) algorithm. Abbreviations on the vertical scale refer to business (Bus.) and residential (Res.) investment. The latest observations are for the fourth quarter of 2019.

3 Durable consumption, credit and financing conditions

Credit availability is important for households' ability to smooth consumption over the business cycle. Financing conditions are particularly relevant for the purchase of big-ticket items such as durables, which, because of their longer lifespan and higher unit value, are more often acquired with credit and are sometimes eligible for use as collateral to secure the underlying credit claim.[85] Box 2 provides further details on the use of credit for durable goods purchases in the euro area.

Box 2

The use of credit for durable goods purchases in the euro area

Prepared by Matteo Falagiarda and Mika Tujula

A large share of purchases of durable goods in the euro area is financed via credit.[86] This feature makes durable goods more exposed to credit conditions and monetary policy than non-durable goods. In the euro area as a whole, the relevance of consumer credit for purchases of durable goods declined markedly in the wake of the global financial crisis but has recovered since 2015 (see panel (a) in Chart A). While about 60% of the purchases of durable goods were financed using credit in the pre-crisis period, the share declined to around 40% in the period 2008-14 before increasing to almost 50% in the most recent period. From a country perspective, a similar pattern can be observed in Germany and Spain, where the bulk of households' durable goods purchases in the pre-crisis period

85 Notwithstanding the importance of consumer credit in financing the consumption of durable goods (see Box 2), mortgages associated with the acquisition of housing still account for a larger share of household debt.

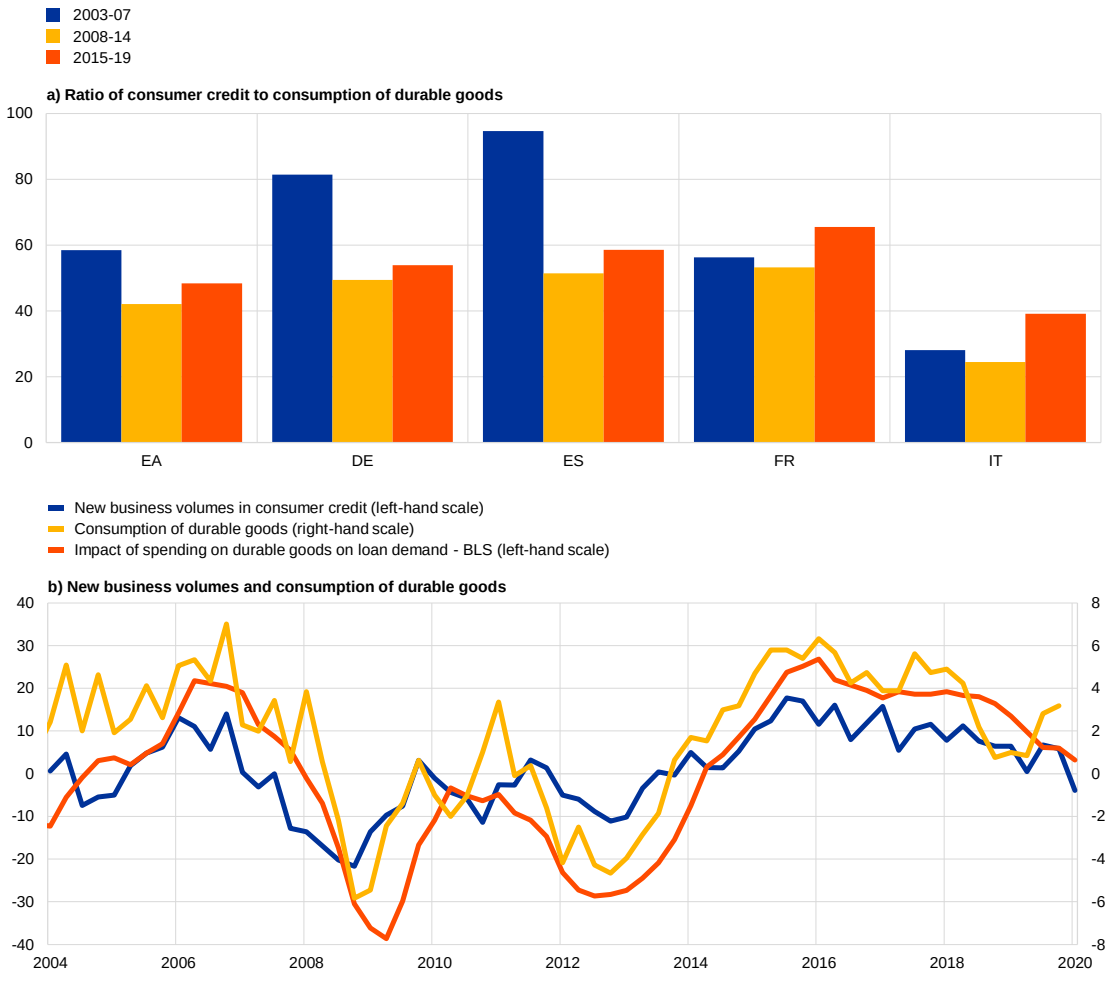
86 Credit for consumption refers to loans granted for mainly personal use for the purchase of goods and services. It should be noted that revolving loans, overdrafts and credit card debt are covered by consumer credit in the case of outstanding amounts in MFI balance sheet statistics, while in the case of new business volumes they are excluded from MFI interest rate statistics. For more details on the statistical definitions, see the "Manual on MFI balance sheet statistics" and the "Manual on MFI interest rate statistics".

was financed with credit. In Germany, the decline observed after 2007 can be attributed to a decrease in the share of cars to total durable purchases and, in 2009-10, also to the vehicle scrappage scheme, which reduced the amount of credit needed to purchase a car. In Spain, the decline in the share of durables financed via credit can be explained by the strong deleveraging of the household sector and high unemployment rates observed after the global financial crisis. In France and Italy, credit is currently supporting purchases of durable goods to a higher extent than in the past, although in Italy it remains at a relatively moderate level, owing to the lower share of cars to total durable purchases in comparison with the other countries.

Chart A

Developments of consumer credit in the euro area

(panel (a): percentages; panel (b): annual percentage changes; four-quarter moving averages of net percentages)



Source: ECB calculations.
Notes: Panel (a) – ratio of new business volumes of consumer credit to consumption expenditure of durable goods; Panel (b) – annual growth rate of new business volumes in consumer credit and consumption expenditure of durable goods in nominal terms; four-quarter moving averages of net percentages for the ECB's euro area bank lending survey (BLS) indicator. The latest observations are for the first quarter of 2020, except the observation for consumption of durables, which is for the fourth quarter of 2019.

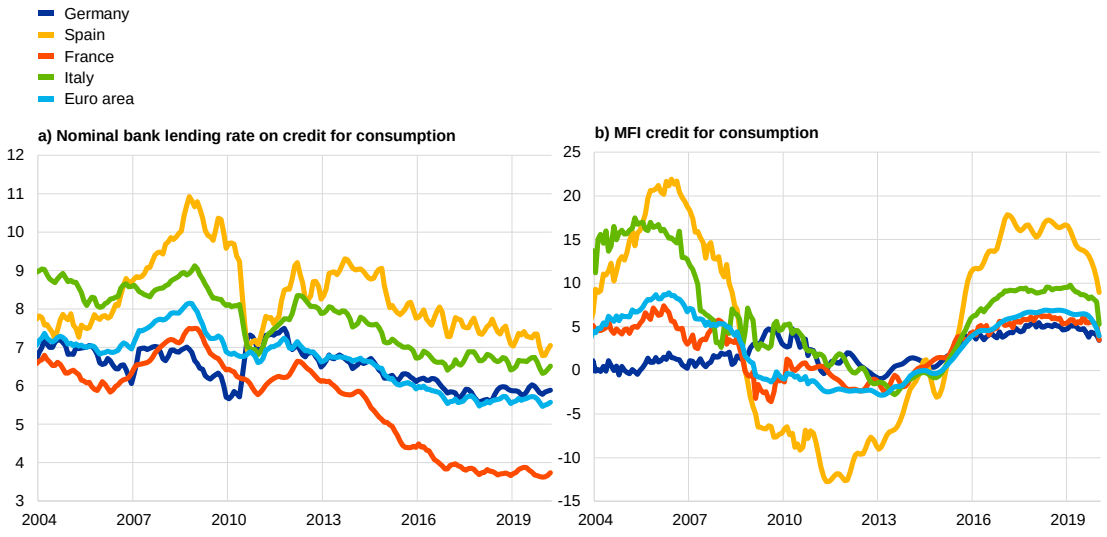
Consumer credit has supported households' demand for durable goods during the latest recovery. Movements in new business volumes in consumer credit have generally followed changes in consumption expenditure on durable goods very closely (see panel (b) in Chart A). The correlation between durable goods consumption and new business volumes in consumer credit from the first quarter of 2004 to the fourth quarter of 2019 is around 0.75. This strong link is also confirmed by the

ECB's euro area bank lending survey, which suggests that spending on durable goods is an important contributor to the demand for consumer credit. This robust relationship is also driven by the fact that durable goods, particularly cars, may serve as collateral to back the corresponding credit claims. Since 2014, the increasing demand for durable goods and for consumer credit to finance them has been supported by a return of confidence among households following the broad-based recovery in the economy and the improved labour market situation, as well as by record low bank lending rates (see panel (a) in Chart B). These developments were underpinned by the ECB's accommodative monetary policy measures. The improved macroeconomic environment considerably reduced borrowers' credit risk, thereby allowing banks to ease their credit supply conditions.[87] Since mid-2018, consumer credit dynamics have started to decelerate gradually, in line with the slowdown in economic activity and in the consumption of durables. This deceleration has been accompanied by increasing tightening pressures on banks' credit standards, mainly due to banks' stricter attitude towards credit risk, as well as higher collateral requirements and rejection rates. These pressures intensified in early 2020, reflecting the impact of the coronavirus pandemic.[88]

Chart B

Developments in lending rates and volumes of consumer credit in selected euro area countries

(panel (a): percentages per annum, three-month moving averages; panel (b): annual percentage changes)



Source: ECB calculations.
Notes: Panel (a) – The latest observations are for March 2020; Panel (b) – The data before 2011 are not adjusted for loan sales and securitisation. For the euro area and for Spain, quarterly data are interpolated to a monthly frequency using a cubic spline function. The latest observations are for March 2020.

The strengthening of euro area consumer credit since 2014 has been broadly based, although the growth rates of consumer credit in individual countries has shown marked differences (see panel (b) in Chart B). Since mid-2015, consumer credit has played a key role in supporting the recovery in total MFI loans to households in Spain and, to a lesser extent, Italy. In Spain, consumer credit grew at double-digit rates in annual terms and was the only private sector loan component to display a positive annual growth rate between 2015 and 2017. These robust dynamics should, however, be seen against the background of the strong and protracted decline in bank credit that took place during the euro area financial and sovereign debt crises and the subsequent strong pent-up demand pressures. In Italy, consumer credit accounted for half of the annual growth in total MFI loans to

87 See "Recent trends in consumer credit in the euro area", *Economic Bulletin*, Issue 7, ECB, 2017.
88 See "The euro area bank lending survey – First quarter of 2020", ECB, April 2020.

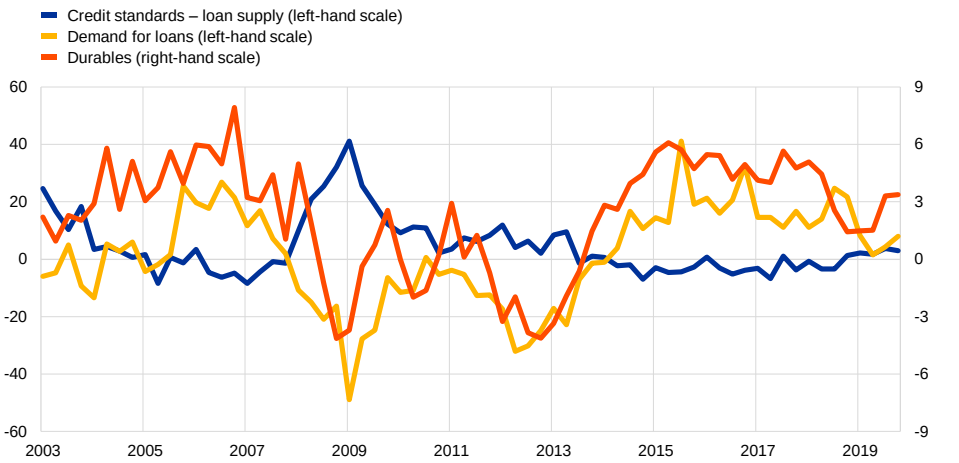
households over the period 2016-19. By contrast, the annual growth rates of consumer credit remained relatively moderate in Germany and France. Focusing on the most recent period, the growth of credit for consumption moderated in all large euro area countries, in line with the weakening economic environment. This moderation was particularly pronounced in Spain, as strong pent-up demand pressures following the crisis have been gradually reabsorbed. A sharp decline in consumer credit dynamics was observed in early 2020 across all large euro area countries, as a result of the lockdown measures introduced following the coronavirus outbreak.

As a result, durables correlate closely with demand for consumer credit and can provide important insights into the state of financing conditions in the economy. As shown in Chart 5, phases of sustained growth in durable goods consumption, such as during the period of expansion prior to the global financial crisis or the more recent one in 2013-19, tend to coincide with increases in demand for consumer loans typically used by households to finance purchases of durables. Likewise, the close co-movement between durables and demand for credit was present during the double-dip recessions in the euro area. Moreover, during the global financial crisis in 2008-09, the tightening of credit standards by banks restricted the availability of credit from the supply side and coincided with a significant contraction in durable goods purchases.

Chart 5

Supply of and demand for consumer credit, and durable goods consumption in the euro area

(left-hand scale: net percentages; right-hand scale: annual percentage changes)



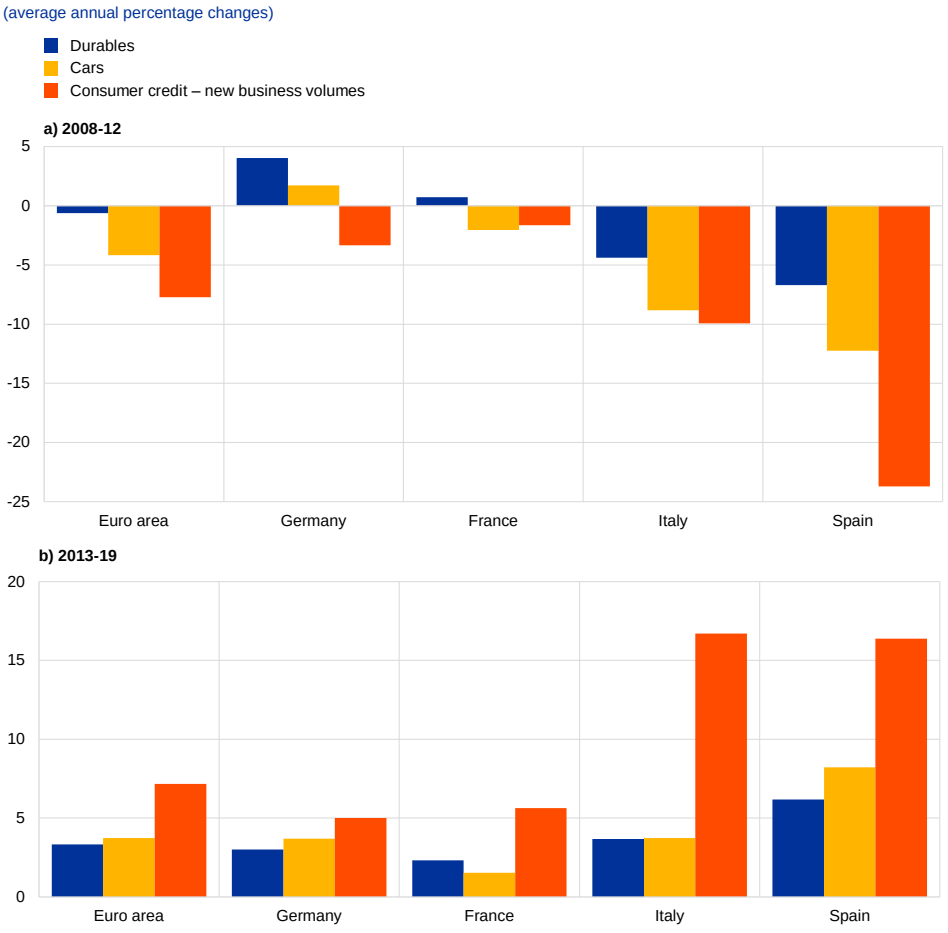
Sources: ECB's euro area bank lending survey (BLS), Eurostat and ECB calculations.
Notes: Loan supply and demand are based on questions asked to banks about how their credit standards and demand for loans have changed over the past three months. Euro area durable goods consumption series is in real terms. The latest observations are for the fourth quarter of 2019.

Divergent patterns in durable goods expenditure across different countries can therefore also reflect heterogeneity in financing conditions. Chart 6 displays durable goods consumption, expenditure on cars and consumer credit during two phases of the business cycle, for the euro area as a whole and across the four largest economies. The first period, 2008-12, was dominated by the double-dip recession and was followed by a phase of sustained recovery. While durable goods expenditure

stagnated and credit contracted in the euro area as a whole during the first period, these developments – in the form of a sharp contraction – were particularly evident in Italy and Spain, countries heavily affected by the euro area financial and sovereign debt crises. By contrast, in the second period starting in 2013, as credit availability improved and the crisis-induced dispersion of financing conditions across euro area economies declined with the support of policy measures, both credit growth and durable goods expenditure – including purchases of vehicles – recovered, expanding at above-average rates in Italy and Spain. In particular, the recovery in credit in the latter phase was driven by the strong take-up in new medium and long-term consumer loans, the type of loans predominantly used by households to finance purchases of big-ticket items.[89]

Chart 6

Consumer credit, durable consumption and expenditure on cars



Sources: Eurostat, ECB and ECB calculations.
Notes: Average growth rate of consumption of durable goods, expenditure on cars and consumer credit over the periods 2008-12 and 2013-19. Consumer credit is the annual change in the flow of new business loans granted for consumption purposes (excluding revolving loans and overdrafts, convenience and extended credit card debt). Consumer credit is expressed in nominal terms, while the consumption of durable goods and expenditure on cars are expressed in real terms. For consumption of durable goods and consumer credit the latest observations are for 2019, while for expenditure on cars the latest observations are for 2018. The growth rate for expenditure on cars in 2019 is extended on the basis of new passenger car registrations.

In particular, car purchases stand out as a major item within durable goods consumption – at around 40% of the euro area total – that is strongly affected

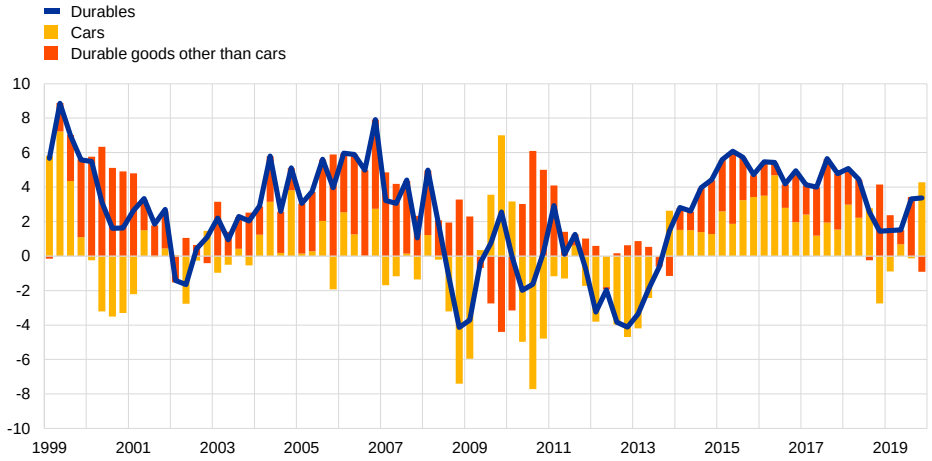
[89] See "Recent trends in consumer credit in the euro area", *Economic Bulletin*, Issue 7, ECB, 2017.

by financing conditions (see Chart 7). What usually makes a vehicle suitable for financing, in addition to being more easily used as collateral, is its high unit value in proportion to income, its relatively long lifespan and its relatively low rate of depreciation.[90] Given the high cost involved in upgrading and adjusting the stock of major items such as cars, households' intentions to make major purchases are strongly correlated with income expectations and their financial situation. As a consequence, the pattern of car purchases mirrors aggregate financing conditions and the strength of the economic cycle.

Chart 7

Consumption of durable goods in the euro area

(annual percentage changes and contributions in real terms)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for the fourth quarter of 2019.

Expenditure on cars can also be an idiosyncratic source of fluctuations in durable consumption. This is due to the systemic relevance of the car industry for the overall economy – sometimes leading to the implementation of countercyclical policy support (e.g. subsidised vehicle scrappage schemes) – and to regulatory changes and technological advances. For instance, the rebound in car purchases in 2009, in the middle of the financial crisis, was bolstered by the wide-spread implementation of subsidies for vehicle scrappage schemes across the euro area, ranging from €1,000 per car in France to €2,500 per car in Germany.[91] The car-led recovery in durables during the recession proved to be short-lived, as the subsidies mostly brought forward future demand.

In the course of the latest expansion, expenditure on cars has provided a major impetus to the sustained growth in durables amid supportive financing conditions and the easing of banks' credit standards for consumer loans since 2014. During this period, favourable funding conditions are likely to have supported

90 While cars may depreciate faster than some durables, such as furniture, they depreciate much more slowly than other items, such as computers. See Stacchetti, E. and Stolyarov, D., "Obsolescence of Durable Goods and Optimal Purchase Timing", *Review of Economic Dynamics*, Vol. 18, No 4, 2015, pp. 752-773.

91 See Grigolon, L., Leheyda, N. and Verboven, F., "Scrapping subsidies during the financial crisis – Evidence from Europe", *International Journal of Industrial Organization,* Vol. 44, 2016, pp. 41-59.

durable goods expenditure more effectively since durables tend to react more strongly to monetary shocks during expansions than during recessions, as consistently found in the literature.[92] Using micro data, Box 3 investigates the heterogeneity across households in car purchases and the use of car loans during the recovery. In the past two years (2018-19), expenditure on cars experienced a slowdown amid substantial volatility, in part related to changes in environmental regulations and uncertain prospects about both the future use of diesel combustion engines and the speed of diffusion of electric cars.

Box 3
Household heterogeneity in vehicle purchases

Prepared by Fabian Nemeczek, Francisco Rodrigues and Jiri Slacalek

Vehicles, such as cars, trucks and motorcycles, are an important component of durable goods. They make up about 40% of durable goods consumption at the aggregate level and account for much of its cyclical variation. Aggregate purchases of vehicles (hereafter "cars" for simplicity) have accordingly experienced buoyant dynamics in recent years. Aggregate figures, however, may hide considerable heterogeneity across the population. If, for example, only the wealthiest households were responsible for the aggregate increase in car purchases, it would be a sign of fragility in the growth in durable goods consumption. Moreover, car purchases often require a loan. The distribution of loans for car purchase can also provide useful information on macroeconomic and financial conditions.

This box investigates heterogeneity across euro area households in car purchases and in loans for the purchase of cars during the recovery following the European sovereign debt crisis. We make use of the Eurosystem's Household Finance and Consumption Survey (HFCS), which is a unique source of cross-country comparable household-level data on balance sheets, income and consumption indicators. The survey also provides information on households' expenditure on, and loans for, vehicle purchases. The HFCS is a triennial survey, so this box focuses on the two waves conducted in 2014 and 2017. Information on car purchases is available with reference to the year before the survey interviews, i.e. 2013 and 2016 respectively.[93]

A general feature emerging from the micro data is that households with higher levels of income tend to buy more expensive cars and to change them more often. Chart A shows how the share of households who bought a new or used car in the year preceding the survey (panel (a) of Chart A) and the median value paid (panel (b) of Chart A) are distributed across quintiles of gross household income. The amount paid for purchase, as given in panel (b), refers to purchases of both new and used cars, net of anything received for trading in or selling an older model.[94] Both measures clearly increase in accordance with income in the two survey waves: households with higher incomes tend to buy cars more often and to spend more on them.

92 See, for instance, Berger, D. and Vavra, J., "Consumption dynamics during recessions", *Econometrica*, Vol. 83, No 1, 2015, pp. 101-154.

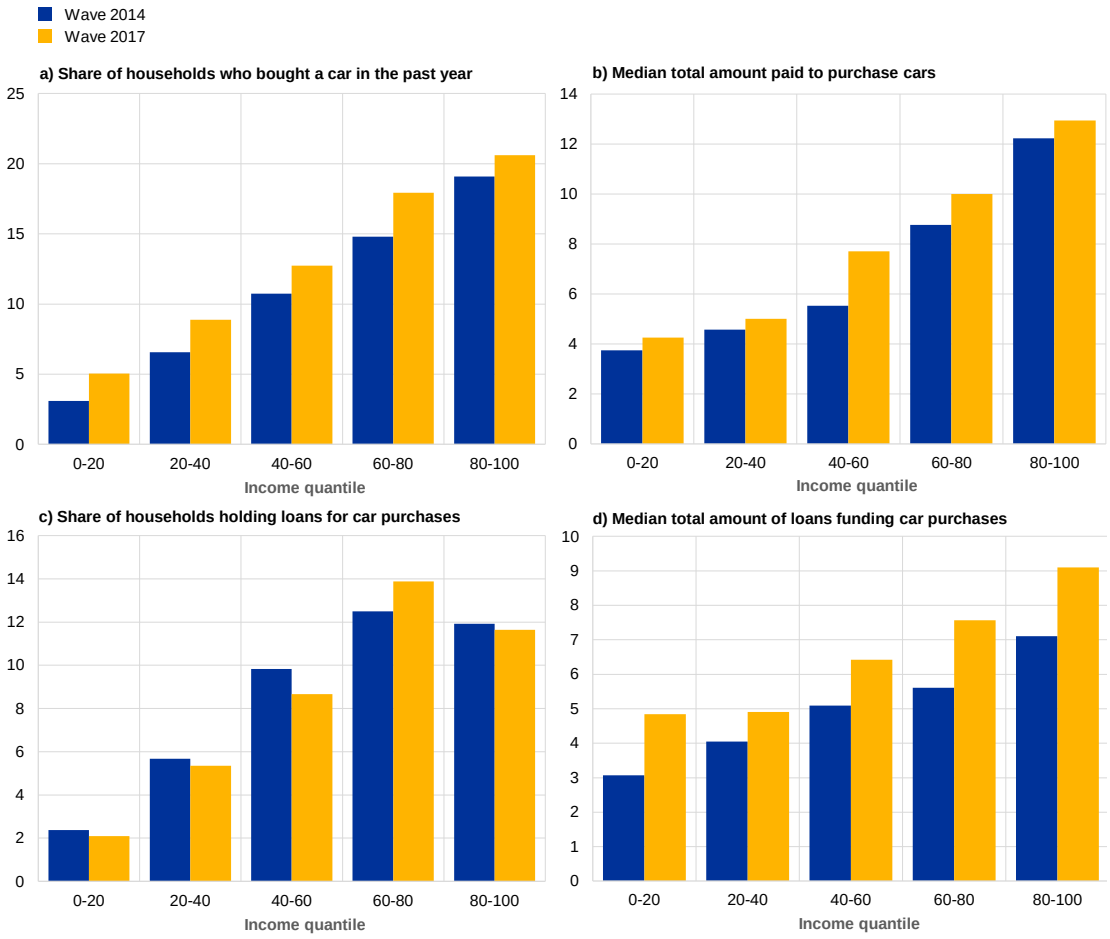
93 The information about car purchases was not collected in the first wave of the HFCS. The description of the main results of the survey can be found in Household Finance and Consumption Network, "The Household Finance and Consumption Survey: Results from the second wave", *Statistics Paper Series*, No 18, ECB, 2016; and Household Finance and Consumption Network, "The Household Finance and Consumption Survey: Results from the 2017 wave", *Statistics Paper Series*, No 36, ECB, 2020.

94 The HFCS data cannot be directly compared with most other data sources because those sources do not separately cover the household sector or because they focus on new cars only. The HFCS data also cover purchases/sales of used cars by households. The data on amounts in euro spent on purchases of cars collected in the HFCS are comparable with the amounts reported in the Household Budget Surveys.

Chart A

Households' car purchases and loans funding car purchases in the euro area

(percentages and thousands of 2017 EUR)



Sources: Household Finance and Consumption Survey (HFCS) 2014 and 2017.
Notes: Car purchases refer to the total net amount paid for cars, net of anything received for trading in or selling an older model, that were bought by households during the previous 12 months. Loans funding car purchases refer to the total outstanding balance of all loans currently held that have been used to buy cars. The data include the following euro area countries: Belgium, Germany, Estonia, Ireland, Greece, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia and Slovakia. Information on loans for cars for Spain and Finland is not available.

Reflecting a broad-based recovery, the data show that purchases of vehicles between 2014 and 2017 increased across the income distribution. Both the share of households who bought a car and the median value of the car increased for all income groups. More specifically, the share of households buying a car grew by between 1.5 and 3.1 percentage points and the median value of the car grew within a range of €400 and €2,100. Similar increases were recorded across other socio-demographic dimensions, such as age, education and employment status.

The increases in car purchases were sizable throughout the income distribution, including the lower and middle segments. While in the lowest income quintile the share of households buying a car rose by about 60%, in the middle quintile it increased by about 20% and in the top quintile by 8%. This may reflect the fact that durable goods, including cars, are particularly pro-cyclical. During a recession, households tend to postpone the purchase of durables and instead spend on necessities.[95] This

[95] See, for example, Carroll, C.D. and Dunn, W.E., "Unemployment Expectations, Jumping (S,s) Triggers, and Household Balance Sheets", in Benjamin S. Bernanke and Julio Rotemberg (eds.), *NBER Macroeconomics Annual*, Cambridge: MIT Press, 1997, pp. 165–229.

pattern is particularly pronounced in the case of poorer households, who are more subject to unemployment risk and have less liquid assets to smooth their spending.

Lower uncertainty spurs car purchases. A durable good provides households with a stream of services throughout its lifetime. Purchasing a durable good is therefore a decision to allocate present and future savings to current and future consumption, and as such, households that are less certain of what their future income will be have fewer incentives to do so. Declining uncertainty, lower unemployment and more optimistic prospects about future economic developments likely contributed to increasing numbers of car purchases, especially in the lower segments of the income distribution (see panel (a) of Chart A).

The size of loans stipulated for car purchases also increases in the income distribution. Furthermore, car loans tend to increase with income (panel (d) of Chart A). However, the share of households holding car loans increases up to the fourth income quintile, before falling slightly for the fifth quintile (panel (c) of Chart A).

While the share of households holding loans for car purchases remained roughly stable between 2014 and 2017, the balance of these loans increased across the income distribution. The share of households holding loans for purchases decreased slightly for most income quintiles (panel (c) of Chart A); the difference between the two years did not exceed 1.5 percentage points. At the same time, the median value of loans funding purchases (panel (d) of Chart A) grew by between €900 and €2,000 throughout the income distribution. In percentage terms, the strongest increase was recorded among households in the lowest quintile. This increase in the median value of loans funding car purchases for lower income households may reflect their more optimistic expectations about the economy and less binding credit constraints.

Car purchases increased more strongly for households with few net liquid assets. This fact suggests that a precautionary saving motive may have been an important factor dampening durable goods spending during the Great Recession. As with income risk, durable goods consumption is also influenced by how well households are insured against shocks in terms of net liquid assets. In line with economic models, households with low buffers of liquid assets tend to postpone purchases of durables during recessions and buy cars during the recovery when their economic outlook is more optimistic. Additional calculations document that households with few net liquid assets relative to their income – especially those exposed to risk, such as those with lower incomes – expanded their car purchases more strongly.

Looking ahead, in the near future, purchases of cars will decline because of the coronavirus pandemic. In the short run, many households will put off their spending on cars because the supply has been severely curtailed owing to containment measures and because of adverse shocks to incomes, as well as rising economic and financial uncertainty. Over the medium run, the future recovery in consumer durables could be supported by the postponed pent-up demand and a possible change in households' preferences for cars over public transport. However, this effect could be tempered by the fact that the pandemic shock will disproportionately affect younger households. These households account for a substantial part of car purchases and they are also likely to be particularly exposed to declines in income and rising uncertainty.

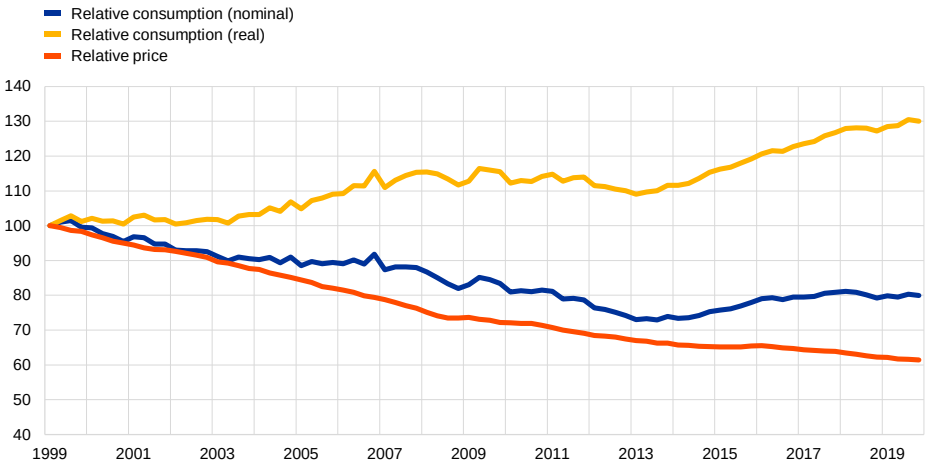
4 Relative prices and relative consumption of durables

Over the long run the relative price of durables exhibits a sustained downward trend. The relative price, as measured by the ratio between the consumption deflators of durables and non-durables (the latter including semi-durables and services), has declined by almost 40% in the euro area since 1999 (see Chart 8). The increase in the affordability of durables has benefited from globalisation trends and has been observed also in other advanced economies, such as the United States, the United Kingdom and Japan. Since the mid-1990s, globalisation has increasingly allowed firms to source low-cost imports of consumer goods from new locations in emerging markets and to move production capacities to such destinations.[96] In addition, rapid technological advances have lead to a constant decline in prices for durable goods items such as electronics, while posing challenges to quality adjustments in the statistical measurement of price changes. Box 4 sheds light on the importance of durable goods for HICP inflation in the euro area.

Chart 8

Relative consumption and relative prices of durables in the euro area

(index of relative prices and relative consumption in real and nominal terms, 1999 Q1 = 100)



Sources: Eurostat and ECB calculations.
Notes: The relative consumption index is computed as the ratio of durables to non-durables, in both real and nominal terms. The relative price index is the ratio of durable goods to non-durable goods deflators. The series are indexed to the first quarter of 1999 (1999 Q1 = 100). The latest observations are for the fourth quarter of 2019.

