



EUROPEAN CENTRAL BANK
EUROSYSTEM

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Update on economic and monetary developments

Summary

The incoming information that has become available since the Governing Council's decision to end net asset purchases in December 2018 has continued to be weaker than expected on account of softer external demand and some country and sector-specific factors. In particular, the persistence of uncertainties relating to geopolitical factors and the threat of protectionism is weighing on economic sentiment.

At the same time, supportive financing conditions, favourable labour market dynamics and rising wage growth continue to underpin the euro area expansion and gradually rising inflation pressures. This underlying strength of the economy supports the Governing Council's confidence in the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term. Nevertheless, significant monetary policy stimulus remains essential to support the further build-up of domestic price pressures and headline inflation developments over the medium term. This will be provided by the Governing Council's forward guidance on the key ECB interest rates, reinforced by the reinvestments of the sizeable stock of acquired assets. The Governing Council confirmed that it stands ready to adjust all of its instruments, as appropriate, to ensure that inflation continues to move towards the Governing Council's inflation aim in a sustained manner.

The global economic growth momentum has slowed recently amid geopolitical uncertainties and vulnerabilities in emerging markets. Global trade decelerated towards the end of 2018 as downside risks related to unresolved trade disputes remained prominent and growth in emerging markets slowed down. While financial conditions are favourable overall, the weaker global growth momentum has fuelled stock market volatility. A more accommodative monetary policy stance has been taken in China in the light of the slowing growth momentum.

Euro area government bond yields declined somewhat as global risk-free rates decreased and sovereign bond spreads in the euro area remained stable. Despite heightened intra-period volatility, equity prices in the euro area stayed, overall, broadly unchanged. Similarly, yield spreads on corporate bonds increased only modestly. In foreign exchange markets, the euro depreciated in trade-weighted terms.

Euro area real GDP increased by 0.2%, quarter on quarter, in the third quarter of 2018, following growth of 0.4% in the previous two quarters. Incoming data have continued to be weaker than expected resulting from a slowdown in external demand which was compounded by several country and sector-specific factors. While the impact of some of these factors is expected to fade, the near-term growth momentum is likely to be weaker than previously anticipated. Looking ahead, the euro area expansion will continue to be supported by favourable financing conditions, further employment

gains and rising wages, lower energy prices, and the ongoing – albeit somewhat slower – expansion in global activity.

Euro area annual HICP inflation declined to 1.6% in December 2018, from 1.9% in November, reflecting mainly lower energy price inflation. On the basis of current futures prices for oil, headline inflation is likely to decline further over the coming months. Measures of underlying inflation remain generally muted, but labour cost pressures are continuing to strengthen and broaden amid high levels of capacity utilisation and tightening labour markets. Looking ahead, underlying inflation is expected to increase over the medium term, supported by the ECB's monetary policy measures, the ongoing economic expansion and rising wage growth.

Overall, the risks surrounding the euro area growth outlook have moved to the downside on account of the persistence of uncertainties related to geopolitical factors and the threat of protectionism, vulnerabilities in emerging markets and financial market volatility.

The monetary analysis shows that broad money (M3) growth decreased to 3.7% in November 2018, after 3.9% in October. M3 growth continues to be backed by bank credit creation. The narrow monetary aggregate M1 remained the main contributor to broad money growth. The annual growth rate of loans to non-financial corporations stood at 4.0% in November 2018, after 3.9% in October, while the annual growth rate of loans to households remained broadly unchanged at 3.3%. The euro area bank lending survey for the fourth quarter of 2018 suggests that overall bank lending conditions remained favourable, following an extended period of net easing, and demand for bank credit continued to rise, thereby underpinning loan growth.

The outcome of the economic analysis and the signals coming from the monetary analysis confirmed that an ample degree of monetary accommodation is still necessary for the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

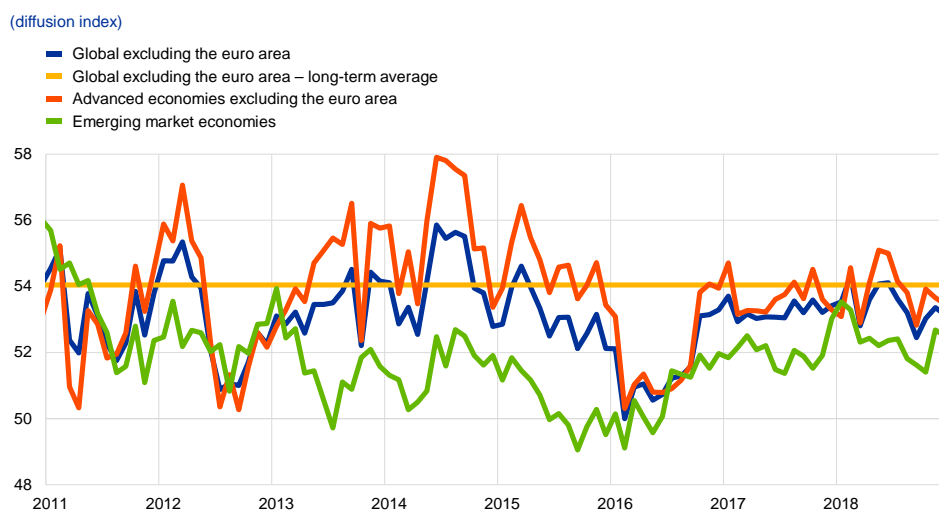
Based on this assessment, the Governing Council decided to keep the key ECB interest rates unchanged and continues to expect them to remain at their present levels at least through the summer of 2019, and in any case for as long as necessary to ensure the continued sustained convergence of inflation to levels that are below, but close to, 2% over the medium term.

Regarding non-standard monetary policy measures, the Governing Council confirmed that the Eurosystem will continue to reinvest, in full, the principal payments from maturing securities purchased under the asset purchase programme for an extended period of time past the date when the Governing Council 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.

1 External environment

Economic indicators signal a moderation in global growth momentum. The global composite output Purchasing Managers' Index (PMI) excluding the euro area weakened in late 2018 (see Chart 1), mainly owing to a continued deceleration in global manufacturing activity. The services sector remained more resilient than manufacturing, notwithstanding some volatility in the figures. Consumer confidence has declined recently, albeit from high levels.

Chart 1
Global composite output PMI



Sources: Haver Analytics, Markit and ECB calculations.
Notes: The latest observations are for December 2018. "Long-term average" refers to the period from January 1999 to December 2018.

Downside risks to global activity have been increasing and a further escalation of trade disputes could weigh on global growth. While the postponement of further tariff increases by the United States and China has sent a positive signal, considerable uncertainty remains as to whether the negotiations will lead to a significant de-escalation of US-Chinese trade tensions. Other downside risks relate to a faster tightening of global financial conditions and broader stress in emerging markets, uncertainties regarding China's economic prospects, as well as political and geopolitical uncertainties, including risks related to Brexit.

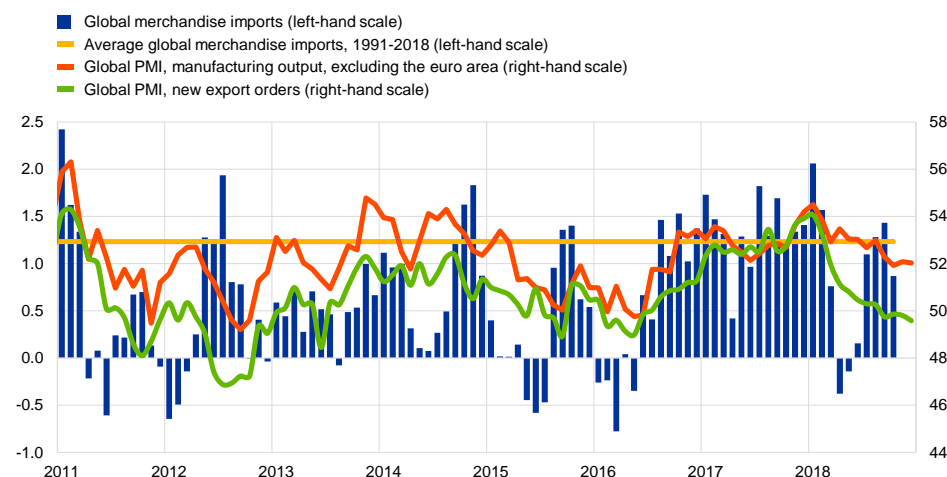
Financial conditions remain accommodative overall, while concerns over US and global economic activity have fuelled stock market volatility. In China, fiscal policy and monetary policy have eased in response to a weakening, in particular, of the manufacturing sector. Market expectations of further interest rate increases in the United States have eased somewhat, amid a further decline in Treasury yields, partly reflecting developments in term premia. Looking ahead, the Federal Open Market Committee (FOMC) is proceeding with its gradual policy normalisation, albeit against a more cautious economic outlook and a slightly lower interest rate path projection.

Global trade momentum decelerated towards the end of 2018. Global merchandise imports weakened in October, while in December the global PMI for new export orders pointed, for the fourth consecutive month, to a contraction (see Chart 2).

Overall, data suggest that trade tensions between the United States and China may be affecting manufacturing sentiment and adversely impacting global trade growth.

Chart 2
Surveys and global trade in goods

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



Sources: Markit, CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations.
Note: The latest observations are for October 2018 for global merchandise imports and December 2018 for the PMIs.

Global inflation slowed in November. Annual consumer price inflation in the countries of the Organisation for Economic Co-operation and Development (OECD) moderated to 2.7% in November, largely as a result of easing energy prices, while inflation excluding food and energy decreased marginally to 2.2%. Global inflationary pressures are expected to remain contained. Wage growth in advanced economies continues to be moderate, despite a tightening of labour markets and rising capacity constraints.

Oil markets have remained broadly stable. Oil prices declined in the fourth quarter of 2018, mainly on account of oversupply fears related to the waivers on the US sanctions on Iranian oil exports, coupled with continued high production growth in the United States. These effects initially outweighed the possible price effects of production cuts by OPEC and a group of allied oil-producing nations, particularly because market uncertainty persisted regarding the cuts agreed on 7 December 2018. However, prices recovered after data releases indicated lower than expected production levels, and Brent crude oil prices stood at USD 61 per barrel on 22 January. Non-oil commodity prices have increased slightly, mainly on the back of food price increases.

The US economy recorded strong growth in 2018, in the context of a pro-cyclical fiscal stimulus, but lower confidence and weaker than expected data have clouded the growth outlook. Real GDP growth expanded at an annualised rate of 3.4% in the third quarter of 2018 – well above potential – albeit slowing from 4.2% in the previous quarter on the back of declining net exports and decelerating private fixed investment. The US government shutdown has added to the uncertainty generated by US trade policy in respect of China and is (temporarily) weighing on US economic activity in the near term. Headline consumer price inflation

declined to 1.9% in December due to a sharp deceleration in energy prices, while average hourly earnings remained strong. Against this background, the FOMC raised the federal funds rate target range at its December 2018 meeting by 25 basis points, as expected, and slightly lowered its projections for GDP growth and core inflation for the next years.

In Japan, real GDP for the fourth quarter of 2018 is set to return to positive growth, but inflation remains weak. Volatility in GDP in 2018 was mainly due to the impact of natural disasters and extreme weather conditions. Looking ahead, the economy is expected to remain on a moderate growth path, supported by highly accommodative monetary policy and the domestic capital expenditure cycle. The reflation momentum in the economy has weakened, with headline inflation declining significantly in December due to the recent softening of oil and food prices.

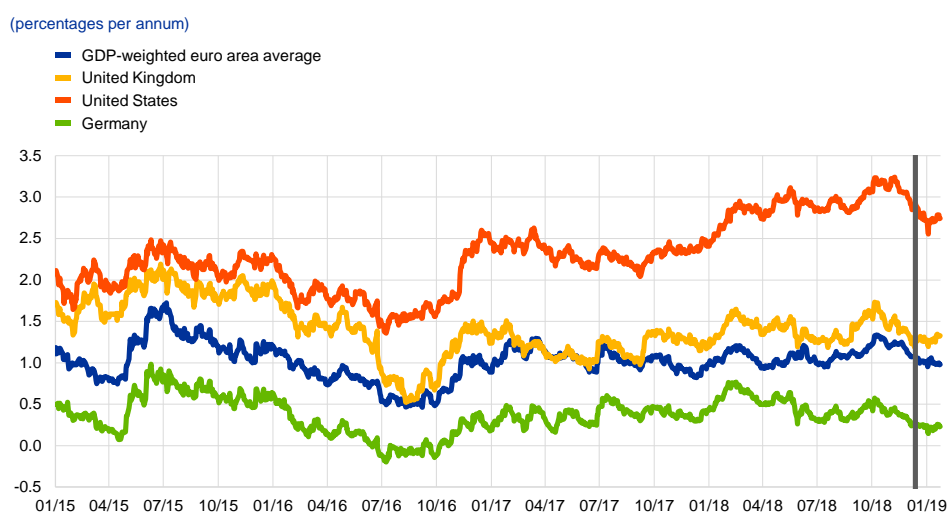
In the United Kingdom, growth looks set to decline after a robust outturn in the third quarter of 2018. The strong quarter-on-quarter growth of 0.6% in the third quarter reflected a temporary boost to consumption and public investment, as well as a strong rebound in exports. However, business investment fell for the third consecutive quarter. Overall, activity is expected to remain muted in the medium term. Annual CPI inflation decreased slightly to 2.1% in December, resulting in a fourth quarter average of 2.3%, following strong declines in previous months.

The Chinese economy is losing growth momentum, with the manufacturing sector in particular showing signs of weakening. In December 2018, the manufacturing PMI dropped below 50 for the first time since 2017, while the services sector – less exposed to the US trade tensions – was more resilient. The People's Bank of China enacted new policies to cushion the slowdown, including a 100-basis point reduction in the required reserve ratio in early January and a new lending facility to support small firms in December. New fiscal policy measures are also expected, although fiscal spending by local governments may face constraints. Annual headline CPI inflation fell to 1.9% in December, reflecting a lower contribution from non-food items, while core inflation remained steady. Producer price index inflation decelerated sharply to 0.9% in the same month in response to lower oil and commodity prices, and also to the slowdown in Chinese manufacturing activity.

2 Financial developments

Long-term yields have declined in the euro area and in the United States. During the period under review (from 13 December 2018 to 23 January 2019), the GDP-weighted euro area ten-year sovereign bond yield fell to 0.98% (down 9 basis points) as global risk-free rates decreased and intra-period financial market volatility increased (see Chart 3). In the United States, the ten-year sovereign bond yield fell by 16 basis points to 2.74%, while in the United Kingdom the ten-year sovereign bond yield rose by 2 basis points to 1.33%.

Chart 3
Ten-year sovereign bond yields



Sources: Thomson Reuters and ECB calculations.
Notes: Daily data. The vertical grey line denotes the start of the review period on 13 December 2018. The latest observation is for 23 January 2019.

Euro area sovereign bond spreads relative to the risk-free OIS rate are broadly unchanged. Spreads for Spanish and Portuguese sovereign bonds were broadly unchanged during the review period, at 72 basis points and 100 basis points respectively. Italian spreads decreased by 8 basis points but remained at elevated levels around 2.17%. German spreads increased by 6 basis points to -0.37% and French spreads increased by 1 basis point to 0.04%.

Broad indices of euro area equity prices are, overall, broadly unchanged despite heightened market volatility around the turn of the year. Over the review period, equity prices of euro area banks and non-financial corporations increased by around 1%. Elevated levels of global uncertainty, coupled with negative macroeconomic surprises, led to a broad-based sell-off across jurisdictions and a heightened level of volatility, exacerbated by temporarily low liquidity around the turn of the year. Thereafter, equity markets partly recovered from earlier losses and volatility became more muted.

Euro area corporate bond spreads widened somewhat over the review period. Since December the spread on investment-grade NFC bonds relative to the risk-free rate has increased by around 2 basis points to stand at 95 basis points. Yields on

financial sector debt have also increased slightly, resulting in a widening of the spread of around 2 basis points to 120 basis points. Overall, despite a gradual increase in 2018, corporate bond spreads still remain below the levels observed in March 2016, prior to the announcement and subsequent launch of the corporate sector purchase programme.

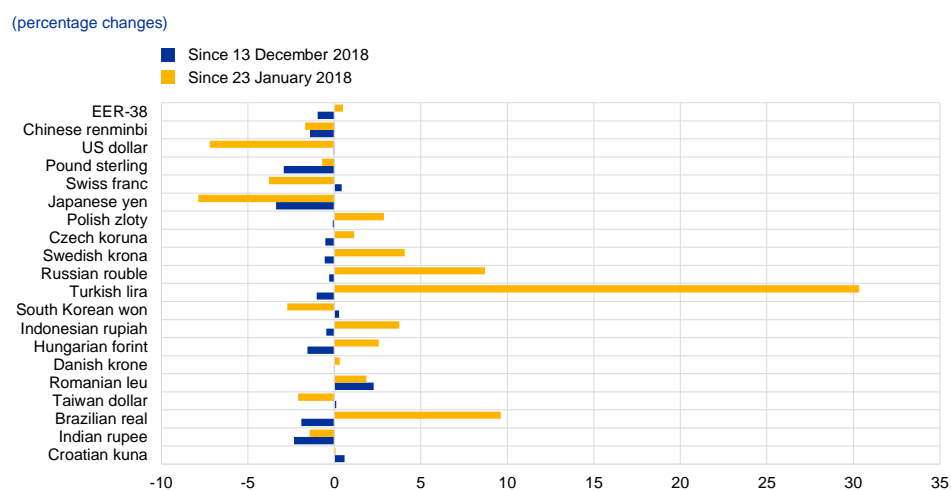
The euro overnight index average (EONIA) was, on average, -36 basis points over the review period. Excess liquidity declined by around €43 billion to around €1,847 billion. This decline was mainly driven by an increase in net autonomous factors and, to a lesser extent, early repayments in the second series of targeted longer-term refinancing operations (TLTRO-II).

The EONIA forward curve shifted downwards somewhat over the review period. The curve remains below zero for horizons prior to 2021, reflecting market expectations of a prolonged period of negative interest rates.

In foreign exchange markets, the euro has depreciated in trade-weighted terms (see Chart 4). Over the review period the nominal effective exchange rate of the euro, measured against the currencies of 38 of the euro area’s most important trading partners, depreciated by 1.0%. This resulted from a broad-based depreciation of the euro against most major currencies. In particular, the euro depreciated against the Japanese yen (by 3.4%) and the British pound (by 2.9%), while it was broadly unchanged against the US dollar. The euro also weakened against the Chinese renminbi (by 1.4%) and the currencies of other major emerging economies, including the Turkish lira, the Brazilian real and the Russian rouble, which continued to recover some of their previous losses.

Chart 4

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



Source: ECB.

Notes: "EER-38" is the nominal effective exchange rate of the euro against the currencies of 38 of the euro area's most important trading partners. All changes have been calculated using the foreign exchange rates prevailing on 23 January 2019.

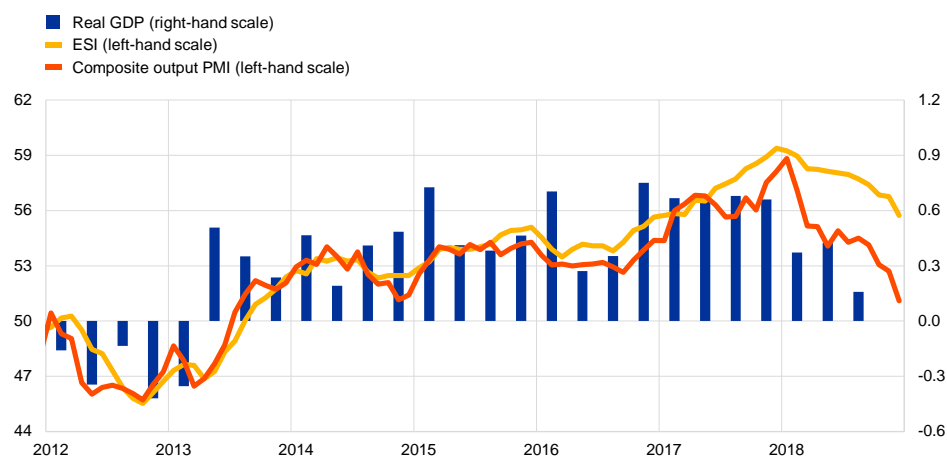
3 Economic activity

Incoming information has surprised on the downside. Real GDP increased by 0.2%, quarter on quarter, in the third quarter of 2018, following growth of 0.4% in the two previous quarters (see Chart 5). Domestic demand and changes in inventories made positive contributions to the third quarter outcome, whereas net trade contributed negatively to GDP growth. Economic indicators point to ongoing but continued moderate growth in the final quarter of last year.

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 growth)



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 third quarter of 2018 for real GDP and December 2018 for the ESI and the PMI.

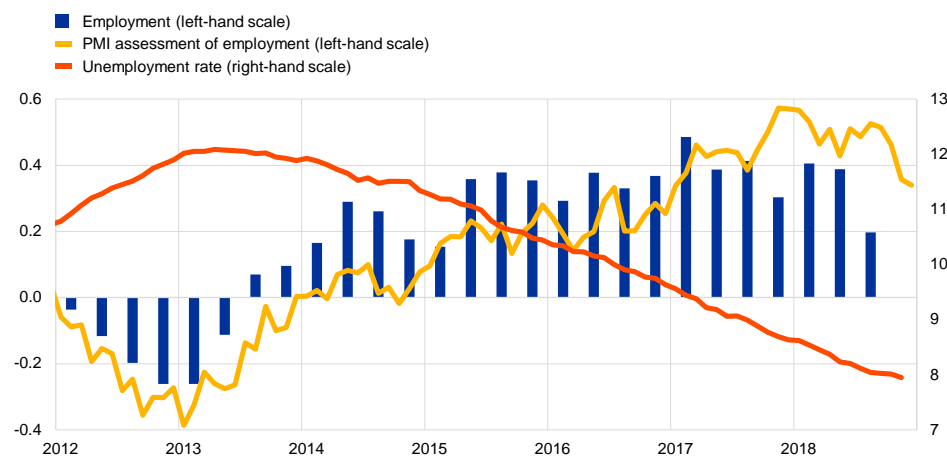
Employment continued to increase in the third quarter of the year, rising by 0.2%, quarter on quarter (see Chart 6). The level of employment currently stands 2.6% above the pre-crisis peak recorded in the first quarter of 2008. Employment increased in most euro area countries and the increase was also broadly based across sectors. With the latest increase, cumulative employment growth in the euro area since the trough in the second quarter of 2013 amounts to 9.6 million persons. Continuing employment growth in combination with the decline in GDP growth in 2018 has translated into a moderation in productivity growth, following a modest pick-up in 2017.

Looking ahead, short-term indicators point to continued positive employment growth in the coming quarters, although it is likely to be slower than before. The euro area headline unemployment rate declined to 7.9% in November – the lowest level seen since October 2008 – after being flat for three months (see Chart 6). Survey indicators weakened in the last quarter of 2018, and point to weaker employment growth in the coming quarters, though still in a positive range.

Chart 6

Euro area employment, PMI assessment of employment and unemployment

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



Sources: Eurostat, Markit and ECB calculations.

Notes: The Purchasing Managers' Index (PMI) is expressed as a deviation from 50 divided by 10. The latest observations are for the third quarter of 2018 for employment, December 2018 for the PMI and November 2018 for the unemployment rate.

Rising employment continued to support household income and consumer spending. Private consumption rose by 0.1%, quarter on quarter, in the third quarter of 2018, following a similar rate of expansion in the previous quarter. Temporary bottlenecks in car production following the introduction of the new Worldwide Harmonised Light Vehicle Test Procedure (WLTP) had an adverse impact on economic activity and, in particular, the consumption of durable goods. Growth of consumption of non-durable goods, i.e. food and energy, also slowed down. As this component of consumer spending has arguably been more sensitive to past increases in oil prices, and oil prices weakened in the fourth quarter, its weakness is also to some extent of a more temporary nature. By contrast, in line with strong growth in the real compensation of employees, consumption of services, the largest component of consumer spending, remained robust.

Despite the recent deceleration in growth, private consumption is expected to regain momentum going forward. Recent data on the volume of retail sales and new passenger car registrations point to slow but steady growth in consumer spending in the fourth quarter of 2018. Other indicators, however, support the picture of more resilient consumption dynamics. The latest survey results signal further labour market improvements, which should continue to support household income and consumer spending. Moreover, households' net worth continued to increase at robust rates in the third quarter. Although consumer confidence has been on a broadly declining trend since the end of 2017, it still stands above its long-term average.

Following a strong second quarter in 2018, investment growth slowed in the third quarter. Following a rate of 1.8%, quarter on quarter in the second quarter, non-construction investment grew by 1.2% in the third quarter, driven by machinery and equipment, intellectual property products (IPP) and transport equipment. The decline in growth would have been stronger had it not been for a special effect associated with R&D and IPP investment in Ireland. Quarterly growth in construction

investment moderated to 0.2%, supported by dynamic residential investment growth at 0.7%. For the fourth quarter of 2018, short-term indicators point to continued growth. In October and November monthly data on capital goods production stood on average at the same level as in the third quarter, when growth was 0.9% on a quarterly basis, which points to a further slowdown in non-construction growth. Indicators such as capacity utilisation, confidence and new orders are also consistent with slower growth in the fourth quarter. With regard to construction investment, construction production contracted in October and November, while PMI and confidence indices for the construction sector up to December still pointed to continued – but moderating – growth in the fourth quarter of 2018.

Investment is expected to continue to grow, though at a slowing pace. The slightly declining path expected for non-construction investment growth will be driven by weakening domestic and foreign demand as well as decreasingly favourable financial conditions. Also profits, which are firms' main source of funding for investment, seem to be growing at a declining rate. According to the euro area sectoral accounts for the third quarter of 2018, non-financial corporations' gross operating surplus slowed strongly in year-on-year terms. Moreover, uncertainties surrounding Brexit, trade protectionism and the general outlook for global growth, inter alia, may already be proving unfavourable to investment decisions. As regards construction investment, households' increasing intentions to buy or renovate, constructors' buoyant price and employment expectations, and stable issuance of building permits, amid persistent limits from labour shortages and insufficient demand, point to a positive – but softening – momentum in the construction sector going forward.

After disappointing in the third quarter, growth in euro area foreign trade appears set to decline further in the fourth quarter of 2018. The pace of euro area export growth slowed down substantially (to 0.1%) in the third quarter, whereas growth in imports eased (to 1.0%). As a result net trade exerted a drag on economic activity with a large negative contribution to GDP growth (of 0.4 percentage point). Based on information up to November, euro area foreign trade is assessed as having further weakened in the fourth quarter, reflecting a moderation in growth in intra-euro area trade amid weak foreign demand. The expansion of export volumes of goods (obtained by deflating trade values by producer price indices) remained very moderate (at 0.8%, quarter on quarter), while import growth is likely to have undergone a correction (to -0.8%) in the fourth quarter. Survey indicators with leading properties for trade, such as the Purchasing Managers' Index (PMI) for new manufacturing export orders and the European Commission's assessment of export order book levels, also anticipate a gloomier outlook towards the end of the year.

Incoming data have been weaker than expected, reflecting a diminishing contribution from external demand and some country and sector-specific factors. While some of these factors are likely to unwind, this may suggest some slower growth momentum ahead. Following growth of close to zero in October, industrial production (excluding construction) declined by 1.7%, month on month, in November. As a result, on average over these two months production stood 0.7% below the level seen in the third quarter of 2018, when it declined by 0.1% on a

quarterly basis. The weak November outcome was broadly based across the main industrial groupings as well as the largest euro area countries. More timely survey data signal continued moderate growth, but at rates lower than those seen during the first half of last year. The composite output PMI averaged 52.3 in the fourth quarter of 2018, compared with 54.3 in the third quarter, while the European Commission's Economic Sentiment Indicator (ESI) eased to 108.8 from 111.5 between the same quarters (see Chart 5). While the ESI has continued to stand above its long-term average, the PMI is now below its historical average.

Looking ahead, the euro area expansion will continue to be supported by favourable financing conditions. In addition, growth should also be underpinned by further employment gains and rising wages, lower energy prices, and the ongoing – albeit somewhat slower – expansion in global activity. Box 2 elaborates further on factors that are expected to either underpin or adversely affect domestic activity going forward. The results of the latest round of the [ECB Survey of Professional Forecasters](#), conducted in early January, show that the GDP growth forecasts made by the private sector were revised downwards for 2019 and 2020 compared with the previous round, conducted in early October.

The risks surrounding the euro area growth outlook have moved to the downside. The more negative risk assessment reflects the persistence of uncertainties related to geopolitical factors and the threat of protectionism, vulnerabilities in emerging markets, and financial market volatility.

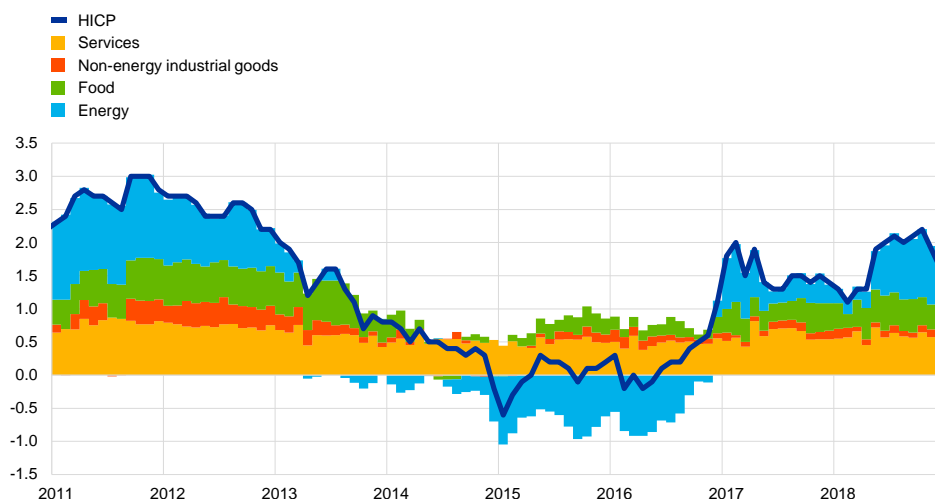
4 Prices and costs

Euro area annual HICP inflation was 1.6% in December 2018, down from 1.9% in November (see Chart 7). This decrease mainly reflected lower energy price inflation and also, to a lesser extent, lower food price inflation. The decline in headline inflation since its peak in October 2018 was largely due to energy inflation, which was pushed down by a base effect and the impact of recent declines in oil prices. The decline in oil prices and the corresponding futures prices after mid-November was more substantial than had been expected in the December 2018 Eurosystem staff projections. This mechanically implies a weaker short-run outlook for headline inflation (see the box entitled “The mechanical impact of changes in oil price assumptions on projections for euro area HICP energy inflation” in this issue of the Economic Bulletin).

Chart 7

Contributions of components of euro area headline HICP inflation

(annual percentage changes; percentage point contributions)



Sources: Eurostat and ECB calculations.
Note: The latest observations are for December 2018.

Measures of underlying inflation have been moving sideways recently but stand above earlier lows. HICP inflation excluding energy and food was 1.0% in December, unchanged from November. The same holds for HICP inflation excluding energy, food and highly volatile components, such as travel-related items, clothing and footwear. In recent months broadly sideways developments were also evident in two model-based measures of underlying inflation, the Persistent and Common Component of Inflation indicator and the Supercore indicator. Nonetheless, each of the statistical and model-based measures remained higher than their respective lows in 2016.

Supply chain price pressures for HICP non-energy industrial goods remained resilient despite further weakness in the early stages of the chain. Price pressures in the early stages continued to weaken; the annual rate of change of oil prices in euro was -4.9% in December, down from 9.7% in November and 43.8% in October, and the annual rate of change of raw material prices was 0.4% in December, down from 4.8% and 6.2% the previous two months. In the later stages of the supply

chain, import price inflation for non-food consumer goods continued to strengthen in November, and so remained substantially higher than its lows in early 2018. Domestic producer price inflation for non-food consumer goods increased further to 0.9% in November, its highest rate since April 2012, and above its long-term average of 0.6%. Overall, price pressures in the later stages of the supply chain for industrial goods remained steady, albeit with a risk of the continued weakness in the early stages filtering through.

Rising labour cost pressures did not translate into further increases in overall domestic price pressures recently as they were buffered by profit margins.

Price pressures from labour costs continued to intensify in the third quarter of 2018 due to higher growth in compensation per employee as well as weaker growth in productivity. Still, the annual percentage change in the GDP deflator remained stable at 1.4% in the first three quarters of 2018, as the overall weakening in the cyclical momentum of the economy, together with deteriorations in the terms of trade (related particularly to the past increases in oil prices), weighed on profit margin developments. These latest developments in the GDP deflator and its decomposition are characteristic of a more mature phase of a demand-driven recovery¹.

Both market-based and survey-based measures of longer-term inflation expectations declined.

The five-year forward inflation-linked swap rate five years ahead stood at 1.54% on 23 January 2019, around 9 basis points lower than the level that prevailed in mid-December. The forward profile of market-based measures of inflation expectations continues to point towards a prolonged period of low inflation with a very gradual return to inflation levels below, but close to, 2% (see Chart 8). The risk-neutral probability of negative average inflation over the next five years implied by inflation options markets remains negligible, which suggests that markets currently consider the risk of deflation to be very low. The results of the ECB [Survey of Professional Forecasters \(SPF\) for the first quarter of 2019](#) show average headline inflation expectations for the euro area of 1.5% in 2019, 1.6% in 2020 and 1.7% in 2021. This represents downward revisions of 0.2 and 0.1 percentage point to 2019 and 2020, respectively, compared with the previous survey, mainly attributable to oil price developments. According to the SPF, average longer-term inflation expectations were 1.8%, a downward revision of 0.1 percentage point.

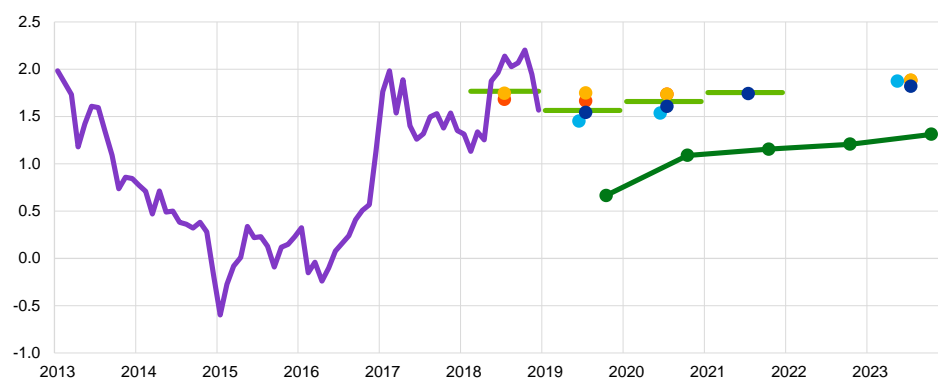
¹ See the box entitled [“The role of wages in the pick-up of inflation”](#) Economic Bulletin, Issue 5, ECB, 2018.

Chart 8

Market and survey-based measures of inflation expectations

(annual percentage changes)

- SPF Q1 2019
- SPF Q4 2018
- SPF Q3 2018
- Eurosystem staff macroeconomic projections (December 2018)
- Consensus Economics forecasts (17 January 2019)
- Market-based measures of inflation expectations (January 2019)
- HICP



Sources: ECB Survey of Professional Forecasters (SPF), Eurosystem staff macroeconomic projections for the euro area and Consensus Economics.

Notes: The SPF survey for the first quarter of 2019 was conducted between 7 and 11 January 2019. 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-implied inflation are for 23 January 2019.

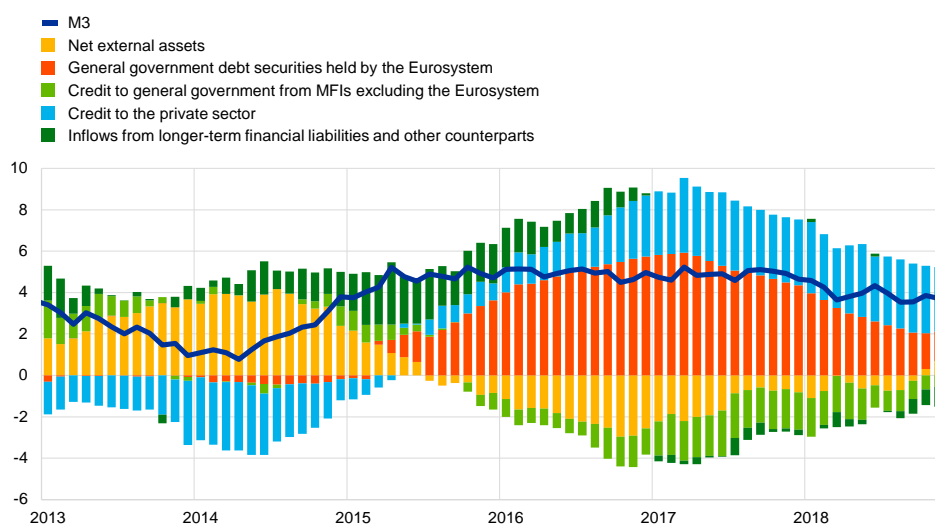
Residential property prices in the euro area continued to rise in the third quarter of 2018. According to the ECB's residential property price indicator, prices for houses and flats in the euro area increased by 4.3% year on year in the third quarter of 2018, compared with 4.2% and 4.3% in the second and first quarters of 2018 respectively. The data for the first three quarters of 2018 thus imply a sideways movement at robust rates of growth.

5 Money and credit

Broad money growth moderated in November. The annual growth rate of M3 decreased to 3.7% in November from 3.9% in October (see Chart 9). The reduction in net asset purchases (from €80 billion to €60 billion in April 2017, to €30 billion in January 2018, and then to €15 billion in October 2018) has led to a smaller positive impact of the APP on M3 growth. The annual growth rate of M1, which again made a significant contribution to broad money growth, decreased to 6.7% in November (down from 6.8% in October). Money growth continued to be bolstered by sustained economic expansion and the low opportunity cost of holding the most liquid instruments in an environment of very low interest rates.