Box 4

The impact of durable goods prices on HICP inflation

Prepared by Luigi Ferrara

Durable goods prices have not provided support to euro area inflation developments over the past two decades. Their contribution to headline and underlying inflation has, on average, been zero (see Chart A). This reflects a slightly negative rate of inflation – about -0.1% on average since 1999 – and the relatively small weight of durable goods in the HICP basket. Since1999 the weight of durable

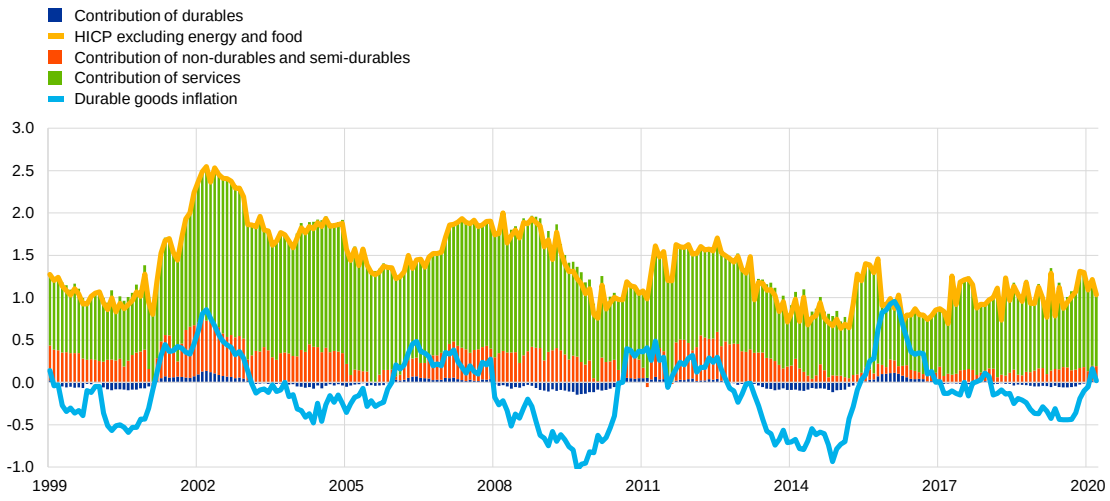
[96] See Kim, M. and Reinsdorf, M.B., "The Impact of Globalization on Prices: A Test of Hedonic Price Indexes for Imports", in Houseman, S.N. and Mandel, M. (eds.), *Measuring Globalization: Better Trade Statistics for Better Policy, Vol.* 1, Kalamazoo: Upjohn Institute Press, 2015.

goods has been, on average, 34% for non-energy industrial goods and 14% in the HICP excluding energy and food.[97]

Chart A

Durable goods inflation, HICP inflation excluding energy and food and its components

(annual percentage changes and percentage points, monthly data)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for March 2020.

While durable goods inflation has seen a flat trend, it has also displayed a fair degree of cyclicality. A granular analysis suggests that specific items have contributed to both features. Chart B decomposes developments in durable goods prices into six major items: cars, furniture, household appliances, computers, telephones and others. Prices for computers have declined, on average, by 10% and have not seen a positive annual rate of change since 1999. Moreover, the volatility of the negative annual rates of change has been substantial, as documented by a standard deviation of almost 6 percentage points. The same can be said of telephone prices.[98] Appliances has also recorded, on average, a negative inflation rate, albeit smaller and much less volatile. By contrast, cars and furniture have, on average, seen positive inflation rates with volatilities much lower than for computers and telephones. Accounting for more than half of the weight of durables, they shape the trend and volatility of the HICP durable goods aggregate. If computers and telephones were excluded from durable goods, the average durable goods inflation rate over the past two decades would have been slightly positive.

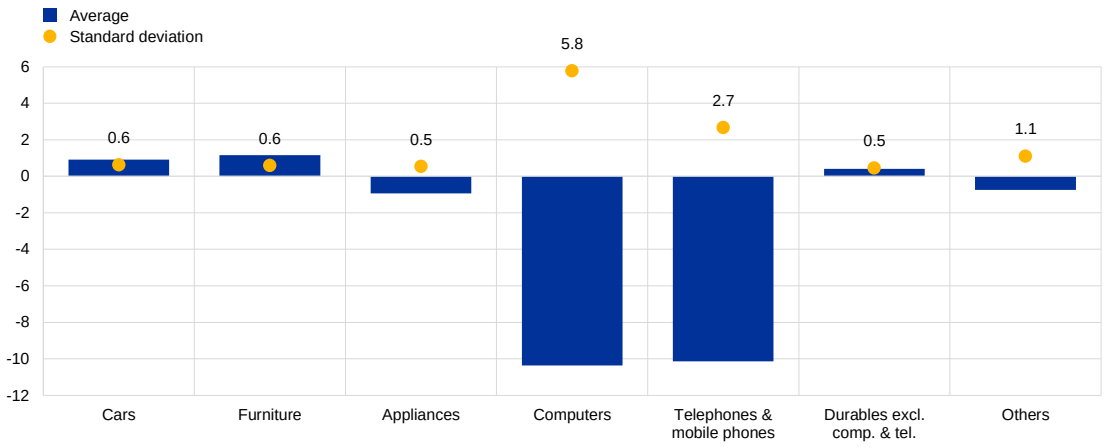
97 The HICP coverage was extended in 2000 to include several social services, with the result that any comparison of weights before 2001, on the one hand, and for 2001 and thereafter, on the other hand, is affected by this structural break.

98 These prices **have been available only since December 2017 in preparation for the HICP transition to the COICOP5 breakdown in 2019.**

Chart B

Major durable goods items: average inflation rate and standard deviation 1999-2020

(average annual percentage changes and percentage points)



Sources: Eurostat and ECB calculations.
Notes: "Cars", "Furniture", "Appliances", "Computers" and "Telephones and mobile phones" together represent 80% of all durable goods, with the first three items covering about 40%, 20% and 10% of the aggregate respectively. The inflation rate for "telephones and mobile phones" has been available only since December 2017. The inflation rate of "Durables excluding computers and telephones" excludes telephones only from December 2017 and thus includes the changes due to the transition to the COICOP5 breakdown.

The diverse inflation developments across durable goods items suggest that there may be idiosyncratic factors driving them. For instance, the high degree of technological progress since the late 1990s is likely to have been particularly prevalent for computers. In the HICP statistics, such progress is considered as an improvement in product quality and, hence, does not reflect a pure price change. Purchasing a new computer with more processing power than the one to be replaced therefore implies a decline in the price recorded in the HICP statistics. Similar adjustments for quality improvements, although not to the same extent, are also applied to car prices.[99] This factor has contributed to the relatively muted average inflation rate of durable goods over the past two decades.

Idiosyncratic factors can make it more difficult to discern the relationship between durable goods inflation and regular demand and cost factors. For instance, from a demand perspective, durable goods inflation tends to co-move with private consumption growth. From a cost factor perspective, durable goods inflation exhibits a negative correlation with unit labour cost growth, which comes from a strong positive association with productivity growth rather than with wage developments. Although these aggregate indicators are only crude proxies for sector-specific demand and cost conditions for durables, they are consistent with a picture whereby firms' pricing of durable goods tends to reflect changes in the cycle and profits adjust to demand and cost shocks. Developments in global sourcing and production are also relevant for durable goods inflation. For non-energy industrial goods as a whole, the direct and indirect import contents rose from 20% in 2000 to slightly above 25% in 2014.[100] The shares for durable goods are likely to be similar.

[99] The HICP methodology requires actual price changes to be adjusted for quality improvements. This is a difficult task, in particular for products whose quality changes rapidly and often substantially over time. With a view to providing comparable results, HICPs for euro area countries are designed to present harmonised results, while the statistical tools and methods used to produce these results may vary.

[100] See Schaefer, S. in Box 1 of Ortega, E. and Osbat, C. (eds.), "Exchange rate pass-through in the euro area and EU countries", *Occasional Paper Series*, No 241, ECB, Frankfurt am Main, April 2020.

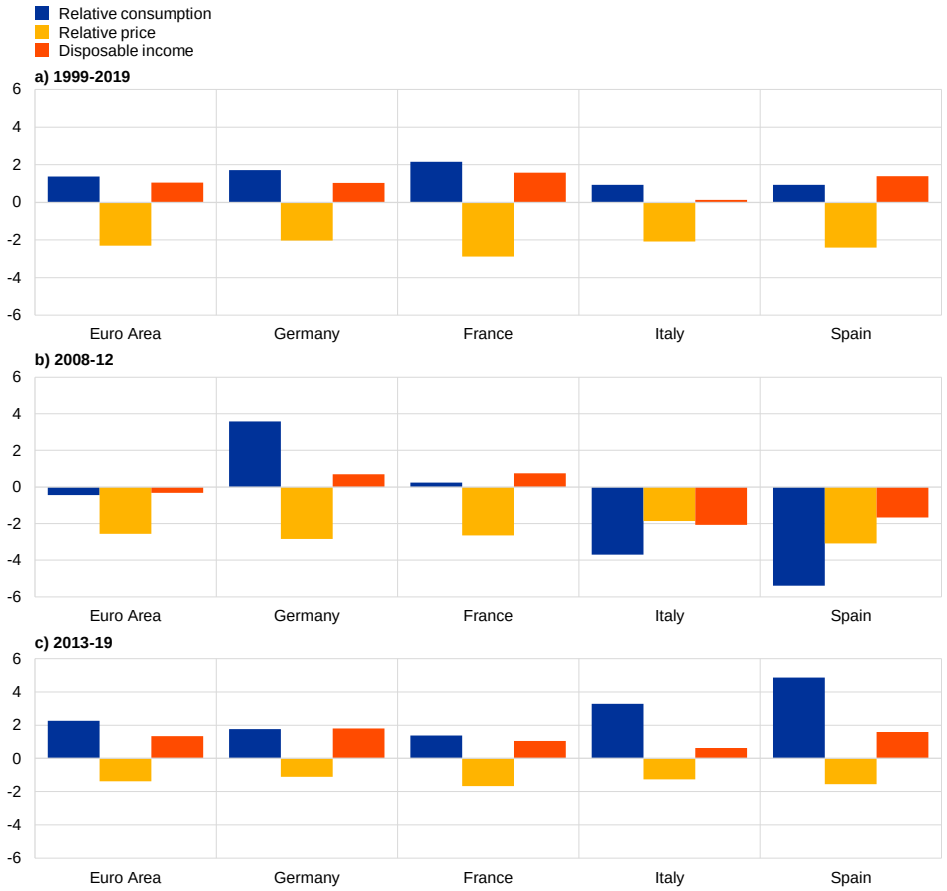
Over time, the decline in relative prices has coincided with a rise in real durable consumption relative to other items. As evident in Chart 8, favourable price developments have contributed to an increase in the share of durables in total consumption in real terms, despite a modest decline in the corresponding nominal share. Moreover, panel (a) in Chart 9 shows the common nature of this phenomenon being observed over the long run, not only for the euro area as a whole but also across its four largest economies. At business cycle frequency, however, relative durable consumption can respond to country-specific economic conditions, being affected by pent-up demand and catch-up effects. Panel (b) highlights that, even though relative prices continue to decline during weak phases of the business cycle, sometimes consumers fail to take advantage of favourable price conditions. For instance, in Italy and Spain during the period 2008-12, other factors such as declining disposable income and increasing unemployment hindered consumption more broadly. The postponement of purchases of big-ticket items in the middle of the protracted recessionary phase led to an ageing stock of durables generating pent-up demand.[101] As a consequence, the subsequent expansion, as displayed in panel (c), may well have been associated with catch-up effects as economic conditions improved.

[101] See Dossche, M. and Saiz, L., "Consumption of durable goods in the ongoing economic expansion", *Economic Bulletin*, Issue 1, ECB, 2018.

Chart 9

Dynamics in relative consumption, relative prices and real disposable income

(average annual growth rates as percentages)



Sources: Eurostat and ECB calculations.
Notes: Relative consumption is the ratio of durable goods expenditure volumes to non-durable goods expenditure volumes, and the relative price is the ratio of durable goods deflators to non-durable goods deflators. Disposable income is expressed in real terms and, owing to data availability, is the average over 2000-19 in panel (a).

5 A structural decomposition of consumption taking into account durable goods-specific shocks

The aim of this section is to empirically assess the drivers of total consumption, allowing for durable goods-specific factors to play a role. In the empirical literature few studies distinguish durables consumption from non-durables consumption and explore how they are interconnected, especially for the euro area. The limited existing analysis in this area is because aggregate data on euro area durables expenditure have not yet been published officially and have only recently become available for all individual countries. Moreover, the specific characteristics of durables discussed previously – namely durability, depreciation and sensitivity to credit conditions – make it more challenging to incorporate them into a consumption model alongside non-durable expenditure items.

The empirical analysis is based on a vector autoregressive (VAR) model featuring durable goods, where the structural shocks are identified based on theory.[102] The underlying idea is that overall consumption is better modelled by treating expenditure on durables and non-durables separately, given their asynchronous adjustment, as well as the possibility of spillovers from durable-specific shocks to non-durable consumption in the presence of liquidity constraints.[103] The model uses five variables, volumes and prices of durable and non-durable consumption and the nominal interest rate on consumer credit. To interpret the evolution of consumption in terms of fundamental drivers, five structural drivers are identified: durable goods-specific demand and supply, aggregate (approximated by non-durables) demand and supply, and broad monetary conditions capturing both monetary policy and the credit environment. The identification relies on a mix of zero and sign restrictions as informed by a theoretical model. The VAR model has time-varying parameters and is estimated with Bayesian techniques.

The methodology allows consumption to be decomposed into contributions from structural shocks. Chart 10 presents a historical decomposition of overall consumption and of durable goods consumption growth in the euro area. Focusing on overall consumption, the results in panel (a) suggest that, against the background of prevailing negative aggregate supply shocks between 2008 and 2013, the main cyclical drivers of consumption in both the financial crisis and the sovereign debt crisis were demand-side factors, as their contribution triggered both downturns throughout the episodes of the crises, as well as the brief recovery phase in between. The negative effects from demand factors were compounded by unfavourable monetary conditions during the financial crisis.[104] The model assigns a strong positive role in the initial years of the recovery, which started in 2014, to aggregate supply-side shocks. These shocks captured, together with other factors, a positive impact from very low energy prices, as they coincided with an unexpected drop in oil prices that gave a considerable boost to euro area households' purchasing power and thereby supported consumption expenditure.[105] The slowdown in consumption growth since 2018 can be explained by a combination of demand and supply shocks, the latter possibly capturing the adverse effects on consumer purchasing power from rising energy prices since 2017.

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[102] The approach is based on Casalis, A. and Krustev, G., "Cyclical drivers of euro area consumption: what can we learn from durable goods?", *Working Paper Series,* No 2386, ECB, April 2020.

[103] See Chah, E., Ramey, V. and Starr, R., "Liquidity Constraints and Intertemporal Optimisation: Theory and Evidence from Durable Goods", *Journal of Money, Credit and Banking*, Vol. 27, Issue 1, 1995, pp. 272-287.

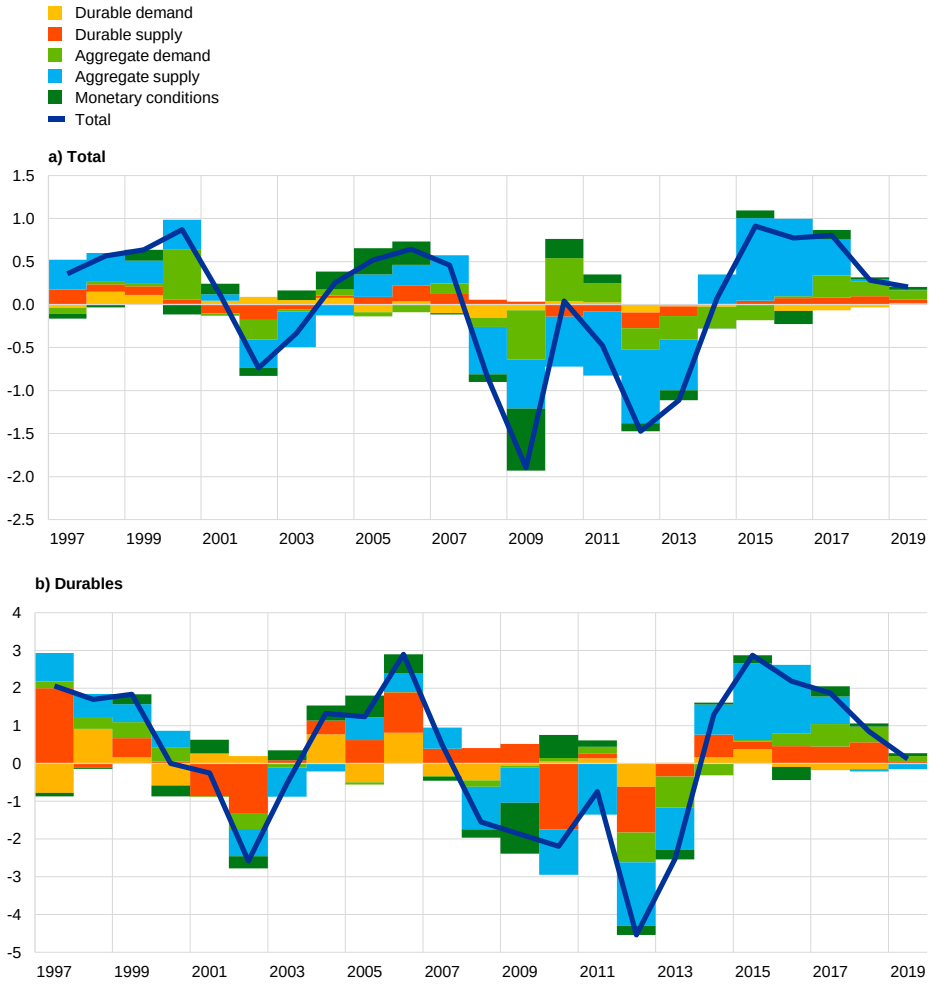
[104] As noted earlier, monetary conditions in this case encompass both monetary policy and the broader credit environment. Interestingly, the finding of a negative contribution from monetary conditions in 2009 corroborates the evidence of a tightening in credit supply as shown in Chart 5.

[105] See Dossche, M., Forsells, M., Rossi L. and Stoevsky, G., "Private consumption and its drivers in the current economic expansion", *Economic Bulletin*, Issue 5, ECB, 2018.

Chart 10

Model-based historical decomposition of private consumption in the euro area

(percentage point contributions from structural factors to the average annual growth rate of private consumption excluding trend, as percentages)



Source: ECB calculations.
Notes: The decomposition of the annual growth rate of private consumption is based on a time-varying parameter Bayesian VAR (TVP-BVAR) model of consumption featuring durable goods. It is based on Casalis, A. and Krustev, G., "Cyclical drivers of euro area consumption – what can we learn from durable goods?", *Working Paper Series*, No 2386, ECB, April 2020. The decomposition of private consumption into structural shocks (durable goods demand, durable goods supply, aggregate demand, aggregate supply and broad monetary/credit conditions) is based on an identification scheme using a combination of zero and sign restrictions.

The results from the model confirm the pro-cyclical role played by durable goods-specific factors. In particular, durable goods-specific supply shocks have continued to provide positive, albeit modest, support to consumption throughout the last years of the sample ending in 2019. By contrast, the negative contribution from durable goods-specific demand factors since approximately 2016 may capture the waning of catch-up effects arising from the accumulation of pent-up demand for durables during the crisis.

Aggregate macroeconomic shocks contribute strongly in driving durable consumption and the broader economy. As expected, durable goods-specific shocks play a larger role in driving durables expenditure (see panel (b) of Chart 10) than overall consumption (see panel (a) of Chart 10). At the same time, aggregate shocks – such as shocks to aggregate demand, aggregate supply and monetary

conditions – matter at least as much for durables as sector-specific shocks. This validates the evidence that durables are greatly affected by the broader business cycle and thus they are a useful indicator for tracking cyclical conditions in the economy.

6 Conclusions

Focusing on longer-run trends, this article has explored the role played by durable goods as a cyclical driver of euro area consumption. On the basis of the empirical results, the slowdown during 2018-19, in comparison with the buoyant dynamics in consumption during the earlier phases of the latest recovery, is best interpreted as a normalisation following the dissipation of some favourable but transitory factors at play in the preceding years.

Looking ahead, with the spread of the coronavirus having triggered a deep recession, expenditure on durables is very likely to contract severely in 2020 owing to many shops closing under lockdown and households postponing purchases of big-ticket items. In the current environment of high uncertainty, past experience highlights the benefits for economic analyses coming from the availability of durable goods expenditure data and invites policymakers to monitor closely the behaviour of durables, as they can help track the health of the broader economy and provide clues about the path to recovery. If the pandemic crisis turns out to be temporary and financial amplification effects can be contained, as expected, the delay in durable purchases in the short term may generate pent-up demand and bring catch-up effects later on, once economic conditions normalise. In a less favourable scenario, the rebound in durable consumption may be more muted as households readjust to a lower desired stock in view of lower long-run income expectations.

2 Drivers of rising labour force participation – the role of pension reforms

Prepared by Katalin Bodnár and Carolin Nerlich

1 Introduction

Labour supply developments are a major determinant of potential output and are therefore also relevant for monetary policy. Labour supply developments in the euro area are strongly affected by population ageing, among other things.[106] Against this background, it is crucial to have a good understanding of how demographic changes in the various working-age cohorts, together with structural factors such as policy changes, will affect the labour market. Looking ahead, this understanding will be relevant when assessing the potential growth outlook, even though uncertainty has considerably increased recently due to the coronavirus (COVID-19) pandemic.

With the ageing of the baby boom generation, the population share of the older working-age cohort, i.e. those between 55 and 74 years, has been gradually increasing. This would suggest a decline in the overall labour force participation rate, given that the participation rate of these older workers has usually been considerably lower compared to other working-age cohorts.[107] However, this is not what we have observed during the past two decades. Instead, most euro area countries have experienced an increase of labour supply since the early 2000s, largely explained by developments in the labour force participation rate. Moreover, the steepest rise in the labour force participation rate was observed for older workers, following a seminal decline before the turn of the century.[108]

This raises the question: what has been driving this increase in the labour force participation rate of older workers? Deciding on when to exit the labour market and enter retirement is a complex individual choice. Factors that influence this choice include: the relevant labour market situation; the set-up of the national social security system; and each individual's health status and personal preferences. The net wealth position of older workers, and in this context the increasing role of occupational pensions, is also likely to, at least indirectly, influence their retirement decisions – not least because higher net wealth might help to partly compensate for possibly shrinking pension entitlements. Many of these factors have improved over time. In fact, better health conditions, rising life expectancy, higher educational levels – mainly among women – and rising net wealth reflect long-term trends that had already started well before the turn of the twenty-first century. As such, those factors, though they have likely contributed to the rise in participation, cannot be used to fully explain the particularly sharp rebound in the participation rate of older workers since 2000. This

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106 For more details, see the article entitled "The economic impact of population ageing and pension reforms", *Economic Bulletin,* Issue 2, ECB, 2018, and the article entitled "Labour supply and employment growth", *Economic Bulletin,* Issue 1, ECB, 2018.

107 In 2019, the labour force participation rate of the 15-54 age group stood at around 76%, compared to around 40% for those aged 55-74.

108 See the box entitled "Recent developments in euro area labour supply", *Economic Bulletin,* Issue 6, ECB, 2017.

sharp rebound may, in fact, have been supported by more recent policy changes, such as pension reforms, which incentivised older workers to remain in the labour market for longer by postponing retirement. Against this background, the focus of this article will mainly be on the role of pension reforms.

Most euro area countries adopted substantial pension reforms in the last two decades to reduce risks to long-term fiscal sustainability. Pension reforms are essential in view of the challenges that population ageing poses for financial sustainability of the public pension systems, which are predominately pay-as-you-go schemes in the euro area. At the same time, pension payments need to ensure that pension benefits are socially adequate. The adopted pension reforms mainly sought to reduce the generosity of retirement schemes and to limit eligibility criteria, in particular for early retirement; it can be expected that this does encourage older workers to participate in the labour market for a longer period of time. These pension reforms were in some cases complemented by labour market reforms tailored towards older workers – for example, incentivising job searches or supporting the retention of older workers.

However, the COVID-19 shock – if prolonged – may bring into question whether this increase in the labour force participation rate of older workers will continue. Experiences drawn from some earlier shocks suggest that older workers – predominantly those with lower education levels – may be particularly exposed to prolonged negative macroeconomic shocks.[109] When labour demand drops significantly and workers are dismissed they may become discouraged from job searching and withdraw from the labour market. For older people, this withdrawal may not be reversed when the economic conditions improve again, thus, their labour force participation rate may be permanently affected. In the current macroeconomic shock resulting from COVID-19, some factors may amplify this effect. First, the direct health shock related to the rise of fatality rates with age may make older workers less willing to prolong their employment. Second, sectors where older people might have longer careers – for instance, service sectors – are significantly exposed to the shock. However, short-time work schemes implemented across the euro area are contributing to preserve employment relationships and thus are likely to mitigate the possible subsequent discouragement effects.[110] Furthermore, the current crisis may negatively affect disposable income and – through pension funds and other personal investments – worker's net wealth. This may incentivise older workers to prolong their working careers. This may counterbalance some of the negative impact mentioned above.

The current shock may be unlike the financial crisis. In fact, after 2008, unlike in earlier shocks, the trend increase of the labour force participation rate continued for older workers[111], while today the older workers' labour market situations, their willingness to work and thus their labour force participation rate might be at greater

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109 See "All in it together? The experience of different labour market groups following the crisis", in *OECD Employment Outlook,* OECD Publishing, 2013, pp. 19-63.

110 See the Box "A preliminary assessment of the COVID-19 pandemic on the euro area labour market" in this issue

111 See "Comparisons and contrasts of the impact of the crisis on euro area labour markets", *Occasional Paper Series*, No 159, ECB, 2015.

risk. This may be due to the specificities of the health shock, the differences in sectoral developments, as well as differences in terms of governments' willingness to carry out further pension reforms. Given that recently older workers provided the largest contribution to the recent labour force participation rate increases, the impact of the macroeconomic shock on their labour market situation may have a large impact on the overall labour force participation rate.

The article is organised as follows. Section 2 gives a broad overview of developments in the labour force participation rate across euro area countries in the past two decades. Section 3 examines indicators of when older workers retire in the euro area. Section 4 discusses various factors that potentially determine the participation rate of older workers from a conceptual point of view, including pension reforms. Box 1 complements the analysis by looking at the role of labour market reforms for older workers, while Box 2 discusses the composition of net wealth of older age cohorts. Section 5 provides an overview of the pension reforms that have been adopted and implemented by euro area countries since the early 2000s and discusses their possible impact on the participation rate of older workers. Finally, Section 6 concludes with a tentative outlook for participation rate developments in euro area countries, examining how this could affect future labour supply and potential growth, also in the light of the COVID-19 shock.

2 Changes in labour force participation rates in the euro area

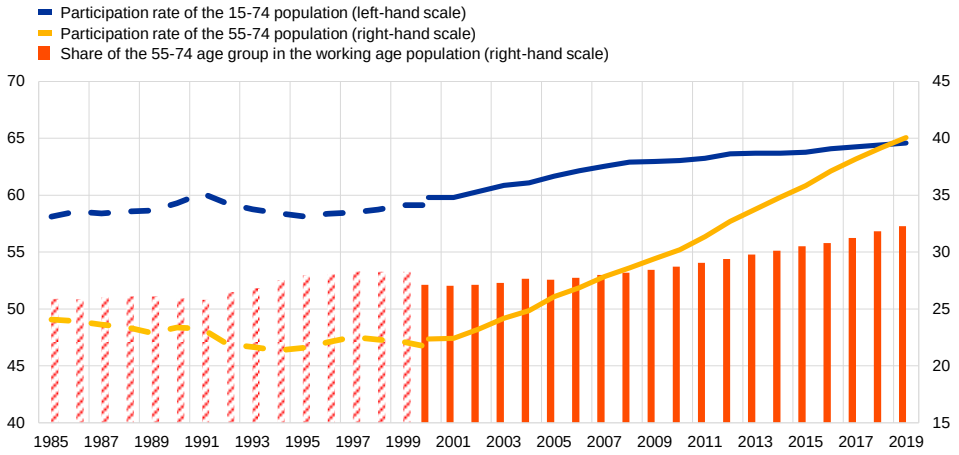
Labour force participation rates increased across euro area countries in the past two decades. In the euro area, the overall labour force participation rate of the working-age population (defined as the population aged between 15 and 74 years) increased by almost 5 percentage points in the last two decades, reaching 64.5% in 2019. This follows an earlier period where the labour force participation rate was flat overall (see Chart 1).[112] Instead, the participation rate of older workers is u-shaped because it declined until 2000 before increasing strongly between 2001 and 2019.

[112] Source: OECD statistics.

Chart 1

Developments of labour force participation and the population share of older workers in the euro area

(labour force participation rate: 55-74 active population as a percentage of the 55-74 population; population share: 55-74 population as a percentage share of the 15-74 population)



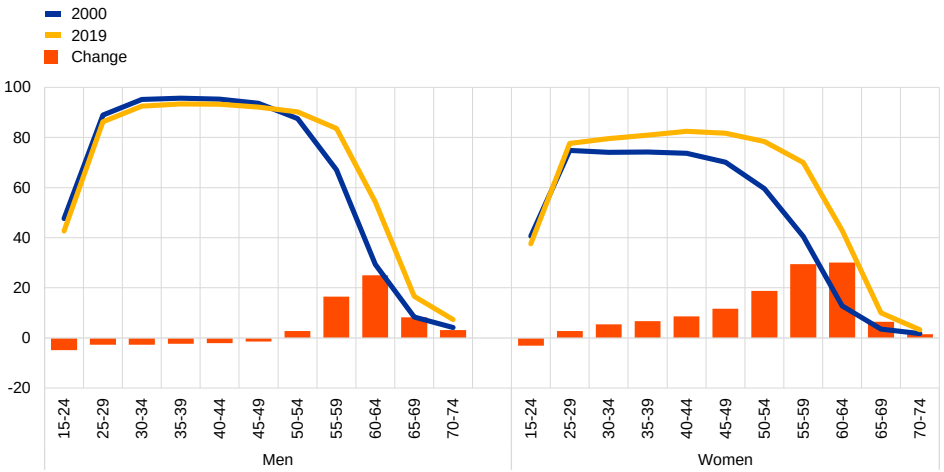
Source: Eurostat.
Notes: Eurostat data for the euro area as a whole are available from the year 2000 onward. The longest time series for euro area countries are available for Germany, France and Italy, starting in 1983. We have used the aggregation of data for these three countries for the period between 1983 and 1999. This is indicated by the dashed lines and columns.

Since 2000, the labour force participation rate of older workers showed the largest increase in the euro area when compared to other age cohorts. The participation rate has been increasing for almost all age groups. In contrast, while it has been rising only modestly for those below the age of 55, and even slightly decreasing for the 15-24 age group, the participation rate has increased since 2000 by around 15 percentage points for those in the euro area aged between 55 and 74. For those aged between 55 and 64 years, the rise has been well over 20 percentage points. In 2019 most labour market withdrawals happened in the 65-69 age group, whereas they occurred in the 60-64 age group in 2000. Two decades ago 20% of the male population withdrew from the labour market when they were between the ages of 55 and 59, while 38% withdrew when aged between 60 and 64. These figures are at 7% and 30% as of 2019, respectively. A similar pattern can be observed in the female population. The participation rates of women aged between 55 and 59 years is now as high as the participation rate of those aged between 45 and 49 years two decades ago (Chart 2). These figures indicate major changes that happened in the older age cohort of the working-age population.

Chart 2

Labour force participation rate by gender and age groups in the euro area

(percentage of the respective population and percentage point changes)

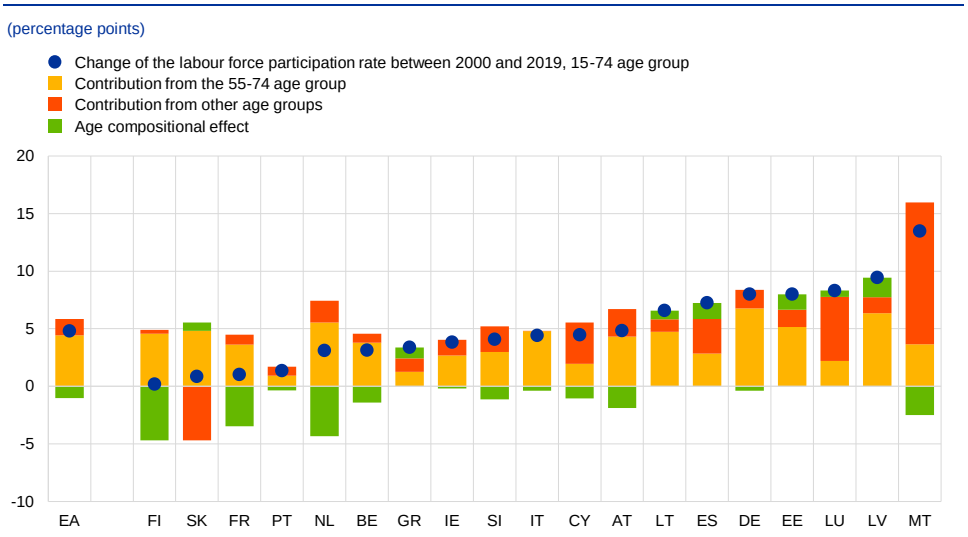


Sources: Eurostat.

The positive contribution from the rise in the labour force participation rate of the older workers exceeded, by far, the negative impact due to population ageing. The population share of the 55-74 age group increased considerably, from about 27% in the early 1980s to 32% in 2019 (Chart 1). This increase is mainly the consequence of the baby boom generation reaching this age group. Given the generally lower participation rate of older workers compared to prime-age workers (Chart 2), this exerts a negative compositional effect on the overall participation rate. However, this has been more than compensated by the rise in the participation rate of older workers, resulting in a significant net positive overall impact. The age group with the largest increases in its labour force participation rate, i.e. those aged between 55 and 64 years, accounts for 3.8 percentage points of the overall 4.7 percentage point change observable for the entire working-age population (Chart 3).

Chart 3

Change of the overall participation rate between 2000 and 2019, and its decomposition for the euro area and euro area member countries



Sources: Eurostat, ECB staff calculations.
Notes: The charts refer to the entire working-age population. The compositional effect is calculated as the difference between the actual labour force participation rate of the 15-74 age group in 2019 and the weighted average of the participation rates using the 2000 population shares as weights. Data are available for age groups comprising five-year age ranges (e.g. 25-29, 30-34, 35-39, etc.). Such five-year age groups are used here and only the age composition is taken into consideration for the calculations. The compositional effects are more negative in countries with more significant increases in the population share of the age groups with low participation rates and a larger difference in the labour force participation rate across age groups. Apart from developments in the older age groups, the share of the population weight of the youngest working-age cohorts also has an impact on this decomposition.

This pattern of older workers being the main drivers of labour force participation rate increases is evident across all euro area countries. The overall labour force participation rate has been increasing in all euro area countries in the last two decades, although to varying degrees. In most countries, a major part of the overall increase can be explained by the 55-74 age group remaining active for longer. The contribution of the rest of the working-age population remains more diverse across the euro area countries. For example, it is strongly negative in Slovakia and strongly positive in Malta. The age compositional effect tends to be negative in more than half of the euro area countries, mainly reflecting the ageing of the baby boom generation (Chart 3).

The rise of labour force participation rate of older workers is more pronounced for women. In the euro area, the recent increase in the female participation rate in the 55-74 age group (19 percentage points) exceeded that of men (15 percentage points). Still, women in this age group continue to participate in the labour market less than men (Chart 2). This is true for all euro area countries. Between 2000 and 2019, the difference between the increase in the male participation rate and the female participation rate was particularly pronounced in Latvia, Estonia, Ireland, Slovakia, Cyprus and Spain.

The increase in the participation rate is largely independent of education levels. While participation rates are usually higher for workers with higher education levels compared to low-skilled workers, the steep increase in the participation rates of older workers was observed across all education levels. At the same time, the population share of people with low education is declining (in the 55-64 age group, from 51.9% in

2000 to 33.5% in 2018 for the euro area), which means that the compositional effect according to education level contributes positively to the change in the participation rate. A shift-share analysis suggests that this compositional effect is moderate for older workers (explaining about one-fifth of the change for the 55-64 age group), while the major part of the rise in the participation rate seen in the last two decades would have happened even with unchanged education levels.