Chart 9
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 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 November 2018.

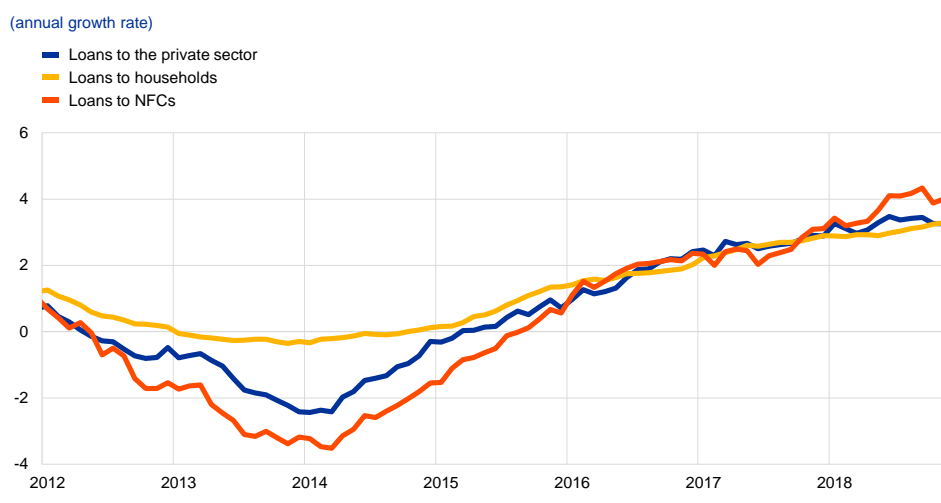
Credit to the private sector remained the largest driver of broad money growth.

From a counterpart perspective, the positive contribution to M3 growth from general government securities held by the Eurosystem decreased further (see the red bars in Chart 9) in the context of the aforementioned reduction in monthly net purchases under the APP. It has been largely offset by a moderate increase in the contribution from credit to the private sector since late 2017 (see the blue bars in Chart 9). This marks an ongoing shift towards more self-sustained sources of money creation, with credit to the private sector surpassing Eurosystem purchases of general government debt securities as the largest contributor to M3 growth since October 2018. By contrast, government bond sales by euro area monetary financial institutions (MFIs) excluding the Eurosystem dampened M3 growth (see the light green bars in Chart 9). Finally, the contribution from net external assets (see the yellow bars in Chart 9) was again positive in November.

The annual growth of loans to the private sector remained stable in November.

The annual growth rate of MFI loans to the private sector (adjusted for loan sales, securitisation and notional cash pooling) was unchanged in November at 3.3% (see Chart 10). It benefited from increases in the annual growth rate of loans to NFCs, which increased from 3.9% in October to 4.0% in November, and of loans to households, which increased from 3.2% in October to 3.3% in November. These slight increases in loans to NFCs and households were offset by a decrease in the annual growth rate of loans to financial intermediaries, leading to no change in the growth rate of loans to the private sector overall. While the annual growth rate of loans to households for house purchase remained moderate from a historical perspective, loan origination was strong. The recovery in loan growth has been supported by the significant decline in bank lending rates across the euro area since mid-2014 (notably owing to the ECB's non-standard monetary policy measures) and by overall improvements in the supply of, and demand for, bank loans. In addition, banks have made progress in consolidating their balance sheets, although the volume of non-performing loans (NPLs) remains high in some countries and may constrain financial intermediation.²

Chart 10
Loans to the private sector



Source: ECB.
Notes: Loans are adjusted for loan sales, securitisation and notional cash pooling. The latest observation is for November 2018.

Loan growth continued to be supported by favourable bank lending conditions and increasing loan demand across all loan categories.

According to the January 2019 [euro area bank lending survey](#), credit standards for loans to enterprises and loans to households for house purchase remained broadly unchanged in the fourth quarter of 2018. These developments follow a considerable overall net easing of credit standards since 2014. Competitive pressures continued to contribute to an easing of credit standards for loans to enterprises and housing loans, while lower risk perceptions only contributed to an easing of credit standards for housing loans. Increasing net loan demand is largely due to the low general level of interest rates, fixed investment, inventories and working capital, merger and acquisition activity,

² See also Chapter 3 of the “[Financial Stability Review](#)”, ECB, November 2018.

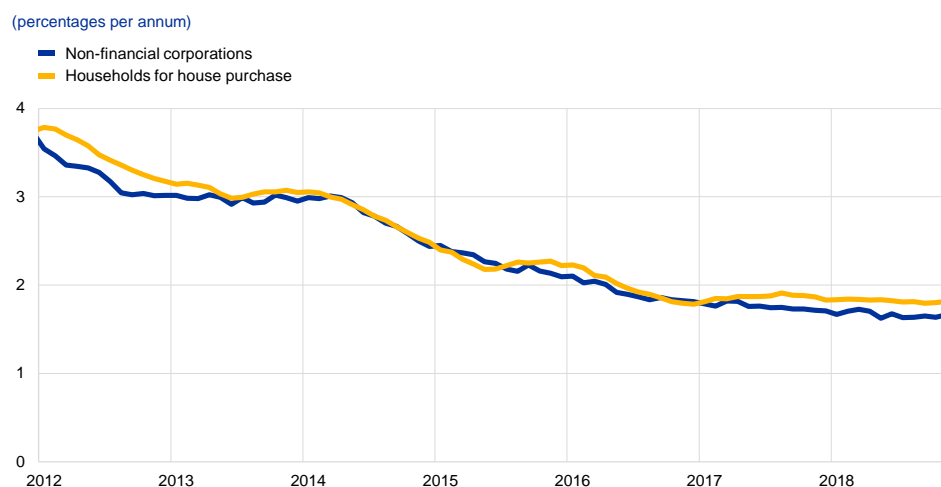
favourable housing market prospects and consumer confidence. Euro area banks also reported that regulatory or supervisory actions led to a further strengthening of their capital positions in the second half of 2018 and a tightening of their credit standards across all loan categories. With regard to the impact of NPL ratios on lending policies, euro area banks reported that these ratios had a tightening impact on their credit standards for loans to enterprises and housing loans over the past six months, which is expected to persist and to affect all loan categories.

Very favourable lending rates continued to support euro area economic growth.

In November 2018 the composite bank lending rate for loans to NFCs remained broadly stable at 1.66%, which is close to its historical low in May 2018. The composite bank lending rate for housing loans remained stable in November at 1.81%, also close to its historical low in December 2016 (see Chart 11). Composite bank lending rates for loans to NFCs and households have fallen significantly and by more than market reference rates since the ECB's credit easing measures were announced in June 2014. The reduction in bank lending rates for loans to NFCs, as well as for loans to small firms (assuming that very small loans of up to €0.25 million are primarily granted to small firms), was particularly significant in those euro area countries that were most exposed to the financial crisis. This indicates a more uniform transmission of monetary policy to bank lending rates across euro area countries and firm sizes.

Chart 11

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 November 2018.

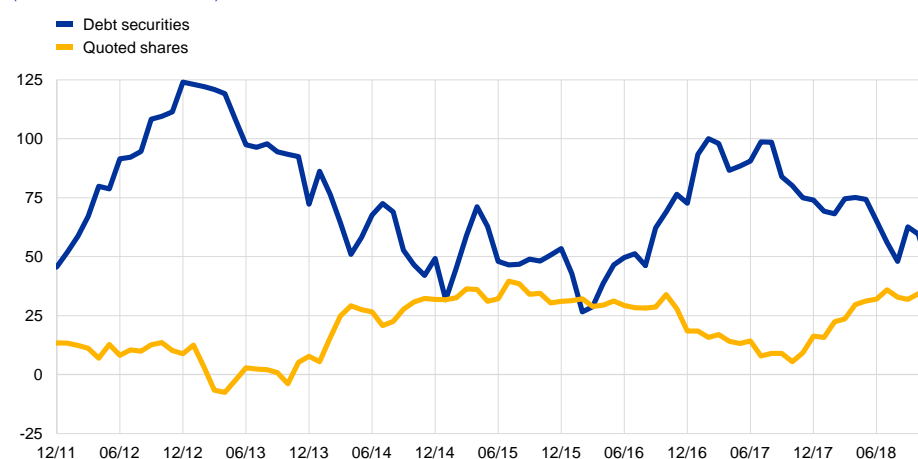
Net issuance of debt securities by euro area NFCs decreased slightly in the first two months of the fourth quarter of 2018 after increasing moderately in the same months of the previous quarter. The latest ECB data indicate that, on a net basis, the total flow of debt securities issued by NFCs in October and November 2018 was marginally negative. This contrasts with the typical seasonal patterns observed over the last few years, in which weakness in issuance has tended to be concentrated in the last month of the fourth quarter. From a more medium-term perspective (see Chart 12), the annual flows of debt securities continued to decrease. They reached

€44 billion in November 2018, following a drop of €30 billion over the previous 12 months. Available market data suggest that net debt securities issuance remained weak in December 2018 but eventually recovered somewhat at the beginning of January 2019. In October and November 2018, total net issuance of quoted shares by NFCs was quite robust, improving from the slightly negative figure recorded in the first two months of the third quarter of 2018. In terms of annual flows, net issuance of quoted shares remained close to the highest levels recorded since 2012.

Chart 12

Net issuance of debt securities and quoted shares by euro area NFCs

(annual flows in EUR billions)



Source: ECB.

Notes: Monthly figures based on a 12-month rolling period. The latest observation is for November 2018.

Despite edging up in recent months, financing costs for euro area NFCs

remained favourable overall. The overall nominal cost of external financing for NFCs, comprising bank lending, debt issuance in the market and equity finance, remained at around 4.7% in November and is projected to have increased further in December 2018 and January 2019. Although the cost of financing is currently estimated to be around 54 basis points above the historical low of August 2016, it is still below the levels observed in the summer of 2014. The increase in the cost of financing since the end of the third quarter of 2018 reflects an increase in both the cost of equity and in the cost of market-based debt. The cost of both short and long-term bank lending remained relatively stable over the same period.

Boxes

1 Recent developments in oil prices

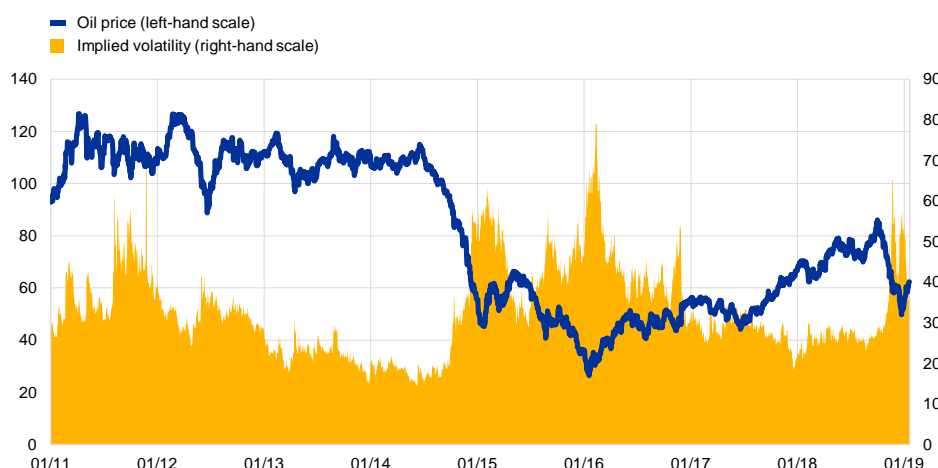
Prepared by Dominic Quint

Against the background of large swings in oil prices in recent months, this box assesses the key drivers of oil market developments. While demand has been relatively stable, supply factors have been the main driving force behind recent oil price volatility.

The past few months have seen a marked turnaround in oil prices accompanied by a strong increase in implied price volatility. After rising since the summer of 2017 and peaking at USD 86 per barrel in early October 2018, the Brent crude oil price has undergone a marked correction, falling by around 40% by the end of 2018 (see Chart A). A similar correction occurred four years ago. Oil prices dropped sharply in 2014 after a period in which Brent crude had traded at around USD 110 per barrel for several years. And in January 2016 prices fell to below USD 30 per barrel. These periods of oil price collapse tend to be accompanied by a high degree of uncertainty. Based on United States Oil Fund options, the Oil Volatility Index (OVX) captures expectations regarding oil price volatility in the near future. In November, uncertainty in oil markets reached levels last seen during the sharp drop in oil prices at the turn of the year 2014/15 and at the beginning of 2016.

Chart A
Oil price

(left-hand scale: USD per barrel; right-hand scale: index)



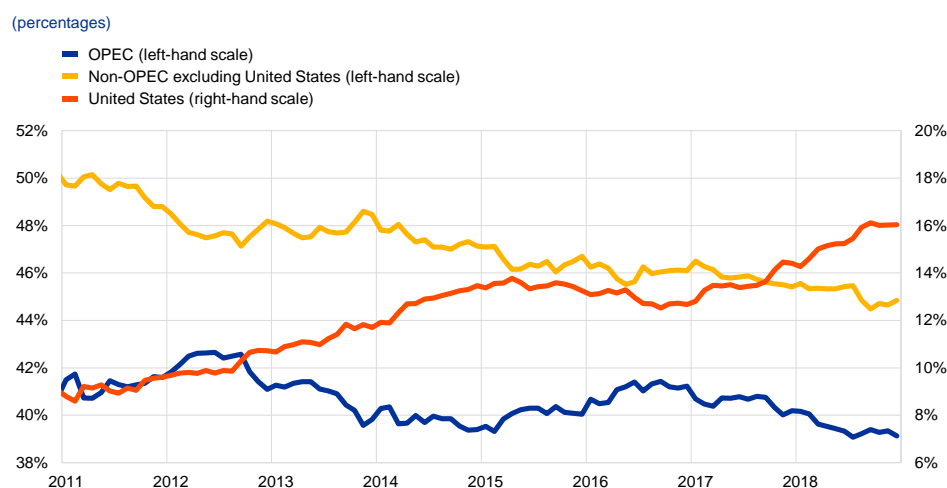
Sources: Bloomberg and Haver Analytics.

Notes: The Chicago Board Options Exchange (CBOE) Crude Oil ETF Volatility Index (OVX) measures the market's expectation of 30-day volatility of crude oil prices by applying the VIX methodology to United States Oil Fund options spanning a wide range of strike prices. The latest observation is for 21 January 2019.

Shifts in sources of oil supply have been an important driver of oil prices following the advent of US shale oil. Since 2011 US shale oil production capacity has expanded greatly, allowing the United States to compete with two of the world's

largest oil producers, Russia and Saudi Arabia, in terms of daily extraction volumes.³ Advances in extraction technology and investments in pipeline systems and rail capacity have allowed US producers to expand production, making the United States an important factor in global oil supply. Its share in aggregate supply increased significantly between 2011 and the summer of 2014 (see Chart B). In late 2014 members of the Organization of the Petroleum Exporting Countries (OPEC) appeared to change their strategy, abandoning production quotas in an attempt to regain market share and, according to some market analysts, crowd out US supply by driving oil prices below levels at which US shale oil producers could be profitable.⁴ OPEC's actions led only to a short-lived curtailing of shale oil production. In late 2016 it had to reconsider its approach as global demand worries led to further declines in oil prices. In addition, OPEC's strategy had put strains on the public finances of its members and fiscal sustainability indicators deteriorated sharply between 2014 and 2016 for most OPEC countries.⁵ Once oil prices started to increase again in 2017, US producers quickly regained market shares.⁶

Chart B
Market shares of oil producers



Sources: International Energy Agency and ECB staff calculations.
Note: The latest observation is for December 2018.

The most recent swings in oil prices towards the end of 2018 were also driven by significant shifts in the market's assessment of oil supply prospects. Despite increasing US production, oil prices rose during the first three quarters of 2018 as market participants focused on falling production in Venezuela and the prospect of lower Iranian exports after the US withdrawal from the 2015 Iran nuclear agreement. In May 2018 the United States announced that it would reimpose sanctions on Iranian

³ For further reflections on US shale oil production, see the article entitled "The oil market in the age of shale oil", *Economic Bulletin*, Issue 8, ECB, 2017.
⁴ For an economic interpretation of OPEC's strategic actions, see, for example, Behar, A. and Ritz, R.A., "An analysis of OPEC's strategic actions, US shale growth and the 2014 oil price crash", *IMF Working Papers*, No 16/131, July 2016.
⁵ See, for example, Kose, M.A., Kurlat, S., Ohnsorge, F. and Sugawara, N, "A Cross-Country Database of Fiscal Space", *Policy Research Working Paper*, No 8157, World Bank, August 2017.
⁶ In late 2018 the United States even became a net oil exporter for the first time in its history, taking into account all imports and exports of crude and refined products.

oil exports, starting from November 2018. By October 2018 Iranian oil exports had already decreased by about 0.35 million barrels per day.⁷ At the same time, the market had been concerned about whether OPEC would react by increasing production to compensate for the loss of Iranian production in global markets. Starting in early October, however, there was a marked correction in prices. Saudi Arabia and Russia provided reassurances that they would indeed increase production if needed after the implementation of the sanctions. Further downward pressure came from the US Government's decision to grant six-month waivers for imports of oil to key customers of Iran. Together with major non-OPEC producers, OPEC agreed on production cuts in early December 2018. However, the proposed cuts were at the lower end of what markets considered necessary to have a lasting impact on prices, while there were also doubts about the extent to which members would comply with the production cuts.⁸ Consequently, the decline in oil prices did not halt until the beginning of 2019 after initial indicators for December pointed to a significant drop in OPEC production.

Growth in aggregate demand for oil has been more stable over recent years, but is expected to decline in 2019. Over the past decade, energy consumption in non-OECD countries, particularly in China, has been the main driver of global oil demand (see Chart C). However, rising demand in emerging and developing economies was balanced by slowing demand in OECD countries. More recently, with economic expansion having slowed somewhat in emerging and developing economies, there has been a degree of convergence in oil demand growth in OECD and non-OECD countries. With global economic activity expected to moderate somewhat during 2019, forecasts for oil demand growth have been revised downwards by the International Energy Agency in recent months. This has put additional pressure on prices, particularly in the second half of December, amid a broad-based correction in global financial markets.

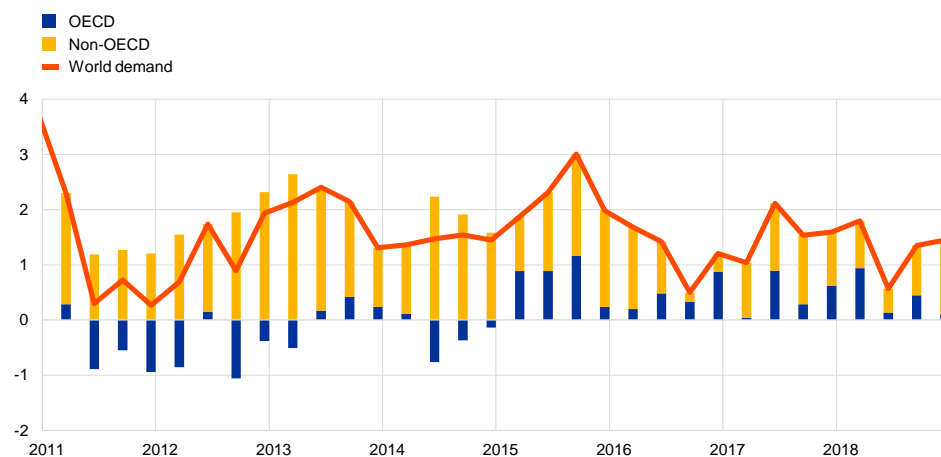
⁷ This is less severe than in 2012 when sanctions caused Iran's oil exports to fall by around 1 million barrels per day.

⁸ The unity among OPEC members was further challenged by Qatar's decision to withdraw from OPEC. Qatar, which until then had been the 11th largest oil producer in OPEC, intends to focus more on its natural gas production and no longer wants to be bound by OPEC agreements.

Chart C

Oil demand

(annual percentage changes, quarterly data)



Sources: International Energy Agency and ECB staff calculations.
Note: The latest observation is for the fourth quarter of 2018.

Although diminished, the role of OPEC and the other major producers that cooperate with OPEC remains an important factor in oil price dynamics. Large conventional “swing producers” like Saudi Arabia still play an important role. For example, it is still only OPEC countries that have sufficient spare capacity to increase production in response to sudden peaks in demand.⁹ Nonetheless, OPEC’s strategy of lowering oil prices in 2014 and 2015 did not succeed in permanently crowding out US shale oil production, suggesting that, over longer horizons, OPEC’s ability to stabilise prices around desired levels has diminished. While conventional extraction methods are usually less costly than shale oil production, most traditional oil-exporting countries need higher oil prices to balance their public-sector budgets.¹⁰ However, the shale revolution has helped to limit upward pressures on oil prices, as US production tends to increase once prices rise above break-even levels. According to an energy survey conducted by the Federal Reserve Bank of Dallas, operating existing wells can be profitable in a price range of USD 25-35 per barrel. For the exploitation of new wells, however, producers need prices to be somewhat higher (see Chart D).

Overall, the shale revolution has change the structure of the oil market. OPEC strategies now need to take into account the endogenous reaction of shale oil producers. Competition from shale oil may reduce the power of traditional oil producers to drive up prices beyond a given level over long horizons. At the same time, the process of OPEC adapting its strategies to the new source of competition has introduced some volatility in oil prices in recent years, including during the second half of 2018.

⁹ The spare capacity of OPEC is estimated at between 1 million and 2 million barrels per day, i.e. it should be able to increase production by this amount within 30 to 90 days. The United State’s ability to increase supply significantly at short notice is still limited. To increase production by 0.5 million barrels per day, US producers would need six months to step up drilling activities. See Newell, R.G. and Prest, B.C., “Is the US the New Swing Producer? The Price-Responsiveness of Tight Oil”, *RFF Working Paper*, No 17-15, Resources for the Future, June 2017.

¹⁰ See the [Statistical Appendix](#) to the *Regional Economic Outlook: Middle East and Central Asia*, IMF, November 2018.

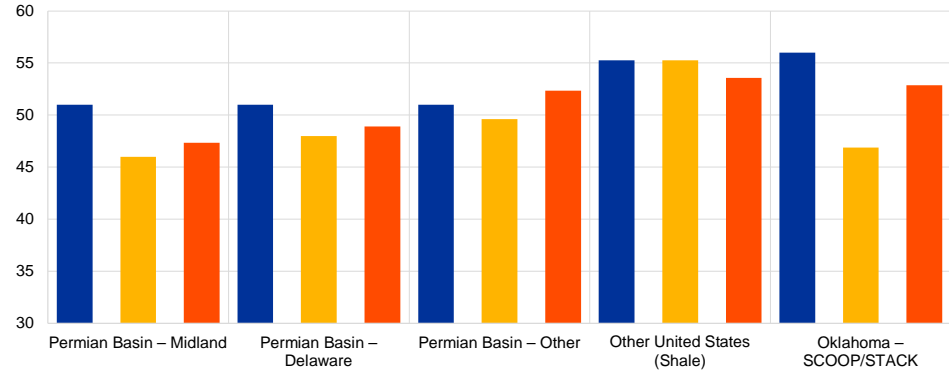
Chart D

Break-even oil price for US producers

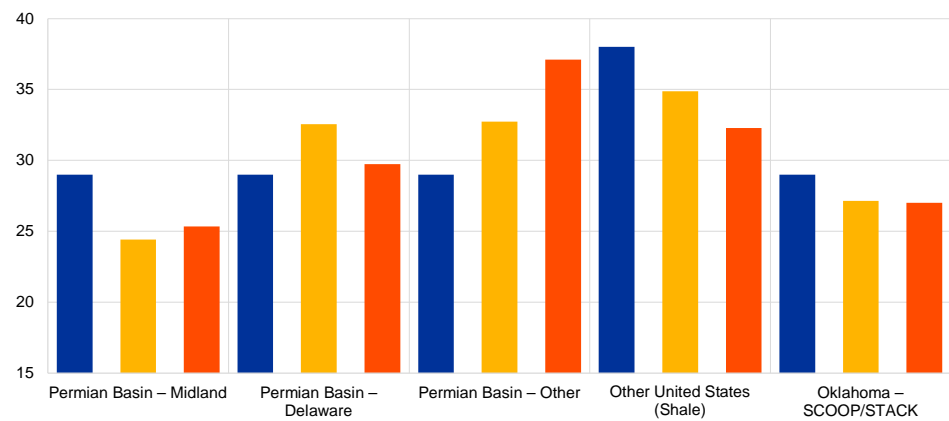
(USD per barrel)

■ 2016
■ 2017
■ 2018

a) New wells



b) Existing wells



Source: Dallas Fed Energy Survey.

Notes: Average prices necessary to cover operating expenses for new and existing wells across regions. The reference price is the West Texas Intermediate (WTI) oil price, which trades on average 10% below the Brent crude oil price. The data are based on a survey conducted in the period 14-22 March 2018.

2 Driving factors of and risks to domestic demand in the euro area

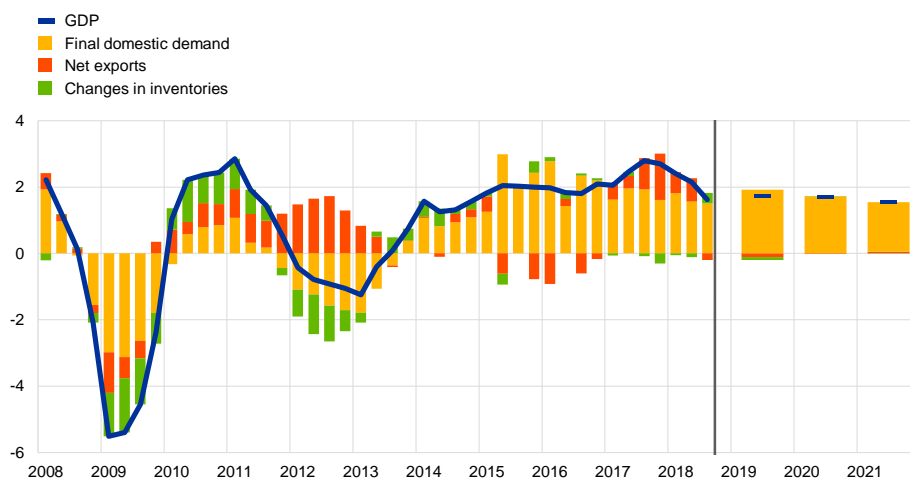
Prepared by Malin Andersson and Benjamin Mosk

Activity in the euro area is expected to continue to expand at a moderate pace, while more elevated uncertainty points to intensified downside risks to the growth outlook. Heightened uncertainties at the global level, the prospect of Brexit, escalating protectionism, volatility in emerging market economies (EMEs) and policy uncertainty in some parts of the euro area pose major challenges to the sustainability of domestic demand going forward. According to the December 2018 Eurosystem staff macroeconomic projections,¹¹ the growth outlook is expected to be underpinned by sustained growth in domestic demand over the next few years, notwithstanding a very limited contribution from net exports and inventories (see Chart A). Even though growth is expected to slow, which is consistent with a maturing business cycle in which labour supply shortages increase in some countries and saving ratios recover from their low levels, activity is expected to be relatively resilient owing to a number of factors, including the expected continued expansion of global activity, the accommodative monetary policy stance supporting financing conditions, improving labour markets, rising wages and some fiscal loosening. This box reviews the factors underpinning domestic expenditure and assesses the potential adverse effects on domestic activity of heightened global uncertainty.

Chart A

Breakdown of euro area real GDP growth

(annual percentage changes and percentage point contributions)



Sources: Eurostat and December 2018 Eurosystem staff macroeconomic projections.

Notes: The latest observations of actual outcomes are for the third quarter of 2018. Data to the right of the vertical grey line are projections.

According to the December 2018 Eurosystem staff macroeconomic projections, private consumption is expected to remain supported by employment and income growth as important drivers of growth in household income. The

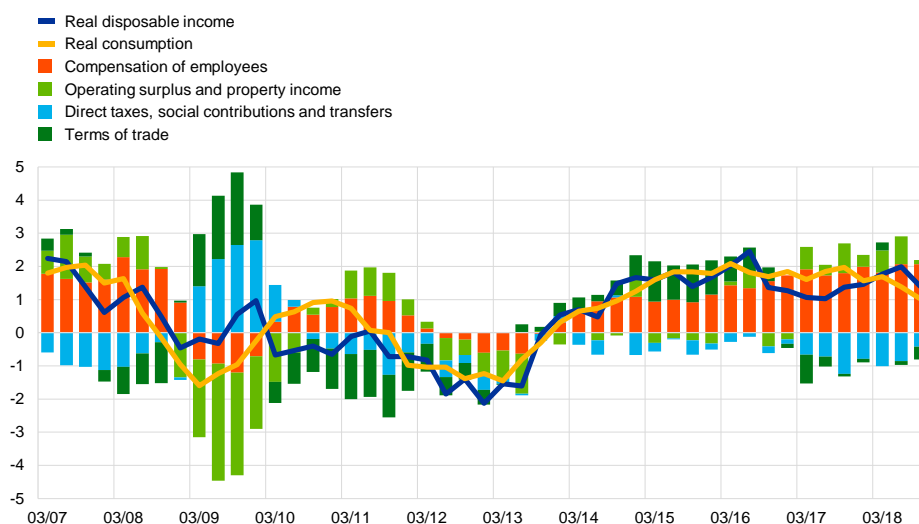
¹¹ See the “December 2018 Eurosystem staff macroeconomic projections for the euro area”, ECB, 2018.

moderation in euro area real GDP growth¹² in the first three quarters of 2018 was partly related to growth in private consumption, which slowed up to the third quarter. Consumer confidence declined in the course of 2018, but has remained above its long-term average. Looking forward, consumption growth is expected to continue to evolve in line with real disposable income developments. The main contribution to real disposable income growth stems from real labour income growth (see Chart B), which is expected to be driven to an increasing extent by wage developments and less by employment growth. This composition partly explains the slowdown in consumption growth, as the latter typically reacts more strongly to changes in employment than to income. The terms of trade – reflecting the relationship between export prices and import prices – are expected to improve and to provide additional support to disposable income¹³ as oil prices are assumed to fall back after having risen in the third quarter of 2018, subject to the caveat that oil prices can be highly volatile, as recently witnessed. Property income is also expected to continue to support real disposable income. While fiscal policies overall have contributed negatively to disposable income in recent years, in line with the cyclical mechanism of fiscal stabilisers, they are expected to give some support to disposable income in 2019. In addition, progress achieved in household sector deleveraging should also support consumption, although household debt is still at a relatively high level. All in all, real disposable income will underpin private consumption while at the same time allowing a gradual build-up of household savings.

Chart B

Private consumption and breakdown of disposable income growth

(annual percentage changes and percentage point contributions)



Sources: Eurostat and ECB calculations.

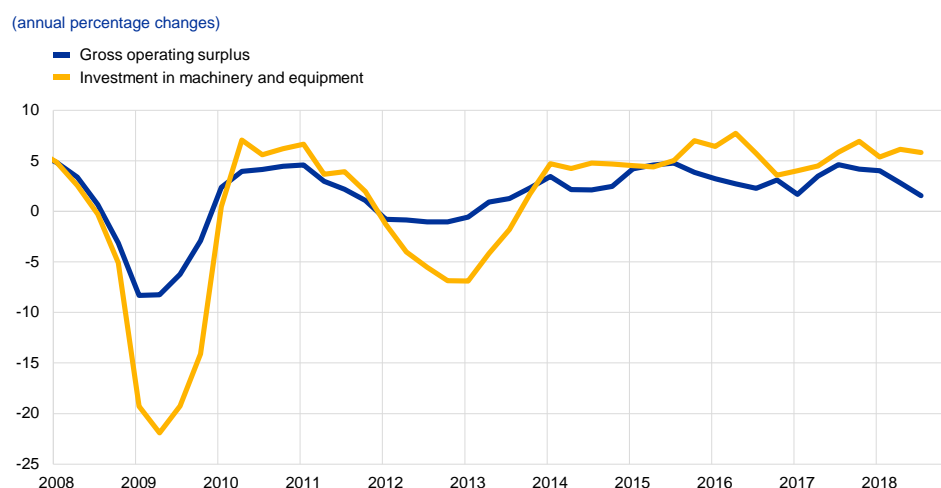
Notes: The contribution from terms of trade is proxied by the differential between the GDP and consumption deflators. The latest observations are for the third quarter of 2018.

¹² See the box entitled “The recent slowdown in euro area output growth reflects both cyclical and temporary factors”, *Economic Bulletin*, Issue 4, ECB, 2018.

¹³ See the box entitled “Oil prices, the terms of trade and private consumption”, *Economic Bulletin*, Issue 6, ECB, 2018.

In the context of a maturing business cycle, growth in business investment is still expected to continue, despite a more uncertain environment. Business investment will be underpinned by domestic demand developments, capacity constraints and profitability in line with historical patterns (see Chart C), albeit exhibiting a slowing pace as the business cycle matures and profit and demand conditions weaken. Financial conditions remain accommodative, but are expected to gradually become less supportive of investment. In addition, improving balance sheets and easing liquidity needs for euro area firms will also support business investment. As for the housing market, short-term indicators at the turn of the year – such as subdued Purchasing Managers’ Index levels and construction production – reflect rising labour shortages in some countries and point to a near-term deceleration in housing investment growth. Nevertheless, the medium-term upturn in housing investment should continue from below pre-crisis levels in many of the larger euro area countries, supported by house price developments.

Chart C
Growth in machinery and equipment investment and profits



Source: Eurostat.
Note: The latest observations are for the third quarter of 2018.

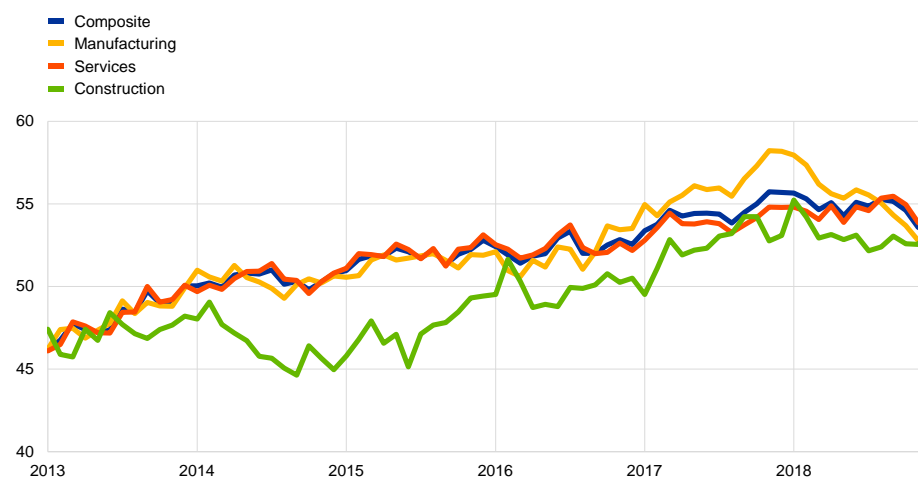
There are also signs that growth is increasingly supported by structural factors as well as cyclical ones, despite some vulnerabilities. The reduction in macroeconomic imbalances, notably in former programme countries, and structural reforms have strengthened the euro area’s resilience and the effectiveness of monetary policy. This should also reduce adverse repercussions of idiosyncratic shocks in euro area countries. At the same time, potential vulnerabilities stem from, among other things, still high public and private debt levels, non-performing loans on banks’ balance sheets, below pre-crisis household savings and remaining structural rigidities in some countries.

The resilience of the domestic demand components could be particularly challenged by increasing global uncertainty related inter alia to an escalation in trade tensions. As for private consumption, data suggest that labour income growth can be expected to continue to support household spending, despite possible adverse impacts from global trade uncertainty. This is evidenced by survey data on

employment expectations, which remain at high levels overall, although prospects in sectors more exposed to trade (e.g. manufacturing) have declined somewhat (see Chart D).

Chart D Employment expectations

(diffusion index: 50 = no change on previous month)



Source: European Commission.
Note: The latest observations are for December 2018.

The adverse impact of heightened global uncertainty could potentially be greater for business investment than for private consumption, according to survey data and model evidence. While uncertainty is difficult to measure, heightened uncertainty has a well-documented adverse impact on business investment decisions.¹⁴ As evidence of this impact, country surveys suggest that increasing global uncertainty is causing some delay in investment decisions.¹⁵ In order to assess the impact, two simulations were run using the ECB’s multi-country forecast model.¹⁶ In both simulations, the residuals of the investment equations for the largest euro area countries in the model were shocked to replicate an increase in the VIX volatility index (see Chart E), exploiting historical correlations between the VIX and the residuals. In the first scenario, the VIX was increased by one standard

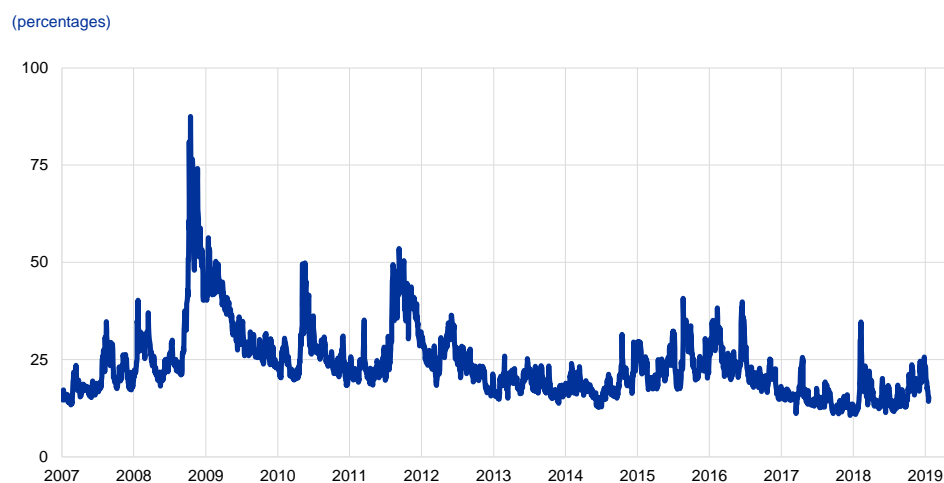
¹⁴ In response to uncertainty shocks, firms can adjust their inventory policies by disproportionately cutting their orders of foreign intermediates, leading to a bigger contraction in international trade flows than in domestic economic activity (see, for example, Novy, D. and Taylor, A.M., “Trade and Uncertainty”, *CEP Discussion Paper*, No 1266, Centre for Economic Performance, May 2014). An uncertain trade policy outlook gives firms a reason to delay entry into a foreign market (extensive margin) and to delay upgrading their technology (intensive margin) (see Handley, K. and Limão, N., “Trade and Investment under Policy Uncertainty: Theory and Firm Evidence”, *American Economic Journal: Economic Policy*, Vol. 7, No 4, November 2015). The impact of trade policy uncertainty can be magnified by global value chains (GVCs) (see Osnago, A., Piermartini, R. and Rocha, N., “The Heterogeneous Effects of Trade Policy Uncertainty: How Much Do Trade Commitments Boost Trade?”, *Policy Research Working Paper*, No 8567, World Bank, August 2018).