The rise of the participation rate of older workers has been a major driver of the increasing labour supply. Recent labour supply developments have been dominated by older workers: between 2000 and 2019, 98% of the increase in the overall labour supply came from those aged between 55 and 74. This mainly reflects the increasing participation rate (explaining about two-thirds of the rising labour supply of older workers) and, to a smaller degree, the rising population of this age group.[113]

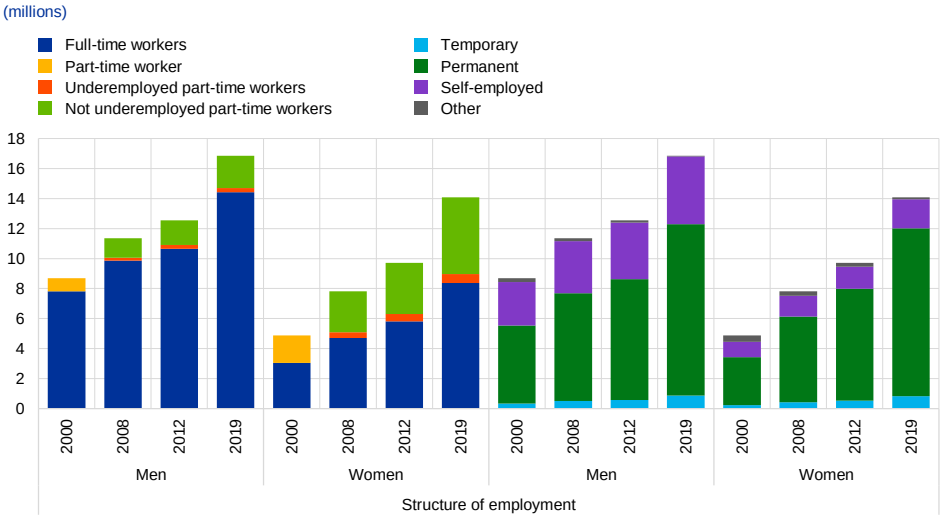
In the last two decades the rising labour force of older workers combined with a strong increase in their employment, while unemployment remained moderate. The rise of the labour force participation rate of older workers transformed almost entirely to a higher employment share (increasing by around 15 and 19 percentage points for men and women, respectively), while the number of unemployed changed only a little. Older workers are generally characterised by a lower unemployment rate than the younger cohorts, partly reflecting that often they move to inactivity in case of a loss of job.[114] However, the moderate change of the unemployment rate of older workers following the strong increases in the labour force participation rate is remarkable. This, in turn, reflects that the 55-74 age group was the main contributor to employment growth in the period examined. This does not seem to have been accompanied by a rise of potentially precarious contracts (such as temporary contracts, underemployed part-time workers, self-employed) in this age group. Indeed, most of the increase of the employment of older workers was due to permanent, full-time positions (Chart 4). Part-time employment has also increased somewhat, mainly for women, mostly in line with the preferences of older workers.

[113] The labour force of older workers has also increased in the United States (driven by demographic developments) while the participation rate of the older age group has been relatively stable, following a rise until 2008. In Japan, the labour force of those above the age of 55 has also been increasing. This reflects both the rising population of this age group and the rise of the labour force participation rate. In 2019 the labour force participation rate of the 55-64 age group was 65% in the United States and 78% in Japan, which compares to 63.6% in the euro area. Source: Eurostat, Haver, U.S. Bureau of Labor Statistics.

[114] Due to this difference, the rising population share of older workers exerted a downward compositional impact on the unemployment rate. Without this negative compositional effect between 2000 and 2019, the unemployment rate of the 15-74 age group would have been 0.6 percentage points higher in 2019 (using the composition of the labour force and unemployment rates by five-year age group and gender). This calculation is based on taking the age-specific unemployment rates as given. However, due to the endogeneity between labour demand and labour supply, the age-specific unemployment rates would be different at a different labour supply path. Without the aging of the baby boom generation, labour demand would have likely developed differently during this period. For age-specific unemployment rates, see "Labour supply and employment growth" op. cit.

Chart 4

The number of people aged 55-74 in employment according to contract types



Sources: Eurostat, ECB staff calculations.
Notes: In the European Union Labour Force Survey, it is possible to distinguish between part-time workers who are seeking to work more hours and those who are not. The former group is referred to as "underemployed" and the latter is referred to as "not underemployed". The decomposition of part-time workers according to underemployed and not underemployed is not available for the period before 2008. Disaggregation of employment is available either by full-time/part-time or by permanent/temporary, but not in combination.

3 When do older workers retire?

When do older workers actually retire in the euro area? The timing of older workers exiting the labour market does not necessarily fully align with their entry into retirement. While comparable data on the actual average retirement age is not publicly available for all countries, several indicators could serve as proxy. One of them is referred to as "effective retirement age", which corresponds to the age at which people withdraw from the labour market. It is defined by the Organisation for Economic Co-operation and Development (OECD) "as the average age of exit from the labour force during a five-year period for workers initially aged 40 and over". The effective retirement age may well differ from the statutory retirement age, which defines the age at which people become eligible for a full pension.[115]

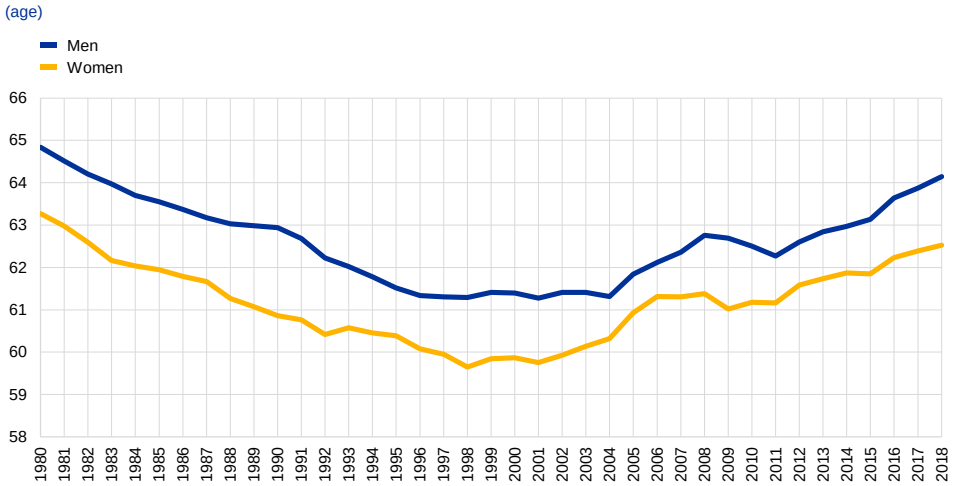
The effective retirement age has changed considerably over time and across countries – broadly in line with the dynamics of the participation rate of older workers, as shown in Chart 1. The average effective retirement age within the euro area constantly declined towards the end of the last century to a level of as low as 61 years for men and below 60 years for women (Chart 5). From 2000 onwards, the effective retirement age started to rise, even though the recovery was briefly interrupted during the financial crisis. By 2018, the effective retirement age for men stood at more than 64 years and for women at almost 63 years, which corresponds to

[115] The effective retirement age has some drawbacks as an indicator. It is a lagged indicator, based on a five-year period. As it is partly driven by cyclical developments, its usefulness is limited for countries particularly strongly affected by the financial crisis, such as Greece and Spain. Moreover, the indicator does not enable differentiating between whether an exit from the labour market is due to entry into retirement and other reasons (such as a disability pension or caring for family members). Furthermore it does not capture part-time working arrangements among older workers.

an increase by 3 years since 2000.[116] Despite the wide-spread improvement in the effective retirement age since 2000, the changes and the current levels differ across countries (Chart 6). The highest effective retirement ages are currently seen in Estonia, Latvia, the Netherlands (only men) and Portugal. These countries also observed the strongest increases in the effective retirement age since 2000. In a few countries, however, the effective retirement age declined, partly reflecting the (lagged) impact of the financial crisis as well as in anticipation of substantial changes to (early) retirement schemes, as discussed in Section 5.

Chart 5

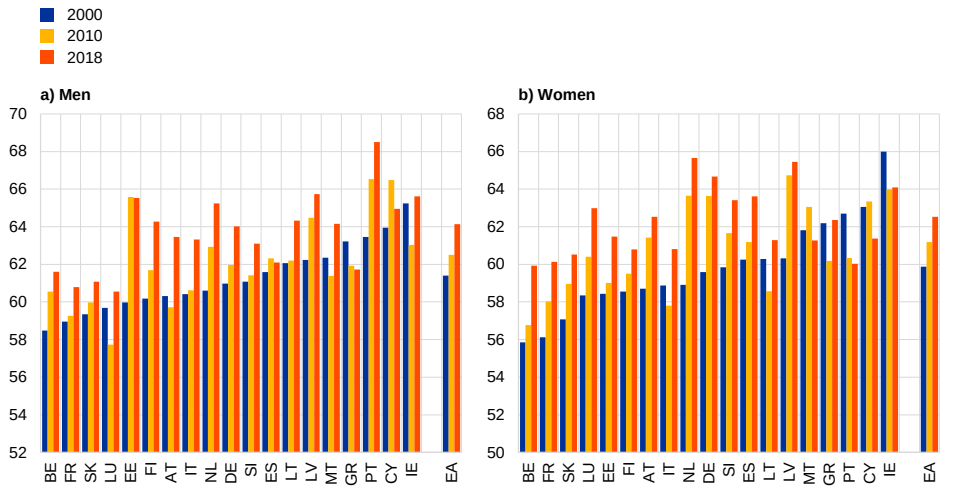
Effective retirement age of men and women in the euro area



Sources: OECD

Chart 6

Effective retirement age across countries



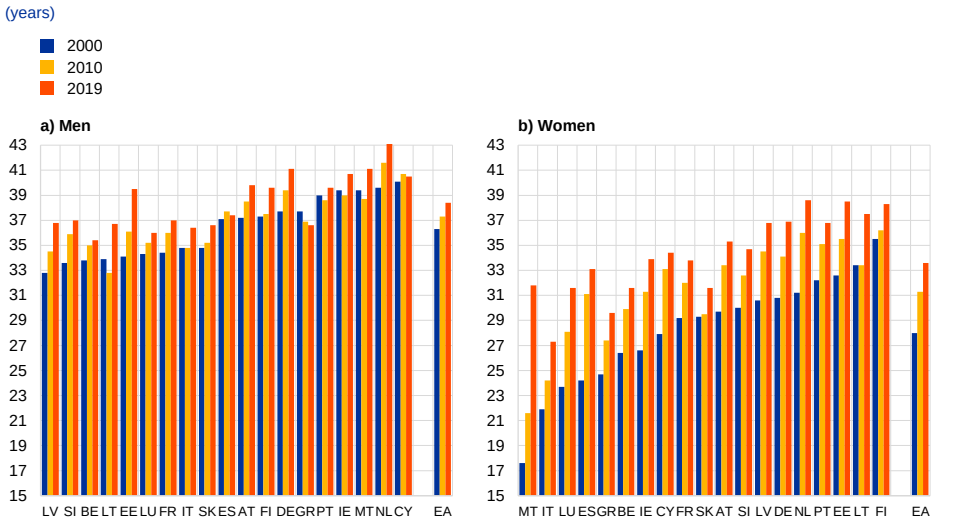
Source: OECD.

[116] This compares to the significantly higher effective retirement ages of men and women in 2018 in the United States (of almost 68 and 66.5 years, respectively) and in Japan (of almost 71 and 69 years, respectively).

Analogous developments were observed for the duration of working careers, in particular among women. The length of working careers is another indicator for the actual retirement age. Since 2000, the duration of working life increased for men by 2 years and for women by almost 6 years, standing at almost 39 years and 33 ½ years in 2019, respectively (Charts 7). This has to be seen in the context of rising education levels, particularly for women. Women work longest in Estonia, Lithuania, the Netherlands and Finland, while the most substantial improvements since 2000 were achieved in Spain, Luxembourg and Malta. Overall, the rising duration of working careers seem to broadly coincide with the sharp rise of the participation rate of older workers.

Chart 7

Duration of working life



Source: Eurostat

4 Why do older workers remain in the labour market for a longer period of time?

From a conceptual point of view, there are many possible reasons for older workers to postpone retirement and remain in the labour market for a longer period of time. Entering retirement is a complex individual decision, influenced by many factors including the attributes of relevant labour markets, the set-up of national social security systems, peoples' net wealth, their health status and their individual preferences. While most of these factors have changed considerably in the past two decades, the extent to which they serve to explain the steep increase in the labour force participation rate of older workers can be expected to differ.

Healthy ageing is likely to encourage longer working lives. Healthy ageing not only implies an increase in life expectancy, but also better health conditions of older cohorts, both reflecting long-term trends. Since 2000, life expectancy at age 65 in the euro area increased on average by 2 ½ years, reaching almost 21 years in 2018, with

a stronger improvement for men compared to women.[117] The number of healthy years expected at older ages has also improved in many countries. Several factors might have positively affected the health of individuals, and a person's health is an important prerequisite for older workers to stay longer in the labour force. Healthy ageing might be positively influenced by higher educational levels, as life expectancy is found to be higher for people with higher education.[118]

Structural changes of labour markets, labour market policies and cyclical labour demand have supported the improvement of the labour market situation for older workers. While labour demand has likely contributed to the improvement seen before the financial crisis and during the euro area recovery (between early 2013 and end-2019), the increase in the participation rate of older workers does not seem to have been strongly distorted by cyclical developments. At the same time, structural changes in the labour markets – for example a rising share of jobs in the service sector – has likely supported longer working careers due to higher overall labour demand and by offering physically less demanding working conditions than manufacturing and construction. In addition, several labour market reforms have influenced the labour market for older workers – these are summarised in Box 1.

Box 1
Labour market reforms and their impact on older workers

Prepared by Katalin Bodnár

Apart from pension reforms, labour market reforms can influence the labour market for older workers. Some of these reforms are specifically tailored towards older workers. Others affect all workers but may have a higher impact on those that are less strongly attached to the labour market in terms of their labour force participation rate, including older workers. This box gives an overview of labour market reforms that have likely affected the labour market for older workers in the euro area during the last two decades.

The position of older workers in the labour market is characterised by an important duality. On the one hand, the share of older workers who hold permanent positions is higher than that of younger workers, thus older workers are more protected once in employment. On the other hand, older workers may be in less favourable positions than younger workers when searching for a job, due to, among other things, age discrimination. The latter feature may also reflect a lower educational level on average for older workers compared to younger workers.[119] With this in mind, ensuring the employability of older workers is an important labour market policy objective.

[117] The data are based on Eurostat statistics and calculated as a weighted average of the euro area countries, using total population as weights.

[118] See, for example Blundell, R. et al., "Chapter 8 – Retirement Incentives and Labour Supply" in Piggott, J. and Woodland, A. (eds.), *Handbook of the Economics of Population Aging*, Vol. 1B, Elsevier, 2016, pp. 457-566., and Murtin, F., Mackenbach, J., Jasilionis, D. and d'Ercole, M. M. (2017), "Inequalities in longevity by education in OECD countries: Insights from new OECD estimates", *OECD Statistics Working Papers*, No 2017/2, OECD Publishing, 2017.

[119] There is also some evidence of larger wage flexibility of older workers compared to younger ones – possibly because the cost of losing a job is higher for older people. For more details, see Du Caju, P., Fuss, C. and Wintr, L., "Sectoral differences in downward real wage rigidity: workforce composition, institutions, technology and competition", Journal for Labour Market Research, Vol. 45, No 1, 2012, pp. 7-22

Reforms affecting alternative pathways to retirement

Conditions of alternative pathways to early retirement, such as unemployment or disability benefits, are likely to affect the labour supply of older people. Several European countries introduced specific conditions for unemployment benefits for older workers in the 1980s, for example by providing a longer duration of unemployment benefits or by removing the requirement that recipients look for a job while receiving unemployment benefits. These changes contributed to the rise of long-term unemployment for older workers (or, in cases where those out of work were not searching for a job, a rise in "inactivity" as defined in the International Labour Organisation's labour market statistics). [120] In the late 1990s until the early 2000s, these schemes were tightened in several countries.[121] In terms of reducing long-term unemployment among older people, Germany stands out: the long-term unemployment rate of the 55-64 age group declined from almost 9% in 2006 to 1% in 2019. This decline followed the Hartz reforms, which included a large set of reform measures, including tightening unemployment benefits for older workers, but also other reforms supporting retention and job searches. Finland also seems to have been successful in decreasing the long-term unemployment rate of older workers, following the tightening of the unemployment benefit criteria for older workers in 1997.[122]

Social safety nets provide insurance against the risk of becoming disabled and support those people whose working capacity becomes limited. However, these schemes may serve as alternative pathways to retirement, even for those whose working capacity is not entirely damaged. In the euro area, disability pension schemes were tightened between 2000 and 2018 in about half of the euro area countries (Chart A).[123] This was implemented either by tightening the eligibility criteria for obtaining a disability pension or by decreasing the generosity of their disability pension system. The number of disability pensioners (of all ages) declined in the countries that tightened their disability schemes, as can be seen in Chart A, panel c. However, in the 55-74 age group, the population share of those who are inactive due to their own sickness or disability has not declined (see Chart A, panel b), suggesting that the tightening of disability schemes could have affected other generations than those in the above 55 year age bracket.

120 According to the International Labour Organisation's classification, "persons in unemployment are defined as all those of working age who were not in employment, carried out activities to seek employment during a specified recent period and were currently available to take up employment given a job opportunity". People who do not carry out activities to seek employment are considered as inactive even when they receive unemployment benefits.

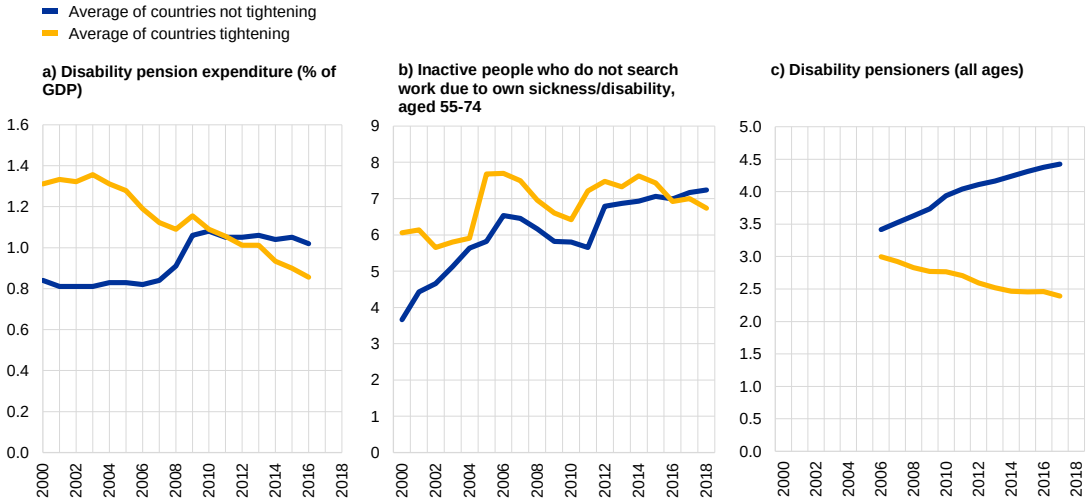
121 See Wise, David A., (ed.) "*Social Security Programs and Retirement around the World: Historical Trends in Mortality and Health, Employment, and Disability Insurance Participation and Reforms*", University of Chicago Press, Chicago, 2012, Geyer, J. and Welteke, C. "Closing Routes to Retirement: How Do People Respond?", *Discussion Paper Series*, DP No 10681, IZA Institute of Labor Economics, March 2017, and Steiner, V., "The labor market for older workers in Germany, *Journal for Labour Market Research*, Vol 50, No 1, pp. 1-14, 2017.

122 Kyyrä, Tomi and Wilke, Ralf A., "Reduction in the Long-Term Unemployment of the Elderly: A Success Story from Finland" *Journal of the European Economic Association*, Vol. 5, No 1, March 2007, pp. 154-182.

123 Source: Eurostat

Chart A

Disability pensioners, aged 55-74, who are inactive due to own sickness/disability, according to the tightening of the disability schemes



Source: Eurostat, own computations
Notes: When grouping the countries, the change in disability pension as a percentage of GDP between 2000 and 2016 was taken into account. If, instead, averages from 2012-2016 and 2000-2004 are used for the calculation of the change, the classification remains unchanged. Tightening countries are: Germany, Cyprus, Luxembourg, Malta, the Netherlands, Austria, Portugal, Slovenia and Finland.

Policies directly supporting the employment of older workers

Measures that affect retention on the one hand and promote the employability and productivity of older workers on the other hand are also important in boosting the participation rate. Such reforms may include wage subsidies for older workers, stronger job protection and more flexible working times, which are complemented by information measures targeted at employers (such as campaigns to increase awareness about the benefits of age diversification and campaigns against the discrimination towards older workers).[124] For example, in Germany, wage subsidies in the form of in-work benefits and temporary wage subsidies have been paid since 2003 for older workers. In Luxembourg, a 2014 reform made it possible for workers over the age of 50 to go part-time and for the employers to ask for subsidies in case another worker is hired to make up for the missing hours.

Impact of general labour market reforms on older workers

Recent reforms in euro area countries point to somewhat less stringent employment protection legislation (EPL) and more wage flexibility for the labour markets as a whole. Higher EPL tends to support the employment ratio of older workers.[125] While overall decreasing employment protection may have been unfavourable for older workers, data from the Labour Market Reform (LABREF) database suggests that the overall change of EPL may have been less tilted to flexibility for older workers than for others (see Chart B, left panel). The role of wage flexibility may be less clear-cut. Wage rigidity influences the degree to which employment reacts to macroeconomic shocks. Most of the recent labour market reforms aimed at increasing overall wage flexibility in euro area countries have primarily affected incumbents, thus implicitly having a potentially larger impact on older workers than younger ones (see Chart B, right panel). This may have contributed to increased hiring of older

[124] See "Working Better with Age", *Ageing and Employment Policies Series*, OECD Publishing, Paris, 2019.

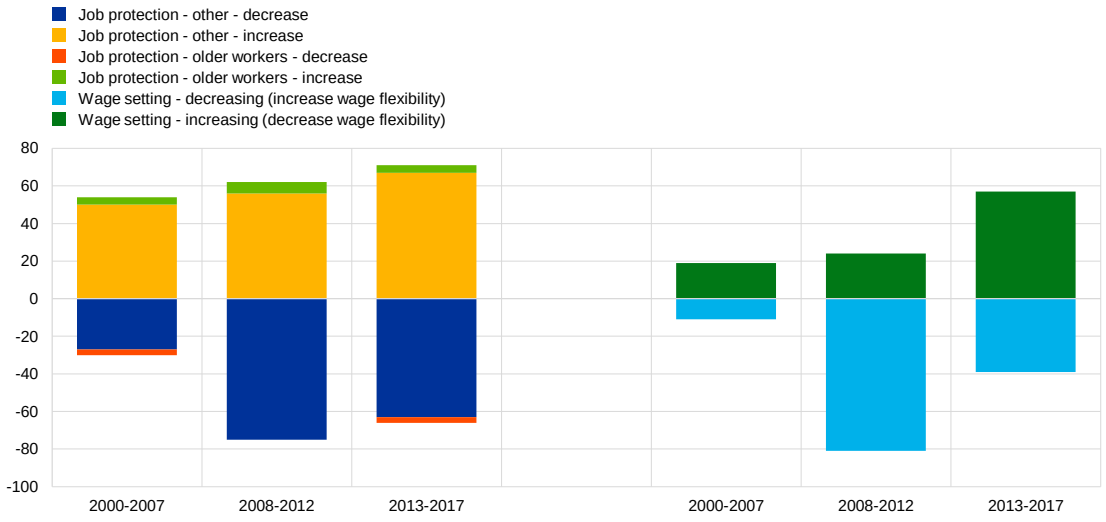
[125] Gal, P. and Theising, A., "The macroeconomic impact of structural policies on labour market outcomes in OECD countries: A reassessment" , *OECD Economics Department Working Papers*, No 1271, OECD Publishing, Paris, 2015.

workers, or to keeping them in employment. However, the exact role of increasing wage flexibility in the context of older workers' employment remains unclear.

Chart B

Labour market reforms affecting the level of employment protection and wage setting in the euro area countries

(number of reform measures per year)



Source: European Commission, LABREF database

Reforms of different forms of non-standard employment may also affect the labour market for older workers more than for other groups. For example, the Hartz reforms introduced subsidised "marginal" jobs ("mini" and "midi"-jobs) in Germany, increasing work incentives for those in early retirement.[126] Furthermore, labour market reforms tailored towards self-employed people (for example in Italy) may affect older people to a larger extent than younger people because the share of self-employment in total employment increases with age.

Overall, several labour market reforms, both those tailored towards older people and more general ones, affected the labour market for older workers in the euro area. With the ageing of the working-age population, reforms that support the labour supply, labour demand, employability and productivity of older workers will remain important on the reform agenda of euro area countries.

The characteristics of pension schemes are important determinants of the retirement behaviour of older workers. Pension schemes provide for a range of circumstances, from old-age pensions to disability pensions, and can be designed in different ways, from public pensions to occupational pensions, and from pay-as-you-go systems to fully funded private systems. With respect to old-age pensions, including early retirement schemes, age eligibility parameters for pensions are a decisive factor in determining the participation rate of older workers. Statutory and early pension ages may serve either as constraints, after which working is not

[126] Steiner, V., "The labor market for older workers in Germany", op. cit.

possible,[127] or at least as an indicator of when to retire. Moreover, incentives to stay in the labour market for a longer period are seen to be negatively correlated with the generosity of pension payments. In case pension entitlements are cut, for example by raising the malus applied in case of early retirement, this is likely to encourage prolonged working lives. This also has to be seen against comfortable net wealth positions of households in retirement on average (see Box 2). In addition, moving to actuarially fairer adjustments for delayed retirement, for example in the form of a bonus, can be expected to have a positive impact on the duration of working lives. Furthermore, more flexible pension arrangements which allow combining work and retirement are expected to positively affect the decision to postpone retirement. In case of more restricted access to programmes that offer alternative pathways out of the labour market, such as disability pensions (see Box 1), this might also encourage old-age workers to retire later.

Box 2
Net wealth of households in retirement in the euro area

Prepared by Marta Rodríguez-Vives

This box reviews the concept of net wealth of households in the euro area, with a focus on pension-related wealth at retirement age. Individual retirement decisions are partly based on expectations of welfare levels in retirement. Wealth accumulation[128] is an important factor for mitigating any potential decrease in labour and pension income at a later stage in life (e.g. as a consequence of future pension reforms).

Household "net" wealth is the value of wealth (total assets broken down by financial and non-financial) held by households netted out by the value of outstanding debt liabilities. Overall, the average stock of household net wealth increased notably at the euro area level from around 550% of annual household gross disposable income (GDI) in 2002 to around 710% in 2019.[129] The net wealth trajectories are heterogeneous across countries reflecting different starting positions, societal preferences, and tax and savings policies.[130] Based on sectoral accounts, household wealth by end-2019 was broadly composed of housing wealth (around 460% of GDI), financial wealth (350%) and, with opposite sign, debt liabilities (100%). The main financial assets held by households are liquid assets (currency and deposits) and *voluntary pension and life insurance*, followed by debt securities and equity.

Pension entitlements add to financial wealth but the way they are recorded deserves particular attention because future pension entitlements are difficult to capture statistically yet they represent a major source of financial wealth. Chart A provides an indication of the maximum potential household pension wealth. This combines all pension assets recorded in the financial wealth as above (core

127 See Blanchet, D., Bozio, A., Rabaté, S. and Roger, M. "Workers' employment rates and pension reforms in France: the role of implicit labor taxation", *NBER Working Paper Series*, Working Paper 25733, NBER, April 2019.

128 Households accumulate wealth by saving income and through private transfers (gifts and bequests).

129 The increase in net wealth in the euro area is mainly attributable to valuation gains on households' real estate holdings due to the robust housing market dynamics in the recent years. For more details, see the article entitled "Household wealth and consumption in the euro area", *Economic Bulletin*, Issue 1, ECB, Frankfurt am Main, 2020.

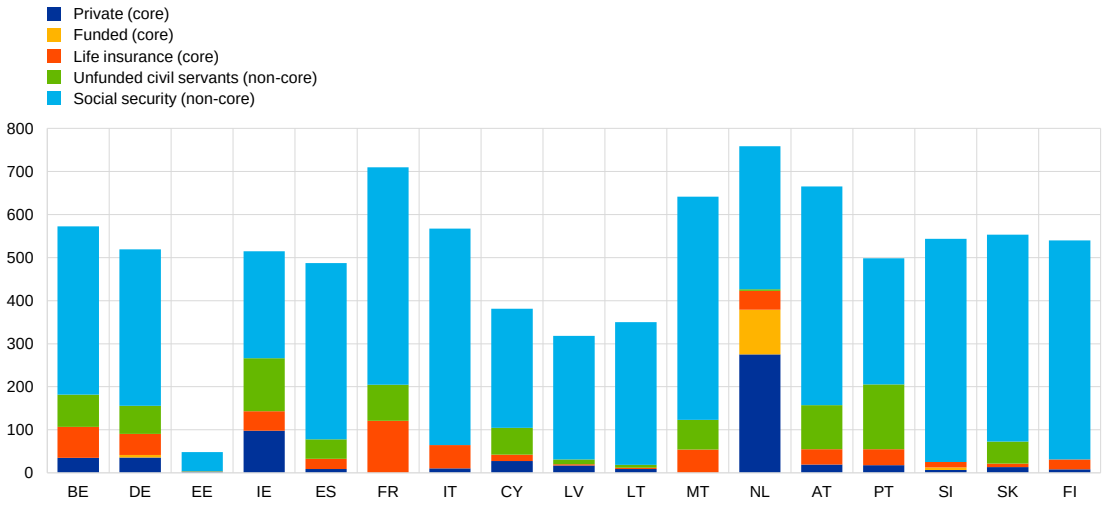
130 Countries use two types of financial incentives to encourage individuals to save for retirement, tax incentives and non-tax incentives. For more information, see the report entitled "Financial incentives for funded private pension plans", OECD, November 2019.

national accounts) and the contingent pension entitlements of households vis-à-vis governments (non-core).[131] This augmented concept of household pension wealth leads to larger estimates of pension wealth, at approximately three to six times of annual household GDI for most euro area countries. This augmented concept captures the substantial additional pension wealth in the countries where pension schemes are predominantly organised as social security pensions, such as in Belgium, Germany, Spain, France, Italy or Finland. It is also particularly relevant in countries with a predominance of unfunded (defined benefit) schemes, such as in Portugal, or Malta, which are managed by the Government but recorded outside the core government sector accounts. By contrast, funded employment-related pension schemes (whether managed privately or by the Government), which are very important, e.g. in the Netherlands, they are already reflected in the core accounts. Voluntary pension assets tend to be important in countries where the Government encourages such saving schemes, such as in France, Malta, Italy, Ireland, Germany or Belgium.

Chart A

Augmented household pension wealth in euro area countries

(percentage of household Gross Disposable Income, 2015 data)



Sources: ECB and Eurostat. Accrued-to-date pension entitlements data for Greece and Luxembourg have not yet been published.
Notes: The household financial wealth calculations (in the core national accounts) recognise all employment-related pension schemes to households, whether funded or not, plus the voluntary life insurance (in the graph this is represented by red+yellow+green). It includes both privately managed schemes (including pension funds and insurers) and the funded schemes operated by the Government as an employer. The contingent pension entitlements that are not included in the core national accounts, but are included in the augmented household pension wealth in this Chart, are the social security pension schemes (dark blue) and the unfunded government (defined benefit) schemes for government employees (light blue).

The composition of household net wealth also varies significantly as a function of the household age according to survey data.[132] Regarding housing wealth, Chart B shows that households tend to disinvest at 75 years and above (left). By contrast, the picture for financial wealth (right) indicates the opposite trend, with older households continuing to accumulate financial assets into old age. The

131 Eurostat publishes a new comprehensive and harmonised collection of a supplementary data on pension entitlements in social insurance, i.e. ESA 2010 transmission programme Table 29. The reference date is 2015, but data are broadly expected to be stable over time. For more details, see article entitled "Social spending, a euro area cross-country comparison", *Economic Bulletin*, Issue 5, ECB, Frankfurt am Main, 2019. At the euro area level, a re-calculated "net" wealth ratio, including the augmented pension wealth concept, would sum up to around 1000% of GDI, i.e. 290 percentage points of GDI higher than the latest value at end-2019.

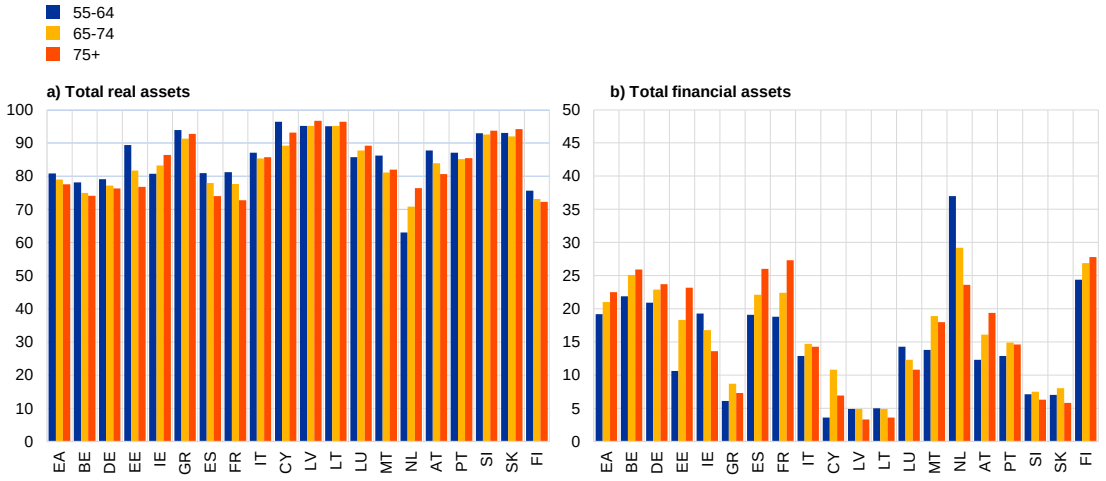
132 The data refer to the third wave of the "Eurosystem's Household Finance and Consumption Survey", HFCS (March, 2020). The results from the third wave (reference year 2017) are stable in comparison to the second wave (reference year 2014).

main exceptions are Ireland and the Netherlands where households invest more in real assets when ageing.

Chart B

Household holding of total assets by country, breakdown by household total real assets (left) and total financial assets (right)

(percentage of households by age range, 2017 data)



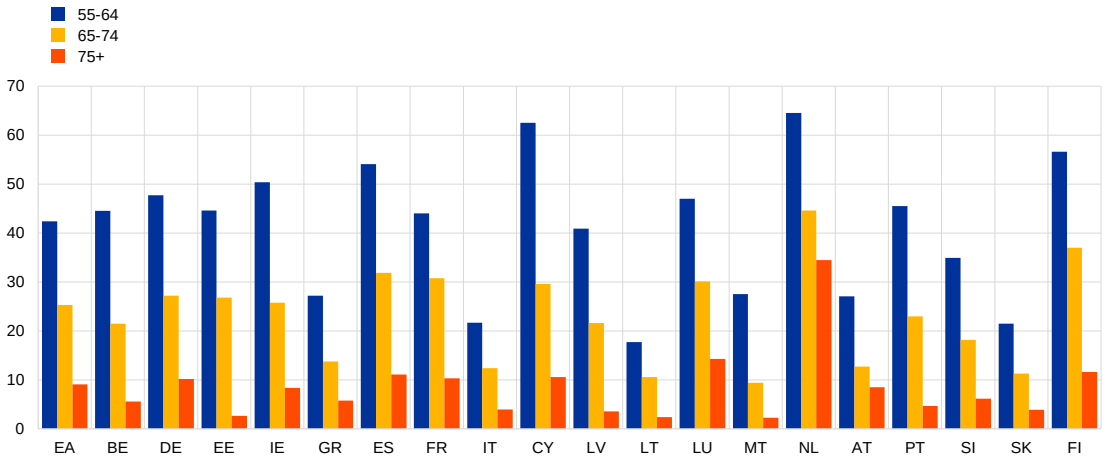
Sources: HFCS (2020) and author calculations. The sum of total real assets (left) and total financial assets (right) equals total assets (100%).