¹⁵ See, for example, *Economic Bulletin*, No 4, Banca d’Italia, 2018; “The air is getting thinner”, *DIHK Economic Survey*, Fall 2018, Association of German Chambers of Industry and Commerce, October 2018; and *Economic Bulletin*, No 3, Banco de España, 2018.

¹⁶ See Dieppe, A., González-Pandiella, A. and Willman, A., “The ECB’s New Multi-Country Model for the euro area: NMCM – Simulated with rational expectations”, *Economic Modelling*, Vol. 29, Issue 6, 2012, pp. 2597-2614; and Dieppe, A., González-Pandiella, A., Hall, S. and Willman, A., “Limited information minimal state variable learning in a medium-scale multi-country model”, *Economic Modelling*, Vol. 33, 2013, pp. 808-825.

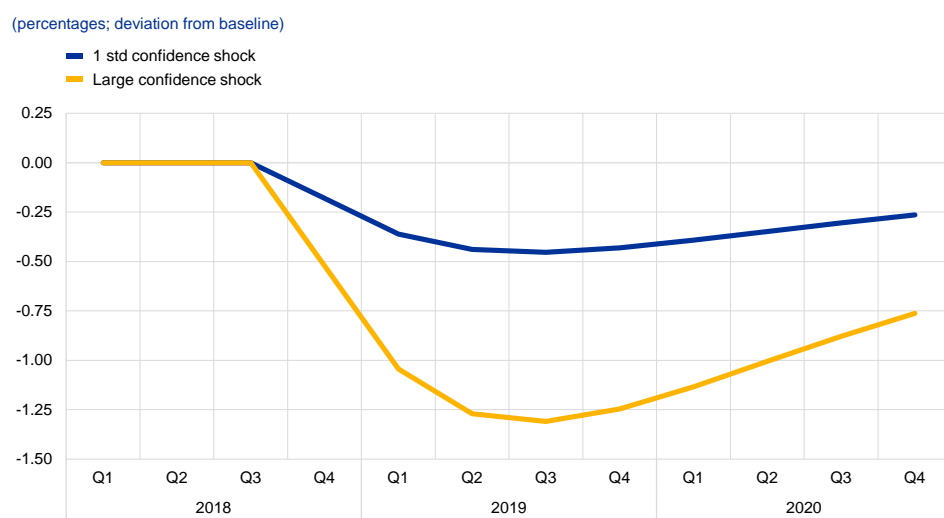
deviation of the index in the fourth quarter of 2018, with subsequent values of the VIX in line with its historical persistence pattern. This shock leads to lower investment, with an adverse impact that peaks in the second half of 2019 (see Chart F). In a second scenario, the initial increase in the VIX matches the quarter-on-quarter increase in the VIX observed at the height of the European sovereign debt crisis, with the subsequent values of the VIX also following historical patterns. The simulation yields a larger adverse impact on investment (see Chart F). In both scenarios, almost half of the peak loss in the investment level is recovered after 2.5 years as uncertainty subsides.

Chart E
VIX volatility index



Source: Haver Analytics.
Note: The latest observation is for 21 January 2019.

Chart F
Impact of uncertainty shocks on euro area total investment



Source: ECB calculations.
Notes: The scenarios considered are based on historical VIX patterns, as captured through an AR(1)MA(1) regression on 12 years of quarterly averaged VIX data. The one standard deviation (1 std) confidence shock amounts to an initial increase of 5.5 percentage points, which is in line with the increase in the quarterly averaged VIX levels between the third and fourth quarters of 2018. The larger confidence shock scenario, based on the increase in volatility at the height of the European sovereign debt crisis, amounts to an initial increase of 16 percentage points.

To conclude, domestic demand growth, in particular private consumption, will remain a key driver of activity over the next few years, albeit with a diminishing contribution, reflecting the expected maturing of the business cycle. Meanwhile, increasing uncertainties at the global level constitute a downside risk to the outlook, particularly for business investment.

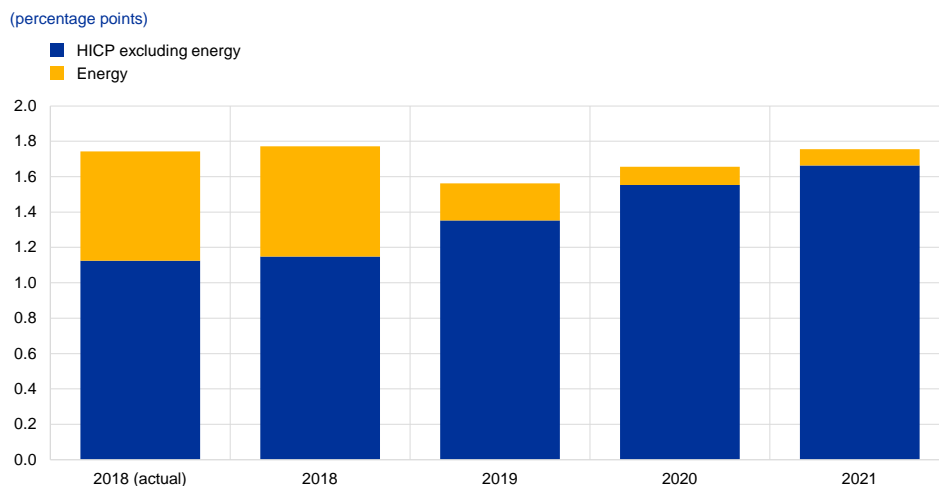
3 The mechanical impact of changes in oil price assumptions on projections for euro area HICP energy inflation

Prepared by Mario Porqueddu

Inflation projections are based on models, assumptions and expert judgement. These include assumptions regarding the future evolution of oil prices. In the case of the Eurosystem/ECB projection exercises, the inflation projections are based on the assumption that oil prices will evolve in line with the average futures prices observed over a two-week period prior to the projection cut-off date. Using the oil price futures has an important bearing on the projections for HICP energy inflation. For instance, the pattern of HICP inflation in the December 2018 Eurosystem staff projections entailed, among other things, a strong decline in the contribution of energy inflation, from 0.6 percentage point in 2018 to 0.2 percentage point in 2019 and 0.1 percentage point in 2020 and 2021 (see Chart A).¹⁷ However, the cut-off date for the assumptions underlying these projections was 21 November 2018, and oil prices and their corresponding futures paths fell significantly after this date. While they have recovered somewhat lately compared with the end of 2018, they remain on balance substantially below the levels on the cut-off date. This box documents the mechanical implications of a shift in the oil price assumptions for the projections of the energy component of HICP inflation.

Chart A

Contribution of energy inflation to headline inflation in the December 2018 Eurosystem staff projections



Sources: Eurostat, Eurosystem and ECB calculations.

Note: The first bar refers to actual Eurostat data for 2018. The other bars refer to the December 2018 Eurosystem projections.

Oil prices and oil futures have moved down significantly since autumn 2018.

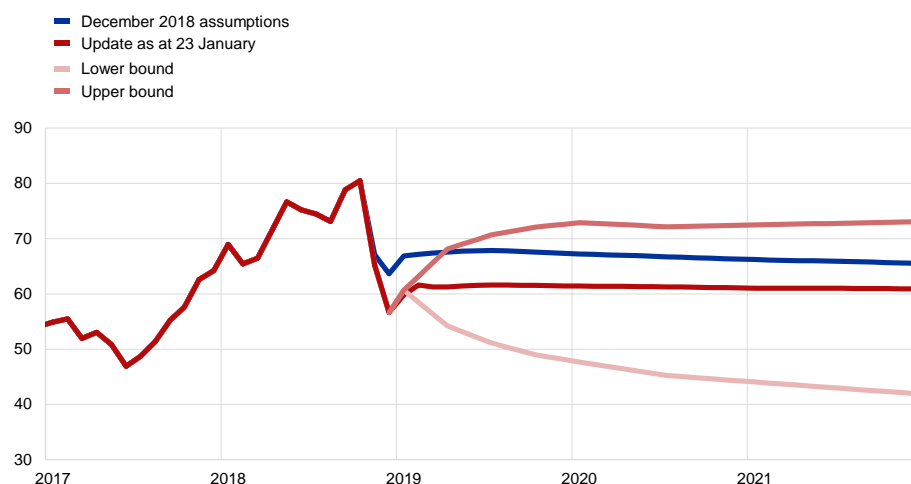
Energy inflation declined from 10.7% in October 2018 (the latest available data in the December 2018 Eurosystem staff projections) to 5.4% in December 2018. Latest oil

¹⁷ See the article entitled “December 2018 Eurosystem staff macroeconomic projections for the euro area”, published on the ECB’s website on 13 December 2018.

futures¹⁸ data see oil prices hovering around USD 61 per barrel in 2019, which is 9% below the December 2018 projection assumptions for the average for that year (see Chart B). For the latter part of the projection horizon, the updated oil futures curve has a slightly upward-sloping shape, as compared with the slightly downward-sloping one seen at the time of the latest projection exercise, but in terms of annual growth rates this makes little difference beyond 2019.

Chart B Oil price futures

(USD per barrel)



Sources: Morningstar Global Market Data and ECB calculations.

Note: The lower (upper) bound is the 25th (75th) percentile of the distribution provided by the option-implied densities for the oil price on 23 January 2019.

Energy prices mirror oil price developments closely, but there is some deviation between the two. This is because energy items such as gas and electricity have a looser relationship with oil prices than do fuels (for which the relationship is very close). Moreover, the impact of taxes and margins also plays an important role in shaping energy price developments.¹⁹ Nevertheless, developments in the annual rate of change in oil prices are typically a fairly reliable gauge for developments in the annual rate of change in energy prices (see Chart C).

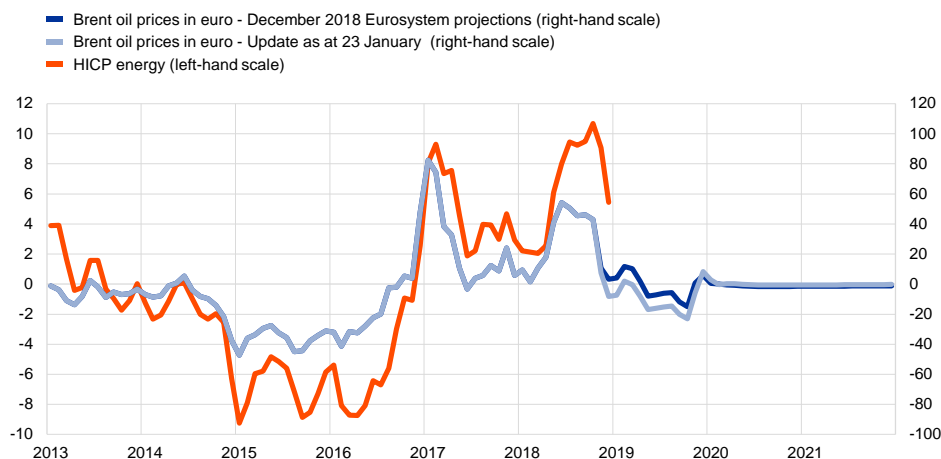
¹⁸ As at the cut-off date of 23 January.

¹⁹ For more details see the box entitled “[The role of energy prices in recent inflation outcomes: a cross-country perspective](#)”, *Economic Bulletin*, Issue 7, ECB, 2018.

Chart C

Oil prices and energy prices

(annual percentage changes)



Sources: Eurostat, Bloomberg and ECB calculations.

Notes: The annual rates of change in oil prices were calculated on spot prices and on futures prices as at 21 November 2018, the cut-off date for the assumptions for the December 2018 Eurosystem staff macroeconomic projections for the euro area, and updated with futures prices as at 23 January 2019. The updated assumption for the EUR/USD exchange rate for 2019 corresponds to the average over the two-week period ending on 23 January (1.14 USD per euro), which is 0.5% above the December 2018 hypothesis. This means that almost all of the change in oil prices in euro corresponds to the downward shift of the oil price futures curve in USD.

The implications of the recent oil price developments are a reminder of the uncertainty regarding energy inflation projections. The option-implied density distribution of oil prices is wide (see the bands in Chart B), corresponding to an interquartile range of between around USD 53 per barrel and USD 69 per barrel on average in 2019 (22% below and 2% above the assumptions underlying the December 2018 Eurosystem staff projections). Cross-sectional distributions of future oil prices in expectation surveys offer another way to look at the uncertainty surrounding the projections for energy inflation. For instance, on average, the participants in the ECB's Survey of Professional Forecasters for the first quarter of 2019²⁰ expected oil prices to stand at around USD 64 per barrel in 2019 (implying a steeper upward path than the oil futures curve), with a one standard deviation range in individual expectations of around USD 5 per barrel.

Overall, changes in oil prices also have a notable impact beyond energy prices.

It is important to bear in mind that changes in oil prices not only have direct effects on energy prices, they also have indirect effects on other consumer prices via cost and demand channels. While the cost advantage of lower oil prices may to some extent be passed on to consumer prices, the increase in purchasing power can be expected to support consumption and economic activity more generally, thereby exerting – with some delay – upward pressure on consumer prices. In addition, it is important to monitor to what extent oil price changes may influence inflation expectations. The full impact of changes in oil prices therefore needs to be assessed in the context of a fully-fledged projection exercise.

²⁰ The survey was conducted between 7 and 11 January 2019.

Articles

1 Twenty years of the ECB Survey of Professional Forecasters

Prepared by Rupert de Vincent-Humphreys, Ivelina Dimitrova, Elisabeth Falck and Lukas Henkel

It is twenty years since the ECB first launched its Survey of Professional Forecasters (SPF). The survey asks for point forecasts and probability distributions for HICP inflation, HICP inflation excluding energy, food, alcohol and tobacco, real GDP growth and the unemployment rate at six horizons, as well as point forecasts for wage growth, the exchange rate, the oil price and the ECB's policy rate. All quantitative data collected in the survey are systematically published shortly after the completion of the survey. This makes the SPF the most long-standing, comprehensive and transparent survey of the aggregate euro area economy.

The past twenty years have seen a wide variety of economic conditions, including the Great Moderation, with relatively high economic growth and stable inflation, the financial crisis and, more recently, a prolonged period of subdued inflationary pressures. This article documents the evolution of the SPF through this changing economic landscape and what we have learned from it. The SPF remains as useful for economic analysis and as relevant to the monetary policy debate today as it was when it was first launched.

1 Introduction to the Survey of Professional Forecasters

Inflation expectations play a central role in the ECB's economic and monetary analyses, particularly in view of its mandate to maintain price stability in the euro area. The ECB sets monetary policy with the aim of maintaining annual euro area HICP inflation at a rate below, but close to, 2% over the medium term. In this context, private agents' inflation expectations can affect the economy, because they can influence economic decisions in areas such as saving, consumption and investment, as well as wage and price setting. The role of inflation expectations in determining actual wage and price inflation can be modelled in a forward-looking Phillips curve relationship. Similarly, financial market participants' inflation expectations can directly influence the pricing of some financial instruments, such as nominal bonds, and thus directly affect the transmission of monetary policy to the real economy.²¹ In addition, inflation expectations also serve as a valuable cross-check on the inflation outlook in the Eurosystem/ECB staff macroeconomic projections, which in turn inform monetary policy decisions. The ECB therefore closely monitors private

²¹ For more information on market-based measures, see the article entitled "[Interpreting recent developments in market-based indicators of longer-term inflation expectations](#)", *Economic Bulletin*, Issue 6, ECB, 2018.

agents' inflation expectations using a range of sources, not least the results of its own quarterly Survey of Professional Forecasters (SPF).

The SPF has measured inflation expectations and other macroeconomic expectations since the beginning of monetary union. At the time of its launch, the SPF was the only gauge of private sector macroeconomic expectations for the euro area as a whole. The survey collects information on the expected rates of consumer price inflation, wage growth, real GDP growth and unemployment in the euro area at several horizons, ranging from the current year to the longer term. In addition, respondents provide expectations for exogenous variables underpinning their forecasts, such as the oil price and the exchange rate, and qualitative comments that enrich their quantitative forecasts. Thus the overall survey results provide a comprehensive depiction of experts' aggregate assessment of the macroeconomic outlook.

Expectations are sampled at different horizons for different purposes. In the shorter term, expectations are collected for the current and the following two calendar years, as well as two rolling horizons, one year and two years ahead of the latest available data. The evolution of shorter-term expectations allows us to track how the professional forecasting community is assessing new information about the shocks hitting the economy, e.g. from the incoming data, as well as learning about the effect of a given shock. In this context, calendar year point forecasts can easily be compared with those published in other surveys or with Eurosystem/ECB staff macroeconomic projections. The rolling horizons are better suited to measuring how perceptions of risk and uncertainty evolve over time, because these abstract from the natural decline in uncertainty that tends to occur as the forecast horizon shrinks. Finally, longer-term expectations can reveal information about the perceived steady state of the economy. In particular, longer-term inflation expectations can tell us about confidence in meeting the inflation objective.

Probability distributions provide a quantitative assessment of risk and uncertainty. A distinguishing feature of the SPF is that for inflation, core inflation, unemployment and real GDP growth, expectations at all horizons, including the longer term, are collected not just in the form of point forecasts, but also probability distributions. This allows a quantification of forecast uncertainty and of whether forecasters consider the uncertainty to be broadly balanced around their point forecast or skewed towards the upside or the downside.

The respondents to the survey are expert economists working in either financial or non-financial institutions, using different forecasting methodologies. Approximately 55 responses are received each quarter, which is relatively high compared with other expert macroeconomic surveys for the euro area as a whole. The majority of respondents are from financial institutions, although a significant number of economic research institutions also contribute. Since 2008 a special survey conducted every five years has provided additional insight on how the expectations reported in the SPF are formed (see Box 1).

High data transparency and economic relevance have led to considerable research based on the SPF. All the quantitative data, including microdata, are

published on the ECB's website each quarter, along with the summary report. This has helped stimulate substantial academic research into the SPF and what we can learn from its results. For a selective summary of such research, see Box 2.

This article looks at twenty years of results from the SPF and what we have learned from them. Section 2 explores the extent to which co-movement of expectations for pairs of variables is informative of the underlying economic relationships. Sections 3 and 4 examine, respectively, the point forecast results and the risk parameters implied by the probability distribution functions (PDFs), while Section 5 considers what we can learn from the longer-term expectations. Section 6 concludes.

Box 1

The 2018 special survey: forecasting processes and methodologies and how they have changed over time

Prepared by Rupert de Vincent-Humphreys and Ivelina Dimitrova

The five-yearly special survey is an important tool for understanding how SPF participants make their forecasts and form their expectations. In particular, it can track whether and how forecasters are adapting to the challenges posed to underlying economic relationships by episodes such as the financial crisis or the more recent period of protracted low inflation. This box summarises selected results on forecasting processes and methodologies in the 2018 survey and discusses how they have changed over time.²²

Reduced-form models remained the predominant tool for short and medium-term forecasts, while for longer-term forecasts models with economic structure were more widely used. On average across variables, 80% of respondents in the 2018 survey indicated that they use reduced-form models for their short-term forecasts, compared with 60% for longer-term forecasts (see Chart A, upper panel). Models with economic structure are used by 40% of respondents for longer-term forecasts, compared with 20% for short-term forecasts. These numbers are broadly similar to those found in the 2013 survey, reconfirming the shift in relative usage compared with the 2008 survey.

Expert judgement also continued to play an important role, especially for longer-term forecasts, for which it has become more important over time. Across all variables and horizons, on average little more than 10% of respondents in the 2018 survey said that they rely solely on model outcomes. For most variables and horizons, the share is lower than in the 2008 and 2013 surveys. For longer-term horizons, approximately 50% of point forecasts were essentially judgement-based. Following the 2008 crisis, the shift towards increased judgement was reflected more in an increase in essentially judgement-based forecasts, while since the period of protracted low inflation there has been a greater shift towards models with judgement-based adjustment (see Chart A, lower panel). The degree of judgement underlying the probability distributions is generally higher than for the point forecasts. In the 2018 special survey, 75% of respondents indicated that their probability distributions were essentially judgement-based.

The shifts in relative importance are consistent with the answers to questions on the impact of specific economic episodes. In the 2013 special survey, 70% of respondents reported that in

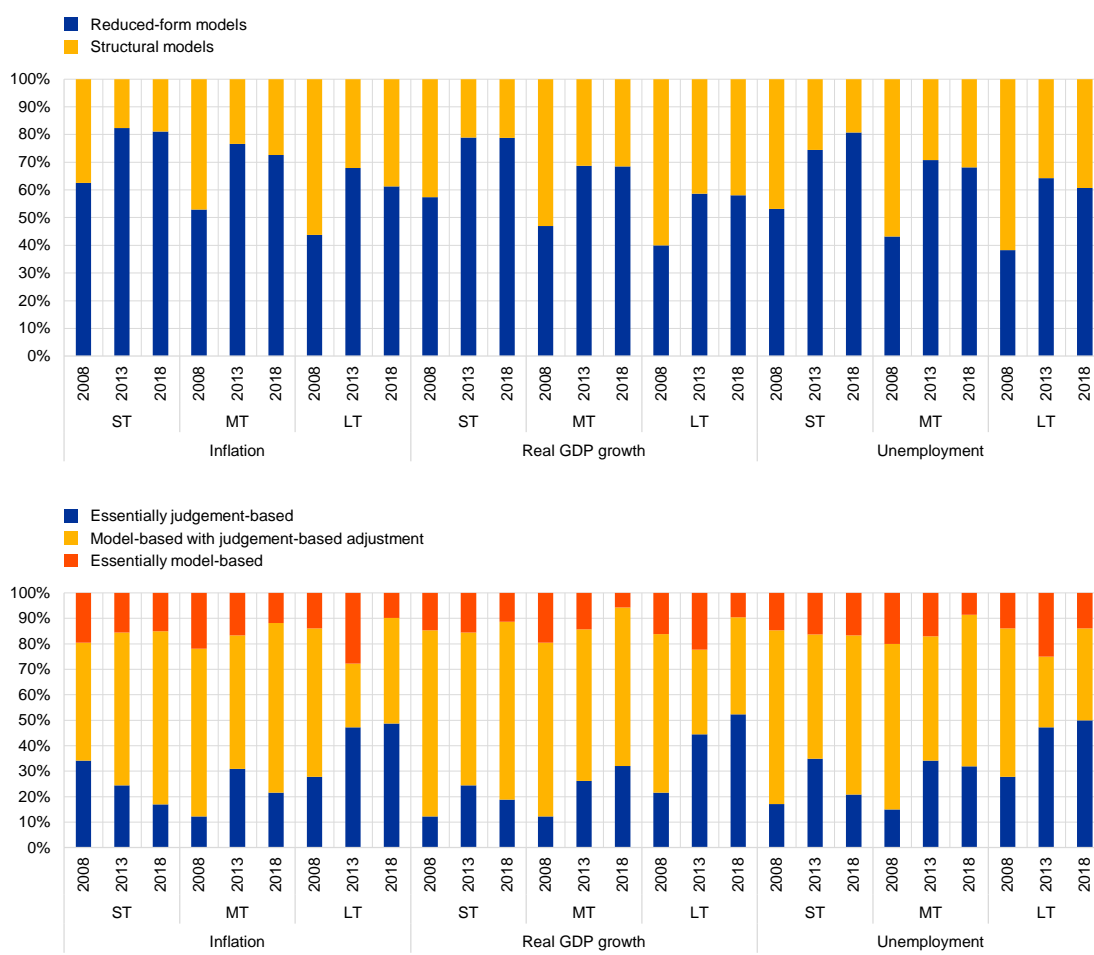
²² For further information, see the [report on the results of the 2018 special survey](#).

response to the 2008 crisis they used more judgement. The 2018 special survey asked the same question in respect of the period of prolonged low inflation, and 75% of respondents indicated that they supplemented their models with a higher degree of judgement. In this respect, the higher degree of judgement after the 2008 crisis may have coincided with a greater use of reduced-form models for two possible reasons. On the one hand, the crisis may have undermined forecasters' confidence in the ability of structural models to capture the structure of the economy at a time of potentially large structural changes. On the other hand, forecasters may have opted for reduced-form models because of the relative ease of applying more judgement to them.

Chart A

Use of reduced-form or structural models and model-based or judgement-based methods for short, medium and longer-term economic forecasts

(percentages of respondents)



Sources: SPF and ECB staff calculations.

Note: ST stands for short term, MT for medium term and LT for longer term.

Box 2

A selective summary of economic research based on the SPF

Prepared by Elisabeth Falck and Lukas Henkel

The rich body of information in the SPF has attracted researchers from academia and international institutions. Besides aggregate forecasts, the ECB also publishes microdata on the

point and density forecasts of individual SPF forecasters in an anonymised form. Researchers have used these various data dimensions for a variety of analytical purposes as follows:

Forecast performance: One strand of the literature compares SPF forecasts to benchmark forecasting models and finds that the survey responses provide useful information about future economic developments. Bowles et al. (2010) and Grothe and Meyler (2018) analyse aggregate forecast errors for unemployment, GDP growth and inflation at business cycle frequency. They conclude that average expectations in the SPF perform better than naïve or purely backward-looking benchmark models. Exploiting the panel dimension of the SPF data, Genre et al. (2013) apply several combination schemes of the individual forecasts, such as principal component analysis, performance-based weighting, and Bayesian shrinkage, and find that a simple average of SPF forecasts is hard to beat using the more sophisticated methods.²³

Forecast uncertainty: Since the financial crisis there has been increased interest in the uncertainty surrounding SPF point forecasts. Abel et al. (2016) find a countercyclical behaviour of forecast uncertainty and, in line with other papers (for example Łyziak and Paloviita, 2017), document a rise in uncertainty in the post-crisis period. While the cross-sectional forecast disagreement has also increased since the crisis, it has proven to be a poor proxy of forecast uncertainty (see Glas and Hartmann, 2016). Rich and Tracy (2018) exploit the SPF microdata to calculate a measure of how much an individual respondent's distributional forecast differs from all others reported in a particular survey round. They find considerable heterogeneity across forecasters and document little relation between this measure of distributional difference and individual forecast uncertainty. While individual uncertainty is very persistent over time, the measure of distributional difference shows pronounced time-variation.²⁴

Anchoring of inflation expectations: Another strand of the literature highlights that the long-run inflation forecasts reflect trust in the central bank inflation objective. Beechey et al. (2011) show that average long-run inflation expectations in the SPF are very stable and show little variation across forecasters. They conclude that expectations are firmly anchored, which is in line with the findings of Grishchenko et al. (2017), who estimate a dynamic factor model of aggregate US SPF and ECB SPF data. For a short and limited period after the crisis, Grishchenko et al. (2017) and Łyziak and Paloviita (2017) document mild signs of de-anchoring. In a panel analysis of the individual SPF inflation forecasts, Dovern and Kenny (2017) confirm the anchoring of SPF inflation

²³ See Bowles, C., Friz, R., Genre, V., Kenny, G., Meyler, A. and Rautanen, T., "An Evaluation of the Growth and Unemployment Forecasts in the ECB Survey of Professional Forecasters", *OECD Journal: Journal of Business Cycle Measurement and Analysis*, Vol. 2010/2, OECD, December 2010; Grothe, M. and Meyler, A., "Inflation Forecasts: Are Market-Based and Survey-Based Measures Informative?", *International Journal of Financial Research*, Vol. 9(1), January 2018; and Genre, V., Kenny, G., Meyler, A. and Timmermann, A., "Combining expert forecasts: Can anything beat the simple average?", *International Journal of Forecasting*, Vol. 29(1), January-March 2013, pp. 108-121.

²⁴ See Abel, J., Rich, R., Song, J. and Tracy, J., "The Measurement and Behaviour of Uncertainty: Evidence from the ECB Survey of Professional Forecasters", *Journal of Applied Econometrics*, Vol. 31(3), April/May 2016, pp. 533-550; Łyziak, T. and Paloviita, M., "Anchoring of inflation expectations in the Euro Area: Recent evidence based on survey data", *European Journal of Political Economy*, Vol. 46(C), January 2017, pp. 52-73; Rich, R. and Tracy, J., "A Closer Look at the Behaviour of Uncertainty and Disagreement: Micro Evidence from the Euro Area", *Working Papers*, No 1811, Federal Reserve Bank of Dallas, July 2018; and Glas, A. and Hartmann, M., "Inflation uncertainty, disagreement and monetary policy: Evidence from the ECB Survey of Professional Forecasters", *Journal of Empirical Finance*, Vol. 39(B), December 2016, pp. 215-228.

expectations, but find significant shifts in higher moments of the distribution of long-run inflation forecasts in the post-crisis period.²⁵

Expectations formation: Recent studies investigate whether forecasts are made according to specific economic relationships or rules. Frenkel et al. (2011) find that the expectations of SPF participants are consistent with standard macroeconomic relationships, such as the Phillips curve or Okun's law. Reitz et al. (2012) study the individual oil price forecasts from the SPF and document a complex and non-linear formation process for oil price expectations.²⁶

The wide range of research areas for which SPF data are used highlights the usefulness of the dataset for academic and applied research. In particular, analyses related to the anchoring of long-term inflation expectations, changes in the expectation formation in the post-crisis period and the pronounced increase in forecast uncertainty are of high policy relevance.

2 What do SPF results reveal about underlying economic relationships?

Forecasters typically form their expectations on the basis of economic concepts and relationships. Differences in perceived underlying relationships can thus be an important source of differences between forecasts and need to be considered in the assessment and communication of expectations. For instance, relationships such as the Phillips curve or Okun's law are building blocks of many macroeconomic models and often shape the common economic thinking of the professional forecasting community. The ECB reviews and uses such relationships in its economic analysis,²⁷ and it is important to understand whether SPF expectations are also generated in line with corresponding economic relationships. So what are the conventional ways of specifying these relationships and to what extent can they be tested using SPF data?

The Phillips curve connects price or wage movements with measures of economic slack, such as the output or unemployment gap. A widely used version is the New Keynesian Phillips curve that can be expressed in the following equation:

$$\pi_t = c + \kappa (u_t - \bar{u}) + \beta \pi_{t+1}$$

²⁵ See Beechey, M.J., Johannsen, B.K. and Levin, A.T., "Are Long-Run Inflation Expectations Anchored More Firmly in the Euro Area Than in the United States?", *American Economic Journal: Macroeconomics*, Vol. 3(2), April 2011, pp. 104-129; Grishchenko, O., Mouabbi, S. and Renne, J.-P., "Measuring Inflation Anchoring and Uncertainty: A US and Euro Area Comparison", *Finance and Economics Discussion Series*, No 102, Board of Governors of the Federal Reserve System, 2017; and Dovern, J. and Kenny, G., "Anchoring Inflation Expectations in Unconventional Times: Micro Evidence for the Euro Area", working paper featured at the ECB conference on "Understanding inflation: lessons from the past, lessons for the future?", September 2017.

²⁶ See Frenkel, M., Lis, E.M. and Rülke, J.-C., "Has the economic crisis of 2007-2009 changed the expectation formation process in the Euro area?", *Economic Modelling*, Vol. 28(4), July 2011, pp. 1808-1814; and Reitz, S., Rülke, J.-C. and Stadtmann, G., "Nonlinear expectations in speculative markets – Evidence from the ECB survey of professional forecasters", *Journal of Economic Dynamics and Control*, Vol. 36(9), September 2012, pp. 1349-1363.

²⁷ See Ciccarelli, M. and Osbat, C. (eds.), "Low inflation in the euro area: Causes and consequences", *Occasional Paper Series*, No 181, ECB, January 2017.

where current inflation (π_t) is a function of the unemployment gap, defined as the difference between the unemployment rate u_t and its structural rate \bar{u} (often represented by the non-accelerating inflation rate of unemployment, NAIRU), and a term for expected future inflation $E_t(\pi_{t+1})$. As well as the unemployment gap, economic slack can also be measured using the output gap, i.e. the difference between actual output and a measure of potential output. Some versions of the Phillips curve (especially earlier versions) do not include expected inflation. A similar concept exists for wages, where price inflation is replaced by a measure of wage inflation.

Okun's law describes the relationship between the unemployment rate and GDP growth. A widely used version relates changes in the unemployment rate to real GDP growth, as in the following equation:

$$\Delta u_t = c + \kappa \Delta y_t$$

where Okun's coefficient κ is negative and describes the strength of the relationship. If real GDP growth is one percentage point higher, the unemployment rate falls by κ percentage points. Another widely used formulation relates the unemployment gap to the output gap.

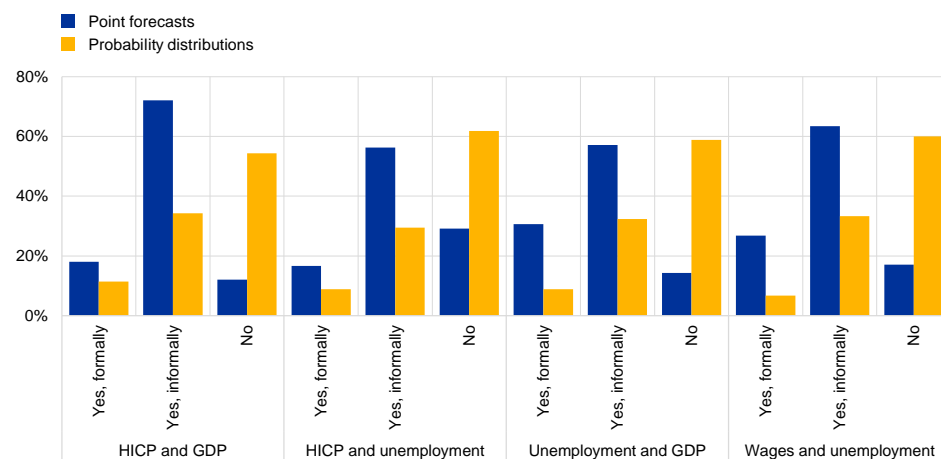
The results of the 2018 special survey indicate that point forecasts for the key variables tend to be jointly determined. Participants had the opportunity to specify whether any joint determination of their forecasts was done in a formal manner, e.g. within one model, or more informally, e.g. through expert consideration of, and judgement applied to, model outputs. Across the different pairs of economic variables, on average over 80% of respondents indicated that their point forecasts were determined jointly, and predominantly in a more informal manner (see Chart 1). By contrast, only about 40% of respondents indicated that they prepare their PDFs jointly.

Phillips curve and Okun's law relationships were primarily used to inform revisions to forecasts at medium-term horizons (from one to three years ahead). This is consistent with there being a greater role for idiosyncratic shocks in the short term (the next twelve months), whereas longer-term expectations would be more influenced by views on the structural parameters of the economy. Similarly, the proportion of forecasters indicating that they revised the HICP inflation PDFs jointly with either their GDP growth or unemployment rate PDFs was greatest at the medium-term horizon, although the overall shares of positive responses were lower than for the point forecasts.

Chart 1

The extent to which SPF expectations are jointly determined

(percentages of respondents)



Sources: SPF and ECB staff calculations.

Indeed, these macroeconomic relationships can also be seen in the aggregate data.

A scatter plot of aggregate point forecasts from the SPF shows a negative relationship for two-year-ahead forecasts of inflation and the unemployment rate, which is consistent with a Phillips curve relationship (see Chart 2). However, the correlation between the two variables significantly weakened in the post-crisis period, which is consistent with the evidence presented in Box 3.²⁸ Moreover, aggregate two-year-ahead forecasts of real GDP growth and changes in the two-year-ahead forecasts for unemployment exhibit a negative correlation, which is in line with Okun's law. However, the negative correlation was not statistically significant before 2008 and has strengthened considerably in the post-crisis period. This observation is also present in realised data, which show a strong increase in the correlation between GDP growth and unemployment in the post-crisis period. The effect has been especially strong since the start of the recovery and points towards a possible structural change in the unemployment-GDP relationship.²⁹

²⁸ The results also confirm findings by López-Pérez, V., "Do professional forecasters behave as if they believed in the New Keynesian Phillips Curve for the euro area?", *Empirica*, Vol. 44, No 1, 2017, pp. 147-174.

²⁹ For possible factors driving the change in the relationship, see the article entitled "The employment-GDP relationship since the crisis", *Economic Bulletin*, Issue 6, ECB, 2016.

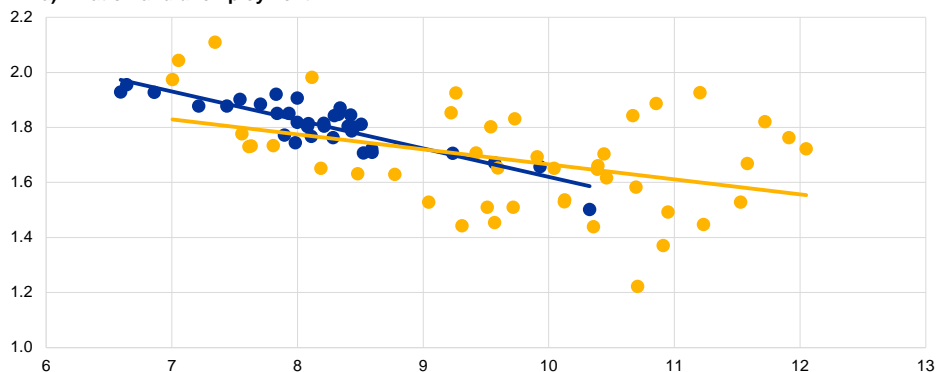
Chart 2

Correlation analysis of mean point forecasts

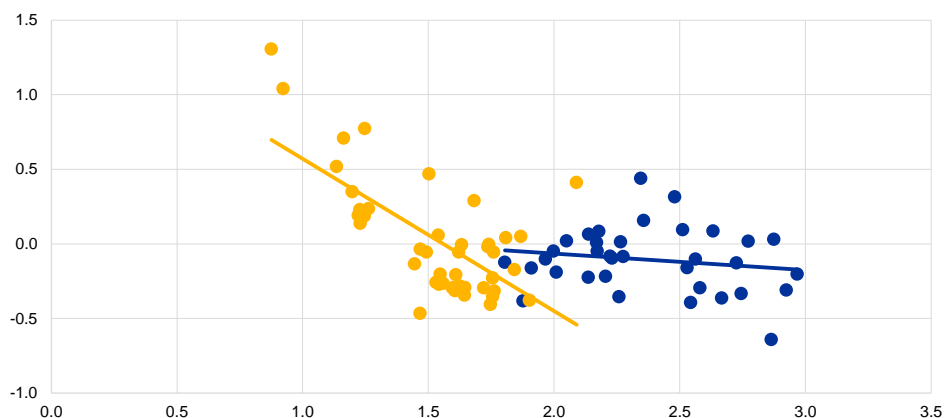
(inflation and GDP growth: annual percentage changes; unemployment: percentages of the labour force)

- 1999-2007
- 2008-2018

a) Inflation and unemployment



b) Change in unemployment and GDP growth



Sources: SPF and ECB staff calculations.

Notes: Panel a: scatter plot of the mean point forecast for inflation (vertical axis) and unemployment (horizontal axis) in two years' time. Panel b: scatter plot of the change in the unemployment forecast in two years' time between two consecutive survey rounds (vertical axis) and the mean point forecasts for GDP growth in two years' time (horizontal axis). Sample period: from the first quarter of 1999 to the last quarter of 2018.

Box 3

Stability of the price Phillips curve implied by SPF microdata

Prepared by Lukas Henkel

Forecasts reported in the SPF can be used to investigate the existence of, and time variation in, the relationship between different economic variables. This box examines whether the Phillips curve link between inflation and unemployment point forecasts of individual respondents changes over time. The analysis is carried out in terms of revisions rather than levels of point forecasts to abstract from presumed time-invariant differences between forecasters. The relationship is described by the slope of a price Phillips curve β estimated in the following regression:

$$\Delta E(\pi^{ny}_{i,t}) = \alpha + \beta \Delta E(u^{ny}_{i,t}) + \gamma \Delta E(\pi^{yono}_{i,t}) + \varepsilon_{i,t}$$

where $\Delta E(\pi^{ny}_{i,t})$ and $\Delta E(u^{ny}_{i,t})$ denote the revision of, respectively, expected inflation and the expected unemployment rate for the next calendar year in survey round t of forecaster i and

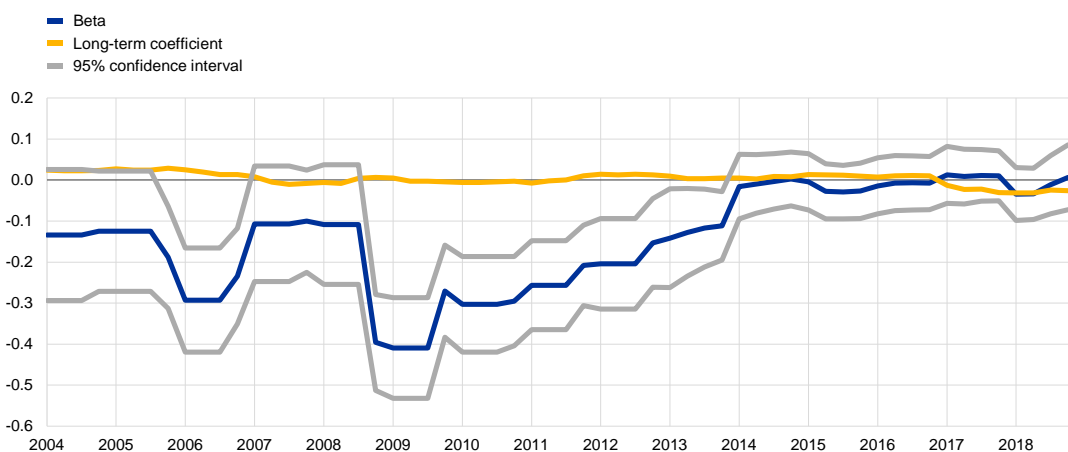
$\Delta E(\pi^{yomo}_{i,t})$ denotes the forecast revision of expected inflation for the subsequent calendar year. Forecast revisions are defined as the change in the point forecast between two consecutive survey rounds. The sample period is from the first quarter of 1999 to the last quarter of 2018. Using the full sample and pooling over all forecasters, the Phillips curve slope has a statistically significant negative value of -0.09.

Five-year rolling window regressions suggest that the slope of the implied Phillips curve has substantially flattened. While the slope of the Phillips curve was relatively stable (but imprecisely estimated) before the financial crisis, the slope consistently converged to zero in the post-crisis period and has remained there in recent years. Using long-term expectations,³⁰ the regression uncovers no relationship between unemployment and inflation forecast revisions, reflecting rather small variations at that horizon, but also supporting the view of monetary neutrality in the long run (yellow line in Chart A).

Chart A

Rolling window estimation of the slope of the price Phillips curve implied by SPF microdata

(estimated slope coefficient)



Sources: SPF and ECB staff calculations.

Notes: The blue line shows the slope coefficient β of the New Keynesian Phillips curve specified above, estimated using rolling windows with a window length of five years for each end-date of the rolling window estimation. The grey lines show the 95% confidence interval of the coefficient. The yellow line shows the slope coefficient of a regression of revisions to long-term inflation expectations on revisions to long-term unemployment expectations, estimated using rolling windows of the same length. This coefficient is never significantly different from zero.

This analysis points to changes in the link between the formation of unemployment and inflation forecasts. While the SPF unemployment and inflation forecasts are generally in line with a price Phillips curve, the analysis also reveals that the macroeconomic relationship has considerably weakened in the post-crisis period. The results suggest that other factors, such as judgement-based forecasts (see Box 1), have gained in importance for the expectations formation process.

³⁰ The specification using long-term expectations omits the forward-looking part of the New Keynesian Phillips curve owing to data constraints, i.e. the regression is given by $\Delta E(\pi^{lt}_{i,t}) = \alpha + \beta \Delta E(u^{lt}_{i,t}) + \varepsilon_{i,t}$

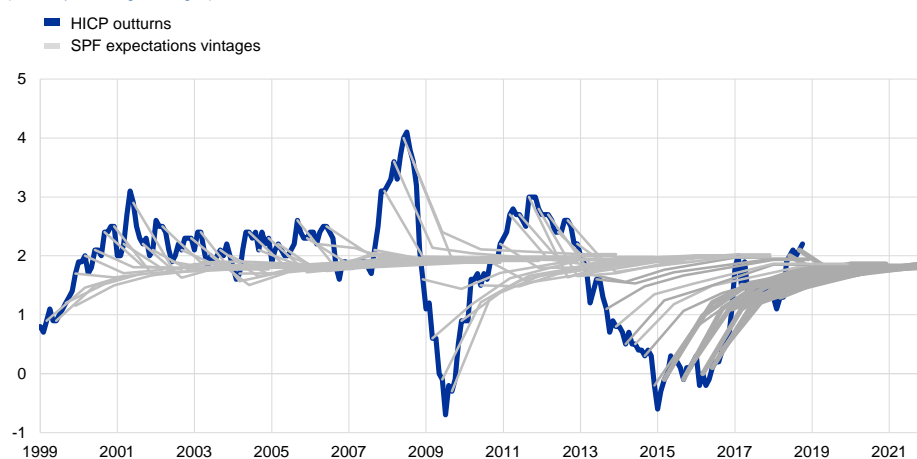
3 How have SPF point forecasts evolved over time?

HICP inflation and real GDP growth outturns have been affected by strong and persistent shocks over the last ten years. In the first ten years of the SPF, HICP inflation was mostly a little over 2%, and was modestly, although persistently under-predicted by the aggregate forecast of the SPF, while aggregate real GDP growth forecasts either over-predicted or under-predicted the actual outturns. The last ten years have seen much greater swings in these variables and have been more characterised by overestimation of both HICP inflation and real GDP growth (see Charts 3 and 4).

Chart 3

Aggregate HICP inflation expectations and outturns

(annual percentage changes)



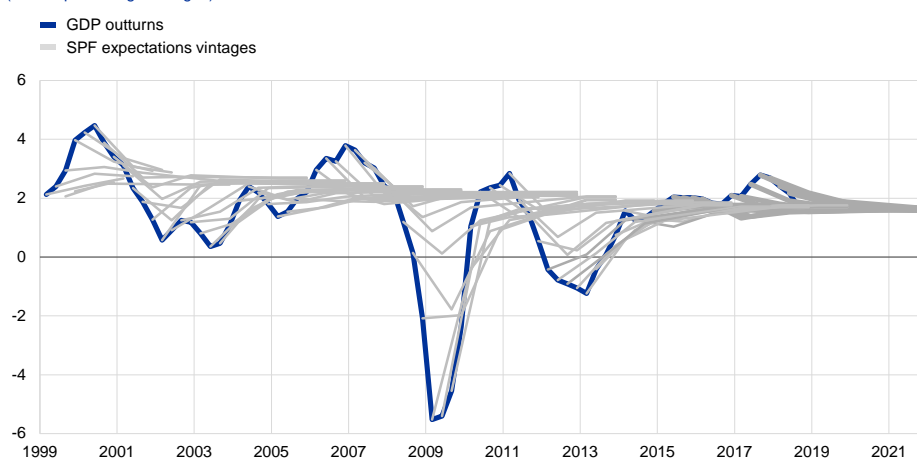
Sources: SPF and ECB staff calculations.

Note: The inflation expectations profiles for each survey round (in grey) comprise the 12 and 24-month-ahead and longer-term expectations.

Chart 4

Aggregate real GDP growth expectations and outturns

(annual percentage changes)

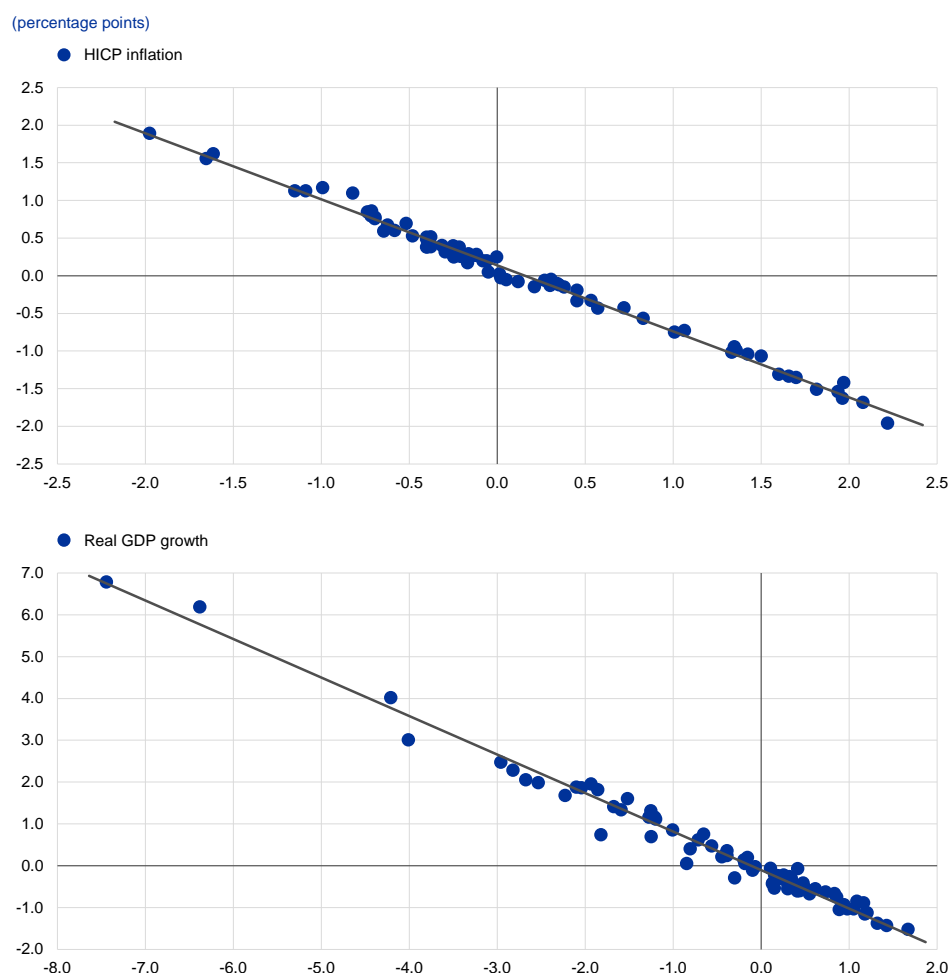


Sources: SPF and ECB staff calculations.

Note: The real GDP growth expectations profiles for each survey round (in grey) comprise the 4 and 8-quarter-ahead and longer-term expectations.

SPF forecasts have typically exhibited strong reversion to trend. Despite the magnitudes of the gyrations in both HICP inflation and real GDP growth, SPF forecasts have tended immediately to revert back towards a long-run trend (exceptions being real GDP growth expectations in 2008 and 2011, when the sharp fall in the growth rate was expected to continue before recovering). In general, the further the data were from their perceived trend, as proxied by the longer-term expectation, the stronger was the movement expected back towards that trend. In other words, there is a strong negative relationship between deviation from trend, and the change expected over the next two years (see Chart 5). This relationship holds more tightly for inflation, which could be interpreted positively as an indication of the strength of the inflation anchor.

Chart 5
Reversion to trend in SPF forecasts



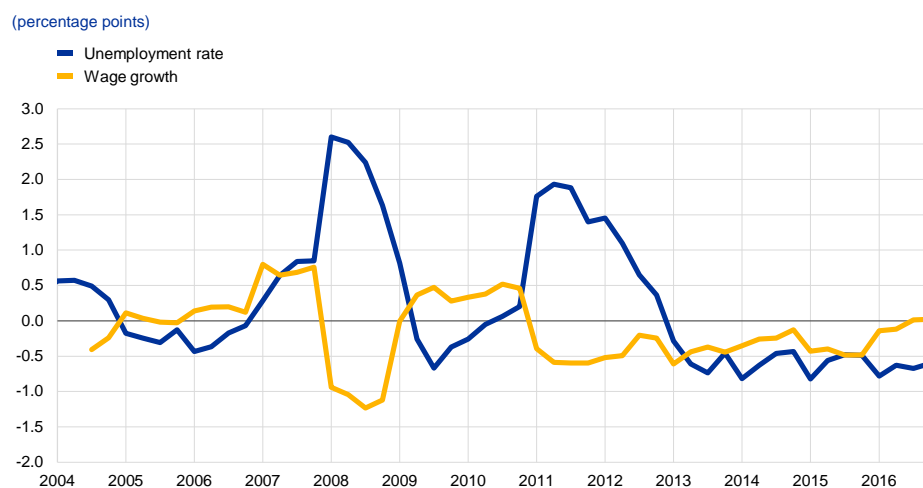
Sources: SPF and ECB staff calculations.
Notes: In each panel, the x-axis denotes the distance from trend, measured as the deviation between the latest data on HICP inflation or real GDP growth at the time of each survey round and the longer-run expectation of that variable, while the y-axis denotes the steepness of the short-term expectation path, measured as the change expected in the variable over the next two years.

As well as the point forecasts themselves, the constellations of forecast errors can be informative about potential changes in underlying economic relationships. For example, a historically unusual pattern of forecast errors for wage growth and unemployment beginning in 2013 may point to a structural break in euro

area labour market dynamics. Until 2013, SPF forecast errors for wage growth tended to mirror those for unemployment: episodes of weaker-than-expected wage growth coincided with a higher-than-expected unemployment rate and vice versa. After 2013, however, that pattern changed and both wage growth and the unemployment rate were jointly overestimated (see Chart 6). Similarly, Eurosystem/ECB staff projections of compensation per employee growth during this period consistently over-predicted, while forecasts of employment growth under-predicted.³¹ This might suggest that, even though the amount of slack in the labour market (as measured by the unemployment rate) turned out to be less than expected, other factors kept wage growth subdued.³²

Chart 6

SPF near-term projection errors for the unemployment rate and wage growth



Sources: SPF and ECB staff calculations.
Notes: The projection horizon is the calendar year after the x-axis date. Projection errors are defined as the outcome, according to the most recent data, minus the expectation.

Box 4

Assessing individual forecaster performance

Prepared by Aidan Meyler

Determining whether the heterogeneity in individual forecaster's forecasting performance is due to chance or differences in forecasting ability is challenging for a number of reasons.

First, all we can observe is the (ex post) forecast error once the outcome is realised. However, a large/small forecast error does not necessarily imply a bad/good forecast at the time the forecast was made (i.e. ex ante) because the error might just reflect an unanticipated shock related, for example, to oil prices, weather or exchange rates. Second, there is also the difficulty of making comparisons across different variables and forecasting horizons. For instance, a forecaster might perform relatively well when forecasting HICP inflation one year ahead but relatively poorly when forecasting real GDP growth two years ahead. Third, not all forecasters respond in every round and not all provide forecasts for all variables/horizons (in technical terms, it is an unbalanced panel). Thus it could be that

³¹ See the box entitled "Recent wage trends in the euro area", *Economic Bulletin*, Issue 3, ECB, 2016.

³² See the box entitled "What can we learn from the ECB Survey of Professional Forecasters about perceptions of labour market dynamics in the euro area?", *Economic Bulletin*, Issue 8, ECB, 2017.

a particular forecaster did not respond when it was relatively easy/hard to make a forecast and this could affect the forecaster's average error.

We address the question of chance versus ability using techniques known as

“bootstrapping” and “Monte Carlo simulation”.³³ The basic idea is to take the forecast errors for a given variable/horizon in each period and randomly reallocate them across the forecasters who provided a forecast in that period for the specific variable/horizon (also known as bootstrapping).³⁴ This process is then repeated a large number of times, for example one thousand (also known as Monte Carlo simulation), to simulate the distribution of forecast errors under the assumption (null hypothesis) of equal forecasting ability.³⁵ If the actual distribution of forecast performance lies within given confidence bands (for example, 1% and 99%) of the simulated distribution, then we cannot reject the null hypothesis that forecasters have equal ability and that differences in performance are largely due to chance.

At first glance, the results suggest that some forecasters perform better/worse than would be expected if the null hypothesis of equal ability were true. For example, panel a of Chart A shows that, for HICP one-year-ahead forecasts, there are a number of forecasters who perform better than would be expected under the null hypothesis of equal forecasting ability and some that perform worse. This is shown by the fact that the actual distribution lies below/above the simulated distribution for the better/worse ranked forecasters. This pattern is generally repeated for the other variables/horizons.

³³ See D'Agostino, A., McQuinn, K. and Whelan, K., “[Are Some Forecasters Really Better Than Others?](#)”, *Journal of Money, Credit and Banking*, Vol. 44, No 4, June 2012, pp. 715-732. This approach also has the advantage that it (i) mimics the unbalanced nature of the SPF, (ii) replicates the participation of each forecaster, and (iii) only reallocates errors intra-period not inter-period. Other papers that have looked at the issue of forecaster performance (e.g. Stekler, H., “[Who Forecasts Better?](#)”, *Journal of Business & Economic Statistics*, Vol. 5, No 1, January 1987, pp. 155-158; and Batchelor, R.A., “[All Forecasters Are Equal](#)”, *Journal of Business & Economic Statistics*, Vol. 8, No 1, January 1990, pp. 143-144) have relied on balanced panels and, in some cases, utilised rank, which does not take into account the size of forecast errors.

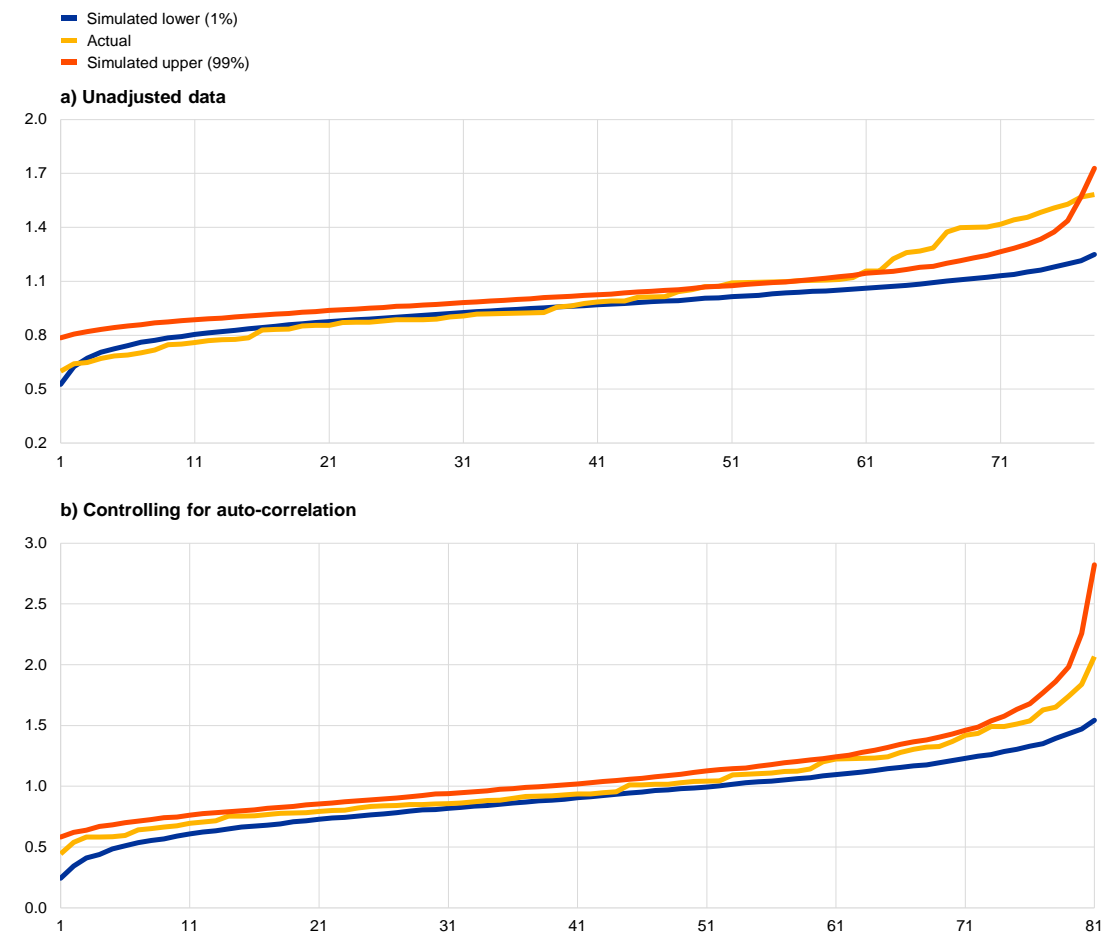
³⁴ To avoid forecasters with only a few forecasts having a disproportionate impact on the results, we only consider forecasters who have provided at least 20 forecasts (i.e. the equivalent of five-years) for a given variable/horizon. This leaves us with between 63 and 77 forecasters, depending on the variable/horizon.

³⁵ We assess relative forecast performance using a statistic (the squared error statistic scaled by the mean squared error) that (a) penalises larger errors, (b) controls for difficult to forecast variables/horizons/periods, and (c) allows us to aggregate across variables and horizons.

Chart A

Actual and bootstrapped/simulated distributions of forecaster performance for HICP one year ahead

(y-axes: percentage points; x-axes: forecasters by rank)



Sources: SPF, Eurostat and ECB staff calculations.

However, the apparent over/under performance appears to be a statistical artefact. First, if individual forecasters indeed had above/below average forecasting ability, we might expect to see some correlation in performance rankings across sample periods. In this regard, it is telling that the correlation of the rankings of forecast performance across the pre- and post-crisis periods is close to zero (see Table A), with the exception of HICP two years ahead, where the correlation between the ranking for the pre-crisis and post-crisis periods for HICP two-year-ahead forecasts is 0.37. Second, panel b of Chart A shows that the apparent over/under performance for HICP one year ahead disappears if one controls for autocorrelation in the errors (in this case by taking only the forecasts in the first quarter of each year).

Table A

Correlation of forecasting ranks across two sub-sample periods (1999-2008 and 2009-2018) for one-year-ahead and two-year-ahead forecasts

	One year ahead	Two years ahead
Inflation	0.11	0.37
GDP growth	-0.03	0.06
Unemployment rate	0.05	0.08

Sources: SPF and ECB staff calculations.

To sum up, there is no strong evidence of statistically significant differences in forecasting ability. In fact, the aggregate SPF forecast (which averages all individual responses) is always in the upper quartile across the 12 permutations³⁶ of variable, horizon and period and is ranked first overall when aggregating across variables, horizons and periods. This suggests that it is hard to consistently beat the simple average.³⁷

4 How have SPF probability distributions performed over time?

PDFs allow survey respondents to express their views on the complete range of outcomes and are thus a valuable complement to point forecasts. Forecasters assign probabilities to outcomes of each variable at each horizon in an interval half a percentage point wide.³⁸ Each quarter the SPF reports the aggregate probability distribution, i.e. the average of all probabilities reported for each interval. These distributions, at both the individual and the aggregate level, allow a quantitative assessment of perceived risk and uncertainty, adding the extra dimension of information to the point forecasts.

The aggregate probability distributions for the individual variables have seen dynamic and often large movements over the years (see Chart 7). In particular, there are some notable differences in the PDFs reported in the first ten years and the latest ten years of the SPF, which broadly correspond to the pre- and post-crisis periods. These reflect not only differences in the location of the PDFs, echoing differences in the point forecasts, but also differences in the shape of the PDFs. For example, even though at the two-year horizon the perceived deflation risk has vanished, the probability assigned to relatively low inflation outturns (<1.5%) is still quite elevated, as the PDFs have a more negative skew.

³⁶ The twelve permutations are the result of having three variables (HICP, GDP and unemployment), two horizons (one year and two years ahead) and two sample periods (pre-crisis and post-crisis).

³⁷ This confirms findings in Genre, V., Kenny, G., Meyler, A. and Timmermann, A., op. cit.

³⁸ Over the twenty years of the survey, the range of outcomes spanned by the closed intervals has been updated in response to developments in the data.

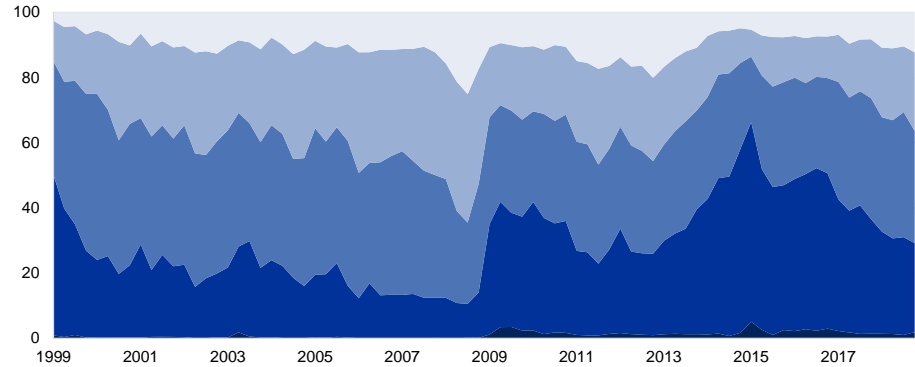
Chart 7

Two-year-ahead probability distributions for inflation, real GDP growth and unemployment

(percentages)

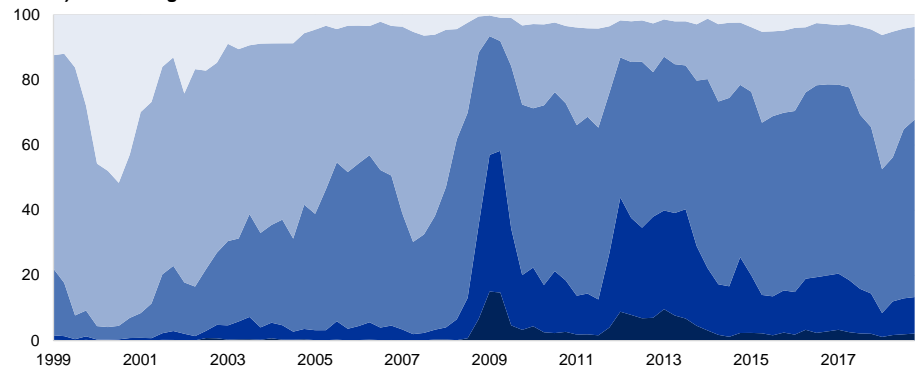
- Below 0%
- Between 0% and 1.5%
- Between 1.5% and 2.0%
- Between 2.0% and 2.5%
- Above 2.5%

a) Inflation



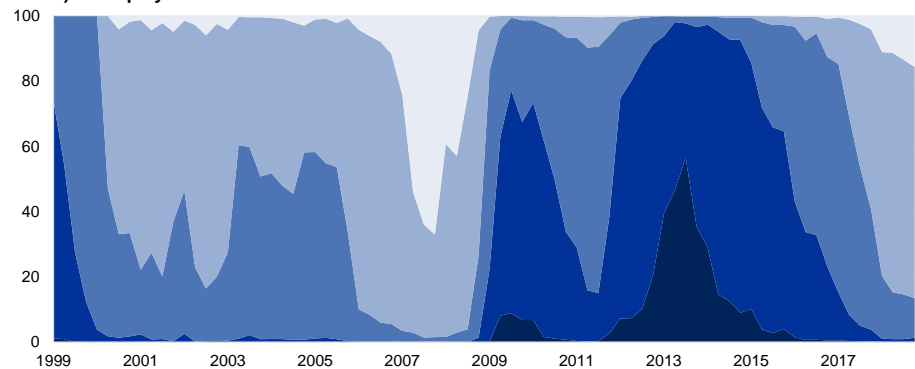
- Below 0%
- Between 0% and 1.0%
- Between 1.0% and 2.0%
- Between 2.0% and 3.0%
- Above 3.0%

b) Real GDP growth



- Above 12.0%
- Between 10.0% and 12.0%
- Between 8.5% and 10.0%
- Between 7.0% and 8.5%
- Below 7.0%

c) Unemployment

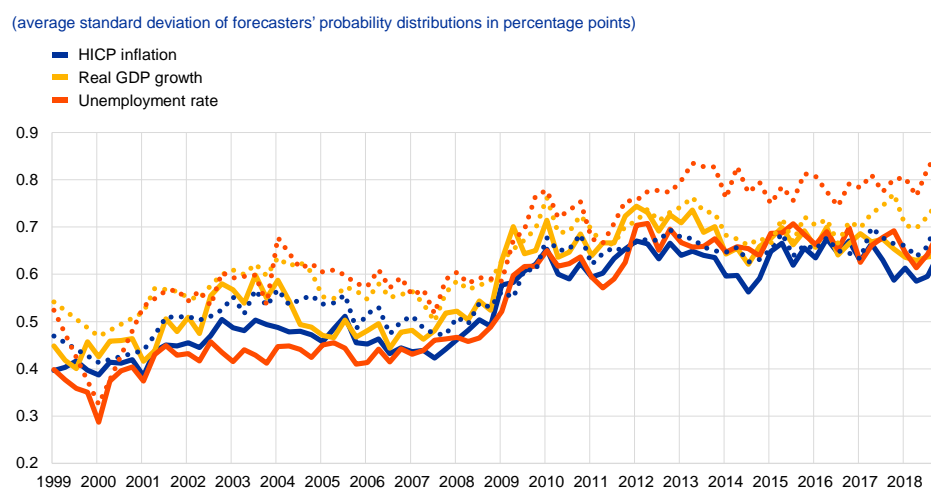


Sources: SPF and ECB staff calculations.

Forecasters' assessments of uncertainty seem to have increased permanently in 2009, across all variables and horizons.

Aggregate uncertainty is typically measured by the width of the aggregate PDF. This, in turn, is determined by two factors: how uncertain each forecaster is, i.e. the width of the individual PDFs being aggregated, and how much forecasters disagree about the most likely outcome, i.e. the extent to which the individual distributions are centred differently. One striking feature of the SPF data is that, across all variables and horizons, there was a step increase in forecasters' individual uncertainty at the time of the financial crisis (see Chart 8) which has persisted ever since. The effect of disagreement on aggregate uncertainty, on the other hand, has been much more varied across economic variables, forecast horizons and time.

Chart 8
Forecasters' assessment of uncertainty

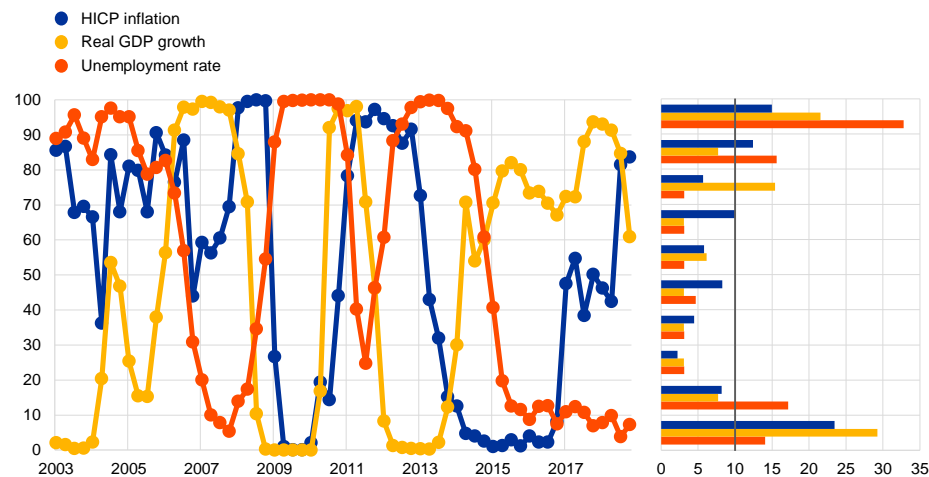


Sources: SPF and ECB staff calculations.
Notes: Solid lines depict two-year-ahead expectations, dotted lines depict longer-term expectations.

Even after the 2009 step increase in forecasters' uncertainty, the two-year-ahead PDFs underestimated subsequent data volatility. Over the last twenty years, the changes over two years in rates of inflation, real GDP growth and unemployment have tended to be much larger than the widths of the two-year-ahead PDFs. This can be seen from the concentration of the proportion of outcomes in the first and last deciles (see Chart 9, right panel). For instance, over 30% of unemployment rate outcomes came from the upper decile of the distribution expected two years previously. If the PDFs were good descriptors of the true, underlying distributions, then the same share of outcomes (10%) would come from each of the deciles of the respective PDFs. Moreover, many of those tail outcomes occurred after forecasters had widened their PDFs in 2009. This suggests that, while they believe economic developments to be intrinsically a little more uncertain than during the Great Moderation period before 2008, much of the volatility over the last ten years was driven by shocks which have been surprising in their magnitude, frequency or persistence.

Chart 9**Cumulative two-year-ahead probabilities and proportions by PDF decile**

(percentages)



Sources: SPF and ECB staff calculations.

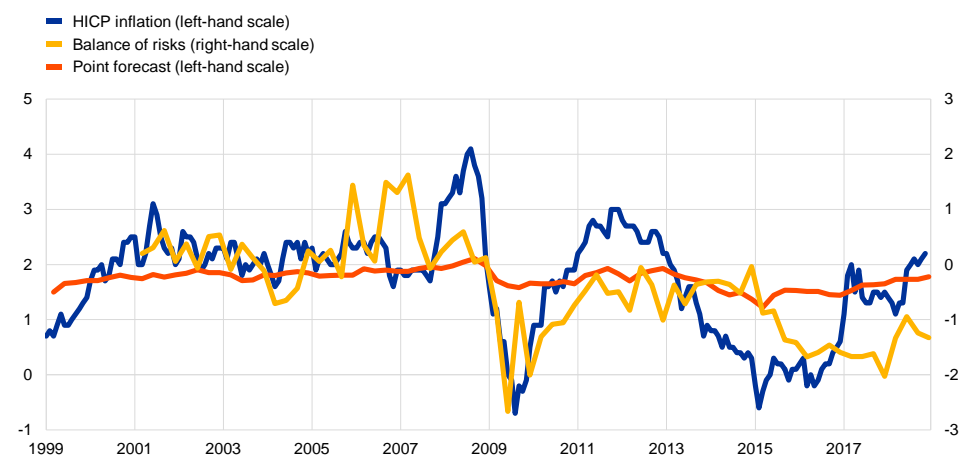
Notes: The dots show the probability of either HICP inflation, real GDP growth or the unemployment rate taking any value less than or equal to the actual outcome, according to the two-year-ahead probability distribution expected two years prior to the date shown. The bar chart on the right shows the proportion of outcomes associated with each decile of the expected PDF. If these PDFs were perfectly specified, there would be 10% of outcomes in each decile.