Finally, regarding the debt dimension of the net wealth concept, Chart C, below, shows the household participation rates in total debt. There is a strongly negative relationship between age and the percentage of indebted households, as older households tend to clearly reduce their mortgage debt. Also the dynamics of the median debt-to-asset ratio in the euro area shows that it decreases for those households during retirement age (from 8.5% for those aged 65-74 to 5.6% for those aged 75 and older).

Chart C

Household holding of total debt liabilities by country

(percentage of households by age range, 2017 data)



Sources: HFCS (2020) and author calculations.

Against this background, pension reforms can be expected to play a key role in the changes in the participation rate of older workers. While better health conditions, rising education, and more favourable labour market conditions are expected to support a higher labour participation rate of older workers, these common long-term trend factors alone are not able to explain the recent increase in the participation rate and its large variation across countries. This shifts the focus on to how pension reforms might have affected the old-age participation rate.

5 Recent pension reforms across euro area countries and their labour market impact

While all euro area countries adopted pension reform measures during the past two decades, they varied across countries in terms of intensity and frequency. The pension reforms comprised in particular increases in the statutory retirement age, more flexible retirement arrangements to combine work and retirement, financial incentives for prolonging working lives beyond the statutory retirement age, less generous (early) retirement schemes and stricter eligibility criteria for early retirement for instance due to more required contributory years.[133] The pension reforms implemented in the last decade were particularly substantial in countries subject to adjustment programmes, such as Greece, Spain, Cyprus and Portugal.

Pension reforms are important not only for fiscal sustainability but also for labour supply. Population ageing is placing upward pressure on mostly already elevated levels of age-related public spending, including old-age pension expenditures.[134] The recently adopted pension reforms have helped to strengthen the robustness of the countries' public pension systems in view of population ageing and to contain long-term fiscal sustainability risks.[135] Moreover, pension reforms are seen as an important factor of prolonged working lives.

Statutory retirement ages have been raised in almost all euro area countries. Since 2000, the age limits for receiving a full pension increased by on average more than two years for men and almost four years for women in the euro area countries (Chart 8). Increases of 5 years or more were implemented in two countries, France and Slovenia, both for men and women, and in six countries, namely Germany, Estonia, Italy, Greece, Latvia and Lithuania, only for women. The generally more pronounced increase of eligibility ages for women reflects a common trend in Europe towards equalising the retirement ages of men and women. Only a few countries, namely Belgium (only men), Luxembourg and Austria, left the eligibility age unchanged during the past two decades. Most countries have also restricted access to old-age pension payments by making them contingent on a higher number of

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133 See Carone, G. et al., "Pension Reforms in the EU since the Early 2000's: Achievements and Challenges Ahead", *European Commission Discussion Papers*, No 42, 2016.

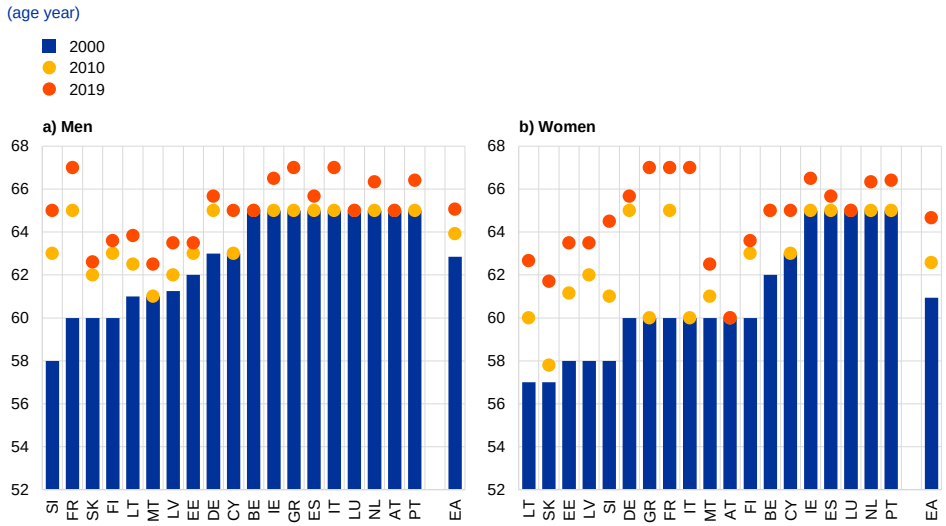
134 See "The economic impact of population ageing and pension reforms", op. cit.

135 Successive vintages of the European Commission's Ageing Report project a decline in the level of public pension expenditure in 2050 from 13.3% of GDP in the 2001 report to 11.7% of GDP in the 2018 report. However, these figures need to be interpreted with care, as neither the forecasting horizon nor the country composition are fully comparable across vintages and the starting level has also changed over time.

contribution years, which is particularly relevant for the sustainability of predominately defined benefit schemes. The trend of rising statutory retirement ages is expected to continue, as several countries decided to automatically link the retirement age to changes in life expectancy.

Chart 8

Statutory retirement age



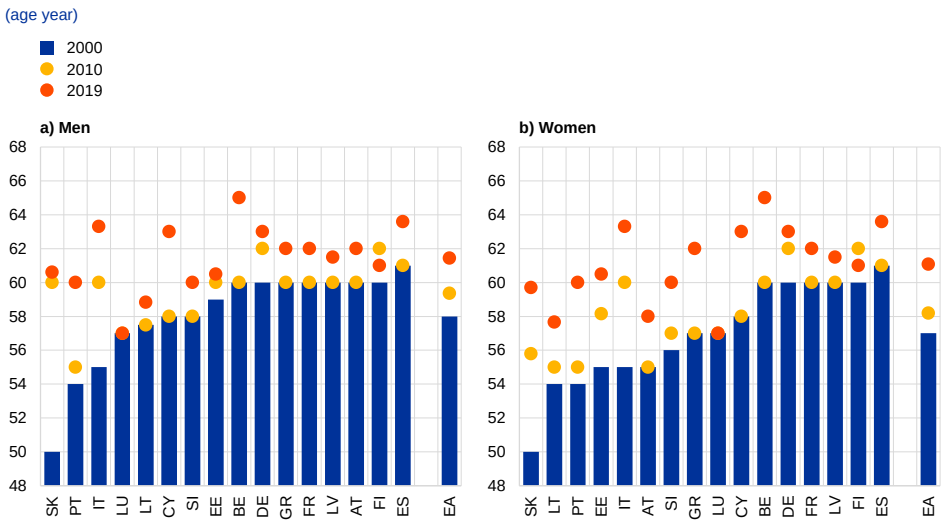
Source: National sources and own calculations.

Stricter eligibility criteria for statutory pensions were often complemented by restrictions on early retirement. All euro area countries, except Ireland and the Netherlands, have early retirement schemes in place.[136] Some countries even operate several early retirement schemes in parallel which target specific groups of workers. Most early retirement schemes entail deductions to allow for more actuarial fairness. Since 2000, the early retirement age limit was raised on average by 3 ½ years for men and by more than 4 years for women, reaching around 61 years for both men and women in 2019 (Chart 9). Some countries, mainly those that implemented an automatic link between retirement age and changes in life expectancy, also broadened this instrument to their early retirement schemes. In addition, six euro area countries (Belgium, Germany, Greece, Spain, France and Austria) allow receipt of full pension without any deductions before reaching the statutory retirement age. However, entitlements are usually made conditional on specific criteria, such as long working careers. Since 2000, these requirements were significantly increased to currently around 40 contributory years or more. By requiring very long working careers, such early retirement schemes have implicitly become predominantly tailored towards workers with earlier career starts and lower educational levels.

136 Early retirement schemes are specific schemes that allow people to enter retirement before reaching the statutory retirement age, mostly contingent on long working careers and implying an adjustment of pension entitlements. Besides specific early retirement schemes, an early exit from the labour market was also encouraged through the use of unemployment, sickness or disability insurance schemes for older workers. Most of these schemes were introduced in the 1970s in response to rising unemployment – see Carone, G. et al., op. cit.

Chart 9

Early retirement age

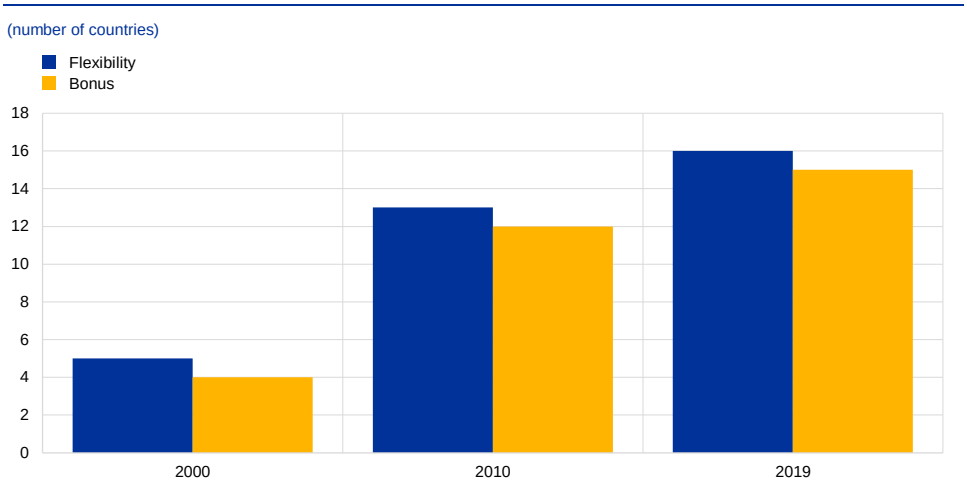


Source: National sources and own calculations.
Notes: Ireland and the Netherlands do not have an early retirement scheme. No data available for Malta. While some countries have several early retirement schemes in place, only one scheme is shown here.

Most countries have embedded in their pension schemes some (financial) incentives for older workers to prolong their working careers. To incentivise older workers to stay in the labour market for a longer period, sometimes even beyond the statutory retirement age, several countries tuned their pension systems in the past two decades by more strongly rewarding delayed retirement or by allowing retirees to continue working (Chart 10). However, the concrete set-up of these measures is very country-specific. Financial incentives are mostly provided in the form of a pension bonus for delayed retirement and through age-dependent tax credits for older workers. Some countries allow older workers to claim pension payments while working up to a certain age limit, while others do not set any upper boundary. Against the background of generally rising statutory retirement ages, these measures have also been increasingly affecting the participation rate of age cohorts beyond 65 years.

Chart 10

Different incentivising policies to prolong working careers



Sources: National sources and own calculations.
Notes: The Chart shows the number of countries with incentivising policies in place in 2000, 2010 and 2019. The bar on "flexibility" subsumes the number of euro area countries that have policies in place that allow combining work and retirement, while "bonus" refers to the number of countries that pay a pension bonus for delayed retirement.

Reducing the generosity of pension benefits can be expected to encourage older workers to retire later. Many euro area countries reduced the generosity of their public pension systems mainly with the aim of improving the financial sustainability of their pension schemes. Older workers might postpone their retirement date to compensate for the pension shortfall, which might have a positive side effect on the participation rate. In the euro area, pension entitlements were cut through various means, such as by lowering the accrual rate by which pensionable earnings are transferred into pension entitlements; by calculating the reference wage for pension payments on the basis of a full career rather than a subset of best years which usually imply higher salaries; and by strengthening the indexation of pensions to inflation developments rather than wage developments.[137] Moreover, several countries raised the pension tax rates and made early retirement financially less attractive by increasing penalties for early retirement.

All these pension reforms can be expected to incentivise older workers to delay their retirement decision. The reform impact can be captured by the implicit tax rate of working one year longer, which reflects the changes in the present value of the future stream of pension benefits of a standardised worker in comparison to the additional earnings gained by working one year longer.[138] A high positive value of the implicit tax rate for working longer reveals incentives for retiring earlier, while a negative value can be considered to be a kind of subsidy for working longer – this is because the additional earnings from working one year longer exceed the shortfall in

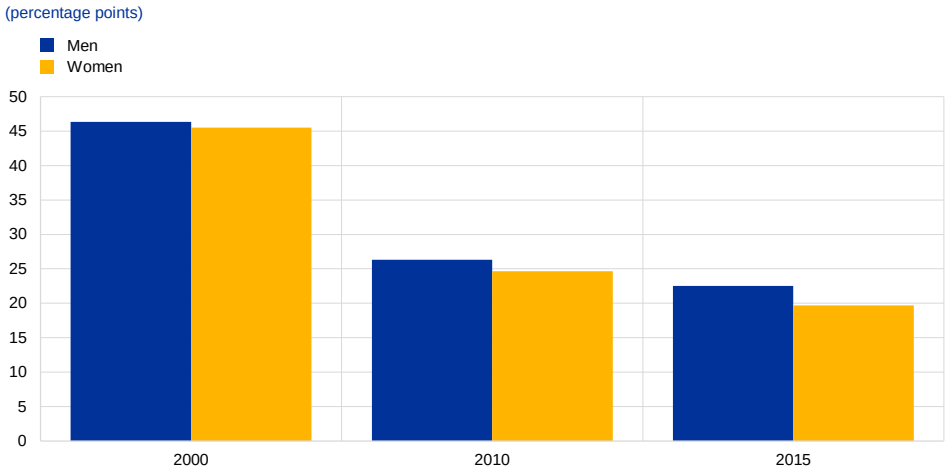
137 For an overview see, for example, Carone, G. et al., op. cit.

138 The calculation of the implicit tax rate of working longer requires detailed, country-specific information. This explains why only very few cross-country studies use the concept of the implicit tax rate. See for example Duval, R., The Retirement Effects of Old-Age Pension and Early Retirement Schemes in OECD Countries, OECD Economics Department Working Papers No. 370, and OECD, Economic Policy Reforms – going for growth, various editions. More recently, a cross-country analysis was conducted for 12 advanced economies. See Börsch-Supan, A. and Coile, C. (eds.), *Social Security Programs and Retirement around the World: Reforms and Retirement Incentives*, NBER Book Series – International Social Security, University of Chicago Press, Chicago, 2020.

the present value of pension benefits. The value of the implicit tax rate depends on the underlying parameters of the respective pension scheme and therefore varies across country, age cohort and time. For example, in the case of an early retirement scheme, the implicit tax rate tends to increase in the year before reaching the earliest age at which one is eligible for early retirement, while flattening somewhat thereafter. Pension reforms that affect the generosity of the pension system and postpone the retirement age are expected to result in a lower implicit tax rate. The few available studies on euro area countries suggest an overall decline of the implicit tax rate for both men and women. In fact, a recent study shows that the implicit tax rate for workers at age 62 more than halved for a group of euro area countries, from above 45% on average in 2000 to around 20% in 2015, notwithstanding large cross-country differences.[139]

Chart 11

Implicit tax rate of prolonging working life



Sources: Börsch-Supan and Coile (2020), own calculations.
Notes: The data shown represents the implicit tax rate for working longer for an average worker at the age of 62 years, as calculated in Börsch-Supan and Coile (2020). It is the unweighted average of the six euro area countries, for which data are available, which comprise Belgium, Germany, Spain, France, Italy and the Netherlands.

The implicit tax rate for working longer seems to be negatively correlated with the participation rate of older workers, as also confirmed in the literature. A decline in the implicit tax rate as a result of pension reforms can be seen as an indication that older workers postpone their entry into retirement. The positive effect of pension reforms on incentives to participate in the labour market for longer has been broadly confirmed in several studies. They find evidence that people react to changes in financial incentives (such as early retirement deductions, but also lifetime income and wealth effects) as well as to changes in the statutory pension age.[140] Moreover, recent research has shown a statistically significant negative correlation between the

139 See Börsch-Supan, A. and Coile, C. op. cit. This study contains country-specific analyses, including for six euro area countries (i.e. Belgium, Germany, Spain, France, Italy and the Netherlands). Compared to the group of euro area countries, the 2015 level of the implicit tax rate is considerably higher in Japan (around 45%), although it has halved since 2000, and much lower in the United States (at a stable level around 10%). The analysis covers several types of recipients, for whom the social security benefit is calculated for every year from 1980 to 2015 for every possible retirement age (between 55 and 69 years), and for every pathway to retirement (such as old-age public pension, early retirement pension, disability pensions, etc.) available for the typical individuals.

140 See, for example, Blundell et al., op. cit.

implicit tax rate and the employment rate across several advanced countries, including six euro area countries.[141] Pension reforms, in particular those restricting access to early retirement schemes, are found to have played a major role in driving up the employment rate of older people. In fact, based on pooled panel regressions, the results suggest an increase in the employment rate of older workers (at an average early retirement age of 62 years) by 6.7 percentage points for men and 4.6 percentage points for women in the case of a decline in the implicit tax rate (from 100% to zero). At the statutory retirement age, the positive impact on the employment rate is estimated to stand at 1.8 percentage points. These findings are broadly in line with other studies.[142]

At the same time, disentangling the impact of pension reforms on the labour force participation rate across countries is far from trivial. First, pension schemes and the amount and scope of pension reforms differ considerably across countries, while the specific features of reforms are important with respect to their concrete impact on labour supply. Second, considerable variation exists with respect to the date pension reforms were adopted and the time period between announcement and implementation of reforms. In particular, long implementation delays have been found to have macroeconomic effects, not at least as people try to advance retirement to still benefit from the old regime.[143] Third, the pace of reform implementation varied across countries. In some countries, such as Germany, certain pension reform elements were implemented very gradually, while in others, such as Italy, the increase in the statutory retirement age was implemented rather abruptly. This has implications for when the participation rate of older workers will be affected.

Furthermore, pension reform reversals may have adverse implications for labour supply. More recently, several countries are contemplating whether to reverse previously adopted pension reforms, in view of rising political pressure. In a few countries, such steps have indeed already been decided. However, as recent research has shown, undoing past pension reforms would not only pose challenges for fiscal sustainability, but would also generate substantial adverse macroeconomic costs, including for the labour supply.[144] Thus, if this trend of reform reversals continues, it is likely to result in a declining participation rate of older workers.

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141 See Börsch-Supan, A. and Coile, C. op. cit.

142 See, for example, Geppert, C., Guillemette, Y., Morgavi, H. and Turner, D., "Labour supply of older people in advanced economies: the impact of changes to statutory retirement ages", *OECD Economics Department Working Papers,* No 1554, OECD Publishing, Paris, 2019; Grigoli, F., Koczan, Z. and Topalova, P., "A Cohort-Based Analysis of Labor Force Participation for Advanced Economies", *Cohort-Based Analysis of Labor Force Participation for Advanced Economies,* United States, IMF, 2018; and De Philippis, M., "The dynamics of the Italian labour force participation rate: determinants and implications for the employment and unemployment rate", *Banca d'Italia Occasional Papers*, No 396, Banca d'Italia, 2017.

143 See, for example, Bi, H., Hunt, K. and Zubairy, S. "Implementation delays in pension retrenchment reforms", *Economic Review,* Vol. 104, No 2, Federal Reserve Bank of Kansas City, Second Quarter 2019, pp. 53-70.

144 For an analysis of the macroeconomic and fiscal costs of pension reform reversals, see Baksa, D., Munkacsi, Z. and Nerlich, C., "A framework for assessing the costs of pension reform reversals", *Working Paper Series*, No 2396, ECB, April 2020. A study on the impact of the 2014 pension reform reversal in Germany that allows workers with a particularly long working history of 45 years to retire earlier at the age of 63 years at a full pension, finds that the probability of retiring earlier is indeed 10 percentage points higher for eligible persons for early retirement than for those who face penalties. For more information, see Krolage, C. and Dolls, M., "The effects of early retirement incentives on retirement decisions", *ifo Working Papers*, No 291, ifo Institute, Munich, 2019, pp. 1-31.

6 Conclusions

This article argues that several factors played a role in the considerable increase in the labour force participation rate of older workers during the past two decades. The participation rate of older workers increased particularly strongly among women, although they were starting from a lower level than men. Various factors can determine the participation rate of older workers. Deciding on when to enter retirement is a complex choice, influenced by many factors, including: the labour market situation; the set-up of the social security systems; a person's health status; their net wealth and its expected evolution; and their individual preferences. While many of these factors have changed considerably over time, most of them are long-term trends, such as better health conditions, rising life expectancy and higher educational levels, and therefore cannot explain the steep increase in the participation rate since 2000. In turn, pension reforms seem to have played a decisive role in driving the participation rate up. They comprise increases in the statutory retirement age, more flexible retirement arrangements to combine work and retirement, financial incentives for prolonging working lives beyond the statutory retirement age, less generous (early) retirement schemes and stricter eligibility criteria for retiring earlier, for instance due to an increase in the contributory years required.

Looking ahead, various factors will play a role in driving the labour force participation rate of older workers in future years, with the overall impact being unclear. First, the latest population projections suggest that the relative share of the cohort of older workers will shrink somewhat, once the baby boom generation has entered retirement. This would drive the overall participation rate up by itself, all other things being equal. Moreover, to further contain fiscal sustainability risks related to population ageing, governments would need to pursue further pension reforms with a potentially positive impact on the labour force participation rate of older workers. However, if the recent trend of pension reform reversals were to continue, this is likely to have an adverse impact on the labour force participation rate of older workers. Finally, in the shorter term all these effects are likely to be dominated by the impact of the COVID-19 pandemic and the severe macroeconomic implications, including on the labour market. The experience from past severe macroeconomic shocks suggests that the labour force participation rate of older workers is likely to be negatively affected, unless mitigated by policy intervention.

3 Liquidity distribution and settlement in TARGET2

Prepared by Ioana Duca-Radu and Livia Polo Friz[145]

1 Introduction

TARGET2, the payment system owned and operated by the Eurosystem, plays a vital role in the euro area, supporting the implementation of monetary policy as well as the functioning of financial markets and economic activity. Central banks and commercial banks use TARGET2 for monetary policy operations, interbank payments and customer payments.[146] The system processes euro-denominated payments in central bank money, on a gross basis, in real time and with immediate finality. It ensures the free flow of central bank money across the euro area, supporting economic activity, financial stability and promoting financial integration in the EU.[147] Moreover, TARGET2 has a global reach through correspondent banking,[148] which further supports the operations of EU banks and firms. Central bank liquidity – funds held by banks at the central bank, including the minimum reserves they must hold – is held on TARGET2 accounts and can be used to make payments throughout the day.

Liquidity plays a central role in real-time gross settlement (RTGS) systems, as without it no payment can be settled.[149] RTGS systems require considerable liquidity, as payments are settled one by one. They thus typically have features that enable participants to save liquidity. TARGET2 offers a number of such features to support participants in their intraday liquidity management.[150] In addition, participants can use the intraday credit line (ICL) facility offered by the Eurosystem when the liquidity on their accounts is not sufficient to settle payments.[151] They can also actively manage their payment flows, for example by synchronising their outgoing and incoming payments, thus making more efficient use of the liquidity available in the system. During periods of generally higher levels of liquidity, less effort is needed on

145 The authors of this article are members/alternates of one of the user groups with access to TARGET2 data in accordance with Article 1(2) of Decision ECB/2010/9 of 29 July 2010 on access to and use of certain TARGET2 data. The ECB, the Market Infrastructure Board and the Market Infrastructure and Payments Committee have checked the article against the rules for guaranteeing the confidentiality of transaction-level data imposed by the Payment and Settlement Systems Committee pursuant to Article 1(4) of the abovementioned ECB Decision. The views expressed in the article are solely those of the authors and do not necessarily represent the views of the Eurosystem. The authors thank Carlos Luis Navarro Ramirez for research assistance.

146 For instance, if an airline company in the Netherlands acquires an aeroplane from a company in France, the transfer of the payment can be made in TARGET2 via their banks. Other payment and securities settlement systems such as EURO1, a pan-European large-value payment system, and STEP2, a pan-European retail payment system, also settle their participants' net positions in TARGET2.

147 In 2019 TARGET2 settled an average of €1.7 trillion on a daily basis, corresponding to 344,120 transactions (see *TARGET Annual Report 2019*, ECB, Frankfurt am Main, May 2020).

148 A correspondent bank is a bank that provides services on behalf of another bank.

149 When a payment message is sent to the system, the payment is settled immediately if the participant has enough liquidity on its account. As soon as the sender's account has been debited, the payment becomes irrevocable. If liquidity on the sender's account is not sufficient to settle the payment, the payment is placed in a queue.

150 For instance, offsetting algorithms, which match and offset payments at entry or while they are in the queue.

151 The ICL is offered, free of interest, against eligible collateral that participants post with their national central banks. At the end of the day, if the participant cannot cover its negative position, the intraday credit becomes overnight credit charged at the rate on the marginal lending facility.

the part of TARGET2 participants to manage their intraday liquidity and liquidity-saving mechanisms are used less.[152]

Liquidity availability and how liquidity is distributed have an impact on the settlement process. Although TARGET2 is operated as a single technical platform, it connects legally distinct component systems, each of which is operated by a national central bank. This article focuses on how liquidity is distributed across the various TARGET2 components and attempts to understand what this implies for payment settlement at jurisdiction level. In particular, it investigates how liquidity distribution across countries affects the reliance on intraday credit and the time of payment settlement. These aspects are important for the payment system operator:[153] a large intraday credit line increases the payment capacity[154] of the respective participant, making payment settlement smoother. Nevertheless, if a participant cannot repay its credit at the end of day, the latter is automatically transformed into overnight credit at the ECB's marginal lending rate. The earlier payments are settled, the lower the operational risk.[155] Should an operational disruption occur during the day, the more payments have been settled up to that point, the lower the pressure on the system once it resumes settlement activity.

The remainder of the article is structured as follows. Section 2 provides an overview of liquidity distribution in TARGET2. Section 3 describes the implications of liquidity distribution for payment settlement in TARGET2. Section 4 concludes and discusses the relevance of the findings.

2 An overview of liquidity distribution in TARGET2

Liquidity in TARGET2 can be measured as the sum of the liquidity held by participants on their accounts at the beginning of each day.[156] Liquidity in TARGET2 increased by approximately eight times between mid-2008 and end-2019 (see Chart 1). It rose at the time of the sovereign debt crisis in 2011-12, amid

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152 For example, in mid-2014 a daily average of €2.0 trillion worth of payments were settled in TARGET2, against an overall liquidity level of €200.7 billion. In mid-2019, approximately €1.8 trillion in payments were settled each day, but liquidity levels stood at €1,790.5 billion as a consequence of monetary policy measures under the asset purchase programme, i.e. fewer payments were settled with higher liquidity. The difference lies in how efficiently liquidity is used: in mid-2014 an indicator showing the efficiency of the liquidity used in TARGET2 stood at 5.0, while in mid-2019 it stood at 3.3. The efficiency of the liquidity used is computed as the ratio of total payments settled to an estimated level of liquidity used, following Benos, E., Garratt, R. and Zimmerman, P., "*Bank behaviour and risks in CHAPS following the collapse of Lehman Brothers"*, *Working Paper Series*, No 451, Bank of England, June 2012.

153 Payment systems may be owned and operated by a central bank or by the private sector. In its role as owner and operator of TARGET2, the Eurosystem offers settlement in central bank money by allowing financial institutions to transfer funds held in accounts with their central bank to each other. Acting in an operational capacity is one way for a central bank to ensure that the system meets the safety and efficiency standards it has set.

154 The payment capacity of a TARGET2 participant at the start of the business day is defined as the sum of the opening balance on its account and the amount of the ICL set.

155 See e.g. McAndrews, J. and Kroeger, A., "The Payment System Benefits of High Reserve Balances", *Staff Reports*, No 779, Federal Reserve Bank of New York, June 2016.

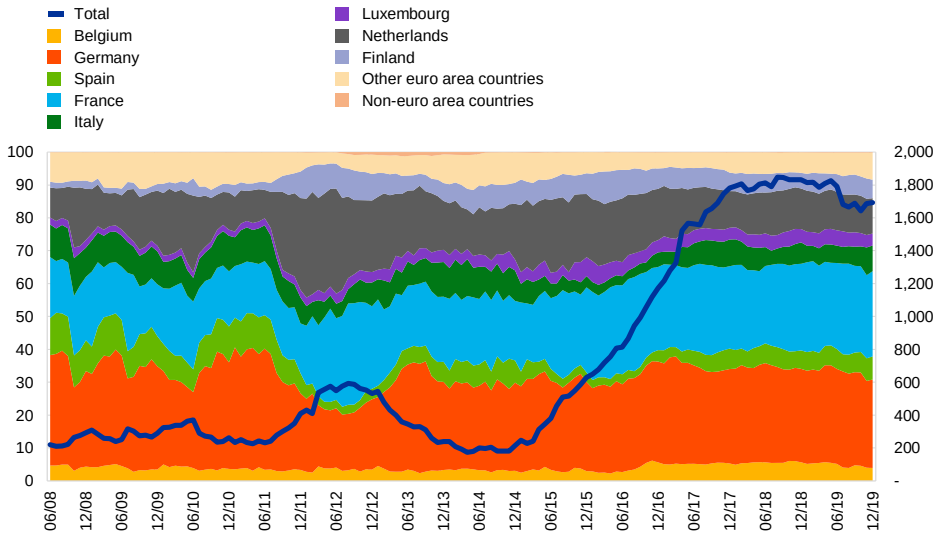
156 Start-of-day balances are adjusted for the use made overnight of the Eurosystem's standing facilities (the marginal lending facility and the deposit facility). Further adjustments are applied to correct for national specificities. In particular, some central banks use proprietary home accounts, to which their participants' liquidity is moved at the end of the day. This is done, for instance, for the computation of the minimum reserves credit institutions are required to hold with their central bank, as the Reserve Management Module in TARGET2 is optional.

measures taken by the Eurosystem to accommodate banks' liquidity demand, and reached €592.7 billion in August 2012, compared with €219.8 billion in June 2008. The launch of the public sector purchase programme (PSPP) in March 2015 brought a new surge in liquidity levels. A peak of €1,847.2 billion was reached in August 2018. These developments resemble the evolution of excess liquidity, i.e. the funds held by credit institutions on accounts with the central bank in excess of minimum reserves.[157] With the increase in liquidity levels in TARGET2 following the start of the PSPP, the volatility of liquidity holdings at country level has decreased. Since end-2016 the country shares have broadly stabilised, with the exception of the Netherlands, whose share has decreased.[158]

Chart 1

Total liquidity in TARGET2 and liquidity by country

(left-hand scale: percentages of total liquidity; right-hand scale: total liquidity, EUR billions)



Sources: TARGET2 and ECB calculations.
Note: The data points represent monthly averages of daily data. Data cover the period from June 2008 to December 2019.

Most of the liquidity in TARGET2 is held by eight jurisdictions. Germany, France, the Netherlands, Italy, Spain, Finland, Belgium and Luxembourg account on average for 92.5% of the total liquidity held in TARGET2 (see Chart 1), broadly in line with the distribution of excess liquidity. Between June 2008 and December 2019 the share of liquidity held by Germany stood at an average of 28.2%, compared with 21.9% for France and 16.3% for the Netherlands. Italy held an average of 7.1%, Spain 6.2%, Finland 5.4%, Belgium 4.0% and Luxemburg 3.3%. The correlation between the liquidity available at country level and the value of TARGET2 payments is 0.92 over the same period. This suggests that jurisdictions with higher liquidity levels are also those which have higher payment activity in TARGET2. Germany, France and the Netherlands were

157 See Baldo, L., Hallinger, B., Helmus, C., Herrala, N., Martins, D., Mohing, F., Petroulakis, F., Resinek, M., Vergote, O., Usciati, B. and Wang, Y., "The distribution of excess liquidity in the euro area", *Occasional Paper Series*, No 200, ECB, Frankfurt am Main, November 2017.

158 The developments observed in the latter part of 2019 can be explained by the fact that some credit institutions based in the United Kingdom have relocated their point of access to TARGET2 from the Netherlands to France and Germany in view of Brexit.

the largest contributors to the TARGET2 traffic in 2019, in line with their liquidity share, accounting for around 68.0% of the value settled.[159] Luxembourg, Belgium, Spain and Italy followed, with shares ranging between 4.0% and 9.0%. The concentration of payment activity in a few countries is the consequence of a number of factors, including the size of the national banking system, the presence of financial market infrastructures, the location of banking groups' headquarters and the role of institutions based in the country in providing access to TARGET2 to non-euro area banks.

Liquidity in TARGET2 is concentrated among a subset of institutions. Liquidity concentration is measured using the Gini coefficient,[160] which lies between zero (perfect equality) and one (maximum inequality). The Gini coefficient has ranged between 0.86 and 0.92 over time (see Table 1), indicating that most liquidity in TARGET2 is held by a few participants. This is broadly in line with the Gini coefficient calculated for minimum reserve requirements, which averaged 0.87 between the seventh reserve maintenance period in 2012 and the eighth maintenance period in 2019.[161] Thus the concentration of liquidity in TARGET2 largely reflects the concentration of banks' minimum reserves and ultimately, as minimum reserve requirements are calculated on the basis of the banks' balance sheets, market composition. The Gini coefficient for liquidity concentration increased first during the sovereign debt crisis in 2011-12, in line with the market fragmentation phenomenon observed at the time.[162] It also increased following the start of the PSPP. This suggests that the additional liquidity injected into the system ended up with participants that already had more liquidity on their accounts than others. On the other hand, the introduction of the two-tier system for the remuneration of excess reserves on 30 October 2019 led to a decrease in the concentration of liquidity holdings. Box 1 below discusses the impact of the introduction of the two-tier system on liquidity distribution in TARGET2 in greater detail.

The concentration of liquidity within euro area countries varies. Average figures for four periods between June 2008 and December 2019 show that concentration has ranged from 0.47 to 0.93 across all jurisdictions (see Table 1). The lowest concentration levels were recorded before the sovereign debt crisis, whereas the highest have been observed most recently. This is valid across jurisdictions, with very few exceptions. Since the start of the PSPP, Germany, Spain, France and the Netherlands have displayed the highest average concentration values, whereas Slovenia, Ireland and Malta have recorded the lowest. There is no clear impact of the PSPP on the concentration of liquidity at country level.

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159 See *TARGET Annual Report 2019*, ECB, Frankfurt am Main, May 2020.

160 The Gini coefficient has been adopted in payment system-related literature to measure inequality from different perspectives. Another measure of concentration widely used is the Herfindahl-Hirschman Index (HHI). See e.g. Adams, M., Galbiati, M. and Giansante S., "Liquidity costs and tiering in large-value payment systems", *Working Paper Series*, No 399, Bank of England, July 2010; Denbee, E., Garratt, R.J. and Zimmerman, P., "Variations in liquidity provision in real-time payment systems", *Working Paper Series*, No 513, October 2014, revised January 2015; McAndrews, J. and Kroeger, A., "The Payment System Benefits of High Reserve Balances", *Staff Reports*, No 779, Federal Reserve Bank of New York, New York, June 2016.

161 The ECB started collecting individual minimum reserve requirement data from national central banks as of the seventh reserve maintenance period of 2012.

162 Eisenschmidt, J., Kedan, D., Schmitz, M., Adalid, R. and Papsdorf, P., "The Eurosystem's asset purchase programme and TARGET balances", *Occasional Paper Series*, No 196, ECB, Frankfurt am Main, September 2017.