Forecasters have actively adjusted their view on the balance of risks, as well as revising their point forecasts. The asymmetry of a forecast probability distribution is indicative of the balance of risks that the forecast embodies (see Box 5). Forecasters have adjusted their risk balances dynamically in response to the evolving economic outlook, especially for their expected inflation PDFs (see Chart 10). In 2006, as inflationary pressures appeared to be building, forecasters moved the balance of risks around their expectations for inflation in two years' time strongly to the upside, but without much change in their point forecasts. In the survey in the first quarter of 2009, the aggregate point estimate fell by 0.3 percentage point (the largest quarter-on-quarter revision) and the balance of risk measure moved from +0.1 to -0.9. In the survey in the second quarter of 2009 the point forecast was revised down by only 0.1 percentage point, whereas the balance of risk measure moved further downwards very strongly to -2.7, before recovering over subsequent survey rounds, while the point forecast remained stable. In contrast, in the period 2013-2014, when HICP inflation was falling, point forecasts were progressively revised downwards, with little change in the balance of risks metric.

Chart 10

HICP inflation, two-year-ahead point forecasts and balance of risks

(left-hand scale: annual percentage changes; right-hand scale: balance of risks indicator)



Sources: SPF and ECB staff calculations.

Note: Positive values of the balance of risks indicator denote that the balance of risks is tilted towards higher inflation outcomes, while negative values denote that the balance of risks is tilted towards lower outcomes.

Box 5

Using probability distributions to measure the balance of risks

Prepared by Rupert de Vincent-Humphreys

A probability distribution for a future outcome forms a complete representation of the forecast. The probability distribution function (PDF) provides the information needed to summarise all aspects of the forecast: the central point forecast, how uncertain that is, whether the balance of risks is seen as more to the upside or downside, and the probabilities of outcomes in given ranges. In practice, the accuracy of such metrics depends on how precisely the PDF is specified.

In theory, how a forecaster summarises the underlying probability distribution as a single point forecast depends on that forecaster's view on forecast errors. More formally, forecasting theory shows that the optimal point forecast $\hat{x}_{t+h|t}^*$ corresponding to a given PDF is the one which minimises the forecaster's loss function associated with possible forecast errors:

$$\hat{x}_{t+h|t}^* \equiv \arg \min E[L(x_{t+h}, \hat{x})]$$

The loss function, L , is a mathematical expression which describes how much the forecaster would care about different-sized forecast errors. Thus, even if different forecasters had the same view on the underlying distribution of possible future outcomes, if they had different loss functions they would give different point forecasts. Three types of loss function are typically considered in economics. The first is the uniform loss function: all forecast errors are equally bad, regardless of their size. In this case, the optimal point forecast is the distribution's mode, which corresponds to the most likely outcome. The second loss function increases linearly with the size of the forecast error, i.e. if the forecast error is twice as large, then that is twice as bad. In this case, the optimal point forecast is the median, where the probability of an upside error is the same as the probability of a downside error. The third is the quadratic loss function, which penalises larger forecast errors even more severely: if the forecast error is twice as large, then that is four times as bad. In this case, the corresponding point forecast is the distribution's mean.

Similarly, the statistical measure of asymmetry that best represents the balance of risks around a point forecast also depends on the forecaster’s view on forecast errors. The extent to which risks around the point forecast are in one direction or another depends on the asymmetry of the forecast PDF: for a symmetric PDF the risks are balanced. Just as forecast theory defines the optimal forecast, it defines the balance of risk as the balance of conditional expected loss:

$$\hat{x}_{t+h|t}^* \equiv E[L(x_{t+h}, \hat{x}_{t+h|t}) | x_{t+h} > \hat{x}_{t+h|t}] - E[L(x_{t+h}, \hat{x}_{t+h|t}) | x_{t+h} < \hat{x}_{t+h|t}]$$

In cases where the loss function itself is symmetric (such as the three described above), i.e. an upside error and a downside error of the same magnitude would be equally undesirable, the balance of risks measures, in the event that a forecast turns out to be wrong, in which direction the forecaster considers it more likely to be wrong. For instance, a positive balance of risks indicates that the forecaster believes that, were the forecast to be wrong, it would more likely be because the outturn was above the forecast than below it. The equation above can be combined with the different loss functions to show that the appropriate measure of asymmetry is the balance of total probability either side of the mode in the case of uniform loss, the quartile skewness in the case of linear loss, and skewness in the case of mean squared loss.

In the context of the SPF, where probabilities are reported for a discrete set of fairly wide intervals, there are a number of alternative ways of evaluating the different statistical asymmetry measures. For example, the interval probabilities supplied in the SPF represent a set of points along the cumulative distribution function, and different interpolation schemes can be used to convert these into a continuous function. In addition, an assumption needs to be made about where to place the points corresponding to the two open probability intervals and the upper and lower ends of the range of plausible outcomes.

All combinations of statistical measures and alternative calculation practices can be brought together in a balance of risk indicator suite. These measures all tend to co-move strongly and can be distilled into a simple summary statistic by taking their unweighted average.³⁹

5 What can we learn from longer-term expectations?

Longer-term expectations in the SPF may provide information on professional forecasters views on the steady state of the economy. The steady state is important because this is what the economy reverts to once the effects of past and current shocks have died out and can evolve in line with structural trends in the economy. In the SPF, the longer-term horizon corresponds to a horizon about five years ahead. It might be reasonable to assume that most shocks hitting the economy are not that persistent, and so, by that horizon, the impact of any shock should have faded. If this were the case, then longer-term expectations should reflect only a view on the structural characteristics of the economy, such as the potential growth rate or the NAIRU.

³⁹ For more information, see the box entitled “[How do professional forecasters assess the risks to inflation?](#)”, *Economic Bulletin*, Issue 5, ECB, 2017.

However, the answers to the 2018 special survey suggest that the picture is more nuanced, i.e. that some shocks might be very persistent. SPF participants were asked to clarify how their long-term forecasts should be interpreted. While many respondents said that their long-term expectations did have a structural interpretation, even more said that this was only sometimes the case, and some suggested in their qualitative comments that the impact of some shocks may be more persistent, in which case five years would not be enough to return to the steady state (see Table 1). Indeed, the average longer-term unemployment rate expectations of those responding “no” to a NAIRU interpretation do appear to be more cyclical than for those responding “always”.

Table 1
Correspondence between SPF longer-term expectations and structural characteristics

(number of respondents)

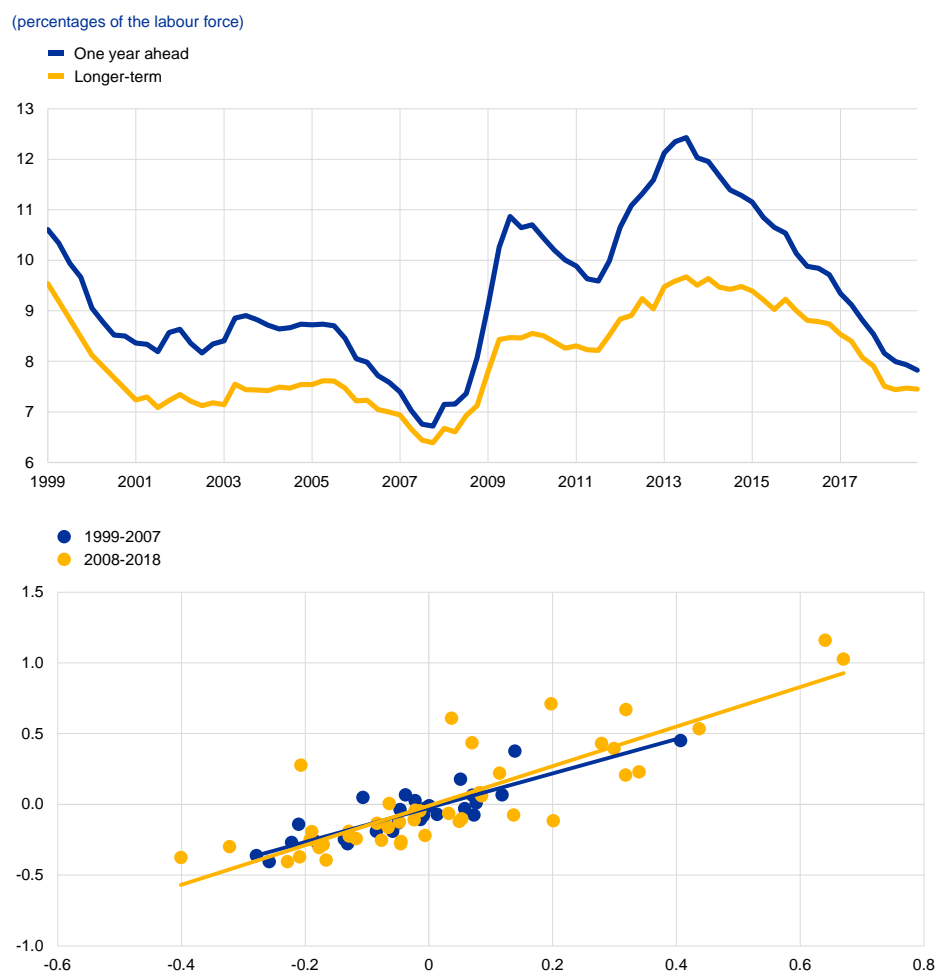
	Always	Sometimes	No	Total
Longer-term unemployment rate expectation and NAIRU	16	17	6	39
Longer-term GDP expectation and potential output	19	21	3	43

Source: SPF special survey, 2018.

The impact of perceived persistence of shocks is most visible in the evolution of long-term unemployment expectations. The sharp increases in actual unemployment and short-term unemployment expectations in the aftermaths of the financial and sovereign debt crises were also accompanied by significant upward revisions of long-term expectations (see Chart 11). Such a link between expectations across horizons can be explained using the concept of hysteresis, whereby temporary demand or supply-driven increases in unemployment can, for instance via duration effects, have persistent effects in terms of a higher equilibrium unemployment rate. In this respect, the survey results for the last few years suggest that forecasters also allow hysteresis to work symmetrically: the decline in short-term expectations since 2013 was accompanied by a decline in long-term expectations in roughly the same proportion as the previous upward movements. As a result, the long-term unemployment expectations display more cyclicity than would normally be expected from structural unemployment.

Chart 11

Unemployment rate expectations and revisions to unemployment rate expectations



Source: SPF.

Note: The upper panel shows the aggregate one-year-ahead and five-year-ahead unemployment expectations. The lower panel shows the revisions to unemployment rate expectations: revisions to the aggregate longer-term unemployment expectations are plotted on the x-axis and revisions to aggregate one-year-ahead expectations from the corresponding survey round are plotted on the y-axis. The blue and yellow lines in the lower panel capture the trend of the two sub-samples shown.

The extent to which longer-term inflation expectations remain anchored to the central bank's target can indicate confidence in the central bank achieving its target. The degree of inflation anchoring can be measured in different ways. These are often based on the sensitivity of longer-term expectations to short-term developments, such as the element of surprise in data outturns, or shorter-term expectations. This was comprehensively assessed in the report of the Low Inflation Task Force.⁴⁰

Data from the quarterly survey suggest that euro area inflation expectations are well anchored. Over the last twenty years the longer-term inflation expectations in the SPF have been in the range of 1.8 to 2.0%, a range which could be interpreted as broadly consistent with the ECB's objective of keeping inflation below, but close to, 2%. Moreover, longer-term expectations have been more stable than the average

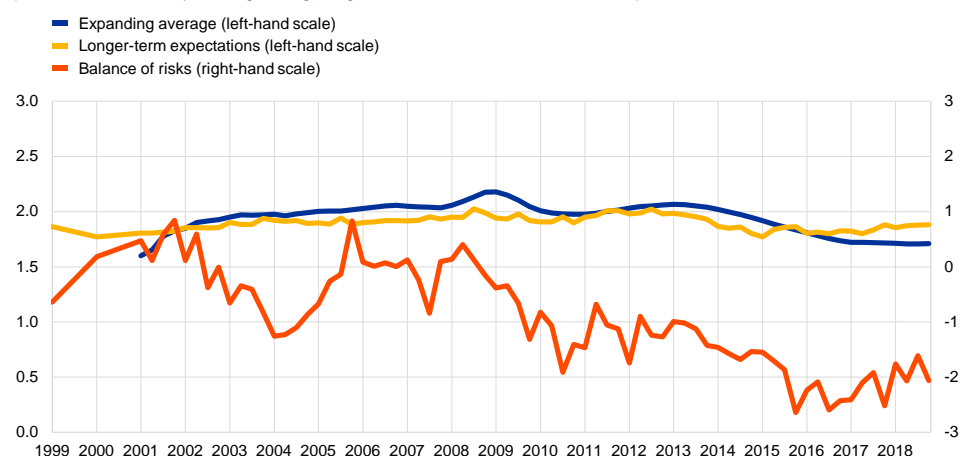
⁴⁰ See Ciccarelli, M. and Osbat, C. (eds.), op. cit.

HICP inflation rate, which might otherwise have been taken as a guide to inform a naïve, backward-looking forecast (see Chart 12). In recent years, longer-term inflation expectations have been gradually and steadily recovering from the low recorded in the first quarter of 2015, i.e. the survey round prior to the announcement of the public sector purchase programme. In the fourth quarter of 2018 survey round, the longer-term expectation for HICP inflation stood at 1.9% and the longer-term expectation for HICP inflation excluding energy, food, alcohol and tobacco stood at 1.8%. However, forecasters' balance of risks around longer-term inflation expectations still remains clearly skewed to the downside, as it has been since the sharp fall in annual inflation in the second half of 2008, although it has been improving.

Chart 12

Longer-term inflation expectations and the balance of risks around them

(left-hand scale: annual percentage changes; right-hand scale: balance of risks indicator)



Sources: SPF and ECB staff calculations.

Notes: The expanding average series denotes the average annual HICP inflation rate from January 1999 to the date indicated on the x-axis. Negative values of the balance of risks indicator denote that the balance is to the downside, while positive values denote that the balance is to the upside.

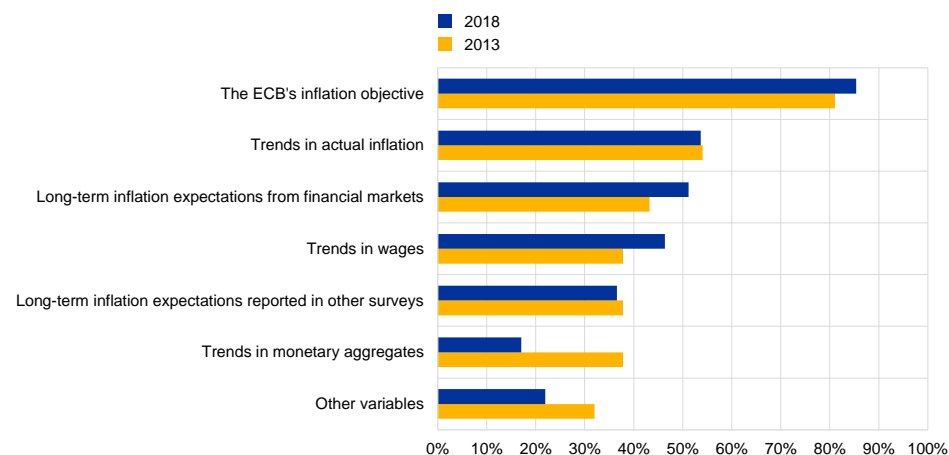
The ECB's inflation objective has remained the key factor informing SPF respondents' longer-term expectations.

The 2018 special survey repeated a question from 2013, asking survey participants what information they used to inform their longer-term inflation expectations. Relative to the previous survey, there were notable increases in the shares of respondents indicating the ECB's inflation objective, trends in financial market based measures of inflation expectations and trends in wages, whereas there were notable declines in the shares of respondents indicating trends in monetary aggregates and other variables (see Chart 13). Given that trends in actual inflation, wages and longer-term market expectations have clearly weakened in recent years, the role of the inflation objective as an anchor of expectations has been brought to the fore.

Chart 13

Factors informing SPF respondents' longer-term expectations

(percentages of respondents)



Sources: SPF and ECB staff calculations.

Notes: The option "fiscal variables" was not offered as a possible response in 2013, although fiscal variables were mentioned by some respondents answering "other variables". It is therefore also included in "other variables" in the 2018 figures. Percentages do not add up to 100 because respondents could indicate multiple factors.

6 Conclusions

The ECB's SPF is the most long-standing, comprehensive and transparent survey of the aggregate euro area economy. In particular, relative to other surveys, the PDFs in the SPF allow a complete, quantitative evaluation of perceived risks to and uncertainty surrounding the outlook. This provides an additional valuable dimension to complement the point forecasts and form a more complete economic assessment of the information received in the quarterly survey, for example when considering the pace and nature of the economic normalisation following the financial crisis.

It is helpful as a cross-check not only of the ECB's/Eurosystem's own macroeconomic projection profiles but also of the fundamental economic relationships underpinning them. The twenty years of the SPF have generated a rich dataset which can be used to address topical economic questions and help inform monetary policy debate. For example, considering the SPF data for different variables together, we can deduce how the professional forecasting community assesses the relationships between key variables, such as growth and inflation or unemployment and wage growth, to be evolving. Thus, the SPF remains as useful for economic analysis and as relevant to monetary policy debate today as it was when it was first launched twenty years ago.

2 Fiscal spillovers in a monetary union

Prepared by Mario Alloza, Bogdan Cozmanca, Marien Ferdinandusse and Pascal Jacquinot

The article describes the main transmission channels of the spillovers of national fiscal policies to other countries within a monetary union and investigates their magnitude using different models. In the context of Economic and Monetary Union (EMU), fiscal spillovers are relevant for the accurate assessment of the cyclical outlook in euro area countries, as well as in the debates on a coordinated change in the euro area fiscal stance and on euro area fiscal capacity. The article focuses on spillovers from expenditure-based expansions in the larger euro area countries by presenting two complementary exercises. The first is an empirical investigation of spillovers based on a new, long dataset for the largest euro area countries, while the second uses a multi-country general equilibrium model with a rich fiscal specification and the capacity to analyse trade spillovers. Fiscal spillovers are found to be heterogeneous but generally positive among the larger euro area countries. The reaction of interest rates to fiscal expansion is an important determinant for the magnitude of spillovers.

1 Introduction

Fiscal spillovers across countries have received increasing attention in recent years. Understanding the impact of one country's fiscal policies on output in other Member States of the monetary union is naturally of considerable interest to a central bank setting a single monetary policy, as it allows the bank to better gauge the euro area's economic developments, and this feeds into the assessment of the risks to price stability. Moreover, fiscal spillovers should be taken into account when assessing the aggregate euro area fiscal stance.⁴¹ Finally, the size of the fiscal spillovers is important when assessing the stabilisation effects of national fiscal policies. If the fiscal spillovers are small, then the existence of a central fiscal stabilisation function that can support national economic stabilisers in the presence of large economic shocks would make the Economic and Monetary Union (EMU) more resilient.⁴²

National fiscal policies spill over to other countries through different channels.

Trade is an important transmission channel between countries, whereby fiscal expansion in one country increases its imports from other countries. Fiscal expansion could also increase domestic prices and the real effective exchange rate, reinforcing spillovers, as the stimulating country loses competitiveness vis-à-vis the other countries. Given the implications for prices, it is important to take into account the monetary policy response. Interest rates may occasionally not react to price changes

⁴¹ For more information on the debate on the euro area fiscal stance, see the article "[The euro area fiscal stance](#)", *Economic Bulletin*, Issue 4, ECB, 2016, and Bańkowski, K. and Ferdinandusse, M., "[Euro area fiscal stance](#)", *Occasional Paper Series*, No 182, ECB, 2017.

⁴² For a discussion on risk sharing in EMU, see Cimadomo, J. Hauptmeier, S., Palazzo, A.A. and Popov, A., "[Risk sharing in the euro area](#)", *Economic Bulletin*, Issue 3, ECB, 2018.

stemming from fiscal action, for instance, if the economy is constrained by the effective lower bound.⁴³

The empirical literature on fiscal spillovers is relatively underdeveloped. While the number of empirical studies of the magnitude of fiscal spillovers has grown in recent years, it is limited and results are not easily comparable. The different identification of fiscal shocks and presentation of the results according to different metrics add to the complication of generalising the findings from the literature. One purpose of this article is to provide a review of the most relevant empirical literature on spillovers. For simplicity we assume an expenditure-based fiscal expansion in our analysis.⁴⁴

Spillover estimates of public spending tend to be positive but generally small. A number of studies have estimated fiscal spillovers from an increase in public spending through the trade channel for a panel of countries. For example, based on annual data from 1965 to 2004, Beetsma, Giuiliodori and Klaassen estimate that a spending-based fiscal expansion of 1% of GDP in Germany would lead to an average increase in the output of other European economies by 0.15% after two years; for an expansion originating in France, the impact is 0.08%.⁴⁵ Using quarterly data from 2000 to 2016 for 55 countries, the International Monetary Fund (IMF) reports that an increase in government spending by 1% of GDP in an average major advanced economy has a spillover effect of 0.15% of GDP on an average recipient country within the first year.⁴⁶ Auerbach and Gorodnichenko find fiscal spillovers from large OECD economies that are broadly comparable with the IMF findings.⁴⁷

Spillover estimates are heterogeneous. The estimated magnitude of spillovers varies, with the heterogeneity related to the trade links, the state of the economy and the reaction of monetary policy. Beetsma et al. find spillovers from Germany to be around 0.4% of GDP after two years in small open economies sharing a land border with the country, such as Austria, Belgium and the Netherlands. Auerbach and Gorodnichenko find spillovers particularly high in recessions and quite modest in expansions. The IMF study finds that spillovers are up to four times as large when

⁴³ Non-standard monetary policy measures that can lessen the constraints of the effective lower bound are not considered in this analysis.

⁴⁴ Spillovers from changes in fiscal revenues, which are not the focus of the article, are usually estimated to be considerably lower than government expenditure spillovers. The reason is that a tax cut impacts aggregate demand through the spending and saving decisions of households and firms, which induce more delays and uncertainty than the direct effect of an increase in government spending. For a review of the transmission channels of fiscal spillovers and their macroeconomic impact during the fiscal consolidation in the euro area countries in 2010–13, see Attinasi, M.G., Lalik, M. and Vetlov, I., “[Fiscal spillovers in the euro area: a model-based analysis](#)”, *Working Paper Series*, No 2040, ECB, 2017.

⁴⁵ See Beetsma, R., Giuiliodori, M. and Klaassen, F., “[Trade spill-overs of fiscal policy in the European Union: a panel analysis](#)”, *Economic Policy*, Vol. 21, Issue 48, 2006, pp. 640–687.

⁴⁶ See International Monetary Fund, “[Cross-border impacts of fiscal policy: Still relevant?](#)”, *World Economic Outlook*, 2017.

⁴⁷ See Auerbach, A.J. and Gorodnichenko, Y., “[Output Spillovers from Fiscal Policy](#)”, *American Economic Review*, Vol. 103, No 3, 2013, pp. 141–46. For a comparison of the results of the IMF study and Auerbach and Gorodnichenko, see Blagrove, P., Ho, G., Koloskova, K. and Vesperoni, E., “[Fiscal Spillovers: The Importance of Macroeconomic and Policy Conditions in Transmission](#)”, *Spillover Notes*, No 11, International Monetary Fund, 2017.

monetary policy is at the effective lower bound (0.3% after one year), compared with normal times (0.08%).⁴⁸

Additional insight into fiscal spillovers is provided by a number of studies using theoretical dynamic stochastic general equilibrium (DSGE) models. Rich DSGE multi-country models can provide more insight into the determinants of the fiscal spillovers than empirical methods such as vector auto-regressions (VARs), which encompass a variety of contributing effects that are difficult to disentangle. However, DSGE models may come at the price of imposing restrictive assumptions, which may not always have strong empirical foundations. Studies based on DSGE models often find spillovers in normal times to be lower than the VAR-based estimates, but higher when interest rates do not react.⁴⁹ This is partly explained by the fact that structural models only include spillovers through trade, whereas VARs also include other effects, such as financial spillovers.

2 Empirical Estimates

This section presents new estimates of fiscal spillover effects from the larger euro area countries. To this end, country-specific exogenous government spending shocks are identified and their dynamic effect on the economic activity of other countries considered.⁵⁰

2.1 Data and methodology

Estimates are based on a new dataset for euro area countries. An analysis of the effects of fiscal spillovers based on time series methods requires the use of comparable, long and detailed data. However, for euro area countries, data on many of the necessary fiscal variables are only available at a quarterly frequency from the mid- to late 1990s. This issue is addressed by assembling a new dataset for Germany, France, Italy, Spain and the euro area as a whole, from the first quarter of 1980 to the fourth quarter of 2015 at a quarterly frequency, which is consistent with Eurostat data (in the current ESA 2010 accounting framework). In particular, using an unobserved component model that combines both annual and quarterly national accounts, as well as monthly indicators, it is possible to estimate fiscal variables at a quarterly frequency

⁴⁸ The effective lower bound is identified as interest rates being in the lowest quartile of the distribution.

⁴⁹ See, for example, International Monetary Fund, “[Cross-border impacts of fiscal policy: Still relevant?](#)”, *World Economic Outlook*, 2017, and In ‘t Veld, J., “[Public Investment Stimulus in Surplus Countries and their Euro Area Spillovers](#)”, *Economic Briefs*, No 16, Economic and Financial Affairs, European Commission, 2016.

⁵⁰ For more information on the methodology and results of the estimates presented in this section, see Alloza, M., Burriel, P. and Pérez, J.J., “[Fiscal policies in the euro area: revisiting the size of spillovers](#)”, *Documentos de Trabajo*, No 1820, Banco de España, 2018.

while maintaining coherence with official annual aggregates. This framework takes into account important features of the data, such as different seasonal patterns.⁵¹

The resulting dataset contains disaggregated measures of fiscal spending (and revenues) for each of the four countries and the euro area aggregate. This disaggregation allows the separation of components of government spending depending on their sensitivity to economic conditions. In the further analysis the government spending aggregate comprises cyclically insensitive items, in particular government consumption and investment, while cyclically sensitive items such as transfers are excluded.⁵²

The empirical strategy follows three steps. First, country-specific VARs are estimated based on (the logs of) real net tax revenues, government spending, output, the GDP deflator and the level of the ten-year interest rate. The identifying assumption is that it takes longer than one quarter to implement fiscal policies in response to a change in the economic environment, which allows the identification of structural shocks to government spending (i.e. fiscal actions are contemporaneously unrelated to the economic conditions).⁵³ Second, the dynamic response of economic activity in a country to a government spending shock originating in another country is traced using local projections.⁵⁴ This framework allows the estimation of the bilateral effect of the fiscal action for each combination of two countries. Third, these pair-wise estimates are combined into two statistics that summarise the results.

Spillovers are summarised by destination and by origin. Destination spillovers measure the spillover from a simultaneous spending shock in all but one euro area country on the recipient country. They are constructed as the ratio of the (cumulative) sum of the total impact on the output of a given country originated by fiscal actions in the rest of the countries to the sum of the respective domestic effects in the originating countries.⁵⁵ Spillover by origin is defined as the ratio of the (output-weighted average) impact on the output in the receiving countries and the impact of a government spending shock on output in the originating country. This statistic indicates the magnitude of the spillovers that each individual country is able to generate.

⁵¹ For Germany and Italy we combine official information from the quarterly non-financial accounts for general government statistics (ESA 2010 and ESA 95) and extend it backwards using intra-annual monthly fiscal information and annual official statistics. For the cases of Spain and the euro area, we obtain our data from updated versions of de Castro, F., Martí, F., Montesinos, A., Pérez, J.J. and Sánchez-Fuentes, A.J., “A quarterly fiscal database fit for macroeconomic analysis”, *Review of Public Economics*, Vol. 224, Issue 1, 2018, pp. 139-155, and Paredes, J., Pedregal, D.J. and Pérez, J.J., “Fiscal policy analysis in the euro area: Expanding the toolkit”, *Journal of Policy Modeling*, Vol. 36, Issue 5, 2014, pp. 800-823, respectively, which were constructed according to the methodology described above and are also consistent with national accounts. Data for France are obtained directly from Eurostat.

⁵² Nominal variables are converted to real terms using the GDP deflator.

⁵³ See Blanchard, O. and Perotti, R., “An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output”, *Quarterly Journal of Economics*, Vol. 117, Issue 4, 2002, pp. 1329-1368.

⁵⁴ See Jordà, O., “Estimation and Inference of Impulse Responses by Local Projections”, *American Economic Review*, Vol. 95, No 1, 2005, pp. 161-182.

⁵⁵ The destination spillover is the response to a simultaneous increase of €1 in the rest of the countries considered, which results from adding the effect of different fiscal shocks at the same moment in time. Hence, the results for this specification are likely to represent an upper bound.

2.2 Results

The results provide evidence of positive fiscal spillovers in the euro area.

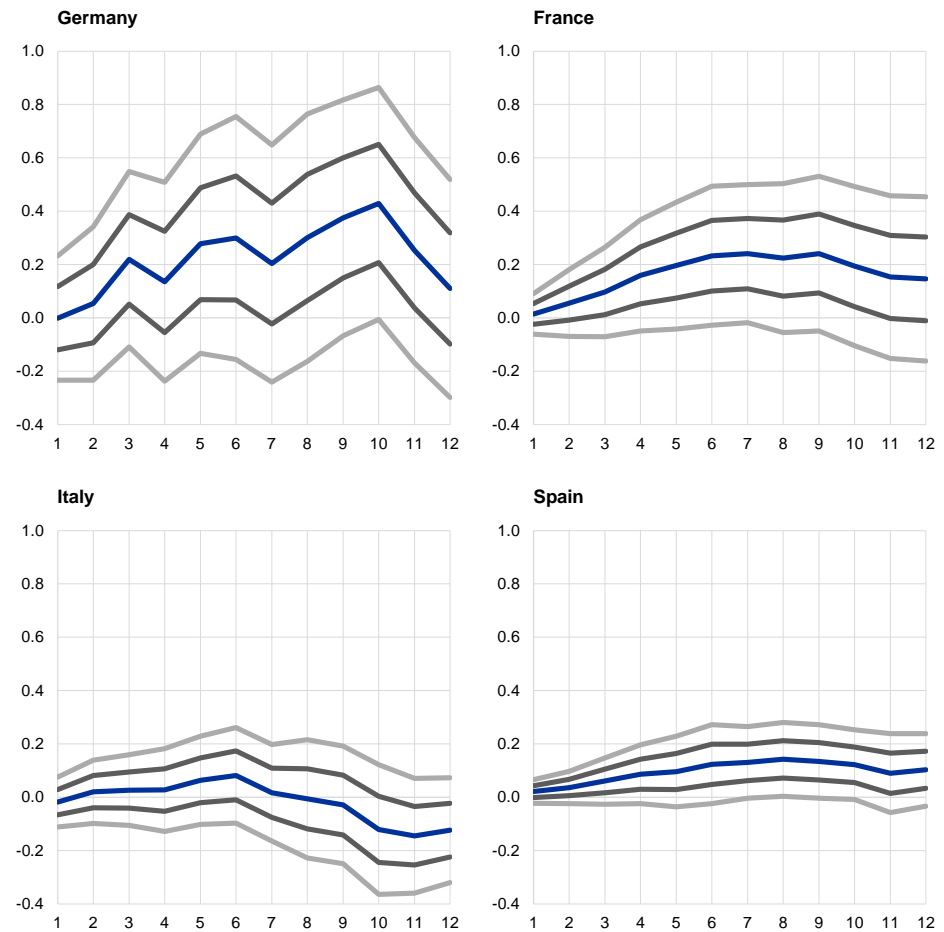
Chart 1 plots the GDP response in each of the four economies to increases in government spending in the rest of countries (i.e. the destination spillover). The blue line shows the output response in the receiving country to the government spending shocks in the source countries. Cumulating these output effects and dividing them by the cumulated response of government spending in the stimulating countries (not shown) converts them into a measure that is directly comparable with the multiplier of a domestic fiscal expansion. For example, France has a cumulative destination spillover of 0.72 after two years. This means a simultaneous €1 increase in government spending in Germany, Italy and Spain would increase French output by €0.72 after two years.

Chart 1

Empirical estimates of spillover effects (by destination)

Output response to a simultaneous increase in government spending in the rest of the countries

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



Source: Alloza et al, 2018.

Note: The blue line shows the output response. The dark grey and light grey lines represent Newey-West confidence intervals at 68% and 95%.

The results are comparable with previous empirical studies. Taking the output-weighted results in Chart 1, the average destination spillovers to large euro area countries are around 0.09, 0.46 and 0.60 in the first, second and third years respectively. These last results are somewhat lower but broadly comparable with those of Auerbach and Gorodnichenko, with which they are methodologically comparable.

There are differences in dynamics, magnitude and significance of destination spillovers across countries. France and Spain show a similar pattern, with the spillover becoming positive and significant at the 68% level by the end of the first year. In both cases the dynamics are similar: around 0.2-0.3 in the first year and cumulatively around 0.6-0.7 in the second year. Germany also shows an increasing positive spillover, but with significant values at the 68% level, only in the third year. While only marginally significant, the magnitude of the effect in Germany seems to be larger than in the rest of the countries considered, with a cumulative destination spillover of 0.6 at the end of the first year. The spillover in Italy is estimated to be the lowest and not significantly different from zero. If the 95% confidence level were applied, then fiscal spillovers would only be significant in the case of Spain.

Positive spillovers are also found for spending increases in one country. When looking at the spillover effect from the point of view of the country conducting the fiscal expansion, i.e. spillovers by origin, the results are heterogeneous but also provide evidence of positive fiscal spillovers among large euro area countries (results not shown here).⁵⁶

3 Spillover analysis based on a multi-country DSGE model

This section provides simulations with a multi-country DSGE model: the Euro Area and Global Economy (EAGLE) model. The model is calibrated for the four largest euro area countries individually (Germany, France, Italy and Spain), the rest of the euro area and the rest of the world.⁵⁷ Like the European Central Bank's New Area-Wide Model, EAGLE is micro-founded and features nominal price and wage rigidities, capital accumulation, and international trade in goods and bonds. Given its global dimension, the model is particularly well suited to assess cross-border spillovers. All regions trade with each other in intermediate goods, with estimates of bilateral trade flows based on recent historical averages. International asset trade is limited to nominally non-contingent bonds denominated in US dollars.

⁵⁶ See Alloza, M. et al (2018), for results. Government spending spillovers by origin are estimated to be stronger in Italy and Spain than in Germany, but not significant for France. Spillovers by origin are found to be stronger for public investment than consumption.

⁵⁷ The Euro Area and Global Economy (EAGLE) model is a multi-country dynamic general equilibrium model of the euro area developed by an ESCB team composed of staff from the Banca d'Italia, Banco de Portugal and ECB. See Gomes, S., Jacquinot, P. and Pisani, M., "The EAGLE. A model for policy analysis of macroeconomic interdependence in the euro area", *Economic Modelling*, Vol. 29, Issue 5, 2012, pp. 1686-1714.

The version used here embeds an extended fiscal bloc.⁵⁸ Households are assumed to derive utility from the consumption of a composite good consisting of public and private consumption goods. It is also assumed that the government capital stock affects the production process. Moreover, in each country, public debt is stabilised through a fiscal rule that induces the endogenous adjustment of fiscal instruments when the public debt ratio deviates from its target.

Members of the euro area share a common nominal exchange rate and a common nominal interest rate. The central bank sets the domestic short-term nominal interest rate according to a standard Taylor-type rule, by reacting to area-wide consumer price inflation and real activity. The remaining region – the rest of the world – has its own nominal interest rate and nominal exchange rate.

The simulations focus on government consumption and public investment separately. The following two sections show the spillovers of a two-year spending-based fiscal stimulus, which is debt-financed, for two alternative specifications: first, with interest rates set according to the Taylor rule; second, with unchanged interest rates. The results are shown for government consumption and public investment separately.

3.1 Spillovers by origin and destination

When interest rates follow Taylor rule prescriptions, spillovers by origin are positive but small. The left-hand panel in Chart 2 shows the spillovers from a fiscal stimulus of 1% of nominal GDP over two years in one large euro area country to the rest of the euro area, both for government investment and for consumption.⁵⁹ While there is some cross-country heterogeneity, both in the domestic effect (shown on the x-axis) and the effect on the other countries (y-axis), the spillovers (computed as the ratio of GDP reaction of destination to source) are below 0.1 on average in the two years after the shock.

⁵⁸ See Clancy, D., Jacquinot, P. and Lozej, M., “Government expenditure composition and fiscal policy spillovers in small open economies within a monetary union”, *Journal of Macroeconomics*, Vol. 48, 2016, pp. 305-326.

⁵⁹ In this and the following model simulations, the size of the stimulus (1% of GDP of the country or countries conducting the stimulus) is chosen for convenience in the interpretation of the results.

Chart 2

Model simulations of fiscal spillovers (with reactive interest rates)

(x-axis: two-year average percentage change in GDP in country(-ies) propagating the fiscal stimulus; y-axis: two-year average percentage change in GDP in recipient country)



Source: EAGLE model.

Notes: The left-hand panel shows the spillover by origin, i.e. the impact of an increase in government consumption or public investment by 1% of GDP for two years in one country on its own output (x-axis) and the output of the other countries (y-axis). The right-hand panel shows the spillover by destination, i.e. the impact of a simultaneous increase in government consumption or public investment by 1% of GDP for two years in all but one country on the countries' output (x-axis) and the country receiving the spillovers (y-axis).

Spillovers by destination are also small. The right-hand panel in Chart 2 shows the spillovers in one large country from a simultaneous fiscal stimulus of 1% of GDP over two years in the other countries. For public investment the spillovers come out at just above 0.1. For public consumption the destination spillovers are, on average, slightly negative during the first two years, mainly because the demand effect of the fiscal stimulus is offset by the contractionary impact of higher interest rates that applies to all countries in the monetary union. Relative country size also matters: the destination spillover in Spain is somewhat larger than the destination spillover in Germany, as the former results from a 1% of GDP stimulus in all countries but Spain and the latter from a 1% of GDP fiscal expansion in all countries but Germany.

Destination spillovers are not identical to an aggregation of the spillovers by origin. Both the domestic effect on output in the countries conducting the stimulus and the spillovers are more clustered. An explanation is that the impact of a simultaneous stimulus on prices and economic activity is larger and triggers a relatively stronger monetary reaction than a stimulus in one large euro area country.

When interest rates in the euro area do not respond to the fiscal shock, spillovers by origin and by destination are positive, and much larger than in the case of reactive monetary policy. Without a reaction by interest rates for two years, spillovers by origin vary between 0.07 for an increase in government consumption in Spain by 1% of GDP and 0.25 for a similar increase in German public investment (see the left-hand panel in Chart 3). These spillovers are around six times as large as those with responsive interest rates. A similarly strong increase can be seen for investment-based spillovers by destination (see the right-hand panel in Chart 3). The sensitivity of destination spillovers to France, Italy and Spain to the reaction of interest

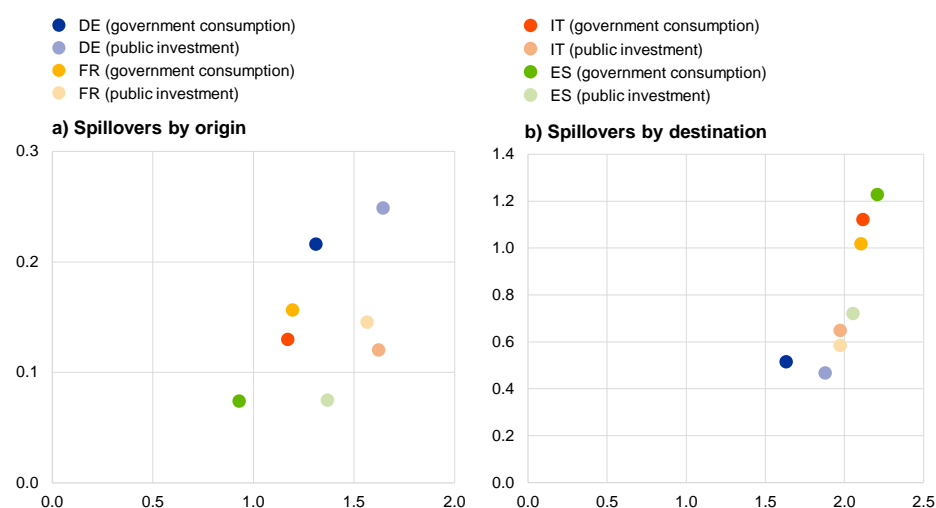
rates is even stronger for a public consumption-based stimulus, with the effect increasing from a negative value to above 1.⁶⁰

The model simulations largely confirm the empirical estimates presented above. When interest rates react, spillovers are generally positive but small, and higher for investment than for consumption. When comparing the model simulations with the empirical estimates of the destination spillovers, it should be taken into account that the empirical estimates are based on data covering different monetary policy regimes and without coordinated fiscal policies (except in the 2009-10 period of the crisis). The relatively high empirical destination spillovers for Germany might partially reflect the fact that fiscal stimulus episodes in the other large euro area countries resulted less often in an increase in interest rates, on account of exchange rate pegs to the Deutsche Mark prior to EMU or their smaller weight in the euro area economy since the introduction of a common monetary policy.

Chart 3

Model simulations of fiscal spillovers (with non-reactive interest rates)

(x-axis: two-year average percentage change in GDP in country(-ies) propagating the fiscal stimulus; y-axis: two-year average percentage change in GDP in recipient country)



Source: The EAGLE model.

Notes: The left-hand panel shows the spillover by origin, i.e. the impact of an increase in government consumption or public investment by 1% of GDP for two years in one country on its own output (x-axis) and the output of the other countries (y-axis). The right-hand panel shows the spillover by destination, i.e. the impact of a simultaneous increase in government consumption or public investment by 1% of GDP for two years in all but one country on the countries' output (x-axis) and the country receiving the spillovers (y-axis).

3.2 Sensitivity analysis

Structural models are sensitive to the assumptions regarding the future evolution of monetary policy. The simulations above are conducted under the assumptions of perfect foresight and complete financial markets. The implication of

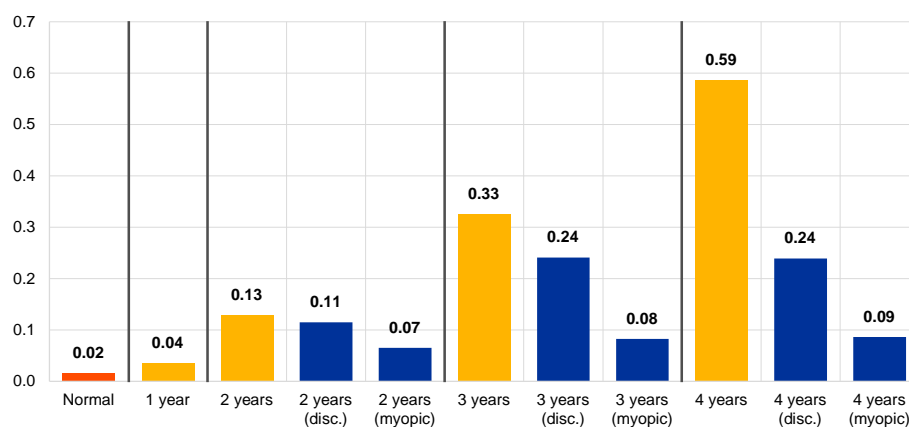
⁶⁰ The exercise is restricted to fiscal shocks and does not take into account other shocks that would have led to forward guidance, such as depressed private demand and credit-constrained households and firms following an economic crisis. From a longer-term perspective, an increase in public investment could generally be expected to contribute more to the productive capacity of the economy than government consumption. For a discussion of the quality of public finances, see "The composition of public finances in the euro area", *Economic Bulletin*, Issue 5, ECB, 2017.

these assumptions is that the monetary authority, firms and households all know and are able to completely adjust to future changes in the monetary and fiscal policy stances. Through these features, structural models are known to be very sensitive to the announcement of future interest rates, which is known in the theoretical literature as the “forward guidance puzzle”.⁶¹

Spillovers are also affected by the forward guidance puzzle. The sensitivity to future interest rates does not only apply to the domestic effect of a fiscal stimulus but also to the spillover ratio – the ratio of the average percentage change in GDP in the recipient country to the percentage change in GDP in the stimulating country. An illustration for a public investment-based stimulus in Germany shows that the spillover ratio increases more than proportionally when the announced path of future interest rates is extended by one year (see Chart 4). The effect becomes much smaller when the interest rate path is modelled as a series of one-year announcements (bars labelled “myopic”) or when households and firms in the model discount the future impact of the expected real interest rate on current consumption and investment decisions (bars labelled “disc.”).⁶² This sensitivity analysis suggests that the size of spillovers under an expected path of unchanged interest rates, as shown in Section 3.2 and found in the literature, should be taken as an upper bound.

Chart 4
Model simulations of fiscal spillovers (with different monetary policy rules)

Spillover ratios to other euro area countries for an increase in public investment in Germany
(percentage change in GDP in recipient country as ratio of the percentage change in German GDP)



Source: The EAGLE model.
Notes: The chart shows four-year average spillover ratios of an increase in German public investment by 1% of GDP for four years, with different monetary policy rules: with responsive interest rates (bar labelled “normal”) and with no expected change in interest rates over different time horizons (bars labelled by the number of years interest rates do not react). The expected unchanged interest rates are modelled as a one-time announcement (yellow bar), a series of one-year announcements (bars labelled “myopic”), or a one-time announcement with households and firms discounting the future impact of the real interest rate on current consumption and investment decisions (bars labelled “disc.”).

⁶¹ “Standard monetary models imply that far future forward guidance is extremely powerful: promises about far future interest rates have huge effects on current economic outcomes, and these effects grow with the horizon of the forward guidance”: McKay, A., Nakamura, E. and Steinsson, J., “The Power of Forward Guidance Revisited”, *American Economic Review*, Vol. 106, No 10, 2016, pp. 3133-58.

⁶² See McKay, A., Nakamura, E. and Steinsson, J., “The Discounted Euler Equation: A Note”, *Economica*, Vol. 84, Issue 336, 2017, pp. 820-831.

4 Conclusions

The article analyses the main transmission channels of the spillovers of national fiscal policies to other countries within a monetary union. Estimates based on a new dataset confirm the findings of earlier studies that fiscal action can have positive spillovers among the largest euro area countries. Expenditure measures in one of the four largest euro area countries have generally a positive but low spillover effect on output in the other countries. This effect can become larger if more countries simultaneously undertake fiscal action.

The small size of fiscal spillovers supports the case for a central fiscal capacity. The reaction of interest rates is an important determinant for the magnitude of spillovers. An illustration using a Taylor rule shows that spillovers are small if interest rates react to the changes in inflation and output induced by fiscal policy, but the effects are amplified if interest rates are not expected to react to a fiscal shock. This reinforces the case for countries in a monetary union to pursue countercyclical fiscal policies in good times, building up fiscal buffers and a sound fiscal position that can be used to stabilise the economy in downturns. In addition, the fact that fiscal spillovers are generally small also suggests that a central fiscal capacity may be an important mechanism to enhance domestic fiscal policy effects.

Statistics

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2 Financial developments	S 3
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Further information

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

Conventions used in the tables

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

1 External environment

1.1 Main trading partners, GDP and CPI

	GDP ¹⁾ (period-on-period percentage changes)						CPI (annual percentage changes)							
	G20	United States	United Kingdom	Japan	China	Memo item: euro area	OECD countries		United States	United Kingdom (HICP)	Japan	China	Memo item: euro area ²⁾ (HICP)	
							Total	excluding food and energy						
	1	2	3	4	5	6	7	8	9	10	11	12	13	
2016	3.2	1.6	1.8	0.6	6.7	2.0	1.6	1.8	1.3	0.7	-0.1	2.0	0.2	
2017	3.8	2.2	1.8	1.9	6.9	2.4	2.3	1.8	2.1	2.7	0.5	1.6	1.5	
2018	.	.	.	.	.	.	.	.	2.4	2.5	1.0	.	1.7
2017 Q4	0.9	0.6	0.4	0.4	1.5	0.7	2.3	1.9	2.1	3.0	0.6	1.8	1.4	
2018 Q1	0.9	0.5	0.1	-0.3	1.5	0.4	2.2	1.9	2.2	2.7	1.3	2.2	1.3	
Q2	1.0	1.0	0.4	0.7	1.7	0.4	2.5	2.0	2.7	2.4	0.7	1.8	1.7	
Q3	0.8	0.8	0.6	-0.6	1.6	0.2	2.9	2.2	2.6	2.5	1.1	2.3	2.1	
2018 July	-	-	-	-	-	-	2.9	2.1	2.9	2.5	0.9	2.1	2.1	
Aug.	-	-	-	-	-	-	2.9	2.1	2.7	2.7	1.3	2.3	2.0	
Sep.	-	-	-	-	-	-	2.9	2.3	2.3	2.4	1.2	2.5	2.1	
Oct.	-	-	-	-	-	-	3.1	2.3	2.5	2.4	1.4	2.5	2.2	
Nov.	-	-	-	-	-	-	2.7	2.2	2.2	2.3	0.8	2.2	1.9	
Dec.	-	-	-	-	-	-	.	.	1.9	2.1	0.3	1.9	1.6	

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.

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

	Purchasing Managers' Surveys (diffusion indices; s.a.)									Merchandise imports ¹⁾		
	Composite Purchasing Managers' Index						Global Purchasing Managers' Index ²⁾			Global	Advanced economies	Emerging market economies
	Global ²⁾	United States	United Kingdom	Japan	China	Memo item: euro area	Manufacturing	Services	New export orders			
	1	2	3	4	5	6	7	8	9	10	11	12
2016	51.6	52.4	53.4	50.5	51.4	53.3	51.8	52.0	50.2	1.2	1.4	1.1
2017	53.3	54.3	54.7	52.5	51.8	56.4	53.9	53.8	52.8	5.6	3.1	7.3
2018	53.4	55.0	53.3	52.1	52.3	54.6	53.2	53.8	50.9	.	.	.
2018 Q1	53.6	54.6	53.4	52.1	53.0	57.0	53.8	53.5	52.4	1.2	0.6	1.6
Q2	53.9	55.9	54.3	52.3	52.5	54.7	53.2	54.2	50.3	0.0	-0.8	0.5
Q3	53.1	54.8	53.9	51.5	52.1	54.3	52.6	53.2	49.8	1.9	0.8	2.6
Q4	53.2	54.7	51.5	52.3	51.5	52.3	52.0	53.6	49.9	.	.	.
2018 July	53.6	55.7	53.5	51.8	52.3	54.3	52.7	53.9	50.0	1.2	-0.4	2.2
Aug.	53.2	54.7	54.2	52.0	52.0	54.5	53.0	53.3	49.9	1.5	0.2	2.3
Sep.	52.5	53.9	54.1	50.7	52.1	54.1	52.3	52.5	49.6	1.9	0.8	2.6
Oct.	53.0	54.9	52.1	52.5	50.5	53.1	51.9	53.4	50.0	1.3	1.4	1.2
Nov.	53.4	54.7	50.8	52.4	51.9	52.7	52.1	53.8	49.9	.	.	.
Dec.	53.2	54.4	51.4	52.0	52.2	51.1	52.0	53.5	49.8	.	.	.

Sources: Markit (col. 1-9); CPB Netherlands Bureau for Economic Policy Analysis and ECB calculations (col. 10-12).

1) Global and advanced economies exclude the euro area. Annual and quarterly data are period-on-period percentages; monthly data are 3-month-on-3-month percentages. All data are seasonally adjusted.

2) Excluding the euro area.

2 Financial developments

2.1 Money market interest rates

(percentages per annum; period averages)

	Euro area ¹⁾					United States	Japan
	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
2016	-0.32	-0.34	-0.26	-0.17	-0.03	0.74	-0.02
2017	-0.35	-0.37	-0.33	-0.26	-0.15	1.26	-0.02
2018	-0.36	-0.37	-0.32	-0.27	-0.17	2.30	-0.05
2018 June	-0.36	-0.37	-0.32	-0.27	-0.18	2.33	-0.04
July	-0.36	-0.37	-0.32	-0.27	-0.18	2.34	-0.04
Aug.	-0.36	-0.37	-0.32	-0.27	-0.17	2.32	-0.04
Sep.	-0.36	-0.37	-0.32	-0.27	-0.17	2.35	-0.04
Oct.	-0.37	-0.37	-0.32	-0.26	-0.15	2.46	-0.08
Nov.	-0.36	-0.37	-0.32	-0.26	-0.15	2.65	-0.10
Dec.	-0.36	-0.37	-0.31	-0.24	-0.13	2.79	-0.10

Source: ECB.

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

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
2016	-0.93	-0.82	-0.80	-0.47	0.26	1.08	1.63	1.17	-0.78	-0.75	0.35	1.35
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	0.13	0.52	-0.67	-0.45	0.44	1.17
2018 June	-0.62	-0.71	-0.68	-0.26	0.38	1.09	0.54	0.60	-0.75	-0.52	0.53	1.31
July	-0.62	-0.65	-0.59	-0.16	0.46	1.11	0.54	0.60	-0.64	-0.39	0.61	1.36
Aug.	-0.63	-0.67	-0.63	-0.23	0.37	1.04	0.41	0.71	-0.68	-0.46	0.50	1.28
Sep.	-0.62	-0.63	-0.55	-0.09	0.51	1.14	0.49	0.77	-0.59	-0.31	0.68	1.36
Oct.	-0.75	-0.73	-0.63	-0.17	0.43	1.17	0.48	0.67	-0.66	-0.37	0.60	1.31
Nov.	-0.67	-0.70	-0.64	-0.23	0.37	1.06	0.30	0.57	-0.68	-0.45	0.50	1.28
Dec.	-0.80	-0.75	-0.66	-0.26	0.32	1.07	0.13	0.52	-0.67	-0.45	0.44	1.17

Source: ECB.

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

2) ECB calculations based on underlying data provided by EuroMTS and ratings provided by Fitch Ratings.

2.3 Stock market indices

(index levels in points; period averages)

	Dow Jones EURO STOXX indices												United States	Japan
	Benchmark		Main industry indices										Standard & Poor's 500	Nikkei 225
	Broad index	50	Basic materials	Consumer services	Consumer goods	Oil and gas	Financials	Industrials	Technology	Utilities	Telecoms	Health care		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2016	321.6	3,003.7	620.7	250.9	600.1	278.9	148.7	496.0	375.8	248.6	326.9	770.9	2,094.7	16,920.5
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
2018 June	383.4	3,442.8	797.5	273.1	719.5	346.7	169.0	647.2	543.6	279.9	290.9	828.1	2,754.4	22,562.9
July	383.8	3,460.9	793.5	273.8	711.4	353.1	169.4	647.6	536.6	287.9	291.0	838.8	2,793.6	22,309.1
Aug.	382.5	3,436.8	785.2	273.0	711.6	357.5	167.9	653.3	529.4	282.1	288.7	834.2	2,857.8	22,494.1
Sep.	376.4	3,365.2	779.9	265.1	692.5	356.4	168.0	649.7	511.7	278.1	274.6	807.2	2,901.5	23,159.3
Oct.	359.0	3,244.5	733.7	253.2	657.3	349.6	160.1	607.6	483.0	269.0	277.7	783.7	2,785.5	22,690.8
Nov.	351.3	3,186.4	692.3	258.1	649.3	328.6	157.2	589.4	459.6	277.1	293.9	757.5	2,723.2	21,967.9
Dec.	335.2	3,057.8	646.7	247.8	624.8	311.8	146.9	556.0	441.5	283.5	296.3	719.4	2,567.3	21,032.4

Source: ECB.

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				Composite cost-of-borrowing indicator	
	Over-night	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⁾			
			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	
2017 Dec.	0.04	0.44	0.34	0.73	6.09	16.86	4.47	5.39	5.80	2.31	1.68	1.86	1.92	1.87	2.15	1.83
2018 Jan.	0.04	0.44	0.36	0.69	6.16	16.92	5.02	5.83	6.28	2.30	1.67	1.87	1.91	1.90	2.14	1.84
Feb.	0.04	0.44	0.34	0.69	6.19	16.88	4.72	5.70	6.19	2.37	1.64	1.88	1.93	1.91	2.14	1.84
Mar.	0.04	0.45	0.35	0.67	6.14	16.89	4.71	5.57	6.05	2.34	1.63	1.84	1.95	1.91	2.14	1.84
Apr.	0.04	0.45	0.34	0.61	6.12	16.87	4.95	5.67	6.15	2.36	1.62	1.85	1.96	1.90	2.13	1.83
May	0.04	0.46	0.34	0.57	6.10	16.89	4.83	5.88	6.39	2.39	1.58	1.85	1.97	1.90	2.13	1.83
June	0.03	0.46	0.33	0.63	6.04	16.84	4.47	5.64	6.10	2.31	1.60	1.81	1.97	1.88	2.12	1.82
July	0.03	0.45	0.33	0.63	6.01	16.80	4.85	5.75	6.22	2.40	1.63	1.83	1.93	1.85	2.12	1.81
Aug.	0.03	0.45	0.30	0.63	6.02	16.78	5.44	5.88	6.41	2.39	1.63	1.83	1.92	1.85	2.12	1.81
Sep.	0.03	0.45	0.30	0.69	6.05	16.71	5.30	5.74	6.27	2.37	1.60	1.82	1.91	1.85	2.09	1.79
Oct.	0.03	0.45	0.29	0.73	5.98	16.73	5.06	5.72	6.23	2.45	1.60	1.80	1.91	1.86	2.09	1.80
Nov. ^(p)	0.03	0.44	0.29	0.74	5.93	16.54	4.93	5.68	6.18	2.38	1.60	1.85	1.94	1.88	2.11	1.81

Source: ECB.

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

2) Including non-profit institutions serving households.

3) Annual percentage rate of charge (APRC).

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

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

	Deposits			Revolving loans and overdrafts	Other loans by size and initial period of rate fixation									Composite cost-of-borrowing indicator
	Over-night	With an agreed maturity of:			up to EUR 0.25 million			over EUR 0.25 and up to 1 million			over EUR 1 million			
		Up to 2 years	Over 2 years		Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	Floating rate and up to 3 months	Over 3 months and up to 1 year	Over 1 year	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
2017 Dec.	0.04	0.06	0.32	2.35	2.40	2.46	2.31	1.70	1.67	1.71	1.34	1.28	1.53	1.71
2018 Jan.	0.04	0.05	0.39	2.35	2.39	2.52	2.33	1.65	1.61	1.72	1.12	1.37	1.60	1.67
Feb.	0.04	0.09	0.43	2.36	2.37	2.48	2.33	1.66	1.62	1.74	1.18	1.34	1.64	1.70
Mar.	0.04	0.08	0.40	2.33	2.39	2.53	2.34	1.67	1.61	1.70	1.26	1.39	1.66	1.73
Apr.	0.04	0.06	0.31	2.32	2.36	2.42	2.33	1.67	1.61	1.74	1.23	1.29	1.65	1.70
May	0.03	0.08	0.43	2.28	2.31	2.47	2.37	1.65	1.61	1.74	1.08	1.22	1.65	1.62
June	0.04	0.07	0.74	2.29	2.27	2.44	2.31	1.64	1.56	1.70	1.21	1.33	1.70	1.68
July	0.03	0.08	0.38	2.27	2.16	2.41	2.28	1.67	1.59	1.68	1.14	1.30	1.66	1.63
Aug.	0.03	0.08	0.60	2.25	2.21	2.42	2.35	1.66	1.63	1.74	1.10	1.27	1.69	1.64
Sep.	0.03	0.09	0.44	2.22	2.21	2.34	2.32	1.65	1.54	1.69	1.12	1.40	1.69	1.65
Oct.	0.03	0.08	0.52	2.21	2.14	2.42	2.33	1.65	1.60	1.70	1.23	1.10	1.66	1.64
Nov. ^(p)	0.03	0.07	0.63	2.18	2.20	2.40	2.34	1.67	1.61	1.69	1.20	1.36	1.68	1.66

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														
2015	1,269	517	147	.	62	478	65	347	161	37	.	33	82	34
2016	1,241	518	136	.	59	466	62	349	161	45	.	31	79	33
2017	1,241	519	156	.	70	438	57	368	167	55	.	37	79	31
2018 June	1,307	523	177	.	90	458	59	388	157	71	.	43	82	36
July	1,313	526	178	.	96	453	60	436	191	77	.	48	79	42
Aug.	1,311	525	178	.	95	447	65	408	201	61	.	31	82	33
Sep.	1,295	531	179	.	89	444	52	378	164	73	.	42	72	28
Oct.	1,280	525	171	.	92	439	54	411	183	66	.	46	77	38
Nov.	1,271	517	167	.	89	445	52	353	154	58	.	36	74	31
Long-term														
2015	15,250	3,786	3,244	.	1,102	6,481	637	215	68	45	.	14	80	9
2016	15,393	3,695	3,217	.	1,155	6,684	641	220	62	53	.	18	78	8
2017	15,362	3,560	3,081	.	1,213	6,865	642	247	66	74	.	17	83	7
2018 June	15,540	3,572	3,137	.	1,220	6,990	620	229	64	71	.	14	72	7
July	15,555	3,570	3,133	.	1,228	7,003	621	220	54	55	.	16	87	8
Aug.	15,563	3,578	3,142	.	1,211	7,010	622	131	50	38	.	2	38	3
Sep.	15,682	3,616	3,155	.	1,234	7,054	623	254	79	57	.	31	82	4
Oct.	15,721	3,672	3,161	.	1,234	7,026	628	215	60	62	.	14	69	10
Nov.	15,797	3,693	3,191	.	1,230	7,054	628	258	104	69	.	8	72	7

Source: ECB.

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

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

(EUR billions; percentage changes)

	Debt securities							Listed shares			
	Total	MFIs (including Eurosystem)	Non-MFI corporations			General government		Total	MFIs	Financial corporations other than MFIs	Non- financial corporations
			Financial corporations other than MFIs	FVCs	Non- financial corporations	Central government	Other general government				
1	2	3	4	5	6	7	8	9	10	11	
Outstanding amount											
2015	16,518.7	4,303.2	3,390.4	.	1,163.8	6,958.9	702.4	6,814.4	584.3	968.3	5,261.9
2016	16,633.8	4,213.3	3,352.9	.	1,214.2	7,149.9	703.5	7,089.5	537.6	1,080.2	5,471.6
2017	16,602.9	4,079.8	3,236.5	.	1,283.1	7,303.6	699.8	7,954.8	612.5	1,249.5	6,092.8
2018 June	16,846.9	4,095.3	3,313.9	.	1,310.1	7,447.8	679.8	7,959.8	543.5	1,267.0	6,149.3
July	16,867.9	4,096.0	3,310.9	.	1,324.2	7,455.8	681.0	8,168.6	576.1	1,293.7	6,298.8
Aug.	16,874.5	4,102.6	3,320.1	.	1,306.6	7,457.7	687.5	8,020.0	521.1	1,282.6	6,216.3
Sep.	16,976.4	4,146.9	3,333.7	.	1,323.3	7,497.7	674.8	7,955.8	543.5	1,294.0	6,118.4
Oct.	17,000.3	4,196.6	3,331.5	.	1,325.3	7,464.9	682.0	7,546.7	515.4	1,202.0	5,829.4
Nov.	17,068.1	4,210.3	3,358.7	.	1,318.9	7,499.3	680.8	7,475.1	512.1	1,179.3	5,783.7
Growth rate											
2015	0.2	-7.0	5.5	.	4.9	1.8	0.6	1.1	4.2	1.8	0.6
2016	0.4	-3.0	-1.1	.	6.5	2.2	-0.1	0.5	1.2	0.9	0.4
2017	1.3	-0.5	-0.1	.	6.1	2.2	0.5	1.1	6.1	2.8	0.3
2018 June	1.2	-0.6	1.9	.	5.2	1.8	-4.0	1.3	1.6	5.0	0.5
July	1.2	-0.8	0.8	.	4.4	2.4	-2.5	1.2	0.4	4.8	0.6
Aug.	1.4	-0.2	1.4	.	3.8	2.2	-2.6	1.2	0.5	4.7	0.5
Sep.	1.8	0.9	1.4	.	5.0	2.4	-3.7	1.1	0.5	3.9	0.5
Oct.	1.9	0.9	2.1	.	4.7	2.4	-3.1	1.0	0.5	3.1	0.6
Nov.	2.0	1.2	2.6	.	3.5	2.4	-3.6	0.9	0.4	2.9	0.5

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 ²⁾	Real ULCT	Nominal	Real CPI
	1	2	3	4	5	6	7	8
2016	94.4	89.5	90.9	85.1	79.4	89.1	109.7	88.9
2017	96.6	91.4	92.0	86.0	78.8	89.9	112.0	90.0
2018	98.9	93.5	93.6	.	.	.	117.9	93.8
2018 Q1	99.6	94.0	94.4	88.2	80.1	91.8	117.0	93.4
Q2	98.4	93.1	93.2	87.3	78.8	90.6	117.0	93.4
Q3	99.2	93.7	93.5	87.8	79.5	91.4	119.2	94.8
Q4	98.5	93.0	93.3	.	.	.	118.4	93.8
2018 July	99.2	93.8	93.5	-	-	-	118.2	94.2
Aug.	99.0	93.4	93.4	-	-	-	119.0	94.6
Sep.	99.5	94.0	93.7	-	-	-	120.4	95.6
Oct.	98.9	93.4	93.2	-	-	-	119.0	94.4
Nov.	98.3	92.8	93.2	-	-	-	117.9	93.5
Dec.	98.4	92.8	93.5	-	-	-	118.0	93.5
	<i>Percentage change versus previous month</i>							
2018 Dec.	0.0	0.0	0.3	-	-	-	0.1	0.0
	<i>Percentage change versus previous year</i>							
2018 Dec.	-0.5	-0.5	-0.2	-	-	-	2.4	1.4

Source: ECB.

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

2) ULCM-deflated series are available only for the EER-18 trading partner group.

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
2016	7.352	7.533	27.034	7.445	311.438	120.197	4.363	0.819	4.4904	9.469	1.090	1.107
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
2018 Q1	7.815	7.438	25.402	7.447	311.027	133.166	4.179	0.883	4.6553	9.971	1.165	1.229
Q2	7.602	7.398	25.599	7.448	317.199	130.045	4.262	0.876	4.6532	10.330	1.174	1.191
Q3	7.915	7.417	25.718	7.455	324.107	129.606	4.303	0.892	4.6471	10.405	1.144	1.163
Q4	7.895	7.420	25.864	7.462	322.995	128.816	4.299	0.887	4.6605	10.320	1.137	1.141
2018 July	7.850	7.397	25.850	7.452	324.597	130.232	4.324	0.887	4.6504	10.308	1.162	1.169
Aug.	7.909	7.426	25.681	7.456	323.021	128.200	4.286	0.897	4.6439	10.467	1.141	1.155
Sep.	7.993	7.429	25.614	7.458	324.818	130.535	4.301	0.893	4.6471	10.443	1.129	1.166
Oct.	7.948	7.425	25.819	7.460	323.843	129.617	4.305	0.883	4.6658	10.384	1.141	1.148
Nov.	7.888	7.428	25.935	7.461	322.330	128.789	4.302	0.881	4.6610	10.292	1.138	1.137
Dec.	7.840	7.404	25.835	7.465	322.738	127.878	4.290	0.898	4.6536	10.277	1.129	1.138
	<i>Percentage change versus previous month</i>											
2018 Dec.	-0.6	-0.3	-0.4	0.1	0.1	-0.7	-0.3	1.9	-0.2	-0.1	-0.7	0.2
	<i>Percentage change versus previous year</i>											
2018 Dec.	0.4	-1.8	0.7	0.3	3.1	-4.3	2.1	1.7	0.4	3.4	-3.4	-3.8

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
<i>Outstanding amounts (international investment position)</i>												
2017 Q4	24,840.3	25,526.8	-686.5	10,675.3	8,735.2	8,550.4	10,967.5	-55.7	5,000.6	5,824.1	669.7	13,890.4
2018 Q1	24,898.2	25,761.3	-863.1	10,643.9	8,825.8	8,532.1	10,933.7	-75.8	5,124.8	6,001.8	673.2	14,134.5
Q2	25,526.6	26,196.4	-669.8	10,828.6	8,922.0	8,743.6	11,010.0	-83.1	5,347.4	6,264.4	690.0	14,369.5
Q3	25,832.2	26,425.6	-593.5	10,939.9	9,011.5	8,883.2	11,099.3	-61.4	5,396.5	6,314.8	673.9	14,450.1
<i>Outstanding amounts as a percentage of GDP</i>												
2018 Q3	224.8	230.0	-5.2	95.2	78.4	77.3	96.6	-0.5	47.0	55.0	5.9	125.8
<i>Transactions</i>												
2017 Q4	91.9	-38.1	130.0	37.6	29.4	89.3	33.7	4.5	-41.3	-101.2	1.9	-
2018 Q1	440.6	319.3	121.3	62.7	-77.8	192.3	196.5	3.1	171.1	200.7	11.4	-
Q2	167.7	105.1	62.6	-2.2	-29.7	-1.9	-41.4	38.0	127.3	176.2	6.6	-
Q3	174.1	81.3	92.8	49.1	28.9	41.0	6.3	33.3	49.5	46.1	1.2	-
2018 June	-77.1	-117.6	40.5	-9.1	-9.5	-4.9	32.9	11.3	-82.2	-141.0	7.9	-
July	143.0	140.1	2.9	43.1	36.9	20.9	13.4	12.8	70.6	89.8	-4.4	-
Aug.	31.6	1.5	30.1	-2.4	8.8	29.0	-42.3	14.1	-12.4	35.1	3.3	-
Sep.	-0.5	-60.4	59.9	8.4	-16.8	-8.8	35.2	6.4	-8.7	-78.7	2.2	-
Oct.	95.7	75.3	20.4	71.0	-2.7	-31.1	-16.3	1.7	54.8	94.3	-0.7	-
Nov.	-87.7	-110.8	23.1	-102.3	-75.2	-45.3	-35.7	13.6	43.0	0.1	3.2	-
<i>12-month cumulated transactions</i>												
2018 Nov.	627.3	210.9	416.3	81.2	-201.7	159.5	137.4	94.4	272.2	275.2	20.0	-
<i>12-month cumulated transactions as a percentage of GDP</i>												
2018 Nov.	5.5	1.8	3.6	0.7	-1.8	1.4	1.2	0.8	2.4	2.4	0.2	-

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	
<i>Current prices (EUR billions)</i>												
2015	10,534.3	10,060.1	5,743.1	2,172.5	2,110.8	1,014.6	640.4	449.7	33.6	474.3	4,866.6	4,392.3
2016	10,827.7	10,349.6	5,877.4	2,223.3	2,210.8	1,053.2	679.3	472.3	38.2	478.0	4,942.9	4,464.9
2017	11,206.0	10,682.9	6,058.2	2,279.5	2,302.8	1,121.6	716.3	459.2	42.4	523.0	5,295.5	4,772.5
2017 Q4	2,844.1	2,702.4	1,530.7	576.0	588.2	287.1	185.4	114.3	7.5	141.7	1,361.5	1,219.8
2018 Q1	2,865.2	2,725.4	1,543.7	578.3	592.1	291.3	184.1	115.3	11.3	139.8	1,357.4	1,217.7
Q2	2,889.4	2,757.3	1,553.4	585.7	604.4	297.9	188.8	116.4	13.8	132.1	1,379.2	1,247.1
Q3	2,904.4	2,788.1	1,562.3	587.7	615.0	302.0	192.9	118.8	23.1	116.2	1,392.3	1,276.0
<i>as a percentage of GDP</i>												
2017	100.0	95.3	54.1	20.3	20.5	10.0	6.4	4.1	0.4	4.7	-	-
<i>Chain-linked volumes (prices for the previous year)</i>												
<i>quarter-on-quarter percentage changes</i>												
2017 Q4	0.7	0.4	0.2	0.2	1.3	0.1	2.7	1.9	-	-	2.2	1.8
2018 Q1	0.4	0.5	0.5	0.0	0.1	0.6	-0.8	0.4	-	-	-0.7	-0.6
Q2	0.4	0.5	0.2	0.4	1.6	1.3	2.4	0.7	-	-	1.2	1.3
Q3	0.2	0.6	0.1	0.3	0.7	0.2	1.3	1.1	-	-	0.1	1.0
<i>annual percentage changes</i>												
2015	2.1	2.4	1.8	1.3	4.9	0.4	5.6	15.6	-	-	6.6	7.7
2016	2.0	2.4	2.0	1.8	4.0	2.7	5.8	4.3	-	-	3.0	4.2
2017	2.4	1.7	1.6	1.2	2.6	3.9	5.0	-3.6	-	-	5.2	3.9
2017 Q4	2.7	1.4	1.6	1.2	2.5	3.9	6.9	-6.6	-	-	6.4	3.7
2018 Q1	2.4	1.8	1.7	1.0	3.4	3.4	5.4	0.6	-	-	3.8	2.7
Q2	2.2	1.5	1.4	1.1	2.9	4.0	6.1	-4.3	-	-	4.0	2.7
Q3	1.6	1.9	1.0	0.9	3.7	2.2	5.8	4.2	-	-	2.8	3.6
<i>contributions to quarter-on-quarter percentage changes in GDP; percentage points</i>												
2017 Q4	0.7	0.4	0.1	0.0	0.3	0.0	0.2	0.1	-0.1	0.3	-	-
2018 Q1	0.4	0.5	0.3	0.0	0.0	0.1	-0.1	0.0	0.2	-0.1	-	-
Q2	0.4	0.4	0.1	0.1	0.3	0.1	0.2	0.0	-0.1	0.0	-	-
Q3	0.2	0.5	0.1	0.1	0.1	0.0	0.1	0.0	0.3	-0.4	-	-
<i>contributions to annual percentage changes in GDP; percentage points</i>												
2015	2.1	2.3	1.0	0.3	1.0	0.0	0.3	0.6	0.0	-0.2	-	-
2016	2.0	2.3	1.1	0.4	0.8	0.3	0.4	0.2	0.1	-0.4	-	-
2017	2.4	1.6	0.9	0.2	0.5	0.4	0.3	-0.2	0.0	0.8	-	-
2017 Q4	2.7	1.3	0.8	0.2	0.5	0.4	0.4	-0.3	-0.3	1.4	-	-
2018 Q1	2.4	1.8	0.9	0.2	0.7	0.3	0.3	0.0	-0.1	0.6	-	-
Q2	2.2	1.5	0.7	0.2	0.6	0.4	0.4	-0.2	-0.1	0.7	-	-
Q3	1.6	1.8	0.6	0.2	0.8	0.2	0.4	0.2	0.3	-0.2	-	-

Sources: Eurostat and ECB calculations.

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

2) Including acquisitions less disposals of valuables.