Table 1

Gini coefficient across euro area countries

Country	June 2008 to Dec. 2010	Jan. 2011 to Dec. 2012	Jan. 2013 to Feb. 2015	Mar. 2015 to Dec. 2019
Belgium	0.47	0.72	0.70	0.84
Germany	N/A	N/A	0.90	0.93
Estonia	0.72	0.65	0.60	0.80
Ireland	0.64	0.67	0.64	0.59
Greece	0.66	0.71	0.81	0.79
Spain	0.82	0.83	0.86	0.88
France	0.85	0.86	0.86	0.88
Italy	0.84	0.85	0.84	0.84
Cyprus	0.68	0.69	0.79	0.78
Latvia	0.69	0.75	0.74	0.74
Lithuania	0.69	0.80	0.80	0.84
Luxembourg	0.59	0.69	0.76	0.71
Malta	N/A	N/A	N/A	0.67
Netherlands	0.90	0.90	0.84	0.88
Austria	0.71	0.80	0.81	0.80
Portugal	0.65	0.82	0.83	0.80
Slovenia	0.65	0.67	0.67	0.56
Slovakia	0.73	0.78	0.79	0.85
Finland	0.78	0.80	0.83	0.74
TARGET2	**0.86**	**0.89**	**0.89**	**0.92**

Sources: TARGET2 and ECB calculations.
Note: Figures are not included for Malta before March 2015 and for Germany before September 2013 owing to data limitations.

Box 1

The impact of the two-tier system for remunerating excess liquidity on the distribution of liquidity in TARGET2

On 30 October 2019 the ECB introduced a two-tier system for remunerating excess liquidity holdings, which coincided with a redistribution of liquidity among the country components in TARGET2. Under the two-tier system, banks' excess liquidity holdings are remunerated at 0% up to a limit of currently six times their minimum reserve requirements, creating an incentive for them to exploit any unused exemption allowances; excess liquidity above this level is subject to the rate on the deposit facility (currently -0.50%). Banks with excess liquidity holdings above the exemption allowances have an incentive to lend at negative rates more favourable to them than the deposit facility rate, while banks with unused exemption allowances can borrow funds at a negative rate and deposit them at 0% as part of the exempted tier. The exemption allowances can be filled on a domestic or cross-border basis. If the allowances are filled on a cross-border basis, liquidity is redistributed among the country components in TARGET2. In fact, according to ECB staff estimations based on excess liquidity data

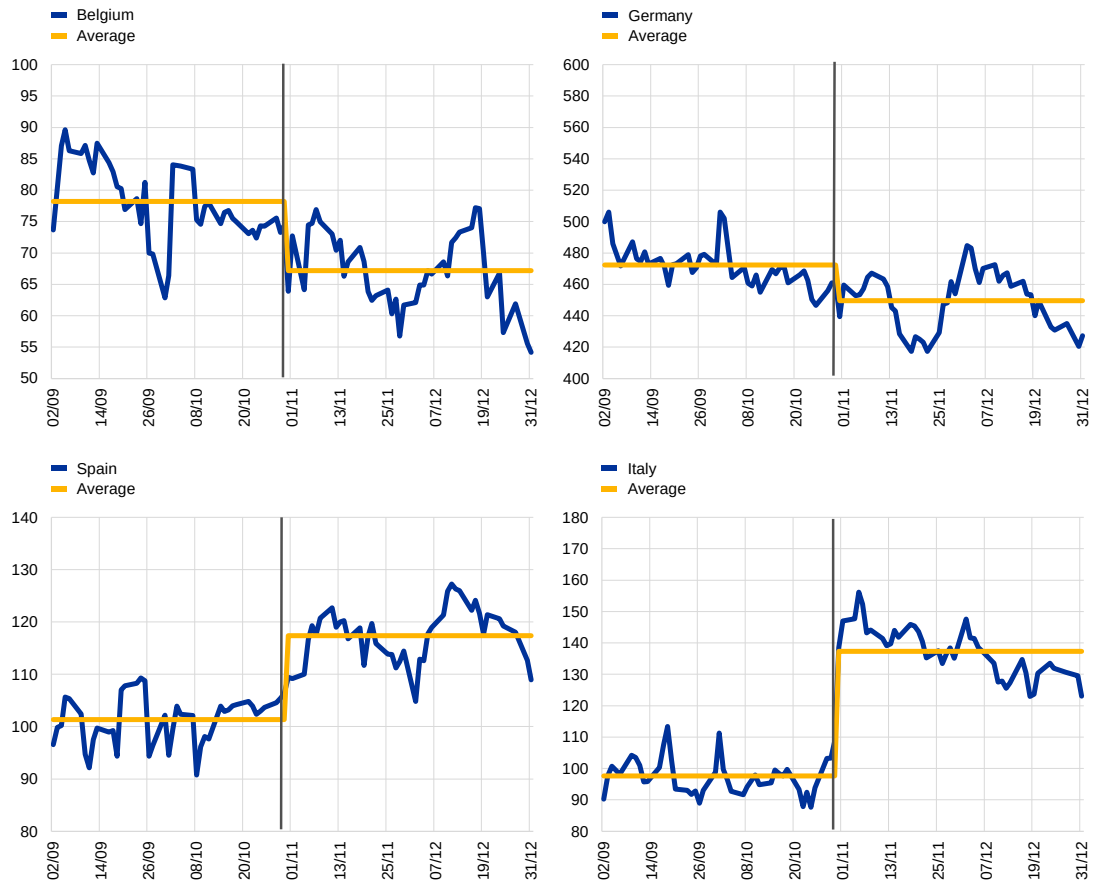
available prior to the introduction of the two-tier system, around 4% of exemption allowances, or around €30 billion, could only be filled if banks traded across borders.[163]

On 31 October, one day after the introduction of the two-tier system, Germany's start-of-day balance registered a noticeable decrease, from €472.6 billion to €449.6 billion, as did that of Belgium, from €78.3 billion to €63.9 billion.[164] On the other hand, liquidity holdings of Italian banks in TARGET2 increased by €39.9 billion to €137.2 billion. In Spain, the TARGET2 start-of-day balance was not significantly altered the day after the introduction of the two-tier system, but in the course of five business days had changed by €13.0 billion. The new levels persisted until the end of the year. These moves in TARGET2 mirrored shifts in excess liquidity from liquidity-flush countries such as Belgium and Germany towards countries with unused allowances such as Italy (see Chart A). The redistribution of liquidity occurred mainly via secured transactions.

Chart A

TARGET2 start-of-day balances in selected jurisdictions around the introduction of the two-tier excess liquidity remuneration system

(EUR billions, daily data)



Sources: TARGET2 and ECB calculations.
Notes: Data cover the period from 2 September 2019 to 30 December 2019.

[163] See *A tale of two money markets: fragmentation or concentration*, speech by Benoît Cœuré at the ECB workshop on money markets, monetary policy implementation and central bank balance sheets, Frankfurt am Main,12 November 2019.

[164] Since start-of-day balances are used to measure liquidity in TARGET2, the changes are visible only one day after.

By 11 December 2019 banks had reduced their unused exemption allowances to 5%, from 28% on 30 October 2019,[165] which also resulted in a reduced concentration of liquidity in TARGET2. In particular, the Gini coefficient declined in Germany from 0.92 on average in the two months preceding the introduction of the two-tier system to 0.89 in the following two months. In Belgium the coefficient fell from 0.89 to 0.86, in Italy from 0.85 to 0.82 and in Spain from 0.88 to 0.86. These changes are significant, being equivalent to between two and seven times one standard deviation of the month-on-month changes since March 2015. Other jurisdictions that registered a decrease were Luxembourg, the Netherlands and Slovakia. Across all TARGET2 participants, liquidity concentration decreased from 0.90 to 0.89.

3 The impact of liquidity distribution on payment settlement in TARGET2

This section explores the link between liquidity distribution in TARGET2 and both the usage of credit lines and the time of payment settlement. Credit line usage and the time of payment settlement are both important factors in a smooth settlement process.

3.1 Usage of the intraday credit line

The ICL is a facility provided to TARGET2 participants by the Eurosystem, against eligible collateral.[166] The size of the credit line, which is interest-free, depends on the amount of collateral posted, which participants have the option to modify throughout the day. The ICL is automatically used by the system for payment settlement when liquidity on a participant's TARGET2 account is insufficient. To ensure a smooth and timely settlement of payments, it is important for a participant to have a sizeable credit line. Nevertheless, if the credit is not repaid at the end of day, this amount automatically becomes subject to interest at the rate on the marginal lending facility. Thus an excessive reliance on intraday credit could expose participants to the risk of additional costs if they cannot repay the credit by the end of the day.

The total ICL has decreased in the context of the abundant levels of liquidity observed since March 2015. After the launch of the PSPP, the overall ICL decreased from €2,999.4 billion on average in March 2015 to €1,734.76 billion in December 2019. In the context of the PSPP and the asset purchase programme (APP) in general, the opportunity cost of holding collateral blocked for the ICL is higher than otherwise. This can at least partially explain the decline in the ICL. Prior to March 2015 the ICL constituted between 78.2% and 95.4% of participants' overall payment capacity. With the recent abundant levels of liquidity, the payment capacity has been split almost evenly between the two sources. In December 2019, the ICL accounted for 49.4% of the payment capacity.

[165] See the box entitled "Market reaction to the two-tier system", *Economic Bulletin*, Issue 8, ECB, 2019.

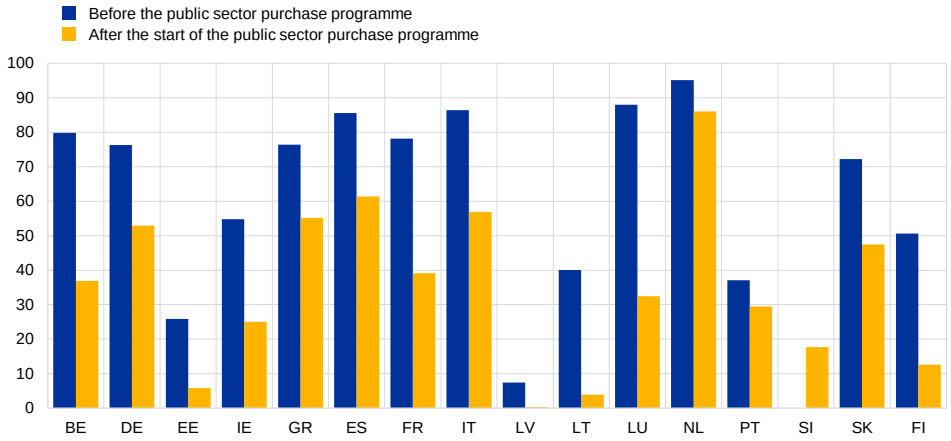
[166] See Guideline (EU) 2015/510 of the European Central Bank of 19 December 2014 on the implementation of the Eurosystem monetary policy framework (ECB/2014/60) (OJ L 91, 2.4.2015, p. 3).

In jurisdictions which are large financial centres, the ICL makes up a large proportion of the payment capacity. Germany and France are the locations of large custodian banks, while Germany and the Netherlands have historically been used by non-euro area banks to access TARGET2. The ICL accounts for above 75% of the payment capacity in these jurisdictions (see Chart 2). These are also the jurisdictions that hold the largest ICLs in absolute value and the largest holders of liquidity in TARGET2. In terms of ICL usage, i.e. the share of the ICL that is actually used to make payments,[167] however, they stand in the middle range, with values between 20.0% and 34.0% (see Chart 3). Overall, these figures suggest that the large ICL values are a consequence of the role that these jurisdictions play as financial centres, which results in large holdings of collateral. Assuming that any collateral that is not used otherwise (e.g. for open market operations) is allocated to ICLs, ICLs will be large. Large ICLs cannot therefore be interpreted as demand-driven. Other jurisdictions, such as Belgium, Greece, Spain, Italy or Luxembourg, also have payment capacity composed mainly of ICLs, but with ICLs in absolute terms much lower than in Germany, France or the Netherlands.

Chart 2

Intraday credit lines in TARGET2 relative to total payment capacity by jurisdiction

(percentages of total payment capacity per jurisdiction)



Sources: TARGET2 and ECB calculations.
Note: Data cover the period from June 2008 to December 2019. The chart shows euro area countries only. Owing to data limitations, the calculation does not include figures for Austria, Malta, Germany before September 2013, Latvia before January 2014, Portugal before April 2009 and Slovenia before November 2015.

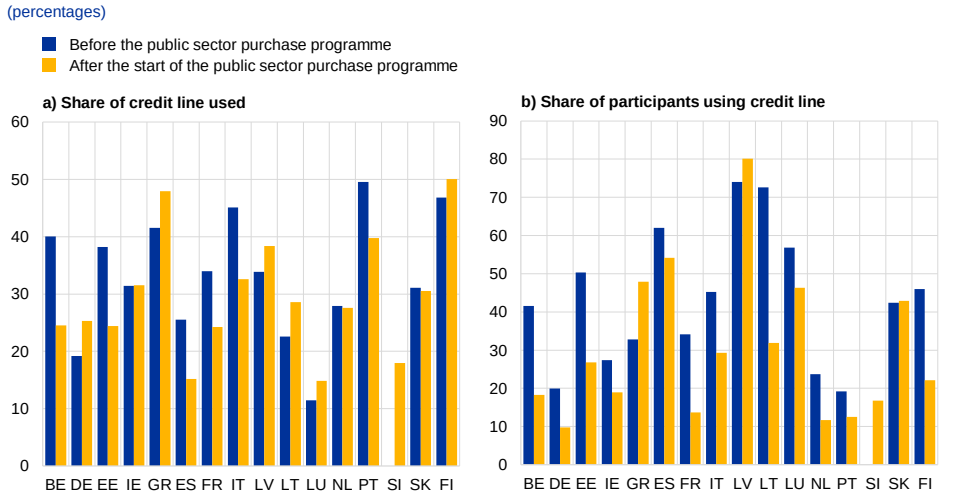
Given relatively limited ICL usage, a large component of the ICL seems to be supply-driven. ICL usage stands at around 31.4% on average across jurisdictions and different time periods, fluctuating between 11.5% and 50.0% (see Chart 3). Among the jurisdictions with the highest use of ICL are Greece, Italy, Portugal and Finland. The jurisdictions with the lowest use are Germany, Spain and Luxembourg. The variation in ICL usage may depend on whether the ICL is more supply or demand-driven, as well as on how well banks manage their liquidity on an intraday basis. The number of participants that actually use the ICL is also limited. In the context of abundant levels of liquidity, only approximately 10.4% of the participants in

[167] The ICL usage is calculated as the ratio of the maximum credit used from the intraday credit line throughout the day relative to the credit line set.

TARGET2 use the ICL, down from 31.9% in March 2015. This generally holds true across jurisdictions, which constitutes an additional indication that a large component of the ICL is actually supply-driven. Moreover, the collateral posted for the ICL can do a “double duty”, i.e. also count as collateral that banks have to hold for prudential purposes (e.g. liquidity buffers and high-quality liquid assets to be maintained under the liquidity coverage ratio rules). When the size of the ICL coincides with the collateral that banks have to hold for prudential purposes, the opportunity cost of having it blocked for the ICL becomes zero, and having access to a large ICL makes it easier for banks to manage intraday liquidity as it augments their payment capacity.

Chart 3

Usage of the intraday credit line across jurisdictions



Sources: TARGET2 and ECB calculations.
Note: Data cover the period from June 2008 to December 2019. The chart shows euro area countries only. Owing to data limitations, the calculation does not include figures for Austria, Malta, Germany before September 2013, Latvia before January 2014, Portugal before April 2009 and Slovenia before November 2015.

To understand better how liquidity availability at jurisdiction level relates to the use of the ICL, a panel study is conducted. This approach allows the value of payments settled, the size of the credit line, the concentration of liquidity, and the intraday coordination of payments to be simultaneously taken into account. Given the same level of liquidity, jurisdictions that settle more payments should also use the ICL more. Use of the ICL could also be higher if the same liquidity level is available but liquidity is concentrated in the hands of fewer participants. The intraday coordination of payments is also relevant for the use of the ICL. By synchronising payments, it is possible to use liquidity more efficiently, and recourse to the ICL should be thus more limited. In addition, the overnight interest rate, which gives the cost of liquidity, is added as a control. An increase in the cost of liquidity is an incentive for participants to make greater use of intraday credit, which bears no interest.

Results show that jurisdictions that hold more liquidity use the ICL less. The results are statistically significant across specifications (see Table 2). According to the most comprehensive specification (specification (3) in Table 2), a €63 billion increase in liquidity (start-of-day liquidity) – equivalent to one standard deviation of liquidity holdings across countries averaged over time – corresponds to a decrease of 1.3

percentage points in the use of the ICL. The size of the ICL is also negatively correlated with its use. This result supports the observation made previously that the size of the ICL seems to have a strong supply component, i.e. the jurisdictions that hold a large credit line need it less. Regarding the concentration of liquidity (Gini coefficient), the coefficients are not statistically significant, while the negative relationship holds across all specifications. Finally, a 1 percentage point increase in the cost of liquidity (the overnight unsecured rate) corresponds to a 2.5 percentage point increase in the use of the ICL.

Jurisdictions that are better at coordinating their payments use the ICL less. Payment coordination is measured as the time spread that each jurisdiction needs on average to settle the core 40%-60% of their payments.[168] This means that as the time spread increases, coordination decreases. As expected, jurisdictions in which participants better synchronise their incoming payments with outgoing payments manage to economise on usage of the liquidity available on their TARGET2 accounts and are less in need of the ICL (see specifications (2) and (3) in Table 2). An improvement in the coordination of payments by 66 minutes – representing one standard deviation in the coordination measure across jurisdictions and averaged across time – is reflected in a decrease of 1.1 percentage points in the use of the ICL.

Table 2

Panel analysis on the usage of the intraday credit line

	ICL usage (%)		
	(1)	(2)	(3)
Start-of-day liquidity	-0.0292***	-0.0308***	-0.0223**
	(0.0081)	(0.0073)	(0.0092)
Gini coefficient	-19.6658	-25.2975	-17.7479
	(14.6966)	(14.5768)	(15.9770)
Payment traffic (value)	0.0222**	0.0177**	0.0170**
	(0.0085)	(0.0073)	(0.0080)
ICL	-0.0174***	-0.0200***	-0.0171***
	(0.0049)	(0.0042)	(0.0048)
Time spread		-13.4006**	-10.8843**
		(6.1804)	(4.9103)
Overnight unsecured rate			2.4786**
			(1.1217)
R^2	0.028	0.058	0.076
Number of observations	**33,529**	**27,528**	**27,528**

Sources: ECB, TARGET2 and ECB calculations.
Notes: Data cover the period from June 2008 to December 2019. The overnight unsecured rate is measured as the EONIA until 1 October 2019 and the €STR from then onwards. The reported results are based on fixed effects regressions. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05,* p<0.1. Owing to data limitations, the calculation does not include figures for Austria, Malta, Germany before September 2013, Latvia before January 2014, Portugal before April 2009 and Slovenia before November 2015.

[168] Payment coordination is measured as: $T_{spread} = \frac{1}{2}(D_8 + D_7 - D_2 - D_3)$, where D_i represents the average time by which $i\%$ of the payments are settled. The measure was developed for a forthcoming paper on wholesale payment system liquidity by the Committee on Payments and Market Infrastructures (Bank for International Settlements) Expert Group on RTGS Liquidity Efficiency.

3.2 Time of payment settlement

The time of payment settlement depends on liquidity availability. In general, payments are settled soon after they enter the system,[169] provided that participants have sufficient payment capacity. Higher payment capacity can thus lead to earlier settlement, whereas a constraint in the payment capacity, such as during times of stress, might lead to later settlement. The degree of concentration of liquidity might also affect payment processing if there is a significant discrepancy between the participants holding most of the liquidity and those sending most payments. Another important factor determining the time of payment settlement is active management of payment flows on the part of TARGET2 participants, which can support earlier settlement by synchronising incoming and outgoing payments.[170] The timing of payment settlement is very important from an operational point of view: the earlier payments are settled, the lower the operational risk. Should an operational disruption occur during the day, the more payments have been settled up to that point, the lower the pressure on the system once it resumes settlement activity.

The time of payment settlement in TARGET2 has responded to changes in liquidity levels over the years. The average time of payment settlement moved during the sovereign debt crisis to 12:34 CET, from 12:08 CET in June 2008.[171] In 26 minutes during the sovereign debt crisis – equivalent to the difference between the two average times of settlement –TARGET2 settled payments worth approximately €84.5 billion[172]. Also at that time liquidity concentration increased, suggesting that fragmentation may have made it more difficult for some jurisdictions to fund their payments, owing either to limited liquidity availability or to the reluctance of counterparties to send payments to participants that were in need of liquidity. When liquidity is limited, payments can spend a longer time in the queue waiting to be settled. Since the start of the PSPP and with the consequent increase in liquidity, the average time of payment settlement has become earlier, from 12:25 CET in March 2015 to 11:46 CET in December 2019. In 2019 TARGET2 settled payments worth on average €93.0 billion[173] in a 39-minute interval. These changes are also reflected in the intraday pattern of payment settlement (see Chart 4). The impact of the financial and sovereign debt crises is more visible in the settlement of payments from the fourth up to the eighth decile. At the beginning of the day TARGET2 processes a large number of customer payments, whereas interbank activity intensifies later in the day.[174] As interbank activity is typically more severely affected in situations of financial turmoil, it is reasonable to expect a smaller impact on the first payment deciles.

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169 In TARGET2, payments are typically processed in less than five minutes (see *TARGET Annual Report 2019*, ECB, Frankfurt am Main, May 2020). In other words, less than five minutes pass between the time at which the payment enters the system – the "introduction time" – and the time at which the payment is settled – the "settlement time".

170 Aside from payments that need to be settled at particular times of the day, such as those related to the settlement of ancillary system positions, participants are free to manage their payment flows.

171 TARGET2 operates during both the day, between 07:00 CET and 18:00 CET, and during the night, between 19:30 CET and 22:00 CET and between 01:00 CET and 07:00 CET. The average settlement time is calculated as a value-weighted average based on TARGET2 payments settled during the day.

172 The figure is computed as a daily average based on traffic in the period 2011-12 and assumes that payments are evenly spread throughout the day. It should thus be interpreted with caution.

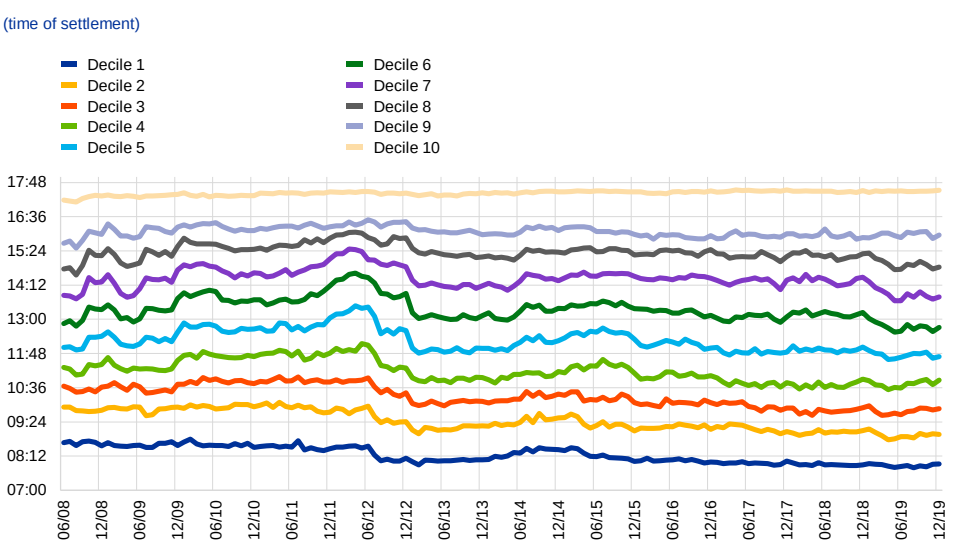
173 The figure is computed as a daily average based on 2019 traffic and assumes that payments are evenly spread throughout the day. It should thus be interpreted with caution.

174 See *TARGET Annual Report 2019*, ECB, Frankfurt am Main, May 2020.

Another downward move in the timing of the same set of payments can be observed just after the PSPP started, as well as towards the end of 2018 until the first half of 2019. The launch of TARGET2-Securities (T2S) in mid-2015, and the consequent migration of central securities depositories (CSDs),[175] could have also had an impact on the average time of payment settlement, as it resulted in a shift of traffic from TARGET2 to T2S. Nevertheless, this impact cannot be disentangled from the impact of the PSPP, as the time periods largely overlap.

Chart 4

Times of settlement by payment value deciles



Sources: TARGET2 data and ECB calculations.
Note: Data cover the period from June 2008 to December 2019. Technical transactions and liquidity transfers are not included in the calculations.

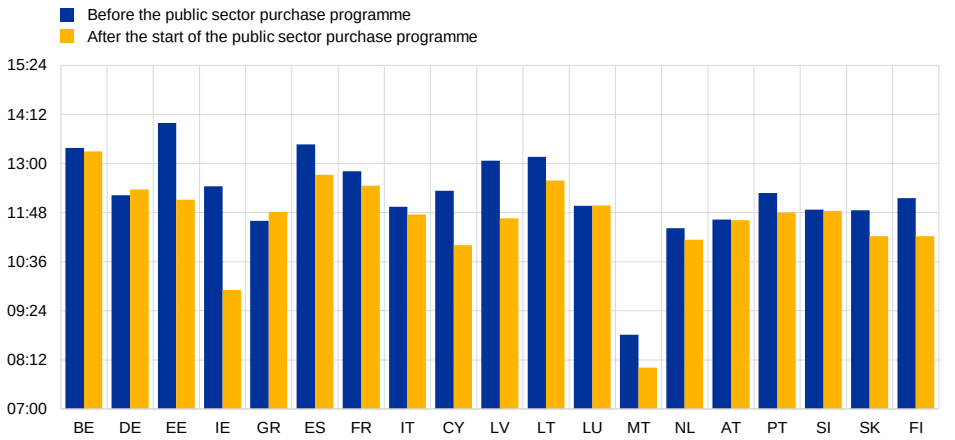
The average time of payment settlement varies significantly from country to country. The average time of payment settlement varies between 08:00 CET and 13:17 CET across countries (see Chart 5). A simple comparison of the average times by country does not appear to suggest a clear link between liquidity holdings and times of payment settlement. After the start of the PSPP, payments were settled earlier on average in most jurisdictions. The changes ranged from around 30 seconds in the case of Austria to almost 2.5 hours for Ireland. At the same time, Greece, Germany and Luxembourg experienced slightly later average times of payment settlement, albeit by less than 15 minutes.

[175] T2S allows the exchange of cash and securities via a single point, as the platform hosts 21 CSDs from 20 European markets. The migration of CSDs started in September 2015 and ended in September 2017.

Chart 5

Average time of payment settlement by jurisdiction

(time of settlement)



Sources: TARGET2 and ECB calculations.
Note: Data cover the period from June 2008 to December 2019. The average settlement time is calculated as a value-weighted average. Technical transactions and liquidity transfers are not included in the calculations.

Countries with larger payment capacity display on average earlier times of payment settlement. This result emerges from a panel analysis in which the start-of-day balances and ICL (both set and used), TARGET2 traffic, liquidity concentration and the intraday coordination of payments are controlled for (see Table 3). In addition, time dummies are introduced for the period of the sovereign debt crisis in 2011-12 and for the start of the PSPP in March 2015. Both start-of-day liquidity and the ICL set are negatively correlated with the average time of payment settlement and the coefficients are in the same range. In other words, greater payment capacity is associated with earlier times of payment settlement. On average, a €63 billion increase in liquidity – equivalent to one standard deviation of liquidity holdings across countries averaged over time – corresponds to a decrease of approximately four minutes in the average time of payment settlement. However, the relationships are not consistently significant across specifications. Greater recourse to the ICL (ICL usage) is also associated with earlier average times of payment settlement, showing that, when participants are willing to tap into their credit lines, it is beneficial for the settlement process.

Jurisdictions with greater payment coordination tend to experience earlier times of payment settlement. Across all specifications, when payments are more dispersed over the day (in other words, less synchronised), the average time of payment settlement is later (see specifications (2), (3) and (4) in Table 3). A 66 minute decrease in the dispersion of payments results in the average time of payment settlement being approximately 11 minutes earlier. Likewise, the higher the TARGET2 traffic, the later the average time of settlement. This seems reasonable: given the same level of liquidity, more payments should take longer to be processed. The coefficient of liquidity concentration (Gini coefficient) is not statistically significant for any specification. As mentioned above, liquidity concentration might influence the time of settlement if there is a significant discrepancy between the participants holding most of the liquidity and those sending most payments. This result suggests that in

TARGET2 liquidity concentration is in line with payment concentration. Finally, higher overnight unsecured rates, which measure the cost of liquidity, lead to later average times of payment settlement.

Table 3

Panel analysis on the average payment settlement time

	Average settlement time			
	(1)	(2)	(3)	(4)
Start-of-day liquidity	-0.0001	-0.0001**	-0.0001*	-0.0000
	(0.0001)	(0.0001)	(0.0000)	(0.0000)
ICL	-0.0001*	-0.0001*	-0.0001	-0.0001*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Payment traffic (value)	0.0001*	0.0001***	0.0001***	0.0000**
	(0.0001)	(0.0000)	(0.0000)	(0.0000)
Gini coefficient	-0.0492	-0.0214	0.0250	0.0416
	(0.1296)	(0.0391)	(0.0387)	(0.0308)
Time spread		0.1705**	0.1854**	0.1663**
		(0.0797)	(0.0790)	(0.0771)
ICL usage (%)		-0.0211	-0.0331*	-0.0406**
		(0.0187)	(0.0158)	(0.0153)
Overnight unsecured rate			1.6244***	0.9394*
			(0.5354)	(0.5208)
Sovereign debt crisis (dummy variable)				0.0238***
				(0.0065)
PSPP (dummy variable)				-0.0248***
				(0.0070)
R^2	0.017	0.086	0.116	0.154
Number of observations	**41,073**	**27,528**	**27,528**	**27,528**

Sources: ECB, TARGET2 and ECB calculations.
Notes: Data cover the period from June 2008 to December 2019. The overnight unsecured rate is measured as the EONIA until 1 October 2019 and the €STR from then onwards. The reported results are based on fixed effects regressions. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05,* p<0.1. Owing to data limitations, the calculation does not include figures for Austria, Malta, Germany before September 2013, Latvia before January 2014, Portugal before April 2009 and Slovenia before November 2015.

4 Conclusion

Liquidity is essential in the settlement process. This article has taken stock of how major aspects of payment settlement have changed under different liquidity regimes. In line with developments in excess liquidity, the amount of liquidity in TARGET2 increased by approximately eight times between 2008 and 2019, as a direct consequence of the monetary policy measures taken. While liquidity levels varied throughout this period, the most visible changes emerged in the context of the abundant levels of liquidity resulting from the extensive asset purchase programme carried out by the Eurosystem. The average time of payment settlement was brought down from 12:25 CET to 11:46 CET, which has contributed to a reduction in operational risk. The payment capacity is now more balanced, being almost equally split between the liquidity available on TARGET2 accounts and intraday credit. The

ICL is used less to settle payments and fewer participants make use of it. An excessive use of the ICL can lead to the use of the marginal lending facility at the end of the day, which incurs a cost for the participant. While these aspects are beneficial for the smooth settlement of payments, they should not be interpreted as essential. Historical developments show that TARGET2 was able to settle even larger payment values than it currently does with less liquidity available in the system.

These observations, which hold for TARGET2 as a whole, are also true for the system's components, although heterogeneity exists. 66.4% of the liquidity in TARGET2 is held by three jurisdictions, namely Germany, France and the Netherlands. These have very high ICLs, and ICLs account for a large part of their payment capacity, although usage is limited. The size of the credit line in these jurisdictions seems to be significantly supply-driven. Figures for other jurisdictions are less conclusive in this respect. As an overview across different periods and jurisdictions, the ICL has represented between 0.0% and 95.2% of the payment capacity, usage of the ICL has varied between 11.5% and 50.0%, and the share of participants using the credit line has been between 9.8% and 80.2%. The average time of payment settlement has varied between 08:00 CET and 13:17 CET, while concentration of liquidity has also differed across countries, ranging on average between 0.47 and 0.93. Liquidity concentration in TARGET2 is nevertheless broadly in line with the concentration of minimum reserves, indicating that it is largely a consequence of market composition.

Across jurisdictions, larger holdings of liquidity are associated with a lower use of the ICL and an earlier time of settlement. This conclusion emerges from the panel analysis conducted. A €63 billion increase in liquidity – equivalent to one standard deviation of liquidity holdings across countries averaged over time – corresponds to a decrease of 1.3 percentage points in the use of the ICL and an average time of payment settlement four minutes earlier. At the same time, an improvement in the coordination of payments by 66 minutes – representing one standard deviation in the coordination measure across jurisdictions and averaged across time – is reflected in a decrease of 1.1 percentage points in the use of the ICL and an average time of payment settlement 11 minutes earlier. The changes are comparable in size, suggesting that improvements beneficial for the settlement process can be achieved equally by increasing liquidity or making a greater effort to synchronise payments.

Statistics

Contents

Further information

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

Conventions used in the tables

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

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP [1] (period-on-period percentage changes)						CPI (annual percentage changes)						
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area [2] (HICP)
							Total	excluding food and energy					
	1	2	3	4	5	6	7	8	9	10	11	12	13
2017	3.8	2.4	1.9	2.2	6.8	2.5	2.3	1.9	2.1	2.7	0.5	1.6	1.5
2018	3.5	2.9	1.3	0.3	6.6	1.9	2.6	2.1	2.4	2.5	1.0	2.1	1.8
2019	2.9	2.3	1.5	0.7	6.1	1.3	2.1	2.2	1.8	1.8	0.5	2.9	1.2
2019 Q2	0.7	0.5	-0.1	0.5	1.6	0.1	2.3	2.2	1.8	2.0	0.8	2.6	1.4
Q3	0.7	0.5	0.5	0.0	1.4	0.3	1.9	2.2	1.8	1.8	0.3	2.9	1.0
Q4	0.6	0.5	0.0	-1.9	1.5	0.1	1.9	2.1	2.0	1.4	0.5	4.3	1.0
2020 Q1	-3.4	-1.3	-2.2	-0.6	-9.8	-3.6	2.1	2.2	2.1	1.7	0.5	5.0	1.1
2020 Jan.	-	-	-	-	-	-	2.4	2.2	2.5	1.8	0.7	5.4	1.4
Feb.	-	-	-	-	-	-	2.3	2.2	2.3	1.7	0.4	5.2	1.2
Mar.	-	-	-	-	-	-	1.7	2.1	1.5	1.5	0.4	4.3	0.7
Apr.	-	-	-	-	-	-	0.9	1.6	0.3	0.8	0.1	3.3	0.3
May	-	-	-	-	-	-	.	.	0.1	0.5	0.1	2.4	0.1
June [3]	-	-	-	-	-	-	.	.	0.6	.	.	.	0.3

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

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

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports [1]		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index [2]					
	Global [2]	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders	Global	Advanced economies	Emerging market economies
	1	2	3	4	5	6	7	8	9	10	11	12
2017	53.2	54.3	54.7	52.5	51.8	56.4	53.8	53.8	52.8	5.9	3.1	7.8
2018	53.4	55.0	53.3	52.1	52.3	54.6	53.1	53.8	50.8	4.4	3.1	5.2
2019	51.7	52.5	50.2	50.5	51.8	51.3	50.3	52.2	48.8	-0.5	0.3	-1.1
2019 Q3	51.3	51.4	50.1	51.3	51.4	51.2	50.4	51.7	48.5	1.2	1.5	1.1
Q4	51.3	51.9	49.5	49.2	52.6	50.7	51.3	51.3	49.5	-0.8	-3.1	0.6
2020 Q1	46.1	47.9	47.4	44.4	42.0	44.2	46.7	45.9	46.0	-2.9	-3.1	-2.7
Q2	37.8	37.3	30.5	31.5	52.6	31.3	40.5	36.9	35.0	.	.	.
2020 Jan.	52.3	53.3	53.3	50.1	51.9	51.3	51.3	52.7	49.5	-1.5	-3.6	-0.1
Feb.	45.0	49.6	53.0	47.0	27.5	51.6	42.5	45.8	44.5	-2.0	-2.8	-1.5
Mar.	41.0	40.9	36.0	36.2	46.7	29.7	46.2	39.2	44.0	-2.9	-3.1	-2.7
Apr.	28.7	27.0	13.8	25.8	47.6	13.6	35.1	26.5	28.6	.	.	.
May	37.1	37.0	30.0	27.8	54.5	31.9	39.8	36.2	32.9	.	.	.
June	47.6	47.9	47.7	40.8	55.7	48.5	46.6	47.9	43.4	.	.	.