3 Economic activity

3.2 Value added by economic activity

(quarterly data seasonally adjusted; annual data unadjusted)

	Gross value added (basic prices)											Taxes less subsidies on products
	Total	Agriculture, forestry and fishing	Manufacturing energy and utilities	Construction	Trade, transport, accommodation and food services	Information and communication	Finance and insurance	Real estate	Professional, business and support services	Public administration, education, health and social work	Arts, entertainment and other services	
	1	2	3	4	5	6	7	8	9	10	11	12
Current prices (EUR billions)												
2015	9,461.6	159.5	1,901.2	468.0	1,784.9	433.4	470.2	1,078.0	1,031.0	1,805.1	330.3	1,072.6
2016	9,715.8	158.6	1,962.6	486.8	1,836.0	452.7	464.1	1,098.7	1,069.2	1,849.8	337.4	1,111.7
2017	10,048.5	171.3	2,032.8	512.8	1,916.8	469.4	455.8	1,129.7	1,118.5	1,897.1	344.4	1,157.3
2017 Q4	2,551.4	43.7	519.9	131.5	486.4	119.1	114.0	285.3	284.9	479.7	86.9	292.8
2018 Q1	2,568.6	43.1	518.5	134.3	490.0	120.9	114.3	287.5	289.3	483.2	87.7	296.5
Q2	2,589.8	42.9	520.7	137.1	494.1	122.7	114.2	289.5	292.5	488.4	87.8	299.8
Q3	2,603.3	43.4	521.9	139.6	495.8	123.8	115.0	291.2	294.2	490.0	88.2	301.9
<i>as a percentage of value added</i>												
2017	100.0	1.7	20.2	5.1	19.1	4.7	4.5	11.2	11.1	18.9	3.4	-
Chain-linked volumes (prices for the previous year)												
<i>quarter-on-quarter percentage changes</i>												
2017 Q4	0.7	0.8	1.3	1.2	0.7	0.3	0.3	0.2	0.8	0.3	0.2	0.6
2018 Q1	0.4	0.7	-0.7	0.8	0.8	1.7	-0.4	0.6	1.1	0.3	0.1	0.3
Q2	0.4	-0.5	0.3	1.2	0.5	1.3	0.6	0.1	0.7	0.2	0.0	0.6
Q3	0.2	-0.6	0.0	0.6	0.1	0.8	0.4	0.3	0.0	0.2	0.2	0.1
<i>annual percentage changes</i>												
2015	1.9	-0.2	3.6	0.8	2.2	3.6	0.0	0.7	3.0	0.8	1.2	3.5
2016	1.9	-1.4	3.4	1.5	1.7	3.9	0.6	0.3	2.5	1.3	1.0	2.7
2017	2.4	0.7	3.1	3.2	3.1	4.3	-0.6	1.1	4.0	1.1	0.9	2.4
2017 Q4	2.8	2.5	3.9	4.3	3.4	3.7	0.0	1.3	4.4	1.2	1.0	2.1
2018 Q1	2.5	1.8	3.1	3.8	2.9	4.8	0.0	1.5	3.5	1.4	1.2	1.6
Q2	2.2	1.3	2.4	3.8	2.6	5.1	0.5	1.2	3.3	1.2	0.7	1.8
Q3	1.6	0.4	0.9	3.8	2.1	4.3	1.0	1.2	2.6	1.0	0.5	1.5
<i>contributions to quarter-on-quarter percentage changes in value added; percentage points</i>												
2017 Q4	0.7	0.0	0.3	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	-
2018 Q1	0.4	0.0	-0.1	0.0	0.2	0.1	0.0	0.1	0.1	0.1	0.0	-
Q2	0.4	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	-
Q3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
<i>contributions to annual percentage changes in value added; percentage points</i>												
2015	1.9	0.0	0.7	0.0	0.4	0.2	0.0	0.1	0.3	0.2	0.0	-
2016	1.9	0.0	0.7	0.1	0.3	0.2	0.0	0.0	0.3	0.2	0.0	-
2017	2.4	0.0	0.6	0.2	0.6	0.2	0.0	0.1	0.4	0.2	0.0	-
2017 Q4	2.8	0.0	0.8	0.2	0.6	0.2	0.0	0.2	0.5	0.2	0.0	-
2018 Q1	2.5	0.0	0.6	0.2	0.5	0.2	0.0	0.2	0.4	0.3	0.0	-
Q2	2.2	0.0	0.5	0.2	0.5	0.2	0.0	0.1	0.4	0.2	0.0	-
Q3	1.6	0.0	0.2	0.2	0.4	0.2	0.0	0.1	0.3	0.2	0.0	-

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													
<i>as a percentage of total persons employed</i>													
2015	100.0	85.2	14.8	3.3	14.9	6.0	24.9	2.7	2.6	1.0	13.3	24.3	7.0
2016	100.0	85.5	14.5	3.2	14.8	6.0	24.9	2.8	2.6	1.0	13.5	24.2	7.0
2017	100.0	85.8	14.2	3.2	14.7	6.0	24.9	2.8	2.5	1.0	13.7	24.2	7.0
<i>annual percentage changes</i>													
2015	1.0	1.3	-0.3	-1.1	0.1	0.1	1.4	1.5	-0.4	1.1	2.8	1.1	0.6
2016	1.4	1.7	-0.3	-0.4	0.8	0.4	1.7	3.0	-0.2	1.9	2.7	1.4	0.7
2017	1.6	2.0	-0.5	-0.6	1.2	1.8	1.7	3.1	-1.2	1.5	3.1	1.3	1.4
2017 Q4	1.6	2.0	-0.7	-1.2	1.4	2.5	1.5	3.0	-1.5	1.6	3.4	1.3	1.1
2018 Q1	1.5	1.9	-0.8	-0.8	1.6	2.1	1.5	2.6	-0.9	1.5	3.1	1.2	0.5
Q2	1.5	1.8	-0.4	-0.4	1.6	2.6	1.3	2.6	-0.8	1.5	3.0	1.2	0.8
Q3	1.3	1.6	-0.3	0.3	1.2	2.5	1.3	3.4	-1.2	0.9	2.5	1.1	-0.8
Hours worked													
<i>as a percentage of total hours worked</i>													
2015	100.0	80.3	19.7	4.4	15.4	6.7	25.7	2.9	2.7	1.0	13.0	21.9	6.2
2016	100.0	80.6	19.4	4.3	15.3	6.7	25.8	3.0	2.6	1.0	13.2	21.9	6.2
2017	100.0	81.0	19.0	4.2	15.3	6.7	25.8	3.0	2.6	1.0	13.4	21.8	6.2
<i>annual percentage changes</i>													
2015	1.2	1.4	0.1	-0.5	0.5	0.6	1.1	2.7	-0.2	1.4	3.0	1.2	1.1
2016	1.5	1.9	-0.3	-0.3	0.9	0.7	1.7	2.8	0.2	2.3	2.9	1.4	0.8
2017	1.4	1.9	-0.8	-1.0	1.2	1.9	1.4	3.0	-1.7	2.1	3.0	1.1	0.8
2017 Q4	1.8	2.4	-0.6	-0.6	2.0	3.6	1.5	3.1	-1.8	3.5	3.7	1.3	0.7
2018 Q1	1.4	2.0	-0.9	-1.0	1.7	2.4	1.2	2.3	-1.0	2.9	3.2	1.2	0.2
Q2	1.7	2.2	-0.5	0.4	1.8	2.7	1.1	3.0	-0.4	1.4	3.6	1.4	0.7
Q3	1.6	2.0	-0.2	0.5	1.7	3.4	1.3	3.7	-1.0	1.2	3.2	1.1	0.2
Hours worked per person employed													
<i>annual percentage changes</i>													
2015	0.1	0.2	0.4	0.7	0.4	0.5	-0.3	1.1	0.1	0.3	0.2	0.1	0.5
2016	0.1	0.2	0.0	0.2	0.1	0.3	0.0	-0.1	0.4	0.4	0.1	0.1	0.1
2017	-0.2	-0.1	-0.3	-0.4	0.0	0.1	-0.3	-0.1	-0.5	0.5	-0.1	-0.2	-0.6
2017 Q4	0.2	0.4	0.1	0.6	0.7	1.1	0.0	0.0	-0.3	1.9	0.2	0.1	-0.5
2018 Q1	-0.1	0.1	-0.2	-0.2	0.1	0.3	-0.3	-0.2	0.0	1.3	0.1	-0.1	-0.3
Q2	0.2	0.4	-0.1	0.8	0.3	0.1	-0.2	0.4	0.4	-0.1	0.6	0.2	-0.1
Q3	0.3	0.5	0.1	0.2	0.4	0.8	0.0	0.3	0.2	0.3	0.7	0.0	1.0

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 ¹⁾	Under-employment, % of labour force ¹⁾	Unemployment										Job vacancy rate ²⁾	
			Total		Long-term unemployment, % of labour force ¹⁾	By age				By gender				
			Millions	% of labour force		Adult		Youth		Male		Female		
						Millions	% of labour force	Millions	% of labour force	Millions	% of labour force	Millions		% of labour force
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
% of total in 2016			100.0		81.7	18.3			52.2		47.8			
2015	160.730	4.6	17.472	10.9	5.6	14.307	9.8	3.165	22.3	9.261	10.7	8.211	11.1	1.5
2016	162.028	4.3	16.252	10.0	5.0	13.289	9.0	2.963	20.9	8.482	9.7	7.770	10.4	1.7
2017	162.659	4.1	14.764	9.1	4.4	12.096	8.1	2.668	18.8	7.636	8.7	7.128	9.5	1.9
2017 Q4	163.132	3.9	14.185	8.7	4.2	11.636	7.8	2.549	17.9	7.314	8.3	6.870	9.1	2.0
2018 Q1	162.591	4.0	13.926	8.5	4.2	11.422	7.7	2.505	17.6	7.185	8.2	6.741	8.9	2.1
Q2	163.180	3.9	13.505	8.3	3.9	11.065	7.4	2.439	17.1	6.972	7.9	6.533	8.6	2.1
Q3	163.709	3.6	13.172	8.1	3.6	10.742	7.2	2.430	16.9	6.822	7.8	6.350	8.4	2.1
2018 June	-	-	13.403	8.2	-	10.973	7.4	2.430	17.0	6.921	7.9	6.483	8.6	-
July	-	-	13.250	8.1	-	10.840	7.3	2.410	16.9	6.859	7.8	6.391	8.5	-
Aug.	-	-	13.139	8.0	-	10.711	7.2	2.428	16.9	6.804	7.8	6.335	8.4	-
Sep.	-	-	13.127	8.0	-	10.674	7.2	2.452	17.0	6.803	7.7	6.324	8.4	-
Oct.	-	-	13.130	8.0	-	10.650	7.1	2.480	17.1	6.783	7.7	6.346	8.4	-
Nov.	-	-	13.040	7.9	-	10.587	7.1	2.452	16.9	6.734	7.6	6.305	8.3	-

Sources: Eurostat and ECB calculations.

1) Not seasonally adjusted.

2) 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					Construction production	ECB indicator on industrial new orders	Retail sales				New passenger car registrations	
	Total (excluding construction)		Main Industrial Groupings					Total	Food, beverages, tobacco	Non-food	Fuel		
	Manufacturing	Intermediate goods	Capital goods	Consumer goods	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													
2016	1.6	1.8	1.8	1.9	1.7	0.5	3.1	0.6	1.6	1.0	2.1	1.4	7.2
2017	3.0	3.2	3.4	3.9	1.5	1.1	3.0	7.9	2.3	1.4	3.3	0.9	5.7
2018	.	.	.	.	.	.	.	.	.	.	.	.	0.8
2018 Q1	3.1	3.4	3.0	4.4	2.4	0.6	2.5	6.5	1.7	1.6	1.8	0.1	5.3
Q2	2.4	2.8	1.8	4.6	2.0	-1.9	2.7	3.8	1.7	1.1	2.3	0.8	3.2
Q3	0.7	0.9	-0.2	1.9	1.0	-1.1	2.3	1.6	1.2	1.0	1.3	0.2	3.4
Q4	.	.	.	.	.	.	.	.	.	.	.	.	-9.4
2018 July	0.4	0.5	0.0	1.7	-0.5	-1.2	0.2	2.0	1.0	1.0	1.0	-0.5	7.7
Aug.	1.1	1.4	-0.2	1.8	3.1	-0.8	0.9	2.4	2.2	1.8	2.6	-0.1	30.9
Sep.	0.6	0.9	-0.4	2.2	0.7	-1.3	3.7	0.4	0.3	0.1	0.3	1.1	-21.2
Oct.	1.2	1.5	-0.1	3.7	0.7	-3.0	0.6	0.1	2.3	2.4	2.6	1.7	-11.8
Nov.	-3.3	-3.1	-3.0	-4.5	-0.6	-5.2	0.9	1.4	1.1	0.2	1.5	2.9	-8.9
Dec.	.	.	.	.	.	.	.	.	.	.	.	.	-7.5
month-on-month percentage changes (s.a.)													
2018 July	-0.8	-0.8	-0.8	0.9	-1.6	0.7	-2.0	-1.2	-0.4	-1.0	-0.1	-1.2	2.0
Aug.	1.2	1.2	0.5	1.9	1.9	1.6	0.6	2.8	0.4	0.4	0.6	-0.6	21.9
Sep.	-0.6	-0.4	-0.4	-0.3	-1.0	-2.1	2.0	-1.0	-0.5	-0.4	-0.6	0.8	-37.1
Oct.	0.1	0.2	0.1	0.7	-0.2	-1.4	-1.6	0.3	0.6	0.7	0.6	0.5	9.1
Nov.	-1.7	-1.7	-1.2	-2.3	-1.1	-0.6	-0.1	2.3	0.6	-0.9	1.2	1.2	6.7
Dec.	.	.	.	.	.	.	.	.	.	.	.	.	2.5

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

3 Economic activity

3.6 Opinion surveys (seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances, unless otherwise indicated)								Purchasing Managers' Surveys (diffusion indices)			
	Economic sentiment indicator (long-term average = 100)	Manufacturing industry		Consumer confidence indicator	Construction confidence indicator	Retail trade confidence indicator	Service industries		Purchasing Managers' Index (PMI) for manufacturing	Manufacturing output	Business activity for services	Composite output
		Industrial confidence indicator	Capacity utilisation (%)				Services confidence indicator	Capacity utilisation (%)				
	1	2	3	4	5	6	7	8	9	10	11	12
1999-14	99.8	-5.8	80.7	-12.7	-14.5	-9.5	6.9	-	51.1	52.4	52.9	52.7
2016	104.2	-2.6	81.8	-7.7	-16.4	0.3	10.6	89.0	52.5	53.6	53.1	53.3
2017	110.8	5.0	83.3	-2.5	-4.0	2.1	14.1	89.9	57.4	58.5	55.6	56.4
2018	111.7	5.8	.	-1.4	6.2	1.0	14.6	.	55.0	54.7	54.5	54.6
2018 Q1	114.0	8.5	84.4	0.5	4.7	2.8	16.3	90.3	58.2	58.9	56.4	57.0
Q2	112.5	7.0	84.2	0.0	5.8	0.3	14.5	90.4	55.6	55.1	54.5	54.7
Q3	111.5	5.4	84.0	-1.8	6.7	1.5	14.8	90.4	54.3	54.0	54.4	54.3
Q4	108.8	2.5	.	-4.3	7.8	-0.4	12.9	.	51.7	51.0	52.8	52.3
2018 July	112.1	5.8	84.2	-0.5	5.4	0.3	15.3	90.6	55.1	54.4	54.2	54.3
Aug.	111.6	5.6	-	-1.9	6.4	1.9	14.4	-	54.6	54.7	54.4	54.5
Sep.	110.9	4.7	-	-2.9	8.3	2.4	14.7	-	53.2	52.7	54.7	54.1
Oct.	109.7	3.0	83.9	-2.7	7.9	-0.8	13.3	90.1	52.0	51.3	53.7	53.1
Nov.	109.5	3.4	-	-3.9	8.2	-0.5	13.4	-	51.8	50.7	53.4	52.7
Dec.	107.3	1.1	-	-6.2	7.2	0.0	12.0	-	51.4	51.0	51.2	51.1

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) ¹⁾	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)		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
2015	12.4	94.0	1.6	2.1	1.2	3.2	2.0	34.7	6.2	138.4	5.1	7.8	2.9
2016	12.3	94.2	1.8	2.1	6.2	3.2	2.8	35.2	7.7	139.2	4.9	6.2	2.9
2017	11.8	94.1	1.2	2.0	6.9	4.0	4.1	34.7	6.9	137.2	3.4	5.0	2.0
2017 Q4	11.8	94.1	1.5	2.0	6.4	4.0	4.1	34.7	6.9	137.2	3.4	1.4	2.0
2018 Q1	11.8	93.8	1.8	1.9	5.7	3.6	4.5	34.8	7.0	137.0	2.9	0.0	1.6
Q2	12.0	93.8	1.9	2.0	8.4	3.8	4.6	34.9	6.9	137.7	3.1	1.0	1.7
Q3	12.1	93.6	1.4	1.9	8.5	3.8	5.1	34.5	6.9	.	2.8	8.1	1.5

Sources: ECB and Eurostat.

1) Based on four-quarter cumulated sums of both saving and gross disposable income (adjusted for the change in the net equity of households in pension fund reserves).

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) Based on the outstanding amount of loans, debt securities, trade credits and pension scheme liabilities.

3 Economic activity

3.8 Euro area balance of payments, current and capital accounts

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

	Current account											Capital account ¹⁾	
	Total			Goods		Services		Primary income		Secondary income		Credit	Debit
	Credit	Debit	Net	Credit	Debit	Credit	Debit	Credit	Debit	Credit	Debit		
1	2	3	4	5	6	7	8	9	10	11	12	13	
2017 Q4	1,007.3	907.8	99.5	586.6	495.5	220.3	189.1	171.2	160.2	29.3	63.1	12.1	10.5
2018 Q1	993.0	888.1	104.9	577.5	492.1	218.8	189.0	168.5	147.9	28.3	59.1	9.0	6.4
Q2	1,020.4	924.3	96.1	585.2	505.2	220.9	191.8	186.2	163.5	28.1	63.8	8.1	6.4
Q3	1,029.7	953.5	76.2	591.8	523.0	228.7	200.1	180.5	161.5	28.8	68.8	8.2	5.9
2018 June	345.0	315.8	29.2	197.2	169.2	73.9	63.7	64.7	60.2	9.2	22.7	3.1	2.0
July	338.8	316.5	22.3	194.8	173.2	76.2	66.7	58.6	53.3	9.2	23.3	2.9	1.9
Aug.	348.1	315.4	32.8	199.6	173.6	76.7	66.4	61.8	53.2	10.1	22.2	3.0	1.8
Sep.	342.8	321.6	21.2	197.3	176.2	75.9	67.0	60.1	55.1	9.5	23.3	2.3	2.2
Oct.	335.1	308.2	26.8	198.9	179.2	72.5	61.2	54.1	45.7	9.5	22.2	3.3	2.2
Nov.	338.7	318.4	20.3	196.3	178.0	76.0	65.0	57.0	51.1	9.3	24.3	4.1	3.1
<i>12-month cumulated transactions</i>													
2018 Nov.	4,057.8	3,704.6	353.2	2,348.7	2,045.2	891.8	770.4	703.0	629.9	114.4	259.2	39.1	29.3
<i>12-month cumulated transactions as a percentage of GDP</i>													
2018 Nov.	35.3	32.2	3.1	20.4	17.8	7.8	6.7	6.1	5.5	1.0	2.3	0.3	0.3

1) The capital account is not seasonally adjusted.

3.9 Euro area external trade in goods¹⁾, values and volumes by product group²⁾

(seasonally adjusted, unless otherwise indicated)

	Total (n.s.a.)		Exports (f.o.b.)					Imports (c.i.f.)					
	Exports	Imports	Total			Memo item: Manu- facturing	Total			Memo items:			
			Intermediate goods	Capital goods	Consumption goods		Intermediate goods	Capital goods	Consumption goods	Manu- facturing	Oil		
1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Values (EUR billions; annual percentage changes for columns 1 and 2)</i>													
2017 Q4	6.2	8.1	561.9	268.2	116.1	166.8	471.6	502.0	286.1	81.7	125.2	362.4	58.7
2018 Q1	2.1	2.3	561.0	270.5	113.9	167.7	469.8	504.9	291.8	81.7	123.7	358.3	65.2
Q2	4.3	5.9	565.9	271.2	117.6	166.4	473.7	515.2	300.8	79.8	126.9	364.0	65.7
Q3	4.6	9.9	572.2	277.6	116.6	167.1	476.7	531.0	310.1	85.8	126.7	372.3	68.4
2018 June	6.1	8.8	190.9	91.8	39.9	56.5	159.6	174.4	103.2	26.8	42.2	121.7	23.1
July	9.3	14.0	189.2	91.7	38.8	55.1	155.9	177.2	103.7	28.7	42.3	124.4	22.7
Aug.	5.5	8.7	192.7	93.4	38.8	56.5	161.1	176.4	102.9	28.3	42.2	123.5	23.0
Sep.	-0.8	7.1	190.3	92.4	39.1	55.4	159.8	177.4	103.5	28.8	42.2	124.4	22.6
Oct.	11.1	14.0	194.0	93.5	40.1	56.3	160.8	180.5	105.7	29.0	43.9	126.4	24.2
Nov.	1.9	4.7	192.1	.	.	.	160.4	177.0	.	.	.	123.9	.
<i>Volume indices (2000 = 100; annual percentage changes for columns 1 and 2)</i>													
2017 Q4	4.6	4.6	126.5	125.7	125.6	130.5	126.9	115.0	114.9	114.3	115.5	119.1	105.8
2018 Q1	2.2	2.6	125.8	125.5	123.3	131.4	126.1	114.5	114.9	113.9	115.2	117.8	110.4
Q2	3.0	2.5	125.6	124.3	126.7	129.2	126.2	115.2	115.3	112.0	118.3	119.2	101.8
Q3	0.8	1.5	125.2	125.4	124.1	127.8	125.6	115.2	114.9	117.4	115.1	119.4	99.4
2018 May	-2.0	-1.7	124.8	124.5	123.8	126.7	125.8	115.6	114.8	114.2	118.5	121.2	99.2
June	3.5	2.0	126.4	125.1	128.3	131.3	127.1	114.9	115.6	112.1	117.2	118.4	101.6
July	6.2	6.6	124.7	124.5	124.5	127.1	123.6	116.0	115.8	119.0	116.2	120.5	100.4
Aug.	1.6	0.1	126.7	126.8	124.1	129.9	127.4	115.2	114.9	117.1	114.7	119.1	102.4
Sep.	-5.0	-2.0	124.3	124.8	123.6	126.5	125.7	114.3	114.0	116.2	114.4	118.7	95.4
Oct.	6.9	4.4	126.9	126.1	127.9	128.6	126.9	116.2	115.7	118.4	119.1	121.3	98.4

Sources: ECB and Eurostat.

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

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

4 Prices and costs

4.1 Harmonised Index of Consumer Prices ¹⁾

(annual percentage changes, unless otherwise indicated)

	Total					Total (s.a.; percentage change vis-à-vis previous period) ²⁾						Administered prices	
	Index: 2015 = 100	Total		Goods	Services	Total	Processed food	Unprocessed food	Non-energy industrial goods	Energy (n.s.a.)	Services	Total HICP excluding administered prices	Administered prices
		Total excluding food and energy											
	1	2	3	4	5	6	7	8	9	10	11	12	13
% of total in 2018	100.0	100.0	70.7	55.6	44.4	100.0	12.1	7.5	26.3	9.7	44.4	86.6	13.4
2016	100.2	0.2	0.9	-0.4	1.1	-	-	-	-	-	-	0.2	0.3
2017	101.8	1.5	1.0	1.7	1.4	-	-	-	-	-	-	1.6	1.0
2018	103.5	1.7	1.0	2.1	1.3	-	-	-	-	-	-	1.7	2.1
2018 Q1	102.3	1.3	1.0	1.2	1.3	0.5	0.7	0.1	0.1	1.9	0.4	1.2	1.9
Q2	103.7	1.7	0.9	2.0	1.3	0.5	0.8	0.7	0.1	1.9	0.4	1.7	1.6
Q3	103.9	2.1	1.0	2.7	1.3	0.5	0.3	0.8	0.1	2.7	0.3	2.0	2.4
Q4	104.4	1.9	1.0	2.3	1.4	0.3	0.2	0.3	0.1	1.6	0.2	1.8	2.8
2018 July	103.6	2.1	1.1	2.8	1.4	0.2	0.1	0.0	0.1	0.7	0.2	2.1	2.4
Aug.	103.8	2.0	0.9	2.6	1.3	0.1	0.1	0.4	0.0	0.5	0.0	2.0	2.3
Sep.	104.3	2.1	0.9	2.7	1.3	0.2	0.0	0.8	0.0	1.2	0.1	2.0	2.4
Oct.	104.5	2.2	1.1	2.8	1.5	0.2	0.1	-0.3	0.1	1.8	0.1	2.1	2.8
Nov.	104.3	1.9	1.0	2.5	1.3	0.0	0.0	-0.1	0.0	0.0	0.0	1.8	2.8
Dec.	104.3	1.6	1.0	1.8	1.3	-0.3	-0.1	0.1	0.0	-3.2	0.1	1.4	2.7

	Goods						Services					
	Food (including alcoholic beverages and tobacco)			Industrial goods			Housing	Transport	Communi-cation	Recreation and personal care	Miscel-laneous	
	Total	Processed food	Unpro-cessed food	Total	Non-energy industrial goods	Energy						Rents
	14	15	16	17	18	19	20	21	22	23	24	25
% of total in 2018	19.6	12.1	7.5	36.0	26.3	9.7	10.6	6.4	7.3	3.2	15.3	8.1
2016	0.9	0.6	1.4	-1.1	0.4	-5.1	1.1	1.1	0.8	0.0	1.4	1.2
2017	1.8	1.6	2.2	1.6	0.4	4.9	1.3	1.2	2.1	-1.5	2.1	0.7
2018	2.2	2.4	1.8	2.0	0.4	6.3	1.2	1.2	1.5	-1.1	1.8	1.4
2018 Q1	1.7	2.6	0.3	0.9	0.5	2.1	1.3	1.3	1.7	-1.0	1.8	1.2
Q2	2.6	2.7	2.3	1.7	0.3	5.5	1.2	1.2	1.3	-0.7	1.8	1.3
Q3	2.5	2.3	2.8	2.8	0.4	9.4	1.1	1.1	1.4	-0.8	1.9	1.3
Q4	2.0	2.0	1.9	2.6	0.4	8.4	1.2	1.1	1.5	-1.8	1.8	1.8
2018 July	2.5	2.4	2.6	2.9	0.5	9.5	1.1	1.1	1.3	-0.6	2.1	1.4
Aug.	2.4	2.4	2.5	2.7	0.3	9.2	1.1	1.1	1.6	-0.8	1.8	1.2
Sep.	2.6	2.2	3.2	2.8	0.3	9.5	1.1	1.1	1.3	-1.2	1.9	1.3
Oct.	2.2	2.2	2.1	3.1	0.4	10.7	1.2	1.1	1.8	-1.5	2.0	1.7
Nov.	1.9	2.0	1.8	2.7	0.4	9.1	1.2	1.1	1.6	-1.9	1.7	1.8
Dec.	1.8	1.7	1.9	1.8	0.4	5.4	1.2	1.1	1.2	-1.8	1.9	1.8

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>).

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	Intermedi- ate 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			
2015	100.0	-2.6	-2.3	-0.5	-1.2	0.6	-0.6	-1.0	0.2	-8.6	0.4	1.7	2.3
2016	97.9	-2.1	-1.4	-0.5	-1.6	0.5	0.0	0.0	0.0	-6.9	0.6	3.4	5.0
2017	100.8	3.0	3.0	2.1	3.2	0.9	1.9	2.8	0.2	5.7	2.2	3.7	5.1
2017 Q4	101.7	2.5	2.5	2.0	3.2	1.0	1.5	2.0	0.3	3.6	2.5	3.9	6.6
2018 Q1	102.4	1.7	1.6	1.5	2.4	0.9	0.8	1.0	0.5	2.0	2.4	4.3	4.5
Q2	103.1	2.8	2.6	1.4	2.5	1.0	0.3	0.1	0.6	6.7	2.3	4.2	2.3
Q3	104.9	4.3	3.2	1.5	3.1	1.1	0.1	-0.3	0.7	12.5	2.7	4.3	.
2018 June	103.7	3.6	3.3	1.5	3.1	1.0	0.2	-0.2	0.6	9.3	-	-	-
July	104.4	4.2	3.3	1.6	3.2	1.0	0.1	-0.2	0.7	12.0	-	-	-
Aug.	104.8	4.3	3.3	1.6	3.3	1.1	0.1	-0.3	0.7	12.4	-	-	-
Sep.	105.4	4.6	3.0	1.5	2.9	1.1	0.0	-0.4	0.7	12.9	-	-	-
Oct.	106.2	4.9	3.2	1.5	2.6	1.2	0.2	-0.3	0.8	14.6	-	-	-
Nov.	105.9	4.0	2.3	1.5	2.6	1.2	0.2	-0.2	0.9	10.8	-	-	-

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: 2010 = 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	
2016	106.9	0.8	0.5	0.4	0.5	0.7	-1.4	-2.5	39.9	-2.0	-1.4	-2.8	-3.1	-3.7	-2.3
2017	108.0	1.1	1.5	1.4	1.4	1.5	1.9	2.9	48.1	5.8	-3.5	16.6	6.7	-1.6	17.8
2018	.	.	.	.	.	.	.	.	60.4	-0.9	-6.3	4.3	-0.2	-5.5	5.7
2018 Q1	108.9	1.4	1.5	1.2	1.5	1.8	0.4	0.4	54.6	-8.9	-14.6	-3.2	-7.6	-12.9	-1.4
Q2	109.4	1.4	1.8	1.5	2.0	1.9	1.0	2.0	62.6	2.1	-6.0	10.3	1.9	-6.3	11.7
Q3	109.8	1.4	2.1	1.8	1.9	2.5	2.2	3.9	64.8	2.0	-3.4	7.1	3.1	-2.2	8.8
Q4	.	.	.	.	.	.	.	.	59.5	1.9	0.1	3.6	2.3	0.2	4.4
2018 July	.	.	.	.	.	.	.	.	63.7	2.1	-6.3	10.5	2.4	-5.9	12.2
Aug.	.	.	.	.	.	.	.	.	63.3	3.1	-0.8	6.7	4.6	0.7	8.7
Sep.	.	.	.	.	.	.	.	.	67.6	0.8	-3.0	4.2	2.3	-1.0	5.7
Oct.	.	.	.	.	.	.	.	.	70.1	2.5	-1.0	5.7	2.9	-0.5	6.4
Nov.	.	.	.	.	.	.	.	.	57.4	1.8	-0.8	4.1	1.7	-1.2	4.8
Dec.	.	.	.	.	.	.	.	.	49.8	1.5	2.0	1.1	2.3	2.4	2.1

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

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

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

4 Prices and costs

4.4 Price-related opinion surveys

(seasonally adjusted)

	European Commission Business and Consumer Surveys (percentage balances)					Purchasing Managers' Surveys (diffusion indices)			
	Selling price expectations (for next three months)				Consumer price trends over past 12 months	Input prices		Prices charged	
	Manu- facturing	Retail trade	Services	Construction		Manu- facturing	Services	Manu- facturing	Services
	1	2	3	4	5	6	7	8	9
1999-14	4.4	-	-	-3.1	33.5	57.2	56.5	-	49.8
2016	-1.0	2.2	4.1	-7.2	0.2	49.8	53.9	49.3	49.6
2017	8.7	5.0	6.7	2.6	12.3	64.6	56.3	55.1	51.6
2018	11.0	7.3	9.1	12.1	20.1	65.4	57.9	56.1	52.7
2018 Q1	12.5	6.7	8.9	10.9	17.4	68.4	57.2	57.9	52.9
Q2	9.8	6.7	9.0	12.2	18.5	65.6	57.6	56.5	52.3
Q3	10.6	7.3	8.9	12.5	21.0	65.2	58.4	55.5	52.8
Q4	11.1	8.4	9.6	12.9	23.7	62.6	58.4	54.5	52.7
2018 July	9.6	6.8	9.0	12.3	20.7	66.6	57.9	55.6	53.0
Aug.	10.5	7.8	9.3	13.2	19.6	65.3	58.1	55.1	52.7
Sep.	11.6	7.3	8.3	12.0	22.6	63.6	59.1	55.7	52.8
Oct.	9.7	8.9	8.5	12.9	24.4	65.1	58.5	54.8	52.8
Nov.	11.2	7.2	9.9	12.3	23.8	63.6	58.9	54.7	52.8
Dec.	12.3	9.0	10.6	13.6	23.0	59.1	57.9	54.1	52.5

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: 2012 = 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 2012	100.0	100.0	74.6	25.4	69.3	30.7	
2015	104.1	1.6	1.9	0.7	1.5	1.6	1.5
2016	105.5	1.4	1.4	1.1	1.3	1.5	1.4
2017	107.5	1.8	1.8	1.8	1.9	1.6	1.5
2017 Q4	114.1	1.6	1.6	1.4	1.8	1.1	1.5
2018 Q1	102.6	2.0	1.8	2.8	2.3	1.5	1.7
Q2	113.9	2.3	2.0	3.0	2.5	1.7	2.1
Q3	106.4	2.5	2.4	3.0	2.7	2.2	2.1

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: 2010 =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												
2015	104.6	0.4	0.4	-1.4	0.6	0.4	0.7	0.5	2.4	1.3	1.4	1.1
2016	105.3	0.6	1.3	-1.3	0.6	1.3	-0.7	1.4	3.8	0.6	1.4	1.5
2017	106.1	0.8	0.3	-0.4	-0.1	0.3	0.8	-0.5	4.4	2.2	1.6	1.8
2017 Q4	106.4	0.8	-1.3	-0.6	-0.1	-0.1	1.7	-1.4	4.4	2.3	1.7	1.7
2018 Q1	107.0	1.1	0.4	0.0	-0.5	0.6	0.6	0.8	3.3	2.2	1.7	1.6
Q2	107.6	1.6	1.0	1.3	0.3	0.9	0.4	0.6	3.1	2.5	2.2	2.5
Q3	108.4	2.2	1.9	2.6	1.1	1.7	1.4	0.2	3.6	3.0	2.4	2.6
Compensation per employee												
2015	108.0	1.4	1.3	2.0	1.2	1.3	2.7	0.8	2.0	1.6	1.1	1.8
2016	109.3	1.2	0.2	1.3	1.8	1.3	0.2	-2.2	2.2	0.4	1.3	1.7
2017	111.1	1.6	1.6	1.5	1.2	1.6	1.9	0.0	4.0	3.1	1.5	1.3
2017 Q4	112.1	1.9	2.4	1.9	1.6	1.8	2.4	0.1	4.1	3.3	1.6	1.6
2018 Q1	112.6	1.9	3.0	1.6	1.2	2.0	2.8	1.7	3.3	2.5	1.9	2.2
Q2	113.3	2.2	2.6	2.1	1.5	2.2	2.9	1.9	2.8	2.8	2.3	2.4
Q3	114.1	2.5	1.9	2.3	2.4	2.4	2.4	2.4	3.9	3.0	2.3	4.0
Labour productivity per person employed												
2015	103.3	1.0	0.9	3.5	0.7	0.9	2.0	0.3	-0.4	0.2	-0.3	0.6
2016	103.9	0.6	-1.0	2.6	1.1	0.0	0.9	0.7	-1.5	-0.2	-0.1	0.3
2017	104.7	0.8	1.3	1.9	1.3	1.4	1.1	0.6	-0.4	0.8	-0.2	-0.5
2017 Q4	105.3	1.1	3.8	2.5	1.8	1.9	0.7	1.5	-0.3	1.0	-0.1	-0.1
2018 Q1	105.3	0.9	2.7	1.5	1.7	1.4	2.2	0.9	0.0	0.3	0.2	0.7
Q2	105.3	0.6	1.6	0.8	1.2	1.3	2.4	1.3	-0.3	0.3	0.0	-0.1
Q3	105.3	0.3	0.0	-0.3	1.3	0.7	0.9	2.2	0.3	0.1	-0.1	1.3
Compensation per hour worked												
2015	109.7	1.2	1.4	1.6	0.7	1.3	1.5	0.7	1.4	1.1	1.2	1.5
2016	110.8	1.0	-0.4	1.2	1.7	0.9	0.2	1.8	1.9	0.0	1.3	1.5
2017	112.6	1.7	1.3	1.5	1.0	1.9	1.8	0.5	3.3	2.8	1.6	1.7
2017 Q4	113.2	1.5	1.6	1.1	0.6	1.6	2.1	0.3	2.1	2.7	1.4	1.8
2018 Q1	113.8	1.8	2.9	1.4	0.3	2.2	2.9	1.8	2.0	2.2	1.9	2.0
Q2	114.3	1.9	1.1	1.8	0.9	2.1	2.2	1.5	2.3	2.1	2.0	1.9
Q3	114.8	2.0	1.9	1.7	1.5	2.2	2.1	2.2	2.7	2.3	2.2	2.2
Hourly labour productivity												
2015	105.2	0.9	0.2	3.1	0.2	1.1	0.9	0.2	-0.7	0.0	-0.4	0.1
2016	105.7	0.5	-1.2	2.5	0.8	0.0	1.0	0.3	-2.0	-0.4	-0.2	0.2
2017	106.8	1.0	1.7	1.9	1.3	1.7	1.2	1.1	-0.9	0.9	0.0	0.1
2017 Q4	107.1	0.9	3.1	1.9	0.7	1.9	0.7	1.8	-2.1	0.7	-0.2	0.4
2018 Q1	107.2	0.9	2.8	1.4	1.3	1.7	2.4	1.0	-1.4	0.2	0.3	1.0
Q2	107.0	0.4	0.9	0.5	1.0	1.5	2.0	0.9	-0.2	-0.3	-0.2	0.0
Q3	106.7	0.0	-0.1	-0.7	0.4	0.8	0.6	2.0	0.0	-0.6	-0.2	0.3

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				Repos	Money market fund shares	Debt securities with a maturity of up to 2 years			
	Currency in circulation	Overnight deposits	Deposits with an agreed maturity of up to 2 years	Deposits redeemable at notice of up to 3 months								
1	2	3	4	5	6	7	8	9	10	11	12	
Outstanding amounts												
2015	1,037.3	5,574.7	6,612.0	1,445.6	2,159.4	3,605.0	10,217.0	73.7	488.6	69.2	631.6	10,848.5
2016	1,075.3	6,082.8	7,158.1	1,330.6	2,221.0	3,551.5	10,709.6	69.6	523.1	86.6	679.2	11,388.8
2017	1,111.6	6,637.7	7,749.3	1,197.0	2,260.8	3,457.7	11,207.0	74.7	512.0	71.6	658.3	11,865.4
2017 Q4	1,111.6	6,637.7	7,749.3	1,197.0	2,260.8	3,457.7	11,207.0	74.7	512.0	71.6	658.3	11,865.4
2018 Q1	1,116.9	6,744.0	7,860.9	1,170.3	2,259.8	3,430.1	11,291.1	71.4	511.4	61.5	644.3	11,935.3
Q2	1,133.6	6,892.4	8,025.9	1,178.1	2,270.8	3,448.8	11,474.8	73.7	507.8	65.5	647.1	12,121.8
Q3	1,150.5	7,010.1	8,160.6	1,126.6	2,285.0	3,411.6	11,572.2	71.4	495.4	61.3	628.2	12,200.4
2018 June	1,133.6	6,892.4	8,025.9	1,178.1	2,270.8	3,448.8	11,474.8	73.7	507.8	65.5	647.1	12,121.8
July	1,137.3	6,916.3	8,053.5	1,155.9	2,277.2	3,433.0	11,486.5	68.5	508.4	62.0	638.9	12,125.5
Aug.	1,143.8	6,951.5	8,095.3	1,140.1	2,281.1	3,421.2	11,516.5	71.8	501.7	65.6	639.1	12,155.6
Sep.	1,150.5	7,010.1	8,160.6	1,126.6	2,285.0	3,411.6	11,572.2	71.4	495.4	61.3	628.2	12,200.4
Oct.	1,154.4	7,045.0	8,199.4	1,138.0	2,290.1	3,428.1	11,627.5	72.0	506.2	62.4	640.6	12,268.2
Nov. ^(p)	1,158.2	7,090.8	8,248.9	1,127.1	2,295.1	3,422.1	11,671.1	73.7	500.4	59.9	634.0	12,305.1
Transactions												
2015	66.5	565.9	632.4	-132.2	12.3	-119.9	512.5	-47.2	50.6	-28.9	-25.4	487.1
2016	38.1	541.7	579.8	-106.1	16.1	-90.0	489.7	-4.3	34.3	18.2	48.2	538.0
2017	36.4	591.2	627.6	-110.5	34.1	-76.4	551.2	6.6	-10.9	-18.4	-22.7	528.5
2017 Q4	7.7	119.8	127.5	-18.7	9.5	-9.2	118.2	7.6	-19.0	-9.6	-21.0	97.2
2018 Q1	5.3	103.0	108.4	-25.0	7.6	-17.4	90.9	-3.1	-0.6	-9.1	-12.8	78.2
Q2	16.6	137.8	154.4	4.5	10.2	14.7	169.1	-0.9	-3.2	2.3	-1.8	167.3
Q3	16.0	115.9	131.9	-51.7	14.2	-37.6	94.3	-2.4	-12.6	-3.8	-18.8	75.5
2018 June	4.9	47.3	52.3	13.7	3.9	17.6	69.9	1.9	1.4	2.4	5.7	75.6
July	2.7	24.8	27.5	-21.2	6.4	-14.8	12.7	-5.1	0.4	-3.3	-8.1	4.6
Aug.	6.5	33.7	40.3	-16.4	3.9	-12.5	27.7	3.2	-6.7	3.4	-0.1	27.6
Sep.	6.8	57.4	64.2	-14.1	3.9	-10.2	53.9	-0.5	-6.2	-3.9	-10.6	43.4
Oct.	3.9	31.4	35.3	9.4	5.3	14.7	50.0	0.4	10.7	-0.1	11.0	61.0
Nov. ^(p)	3.7	46.9	50.6	-10.8	5.0	-5.8	44.8	1.7	-5.8	-2.6	-6.6	38.3
Growth rates												
2015	6.9	11.3	10.6	-8.4	0.6	-3.2	5.3	-39.0	11.5	-28.4	-3.9	4.7
2016	3.7	9.7	8.8	-7.4	0.7	-2.5	4.8	-5.8	7.0	26.0	7.6	5.0
2017	3.4	9.7	8.8	-8.4	1.5	-2.2	5.2	9.5	-2.1	-21.4	-3.3	4.6
2017 Q4	3.4	9.7	8.8	-8.4	1.5	-2.2	5.2	9.5	-2.1	-21.4	-3.3	4.6
2018 Q1	2.5	8.4	7.5	-8.9	1.6	-2.2	4.3	-1.6	-4.7	-27.2	-7.0	3.6
Q2	3.5	8.1	7.4	-5.6	1.7	-0.9	4.7	5.3	-1.4	-16.3	-2.4	4.3
Q3	4.1	7.3	6.8	-7.5	1.8	-1.4	4.3	2.0	-6.7	-25.0	-8.0	3.6
2018 June	3.5	8.1	7.4	-5.6	1.7	-0.9	4.7	5.3	-1.4	-16.3	-2.4	4.3
July	3.6	7.6	7.0	-6.5	1.9	-1.1	4.4	-1.8	-1.5	-19.8	-3.7	4.0
Aug.	3.9	7.0	6.5	-7.6	1.8	-1.5	4.0	-2.5	-3.6	-10.5	-4.2	3.5
Sep.	4.1	7.3	6.8	-7.5	1.8	-1.4	4.3	2.0	-6.7	-25.0	-8.0	3.6
Oct.	4.1	7.3	6.8	-6.2	1.8	-1.0	4.4	-0.6	-3.7	-14.9	-4.6	3.9
Nov. ^(p)	4.3	7.1	6.7	-6.6	2.0	-1.0	4.3	-8.1	-3.7	-19.8	-6.0	3.7

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													
2015	1,960.9	1,512.5	323.5	116.9	8.1	5,753.0	3,061.3	695.3	1,993.5	2.9	946.9	226.7	365.9
2016	2,093.3	1,630.4	295.1	159.6	8.2	6,055.5	3,402.3	644.9	2,006.3	2.1	971.8	199.5	383.8
2017	2,255.7	1,801.7	285.8	159.1	9.1	6,305.0	3,698.8	561.9	2,043.6	0.7	994.3	204.0	411.1
2017 Q4	2,255.7	1,801.7	285.8	159.1	9.1	6,305.0	3,698.8	561.9	2,043.6	0.7	994.3	204.0	411.1
2018 Q1	2,260.5	1,821.6	274.0	157.2	7.6	6,376.4	3,787.5	543.5	2,043.8	1.6	983.2	210.4	415.1
Q2	2,296.8	1,855.2	277.9	156.7	7.0	6,462.3	3,870.1	535.2	2,055.9	1.1	1,010.5	219.8	425.6
Q3	2,323.7	1,891.5	268.0	157.4	6.8	6,538.7	3,945.4	524.6	2,067.6	1.1	982.2	211.8	436.8
2018 June	2,296.8	1,855.2	277.9	156.7	7.0	6,462.3	3,870.1	535.2	2,055.9	1.1	1,010.5	219.8	425.6
July	2,296.6	1,860.7	272.0	156.6	7.4	6,490.0	3,894.7	532.0	2,061.5	1.8	989.9	216.0	425.2
Aug.	2,305.8	1,872.8	268.8	157.5	6.7	6,515.4	3,921.6	528.2	2,063.8	1.8	974.8	214.3	434.2
Sep.	2,323.7	1,891.5	268.0	157.4	6.8	6,538.7	3,945.4	524.6	2,067.6	1.1	982.2	211.8	436.8
Oct.	2,316.8	1,892.3	271.4	147.1	5.9	6,587.2	3,984.1	520.8	2,081.1	1.1	992.6	208.3	440.3
Nov. (p)	2,323.3	1,892.3	276.4	146.5	8.1	6,610.0	4,004.6	517.6	2,086.6	1.1	1,002.5	207.7	443.1
Transactions													
2015	90.3	127.8	-31.4	4.9	-11.1	196.1	304.7	-109.6	1.4	-0.4	83.4	-1.1	30.1
2016	131.8	156.6	-25.2	0.3	0.1	300.7	334.2	-46.5	13.9	-0.9	24.2	-28.4	19.1
2017	178.5	181.3	-3.1	-0.7	1.0	254.7	304.4	-81.6	33.2	-1.3	55.2	6.2	26.9
2017 Q4	37.6	32.5	0.4	0.9	3.8	53.0	67.4	-20.4	7.2	-1.2	29.4	2.9	-4.7
2018 Q1	7.7	22.0	-10.9	-2.0	-1.4	73.6	81.9	-18.1	9.0	0.9	-9.3	6.7	3.8
Q2	28.8	29.0	1.1	-0.7	-0.7	83.6	81.7	-9.1	11.6	-0.5	20.1	9.0	10.0
Q3	26.4	36.0	-10.0	0.6	-0.2	76.4	75.4	-10.7	11.6	0.0	-29.8	-8.1	11.1
2018 June	2.8	-3.4	6.1	0.0	0.1	27.3	25.5	-1.6	3.6	-0.2	25.6	5.3	5.8
July	0.9	6.2	-5.6	-0.1	0.4	28.1	24.8	-3.1	5.6	0.8	-20.1	-3.7	-0.3
Aug.	8.4	11.6	-3.5	0.9	-0.7	25.0	26.7	-3.9	2.3	0.0	-16.2	-1.8	9.0
Sep.	17.2	18.2	-1.0	-0.1	0.1	23.2	23.9	-3.7	3.8	-0.8	6.5	-2.6	2.4
Oct.	3.3	1.7	2.5	0.0	-0.9	38.3	37.4	-4.2	5.0	0.1	6.2	-3.8	2.4
Nov. (p)	7.0	0.3	5.4	-0.9	2.2	23.3	20.6	-3.1	5.8	0.0	10.3	-1.0	3.1
Growth rates													
2015	4.8	9.2	-8.8	4.4	-58.0	3.5	11.1	-13.6	0.1	-12.2	9.7	-0.5	9.0
2016	6.8	10.4	-7.9	0.3	1.4	5.2	10.9	-6.7	0.7	-29.3	2.5	-12.5	5.2
2017	8.6	11.2	-1.1	-0.5	12.5	4.2	9.0	-12.7	1.7	-65.5	5.8	3.2	7.0
2017 Q4	8.6	11.2	-1.1	-0.5	12.5	4.2	9.0	-12.7	1.7	-65.5	5.8	3.2	7.0
2018 Q1	5.2	8.0	-7.8	-0.6	19.2	4.0	8.3	-12.5	1.6	-42.0	4.3	10.3	5.3
Q2	4.8	7.1	-5.5	-1.2	7.0	4.4	8.6	-10.9	1.8	-53.9	5.8	12.8	5.8
Q3	4.5	6.8	-6.8	-0.7	27.4	4.6	8.4	-10.0	1.9	-45.8	1.0	5.2	4.9
2018 June	4.8	7.1	-5.5	-1.2	7.0	4.4	8.6	-10.9	1.8	-53.9	5.8	12.8	5.8
July	4.5	6.8	-6.5	-1.0	20.4	4.6	8.7	-10.4	1.9	-13.6	2.0	11.6	3.8
Aug.	4.2	6.5	-7.2	-0.7	13.8	4.6	8.6	-10.4	1.9	-10.7	-1.7	8.1	4.7
Sep.	4.5	6.8	-6.8	-0.7	27.4	4.6	8.4	-10.0	1.9	-45.8	1.0	5.2	4.9
Oct.	4.1	6.0	-4.6	-1.1	5.7	4.7	8.4	-9.6	2.0	-45.3	3.0	2.8	5.1
Nov. (p)	3.7	5.3	-3.2	-1.8	0.4	4.9	8.5	-9.1	2.2	-42.6	0.5	1.3	6.8

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

5.3 Credit to euro area residents ¹⁾

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

	Credit to general government			Credit to other euro area residents								
	Total	Loans	Debt securities	Total	Loans					Debt securities	Equity and non-money market fund investment fund shares	
					Total	To non-financial corporations ³⁾	To households ⁴⁾	To financial corporations other than MFIs and ICPFs ³⁾	To insurance corporations and pension funds			
					Adjusted loans ²⁾							
1	2	3	4	5	6	7	8	9	10	11	12	
Outstanding amounts												
2015	3,898.4	1,114.1	2,781.8	12,601.6	10,510.6	10,806.0	4,287.1	5,309.7	789.3	124.5	1,309.4	781.5
2016	4,389.4	1,084.1	3,292.1	12,881.0	10,710.9	10,981.6	4,311.4	5,449.4	836.5	113.5	1,387.5	782.6
2017	4,625.9	1,033.3	3,578.7	13,116.8	10,874.4	11,170.9	4,326.4	5,599.1	839.2	109.6	1,442.6	799.8
2017 Q4	4,625.9	1,033.3	3,578.7	13,116.8	10,874.4	11,170.9	4,326.4	5,599.1	839.2	109.6	1,442.6	799.8
2018 Q1	4,605.0	1,023.1	3,568.0	13,196.4	10,941.2	11,233.7	4,343.7	5,633.0	851.7	112.8	1,467.7	787.5
Q2	4,603.1	1,017.7	3,571.2	13,276.3	10,990.7	11,328.2	4,358.0	5,659.7	853.2	119.8	1,496.9	788.8
Q3	4,627.4	1,003.5	3,609.9	13,363.2	11,064.5	11,398.2	4,396.9	5,701.3	841.9	124.4	1,513.8	784.8
2018 June	4,603.1	1,017.7	3,571.2	13,276.3	10,990.7	11,328.2	4,358.0	5,659.7	853.2	119.8	1,496.9	788.8
July	4,621.6	1,010.4	3,596.8	13,325.6	11,023.4	11,351.6	4,381.8	5,674.6	846.6	120.4	1,512.2	790.1
Aug.	4,612.1	1,004.0	3,593.9	13,352.9	11,054.9	11,383.1	4,394.3	5,693.2	847.2	120.2	1,515.4	782.6
Sep.	4,627.4	1,003.5	3,609.9	13,363.2	11,064.5	11,398.2	4,396.9	5,701.3	841.9	124.4	1,513.8	784.8
Oct.	4,611.9	1,000.6	3,597.4	13,387.6	11,090.0	11,423.2	4,404.0	5,716.0	849.2	120.8	1,524.8	772.9
Nov. ^(p)	4,619.4	1,003.4	3,594.4	13,405.4	11,111.8	11,444.7	4,419.7	5,731.4	839.9	120.7	1,517.5	776.2
Transactions												
2015	294.1	-21.2	315.0	84.9	57.9	77.4	-11.4	97.2	-22.3	-5.6	25.8	1.1
2016	486.0	-34.4	520.3	319.4	235.7	259.6	82.5	121.1	43.2	-11.0	80.1	3.6
2017	289.6	-43.0	332.0	361.5	273.4	315.3	83.0	173.5	20.4	-3.6	64.6	23.6
2017 Q4	87.7	-14.0	101.6	89.2	76.1	93.9	31.8	48.1	-2.0	-1.8	8.5	4.6
2018 Q1	-30.6	-9.7	-20.8	112.3	94.5	94.4	38.1	39.4	13.7	3.2	27.7	-9.9
Q2	34.7	-6.0	40.3	86.0	55.9	104.2	17.0	35.2	-3.2	6.9	29.6	0.5
Q3	47.9	-16.1	64.2	105.3	91.3	88.3	49.0	49.9	-12.1	4.5	18.4	-4.4
2018 June	11.6	-6.2	17.8	-11.2	-8.7	35.5	-20.8	13.7	-1.8	0.2	7.5	-10.0
July	26.6	-5.8	32.4	51.5	37.6	28.4	26.0	17.0	-5.9	0.5	15.1	-1.2
Aug.	14.5	-6.5	21.1	29.9	31.1	30.5	13.6	18.0	-0.3	-0.2	4.3	-5.5
Sep.	6.7	-3.7	10.7	23.8	22.5	29.4	9.4	14.9	-6.0	4.2	-1.0	2.3
Oct.	-9.9	-3.3	-6.6	26.6	21.6	20.7	5.3	15.4	4.7	-3.7	12.5	-7.6
Nov. ^(p)	-1.1	2.8	-11.6	26.6	29.6	32.4	21.7	17.6	-9.7	0.0	-5.9	2.9
Growth rates												
2015	8.2	-1.9	12.7	0.7	0.6	0.7	-0.3	1.9	-2.7	-4.3	2.0	0.1
2016	12.4	-3.1	18.7	2.5	2.3	2.4	1.9	2.3	5.5	-8.9	6.1	0.5
2017	6.6	-4.0	10.2	2.8	2.6	2.9	1.9	3.2	2.5	-3.2	4.7	3.0
2017 Q4	6.6	-4.0	10.2	2.8	2.6	2.9	1.9	3.2	2.5	-3.2	4.7	3.0
2018 Q1	3.9	-3.9	6.4	2.6	2.6	3.0	2.3	3.0	1.9	-0.4	4.0	-0.1
Q2	4.0	-3.9	6.4	2.8	2.9	3.5	2.5	3.0	3.0	6.8	4.8	-1.3
Q3	3.1	-4.4	5.3	3.0	2.9	3.4	3.2	3.1	-0.4	11.6	5.9	-1.1
2018 June	4.0	-3.9	6.4	2.8	2.9	3.5	2.5	3.0	3.0	6.8	4.8	-1.3
July	3.8	-3.9	6.2	3.0	3.0	3.4	3.0	3.3	1.3	5.5	4.9	-1.1
Aug.	3.3	-4.4	5.6	3.0	3.0	3.4	3.1	3.2	0.8	4.6	6.1	-1.8
Sep.	3.1	-4.4	5.3	3.0	2.9	3.4	3.2	3.1	-0.4	11.6	5.9	-1.1
Oct.	2.7	-4.2	4.8	3.0	2.8	3.3	2.8	3.2	-0.5	7.3	7.2	-2.3
Nov. ^(p)	2.2	-3.8	3.8	2.8	2.7	3.3	2.9	3.2	-1.7	5.0	6.7	-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	Adjusted loans ⁴⁾	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Total	Adjusted loans ⁴⁾	Loans for consumption	Loans for house purchase	Other loans
	1					2					3	4	5	6	7	8	9	10
Outstanding amounts										
2015	4,287.1	4,266.9	1,051.8	760.7	2,474.6	5,309.7	5,643.5	595.3	3,949.1	765.3
2016	4,311.4	4,308.9	1,013.5	795.6	2,502.4	5,449.4	5,728.6	615.9	4,082.8	750.6
2017	4,326.4	4,364.4	987.7	820.3	2,518.5	5,599.1	5,865.6	654.4	4,216.5	728.1
2017 Q4	4,326.4	4,364.4	987.7	820.3	2,518.5	5,599.1	5,865.6	654.4	4,216.5	728.1
2018 Q1	4,343.7	4,381.1	997.8	820.6	2,525.4	5,633.0	5,904.6	663.6	4,243.6	725.8
Q2	4,358.0	4,424.9	986.0	828.0	2,544.0	5,659.7	5,940.5	670.1	4,272.9	716.7
Q3	4,396.9	4,464.4	1,000.2	836.9	2,559.9	5,701.3	5,978.6	678.3	4,310.4	712.7
2018 June	4,358.0	4,424.9	986.0	828.0	2,544.0	5,659.7	5,940.5	670.1	4,272.9	716.7
July	4,381.8	4,441.9	997.6	833.2	2,551.0	5,674.6	5,954.4	673.9	4,285.4	715.3
Aug.	4,394.3	4,453.8	1,001.0	835.0	2,558.4	5,693.2	5,972.2	677.6	4,300.2	715.4
Sep.	4,396.9	4,464.4	1,000.2	836.9	2,559.9	5,701.3	5,978.6	678.3	4,310.4	712.7
Oct.	4,404.0	4,469.6	985.5	844.1	2,574.4	5,716.0	5,996.4	681.6	4,323.6	710.8
Nov. ^(p)	4,419.7	4,484.4	989.3	849.9	2,580.6	5,731.4	6,010.2	685.1	4,335.3	711.0
Transactions										
2015	-11.4	24.1	-50.5	32.0	7.0	97.2	75.3	21.2	80.1	-4.1
2016	82.5	100.2	-14.5	43.0	54.0	121.1	113.8	24.1	105.3	-8.3
2017	83.0	132.9	-0.1	38.1	45.0	173.5	165.8	45.1	134.2	-5.8
2017 Q4	31.8	51.8	10.8	10.8	10.2	48.1	44.5	12.3	36.8	-1.0
2018 Q1	38.1	38.6	16.7	5.6	15.8	39.4	45.6	11.2	27.5	0.7
Q2	17.0	48.0	-12.2	10.2	19.0	35.2	44.8	10.6	29.1	-4.5
Q3	49.0	48.1	16.5	10.3	22.2	49.9	48.5	10.5	40.5	-1.1
2018 June	-20.8	13.3	-19.7	3.5	-4.5	13.7	16.2	2.6	13.9	-2.9
July	26.0	18.4	12.7	6.0	7.3	17.0	16.5	4.3	13.3	-0.7
Aug.	13.6	12.5	3.5	1.9	8.2	18.0	17.3	4.1	13.9	0.0
Sep.	9.4	17.2	0.3	2.4	6.7	14.9	14.8	2.1	13.3	-0.5
Oct.	5.3	3.4	-16.6	7.3	14.6	15.4	19.0	3.6	11.9	-0.1
Nov. ^(p)	21.7	22.2	5.4	7.3	9.0	17.6	17.7	3.8	13.0	0.8
Growth rates										
2015	-0.3	0.6	-4.5	4.4	0.3	1.9	1.4	3.7	2.1	-0.5
2016	1.9	2.4	-1.4	5.7	2.2	2.3	2.0	4.1	2.7	-1.1
2017	1.9	3.1	0.0	4.8	1.8	3.2	2.9	7.3	3.3	-0.8
2017 Q4	1.9	3.1	0.0	4.8	1.8	3.2	2.9	7.3	3.3	-0.8
2018 Q1	2.3	3.3	2.6	4.5	1.4	3.0	2.9	7.2	3.0	-0.4
Q2	2.5	4.1	1.3	5.4	2.1	3.0	3.0	7.2	3.1	-1.1
Q3	3.2	4.3	3.3	4.6	2.7	3.1	3.2	6.9	3.2	-0.8
2018 June	2.5	4.1	1.3	5.4	2.1	3.0	3.0	7.2	3.1	-1.1
July	3.0	4.1	2.7	5.5	2.3	3.3	3.0	7.2	3.4	-0.8
Aug.	3.1	4.2	3.0	5.3	2.4	3.2	3.1	7.2	3.2	-0.8
Sep.	3.2	4.3	3.3	4.6	2.7	3.1	3.2	6.9	3.2	-0.8
Oct.	2.8	3.9	0.6	4.9	2.9	3.2	3.2	7.1	3.3	-0.7
Nov. ^(p)	2.9	4.0	1.2	5.1	2.9	3.2	3.3	6.7	3.3	-0.7

Source: ECB.

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

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

3) Including non-profit institutions serving households.

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

5 Money and credit

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

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

	MFI liabilities						MFI assets			
	Central government holdings ²⁾	Longer-term financial liabilities vis-à-vis other euro area residents					Net external assets	Other		
		Total	Deposits with an agreed maturity of over 2 years	Deposits redeemable at notice of over 3 months	Debt securities with a maturity of over 2 years	Capital and reserves		Total		
								Repos with central counterparties ³⁾	Reverse repos to central counterparties ³⁾	
1	2	3	4	5	6	7	8	9	10	
Outstanding amounts										
2015	282.8	6,999.4	2,119.6	79.5	2,255.5	2,544.9	1,349.2	281.7	205.9	135.6
2016	307.7	6,955.7	2,089.3	70.9	2,145.9	2,649.7	1,128.7	253.2	205.9	121.6
2017	343.4	6,768.5	1,968.3	59.7	2,014.1	2,726.3	935.5	299.1	143.5	92.5
2017 Q4	343.4	6,768.5	1,968.3	59.7	2,014.1	2,726.3	935.5	299.1	143.5	92.5
2018 Q1	340.8	6,745.7	1,952.7	59.4	2,015.0	2,718.5	903.7	316.7	135.9	86.2
Q2	330.4	6,708.9	1,950.6	58.4	2,025.9	2,674.0	858.9	422.7	174.1	183.8
Q3	403.4	6,693.5	1,934.7	56.9	2,048.5	2,653.4	882.1	424.7	177.3	183.0
2018 June	330.4	6,708.9	1,950.6	58.4	2,025.9	2,674.0	858.9	422.7	174.1	183.8
July	354.8	6,695.1	1,951.4	57.7	2,018.6	2,667.3	844.7	383.5	184.1	192.4
Aug.	391.6	6,676.5	1,942.9	57.3	2,016.2	2,660.2	847.6	411.1	181.4	189.0
Sep.	403.4	6,693.5	1,934.7	56.9	2,048.5	2,653.4	882.1	424.7	177.3	183.0
Oct.	398.2	6,789.0	1,936.3	56.6	2,104.5	2,691.6	995.2	460.6	167.1	174.3
Nov. ^(p)	390.4	6,781.6	1,929.1	55.7	2,098.3	2,698.5	1,034.2	418.0	196.1	204.1
Transactions										
2015	6.2	-216.0	-106.3	-13.5	-210.7	114.5	-88.6	-13.1	21.4	-4.0
2016	22.0	-122.9	-71.3	-8.6	-118.7	75.8	-278.2	-90.1	12.8	-12.0
2017	39.4	-76.8	-83.6	-6.6	-71.8	85.2	-92.6	-67.3	-60.9	-27.6
2017 Q4	-11.8	-29.6	-17.5	-1.8	-12.9	2.6	-60.6	-60.4	3.2	7.9
2018 Q1	-2.7	8.4	-15.2	-1.4	9.5	15.5	53.2	-51.0	-7.6	-6.3
Q2	-10.4	-12.8	-5.3	-1.1	-15.0	8.6	-62.7	86.2	16.4	19.4
Q3	76.4	29.6	-16.0	-1.5	18.9	28.3	39.6	-11.2	3.2	-0.8
2018 June	-5.7	-7.3	-0.4	-0.4	-3.6	-3.0	20.4	41.9	-3.2	-2.8
July	24.3	8.5	1.4	-0.7	-3.4	11.2	0.2	-40.9	10.0	8.6
Aug.	36.7	-6.6	-9.0	-0.4	-5.8	8.6	-5.8	19.1	-2.6	-3.5
Sep.	15.4	27.7	-8.4	-0.5	28.1	8.5	45.3	10.7	-4.1	-6.0
Oct.	-5.5	8.0	0.1	-0.3	4.6	3.6	20.9	25.9	-10.2	-8.7
Nov. ^(p)	-8.0	-1.8	-6.8	-0.9	-2.8	8.7	41.0	-38.1	29.0	29.7
Growth rates										
2015	2.5	-3.0	-4.8	-14.5	-8.6	4.6	-	-	11.6	-2.9
2016	7.8	-1.7	-3.4	-10.9	-5.3	2.9	-	-	6.3	-9.0
2017	12.7	-1.1	-4.0	-9.7	-3.4	3.3	-	-	-29.7	-22.7
2017 Q4	12.7	-1.1	-4.0	-9.7	-3.4	3.3	-	-	-29.7	-22.7
2018 Q1	12.0	-0.8	-4.0	-9.8	-1.5	2.6	-	-	-25.6	-22.2
Q2	6.7	-1.0	-3.2	-10.8	-2.5	2.2	-	-	-3.6	-18.0
Q3	14.5	-0.1	-2.7	-9.3	0.0	2.1	-	-	7.7	4.9
2018 June	6.7	-1.0	-3.2	-10.8	-2.5	2.2	-	-	-3.6	-18.0
July	10.3	-0.7	-2.5	-10.4	-2.7	2.5	-	-	22.7	23.3
Aug.	16.4	-0.8	-2.7	-9.9	-2.6	2.2	-	-	24.6	34.2
Sep.	14.5	-0.1	-2.7	-9.3	0.0	2.1	-	-	7.7	4.9
Oct.	18.3	0.4	-1.7	-8.8	0.6	2.0	-	-	-9.9	-22.0
Nov. ^(p)	24.9	0.4	-2.1	-9.2	0.8	2.2	-	-	-0.1	-24.7

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
2014	-2.5	-2.1	-0.2	0.0	-0.1	0.1
2015	-2.0	-1.9	-0.2	0.1	-0.1	0.3
2016	-1.6	-1.7	-0.1	0.2	0.0	0.6
2017	-1.0	-1.3	0.0	0.2	0.1	1.0
2017 Q4	-1.0	.	.	.	.	1.0
2018 Q1	-0.8	.	.	.	.	1.2
Q2	-0.5	.	.	.	.	1.4
Q3	-0.4	.	.	.	.	1.5

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

6.2 Revenue and expenditure

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

	Revenue						Expenditure						
	Total	Current revenue				Capital revenue	Total	Current expenditure				Capital expenditure	
		Direct taxes	Indirect taxes	Net social contributions				Compensation of employees	Intermediate consumption	Interest	Social benefits		
1	2	3	4	5	6	7	8	9	10	11	12	13	
2014	46.7	46.2	12.5	13.1	15.4	0.5	49.1	45.2	10.2	5.3	2.6	23.0	3.9
2015	46.2	45.7	12.5	13.0	15.2	0.5	48.3	44.4	10.0	5.2	2.3	22.7	3.9
2016	46.0	45.5	12.6	12.9	15.2	0.5	47.5	44.0	9.9	5.2	2.1	22.7	3.6
2017	46.1	45.7	12.8	12.9	15.2	0.4	47.0	43.3	9.8	5.1	2.0	22.5	3.8
2017 Q4	46.1	45.7	12.8	12.9	15.2	0.4	47.0	43.3	9.8	5.1	2.0	22.5	3.8
2018 Q1	46.1	45.7	12.9	12.9	15.2	0.4	46.9	43.1	9.8	5.1	1.9	22.4	3.7
Q2	46.1	45.7	12.9	12.9	15.2	0.4	46.6	43.0	9.8	5.1	1.9	22.3	3.7
Q3	46.2	45.8	12.9	12.9	15.2	0.4	46.6	43.0	9.8	5.1	1.9	22.3	3.6

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

6.3 Government debt-to-GDP ratio

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

	Total	Financial instrument			Holder			Original maturity		Residual maturity			Currency	
		Currency and deposits	Loans	Debt securities	Resident creditors	Non-resident creditors	Up to 1 year	Over 1 year	Up to 1 year	Over 1 and up to 5 years	Over 5 years	Euro or participating currencies	Other currencies	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2014	91.8	2.7	17.1	71.9	43.9	25.8	47.9	9.8	82.0	18.8	31.8	41.1	89.7	2.1
2015	89.9	2.8	16.2	70.9	44.1	27.3	45.7	9.1	80.8	17.5	31.2	41.2	87.8	2.1
2016	89.1	2.7	15.4	71.0	46.6	30.5	42.5	8.8	80.3	17.1	29.9	42.1	87.0	2.1
2017	86.8	2.6	14.2	70.0	47.3	31.9	39.5	8.0	78.8	15.9	28.8	42.2	85.0	1.8
2017 Q4	86.8	2.6	14.2	70.0	.	.	.	.	.	.	.	.	.	.
2018 Q1	86.9	2.6	14.0	70.3	.	.	.	.	.	.	.	.	.	.
Q2	86.3	2.6	13.7	70.0	.	.	.	.	.	.	.	.	.	.
Q3	86.1	2.6	13.5	70.0	.	.	.	.	.	.	.	.	.	.

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

6 Fiscal developments

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

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

	Change in debt-to-GDP ratio ²⁾	Primary deficit (+)/surplus (-)	Deficit-debt adjustment								Interest-growth differential	Memo item: Borrowing requirement
			Total	Transactions in main financial assets					Revaluation effects and other changes in volume	Other		
				Total	Currency and deposits	Loans	Debt securities	Equity and investment fund shares				
	1	2	3	4	5	6	7	8	9	10	11	12
2014	0.2	-0.1	-0.2	-0.4	0.2	-0.4	-0.3	0.0	0.1	0.2	0.5	2.3
2015	-1.9	-0.3	-0.8	-0.5	0.2	-0.3	-0.3	-0.1	0.0	-0.4	-0.8	1.2
2016	-0.8	-0.6	0.1	0.2	0.3	-0.1	0.0	0.1	0.0	-0.1	-0.3	1.6
2017	-2.2	-1.0	-0.2	0.3	0.5	0.0	-0.2	0.1	-0.1	-0.3	-1.0	0.9
2017 Q4	-2.2	-1.0	-0.2	0.4	0.5	0.0	-0.2	0.1	-0.1	-0.4	-1.0	0.9
2018 Q1	-2.4	-1.2	-0.1	0.5	0.5	0.0	-0.1	0.1	-0.1	-0.4	-1.1	0.8
Q2	-2.9	-1.4	-0.2	0.3	0.2	-0.1	-0.1	0.2	-0.1	-0.3	-1.3	0.5
Q3	-2.1	-1.5	0.5	0.8	0.6	0.0	0.0	0.2	-0.1	-0.2	-1.1	1.0

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	Maturities of up to 1 year	Issuance	Redemption			
	1	2	3	4	5	6	7	8	9	10	11	12	13	
2015	14.6	12.8	4.3	1.9	0.5	6.6	2.9	1.4	0.1	3.3	3.0	0.4	1.2	
2016	14.1	12.4	4.6	1.7	0.4	6.9	2.6	1.2	-0.1	3.0	2.9	0.2	1.2	
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	
2017 Q3	13.0	11.3	3.7	1.7	0.4	7.1	2.5	1.1	-0.2	2.9	2.5	0.2	1.1	
Q4	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 Q1	12.9	11.3	4.2	1.6	0.4	7.2	2.4	1.1	-0.2	2.8	2.5	0.4	1.1	
Q2	12.8	11.2	3.6	1.6	0.4	7.3	2.4	1.1	-0.2	2.8	2.5	0.4	0.9	
2018 July	12.8	11.3	3.7	1.6	0.4	7.3	2.3	1.1	-0.2	2.7	2.4	0.4	1.0	
Aug.	12.8	11.2	3.8	1.6	0.4	7.2	2.3	1.1	-0.2	2.7	2.5	0.4	1.0	
Sep.	13.1	11.5	3.8	1.6	0.4	7.3	2.3	1.1	-0.1	2.7	2.6	0.4	0.9	
Oct.	13.3	11.8	3.6	1.6	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	1.0	
Nov.	13.5	11.9	3.7	1.6	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.5	1.0	
Dec.	13.0	11.5	3.9	1.5	0.4	7.3	2.3	1.1	-0.1	2.7	2.5	0.4	0.9	

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 1	Germany 2	Estonia 3	Ireland 4	Greece 5	Spain 6	France 7	Italy 8	Cyprus 9	
Government deficit (-)/surplus (+)										
2014	-3.1	0.6	0.7	-3.6	-3.6	-6.0	-3.9	-3.0	-9.0	
2015	-2.5	0.8	0.1	-1.9	-5.6	-5.3	-3.6	-2.6	-1.3	
2016	-2.4	0.9	-0.3	-0.5	0.5	-4.5	-3.5	-2.5	0.3	
2017	-0.9	1.0	-0.4	-0.2	0.8	-3.1	-2.7	-2.4	1.8	
2017 Q4	-0.9	1.0	-0.4	-0.2	0.8	-3.1	-2.7	-2.4	1.8	
2018 Q1	-0.9	1.3	-0.6	-0.3	1.1	-2.9	-2.7	-2.2	2.5	
Q2	-0.3	1.9	-0.2	-0.3	0.9	-2.7	-2.8	-1.9	3.0	
Q3	-0.1	1.9	0.0	-0.1	0.8	-2.7	-2.7	-1.8	-4.0	
Government debt										
2014	107.6	74.5	10.5	104.1	178.9	100.4	94.9	131.8	108.0	
2015	106.5	70.8	9.9	76.8	175.9	99.3	95.6	131.6	108.0	
2016	106.1	67.9	9.2	73.4	178.5	99.0	98.2	131.4	105.5	
2017	103.4	63.9	8.7	68.4	176.1	98.1	98.5	131.2	96.1	
2017 Q4	103.4	63.9	8.7	68.4	176.1	98.1	98.5	131.2	96.1	
2018 Q1	106.4	62.7	8.5	69.3	177.9	98.7	99.4	132.8	93.4	
Q2	105.9	61.5	8.3	69.2	177.4	98.1	99.1	133.1	104.0	
Q3	105.4	61.0	8.0	68.8	182.2	98.3	99.5	133.0	110.9	
	Latvia 10	Lithuania 11	Luxembourg 12	Malta 13	Netherlands 14	Austria 15	Portugal 16	Slovenia 17	Slovakia 18	Finland 19
Government deficit (-)/surplus (+)										
2014	-1.5	-0.6	1.3	-1.7	-2.2	-2.7	-7.2	-5.5	-2.7	-3.2
2015	-1.4	-0.3	1.3	-1.0	-2.0	-1.0	-4.4	-2.8	-2.6	-2.8
2016	0.1	0.3	1.6	0.9	0.0	-1.6	-2.0	-1.9	-2.2	-1.7
2017	-0.6	0.5	1.4	3.5	1.2	-0.8	-3.0	0.1	-0.8	-0.7
2017 Q4	-0.6	0.5	1.4	3.5	1.2	-0.8	-3.0	0.1	-0.8	-0.7
2018 Q1	0.0	0.4	1.4	3.1	1.6	-0.6	-0.7	0.5	-0.7	-0.7
Q2	0.3	0.7	1.5	3.9	1.9	0.2	-1.0	0.6	-0.7	-0.9
Q3	0.0	0.6	1.9	3.6	2.1	0.1	0.0	0.7	-0.7	-0.8
Government debt										
2014	40.9	40.5	22.7	63.7	67.9	84.0	130.6	80.4	53.5	60.2
2015	36.8	42.6	22.2	58.6	64.6	84.8	128.8	82.6	52.2	63.6
2016	40.3	39.9	20.7	56.3	61.9	83.0	129.2	78.7	51.8	63.0
2017	40.0	39.4	23.0	50.9	57.0	78.3	124.8	74.1	50.9	61.3
2017 Q4	40.0	39.4	23.0	50.2	57.0	78.3	124.8	74.1	50.9	61.3
2018 Q1	35.5	36.0	22.2	49.8	55.1	77.2	125.4	75.5	50.9	59.9
Q2	36.9	35.0	22.0	49.0	54.0	76.5	125.0	72.7	51.9	59.6
Q3	37.1	35.0	21.7	45.9	52.9	75.6	125.0	71.0	51.5	58.8

Source: Eurostat.

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