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

2 Financial developments

2.1 Money market interest rates

(percentages per annum; period averages)

	Euro area [1]						United States	Japan
	Euro short-term rate (€STR) [2]	Overnight deposits (EONIA)	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	3-month deposits (LIBOR)	3-month deposits (LIBOR)
	1	2	3	4	5	6	7	8
2017	-	-0.35	-0.37	-0.33	-0.26	-0.15	1.26	-0.02
2018	-0.45	-0.36	-0.37	-0.32	-0.27	-0.17	2.31	-0.05
2019	-0.48	-0.39	-0.40	-0.36	-0.30	-0.22	2.33	-0.08
2019 Dec.	-0.54	-0.46	-0.45	-0.39	-0.34	-0.26	1.91	-0.06
2020 Jan.	-0.54	-0.45	-0.46	-0.39	-0.33	-0.25	1.82	-0.05
Feb.	-0.54	-0.45	-0.47	-0.41	-0.36	-0.29	1.68	-0.07
Mar.	-0.53	-0.45	-0.48	-0.42	-0.36	-0.27	1.10	-0.09
Apr.	-0.54	-0.45	-0.43	-0.25	-0.19	-0.11	1.09	-0.01
May	-0.54	-0.46	-0.46	-0.27	-0.14	-0.08	0.40	-0.03
June	-0.55	-0.46	-0.49	-0.38	-0.22	-0.15	0.31	-0.05

Source: Refinitiv and ECB calculations.

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

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

2.2 Yield curves

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

	Spot rates					Spreads			Instantaneous forward rates			
	Euro area [1], [2]					Euro area [1], [2]	United States	United Kingdom	Euro area [1], [2]			
	3 months	1 year	2 years	5 years	10 years	10 years - 1 year	10 years - 1 year	10 years - 1 year	1 year	2 years	5 years	10 years
	1	2	3	4	5	6	7	8	9	10	11	12
2017	-0.78	-0.74	-0.64	-0.17	0.52	1.26	0.67	0.83	-0.66	-0.39	0.66	1.56
2018	-0.80	-0.75	-0.66	-0.26	0.32	1.07	0.08	0.51	-0.67	-0.45	0.44	1.17
2019	-0.68	-0.66	-0.62	-0.45	-0.14	0.52	0.34	0.24	-0.62	-0.52	-0.13	0.41
2019 Dec.	-0.68	-0.66	-0.62	-0.45	-0.14	0.52	0.34	0.24	-0.62	-0.52	-0.13	0.41
2020 Jan.	-0.62	-0.65	-0.68	-0.64	-0.40	0.26	0.06	-0.11	-0.69	-0.71	-0.46	0.10
Feb.	-0.68	-0.74	-0.79	-0.78	-0.57	0.16	0.13	-0.06	-0.80	-0.85	-0.64	-0.13
Mar.	-0.70	-0.69	-0.71	-0.67	-0.41	0.28	0.49	0.22	-0.70	-0.73	-0.48	0.09
Apr.	-0.54	-0.61	-0.71	-0.72	-0.46	0.16	0.47	0.16	-0.72	-0.85	-0.51	0.01
May	-0.57	-0.60	-0.63	-0.61	-0.36	0.24	0.48	0.14	-0.64	-0.69	-0.42	0.12
June	-0.57	-0.64	-0.69	-0.69	-0.45	0.19	0.50	0.14	-0.71	-0.77	-0.52	0.03

Source: ECB calculations.

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

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

2.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices											
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care	Standard & Poor's 500	Nikkei 225
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2017	376.9	3,491.0	757.3	268.6	690.4	307.9	182.3	605.5	468.4	272.7	339.2	876.3	2,449.1	20,209.0
2018	375.5	3,386.6	766.3	264.9	697.3	336.0	173.1	629.5	502.5	278.8	292.9	800.5	2,746.2	22,310.7
2019	373.6	3,435.2	731.7	270.8	721.5	324.4	155.8	650.9	528.2	322.0	294.2	772.7	2,915.5	21,697.2
2019 Dec.	400.9	3,715.3	799.3	290.0	755.9	322.8	165.1	716.0	598.5	341.8	295.3	862.5	3,178.9	23,660.4
2020 Jan.	406.9	3,758.2	791.2	295.5	758.6	324.6	166.1	728.8	624.6	362.0	291.6	886.8	3,278.4	23,642.9
Feb.	407.1	3,734.9	797.3	292.3	734.5	301.0	168.4	722.8	635.8	391.4	298.1	895.0	3,282.5	23,180.4
Mar.	308.5	2,824.2	622.6	233.6	578.8	210.5	116.1	519.9	500.5	315.7	242.6	731.2	2,652.4	18,974.0
Apr.	310.3	2,839.6	657.9	245.7	588.3	216.7	107.2	508.9	539.3	296.4	242.8	786.8	2,763.2	19,208.4
May	322.1	2,909.3	678.1	251.2	601.3	219.9	109.3	539.7	576.8	307.1	249.9	829.2	2,919.6	20,543.3
June	353.9	3,237.4	733.8	270.5	656.5	236.6	124.7	604.7	637.2	341.5	264.2	866.9	3,104.7	22,486.9

Source: Refinitiv.

2 Financial developments

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

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

	Deposits				Revolving loans and overdrafts	Extended credit card credit	Loans for consumption			Loans to sole proprietors and unincorporated partnerships	Loans for house purchase					
	Overnight	Redeemable at notice of up to 3 months	With an agreed maturity of:				By initial period of rate fixation		APRC [3)]		By initial period of rate fixation				APRC [3)]	Composite cost-of-borrowing indicator
			Up to 2 years	Over 2 years			Floating rate and up to 1 year	Over 1 year			Floating rate and up to 1 year	Over 1 and up to 5 years	Over 5 and up to 10 years	Over 10 years		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2019 June	0.03	0.44	0.32	0.82	5.81	16.48	5.42	5.67	6.24	2.31	1.55	1.74	1.67	1.65	1.95	1.67
July	0.03	0.43	0.31	0.80	5.75	16.44	5.74	5.73	6.30	2.34	1.55	1.72	1.59	1.57	1.90	1.61
Aug.	0.03	0.43	0.28	0.78	5.75	16.45	6.15	5.75	6.35	2.25	1.51	1.69	1.54	1.50	1.84	1.56
Sep.	0.03	0.43	0.27	0.78	5.82	16.46	5.65	5.61	6.17	2.22	1.46	1.65	1.49	1.44	1.77	1.48
Oct.	0.03	0.42	0.24	0.83	5.70	16.50	5.88	5.55	6.19	2.26	1.45	1.59	1.44	1.39	1.74	1.44
Nov.	0.03	0.42	0.23	0.73	5.61	16.49	5.36	5.53	6.26	2.21	1.43	1.59	1.61	1.48	1.80	1.47
Dec.	0.03	0.42	0.22	0.79	5.58	16.55	5.44	5.28	5.89	2.09	1.46	1.58	1.43	1.39	1.75	1.41
2020 Jan.	0.02	0.42	0.27	0.73	5.62	16.55	5.63	5.69	6.25	2.21	1.46	1.52	1.43	1.40	1.73	1.43
Feb.	0.02	0.36	0.32	0.70	5.63	16.60	5.56	5.58	6.15	2.20	1.43	1.54	1.38	1.36	1.71	1.41
Mar.	0.02	0.36	0.30	0.65	5.61	16.18	5.56	5.45	5.91	2.07	1.39	1.55	1.35	1.35	1.65	1.39
Apr.	0.02	0.36	0.22	0.73	5.39	16.06	3.72	5.50	5.58	2.00	1.30	1.54	1.36	1.44	1.67	1.44
May [p]	0.02	0.36	0.23	0.71	5.27	16.06	4.22	5.30	5.67	1.83	1.47	1.58	1.40	1.41	1.70	1.42

Source: ECB.

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

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

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

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

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Overnight	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2019 June	0.03	0.03	0.57	2.17	2.13	2.33	2.25	1.63	1.55	1.56	1.09	1.28	1.39	1.55
July	0.03	0.04	0.56	2.11	2.07	2.50	2.20	1.66	1.57	1.54	1.16	1.32	1.39	1.56
Aug.	0.03	-0.04	0.54	2.08	2.07	2.36	2.19	1.64	1.59	1.53	1.06	1.32	1.40	1.52
Sep.	0.03	-0.05	0.88	2.16	2.03	2.25	2.15	1.61	1.51	1.45	1.10	1.26	1.29	1.54
Oct.	0.02	-0.03	0.43	2.08	2.01	2.41	2.11	1.61	1.54	1.40	1.14	1.40	1.27	1.56
Nov.	0.02	-0.04	0.39	2.06	2.02	2.36	2.13	1.59	1.55	1.41	1.14	1.34	1.29	1.55
Dec.	0.01	0.00	0.42	2.09	2.00	2.28	2.08	1.58	1.54	1.39	1.26	1.21	1.37	1.56
2020 Jan.	0.01	-0.06	0.34	2.09	2.17	2.32	2.10	1.63	1.57	1.44	1.11	1.25	1.28	1.55
Feb.	0.00	-0.12	0.33	2.07	1.99	2.29	2.11	1.57	1.54	1.41	1.11	1.22	1.25	1.52
Mar.	0.00	-0.08	0.25	2.00	1.90	2.17	1.97	1.57	1.52	1.47	1.15	1.10	1.19	1.46
Apr.	0.00	-0.06	0.31	1.99	1.98	1.19	1.76	1.62	0.97	1.59	1.22	1.13	1.35	1.47
May [p]	0.00	-0.10	0.39	1.91	1.87	1.22	1.62	1.54	0.87	1.56	1.23	1.07	1.32	1.46

Source: ECB.

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

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

2 Financial developments

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

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

	Outstanding amounts							Gross issues [1]						
	Total	MFIs (including Euro-system)	Non-MFI corporations			General government		Total	MFIs (including Euro-system)	Non-MFI corporations			General government	
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central govern-ment	Other general govern-ment
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Short-term														
2017	1,240	519	155	.	70	438	57	367	167	54	.	37	79	31
2018	1,217	504	170	.	72	424	47	389	171	66	.	41	76	35
2019	1,283	550	181	.	84	406	61	415	177	80	.	47	73	38
2019 Dec.	1,283	550	181	.	84	406	61	319	113	89	.	37	45	35
2020 Jan.	1,368	598	177	.	99	422	73	507	208	84	.	56	100	57
Feb.	1,371	601	178	.	103	415	74	416	173	89	.	47	69	37
Mar.	1,368	546	182	.	103	450	86	407	111	86	.	46	103	61
Apr.	1,474	527	183	.	117	537	111	550	150	87	.	64	171	78
May	1,590	520	180	.	129	617	144	543	162	80	.	60	159	81
Long-term														
2017	15,353	3,560	3,059	.	1,223	6,866	643	247	66	73	.	18	83	7
2018	15,745	3,688	3,161	.	1,247	7,022	627	228	64	68	.	15	75	6
2019	16,313	3,818	3,397	.	1,321	7,151	626	247	69	74	.	20	78	7
2019 Dec.	16,313	3,818	3,397	.	1,321	7,151	626	166	58	69	.	14	24	2
2020 Jan.	16,401	3,855	3,408	.	1,325	7,188	625	322	118	68	.	16	110	10
Feb.	16,487	3,867	3,408	.	1,338	7,244	630	265	72	60	.	22	101	10
Mar.	16,515	3,846	3,422	.	1,335	7,276	636	250	58	67	.	16	91	19
Apr.	16,704	3,943	3,415	.	1,373	7,326	648	457	135	67	.	54	180	20
May	16,873	3,945	3,411	.	1,406	7,449	663	339	58	50	.	50	162	19

Source: ECB.

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

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

(EUR billions; percentage changes)

	Debt securities							Listed shares			
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non-financial corporations
			Financial corporations other than MFIs	FVCs	Non-financial corporations	Central government	Other general government				
	1	2	3	4	5	6	7	8	9	10	11
Oustanding amount											
2017	16,593.1	4,079.8	3,214.5	.	1,293.2	7,304.7	700.9	7,963.3	612.5	1,258.3	6,092.6
2018	16,962.2	4,192.8	3,331.2	.	1,318.8	7,445.8	673.5	7,033.1	465.0	1,108.9	5,459.2
2019	17,595.5	4,368.6	3,578.0	.	1,405.3	7,557.2	686.5	8,595.6	546.0	1,410.7	6,638.8
2019 Dec.	17,595.5	4,368.6	3,578.0	.	1,405.3	7,557.2	686.5	8,595.6	546.0	1,410.7	6,638.8
2020 Jan.	17,769.2	4,452.8	3,585.3	.	1,424.0	7,609.8	697.4	8,478.3	525.3	1,391.5	6,561.6
Feb.	17,858.3	4,467.2	3,586.4	.	1,441.8	7,659.1	703.7	7,754.9	488.4	1,238.7	6,027.8
Mar.	17,882.2	4,391.9	3,603.8	.	1,438.7	7,725.9	721.9	6,448.6	333.9	975.0	5,139.7
Apr.	18,178.7	4,469.5	3,597.6	.	1,489.3	7,863.6	758.7	6,971.3	343.3	1,081.6	5,546.4
May	18,463.6	4,465.0	3,590.7	.	1,534.9	8,065.7	807.3	7,286.8	362.9	1,115.6	5,808.2
Growth rate											
2017	1.3	-0.5	0.1	.	6.0	2.2	0.4	1.0	6.1	2.8	0.2
2018	1.9	1.7	3.0	.	3.3	1.9	-4.3	0.7	0.3	2.4	0.4
2019	3.1	3.8	5.0	.	5.6	1.5	1.8	0.0	0.5	-0.1	0.0
2019 Dec.	3.1	3.8	5.0	.	5.6	1.5	1.8	0.0	0.5	-0.1	0.0
2020 Jan.	3.1	4.1	4.7	.	5.7	1.4	2.0	0.0	0.5	-0.1	0.0
Feb.	3.0	3.6	4.6	.	6.0	1.5	2.4	0.0	0.5	-0.1	0.0
Mar.	2.7	1.8	4.2	.	4.2	2.1	3.6	0.0	0.1	-0.1	0.0
Apr.	4.4	3.4	4.4	.	6.8	4.2	7.7	0.0	0.1	0.0	0.0
May	5.8	3.2	4.0	.	10.1	6.5	16.3	0.0	0.0	0.1	-0.1

Source: ECB.

2 Financial developments

2.8 Effective exchange rates [1)]

(period averages; index: 1999 Q1=100)

	EER-19						EER-38	
	Nominal	Real CPI	Real PPI	Real GDP deflator	Real ULCM	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2017	97.5	93.5	92.4	89.0	80.3	94.2	112.4	91.9
2018	100.0	95.7	93.9	90.4	80.6	95.5	117.3	95.1
2019	98.2	93.3	92.2	88.6	78.8	92.9	115.5	92.4
2019 Q3	98.5	93.5	92.3	88.8	79.1	93.2	115.6	92.4
Q4	97.7	92.4	91.8	88.2	78.0	92.0	114.9	91.4
2020 Q1	97.5	91.8	91.6	88.0	77.9	92.9	115.2	91.2
Q2	98.8	93.2	92.4	.	.	.	118.1	93.4
2020 Jan.	97.0	91.4	91.4	-	-	-	114.2	90.5
Feb.	96.3	90.7	90.8	-	-	-	113.5	89.9
Mar.	99.0	93.1	92.7	-	-	-	117.8	93.2
Apr.	98.2	92.7	92.4	-	-	-	117.5	93.2
May	98.4	92.7	91.9	-	-	-	117.6	93.0
June	99.8	94.1	92.9	-	-	-	119.1	94.2
Percentage change versus previous month								
2020 June	1.4	1.5	1.1	-	-	-	1.3	1.3
Percentage change versus previous year								
2020 June	1.0	0.2	0.4	-	-	-	2.5	1.1

Source: ECB.

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

2.9 Bilateral exchange rates

(period averages; units of national currency per euro)

	Chinese renminbi	Croatian kuna	Czech koruna	Danish krone	Hungarian forint	Japanese yen	Polish zloty	Pound sterling	Romanian leu	Swedish krona	Swiss franc	US Dollar
	1	2	3	4	5	6	7	8	9	10	11	12
2017	7.629	7.464	26.326	7.439	309.193	126.711	4.257	0.877	4.5688	9.635	1.112	1.130
2018	7.808	7.418	25.647	7.453	318.890	130.396	4.261	0.885	4.6540	10.258	1.155	1.181
2019	7.735	7.418	25.670	7.466	325.297	122.006	4.298	0.878	4.7453	10.589	1.112	1.119
2019 Q3	7.800	7.394	25.734	7.463	328.099	119.323	4.318	0.902	4.7314	10.662	1.096	1.112
Q4	7.801	7.439	25.577	7.471	331.933	120.323	4.287	0.861	4.7666	10.652	1.096	1.107
2020 Q1	7.696	7.490	25.631	7.472	339.137	120.097	4.324	0.862	4.7973	10.669	1.067	1.103
Q2	7.808	7.578	27.058	7.458	351.582	118.410	4.503	0.887	4.8378	10.651	1.061	1.101
2020 Jan.	7.683	7.443	25.216	7.473	334.380	121.363	4.251	0.849	4.7788	10.554	1.076	1.110
Feb.	7.630	7.454	25.051	7.471	337.171	120.026	4.277	0.841	4.7837	10.568	1.065	1.091
Mar.	7.768	7.571	26.575	7.470	345.682	118.897	4.441	0.895	4.8282	10.875	1.059	1.106
Apr.	7.686	7.593	27.262	7.462	356.688	116.970	4.544	0.875	4.8371	10.884	1.054	1.086
May	7.748	7.575	27.269	7.458	350.762	116.867	4.525	0.887	4.8371	10.597	1.057	1.090
June	7.973	7.568	26.681	7.455	347.686	121.120	4.445	0.899	4.8392	10.487	1.071	1.125
Percentage change versus previous month												
2020 June	2.9	-0.1	-2.2	0.0	-0.9	3.6	-1.8	1.3	0.0	-1.0	1.3	3.2
Percentage change versus previous year												
2020 June	2.3	2.2	4.2	-0.2	7.8	-0.8	4.3	0.9	2.4	-1.3	-4.1	-0.3

Source: ECB.

2 Financial developments

2.10 Euro area balance of payments, financial account

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

	Total [1]			Direct investment		Portfolio investment		Net financial derivatives	Other investment		Reserve assets	Memo: Gross external debt
	Assets	Liabilities	Net	Assets	Liabilities	Assets	Liabilities		Assets	Liabilities		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts (international investment position)												
2019 Q2	26,677.5	27,027.6	-350.1	10,948.6	9,055.7	9,193.8	11,378.6	-75.5	5,839.8	6,593.3	770.8	14,786.3
Q3	27,833.8	27,966.7	-132.9	11,345.4	9,372.2	9,646.7	11,849.4	-91.0	6,105.8	6,745.1	827.0	15,131.5
Q4	27,565.7	27,645.3	-79.5	11,214.8	9,334.5	9,908.2	11,943.4	-48.4	5,677.6	6,367.4	813.6	14,541.2
2020 Q1	27,220.8	27,363.4	-142.6	11,065.8	9,307.4	8,900.1	11,058.9	-71.2	6,459.7	6,997.0	866.3	15,316.9
Outstanding amounts as a percentage of GDP												
2020 Q1	229.3	230.5	-1.2	93.2	78.4	75.0	93.1	-0.6	54.4	58.9	7.3	129.0
Transactions												
2019 Q2	190.4	198.0	-7.6	-86.0	0.5	46.8	117.4	32.8	194.1	80.1	2.8	-
Q3	492.1	382.6	109.5	180.8	150.9	149.2	191.5	4.2	157.8	40.2	0.1	-
Q4	-295.7	-375.7	80.0	-82.4	-49.4	145.0	0.9	-5.5	-350.3	-327.2	-2.5	-
2020 Q1	587.7	563.6	24.1	-41.7	-62.3	-144.9	50.6	42.2	728.6	575.3	3.4	-
2019 Nov.	45.0	21.9	23.1	20.9	52.3	58.7	16.4	0.3	-31.0	-46.7	-3.9	-
Dec.	-396.7	-408.5	11.9	-109.2	-64.9	31.1	-35.4	-12.1	-306.9	-308.2	0.5	-
2020 Jan.	415.9	425.4	-9.6	7.2	-8.0	61.7	114.9	16.4	329.5	318.5	1.0	-
Feb.	188.4	162.3	26.2	15.2	-4.2	9.4	40.6	16.9	148.1	125.8	-1.1	-
Mar.	-16.5	-24.1	7.6	-64.1	-50.1	-216.0	-104.9	8.9	251.1	131.0	3.6	-
Apr.	91.9	103.5	-11.7	-5.3	10.6	146.7	3.2	4.6	-55.8	89.7	1.7	-
12-month cumulated transactions												
2020 Apr.	885.7	661.0	224.7	-73.2	6.5	352.2	328.8	64.9	539.4	325.8	2.3	-
12-month cumulated transactions as a percentage of GDP												
2020 Apr.	7.5	5.6	1.9	-0.6	0.1	3.0	2.8	0.5	4.5	2.7	0.0	-

Source: ECB.

1) Net financial derivatives are included in total assets.

3 Economic activity

3.1 GDP and expenditure components

(quarterly data seasonally adjusted; annual data unadjusted)

	GDP											
	Total	Domestic demand								External balance [1]		
		Total	Private consumption	Government consumption	Gross fixed capital formation				Changes in inventories [2]	Total	Exports [1]	Imports [1]
						Total construction	Total machinery	Intellectual property products				
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2017	11,200.6	10,711.5	6,037.1	2,296.2	2,306.8	1,102.5	708.2	489.6	71.4	491.3	5,299.6	4,808.3
2018	11,561.1	11,076.2	6,211.5	2,361.9	2,410.7	1,176.7	744.5	482.5	92.2	492.4	5,559.1	5,066.6
2019	11,906.0	11,457.2	6,368.1	2,445.6	2,612.6	1,255.9	770.7	578.7	30.9	455.4	5,732.9	5,277.5
2019 Q2	2,968.5	2,880.0	1,590.5	608.9	667.2	308.6	191.1	165.7	13.5	90.1	1,429.6	1,339.4
Q3	2,986.6	2,854.9	1,597.8	614.8	641.5	315.7	193.0	130.9	0.7	133.4	1,439.0	1,305.6
Q4	3,004.6	2,897.3	1,603.7	618.6	676.2	321.5	195.6	157.3	-1.3	108.9	1,442.7	1,333.8
2020 Q1	2,911.2	2,813.6	1,534.2	621.8	647.4	304.4	174.0	167.2	10.3	99.1	1,380.2	1,281.1
	as a percentage of GDP											
2019	100.0	96.2	53.5	20.5	21.9	10.5	6.5	4.9	0.3	3.8	-	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2019 Q2	0.1	1.5	0.2	0.5	6.2	-0.7	0.0	32.8	-	-	-0.1	3.0
Q3	0.3	-0.9	0.4	0.7	-4.9	1.1	-0.1	-21.7	-	-	0.7	-1.9
Q4	0.1	0.9	0.1	0.3	5.0	1.0	0.8	20.8	-	-	0.1	1.9
2020 Q1	-3.6	-3.3	-4.7	-0.4	-4.3	-5.5	-10.8	6.3	-	-	-4.2	-3.6
	annual percentage changes											
2017	2.5	2.2	1.7	1.3	3.4	3.6	4.0	2.4	-	-	5.5	5.1
2018	1.9	1.7	1.4	1.2	2.4	3.4	4.4	-2.7	-	-	3.5	3.0
2019	1.2	1.9	1.3	1.8	5.9	3.3	2.1	18.2	-	-	2.5	4.0
2019 Q2	1.2	2.7	1.3	1.5	9.1	2.3	2.2	36.8	-	-	2.3	5.6
Q3	1.3	1.3	1.6	2.2	3.1	3.2	1.0	6.1	-	-	2.7	2.8
Q4	1.0	1.8	1.3	1.9	6.7	2.6	1.5	24.3	-	-	1.8	3.6
2020 Q1	-3.1	-1.8	-3.9	1.0	1.5	-4.2	-10.2	33.6	-	-	-3.5	-0.8
	contributions to quarter-on-quarter percentage changes in GDP; percentage points											
2019 Q2	0.1	1.4	0.1	0.1	1.3	-0.1	0.0	1.4	-0.1	-1.3	-	-
Q3	0.3	-0.9	0.2	0.1	-1.1	0.1	0.0	-1.2	-0.1	1.2	-	-
Q4	0.1	0.9	0.1	0.1	1.1	0.1	0.1	0.9	-0.3	-0.8	-	-
2020 Q1	-3.6	-3.2	-2.5	-0.1	-1.0	-0.6	-0.7	0.3	0.3	-0.4	-	-
	contributions to annual percentage changes in GDP; percentage points											
2017	2.5	2.1	0.9	0.3	0.7	0.3	0.2	0.1	0.2	0.4	-	-
2018	1.9	1.6	0.8	0.2	0.5	0.3	0.3	-0.1	0.1	0.3	-	-
2019	1.2	1.8	0.7	0.4	1.2	0.3	0.1	0.8	-0.5	-0.6	-	-
2019 Q2	1.2	2.6	0.7	0.3	1.9	0.2	0.1	1.5	-0.3	-1.4	-	-
Q3	1.3	1.2	0.8	0.5	0.6	0.3	0.1	0.3	-0.7	0.1	-	-
Q4	1.0	1.7	0.7	0.4	1.4	0.3	0.1	1.0	-0.8	-0.7	-	-
2020 Q1	-3.1	-1.8	-2.1	0.2	0.3	-0.4	-0.7	1.4	-0.2	-1.4	-	-

Sources: Eurostat and ECB calculations.

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

2) Including acquisitions less disposals of valuables.

3 Economic activity

3.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Const-ruction	Trade, transport, accom-modation and food services	Infor-mation and com-munica-tion	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
	Current prices (EUR billions)											
2017	10,042.0	176.1	1,994.5	501.4	1,907.7	468.8	466.7	1,133.0	1,145.0	1,898.0	350.7	1,160.8
2018	10,365.0	178.8	2,044.3	537.9	1,968.4	487.7	477.2	1,167.1	1,194.4	1,954.8	354.6	1,203.7
2019	10,672.0	181.6	2,052.6	581.7	2,029.9	511.7	486.1	1,205.2	1,238.5	2,019.9	364.6	1,240.7
2019 Q2	2,662.2	45.4	513.2	144.4	506.5	127.6	121.4	300.4	309.3	502.8	91.2	308.0
Q3	2,675.2	45.6	512.8	146.6	509.3	128.5	121.9	301.8	310.9	506.6	91.3	313.0
Q4	2,693.7	45.6	514.8	148.4	511.6	130.3	122.0	305.1	312.7	511.4	91.8	312.4
2020 Q1	2,618.9	45.8	498.0	143.5	478.9	129.7	120.5	302.7	302.6	511.5	85.7	293.8
	as a percentage of value added											
2019	100.0	1.7	19.2	5.5	19.0	4.8	4.6	11.3	11.6	18.9	3.4	-
	Chain-linked volumes (prices for the previous year)											
	quarter-on-quarter percentage changes											
2019 Q2	0.1	-0.5	-0.5	-0.2	0.1	0.5	0.8	0.4	0.3	0.2	0.4	0.4
Q3	0.3	0.1	-0.3	0.6	0.2	1.3	0.5	0.3	0.3	0.4	0.5	0.8
Q4	0.1	0.4	-0.7	-0.1	0.1	0.7	0.3	0.5	0.1	0.3	-0.4	0.0
2020 Q1	-3.2	-0.8	-3.3	-3.8	-6.8	-1.3	-0.8	-1.1	-3.4	-1.3	-6.8	-6.1
	annual percentage changes											
2017	2.6	0.6	3.3	2.3	2.8	5.3	1.3	0.7	4.6	1.6	1.5	2.4
2018	2.0	1.4	1.8	3.5	2.1	4.5	1.6	1.5	3.1	1.0	0.3	1.6
2019	1.2	-0.2	-1.0	3.2	1.8	4.0	2.3	1.5	1.6	1.2	1.8	1.6
2019 Q2	1.3	-0.6	-1.0	3.3	1.7	3.9	2.5	1.6	1.8	1.1	1.9	1.3
Q3	1.3	0.3	-1.1	3.2	1.9	3.6	2.2	1.5	1.8	1.2	2.2	2.1
Q4	0.9	-0.1	-1.6	1.6	1.5	4.1	2.5	1.7	0.8	1.1	1.4	1.7
2020 Q1	-2.8	-0.8	-4.8	-3.5	-6.4	1.3	0.8	0.0	-2.7	-0.4	-6.3	-4.9
	contributions to quarter-on-quarter percentage changes in value added; percentage points											
2019 Q2	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Q3	0.3	0.0	-0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	-
Q4	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	-
2020 Q1	-3.2	0.0	-0.6	-0.2	-1.3	-0.1	0.0	-0.1	-0.4	-0.2	-0.2	-
	contributions to annual percentage changes in value added; percentage points											
2017	2.6	0.0	0.7	0.1	0.5	0.2	0.1	0.1	0.5	0.3	0.1	-
2018	2.0	0.0	0.4	0.2	0.4	0.2	0.1	0.2	0.3	0.2	0.0	-
2019	1.2	0.0	-0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.1	-
2019 Q2	1.3	0.0	-0.2	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.1	-
Q3	1.3	0.0	-0.2	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.1	-
Q4	0.9	0.0	-0.3	0.1	0.3	0.2	0.1	0.2	0.1	0.2	0.0	-
2020 Q1	-2.8	0.0	-0.9	-0.2	-1.2	0.1	0.0	0.0	-0.3	-0.1	-0.2	-

Sources: Eurostat and ECB calculations.

3 Economic activity

3.3 Employment [1)]

(quarterly data seasonally adjusted; annual data unadjusted)

	Total	By employment status		By economic activity										
		Employees	Self-employed	Agriculture, forestry and fishing	Manufacturing, energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12	13
Persons employed													
as a percentage of total persons employed													
2017	100.0	85.6	14.4	3.2	14.6	6.0	24.9	2.8	2.5	1.0	13.8	24.3	6.9
2018	100.0	85.8	14.2	3.1	14.6	6.0	24.9	2.9	2.4	1.0	14.0	24.2	6.8
2019	100.0	86.0	14.0	3.0	14.6	6.1	24.9	2.9	2.4	1.0	14.0	24.3	6.8
annual percentage changes													
2017	1.6	2.0	-0.7	-0.5	1.1	1.4	1.8	3.4	-1.5	1.8	3.7	1.1	1.0
2018	1.5	1.8	-0.2	-0.4	1.5	2.4	1.4	3.5	-0.9	1.8	2.8	1.3	0.4
2019	1.2	1.4	-0.2	-1.7	0.8	2.4	1.2	3.7	-0.3	1.2	1.3	1.4	0.7
2019 Q2	1.2	1.5	-0.1	-2.8	1.0	2.6	1.3	4.2	-0.7	1.6	1.2	1.5	0.7
Q3	1.1	1.4	-0.4	-1.9	0.7	2.1	1.0	3.6	-0.2	0.7	1.2	1.5	0.9
Q4	1.1	1.3	-0.6	-1.6	0.3	1.6	1.2	3.0	0.2	0.0	1.1	1.4	1.0
2020 Q1	0.4	0.7	-1.2	-3.3	-0.3	1.4	0.3	2.5	0.0	-0.7	0.3	1.3	0.0
Hours worked													
as a percentage of total hours worked													
2017	100.0	80.7	19.3	4.3	15.1	6.7	25.8	3.0	2.5	1.0	13.6	21.8	6.2
2018	100.0	81.0	19.0	4.2	15.0	6.8	25.7	3.0	2.5	1.0	13.8	21.8	6.1
2019	100.0	81.3	18.7	4.1	14.9	6.8	25.7	3.1	2.4	1.0	13.8	21.9	6.1
annual percentage changes													
2017	1.2	1.7	-1.1	-1.1	0.8	1.3	1.3	3.2	-2.0	1.5	3.5	0.5	0.4
2018	1.4	1.9	-0.3	0.4	1.3	2.7	1.1	3.2	-1.1	2.4	2.8	1.3	0.4
2019	1.1	1.4	-0.4	-1.3	0.4	2.1	0.9	2.8	-0.1	1.3	1.2	1.8	0.6
2019 Q2	1.0	1.4	-0.6	-2.9	0.5	2.6	0.9	3.0	-0.4	1.3	1.3	1.7	0.4
Q3	0.9	1.3	-0.8	-1.8	0.3	1.6	0.7	2.8	0.1	1.7	1.0	1.8	0.7
Q4	0.8	1.2	-0.6	-0.9	-0.3	0.6	0.9	2.2	0.1	1.1	1.1	1.6	1.0
2020 Q1	-2.8	-2.0	-6.3	-3.6	-3.7	-4.5	-5.0	0.6	-1.4	-2.8	-2.0	0.0	-2.8
Hours worked per person employed													
annual percentage changes													
2017	-0.4	-0.3	-0.4	-0.6	-0.3	-0.1	-0.5	-0.1	-0.5	-0.3	-0.2	-0.6	-0.5
2018	-0.1	0.1	-0.1	0.8	-0.2	0.3	-0.3	-0.3	-0.2	0.7	0.0	0.0	0.0
2019	-0.1	0.0	-0.3	0.4	-0.4	-0.3	-0.3	-0.9	0.2	0.1	-0.1	0.3	-0.1
2019 Q2	-0.2	-0.1	-0.5	-0.1	-0.5	0.0	-0.5	-1.1	0.3	-0.3	0.0	0.2	-0.3
Q3	-0.2	0.0	-0.4	0.1	-0.4	-0.6	-0.4	-0.8	0.4	1.0	-0.2	0.3	-0.2
Q4	-0.2	-0.1	-0.1	0.7	-0.6	-0.9	-0.3	-0.8	0.0	1.0	-0.1	0.2	0.0
2020 Q1	-3.2	-2.7	-5.2	-0.2	-3.4	-5.8	-5.3	-1.8	-1.4	-2.1	-2.3	-1.3	-2.8

Sources: Eurostat and ECB calculations.

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

3 Economic activity

3.4 Labour force, unemployment and job vacancies

(seasonally adjusted, unless otherwise indicated)

	Labour force, millions	Under-employ-ment, % of labour force	Unemployment [1]											Job vacancy rate [3]
			Total		Long-term unemploy-ment, % of labour force [2]	By age				By gender				
						Adult		Youth		Male		Female		
			Millions	% of labour force		Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	% of total posts
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
% of total in 2019			100.0			81.8		18.3		51.3		48.7		
2017	161.860	4.1	14.585	9.0	4.4	11.946	8.1	2.640	18.6	7.556	8.7	7.029	9.4	1.9
2018	162.485	3.7	13.211	8.1	3.8	10.823	7.3	2.388	16.8	6.809	7.8	6.402	8.5	2.1
2019	163.297	3.5	12.268	7.5	3.3	10.030	6.7	2.238	15.6	6.291	7.2	5.977	7.9	2.3
2019 Q2	163.093	3.5	12.238	7.5	3.3	10.035	6.7	2.203	15.4	6.291	7.2	5.947	7.9	2.3
Q3	163.039	3.5	12.171	7.5	3.2	9.942	6.7	2.229	15.5	6.282	7.2	5.890	7.8	2.2
Q4	163.675	3.4	12.010	7.3	3.2	9.787	6.6	2.222	15.5	6.130	7.0	5.880	7.7	2.2
2020 Q1	162.865	3.4	11.846	7.3	.	9.609	6.5	2.237	15.6	6.021	6.9	5.826	7.7	1.9
2019 Dec.	-	-	12.101	7.3	-	9.872	6.6	2.229	15.5	6.253	7.1	5.848	7.6	-
2020 Jan.	-	-	12.119	7.4	-	9.880	6.6	2.239	15.6	6.192	7.0	5.927	7.8	-
Feb.	-	-	11.830	7.2	-	9.653	6.4	2.177	15.2	6.026	6.8	5.804	7.6	-
Mar.	-	-	11.719	7.1	-	9.581	6.4	2.138	15.0	5.991	6.8	5.728	7.5	-
Apr.	-	-	11.987	7.3	-	9.762	6.5	2.225	15.7	6.155	7.0	5.831	7.7	-
May	-	-	12.146	7.4	-	9.878	6.6	2.267	16.0	6.103	7.0	6.043	7.9	-

Sources: Eurostat and ECB calculations.

1) Where annual and quarterly Labour Force Survey data have not yet been published, annual and quarterly data are derived as simple averages of the monthly data.

2) Not seasonally adjusted.

3) The job vacancy rate is equal to the number of job vacancies divided by the sum of the number of occupied posts and the number of job vacancies, expressed as a percentage.

3.5 Short-term business statistics

	Industrial production						Con-struction produc-tion	ECB indicator on industrial new orders	Retail sales				New passenger car regis-trations
	Total (excluding construction)	Main Industrial Groupings							Total	Food, beverages, tobacco	Non-food	Fuel	
		Manu-facturing	Inter-mediate goods	Capital goods	Consumer goods	Energy							
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	88.7	32.1	34.5	21.8	11.6	100.0	100.0	100.0	40.4	52.5	7.1	100.0
	annual percentage changes												
2017	3.0	3.2	3.4	3.9	1.4	1.2	3.1	7.9	2.5	1.6	3.5	0.8	5.6
2018	0.7	1.0	0.6	1.1	1.4	-1.5	2.0	2.7	1.6	1.4	1.9	0.6	0.9
2019	-1.3	-1.3	-2.4	-1.8	1.5	-1.9	2.0	-4.3	2.3	0.8	3.6	0.8	1.8
2019 Q2	-1.3	-1.5	-2.2	-2.8	1.9	-0.2	2.3	-3.5	2.1	1.1	3.0	0.1	-0.7
Q3	-1.6	-1.5	-3.2	-1.2	0.4	-1.9	1.2	-4.7	2.7	0.8	4.3	1.3	0.6
Q4	-2.1	-2.1	-3.8	-2.9	2.0	-2.5	0.0	-5.8	2.0	0.5	3.5	-0.7	12.5
2020 Q1	-6.2	-6.3	-5.4	-10.2	-1.1	-5.7	-4.1	-6.4	-1.4	4.7	-4.7	-10.2	-27.3
2019 Dec.	-3.4	-3.6	-5.5	-4.9	1.8	-3.3	-2.7	-4.6	1.9	-0.4	3.9	-1.1	17.9
2020 Jan.	-2.1	-1.4	-2.0	-2.0	0.6	-7.3	6.7	-1.4	2.2	1.0	3.2	-0.1	-5.8
Feb.	-2.2	-2.1	-0.8	-4.3	0.6	-3.1	-0.6	-1.4	2.6	3.7	2.2	-2.0	-6.3
Mar.	-13.6	-14.4	-12.6	-22.5	-4.1	-6.3	-17.5	-16.5	-8.3	9.1	-18.9	-27.3	-60.3
Apr.	-28.7	-30.4	-27.0	-41.1	-19.3	-13.0	-28.4	-34.7	-19.6	2.0	-32.6	-47.9	-79.6
May	-20.9	-22.1	-19.7	-28.4	-15.5	-10.3	.	.	-5.1	4.9	-9.0	-27.4	-48.6
	month-on-month percentage changes (s.a.)												
2019 Dec.	-1.7	-1.6	-1.6	-2.6	-0.1	-1.5	-1.6	-0.5	-1.0	-1.0	-1.1	-0.4	8.8
2020 Jan.	1.7	1.9	3.0	2.1	0.4	-1.2	3.8	2.3	0.8	0.9	0.8	2.0	-14.6
Feb.	0.0	0.0	0.9	-1.9	0.4	0.2	-0.9	-1.3	0.7	2.5	-0.3	-1.3	1.3
Mar.	-11.8	-12.8	-11.8	-18.1	-5.7	-3.2	-15.7	-14.7	-10.6	5.5	-20.7	-26.5	-57.3
Apr.	-18.2	-19.5	-17.0	-26.1	-13.4	-5.5	-14.6	-21.4	-12.1	-5.9	-16.7	-28.8	-45.8
May	12.4	13.4	10.0	25.4	5.9	2.3	.	.	17.8	2.2	34.5	38.4	139.9

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

3 Economic activity

3.6 Opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-15	98.7	-5.2	80.6	-11.7	-15.4	-8.6	7.3	-	51.2	52.5	53.0	52.8
2017	110.4	5.7	83.1	-5.4	-3.0	2.3	14.7	89.9	57.4	58.5	55.6	56.4
2018	111.5	6.7	83.7	-4.9	7.0	1.3	15.2	90.4	54.9	54.7	54.5	54.6
2019	103.1	-5.1	81.9	-7.1	6.4	-0.4	10.7	90.5	47.4	47.8	52.7	51.3
2019 Q3	102.0	-7.1	81.4	-6.8	5.1	0.0	9.7	90.4	46.4	47.0	52.8	51.2
Q4	100.6	-9.2	80.9	-7.7	4.9	-0.1	9.8	90.2	46.4	46.7	52.3	50.7
2020 Q1	100.1	-8.1	75.3	-8.8	4.5	-3.0	6.6	88.0	47.2	45.1	43.9	44.2
Q2	69.3	-27.2	.	-18.5	-15.3	-26.5	-39.3	.	40.1	34.2	30.3	31.3
2020 Jan.	102.6	-7.0	80.8	-8.1	5.8	-0.1	11.0	90.3	47.9	48.0	52.5	51.3
Feb.	103.4	-6.2	-	-6.6	5.4	-0.2	11.1	-	49.2	48.7	52.6	51.6
Mar.	94.2	-11.2	-	-11.6	2.3	-8.6	-2.3	-	44.5	38.5	26.4	29.7
Apr.	64.8	-32.5	69.7	-22.0	-16.1	-30.1	-38.6	85.6	33.4	18.1	12.0	13.6
May	67.5	-27.5	-	-18.8	-17.3	-29.8	-43.6	-	39.4	35.6	30.5	31.9
June	75.7	-21.7	-	-14.7	-12.4	-19.4	-35.6	-	47.4	48.9	48.3	48.5

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

3.7 Summary accounts for households and non-financial corporations
(current prices, unless otherwise indicated; not seasonally adjusted)

	Households							Non-financial corporations					
	Saving ratio (gross)	Debt ratio	Real gross disposable income	Financial investment	Non-financial investment (gross)	Net worth [2]	Housing wealth	Profit share [3]	Saving ratio (net)	Debt ratio [4]	Financial investment	Non-financial investment (gross)	Financing
	Percentage of gross disposable income (adjusted) [1]		Annual percentage changes					Percentage of net value added		Percentage of GDP	Annual percentage changes		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2017	12.1	93.9	1.5	2.4	5.0	4.7	4.7	34.6	7.2	77.6	4.6	8.4	3.1
2018	12.4	93.5	1.8	2.1	6.9	2.5	4.5	34.8	5.8	77.6	2.3	6.0	1.5
2019	13.1	93.8	1.9	2.6	5.1	5.4	3.5	34.1	6.1	77.5	2.3	4.3	1.8
2019 Q2	13.0	93.4	2.3	2.4	4.7	4.0	3.8	34.4	5.8	78.3	1.6	16.7	1.2
Q3	13.1	93.4	2.5	2.6	4.5	4.5	3.5	34.1	5.9	79.1	1.7	-1.4	1.3
Q4	13.1	93.8	0.8	2.6	3.4	5.4	3.5	34.1	6.1	77.5	2.3	-3.7	1.8
2020 Q1	14.1	93.7	0.8	2.8	-1.7	2.3	3.6	33.2	5.0	79.3	2.1	2.3	1.9

Sources: ECB and Eurostat.
1) Based on four-quarter cumulated sums of saving, debt and gross disposable income (adjusted for the change in pension entitlements).
2) Financial assets (net of financial liabilities) and non-financial assets. Non-financial assets consist mainly of housing wealth (residential structures and land). They also include non-financial assets of unincorporated enterprises classified within the household sector.
3) The profit share uses net entrepreneurial income, which is broadly equivalent to current profits in business accounting.
4) Defined as consolidated loans and debt securities liabilities.

3 Economic activity

3.8 Euro area balance of payments, current and capital accounts

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

	Current account											Capital account [1]	
	Total			Goods		Services		Primary income		Secondary income			
	Credit	Debit	Balance	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit
	1	2	3	4	5	6	7	8	9	10	11	12	13
2019 Q2	1,067.1	1,003.8	63.3	594.8	521.2	246.9	236.1	198.1	183.2	27.3	63.4	9.3	24.7
Q3	1,089.0	996.1	92.9	604.3	519.6	251.2	222.3	205.2	184.8	28.3	69.4	9.8	7.8
Q4	1,089.2	1,010.5	78.7	609.2	519.7	252.9	247.8	198.0	180.1	29.2	62.9	16.5	18.7
2020 Q1	1,050.0	1,000.7	49.3	585.8	498.2	241.8	257.8	193.2	180.8	29.3	63.8	10.8	10.8
2019 Nov.	364.1	336.8	27.3	201.6	172.9	84.4	82.7	68.7	60.7	9.5	20.6	3.7	5.0
Dec.	359.3	334.2	25.2	203.2	173.1	83.8	82.8	62.8	58.9	9.6	19.3	9.1	9.0
2020 Jan.	364.0	350.5	13.4	201.6	174.4	84.9	88.9	67.3	61.3	10.2	25.9	2.9	3.3
Feb.	362.6	339.9	22.7	200.8	171.2	84.2	90.0	67.5	60.2	10.1	18.5	3.8	3.3
Mar.	323.5	310.3	13.2	183.4	152.6	72.7	78.9	58.5	59.3	8.9	19.5	4.1	4.3
Apr.	275.1	260.7	14.4	146.2	133.3	61.9	58.0	57.7	48.2	9.3	21.2	4.0	3.5
12-month cumulated transactions													
2020 Apr.	4,215.4	3,935.8	279.6	2,342.4	2,018.1	972.7	943.2	786.0	714.9	114.3	259.7	47.8	57.4
12-month cumulated transactions as a percentage of GDP													
2020 Apr.	35.5	33.2	2.4	19.7	17.0	8.2	7.9	6.6	6.0	1.0	2.2	0.4	0.5

1) The capital account is not seasonally adjusted.

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

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
			Total				Memo item:	Total				Memo items:	
	Exports	Imports		Intermediate goods	Capital goods	Consumption goods	Manufacturing		Intermediate goods	Capital goods	Consumption goods	Manufacturing	Oil
	1	2	3	4	5	6	7	8	9	10	11	12	13
Values (EUR billions; annual percentage changes for columns 1 and 2)													
2019 Q2	2.1	2.4	584.3	276.9	120.7	176.2	487.3	533.4	304.1	86.3	134.9	381.9	66.2
Q3	3.1	0.7	586.2	279.6	117.8	177.6	489.1	530.7	297.9	87.9	137.2	387.3	60.4
Q4	2.2	-1.9	591.3	276.4	125.2	178.9	496.0	525.8	291.4	86.4	138.3	384.9	60.4
2020 Q1	-1.6	-4.1	576.8	274.5	115.3	174.7	479.1	507.2	283.6	82.1	133.3	369.9	56.3
2019 Nov.	-2.6	-4.0	194.6	91.2	40.4	58.9	163.8	175.7	97.5	28.6	46.4	128.9	20.1
Dec.	4.9	1.1	196.5	92.2	41.4	59.1	164.1	174.0	96.8	28.0	45.5	126.4	21.2
2020 Jan.	0.2	-0.3	196.8	93.4	39.0	60.0	164.3	177.9	100.3	28.8	46.1	129.0	22.0
Feb.	1.2	-1.6	198.1	92.8	41.0	60.9	165.9	172.8	96.9	26.9	46.1	126.8	19.7
Mar.	-5.9	-10.1	182.0	88.3	35.2	53.8	148.9	156.5	86.4	26.4	41.1	114.1	14.5
Apr.	-29.3	-24.8	137.3	.	.	.	111.1	136.1	.	.	.	99.2	.
Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)													
2019 Q2	-1.5	-0.2	106.7	108.6	106.2	105.7	106.3	109.6	108.2	110.1	113.5	111.5	98.2
Q3	0.9	1.7	106.8	109.6	103.3	106.1	106.2	109.7	108.4	111.2	113.1	111.8	97.0
Q4	-0.1	-1.7	107.1	108.3	108.3	105.8	107.0	107.4	105.6	105.6	112.7	109.8	95.9
2020 Q1	-4.0	-4.7	103.5	106.4	99.7	101.9	102.0	104.0	103.7	99.6	108.1	104.8	98.0
2019 Oct.	2.2	-0.8	109.2	109.7	112.7	108.9	109.2	108.6	106.1	111.3	113.5	111.4	92.7
Nov.	-4.3	-3.4	106.1	107.7	105.5	104.6	106.3	107.9	106.3	104.4	113.7	110.3	96.8
Dec.	2.1	-0.8	106.0	107.6	106.7	103.9	105.4	105.7	104.3	101.0	110.8	107.6	98.3
2020 Jan.	-2.8	-3.2	105.4	107.6	100.9	105.1	104.7	107.4	106.5	105.6	111.3	109.3	100.6
Feb.	-1.2	-1.8	106.8	107.9	107.0	106.8	106.4	106.9	106.4	99.9	113.1	109.2	99.7
Mar.	-7.8	-8.8	98.3	103.8	91.2	93.7	94.9	97.6	98.0	93.4	100.0	95.9	93.6

Sources: ECB and Eurostat.

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

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

4 Prices and costs

4.1 Harmonised Index of Consumer Prices [1)]

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) [2)]						Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
			Total excluding food and energy										
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2019	100.0	100.0	70.9	55.5	44.5	100.0	14.5	4.5	26.4	10.1	44.5	87.0	13.0
2017	101.8	1.5	1.0	1.6	1.4	-	-	-	-	-	-	1.6	1.0
2018	103.6	1.8	1.0	2.0	1.5	-	-	-	-	-	-	1.7	2.1
2019	104.8	1.2	1.0	1.0	1.5	-	-	-	-	-	-	1.1	1.9
2019 Q3	105.1	1.0	0.9	0.7	1.3	0.1	0.5	1.3	0.1	-1.5	0.3	0.9	1.6
Q4	105.3	1.0	1.2	0.4	1.7	0.3	0.4	0.3	0.1	0.2	0.4	1.0	1.2
2020 Q1	104.7	1.1	1.1	0.8	1.5	0.1	0.7	1.3	0.1	-1.3	0.1	1.2	0.8
Q2	105.5	0.2	0.9	.	1.2	-0.3	0.8	3.7	0.0	-7.9	0.4	.	.
2020 Jan.	104.4	1.4	1.1	1.2	1.5	0.1	0.3	0.3	0.0	0.8	-0.1	1.5	0.8
Feb.	104.6	1.2	1.2	0.9	1.6	0.0	0.2	1.0	0.1	-1.6	0.2	1.3	0.8
Mar.	105.1	0.7	1.0	0.3	1.3	-0.3	0.3	0.0	0.0	-3.3	0.0	0.8	0.7
Apr.	105.4	0.3	0.9	-0.4	1.2	-0.1	0.3	3.8	-0.1	-4.8	0.3	0.3	0.6
May	105.3	0.1	0.9	-0.9	1.3	-0.1	0.2	-0.4	0.0	-1.7	0.1	0.0	0.6
June [3)]	105.7	0.3	0.8	.	1.2	0.2	0.1	-0.3	0.0	1.7	0.1	.	.

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing		Transport	Communication	Recreation and personal care	Miscellaneous
	Total	Processed food	Unprocessed food	Total	Non-energy industrial goods	Energy		Rents				
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2019	19.0	14.5	4.5	36.5	26.4	10.1	11.0	6.5	7.2	2.6	15.3	8.4
2017	1.8	1.5	2.4	1.5	0.3	4.9	1.3	1.2	2.1	-1.1	2.1	0.8
2018	2.2	2.1	2.3	1.9	0.3	6.4	1.2	1.2	1.5	-0.1	2.0	1.4
2019	1.8	1.9	1.4	0.5	0.3	1.1	1.4	1.3	2.0	-0.7	1.7	1.5
2019 Q3	1.8	1.9	1.6	0.0	0.3	-0.7	1.5	1.5	2.2	-0.8	1.1	1.5
Q4	1.8	1.9	1.6	-0.3	0.4	-2.1	1.5	1.5	2.4	-0.2	2.0	1.5
2020 Q1	2.2	2.0	2.8	0.0	0.5	-1.0	1.6	1.4	1.7	0.0	1.6	1.5
Q2	3.4	2.4	6.7	.	0.2	-10.3	.	.	.	.	.	.
2020 Jan.	2.1	2.0	2.3	0.8	0.3	1.9	1.6	1.5	2.0	-0.2	1.5	1.5
Feb.	2.1	2.0	2.6	0.3	0.5	-0.3	1.5	1.4	2.0	0.0	1.8	1.5
Mar.	2.4	2.1	3.6	-0.9	0.5	-4.5	1.5	1.4	1.2	0.1	1.4	1.5
Apr.	3.6	2.3	7.6	-2.4	0.3	-9.7	1.4	1.3	0.7	-0.4	1.3	1.5
May	3.4	2.4	6.7	-3.2	0.2	-11.9	1.4	1.3	1.4	0.3	1.3	1.6
June [3)]	3.1	2.3	5.9	.	0.2	-9.4	.	.	.	.	.	.

Sources: Eurostat and ECB calculations.

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

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

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

4 Prices and costs

4.2 Industry, construction and property prices

(annual percentage changes, unless otherwise indicated)

	Industrial producer prices excluding construction [1]										Con-struction [2]	Residential property prices [3]	Experimental indicator of commercial property prices [3]
	Total (index: 2015 = 100)	Total		Industry excluding construction and energy						Energy			
			Manu-facturing	Total	Intermediate goods	Capital goods	Consumer goods						
							Total	Food, beverages and tobacco	Non-food				
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2015	100.0	100.0	77.3	72.1	28.9	20.7	22.5	16.5	5.9	27.9			
2017	100.8	3.0	3.0	2.1	3.2	0.9	1.9	2.9	0.2	5.6	2.0	4.3	4.7
2018	104.0	3.2	2.4	1.5	2.6	1.0	0.4	0.2	0.6	8.1	2.5	4.8	4.1
2019	104.7	0.7	0.6	0.7	0.1	1.5	1.0	1.1	0.8	-0.1	1.9	4.2	4.6
2019 Q2	104.8	1.6	1.0	1.0	0.7	1.5	1.0	0.9	0.9	3.0	2.2	4.3	5.3
Q3	104.2	-0.6	0.0	0.5	-0.4	1.5	1.0	1.2	0.8	-4.3	1.1	4.0	4.3
Q4	104.4	-1.2	0.0	0.4	-1.2	1.4	1.7	2.4	0.7	-5.9	1.7	4.3	4.3
2020 Q1	103.8	-1.6	0.0	0.4	-1.4	1.1	2.3	3.4	0.6	-7.3	1.6	4.9	.
2019 Dec.	104.5	-0.6	0.9	0.5	-1.1	1.5	2.0	2.9	0.7	-3.8	-	-	-
2020 Jan.	104.7	-0.7	1.1	0.5	-1.1	1.3	2.2	3.2	0.6	-4.1	-	-	-
Feb.	104.1	-1.3	0.3	0.5	-1.1	1.2	2.3	3.4	0.7	-6.6	-	-	-
Mar.	102.5	-2.8	-1.4	0.2	-1.9	1.0	2.3	3.5	0.6	-11.1	-	-	-
Apr.	100.4	-4.5	-3.1	-0.3	-2.6	1.0	1.7	2.5	0.5	-16.5	-	-	-
May	99.8	-5.0	-3.6	-0.6	-2.9	0.9	1.0	1.3	0.5	-17.2	-	-	-

Sources: Eurostat, ECB calculations, and ECB calculations based on MSCI data and national sources (col. 13).
1) Domestic sales only.
2) Input prices for residential buildings.
3) Experimental data based on non-harmonised sources (see https://www.ecb.europa.eu/stats/ecb_statistics/governance_and_quality_framework/html/experimental-data.en.html for further details).

4.3 Commodity prices and GDP deflators

(annual percentage changes, unless otherwise indicated)

	GDP deflators								Oil prices (EUR per barrel)	Non-energy commodity prices (EUR)					
	Total (s.a.; index: 2015 = 100)	Total	Domestic demand				Exports [1]	Imports [1]		Import-weighted [2]			Use-weighted [2]		
			Total	Private consump-tion	Govern-ment consump-tion	Gross fixed capital formation				Total	Food	Non-food	Total	Food	Non-food
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
% of total										100.0	45.4	54.6	100.0	50.4	49.6
2017	101.8	1.0	1.4	1.3	1.4	1.7	1.9	2.8	48.1	5.8	-3.5	16.6	6.7	-1.6	17.8
2018	103.1	1.3	1.7	1.5	1.7	2.0	1.4	2.3	60.4	-0.7	-5.8	4.3	-0.1	-5.3	5.7
2019	104.9	1.7	1.5	1.2	1.7	2.4	0.6	0.2	57.2	1.7	3.8	-0.1	2.6	7.5	-2.3
2019 Q3	105.1	1.7	1.2	1.0	1.7	2.3	0.1	-1.1	55.7	1.8	3.7	0.2	1.7	6.5	-3.1
Q4	105.6	1.8	1.3	1.0	1.6	2.2	0.2	-0.8	56.5	3.9	9.1	-0.6	5.2	13.9	-3.6
2020 Q1	106.2	1.8	1.4	1.2	2.0	1.6	0.2	-0.7	45.9	1.9	7.6	-3.1	1.4	7.5	-4.9
Q2	.	.	.	.	.	.	.	.	28.5	-2.4	4.0	-8.1	-4.8	-0.8	-9.2
2020 Jan.	-	-	-	-	-	-	-	-	57.3	7.0	10.9	3.5	6.8	12.6	0.7
Feb.	-	-	-	-	-	-	-	-	50.5	2.1	8.0	-3.0	2.0	8.7	-4.9
Mar.	-	-	-	-	-	-	-	-	29.7	-3.2	3.9	-9.4	-4.3	1.4	-10.4
Apr.	-	-	-	-	-	-	-	-	21.5	-4.3	4.6	-12.1	-7.2	-1.8	-13.0
May	-	-	-	-	-	-	-	-	28.4	-1.2	5.9	-7.5	-3.4	1.5	-8.7
June	-	-	-	-	-	-	-	-	35.5	-1.8	1.4	-4.6	-3.7	-2.0	-5.7

Sources: Eurostat, ECB calculations and Bloomberg (col. 9).
1) Deflators for exports and imports refer to goods and services and include cross-border trade within the euro area.
2) Import-weighted: weighted according to 2009-11 average import structure; use-weighted: weighted according to 2009-11 average domestic demand structure.

4 Prices and costs

4.4 Price-related opinion surveys
(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu-facturing	Retail trade	Services	Construction		Manu-facturing	Services	Manu-facturing	Services
	1	2	3	4	5	6	7	8	9
1999-15	4.3	-	-	-4.5	32.3	56.7	56.3	-	49.7
2017	9.3	5.2	7.1	2.8	12.9	64.6	56.3	55.1	51.6
2018	11.6	7.5	9.5	12.5	20.6	65.4	57.9	56.1	52.7
2019	4.3	7.2	9.0	7.4	18.3	48.8	57.1	50.4	52.4
2019 Q3	1.9	6.6	8.4	4.9	17.9	46.4	56.5	48.9	52.0
Q4	1.4	6.9	7.9	5.9	14.7	44.2	56.9	48.6	52.0
2020 Q1	2.0	6.6	7.4	4.9	13.3	45.6	54.7	48.0	49.7
Q2	-6.8	-3.7	-7.5	-11.6	11.0	44.2	48.1	46.1	43.3
2020 Jan.	2.9	8.6	10.4	6.8	14.9	45.6	57.6	48.6	51.8
Feb.	3.5	7.4	9.1	5.9	14.3	47.1	56.8	48.1	52.1
Mar.	-0.3	3.9	2.8	1.9	10.6	44.2	49.7	47.2	45.3
Apr.	-7.5	-8.0	-9.9	-13.0	5.9	44.6	44.5	45.8	40.2
May	-8.6	-3.1	-8.8	-11.2	12.6	43.0	47.7	45.8	43.3
June	-4.4	0.1	-3.9	-10.8	14.5	45.1	52.2	46.6	46.3

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

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

	Total (index: 2016 = 100)	Total	By component		For selected economic activities		Memo item: Indicator of negotiated wages [1]
			Wages and salaries	Employers' social contributions	Business economy	Mainly non-business economy	
	1	2	3	4	5	6	7
% of total in 2018	100.0	100.0	75.3	24.7	69.0	31.0	
2017	101.8	1.8	1.7	1.8	1.8	1.7	1.5
2018	104.2	2.4	2.3	2.6	2.5	2.1	2.1
2019	106.8	2.5	2.6	2.2	2.4	2.6	2.2
2019 Q2	110.8	2.7	2.8	2.6	2.5	3.1	2.0
Q3	103.4	2.5	2.7	2.3	2.6	2.4	2.6
Q4	113.2	2.4	2.3	2.2	2.2	2.6	2.0
2020 Q1	103.2	3.4	3.4	3.6	3.1	4.2	1.9

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

4 Prices and costs

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

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

	Total (index: 2015 =100)	Total	By economic activity									
			Agriculture, forestry and fishing	Manu-facturing, energy and utilities	Con-struction	Trade, transport, accom-modation and food services	Information and commu-nication	Finance and insurance	Real estate	Professional, business and support services	Public ad-ministration, education, health and social work	Arts, enter-tainment and other services
	1	2	3	4	5	6	7	8	9	10	11	12
Unit labour costs												
2017	106.2	0.8	0.0	-0.6	0.7	0.6	0.0	-1.6	4.5	1.7	1.3	1.2
2018	108.1	1.8	-0.4	1.6	0.8	1.4	1.5	-0.5	4.3	2.5	2.3	2.8
2019	110.2	1.9	-0.4	3.2	1.0	1.5	1.3	-0.8	2.7	1.7	2.6	1.6
2019 Q2	110.0	2.1	-1.0	3.1	1.3	1.8	1.7	-1.0	3.2	1.7	2.6	2.2
Q3	110.6	1.9	-1.6	3.7	0.7	1.4	1.9	-1.0	2.4	1.4	2.5	0.9
Q4	110.9	1.7	0.5	2.6	1.2	1.3	0.1	-0.8	0.1	1.9	2.7	1.9
2020 Q1	113.7	4.0	-1.2	3.5	2.7	6.0	2.6	-0.2	0.7	4.0	3.9	7.2
Compensation per employee												
2017	111.4	1.7	1.0	1.6	1.6	1.5	1.9	1.2	3.3	2.6	1.8	1.8
2018	113.8	2.2	1.4	1.9	1.9	2.1	2.5	2.0	4.1	2.7	2.0	2.8
2019	116.0	2.0	1.2	1.3	1.8	2.1	1.6	1.8	3.1	1.9	2.3	2.7
2019 Q2	115.9	2.0	1.2	1.1	2.0	2.1	1.5	2.2	3.2	2.3	2.2	3.4
Q3	116.7	2.1	0.5	1.9	1.7	2.2	1.9	1.5	3.3	1.9	2.3	2.3
Q4	116.8	1.6	2.1	0.6	1.2	1.6	1.2	1.6	1.7	1.6	2.5	2.3
2020 Q1	115.6	0.3	1.4	-1.2	-2.3	-1.1	1.4	0.5	1.4	0.9	2.2	0.4
Labour productivity per person employed												
2017	104.8	0.9	1.1	2.2	0.9	0.9	1.9	2.8	-1.1	0.9	0.5	0.6
2018	105.2	0.4	1.9	0.3	1.0	0.7	1.0	2.6	-0.2	0.3	-0.3	0.0
2019	105.3	0.0	1.6	-1.8	0.8	0.5	0.3	2.6	0.3	0.3	-0.3	1.1
2019 Q2	105.3	0.0	2.3	-2.0	0.7	0.4	-0.2	3.2	0.0	0.6	-0.4	1.2
Q3	105.5	0.2	2.2	-1.8	1.0	0.8	0.0	2.5	0.8	0.6	-0.2	1.4
Q4	105.3	-0.1	1.5	-2.0	0.0	0.3	1.1	2.3	1.6	-0.3	-0.3	0.4
2020 Q1	101.7	-3.6	2.7	-4.5	-4.9	-6.7	-1.2	0.7	0.7	-3.0	-1.7	-6.3
Compensation per hour worked												
2017	113.4	2.0	1.3	1.8	1.6	1.8	2.0	1.8	3.2	2.5	2.4	2.3
2018	115.8	2.1	0.9	2.1	1.3	2.2	2.6	2.3	3.3	2.7	2.0	2.5
2019	118.1	2.0	0.7	1.7	2.2	2.1	2.4	1.4	2.6	2.0	1.9	2.8
2019 Q2	117.5	2.1	1.8	1.6	2.3	2.2	2.3	1.7	2.9	2.2	1.9	3.7
Q3	118.3	2.1	0.7	2.3	2.3	2.4	2.5	0.9	1.9	2.0	1.9	2.5
Q4	118.6	1.8	1.4	1.2	2.2	1.7	2.3	1.4	0.8	1.6	2.2	2.4
2020 Q1	120.4	3.1	3.4	2.2	2.5	3.0	3.3	1.6	3.8	3.0	3.5	2.7
Hourly labour productivity												
2017	107.2	1.4	1.7	2.5	1.0	1.5	2.0	3.3	-0.8	1.1	1.1	1.1
2018	107.7	0.5	1.0	0.5	0.7	1.0	1.3	2.8	-0.9	0.3	-0.3	-0.1
2019	107.8	0.2	1.2	-1.4	1.1	0.8	1.2	2.4	0.2	0.4	-0.6	1.2
2019 Q2	107.7	0.2	2.3	-1.4	0.7	0.8	0.9	2.9	0.3	0.6	-0.5	1.5
Q3	107.8	0.4	2.1	-1.4	1.6	1.2	0.8	2.1	-0.2	0.8	-0.6	1.6
Q4	107.7	0.1	0.8	-1.4	1.0	0.6	1.8	2.4	0.6	-0.3	-0.4	0.4
2020 Q1	107.2	-0.4	2.9	-1.1	1.0	-1.5	0.7	2.2	2.9	-0.8	-0.3	-3.6

Sources: Eurostat and ECB calculations.

5 Money and credit

5.1 Monetary aggregates [1)]

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

	M3											
	M2							M3-M2				
	M1			M2-M1								
	Currency in circulation	Overnight deposits		Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months			Repos	Money market fund shares	Debt securities with a maturity of up to 2 years		
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2017	1,112.0	6,638.1	7,750.1	1,196.6	2,261.8	3,458.3	11,208.5	74.4	512.0	72.6	659.1	11,867.5
2018	1,163.3	7,114.7	8,278.1	1,124.9	2,299.0	3,423.9	11,702.0	74.3	524.0	71.5	669.8	12,371.8
2019	1,219.6	7,724.2	8,943.8	1,069.5	2,363.8	3,433.4	12,377.1	78.5	531.6	7.9	618.0	12,995.2
2019 Q2	1,189.0	7,415.4	8,604.4	1,111.1	2,338.5	3,449.6	12,054.0	74.5	523.9	37.6	636.0	12,690.0
Q3	1,204.1	7,605.6	8,809.6	1,110.0	2,354.8	3,464.7	12,274.4	74.5	546.3	19.1	640.0	12,914.4
Q4	1,219.6	7,724.2	8,943.8	1,069.5	2,363.8	3,433.4	12,377.1	78.5	531.6	7.9	618.0	12,995.2
2020 Q1	1,261.8	8,075.3	9,337.1	1,077.9	2,361.4	3,439.4	12,776.4	109.9	533.5	58.4	701.9	13,478.3
2019 Dec.	1,219.6	7,724.2	8,943.8	1,069.5	2,363.8	3,433.4	12,377.1	78.5	531.6	7.9	618.0	12,995.2
2020 Jan.	1,228.3	7,743.6	8,971.9	1,063.3	2,362.3	3,425.6	12,397.5	75.8	548.3	24.1	648.2	13,045.7
Feb.	1,236.2	7,826.7	9,062.8	1,065.0	2,359.7	3,424.8	12,487.6	84.9	551.3	25.9	662.1	13,149.7
Mar.	1,261.8	8,075.3	9,337.1	1,077.9	2,361.4	3,439.4	12,776.4	109.9	533.5	58.4	701.9	13,478.3
Apr.	1,276.8	8,229.3	9,506.2	1,070.7	2,376.8	3,447.4	12,953.6	94.9	542.5	40.0	677.4	13,631.0
May [p]	1,296.5	8,332.6	9,629.1	1,094.3	2,389.2	3,483.5	13,112.6	96.2	551.2	30.1	677.4	13,790.0
Transactions												
2017	36.0	592.6	628.6	-109.5	34.5	-74.9	553.7	6.5	-10.8	-18.5	-22.7	530.9
2018	50.3	465.1	515.4	-74.0	45.2	-28.9	486.6	-0.9	12.3	-3.3	8.1	494.7
2019	56.3	603.1	659.4	-60.0	62.8	2.7	662.1	4.1	-1.8	-57.6	-55.3	606.8
2019 Q2	9.7	143.0	152.8	-4.4	20.3	15.9	168.6	0.4	3.2	-2.4	1.3	169.9
Q3	15.1	181.2	196.3	-4.6	14.8	10.2	206.5	-0.6	21.1	-18.1	2.5	209.0
Q4	15.6	122.8	138.4	-38.0	8.1	-29.9	108.4	4.5	-16.0	-9.5	-21.1	87.4
2020 Q1	42.1	346.6	388.7	6.5	-2.5	4.0	392.7	31.1	2.0	48.6	81.6	474.4
2019 Dec.	2.8	12.9	15.7	-9.9	4.8	-5.1	10.7	5.5	-0.2	-18.1	-12.8	-2.1
2020 Jan.	8.7	15.4	24.0	-7.9	-1.6	-9.5	14.6	-3.0	16.6	16.6	30.2	44.8
Feb.	7.9	81.9	89.7	1.2	-2.6	-1.4	88.4	9.0	3.0	1.3	13.3	101.7
Mar.	25.6	249.3	274.9	13.2	1.7	14.9	289.8	25.0	-17.6	30.7	38.1	327.9
Apr.	15.1	151.1	166.2	-8.5	15.3	6.8	172.9	-15.4	9.1	-18.2	-24.4	148.5
May [p]	19.7	101.9	121.6	26.3	12.9	39.1	160.7	2.0	8.8	-10.7	0.0	160.7
Growth rates												
2017	3.3	9.8	8.8	-8.3	1.6	-2.1	5.2	9.5	-2.1	-21.1	-3.3	4.7
2018	4.5	7.0	6.6	-6.2	2.0	-0.8	4.3	-1.3	2.4	-4.7	1.2	4.2
2019	4.8	8.5	8.0	-5.3	2.7	0.1	5.7	5.4	-0.4	-86.7	-8.2	4.9
2019 Q2	4.7	7.7	7.2	-6.1	3.0	-0.1	5.0	1.1	1.1	-38.3	-2.8	4.6
Q3	4.7	8.5	7.9	-2.6	3.0	1.1	5.9	3.0	8.7	-65.4	1.1	5.7
Q4	4.8	8.5	8.0	-5.3	2.7	0.1	5.7	5.4	-0.4	-86.7	-8.2	4.9
2020 Q1	7.0	10.9	10.4	-3.6	1.8	0.0	7.4	47.5	2.0	56.7	10.1	7.5
2019 Dec.	4.8	8.5	8.0	-5.3	2.7	0.1	5.7	5.4	-0.4	-86.7	-8.2	4.9
2020 Jan.	5.2	8.3	7.9	-5.7	2.4	-0.2	5.5	0.7	5.1	-53.0	-0.8	5.2
Feb.	5.4	8.6	8.1	-5.6	2.0	-0.4	5.6	17.6	6.0	-47.6	2.5	5.5
Mar.	7.0	10.9	10.4	-3.6	1.8	0.0	7.4	47.5	2.0	56.7	10.1	7.5
Apr.	8.0	12.5	11.9	-5.2	2.1	-0.3	8.3	28.2	3.1	8.2	5.9	8.2
May [p]	9.3	13.0	12.5	-2.6	2.3	0.7	9.1	35.3	4.7	-25.7	5.8	8.9

Source: ECB.

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

5 Money and credit

5.2 Deposits in M3 [1]

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

	Non-financial corporations [2]					Households [3]					Financial corporations other than MFIs and ICPFs [2]	Insurance corporations and pension funds	Other general government [4]
	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos	Total	Overnight	With an agreed maturity of up to 2 years	Redeemable at notice of up to 3 months	Repos			
	1	2	3	4	5	6	7	8	9	10	11	12	13
Outstanding amounts													
2017	2,240.3	1,797.4	285.0	149.1	8.8	6,317.6	3,702.8	562.1	2,051.9	0.8	991.1	206.6	415.3
2018	2,331.4	1,898.7	277.3	147.8	7.6	6,644.9	4,035.9	517.6	2,090.1	1.4	998.2	202.9	435.5
2019	2,476.2	2,062.7	256.9	150.1	6.5	7,040.7	4,395.5	492.5	2,151.8	0.9	1,036.9	214.4	467.8
2019 Q2	2,406.1	1,983.7	265.3	150.0	7.1	6,846.9	4,207.9	509.7	2,127.6	1.7	1,009.5	216.6	460.4
Q3	2,450.9	2,031.3	262.2	151.4	5.9	6,964.9	4,318.1	504.5	2,141.3	1.0	1,042.3	221.3	465.5
Q4	2,476.2	2,062.7	256.9	150.1	6.5	7,040.7	4,395.5	492.5	2,151.8	0.9	1,036.9	214.4	467.8
2020 Q1	2,609.4	2,190.9	263.2	147.5	7.7	7,161.4	4,530.5	472.0	2,158.3	0.6	1,152.1	226.4	475.3
2019 Dec.	2,476.2	2,062.7	256.9	150.1	6.5	7,040.7	4,395.5	492.5	2,151.8	0.9	1,036.9	214.4	467.8
2020 Jan.	2,475.0	2,063.6	256.8	150.5	4.1	7,061.1	4,421.5	487.3	2,151.4	0.8	1,024.0	217.7	467.2
Feb.	2,507.0	2,097.6	253.7	150.3	5.4	7,086.6	4,452.7	482.5	2,150.6	0.8	1,051.7	215.3	475.7
Mar.	2,609.4	2,190.9	263.2	147.5	7.7	7,161.4	4,530.5	472.0	2,158.3	0.6	1,152.1	226.4	475.3
Apr.	2,715.0	2,277.6	284.5	146.6	6.3	7,242.0	4,596.6	467.1	2,177.4	0.8	1,120.1	229.8	464.8
May [p]	2,823.4	2,355.4	315.9	147.3	4.7	7,299.4	4,642.5	464.9	2,191.1	1.0	1,100.6	231.4	457.4
Transactions													
2017	180.7	182.4	-1.9	-0.8	0.9	254.7	304.7	-82.1	33.6	-1.5	54.9	7.2	26.7
2018	93.1	105.3	-9.7	-1.1	-1.4	326.5	324.8	-45.0	46.1	0.5	0.5	-3.9	19.1
2019	146.1	163.7	-18.8	1.8	-0.5	394.4	358.3	-25.7	62.3	-0.5	29.1	10.2	30.1
2019 Q2	29.7	30.7	-4.3	2.2	1.1	94.1	82.2	-5.1	16.7	0.3	31.6	4.0	-0.2
Q3	40.7	43.9	-2.9	1.0	-1.3	116.9	109.6	-6.0	13.9	-0.6	25.1	3.8	4.4
Q4	28.8	34.6	-4.3	-2.2	0.7	76.7	76.9	-11.5	11.5	-0.2	-3.0	-6.9	1.8
2020 Q1	130.6	126.4	5.6	-2.5	1.2	119.5	134.2	-20.9	6.4	-0.3	112.4	11.7	7.4
2019 Dec.	-2.8	-8.8	6.3	-1.4	1.0	15.5	13.5	-4.2	7.1	-0.8	17.4	-12.1	-4.6
2020 Jan.	-3.5	-0.7	-0.8	0.4	-2.4	19.5	25.5	-5.6	-0.4	0.0	-15.5	3.0	-0.7
Feb.	31.3	33.6	-3.3	-0.2	1.3	25.2	30.9	-4.9	-0.8	0.0	27.0	-2.5	8.5
Mar.	102.7	93.5	9.7	-2.7	2.3	74.9	77.8	-10.4	7.7	-0.2	100.9	11.1	-0.4
Apr.	104.1	85.8	20.7	-1.0	-1.4	80.0	65.8	-5.1	19.1	0.2	-34.7	3.6	-10.5
May [p]	111.7	80.0	32.4	0.8	-1.5	59.0	46.5	-1.8	14.1	0.1	-22.3	2.0	-7.3
Growth rates													
2017	8.6	11.2	-0.7	-0.5	11.5	4.2	9.0	-12.7	1.7	-65.1	5.8	3.6	6.9
2018	4.2	5.9	-3.5	-0.7	-16.5	5.2	8.8	-8.0	2.3	67.7	0.0	-1.9	4.6
2019	6.3	8.6	-6.8	1.2	-6.8	5.9	8.9	-5.0	3.0	-36.8	2.9	5.0	6.9
2019 Q2	5.8	7.6	-4.6	2.5	12.2	5.8	8.6	-4.9	3.1	72.0	-1.0	-1.3	7.6
Q3	6.4	8.0	-2.6	2.8	-11.8	6.3	9.3	-4.1	3.1	-10.1	3.6	4.3	6.6
Q4	6.3	8.6	-6.8	1.2	-6.8	5.9	8.9	-5.0	3.0	-36.8	2.9	5.0	6.9
2020 Q1	9.7	12.1	-2.2	-1.0	24.8	6.0	9.8	-8.4	2.3	-56.7	16.9	5.9	2.9
2019 Dec.	6.3	8.6	-6.8	1.2	-6.8	5.9	8.9	-5.0	3.0	-36.8	2.9	5.0	6.9
2020 Jan.	6.1	8.2	-5.3	1.2	-41.1	5.7	8.7	-6.0	2.7	-43.6	3.3	5.0	5.2
Feb.	6.5	9.0	-7.6	1.2	-13.8	5.4	8.6	-6.8	2.3	-46.9	7.1	3.1	4.6
Mar.	9.7	12.1	-2.2	-1.0	24.8	6.0	9.8	-8.4	2.3	-56.7	16.9	5.9	2.9
Apr.	13.7	16.1	5.4	-2.2	-11.6	6.7	10.6	-9.1	2.9	-48.2	12.2	8.1	1.0
May [p]	17.6	19.2	18.0	-1.9	-31.8	7.0	10.9	-9.2	3.2	-37.5	9.6	7.3	-0.6

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

5.3 Credit to euro area residents [1)]

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

	Credit to general government			Credit to other euro area residents								
					Loans						Debt securities	Equity and non-money market fund investment fund shares
					Total		To non-financial corporations [3)]	To households [4)]	To financial corporations other than MFIs and ICPFs [3)]	To insurance corporations and pension funds		
	Total	Loans	Debt securities	Total		Adjusted loans [2)]						
	1	2	3	4	5	6	7	8	9	10	11	12
Outstanding amounts												
2017	4,617.2	1,032.3	3,571.0	13,114.0	10,870.5	11,165.8	4,323.4	5,600.3	838.0	108.7	1,440.4	803.2
2018	4,676.7	1,006.2	3,659.0	13,415.9	11,122.4	11,482.8	4,402.3	5,742.1	851.2	126.8	1,517.9	775.6
2019	4,652.6	984.5	3,656.3	13,865.6	11,452.2	11,838.5	4,472.5	5,930.9	896.1	152.6	1,560.5	852.9
2019 Q2	4,640.2	1,000.7	3,627.9	13,640.4	11,290.6	11,667.0	4,462.4	5,825.8	870.3	132.1	1,546.6	803.2
Q3	4,696.5	999.8	3,685.1	13,776.5	11,394.4	11,764.2	4,488.5	5,876.3	883.5	146.2	1,570.6	811.5
Q4	4,652.6	984.5	3,656.3	13,865.6	11,452.2	11,838.5	4,472.5	5,930.9	896.1	152.6	1,560.5	852.9
2020 Q1	4,774.9	1,006.9	3,756.2	14,047.3	11,688.4	12,063.7	4,601.8	5,966.6	958.5	161.5	1,558.7	800.3
2019 Dec.	4,652.6	984.5	3,656.3	13,865.6	11,452.2	11,838.5	4,472.5	5,930.9	896.1	152.6	1,560.5	852.9
2020 Jan.	4,670.2	994.2	3,664.2	13,912.8	11,511.9	11,874.9	4,483.9	5,961.1	913.4	153.5	1,547.1	853.8
Feb.	4,672.0	993.0	3,667.2	13,942.6	11,531.5	11,897.5	4,488.9	5,983.3	909.1	150.1	1,565.8	845.4
Mar.	4,774.9	1,006.9	3,756.2	14,047.3	11,688.4	12,063.7	4,601.8	5,966.6	958.5	161.5	1,558.7	800.3
Apr.	4,962.3	1,015.5	3,935.0	14,122.9	11,728.2	12,104.1	4,670.7	5,960.9	939.8	156.8	1,608.8	785.9
May [(p)]	5,131.8	1,017.4	4,102.6	14,223.4	11,805.6	12,179.7	4,719.4	5,981.5	950.4	154.4	1,624.9	792.9
Transactions												
2017	287.5	-43.7	330.6	363.2	274.2	316.4	84.9	173.2	19.7	-3.5	63.6	25.4
2018	90.3	-28.4	118.7	374.8	307.3	382.1	123.6	166.3	-0.4	17.8	88.1	-20.6
2019	-88.3	-23.5	-65.2	453.0	378.7	426.0	115.0	200.0	42.5	21.2	30.5	43.8
2019 Q2	-49.5	-1.6	-48.2	123.8	105.6	126.5	51.7	38.8	16.6	-1.5	17.4	0.8
Q3	-2.6	-0.9	-1.7	129.7	102.3	104.5	27.2	52.0	9.2	13.9	20.7	6.6
Q4	-5.2	-15.6	10.2	90.2	78.6	104.6	2.8	60.2	9.1	6.5	-7.8	19.5
2020 Q1	133.8	21.8	112.0	229.5	247.9	240.3	135.6	41.8	61.6	8.8	15.4	-33.8
2019 Dec.	21.8	-17.1	38.9	22.6	25.9	47.5	-11.5	21.1	9.5	6.8	-8.4	5.0
2020 Jan.	-9.1	9.6	-18.7	44.8	57.9	35.3	10.5	30.5	15.9	0.8	-14.1	1.0
Feb.	6.7	-1.5	8.2	40.7	20.9	26.1	6.5	22.9	-5.0	-3.4	20.6	-0.9
Mar.	136.2	13.8	122.5	144.0	169.1	178.9	118.6	-11.6	50.7	11.4	8.9	-34.0
Apr.	194.0	8.2	185.7	67.9	38.3	38.1	71.6	-5.3	-23.3	-4.7	46.1	-16.4
May [(p)]	159.8	1.6	158.3	102.9	80.2	77.3	51.9	22.4	8.2	-2.4	17.1	5.6
Growth rates												
2017	6.6	-4.1	10.2	2.8	2.6	2.9	2.0	3.2	2.4	-3.2	4.6	3.2
2018	2.0	-2.8	3.4	2.9	2.8	3.4	2.9	3.0	-0.1	16.4	6.1	-2.6
2019	-1.9	-2.3	-1.8	3.4	3.4	3.7	2.6	3.5	5.0	16.2	2.0	5.6
2019 Q2	-0.2	-2.0	0.3	3.0	3.2	3.5	3.3	3.2	1.7	5.9	3.1	1.3
Q3	-1.1	-0.5	-1.3	3.2	3.2	3.6	2.9	3.2	3.5	14.4	3.3	2.6
Q4	-1.9	-2.3	-1.8	3.4	3.4	3.7	2.6	3.5	5.0	16.2	2.0	5.6
2020 Q1	1.6	0.4	1.9	4.2	4.8	5.0	4.9	3.3	11.2	20.7	3.0	-0.8
2019 Dec.	-1.9	-2.3	-1.8	3.4	3.4	3.7	2.6	3.5	5.0	16.2	2.0	5.6
2020 Jan.	-1.9	-1.3	-2.1	3.4	3.5	3.7	2.6	3.7	4.9	16.7	1.1	5.7
Feb.	-2.0	-1.0	-2.2	3.4	3.5	3.7	2.4	3.9	5.0	14.8	2.0	4.1
Mar.	1.6	0.4	1.9	4.2	4.8	5.0	4.9	3.3	11.2	20.7	3.0	-0.8
Apr.	6.2	1.5	7.5	4.4	4.7	4.9	6.0	3.0	7.5	21.2	6.3	-3.6
May [(p)]	9.8	1.1	12.2	4.9	5.2	5.3	6.7	3.3	8.3	20.9	6.6	-2.6

Source: ECB.

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

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

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

4) Including non-profit institutions serving households.

5 Money and credit

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

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

	Non-financial corporations [2)]					Households [3)]				
	Total		Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total		Loans for consumption	Loans for house purchase	Other loans
		Adjusted loans [4)]					Adjusted loans [4)]			
	1	2	3	4	5	6	7	8	9	10
Outstanding amounts										
2017	4,323.4	4,358.7	986.2	821.2	2,516.1	5,600.3	5,867.4	654.8	4,216.4	729.0
2018	4,402.3	4,487.6	993.0	843.7	2,565.6	5,742.1	6,025.2	682.6	4,356.8	702.7
2019	4,472.5	4,575.5	970.7	877.0	2,624.8	5,930.9	6,224.3	719.8	4,524.2	686.9
2019 Q2	4,462.4	4,554.2	977.6	867.2	2,617.6	5,825.8	6,115.2	703.6	4,426.6	695.6
Q3	4,488.5	4,581.9	982.0	873.5	2,633.0	5,876.3	6,165.7	711.2	4,473.5	691.6
Q4	4,472.5	4,575.5	970.7	877.0	2,624.8	5,930.9	6,224.3	719.8	4,524.2	686.9
2020 Q1	4,601.8	4,703.7	1,002.2	915.8	2,683.8	5,966.6	6,254.2	715.5	4,566.5	684.5
2019 Dec.	4,472.5	4,575.5	970.7	877.0	2,624.8	5,930.9	6,224.3	719.8	4,524.2	686.9
2020 Jan.	4,483.9	4,582.1	965.3	877.1	2,641.5	5,961.1	6,243.4	724.3	4,549.6	687.2
Feb.	4,488.9	4,586.3	957.4	880.0	2,651.5	5,983.3	6,264.7	728.4	4,567.3	687.6
Mar.	4,601.8	4,703.7	1,002.2	915.8	2,683.8	5,966.6	6,254.2	715.5	4,566.5	684.5
Apr.	4,670.7	4,775.3	989.0	961.2	2,720.5	5,960.9	6,247.1	701.4	4,574.5	685.0
May [(p)]	4,719.4	4,822.9	959.2	997.6	2,762.6	5,981.5	6,264.9	699.2	4,593.9	688.4
Transactions										
2017	84.9	134.8	0.6	39.1	45.2	173.2	165.6	45.0	134.0	-5.9
2018	123.6	175.7	18.6	32.7	72.3	166.3	188.6	41.3	134.3	-9.3
2019	115.0	144.7	-11.7	43.1	83.6	200.0	217.2	40.7	168.7	-9.4
2019 Q2	51.7	55.7	1.3	19.3	31.1	38.8	49.9	11.5	28.7	-1.4
Q3	27.2	34.0	3.6	6.3	17.3	52.0	54.9	8.4	46.5	-2.9
Q4	2.8	21.7	-5.3	7.5	0.5	60.2	63.7	9.4	53.7	-2.9
2020 Q1	135.6	135.2	28.9	43.4	63.3	41.8	37.6	-2.9	45.9	-1.1
2019 Dec.	-11.5	2.0	2.0	-4.2	-9.4	21.1	23.2	3.3	19.6	-1.8
2020 Jan.	10.5	6.3	-11.0	3.2	18.4	30.5	19.6	4.5	24.9	1.1
Feb.	6.5	7.5	-8.0	4.2	10.3	22.9	22.3	4.5	17.5	0.9
Mar.	118.6	121.4	47.9	36.1	34.6	-11.6	-4.3	-11.9	3.5	-3.1
Apr.	71.6	72.8	-13.1	46.9	37.8	-5.3	-6.1	-13.9	7.0	1.5
May [(p)]	51.9	50.6	-28.0	38.2	41.6	22.4	18.8	-1.8	20.1	4.2
Growth rates										
2017	2.0	3.2	0.1	5.0	1.8	3.2	2.9	7.3	3.3	-0.8
2018	2.9	4.1	1.9	4.0	2.9	3.0	3.2	6.4	3.2	-1.3
2019	2.6	3.2	-1.2	5.1	3.3	3.5	3.6	6.0	3.9	-1.3
2019 Q2	3.3	3.9	0.2	5.6	3.8	3.2	3.3	6.5	3.4	-1.2
Q3	2.9	3.6	-0.8	5.1	3.6	3.2	3.4	6.0	3.5	-1.6
Q4	2.6	3.2	-1.2	5.1	3.3	3.5	3.6	6.0	3.9	-1.3
2020 Q1	4.9	5.5	2.9	9.1	4.3	3.3	3.4	3.8	4.0	-1.2
2019 Dec.	2.6	3.2	-1.2	5.1	3.3	3.5	3.6	6.0	3.9	-1.3
2020 Jan.	2.6	3.2	-1.3	5.1	3.3	3.7	3.7	6.0	4.1	-1.2
Feb.	2.4	3.0	-2.1	5.0	3.2	3.9	3.7	6.2	4.3	-1.0
Mar.	4.9	5.5	2.9	9.1	4.3	3.3	3.4	3.8	4.0	-1.2
Apr.	6.0	6.6	1.1	13.7	5.3	3.0	3.0	1.3	3.9	-0.9
May [(p)]	6.7	7.3	-1.5	17.3	6.3	3.3	3.0	0.4	4.2	0.0

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

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

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

	MFI liabilities						MFI assets			
	Central government holdings [2)]	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total	Repos with central counter-parties [3)]	Reverse repos to central counter-parties [3)]
	1	2	3	4	5	6	7	8	9	10
	Outstanding amounts									
2017	342.7	6,771.1	1,967.5	59.8	2,017.5	2,726.2	933.7	316.3	143.5	92.5
2018	379.3	6,818.7	1,940.7	56.1	2,099.1	2,722.8	1,033.7	443.4	187.0	194.9
2019	350.3	7,062.0	1,946.5	50.1	2,156.1	2,909.3	1,459.8	429.5	178.9	187.2
2019 Q2	373.7	6,985.0	1,956.9	57.5	2,135.4	2,835.2	1,318.6	449.5	191.5	207.8
Q3	388.0	7,101.1	1,948.1	57.2	2,162.2	2,933.6	1,484.9	445.6	184.2	198.1
Q4	350.3	7,062.0	1,946.5	50.1	2,156.1	2,909.3	1,459.8	429.5	178.9	187.2
2020 Q1	413.3	7,037.1	1,935.1	47.2	2,121.9	2,932.8	1,571.7	534.7	183.7	196.2
2019 Dec.	350.3	7,062.0	1,946.5	50.1	2,156.1	2,909.3	1,459.8	429.5	178.9	187.2
2020 Jan.	372.2	7,115.6	1,948.9	48.8	2,165.9	2,952.1	1,542.8	407.7	171.1	182.3
Feb.	417.2	7,130.6	1,942.5	48.2	2,162.5	2,977.5	1,613.6	469.2	177.9	191.2
Mar.	413.3	7,037.1	1,935.1	47.2	2,121.9	2,932.8	1,571.7	534.7	183.7	196.2
Apr.	521.1	7,059.9	1,930.3	46.1	2,125.8	2,957.7	1,565.7	561.2	187.6	203.3
May [p)]	598.8	7,046.2	1,934.2	45.2	2,100.7	2,966.1	1,541.0	538.8	196.5	211.4
	Transactions									
2017	39.0	-73.4	-83.5	-6.6	-71.1	87.8	-96.1	-58.2	-61.2	-28.5
2018	40.5	51.2	-37.8	-4.9	16.0	77.9	89.0	32.3	16.2	23.6
2019	-28.2	107.3	-5.3	-3.0	27.5	88.1	310.1	11.0	-2.7	-2.5
2019 Q2	3.8	45.8	22.0	1.6	-0.6	22.7	99.9	45.3	-6.9	-4.5
Q3	14.6	12.7	-14.6	-1.0	4.8	23.6	93.5	15.8	6.9	7.4
Q4	-37.5	4.7	-1.4	-3.3	-14.3	23.7	-1.0	-29.5	-5.3	-10.9
2020 Q1	63.2	-50.0	-9.3	-2.9	-44.9	7.1	71.9	52.3	4.7	9.1
2019 Dec.	-18.9	-4.3	-5.6	-1.3	3.0	-0.5	-31.5	-38.3	-32.8	-37.7
2020 Jan.	22.1	-7.2	-2.7	-1.3	2.6	-5.8	43.2	-19.3	-7.8	-4.9
Feb.	45.0	0.5	-6.8	-0.6	-5.0	12.8	58.1	41.6	6.8	9.0
Mar.	-3.9	-43.3	0.1	-1.0	-42.5	0.2	-29.4	30.0	5.8	5.0
Apr.	107.9	-19.1	-5.6	-1.1	-1.3	-11.2	-63.1	38.4	4.0	7.0
May [p)]	77.7	15.5	5.8	-0.9	-9.1	19.7	1.7	-10.5	8.9	8.1
	Growth rates									
2017	12.6	-1.1	-4.0	-9.6	-3.4	3.4	-	-	-29.8	-23.5
2018	11.8	0.8	-1.9	-8.1	0.8	2.9	-	-	8.1	7.7
2019	-7.4	1.6	-0.3	-5.4	1.3	3.2	-	-	-1.5	-1.5
2019 Q2	12.6	2.2	-0.4	-1.3	3.1	3.4	-	-	5.1	6.7
Q3	-3.2	1.8	-0.3	-0.7	2.2	3.1	-	-	6.9	11.0
Q4	-7.4	1.6	-0.3	-5.4	1.3	3.2	-	-	-1.5	-1.5
2020 Q1	12.0	0.2	-0.2	-10.6	-2.5	2.7	-	-	-0.3	0.4
2019 Dec.	-7.4	1.6	-0.3	-5.4	1.3	3.2	-	-	-1.5	-1.5
2020 Jan.	-1.3	1.2	-0.1	-7.3	0.6	2.7	-	-	-11.5	-10.3
Feb.	4.3	0.9	-0.3	-8.5	-0.7	3.0	-	-	-7.6	-6.9
Mar.	12.0	0.2	-0.2	-10.6	-2.5	2.7	-	-	-0.3	0.4
Apr.	42.3	0.0	-0.4	-12.9	-2.2	2.0	-	-	-6.6	-4.9
May [p)]	63.1	0.1	0.0	-15.2	-2.6	2.4	-	-	-0.3	0.2

Source: ECB.

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

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

3) Not adjusted for seasonal effects.

6 Fiscal developments

6.1 Deficit/surplus

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

	Deficit (-)/surplus (+)					Memo item: Primary deficit (-)/ surplus (+)
	Total	Central government	State government	Local government	Social security funds	
	1	2	3	4	5	6
2016	-1.5	-1.7	0.0	0.2	0.1	0.7
2017	-1.0	-1.4	0.1	0.2	0.1	1.0
2018	-0.5	-1.0	0.1	0.2	0.3	1.4
2019	-0.6	-1.0	0.1	0.0	0.2	1.0
2019 Q1	-0.6	.	.	.	.	1.2
Q2	-0.7	.	.	.	.	1.1
Q3	-0.8	.	.	.	.	0.9
Q4	-0.6	.	.	.	.	1.0

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

6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure					Capital expenditure
			Direct taxes	Indirect taxes	Net social contributions				Compen-sation of employees	Intermediate consumption	Interest	Social benefits	
	1	2	3	4	5	6	7	8	9	10	11	12	13
2016	46.2	45.8	12.6	13.0	15.3	0.5	47.7	44.1	10.0	5.3	2.1	22.7	3.6
2017	46.2	45.8	12.8	13.0	15.2	0.4	47.2	43.4	9.9	5.3	1.9	22.5	3.8
2018	46.5	46.0	13.0	13.0	15.2	0.5	47.0	43.3	9.9	5.3	1.8	22.3	3.7
2019	46.5	46.0	13.0	13.1	15.1	0.5	47.1	43.4	9.9	5.3	1.6	22.5	3.7
2019 Q1	46.5	46.0	12.9	13.1	15.2	0.5	47.0	43.3	9.9	5.3	1.8	22.4	3.7
Q2	46.5	46.0	12.9	13.1	15.1	0.5	47.2	43.4	9.9	5.3	1.8	22.4	3.7
Q3	46.4	45.9	12.9	13.1	15.1	0.5	47.2	43.5	9.9	5.3	1.7	22.5	3.8
Q4	46.5	46.0	13.0	13.1	15.1	0.5	47.1	43.4	9.9	5.3	1.6	22.6	3.7

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

6.3 Government debt-to-GDP ratio

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

	Total [1]	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors	MFIs	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other curren-cies
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2016	90.0	3.3	15.7	71.0	47.5	30.9	42.5	9.4	80.7	17.9	29.9	42.3	87.9	2.1
2017	87.8	3.2	14.6	70.0	48.3	32.2	39.5	8.6	79.1	16.4	29.0	42.3	86.0	1.8
2018	85.8	3.1	13.8	68.9	48.1	32.5	37.8	8.0	77.8	16.0	28.4	41.4	84.4	1.5
2019	84.1	3.0	13.1	68.0	45.5	30.7	38.6	7.7	76.4	15.7	28.0	40.4	82.8	1.3
2019 Q1	86.5	3.1	13.6	69.7	.	.	.	.	.	.	.	.	.	.
Q2	86.3	3.1	13.5	69.7	.	.	.	.	.	.	.	.	.	.
Q3	86.0	3.2	13.3	69.4	.	.	.	.	.	.	.	.	.	.
Q4	84.2	3.0	13.1	68.1	.	.	.	.	.	.	.	.	.	.

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

1) A slight difference (0.1 percentage points of GDP) exists between the government debt-to-GDP ratio for 2019 and for the fourth quarter of 2019. This is explained by a difference between annual GDP and the four-quarter moving sum of GDP.

6 Fiscal developments

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

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

	Change in debt-to-GDP ratio [2)]	Primary deficit (+)/ surplus (-)	Deficit-debt adjustment								Interest-growth differential	Memo item: Borrowing requirement
			Total	Transactions in main financial assets					Revaluation effects and other changes in volume	Other		
				Total	Currency and deposits	Loans	Debt securities	Equity and investment fund shares				
	1	2	3	4	5	6	7	8	9	10	11	12
2016	-0.8	-0.7	0.2	0.3	0.3	-0.1	0.0	0.1	0.0	-0.1	-0.3	1.6
2017	-2.3	-1.0	-0.1	0.4	0.5	0.0	-0.2	0.1	-0.1	-0.4	-1.2	0.9
2018	-1.9	-1.4	0.4	0.5	0.4	-0.1	0.0	0.2	0.0	-0.1	-0.9	0.8
2019	-1.7	-1.0	0.1	0.2	0.0	0.0	0.1	0.2	-0.2	0.1	-0.8	0.9
2019 Q1	-1.3	-1.2	0.8	0.6	0.6	-0.2	0.0	0.2	0.1	0.1	-0.8	1.3
Q2	-1.0	-1.1	0.8	0.7	0.7	-0.1	0.0	0.2	0.1	0.0	-0.7	1.4
Q3	-1.2	-0.9	0.6	0.3	0.2	-0.1	0.0	0.2	-0.1	0.3	-0.9	1.4
Q4	-1.7	-1.0	0.1	0.2	0.0	0.0	0.1	0.2	-0.2	0.0	-0.9	0.9

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

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

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

6.5 Government debt securities [1)]

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

	Debt service due within 1 year [2)]					Average residual maturity in years [3)]	Average nominal yields [4)]						
	Total	Principal		Interest			Outstanding amounts					Transactions	
			Maturities of up to 3 months		Maturities of up to 3 months		Total	Floating rate	Zero coupon	Fixed rate		Issuance	Redemption
											Maturities of up to 1 year		
	1	2	3	4	5	6	7	8	9	10	11	12	13
2017	12.9	11.2	4.2	1.7	0.4	7.1	2.4	1.1	-0.2	2.8	2.3	0.3	1.1
2018	12.6	11.1	3.7	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9
2019	12.2	10.8	3.6	1.4	0.4	7.5	2.1	1.3	-0.1	2.4	2.1	0.3	1.1
2019 Q1	12.4	10.9	3.7	1.5	0.4	7.4	2.3	1.1	0.0	2.6	2.5	0.5	1.0
Q2	12.5	11.1	3.6	1.5	0.4	7.4	2.3	1.3	0.0	2.6	2.3	0.5	0.9
Q3	12.7	11.3	3.8	1.5	0.4	7.4	2.2	1.3	-0.1	2.5	2.1	0.3	1.0
Q4	12.2	10.8	3.6	1.4	0.4	7.5	2.1	1.3	-0.1	2.4	2.1	0.3	1.1
2019 Dec.	12.2	10.8	3.6	1.4	0.4	7.5	2.1	1.3	-0.1	2.4	2.1	0.3	1.1
2020 Jan.	12.2	10.9	4.1	1.4	0.4	7.5	2.1	1.3	-0.1	2.4	1.9	0.2	1.1
Feb.	12.0	10.7	4.1	1.3	0.3	7.6	2.1	1.2	-0.1	2.4	1.9	0.2	1.1
Mar.	12.3	11.0	4.1	1.3	0.3	7.5	2.0	1.2	-0.2	2.4	2.0	0.1	1.0
Apr.	13.1	11.8	4.5	1.3	0.3	7.5	2.0	1.2	-0.2	2.3	2.1	0.1	1.1
May	13.9	12.6	4.1	1.3	0.3	7.4	1.9	1.2	-0.2	2.3	2.1	0.1	1.1

Source: ECB.

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

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

3) Residual maturity at the end of the period.

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

6 Fiscal developments

6.6 Fiscal developments in euro area countries

(as a percentage of GDP; flows during one-year period and outstanding amounts at end of period)

	Belgium	Germany	Estonia	Ireland	Greece	Spain	France [1]	Italy	Cyprus
	1	2	3	4	5	6	7	8	9
	Government deficit (-)/surplus (+)								
2016	-2.4	1.2	-0.5	-0.7	0.5	-4.3	-3.6	-2.4	0.3
2017	-0.7	1.2	-0.8	-0.3	0.7	-3.0	-2.9	-2.4	2.0
2018	-0.8	1.9	-0.6	0.1	1.0	-2.5	-2.3	-2.2	-3.7
2019	-1.9	1.4	-0.3	0.4	1.5	-2.8	-3.0	-1.6	1.7
2019 Q1	-1.1	1.8	-0.9	0.0	0.4	-2.5	-2.7	-2.2	-5.1
Q2	-1.6	1.7	-0.9	0.4	0.6	-2.8	-3.0	-2.2	-4.9
Q3	-1.8	1.5	-1.0	0.5	0.6	-2.7	-3.3	-2.0	2.2
Q4	-1.9	1.4	-0.3	0.4	1.5	-2.8	-3.0	-1.6	1.7
	Government debt								
2016	104.9	69.2	10.2	73.8	178.5	99.2	98.0	134.8	103.4
2017	101.7	65.3	9.3	67.7	176.2	98.6	98.3	134.1	93.9
2018	99.8	61.9	8.4	63.5	181.2	97.6	98.1	134.8	100.6
2019	98.6	59.8	8.4	58.8	176.6	95.5	98.1	134.8	95.5
2019 Q1	103.1	61.7	7.8	65.3	182.0	98.6	99.6	136.4	103.1
Q2	102.3	61.1	9.1	63.9	179.5	98.6	99.6	137.8	107.0
Q3	102.1	61.1	9.0	62.5	178.1	97.5	100.4	137.1	97.8
Q4	98.6	59.8	8.4	58.8	176.6	95.5	98.4	134.8	95.5

	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Austria	Portugal	Slovenia	Slovakia	Finland
	10	11	12	13	14	15	16	17	18	19
	Government deficit (-)/surplus (+)									
2016	0.2	0.2	1.8	1.0	0.0	-1.5	-1.9	-1.9	-2.5	-1.7
2017	-0.8	0.5	1.3	3.3	1.3	-0.8	-3.0	0.0	-1.0	-0.7
2018	-0.8	0.6	3.1	1.9	1.4	0.2	-0.4	0.7	-1.0	-0.9
2019	-0.2	0.3	2.2	0.5	1.7	0.7	0.2	0.5	-1.3	-1.1
2019 Q1	-0.9	0.2	3.8	1.6	1.5	-0.1	-0.2	0.5	-1.0	-1.1
Q2	-1.4	0.0	3.9	1.1	1.5	0.3	0.1	0.5	-1.0	-1.3
Q3	-1.1	-0.3	3.0	0.5	1.3	0.3	-0.1	0.6	-1.1	-2.0
Q4	-0.2	0.3	2.2	0.5	1.7	0.7	0.2	0.5	-1.3	-1.1
	Government debt									
2016	40.9	39.7	20.1	55.5	61.9	82.9	131.5	78.7	52.0	63.2
2017	39.3	39.1	22.3	50.3	56.9	78.3	126.1	74.1	51.3	61.3
2018	37.2	33.8	21.0	45.6	52.4	74.0	122.0	70.4	49.4	59.6
2019	36.9	36.3	22.1	43.1	48.6	70.4	117.7	66.1	48.0	59.4
2019 Q1	38.6	33.8	20.7	46.3	50.8	72.7	123.4	68.1	49.3	59.5
Q2	37.5	35.9	20.3	45.7	50.9	71.8	120.8	67.7	48.6	61.5
Q3	37.1	35.7	20.0	43.4	49.2	71.1	120.2	68.1	48.4	60.2
Q4	36.9	36.3	22.1	43.1	48.6	70.4	117.7	66.1	48.0	59.4

Source: Eurostat.

1) A slight difference (0.3 percentage points of GDP) exists between the government debt-to-GDP ratio for 2019 and for the fourth quarter of 2019. This is explained by a difference between annual GDP and the four-quarter moving sum of GDP.

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For specific terminology please refer to the ECB glossary (available in English only).

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